



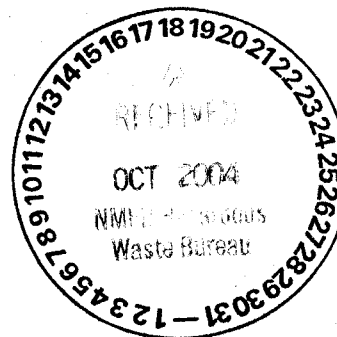
Department of Energy
National Nuclear Security Administration
Los Alamos Site Office
Los Alamos, New Mexico 87544

OCT 15 2004

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Mr. Chris Vick
Ground Water Quality Bureau
New Mexico Environment Department
PO Box 26110
Santa Fe, NM 87502

✓ Mr. John Young
Hazardous Material Bureau
New Mexico Environment Department
PO Box 26110
Santa Fe, NM 87502



Dear Mr. Chris Vick and Mr. John Young:

Subject: R-34 Drilling and Development Water

Attached is the analytical screening data from the sampling from Workplan Well R-34 drilling and development water. Workplan Well R-34 is located in the Mortandad Canyon watershed on San Ildefonso property. Approximately 65,000 gallons of drilling and development water was recently produced during the construction and development of R-34. Screening analysis of the stored water produced the following results:

- No PCBs were detected at concentrations greater than Method Detection Limits (MDLs).
- No VOAs or SVOAs were detected with the exception of acetone at 830 ppb. It is believed that the acetone detected in the stored water is an artifact of the drilling additive, Quickfoam, that contains isopropyl alcohol.
- Gross alpha activity is 0.76 pCi/L (+/-0.52 pCi/L, MDA=0.87 pCi/L).
- Gross beta activity is 4.2 pCi/L (+/-1.2 pCi/L, MDA=1.9 pCi/L).
- Tritium is non detect (MDA=670 pCi/L).
- No perchlorate was detected in the sample at concentrations greater than 4.0 ppb (Method 314).
- Analysis of a filtered sample showed that no contaminants exceeded NM WQCC Regulation 3103 ground water standards.
- No high explosives (HE) were detected in the sample.

DOE proposes to land apply the R-34 water at the drill site using sprinklers and, alternately, apply the R-34 water to the dirt road leading from the drill site to R-13 for dust suppression. The application will be conducted in accordance with the terms and



4153

OCT 15 2004

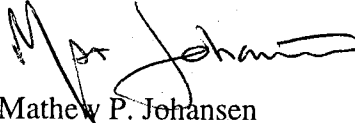
Mr. Chris Vick and Mr. John Young

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conditions of the Hydrogeologic Workplan NOI. The depth to ground water at the site is approximately 796 ft below ground surface

Copies of the analytical reports are attached. Please contact Bob Beers at 667-7969 (office) or Tom Whitacre at 665-5042 (office) should you have any questions regarding this notification.

Sincerely,



Mathew P. Johansen

Ground Water Program Compliance Manager

EM:3BE-001

Attachment

cc w/ attachment:

T. Whitacre, EM, LASO

S. Pearson, RRES-WQH, LANL, MS-M992

M. Saladen, RRES-WQH, LANL, MS-K497

B. Beers, RRES-WQH, LANL, MS-K497

COVER LETTER

September 28, 2004

Bernie Bockisch
Kleinfelder
8300 Jefferson, NE Suite B
Albuquerque, NM 87113
TEL: (505) 401-1955
FAX (505) 344-1711

RE: R-34

Order No.: 0409024

Dear Bernie Bockisch:

Hall Environmental Analysis Laboratory received 3 samples on 9/2/2004 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent.

Reporting limits are determined by EPA methodology. No determination of compounds below these (denoted by the ND or < sign) has been made.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,



Andy Freeman, Business Manager
Nancy McDuffie, Laboratory Manager



Hall Environmental Analysis Laboratory

Date: 28-Sep-04

CLIENT: Kleinfelder
Project: R-34
Lab Order: 0409024

CASE NARRATIVE

Method 8270: Due to an incorrect internal standard mix the Aq sample was re-extracted for confirmation.

A x10 prep dilution was also necessary due to surfactants in the sample.

Method 6010: MB and LCS fail for iron due to contamination from the high concentration in the parent sample.

Hall Environmental Analysis Laboratory

Date: 28-Sep-04

CLIENT: Kleinfelder

Client Sample ID: R-34 Water

Lab Order: 0409024

Collection Date: 9/1/2004 4:00:00 PM

Project: R-34

Lab ID: 0409024-01

Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						
						Analyst: MAP
Fluoride	0.33	0.10		mg/L	1	9/2/2004 3:20:27 PM
Chloride	3.5	0.10		mg/L	1	9/2/2004 3:20:27 PM
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	9/2/2004 3:20:27 PM
Bromide	1.5	0.10		mg/L	1	9/2/2004 3:20:27 PM
Nitrogen, Nitrate (As N)	0.28	0.10		mg/L	1	9/2/2004 3:20:27 PM
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	9/2/2004 3:20:27 PM
Sulfate	16	0.50		mg/L	1	9/2/2004 3:20:27 PM
EPA METHOD 8082: PCB'S						
						Analyst: JMP
Aroclor 1016	ND	1.0		µg/L	1	9/13/2004 8:25:41 AM
Aroclor 1221	ND	5.0		µg/L	1	9/13/2004 8:25:41 AM
Aroclor 1232	ND	1.0		µg/L	1	9/13/2004 8:25:41 AM
Aroclor 1242	ND	1.0		µg/L	1	9/13/2004 8:25:41 AM
Aroclor 1248	ND	1.0		µg/L	1	9/13/2004 8:25:41 AM
Aroclor 1254	ND	1.0		µg/L	1	9/13/2004 8:25:41 AM
Aroclor 1260	ND	1.0		µg/L	1	9/13/2004 8:25:41 AM
Surr: Decachlorobiphenyl	63.2	45.3-140		%REC	1	9/13/2004 8:25:41 AM
Surr: Tetrachloro-m-xylene	42.4	28.1-139		%REC	1	9/13/2004 8:25:41 AM
EPA METHOD 8260B: VOLATILES						
						Analyst: KTM
Benzene	ND	10		µg/L	10	9/3/2004
Toluene	ND	10		µg/L	10	9/3/2004
Ethylbenzene	ND	10		µg/L	10	9/3/2004
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	10	9/3/2004
1,2,4-Trimethylbenzene	ND	10		µg/L	10	9/3/2004
1,3,5-Trimethylbenzene	ND	10		µg/L	10	9/3/2004
1,2-Dichloroethane (EDC)	ND	10		µg/L	10	9/3/2004
1,2-Dibromoethane (EDB)	ND	10		µg/L	10	9/3/2004
Naphthalene	ND	20		µg/L	10	9/3/2004
1-Methylnaphthalene	ND	40		µg/L	10	9/3/2004
2-Methylnaphthalene	ND	40		µg/L	10	9/3/2004
Acetone	830	100		µg/L	10	9/3/2004
Bromobenzene	ND	10		µg/L	10	9/3/2004
Bromochloromethane	ND	10		µg/L	10	9/3/2004
Bromodichloromethane	ND	10		µg/L	10	9/3/2004
Bromoform	ND	10		µg/L	10	9/3/2004
Bromomethane	ND	20		µg/L	10	9/3/2004
2-Butanone	ND	100		µg/L	10	9/3/2004
Carbon disulfide	ND	100		µg/L	10	9/3/2004
Carbon Tetrachloride	ND	10		µg/L	10	9/3/2004
Chlorobenzene	ND	10		µg/L	10	9/3/2004
Chloroethane	ND	20		µg/L	10	9/3/2004

Qualifiers: ND - Not Detected at Reporting Limit

J - Analyte detected below quantitation limit

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Result is outside accepted reporting limits

I - Result is outside accepted reporting limits

E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: 28-Sep-04

CLIENT: Kleinfelder

Client Sample ID: R-34 Water

Lab Order: 0409024

Collection Date: 9/1/2004 4:00:00 PM

Project: R-34

Lab ID: 0409024-01

Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
Chloroform	ND	10		µg/L	10	9/3/2004
Chloromethane	ND	10		µg/L	10	9/3/2004
2-Chlorotoluene	ND	10		µg/L	10	9/3/2004
4-Chlorotoluene	ND	10		µg/L	10	9/3/2004
cis-1,2-DCE	ND	10		µg/L	10	9/3/2004
cis-1,3-Dichloropropene	ND	10		µg/L	10	9/3/2004
1,2-Dibromo-3-chloropropane	ND	20		µg/L	10	9/3/2004
Dibromochloromethane	ND	10		µg/L	10	9/3/2004
Dibromomethane	ND	20		µg/L	10	9/3/2004
1,2-Dichlorobenzene	ND	10		µg/L	10	9/3/2004
1,3-Dichlorobenzene	ND	10		µg/L	10	9/3/2004
1,4-Dichlorobenzene	ND	10		µg/L	10	9/3/2004
Dichlorodifluoromethane	ND	10		µg/L	10	9/3/2004
1,1-Dichloroethane	ND	10		µg/L	10	9/3/2004
1,1-Dichloroethene	ND	10		µg/L	10	9/3/2004
1,2-Dichloropropane	ND	10		µg/L	10	9/3/2004
1,3-Dichloropropane	ND	10		µg/L	10	9/3/2004
2,2-Dichloropropane	ND	10		µg/L	10	9/3/2004
1,1-Dichloropropene	ND	10		µg/L	10	9/3/2004
Hexachlorobutadiene	ND	10		µg/L	10	9/3/2004
2-Hexanone	ND	100		µg/L	10	9/3/2004
Isopropylbenzene	ND	10		µg/L	10	9/3/2004
4-Isopropyltoluene	ND	10		µg/L	10	9/3/2004
4-Methyl-2-pentanone	ND	100		µg/L	10	9/3/2004
Methylene Chloride	ND	30		µg/L	10	9/3/2004
n-Butylbenzene	ND	10		µg/L	10	9/3/2004
n-Propylbenzene	ND	10		µg/L	10	9/3/2004
sec-Butylbenzene	ND	10		µg/L	10	9/3/2004
Styrene	ND	10		µg/L	10	9/3/2004
tert-Butylbenzene	ND	10		µg/L	10	9/3/2004
1,1,1,2-Tetrachloroethane	ND	10		µg/L	10	9/3/2004
1,1,2,2-Tetrachloroethane	ND	10		µg/L	10	9/3/2004
Tetrachloroethene (PCE)	ND	10		µg/L	10	9/3/2004
trans-1,2-DCE	ND	10		µg/L	10	9/3/2004
trans-1,3-Dichloropropene	ND	10		µg/L	10	9/3/2004
1,2,3-Trichlorobenzene	ND	10		µg/L	10	9/3/2004
1,2,4-Trichlorobenzene	ND	10		µg/L	10	9/3/2004
1,1,1-Trichloroethane	ND	10		µg/L	10	9/3/2004
1,1,2-Trichloroethane	ND	10		µg/L	10	9/3/2004
Trichloroethene (TCE)	ND	10		µg/L	10	9/3/2004
Trichlorofluoromethane	ND	10		µg/L	10	9/3/2004
1,2,3-Trichloropropane	ND	20		µg/L	10	9/3/2004

Qualifiers:

ND - Not Detected in Report Limit

J - Analyte detected below quantitation limit

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Result very outside accepted recovery limits

I - Result outside accepted recovery limits

E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: 28-Sep-04

CLIENT: Kleinfelder

Client Sample ID: R-34 Water

Lab Order: 0409024

Collection Date: 9/1/2004 4:00:00 PM

Project: R-34

Lab ID: 0409024-01

Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
Vinyl chloride	ND	10		µg/L	10	9/3/2004
Xylenes, Total	ND	10		µg/L	10	9/3/2004
Surr: 1,2-Dichloroethane-d4	104	70.6-124		%REC	10	9/3/2004
Surr: 4-Bromofluorobenzene	102	76.4-130		%REC	10	9/3/2004
Surr: Dibromofluoromethane	116	67.2-131		%REC	10	9/3/2004
Surr: Toluene-d8	102	82.1-123		%REC	10	9/3/2004

EPA METHOD 8270C: SEMIVOLATILES

Analyst: GAB

Acenaphthene	ND	100		µg/L	1	9/23/2004
Acenaphthylene	ND	100		µg/L	1	9/23/2004
Aniline	ND	100		µg/L	1	9/23/2004
Anthracene	ND	100		µg/L	1	9/23/2004
Azobenzene	ND	100		µg/L	1	9/23/2004
Benz(a)anthracene	ND	150		µg/L	1	9/23/2004
Benzo(a)pyrene	ND	100		µg/L	1	9/23/2004
Benzo(b)fluoranthene	ND	100		µg/L	1	9/23/2004
Benzo(g,h,i)perylene	ND	100		µg/L	1	9/23/2004
Benzo(k)fluoranthene	ND	100		µg/L	1	9/23/2004
Benzoic acid	ND	500		µg/L	1	9/23/2004
Benzyl alcohol	ND	200		µg/L	1	9/23/2004
Bis(2-chloroethoxy)methane	ND	100		µg/L	1	9/23/2004
Bis(2-chloroethyl)ether	ND	150		µg/L	1	9/23/2004
Bis(2-chloroisopropyl)ether	ND	150		µg/L	1	9/23/2004
Bis(2-ethylhexyl)phthalate	ND	150		µg/L	1	9/23/2004
4-Bromophenyl phenyl ether	ND	100		µg/L	1	9/23/2004
Butyl benzyl phthalate	ND	150		µg/L	1	9/23/2004
Carbazole	ND	100		µg/L	1	9/23/2004
4-Chloro-3-methylphenol	ND	200		µg/L	1	9/23/2004
4-Chloroaniline	ND	200		µg/L	1	9/23/2004
2-Chloronaphthalene	ND	100		µg/L	1	9/23/2004
2-Chlorophenol	ND	100		µg/L	1	9/23/2004
4-Chlorophenyl phenyl ether	ND	150		µg/L	1	9/23/2004
Chrysene	ND	150		µg/L	1	9/23/2004
Di-n-butyl phthalate	ND	100		µg/L	1	9/23/2004
Di-n-octyl phthalate	ND	150		µg/L	1	9/23/2004
Dibenz(a,h)anthracene	ND	100		µg/L	1	9/23/2004
Dibenzofuran	ND	100		µg/L	1	9/23/2004
1,2-Dichlorobenzene	ND	100		µg/L	1	9/23/2004
1,3-Dichlorobenzene	ND	100		µg/L	1	9/23/2004
1,4-Dichlorobenzene	ND	100		µg/L	1	9/23/2004
3,3'-Dichlorobenzidine	ND	150		µg/L	1	9/23/2004
Diethyl phthalate	ND	100		µg/L	1	9/23/2004
Dimethyl phthalate	ND	100		µg/L	1	9/23/2004

Qualifiers: ND - Not Detected in Report Limit
 J - Analyte detected below quantitation limit
 B - Analyte detected in the associated Method Blank
 * - Value exceeds Maximum Contaminant Level

Sp - Result very outside accepted range
 I - Result outside accepted range
 E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: 28-Sep-04

CLIENT: Kleinfelder

Client Sample ID: R-34 Water

Lab Order: 0409024

Collection Date: 9/1/2004 4:00:00 PM

Project: R-34

Lab ID: 0409024-01

Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
2,4-Dichlorophenol	ND	100		µg/L	1	9/23/2004
2,4-Dimethylphenol	ND	100		µg/L	1	9/23/2004
4,6-Dinitro-2-methylphenol	ND	500		µg/L	1	9/23/2004
2,4-Dinitrophenol	ND	500		µg/L	1	9/23/2004
2,4-Dinitrotoluene	ND	100		µg/L	1	9/23/2004
2,6-Dinitrotoluene	ND	100		µg/L	1	9/23/2004
Fluoranthene	ND	100		µg/L	1	9/23/2004
Fluorene	ND	100		µg/L	1	9/23/2004
Hexachlorobenzene	ND	100		µg/L	1	9/23/2004
Hexachlorobutadiene	ND	100		µg/L	1	9/23/2004
Hexachlorocyclopentadiene	ND	100		µg/L	1	9/23/2004
Hexachloroethane	ND	100		µg/L	1	9/23/2004
Indeno(1,2,3-cd)pyrene	ND	100		µg/L	1	9/23/2004
Isophorone	ND	100		µg/L	1	9/23/2004
2-Methylnaphthalene	ND	100		µg/L	1	9/23/2004
2-Methylphenol	ND	150		µg/L	1	9/23/2004
3+4-Methylphenol	ND	100		µg/L	1	9/23/2004
N-Nitrosodi-n-propylamine	ND	100		µg/L	1	9/23/2004
N-Nitrosodimethylamine	ND	100		µg/L	1	9/23/2004
N-Nitrosodiphenylamine	ND	100		µg/L	1	9/23/2004
Naphthalene	ND	100		µg/L	1	9/23/2004
2-Nitroaniline	ND	500		µg/L	1	9/23/2004
3-Nitroaniline	ND	500		µg/L	1	9/23/2004
4-Nitroaniline	ND	200		µg/L	1	9/23/2004
Nitrobenzene	ND	100		µg/L	1	9/23/2004
2-Nitrophenol	ND	150		µg/L	1	9/23/2004
4-Nitrophenol	ND	500		µg/L	1	9/23/2004
Pentachlorophenol	ND	500		µg/L	1	9/23/2004
Phenanthrene	ND	100		µg/L	1	9/23/2004
Phenol	ND	100		µg/L	1	9/23/2004
Pyrene	ND	150		µg/L	1	9/23/2004
Pyridine	ND	300		µg/L	1	9/23/2004
1,2,4-Trichlorobenzene	ND	100		µg/L	1	9/23/2004
2,4,5-Trichlorophenol	ND	100		µg/L	1	9/23/2004
2,4,6-Trichlorophenol	ND	150		µg/L	1	9/23/2004
Surr: 2,4,6-Tribromophenol	82.7	16.6-115		%REC	1	9/23/2004
Surr: 2-Fluorobiphenyl	70.6	37-95.7		%REC	1	9/23/2004
Surr: 2-Fluorophenol	56.5	9.54-89.8		%REC	1	9/23/2004
Surr: 4-Terphenyl-d14	99.3	47.9-115		%REC	1	9/23/2004
Surr: Nitrobenzene-d5	79.7	38-106		%REC	1	9/23/2004
Surr: Phenol-d6	42.0	10.7-63.4		%REC	1	9/23/2004

EPA METHOD 7470: MERCURY

Analyst: CMC

Qualifiers: ND - Not Detected (11 Reports Limit) : Sp - Recovery outside acceptable limits
J - Analyte detected below quantitation limit : RF - outside reported concentration limits
B - Analyte detected in the associated Method Blank : E - Value above quantitation range
* - Value exceeds Maximum Contaminant Level

Hall Environmental Analysis Laboratory

Date: 28-Sep-04

CLIENT: Kleinfelder

Client Sample ID: R-34 Water

Lab Order: 0409024

Collection Date: 9/1/2004 4:00:00 PM

Project: R-34

Lab ID: 0409024-01

Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
Mercury	ND	0.00020		mg/L	1	9/7/2004
EPA METHOD 6010C: DISSOLVED METALS						Analyst: NMO
Aluminum	0.022	0.020		mg/L	1	9/30/2004 2:45:18 PM
Antimony	0.012	0.010		mg/L	1	9/30/2004 2:45:18 PM
Arsenic	ND	0.020		mg/L	1	9/30/2004 2:45:18 PM
Barium	0.033	0.020		mg/L	1	9/30/2004 2:45:18 PM
Beryllium	ND	0.0030		mg/L	1	9/30/2004 2:45:18 PM
Cadmium	ND	0.0020		mg/L	1	9/30/2004 2:45:18 PM
Calcium	27	1.0		mg/L	1	9/30/2004 2:45:18 PM
Chromium	ND	0.0060		mg/L	1	9/30/2004 2:45:18 PM
Cobalt	ND	0.0060		mg/L	1	9/30/2004 2:45:18 PM
Copper	ND	0.0060		mg/L	1	9/30/2004 2:45:18 PM
Iron	ND	0.020		mg/L	1	9/30/2004 2:45:18 PM
Lead	ND	0.0050		mg/L	1	9/30/2004 2:45:18 PM
Magnesium	6.2	1.0		mg/L	1	9/30/2004 2:45:18 PM
Manganese	0.031	0.0020		mg/L	1	9/30/2004 2:45:18 PM
Nickel	ND	0.010		mg/L	1	9/30/2004 2:45:18 PM
Potassium	5.8	1.0		mg/L	1	9/30/2004 2:45:18 PM
Selenium	ND	0.050		mg/L	1	9/30/2004 2:45:18 PM
Silver	ND	0.0050		mg/L	1	9/30/2004 3:23:31 PM
Sodium	26	1.0		mg/L	1	9/30/2004 2:45:18 PM
Thallium	ND	0.020		mg/L	1	9/30/2004 2:45:18 PM
Uranium	ND	0.10		mg/L	1	9/30/2004 2:45:18 PM
Vanadium	ND	0.050		mg/L	1	9/30/2004 2:45:18 PM
Zinc	0.016	0.0050		mg/L	1	9/30/2004 2:45:18 PM

Qualifiers:

ND - Not Detected at Reporting Limit

J - Analyte detected below quantitation limit

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spill Recovery outside acceptable recovery limits

I - RF outside accepted recovery limits

E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: 28-Sep-04

CLIENT: Kleinfelder

Client Sample ID: R-34 Cuttings

Lab Order: 0409024

Collection Date: 9/1/2004 4:00:00 PM

Project: R-34

Lab ID: 0409024-02

Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8082: PCB'S						Analyst: JMP
Aroclor 1016	ND	0.050		mg/Kg	1	9/4/2004 11:15:02 AM
Aroclor 1221	ND	0.25		mg/Kg	1	9/4/2004 11:15:02 AM
Aroclor 1232	ND	0.050		mg/Kg	1	9/4/2004 11:15:02 AM
Aroclor 1242	ND	0.050		mg/Kg	1	9/4/2004 11:15:02 AM
Aroclor 1248	ND	0.050		mg/Kg	1	9/4/2004 11:15:02 AM
Aroclor 1254	ND	0.050		mg/Kg	1	9/4/2004 11:15:02 AM
Aroclor 1260	ND	0.050		mg/Kg	1	9/4/2004 11:15:02 AM
Surr: Decachlorobiphenyl	92.0	50.1-115		%REC	1	9/4/2004 11:15:02 AM
EPA METHOD 8260B: VOLATILES						Analyst: BDH
Benzene	ND	0.050		mg/Kg	1	9/3/2004
Toluene	ND	0.050		mg/Kg	1	9/3/2004
Ethylbenzene	ND	0.050		mg/Kg	1	9/3/2004
Methyl tert-butyl ether (MTBE)	ND	0.050		mg/Kg	1	9/3/2004
1,2,4-Trimethylbenzene	ND	0.050		mg/Kg	1	9/3/2004
1,3,5-Trimethylbenzene	ND	0.050		mg/Kg	1	9/3/2004
1,2-Dichloroethane (EDC)	ND	0.050		mg/Kg	1	9/3/2004
1,2-Dibromoethane (EDB)	ND	0.050		mg/Kg	1	9/3/2004
Naphthalene	ND	0.10		mg/Kg	1	9/3/2004
1-Methylnaphthalene	ND	0.20		mg/Kg	1	9/3/2004
2-Methylnaphthalene	ND	0.20		mg/Kg	1	9/3/2004
Acetone	ND	2.0		mg/Kg	1	9/3/2004
Bromobenzene	ND	0.050		mg/Kg	1	9/3/2004
Bromochloromethane	ND	0.050		mg/Kg	1	9/3/2004
Bromodichloromethane	ND	0.050		mg/Kg	1	9/3/2004
Bromoform	ND	0.050		mg/Kg	1	9/3/2004
Bromomethane	ND	0.10		mg/Kg	1	9/3/2004
2-Butanone	ND	1.0		mg/Kg	1	9/3/2004
Carbon disulfide	ND	0.50		mg/Kg	1	9/3/2004
Carbon tetrachloride	ND	0.10		mg/Kg	1	9/3/2004
Chlorobenzene	ND	0.050		mg/Kg	1	9/3/2004
Chloroethane	ND	0.10		mg/Kg	1	9/3/2004
Chloroform	ND	0.050		mg/Kg	1	9/3/2004
Chloromethane	ND	0.050		mg/Kg	1	9/3/2004
2-Chlorotoluene	ND	0.050		mg/Kg	1	9/3/2004
4-Chlorotoluene	ND	0.050		mg/Kg	1	9/3/2004
cis-1,2-DCE	ND	0.050		mg/Kg	1	9/3/2004
cis-1,3-Dichloropropene	ND	0.050		mg/Kg	1	9/3/2004
1,2-Dibromo-3-chloropropane	ND	0.10		mg/Kg	1	9/3/2004
Dibromochloromethane	ND	0.050		mg/Kg	1	9/3/2004
Dibromomethane	ND	0.10		mg/Kg	1	9/3/2004

Qualifiers: ND - Not Detected in Report Limit
 J - Analyte detected below quantitation limit
 B - Analyte detected in the associated Method Blank
 * - Value exceeds Maximum Contaminant Level

SF - Recovery outside acceptable limits
 I - RF outside acceptable limits
 E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: 28-Sep-04

CLIENT: Kleinfelder

Client Sample ID: R-34 Cuttings

Lab Order: 0409024

Collection Date: 9/1/2004 4:00:00 PM

Project: R-34

Lab ID: 0409024-02

Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
1,2-Dichlorobenzene	ND	0.050		mg/Kg	1	9/3/2004
1,3-Dichlorobenzene	ND	0.050		mg/Kg	1	9/3/2004
1,4-Dichlorobenzene	ND	0.050		mg/Kg	1	9/3/2004
Dichlorodifluoromethane	ND	0.050		mg/Kg	1	9/3/2004
1,1-Dichloroethane	ND	0.050		mg/Kg	1	9/3/2004
1,1-Dichloroethene	ND	0.050		mg/Kg	1	9/3/2004
1,2-Dichloropropane	ND	0.050		mg/Kg	1	9/3/2004
1,3-Dichloropropane	ND	0.050		mg/Kg	1	9/3/2004
2,2-Dichloropropane	ND	0.050		mg/Kg	1	9/3/2004
1,1-Dichloropropene	ND	0.050		mg/Kg	1	9/3/2004
Hexachlorobutadiene	ND	0.050		mg/Kg	1	9/3/2004
2-Hexanone	ND	0.50		mg/Kg	1	9/3/2004
Isopropylbenzene	ND	0.050		mg/Kg	1	9/3/2004
4-Isopropyltoluene	ND	0.050		mg/Kg	1	9/3/2004
4-Methyl-2-pentanone	ND	0.50		mg/Kg	1	9/3/2004
Methylene chloride	ND	0.15		mg/Kg	1	9/3/2004
n-Butylbenzene	ND	0.050		mg/Kg	1	9/3/2004
n-Propylbenzene	ND	0.050		mg/Kg	1	9/3/2004
sec-Butylbenzene	ND	0.050		mg/Kg	1	9/3/2004
Styrene	ND	0.050		mg/Kg	1	9/3/2004
tert-Butylbenzene	ND	0.050		mg/Kg	1	9/3/2004
1,1,1,2-Tetrachloroethane	ND	0.050		mg/Kg	1	9/3/2004
1,1,2,2-Tetrachloroethane	ND	0.050		mg/Kg	1	9/3/2004
Tetrachloroethene (PCE)	ND	0.050		mg/Kg	1	9/3/2004
trans-1,2-DCE	ND	0.050		mg/Kg	1	9/3/2004
trans-1,3-Dichloropropene	ND	0.050		mg/Kg	1	9/3/2004
1,2,3-Trichlorobenzene	ND	0.050		mg/Kg	1	9/3/2004
1,2,4-Trichlorobenzene	ND	0.050		mg/Kg	1	9/3/2004
1,1,1-Trichloroethane	ND	0.050		mg/Kg	1	9/3/2004
1,1,2-Trichloroethane	ND	0.050		mg/Kg	1	9/3/2004
Trichloroethene (TCE)	ND	0.050		mg/Kg	1	9/3/2004
Trichlorofluoromethane	ND	0.050		mg/Kg	1	9/3/2004
1,2,3-Trichloropropane	ND	0.10		mg/Kg	1	9/3/2004
Vinyl chloride	ND	0.050		mg/Kg	1	9/3/2004
Xylenes, Total	ND	0.050		mg/Kg	1	9/3/2004
Surr: 1,2-Dichloroethane-d4	90.9	68.4-123		%REC	1	9/3/2004
Surr: 4-Bromofluorobenzene	103	70-119		%REC	1	9/3/2004
Surr: Dibromofluoromethane	87.1	76.8-123		%REC	1	9/3/2004
Surr: Toluene-d8	99.9	75.9-118		%REC	1	9/3/2004

EPA METHOD 8270C: SEMIVOLATILES

Analyst: GAB

Acenaphthene	ND	0.20	mg/Kg	1	9/10/2004
Acenaphthylene	ND	0.20	mg/Kg	1	9/10/2004

Qualifiers: ND - Not Detected at Reporting Limit
 J - Analyte detected below quantitation limit
 B - Analyte detected in the associated Method Blank
 * - Value exceeds Maximum Contaminant Level
 Sp - Recovery outside acceptable limits
 I - RF outside acceptable limits
 E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: 28-Sep-04

CLIENT: Kleinfelder
Lab Order: 0409024
Project: R-34
Lab ID: 0409024-02

Client Sample ID: R-34 Cuttings
Collection Date: 9/1/2004 4:00:00 PM

Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
Aniline	ND	0.20		mg/Kg	1	9/10/2004
Anthracene	ND	0.20		mg/Kg	1	9/10/2004
Azobenzene	ND	0.20		mg/Kg	1	9/10/2004
Benz(a)anthracene	ND	0.25		mg/Kg	1	9/10/2004
Benzidine	ND	0.20		mg/Kg	1	9/10/2004
Benzo(a)pyrene	ND	0.20		mg/Kg	1	9/10/2004
Benzo(b)fluoranthene	ND	0.20		mg/Kg	1	9/10/2004
Benzo(g,h,i)perylene	ND	0.30		mg/Kg	1	9/10/2004
Benzo(k)fluoranthene	ND	0.20		mg/Kg	1	9/10/2004
Benzoic acid	ND	0.50		mg/Kg	1	9/10/2004
Benzyl alcohol	ND	0.25		mg/Kg	1	9/10/2004
Bis(2-chloroethoxy)methane	ND	0.20		mg/Kg	1	9/10/2004
Bis(2-chloroethyl)ether	ND	0.25		mg/Kg	1	9/10/2004
Bis(2-chloroisopropyl)ether	ND	0.20		mg/Kg	1	9/10/2004
Bis(2-ethylhexyl)phthalate	0.70	0.20		mg/Kg	1	9/10/2004
4-Bromophenyl phenyl ether	ND	0.25		mg/Kg	1	9/10/2004
Butyl benzyl phthalate	ND	0.20		mg/Kg	1	9/10/2004
Carbazole	ND	0.20		mg/Kg	1	9/10/2004
4-Chloro-3-methylphenol	ND	0.20		mg/Kg	1	9/10/2004
4-Chloroaniline	ND	0.20		mg/Kg	1	9/10/2004
2-Chloronaphthalene	ND	0.20		mg/Kg	1	9/10/2004
2-Chlorophenol	ND	0.20		mg/Kg	1	9/10/2004
4-Chlorophenyl phenyl ether	ND	0.20		mg/Kg	1	9/10/2004
Chrysene	ND	0.20		mg/Kg	1	9/10/2004
Di-n-butyl phthalate	ND	0.25		mg/Kg	1	9/10/2004
Di-n-octyl phthalate	ND	0.20		mg/Kg	1	9/10/2004
Dibenz(a,h)anthracene	ND	0.25		mg/Kg	1	9/10/2004
Dibenzofuran	ND	0.20		mg/Kg	1	9/10/2004
1,2-Dichlorobenzene	ND	0.20		mg/Kg	1	9/10/2004
1,3-Dichlorobenzene	ND	0.20		mg/Kg	1	9/10/2004
1,4-Dichlorobenzene	ND	0.20		mg/Kg	1	9/10/2004
3,3'-Dichlorobenzidine	ND	0.20		mg/Kg	1	9/10/2004
Diethyl phthalate	ND	0.20		mg/Kg	1	9/10/2004
Dimethyl phthalate	ND	0.20		mg/Kg	1	9/10/2004
2,4-Dichlorophenol	ND	0.20		mg/Kg	1	9/10/2004
2,4-Dimethylphenol	ND	0.20		mg/Kg	1	9/10/2004
4,6-Dinitro-2-methylphenol	ND	0.50		mg/Kg	1	9/10/2004
2,4-Dinitrophenol	ND	0.50		mg/Kg	1	9/10/2004
2,4-Dinitrotoluene	ND	0.20		mg/Kg	1	9/10/2004
2,6-Dinitrotoluene	ND	0.20		mg/Kg	1	9/10/2004
Fluoranthene	ND	0.20		mg/Kg	1	9/10/2004
Fluorene	ND	0.20		mg/Kg	1	9/10/2004

Qualifiers: ND - Not Detected in Report Limit Sp - Recovery outside acceptance limits
J - Analyte detected below quantitation limit I - RF outside acceptance limits
B - Analyte detected in the associated Method Blank E - Value above quantitation range
* - Value exceeds Maximum Contaminant Level

Hall Environmental Analysis Laboratory

Date: 28-Sep-04

CLIENT: Kleinfelder

Client Sample ID: R-34 Cuttings

Lab Order: 0409024

Collection Date: 9/1/2004 4:00:00 PM

Project: R-34

Lab ID: 0409024-02

Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
Hexachlorobenzene	ND	0.20		mg/Kg	1	9/10/2004
Hexachlorobutadiene	ND	0.20		mg/Kg	1	9/10/2004
Hexachlorocyclopentadiene	ND	0.25		mg/Kg	1	9/10/2004
Hexachloroethane	ND	0.20		mg/Kg	1	9/10/2004
Indeno(1,2,3-cd)pyrene	ND	0.20		mg/Kg	1	9/10/2004
Isophorone	ND	0.20		mg/Kg	1	9/10/2004
2-Methylnaphthalene	ND	0.20		mg/Kg	1	9/10/2004
2-Methylphenol	ND	0.20		mg/Kg	1	9/10/2004
3+4-Methylphenol	ND	0.20		mg/Kg	1	9/10/2004
N-Nitrosodi-n-propylamine	ND	0.20		mg/Kg	1	9/10/2004
N-Nitrosodiphenylamine	ND	0.20		mg/Kg	1	9/10/2004
Naphthalene	ND	0.20		mg/Kg	1	9/10/2004
2-Nitroaniline	ND	0.50		mg/Kg	1	9/10/2004
3-Nitroaniline	ND	0.50		mg/Kg	1	9/10/2004
4-Nitroaniline	ND	0.25		mg/Kg	1	9/10/2004
Nitrobenzene	ND	0.20		mg/Kg	1	9/10/2004
2-Nitrophenol	ND	0.20		mg/Kg	1	9/10/2004
4-Nitrophenol	ND	0.20		mg/Kg	1	9/10/2004
Pentachlorophenol	ND	0.50		mg/Kg	1	9/10/2004
Phenanthrene	ND	0.20		mg/Kg	1	9/10/2004
Phenol	ND	0.20		mg/Kg	1	9/10/2004
Pyrene	ND	0.20		mg/Kg	1	9/10/2004
Pyridine	ND	0.50		mg/Kg	1	9/10/2004
1,2,4-Trichlorobenzene	ND	0.20		mg/Kg	1	9/10/2004
2,4,5-Trichlorophenol	ND	0.20		mg/Kg	1	9/10/2004
2,4,6-Trichlorophenol	ND	0.20		mg/Kg	1	9/10/2004
Surr: 2,4,6-Tribromophenol	31.9	26-156		%REC	1	9/10/2004
Surr: 2-Fluorobiphenyl	25.9	23.6-111		%REC	1	9/10/2004
Surr: 2-Fluorophenol	32.0	21.5-107		%REC	1	9/10/2004
Surr: 4-Terphenyl-d14	28.4	22.8-220		%REC	1	9/10/2004
Surr: Nitrobenzene-d5	27.6	25.3-115		%REC	1	9/10/2004
Surr: Phenol-d6	36.4	25.2-115		%REC	1	9/10/2004
EPA METHOD 7471: MERCURY						
Mercury	ND	0.033		mg/Kg	1	9/3/2004
MERCURY, TCLP LEACHED						
Mercury	ND	0.020		mg/L	1	9/7/2004
EPA METHOD 6010C: SOIL METALS						
Aluminum	6700	600		mg/Kg	200	9/9/2004 3:07:14 PM
Antimony	ND	0.50		mg/Kg	1	9/13/2004 4:52:21 PM
Arsenic	ND	2.5		mg/Kg	1	9/9/2004 1:53:32 PM
Barium	120	10		mg/Kg	100	9/9/2004 3:03:33 PM

Qualifiers: ND - Not Detected Limit

J - Analyte detected below quantitation limit

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Result 'very outside' accepted recovery limits

I - Result 'outside' accepted recovery limits

E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: 28-Sep-04

CLIENT: Kleinfelder
Lab Order: 0409024
Project: R-34
Lab ID: 0409024-02

Client Sample ID: R-34 Cuttings
Collection Date: 9/1/2004 4:00:00 PM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
Beryllium	0.27	0.15		mg/Kg	1	9/9/2004 1:53:32 PM
Boron	ND	2.0		mg/Kg	1	9/9/2004 1:53:32 PM
Cadmium	ND	0.10		mg/Kg	1	9/9/2004 1:53:32 PM
Calcium	4300	50		mg/Kg	1	9/13/2004 4:52:21 PM
Chromium	5.6	0.30		mg/Kg	1	9/9/2004 1:53:32 PM
Cobalt	3.8	0.30		mg/Kg	1	9/9/2004 1:53:32 PM
Copper	5.8	0.30		mg/Kg	1	9/9/2004 1:53:32 PM
Iron	12000	100		mg/Kg	100	9/9/2004 3:03:33 PM
Lead	1.9	0.25		mg/Kg	1	9/9/2004 1:53:32 PM
Magnesium	3900	25		mg/Kg	1	9/13/2004 4:52:21 PM
Manganese	150	0.25		mg/Kg	1	9/13/2004 4:52:21 PM
Molybdenum	ND	0.40		mg/Kg	1	9/9/2004 1:53:32 PM
Nickel	8.8	0.50		mg/Kg	1	9/9/2004 1:53:32 PM
Potassium	1100	50		mg/Kg	1	9/13/2004 4:52:21 PM
Selenium	ND	2.5		mg/Kg	1	9/9/2004 1:53:32 PM
Silver	ND	0.25		mg/Kg	1	9/9/2004 1:53:32 PM
Sodium	270	25		mg/Kg	1	9/13/2004 4:52:21 PM
Thallium	ND	0.50		mg/Kg	1	9/9/2004 1:53:32 PM
Uranium	ND	5.0		mg/Kg	1	9/9/2004 1:53:32 PM
Vanadium	18	2.5		mg/Kg	1	9/9/2004 1:53:32 PM
Zinc	17	2.5		mg/Kg	1	9/9/2004 1:53:32 PM

EPA METHOD 6010C: TCLP METALS

Analyst: NMO

Arsenic	ND	5.0		mg/L	1	9/8/2004 10:37:22 AM
Barium	ND	100		mg/L	1	9/8/2004 10:37:22 AM
Cadmium	ND	1.0		mg/L	1	9/8/2004 10:37:22 AM
Chromium	ND	5.0		mg/L	1	9/8/2004 10:37:22 AM
Lead	ND	5.0		mg/L	1	9/8/2004 10:37:22 AM
Selenium	ND	1.0		mg/L	1	9/8/2004 10:37:22 AM
Silver	ND	5.0		mg/L	1	9/8/2004 10:37:22 AM

Qualifiers: ND - Not Detected at Reporting Limit
J - Analyte detected below quantitation limit
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
Sp - Recovery outside acceptable limits
I - RF outside acceptable limits
E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: 28-Sep-04

CLIENT: Kleinfelder
Lab Order: 0409024
Project: R-34
Lab ID: 0409024-03

Client Sample ID: TRIP BLANK

Collection Date:

Matrix: TRIP BLANK

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: KTM
Benzene	ND	1.0		µg/L	1	9/3/2004
Toluene	ND	1.0		µg/L	1	9/3/2004
Ethylbenzene	ND	1.0		µg/L	1	9/3/2004
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/3/2004
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	9/3/2004
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	9/3/2004
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	9/3/2004
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	9/3/2004
Naphthalene	ND	2.0		µg/L	1	9/3/2004
1-Methylnaphthalene	ND	4.0		µg/L	1	9/3/2004
2-Methylnaphthalene	ND	4.0		µg/L	1	9/3/2004
Acetone	ND	10		µg/L	1	9/3/2004
Bromobenzene	ND	1.0		µg/L	1	9/3/2004
Bromochloromethane	ND	1.0		µg/L	1	9/3/2004
Bromodichloromethane	ND	1.0		µg/L	1	9/3/2004
Bromoform	ND	1.0		µg/L	1	9/3/2004
Bromomethane	ND	2.0		µg/L	1	9/3/2004
2-Butanone	ND	10		µg/L	1	9/3/2004
Carbon disulfide	ND	10		µg/L	1	9/3/2004
Carbon Tetrachloride	ND	1.0		µg/L	1	9/3/2004
Chlorobenzene	ND	1.0		µg/L	1	9/3/2004
Chloroethane	ND	2.0		µg/L	1	9/3/2004
Chloroform	ND	1.0		µg/L	1	9/3/2004
Chloromethane	ND	1.0		µg/L	1	9/3/2004
2-Chlorotoluene	ND	1.0		µg/L	1	9/3/2004
4-Chlorotoluene	ND	1.0		µg/L	1	9/3/2004
cis-1,2-DCE	ND	1.0		µg/L	1	9/3/2004
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	9/3/2004
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	9/3/2004
Dibromochloromethane	ND	1.0		µg/L	1	9/3/2004
Dibromomethane	ND	2.0		µg/L	1	9/3/2004
1,2-Dichlorobenzene	ND	1.0		µg/L	1	9/3/2004
1,3-Dichlorobenzene	ND	1.0		µg/L	1	9/3/2004
1,4-Dichlorobenzene	ND	1.0		µg/L	1	9/3/2004
Dichlorodifluoromethane	ND	1.0		µg/L	1	9/3/2004
1,1-Dichloroethane	ND	1.0		µg/L	1	9/3/2004
1,1-Dichloroethene	ND	1.0		µg/L	1	9/3/2004
1,2-Dichloropropane	ND	1.0		µg/L	1	9/3/2004
1,3-Dichloropropane	ND	1.0		µg/L	1	9/3/2004
2,2-Dichloropropane	ND	1.0		µg/L	1	9/3/2004
1,1-Dichloropropene	ND	1.0		µg/L	1	9/3/2004

Qualifiers: ND - Not Detected in Report Limit

J - Analyte detected below quantitation limit

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spill Recovery outside accepted recovery limits

I - RF outside accepted recovery limits

E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: 28-Sep-04

CLIENT: Kleinfelder
Lab Order: 0409024
Project: R-34
Lab ID: 0409024-03

Client Sample ID: TRIP BLANK

Collection Date:

Matrix: TRIP BLANK

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
Hexachlorobutadiene	ND	1.0		µg/L	1	9/3/2004
2-Hexanone	ND	10		µg/L	1	9/3/2004
Isopropylbenzene	ND	1.0		µg/L	1	9/3/2004
4-Isopropyltoluene	ND	1.0		µg/L	1	9/3/2004
4-Methyl-2-pentanone	ND	10		µg/L	1	9/3/2004
Methylene Chloride	ND	3.0		µg/L	1	9/3/2004
n-Butylbenzene	ND	1.0		µg/L	1	9/3/2004
n-Propylbenzene	ND	1.0		µg/L	1	9/3/2004
sec-Butylbenzene	ND	1.0		µg/L	1	9/3/2004
Styrene	ND	1.0		µg/L	1	9/3/2004
tert-Butylbenzene	ND	1.0		µg/L	1	9/3/2004
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	9/3/2004
1,1,2,2-Tetrachloroethane	ND	1.0		µg/L	1	9/3/2004
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	9/3/2004
trans-1,2-DCE	ND	1.0		µg/L	1	9/3/2004
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	9/3/2004
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	9/3/2004
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	9/3/2004
1,1,1-Trichloroethane	ND	1.0		µg/L	1	9/3/2004
1,1,2-Trichloroethane	ND	1.0		µg/L	1	9/3/2004
Trichloroethene (TCE)	ND	1.0		µg/L	1	9/3/2004
Trichlorofluoromethane	ND	1.0		µg/L	1	9/3/2004
1,2,3-Trichloropropane	ND	2.0		µg/L	1	9/3/2004
Vinyl chloride	ND	1.0		µg/L	1	9/3/2004
Xylenes, Total	ND	1.0		µg/L	1	9/3/2004
Surr: 1,2-Dichloroethane-d4	106	70.6-124		%REC	1	9/3/2004
Surr: 4-Bromofluorobenzene	99.0	76.4-130		%REC	1	9/3/2004
Surr: Dibromofluoromethane	118	67.2-131		%REC	1	9/3/2004
Surr: Toluene-d8	103	82.1-123		%REC	1	9/3/2004

Qualifiers: ND - Not Detected at Reporting Limit
J - Analyte detected below quantitation limit
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level

S - Result is "very outside" acceptance limits
I - Result is outside acceptance limits
E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: 28-Sep-04

CLIENT: Kleinfelder
Work Order: 0409024
Project: R-34

QC SUMMARY REPORT

Method Blank

Sample ID	MBLK	Batch ID: R12992	Test Code: E300	Units: mg/L	Analysis Date	9/2/2004 2:46:50 PM	Prep Date				
Client ID:		Run ID: LC_040902B			SeqNo:	302175					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	ND	0.1									
Chloride	ND	0.1									
Nitrogen, Nitrite (As N)	ND	0.1									
Bromide	ND	0.1									
Nitrogen, Nitrate (As N)	ND	0.1									
Phosphorus, Orthophosphate (As P)	ND	0.5									
Sulfate	ND	0.5									

Sample ID	MBLK	Batch ID: R12992	Test Code: E300	Units: mg/L	Analysis Date	9/2/2004 9:46:56 PM	Prep Date				
Client ID:		Run ID: LC_040902B			SeqNo:	302200					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	ND	0.1									
Chloride	ND	0.1									
Nitrogen, Nitrite (As N)	ND	0.1									
Bromide	ND	0.1									
Nitrogen, Nitrate (As N)	ND	0.1									
Phosphorus, Orthophosphate (As P)	ND	0.5									
Sulfate	ND	0.5									

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Kleinfelder
Work Order: 0409024
Project: R-34

QC SUMMARY REPORT

Method Blank

Sample ID	MB-6424	Batch ID: 6424	Test Code: SW8080A	Units: mg/Kg	Analysis Date	9/4/2004 8:56:33 AM	Prep Date	9/2/2004			
Client ID:		Run ID: ECD(17A)_040903A	SeqNo: 302928								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	ND	0.05									
Aroclor 1221	ND	0.25									
Aroclor 1232	ND	0.05									
Aroclor 1242	ND	0.05									
Aroclor 1248	ND	0.05									
Aroclor 1254	ND	0.05									
Aroclor 1260	ND	0.05									
Surr: Decachlorobiphenyl	0.064	0	0.0625	0	102	50.1	115	0			

Sample ID	MB-6426	Batch ID: 6426	Test Code: SW8080A	Units: µg/L	Analysis Date	9/13/2004 6:08:11 AM	Prep Date	9/3/2004			
Client ID:		Run ID: ECD(17A)_040913A	SeqNo: 304507								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	ND	1									
Aroclor 1221	ND	5									
Aroclor 1232	ND	1									
Aroclor 1242	ND	1									
Aroclor 1248	ND	1									
Aroclor 1254	ND	1									
Aroclor 1260	ND	1									
Surr: Decachlorobiphenyl	2.46	0	2.5	0	98.4	45.3	140	0			
Surr: Tetrachloro-m-xylene	1.56	0	2.5	0	62.4	28.1	139	0			

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

CLIENT: Kleinfelder
Work Order: 0409024
Project: R-34

QC SUMMARY REPORT

Method Blank

Sample ID	mb-6420	Batch ID: 6420	Test Code: SW8260B	Units: mg/Kg	Analysis Date	9/3/2004	Prep Date	9/2/2004			
Client ID:		Run ID:	THOR_040903A		SeqNo:	302782					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.05									
Toluene	ND	0.05									
Ethylbenzene	ND	0.05									
Methyl tert-butyl ether (MTBE)	ND	0.05									
1,2,4-Trimethylbenzene	ND	0.05									
1,3,5-Trimethylbenzene	ND	0.05									
1,2-Dichloroethane (EDC)	ND	0.05									
1,2-Dibromoethane (EDB)	ND	0.05									
Naphthalene	ND	0.1									
1-Methylnaphthalene	ND	0.2									
2-Methylnaphthalene	ND	0.2									
Acetone	ND	2									
Bromobenzene	ND	0.05									
Bromochloromethane	ND	0.05									
Bromodichloromethane	ND	0.05									
Bromoform	ND	0.05									
Bromomethane	ND	0.1									
2-Butanone	ND	1									
Carbon disulfide	ND	0.5									
Carbon tetrachloride	ND	0.1									
Chlorobenzene	ND	0.05									
Chloroethane	ND	0.1									
Chloroform	ND	0.05									
Chloromethane	ND	0.05									
2-Chlorotoluene	ND	0.05									
4-Chlorotoluene	ND	0.05									
cis-1,2-DCE	ND	0.05									
cis-1,3-Dichloropropene	ND	0.05									

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Kleinfelder
Work Order: 0409024
Project: R-34

QC SUMMARY REPORT

Method Blank

1,2-Dibromo-3-chloropropane	ND	0.1
Dibromochloromethane	ND	0.05
Dibromomethane	ND	0.1
1,2-Dichlorobenzene	ND	0.05
1,3-Dichlorobenzene	ND	0.05
1,4-Dichlorobenzene	ND	0.05
Dichlorodifluoromethane	ND	0.05
1,1-Dichloroethane	ND	0.05
1,1-Dichloroethene	ND	0.05
1,2-Dichloropropane	ND	0.05
1,3-Dichloropropane	ND	0.05
2,2-Dichloropropane	ND	0.05
1,1-Dichloropropene	ND	0.05
Hexachlorobutadiene	ND	0.05
2-Hexanone	ND	0.5
Isopropylbenzene	ND	0.05
4-Isopropyltoluene	ND	0.05
4-Methyl-2-pentanone	ND	0.5
Methylene chloride	ND	0.15
n-Butylbenzene	ND	0.05
n-Propylbenzene	ND	0.05
sec-Butylbenzene	ND	0.05
Styrene	ND	0.05
tert-Butylbenzene	ND	0.05
1,1,1,2-Tetrachloroethane	ND	0.05
1,1,2,2-Tetrachloroethane	ND	0.05
Tetrachloroethene (PCE)	ND	0.05
trans-1,2-DCE	ND	0.05
trans-1,3-Dichloropropene	ND	0.05
1,2,3-Trichlorobenzene	ND	0.05
1,2,4-Trichlorobenzene	ND	0.05
1,1,1-Trichloroethane	ND	0.05
1,1,2-Trichloroethane	ND	0.05

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Kleinfelder

Work Order: 0409024

Project: R-34

QC SUMMARY REPORT

Method Blank

Trichloroethene (TCE)	ND	0.05							
Trichlorofluoromethane	ND	0.05							
1,2,3-Trichloropropane	ND	0.1							
Vinyl chloride	ND	0.05							
Xylenes, Total	ND	0.05							
Surr: 1,2-Dichloroethane-d4	0.4452	0	0.5	0	89.0	68.4	123	0	
Surr: 4-Bromofluorobenzene	0.4972	0	0.5	0	99.4	70	119	0	
Surr: Dibromofluoromethane	0.4448	0	0.5	0	89.0	76.8	123	0	
Surr: Toluene-d8	0.5168	0	0.5	0	103	75.9	118	0	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Kleinfelder
 Work Order: 0409024
 Project: R-34

QC SUMMARY REPORT

Method Blank

Sample ID	5mL rb	Batch ID: R13014	Test Code: SW8260B	Units: µg/L	Analysis Date 9/3/2004	Prep Date					
Client ID:		Run ID: VAL_040903A			SeqNo: 302631						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1									
Toluene	ND	1									
Ethylbenzene	ND	1									
Methyl tert-butyl ether (MTBE)	ND	1									
1,2,4-Trimethylbenzene	ND	1									
1,3,5-Trimethylbenzene	ND	1									
1,2-Dichloroethane (EDC)	ND	1									
1,2-Dibromoethane (EDB)	ND	1									
Naphthalene	ND	2									
1-Methylnaphthalene	ND	4									
2-Methylnaphthalene	ND	4									
Acetone	ND	10									
Bromobenzene	ND	1									
Bromochloromethane	ND	1									
Bromodichloromethane	ND	1									
Bromoform	ND	1									
Bromomethane	ND	2									
2-Butanone	ND	10									
Carbon disulfide	ND	10									
Carbon Tetrachloride	ND	1									
Chlorobenzene	ND	1									
Chloroethane	ND	2									
Chloroform	ND	1									
Chloromethane	ND	1									
2-Chlorotoluene	ND	1									
4-Chlorotoluene	ND	1									
cis-1,2-DCE	ND	1									
cis-1,3-Dichloropropene	ND	1									

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Kleinfelder
 Work Order: 0409024
 Project: R-34

QC SUMMARY REPORT

Method Blank

1,2-Dibromo-3-chloropropane	ND	2
Dibromochloromethane	ND	1
Dibromomethane	ND	2
1,2-Dichlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
Dichlorodifluoromethane	ND	1
1,1-Dichloroethane	ND	1
1,1-Dichloroethene	ND	1
1,2-Dichloropropane	ND	1
1,3-Dichloropropane	ND	1
2,2-Dichloropropane	ND	1
1,1-Dichloropropene	ND	1
Hexachlorobutadiene	ND	1
2-Hexanone	ND	10
Isopropylbenzene	ND	1
4-Isopropyltoluene	ND	1
4-Methyl-2-pentanone	ND	10
Methylene Chloride	ND	3
n-Butylbenzene	ND	1
n-Propylbenzene	ND	1
sec-Butylbenzene	ND	1
Styrene	ND	1
tert-Butylbenzene	ND	1
1,1,1,2-Tetrachloroethane	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Tetrachloroethane (PCE)	ND	1
trans-1,2-DCE	ND	1
trans-1,3-Dichloropropene	ND	1
1,2,3-Trichlorobenzene	ND	1
1,2,4-Trichlorobenzene	ND	1
1,1,1-Trichloroethane	ND	1
1,1,2-Trichloroethane	ND	1

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Kleinfelder
Work Order: 0409024
Project: R-34

QC SUMMARY REPORT

Method Blank

Trichloroethene (TCE)	ND	1						
Trichlorofluoromethane	ND	1						
1,2,3-Trichloropropane	ND	2						
Vinyl chloride	ND	1						
Xylenes, Total	ND	1						
Surr: 1,2-Dichloroethane-d4	10.4	0	10	0	104	68.4	127	0
Surr: 4-Bromofluorobenzene	9.856	0	10	0	98.6	70.4	126	0
Surr: Dibromofluoromethane	11.66	0	10	0	117	70.2	126	0
Surr: Toluene-d8	10.18	0	10	0	102	73.5	129	0

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Kleinfelder
 Work Order: 0409024
 Project: R-34

QC SUMMARY REPORT

Method Blank

Sample ID	mb-6425	Batch ID: 6425	Test Code: SW8270C	Units: mg/Kg	Analysis Date 9/8/2004	Prep Date 9/2/2004					
Client ID:		Run ID: ELMO_040908A			SeqNo: 303802						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.2									
Acenaphthylene	ND	0.2									
Aniline	ND	0.2									
Anthracene	ND	0.2									
Azobenzene	ND	0.2									
Benz(a)anthracene	ND	0.25									
Benzidine	ND	0.2									
Benzo(a)pyrene	ND	0.2									
Benzo(b)fluoranthene	ND	0.2									
Benzo(g,h,i)perylene	ND	0.3									
Benzo(k)fluoranthene	ND	0.2									
Benzoic acid	ND	0.5									
Benzyl alcohol	ND	0.25									
Bis(2-chloroethoxy)methane	ND	0.2									
Bis(2-chloroethyl)ether	ND	0.25									
Bis(2-chloroisopropyl)ether	ND	0.2									
Bis(2-ethylhexyl)phthalate	ND	0.2									
4-Bromophenyl phenyl ether	ND	0.25									
Butyl benzyl phthalate	ND	0.2									
Carbazole	ND	0.2									
4-Chloro-3-methylphenol	ND	0.2									
4-Chloroaniline	ND	0.2									
2-Chloronaphthalene	ND	0.2									
2-Chlorophenol	ND	0.2									
4-Chlorophenyl phenyl ether	ND	0.2									
Chrysene	ND	0.2									
Di-n-butyl phthalate	ND	0.25									
Di-n-octyl phthalate	ND	0.2									

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

CLIENT: Kleinfelder
Work Order: 0409024
Project: R-34

QC SUMMARY REPORT

Method Blank

Dibenz(a,h)anthracene	ND	0.25
Dibenzofuran	ND	0.2
1,2-Dichlorobenzene	ND	0.2
1,3-Dichlorobenzene	ND	0.2
1,4-Dichlorobenzene	ND	0.2
3,3'-Dichlorobenzidine	ND	0.2
Diethyl phthalate	ND	0.2
Dimethyl phthalate	ND	0.2
2,4-Dichlorophenol	ND	0.2
2,4-Dimethylphenol	ND	0.2
4,6-Dinitro-2-methylphenol	ND	0.5
2,4-Dinitrophenol	ND	0.5
2,4-Dinitrotoluene	ND	0.2
2,6-Dinitrotoluene	ND	0.2
Fluoranthene	ND	0.2
Fluorene	ND	0.2
Hexachlorobenzene	ND	0.2
Hexachlorobutadiene	ND	0.2
Hexachlorocyclopentadiene	ND	0.25
Hexachloroethane	ND	0.2
Indeno(1,2,3-cd)pyrene	ND	0.2
Isophorone	ND	0.2
2-Methylnaphthalene	ND	0.2
2-Methylphenol	ND	0.2
3+4-Methylphenol	ND	0.2
N-Nitrosodi-n-propylamine	ND	0.2
N-Nitrosodiphenylamine	ND	0.2
Naphthalene	ND	0.2
2-Nitroaniline	ND	0.5
3-Nitroaniline	ND	0.5
4-Nitroaniline	ND	0.25
Nitrobenzene	ND	0.2
2-Nitrophenol	ND	0.2

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Kleinfelder
Work Order: 0409024
Project: R-34

QC SUMMARY REPORT

Method Blank

4-Nitrophenol	ND	0.2								
Pentachlorophenol	ND	0.5								
Phenanthrene	ND	0.2								
Phenol	ND	0.2								
Pyrene	ND	0.2								
Pyridine	ND	0.5								
1,2,4-Trichlorobenzene	ND	0.2								
2,4,5-Trichlorophenol	ND	0.2								
2,4,6-Trichlorophenol	ND	0.2								
Surr: 2,4,6-Tribromophenol	1.713	0	5	0	34.3	26	156	0		
Surr: 2-Fluorobiphenyl	0.8747	0	2.5	0	35.0	23.6	111	0		
Surr: 2-Fluorophenol	1.929	0	5	0	38.6	21.5	107	0		
Surr: 4-Terphenyl-d14	0.9063	0	2.5	0	36.3	22.8	120	0		
Surr: Nitrobenzene-d5	0.9067	0	2.5	0	36.3	25.3	115	0		
Surr: Phenol-d6	2.138	0	5	0	42.8	25.2	115	0		

Sample ID MB-6430	Batch ID: 6430	Test Code: SW7471	Units: mg/Kg	Analysis Date 9/3/2004	Prep Date 9/3/2004
Client ID:		Run ID: MI-LA254_040903A		SeqNo: 302600	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.033									

Sample ID MB-6436	Batch ID: 6436	Test Code: SW7470	Units: mg/L	Analysis Date 9/7/2004	Prep Date 9/7/2004
Client ID:		Run ID: MI-LA254_040907A		SeqNo: 302914	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0001224	0.0002									J

Sample ID MB-6438	Batch ID: 6438	Test Code: SW7470	Units: mg/L	Analysis Date 9/7/2004	Prep Date 9/7/2004
Client ID:		Run ID: MI-LA254_040807A		SeqNo: 303034	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.02									

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

CLIENT: Kleinfelder
 Work Order: 0409024
 Project: R-34

QC SUMMARY REPORT

Method Blank

Sample ID MB-6446		Batch ID: 6446		Test Code: SW6010A		Units: mg/Kg		Analysis Date 9/9/2004 12:24:15 PM		Prep Date 9/8/2004	
Client ID:		Run ID: ICP_040909A		SeqNo: 303930							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	3									
Arsenic	ND	2.5									
Barium	ND	0.1									
Beryllium	ND	0.15									
Cadmium	ND	0.1									
Chromium	ND	0.3									
Cobalt	ND	0.3									
Copper	0.2864	0.3									J
Iron	10.22	1									
Lead	0.1711	0.25									J
Nickel	0.1415	0.5									J
Selenium	ND	2.5									
Silver	0.1761	0.25									J
Thallium	ND	0.5									
Uranium	ND	5									
Vanadium	ND	2.5									
Zinc	ND	2.5									

Sample ID	MB-6446	Batch ID:	6446	Test Code:	SW6010A	Units:	mg/Kg	Analysis Date	9/13/2004 4:23:49 PM	Prep Date	9/8/2004	
Client ID:		Run ID:	ICP_040913C	SeqNo:	304923							
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony		0.3299	0.5									J
Calcium		35.06	50									J
Magnesium		ND	25									
Manganese		0.2232	0.25									J
Potassium		ND	50									
Sodium		ND	25									

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Kleinfelder
Work Order: 0409024
Project: R-34

QC SUMMARY REPORT

Method Blank

Sample ID MB-6439		Batch ID: 6439		Test Code: SW1311/6010		Units: mg/L		Analysis Date 9/8/2004 10:09:58 AM		Prep Date 9/7/2004	
Client ID:		Run ID: ICP_040908B				SeqNo: 303259					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	5									
Barium	ND	100									
Cadmium	ND	1									
Chromium	ND	5									
Lead	ND	5									
Selenium	ND	1									
Silver	ND	5									

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

Hall Environmental Analysis Laboratory

Date: 28-Sep-04

CLIENT: Kleinfelder
 Work Order: 0409024
 Project: R-34

QC SUMMARY REPORT

Method Blank

Sample ID: MB	Batch ID: R13290	Test Code: SW6010A	Units: mg/L	Analysis Date: 9/30/2004 1:12:42 PM	Prep Date:						
Client ID:	Run ID: ICP_040930A	SeqNo: 308927									
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	0.02									
Antimony	ND	0.01									
Arsenic	ND	0.02									
Barium	ND	0.002									
Beryllium	ND	0.003									
Cadmium	ND	0.002									
Calcium	0.07011	1									J
Chromium	ND	0.006									
Cobalt	ND	0.006									
Copper	ND	0.006									
Iron	ND	0.02									
Lead	0.001549	0.005									J
Magnesium	0.07262	1									J
Manganese	ND	0.002									
Nickel	ND	0.01									
Potassium	ND	1									
Selenium	ND	0.05									
Silver	ND	0.005									
Sodium	0.07177	1									J
Thallium	0.005566	0.02									J
Uranium	ND	0.1									
Vanadium	ND	0.05									
Zinc	ND	0.005									
Yttrium	100.8	0	100	0	101	70	130	0			
Yttrium Radial	101.5	0	100	0	102	70	130	0			

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

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Hall Environmental Analysis Laboratory

Date: 28-Sep-04

CLIENT: Kleinfelder
Work Order: 0409024
Project: R-34

QC SUMMARY REPORT

Method Blank

Sample ID: mb-6490	Batch ID: 6490	Test Code: SW8270A	Units: µg/L	Analysis Date: 9/23/2004	Prep Date: 9/15/2004						
Client ID:	Run ID: ELMO_040922A	SeqNo: 308218									
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	ND	10									
Acenaphthylene	ND	10									
Aniline	ND	10									
Anthracene	ND	10									
Azobenzene	ND	10									
Benz(a)anthracene	ND	15									
Benzo(a)pyrene	ND	10									
Benzo(b)fluoranthene	ND	10									
Benzo(g,h,i)perylene	ND	10									
Benzo(k)fluoranthene	ND	10									
Benzoic acid	ND	50									
Benzyl alcohol	ND	20									
Bis(2-chloroethoxy)methane	ND	10									
Bis(2-chloroethyl)ether	ND	15									
Bis(2-chloroisopropyl)ether	ND	15									
Bis(2-ethylhexyl)phthalate	ND	15									
4-Bromophenyl phenyl ether	ND	10									
Butyl benzyl phthalate	ND	15									
Carbazole	ND	10									
4-Chloro-3-methylphenol	ND	20									
4-Chloroaniline	ND	20									
2-Chloronaphthalene	ND	10									
2-Chlorophenol	ND	10									
4-Chlorophenyl phenyl ether	ND	15									
Chrysene	ND	15									
DI-n-butyl phthalate	ND	10									
DI-n-octyl phthalate	ND	15									

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Kleinfelder
Work Order: 0409024
Project: R-34

QC SUMMARY REPORT

Method Blank

Dibenz(a,h)anthracene	ND	10
Dibenzofuran	ND	10
1,2-Dichlorobenzene	ND	10
1,3-Dichlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
3,3'-Dichlorobenzidine	ND	15
Diethyl phthalate	ND	10
Dimethyl phthalate	ND	10
2,4-Dichlorophenol	ND	10
2,4-Dimethylphenol	ND	10
4,6-Dinitro-2-methylphenol	ND	50
2,4-Dinitrophenol	ND	50
2,4-Dinitrotoluene	ND	10
2,6-Dinitrotoluene	ND	10
Fluoranthene	ND	10
Fluorene	ND	10
Hexachlorobenzene	ND	10
Hexachlorobutadiene	ND	10
Hexachlorocyclopentadiene	ND	10
Hexachloroethane	ND	10
Indeno(1,2,3-cd)pyrene	ND	10
Isophorone	ND	10
2-Methylnaphthalene	ND	10
2-Methylphenol	ND	15
3+4-Methylphenol	ND	10
N-Nitrosodi-n-propylamine	ND	10
N-Nitrosodimethylamine	ND	10
N-Nitrosodiphenylamine	ND	10
Naphthalene	ND	10
2-Nitroaniline	ND	50
3-Nitroaniline	ND	50
4-Nitroaniline	ND	20
Nitrobenzene	ND	10

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Kleinfelder
Work Order: 0409024
Project: R-34

QC SUMMARY REPORT

Method Blank

2-Nitrophenol	ND	15							
4-Nitrophenol	ND	50							
Pentachlorophenol	ND	50							
Phenanthrene	ND	10							
Phenol	ND	10							
Pyrene	ND	15							
Pyridine	ND	30							
1,2,4-Trichlorobenzene	ND	10							
2,4,5-Trichlorophenol	ND	10							
2,4,6-Trichlorophenol	ND	15							
Surr: 2,4,6-Tribromophenol	34.94	0	200	0	17.5	16.6	115	0	
Surr: 2-Fluorobiphenyl	78.62	0	100	0	78.6	37	95.7	0	
Surr: 2-Fluorophenol	34.26	0	200	0	17.1	9.54	89.8	0	
Surr: 4-Terphenyl-d14	107.2	0	100	0	107	51.2	125	0	
Surr: Nitrobenzene-d5	81.7	0	100	0	81.7	38	106	0	
Surr: Phenol-d6	75.74	0	200	0	37.9	10.7	63.4	0	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

Hall Environmental Analysis Laboratory

Date: 28-Sep-04

CLIENT: Kleinfelder
 Work Order: 0409024
 Project: R-34

QC SUMMARY REPORT

Sample Duplicate

Sample ID	0409024-01C DUP	Batch ID:	R12992	Test Code:	E300	Units:	mg/L	Analysis Date	9/2/2004 3:37:16 PM	Prep Date	
Client ID:	R-34 Water	Run ID:	LC_040902B	SeqNo:	302178						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	0.3283	0.1	0	0	0	0	0	0.3329	1.40	20	
Chloride	3.45	0.1	0	0	0	0	0	3.468	0.520	20	
Nitrogen, Nitrite (As N)	0.05281	0.1	0	0	0	0	0	0.04996	0	20	J
Bromide	1.409	0.1	0	0	0	0	0	1.458	3.37	20	
Nitrogen, Nitrate (As N)	0.2802	0.1	0	0	0	0	0	0.284	1.32	20	
Phosphorus, Orthophosphate (As P)	ND	0.5	0	0	0	0	0	0	0	20	
Sulfate	15.87	0.5	0	0	0	0	0	15.94	0.455	20	

Sample ID	0409024-02A DUP	Batch ID:	6439	Test Code:	SW1311/6010	Units:	mg/L	Analysis Date	9/8/2004 10:41:16 AM	Prep Date	9/7/2004
Client ID:	R-34 Cuttings	Run ID:	ICP_040908B	SeqNo:	303286						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	5	0	0	0	0	0	0	0	30	
Barium	0.4506	100	0	0	0	0	0	0.4333	0	30	J
Cadmium	ND	1	0	0	0	0	0	0	0	30	
Chromium	ND	5	0	0	0	0	0	0	0	30	
Lead	ND	5	0	0	0	0	0	0	0	30	
Selenium	ND	1	0	0	0	0	0	0	0	30	
Silver	ND	5	0	0	0	0	0	0	0	30	

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

Hall Environmental Analysis Laboratory

Date: 28-Sep-04

CLIENT: Kleinfelder
Work Order: 0409024
Project: R-34

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID	0409024-01C MS	Batch ID: R12992	Test Code: E300	Units: mg/L	Analysis Date	9/2/2004 3:54:04 PM	Prep Date				
Client ID:	R-34 Water	Run ID:	LC_040902B	SeqNo:	302179						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	0.7687	0.1	0.5	0.3329	87.2	80	120	0			
Chloride	8.265	0.1	5	3.468	95.9	80	120	0			
Nitrogen, Nitrite (As N)	1.063	0.1	1	0.04996	101	80	120	0			
Bromide	3.774	0.1	2.5	1.458	92.7	80	120	0			
Nitrogen, Nitrate (As N)	2.794	0.1	2.5	0.284	100	80	120	0			
Phosphorus, Orthophosphate (As P)	4.733	0.5	5	0	94.7	80	120	0			
Sulfate	25.34	0.5	10	15.94	94.0	80	120	0			

Sample ID	0409024-01C MSD	Batch ID: R12992	Test Code: E300	Units: mg/L	Analysis Date	9/2/2004 4:10:48 PM	Prep Date				
Client ID:	R-34 Water	Run ID:	LC_040902B	SeqNo:	302180						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	0.7646	0.1	0.5	0.3329	86.3	80	120	0.7687	0.537	20	
Chloride	8.356	0.1	5	3.468	97.8	80	120	8.265	1.09	20	
Nitrogen, Nitrite (As N)	1.036	0.1	1	0.04996	98.8	80	120	1.063	2.55	20	
Bromide	3.857	0.1	2.5	1.458	96.0	80	120	3.774	2.17	20	
Nitrogen, Nitrate (As N)	2.814	0.1	2.5	0.284	101	80	120	2.794	0.711	20	
Phosphorus, Orthophosphate (As P)	4.82	0.5	5	0	96.4	80	120	4.733	1.83	20	
Sulfate	25.38	0.5	10	15.94	94.4	80	120	25.34	0.164	20	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

CLIENT: Kleinfelder
 Work Order: 0409024
 Project: R-34

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID	0409024-02a ms	Batch ID:	6420	Test Code:	SW8260B	Units:	mg/Kg	Analysis Date	9/3/2004	Prep Date	9/2/2004
Client ID:	R-34 Cuttings	Run ID:	THOR_040903A	SeqNo:	302797						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	1.017	0.05	1	0	102	75.3	121	0			
Toluene	0.9783	0.05	1	0	97.8	65.5	123	0			
Chlorobenzene	1.01	0.05	1	0	101	78.3	124	0			
1,1-Dichloroethene	0.9284	0.05	1	0	92.8	70	106	0			
Trichloroethene (TCE)	0.8748	0.05	1	0	87.5	70.8	118	0			
Surr: 1,2-Dichloroethane-d4	0.4505	0	0.5	0	90.1	68.4	123	0			
Surr: 4-Bromofluorobenzene	0.5327	0	0.5	0	107	70	119	0			
Surr: Dibromofluoromethane	0.4522	0	0.5	0	90.4	76.8	123	0			
Surr: Toluene-d8	0.4842	0	0.5	0	96.8	75.9	118	0			

Sample ID	0409024-02a msd	Batch ID:	6420	Test Code:	SW8260B	Units:	mg/Kg	Analysis Date	9/3/2004	Prep Date	9/2/2004
Client ID:	R-34 Cuttings	Run ID:	THOR_040903A	SeqNo:	302800						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	1.016	0.05	1	0	102	75.3	121	1.017	0.118	20	
Toluene	0.9827	0.05	1	0	98.3	65.5	123	0.9783	0.449	20	
Chlorobenzene	1.001	0.05	1	0	100	78.3	124	1.01	0.866	20	
1,1-Dichloroethene	0.8498	0.05	1	0	85.0	70	106	0.9284	8.84	20	
Trichloroethene (TCE)	0.8105	0.05	1	0	81.1	70.8	118	0.8748	7.63	20	
Surr: 1,2-Dichloroethane-d4	0.4432	0	0.5	0	88.6	68.4	123	0.4505	1.63	0	
Surr: 4-Bromofluorobenzene	0.4931	0	0.5	0	98.6	70	119	0.5327	7.72	0	
Surr: Dibromofluoromethane	0.4509	0	0.5	0	90.2	76.8	123	0.4522	0.288	0	
Surr: Toluene-d8	0.4735	0	0.5	0	94.7	75.9	118	0.4842	2.23	0	

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Kleinfelder
 Work Order: 0409024
 Project: R-34

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID	0409024-02A MS	Batch ID:	6439	Test Code:	SW1311/6010	Units:	mg/L	Analysis Date	9/8/2004 10:54:05 AM	Prep Date	9/7/2004
Client ID:	R-34 Cuttings	Run ID:	ICP_040908B	SeqNo:	303270						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.5195	0.2	0.5	0	104	75	125	0			
Barium	0.899	0.2	0.5	0.4333	93.1	75	125	0			
Cadmium	0.4797	0.2	0.5	0	95.9	75	125	0			
Chromium	0.4686	0.2	0.5	0	93.7	75	125	0			
Lead	0.4276	0.2	0.5	0	85.5	75	125	0			
Selenium	0.4127	0.2	0.5	0	82.5	75	125	0			
Silver	0.5121	0.2	0.5	0	102	75	125	0			

Sample ID	0409024-02A MSD	Batch ID:	6439	Test Code:	SW1311/6010	Units:	mg/L	Analysis Date	9/8/2004 10:58:02 AM	Prep Date	9/7/2004
Client ID:	R-34 Cuttings	Run ID:	ICP_040908B	SeqNo:	303271						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.512	0.2	0.5	0	102	75	125	0.5195	1.45	20	
Barium	0.9161	0.2	0.5	0.4333	96.6	75	125	0.899	1.88	20	
Cadmium	0.4912	0.2	0.5	0	98.2	75	125	0.4797	2.37	20	
Chromium	0.4791	0.2	0.5	0	95.8	75	125	0.4686	2.21	20	
Lead	0.438	0.2	0.5	0	87.6	75	125	0.4276	2.40	20	
Selenium	0.4395	0.2	0.5	0	87.9	75	125	0.4127	6.27	20	
Silver	0.5222	0.2	0.5	0	104	75	125	0.5121	1.95	20	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

Hall Environmental Analysis Laboratory

Date: 28-Sep-04

CLIENT: Kleinfelder
 Work Order: 0409024
 Project: R-34

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID	LCS	Batch ID: R12992	Test Code: E300	Units: mg/L	Analysis Date	9/2/2004 3:03:39 PM	Prep Date					
Client ID:			Run ID: LC_040902B		SeqNo:	302176						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Fluoride	0.4729	0.1	0.5	0	94.6	90	110	0				
Chloride	5.097	0.1	5	0	102	90	110	0				
Nitrogen, Nitrite (As N)	0.949	0.1	1	0	94.9	90	110	0				
Bromide	2.5	0.1	2.5	0	100	90	110	0				
Nitrogen, Nitrate (As N)	2.517	0.1	2.5	0	101	90	110	0				
Phosphorus, Orthophosphate (As P)	4.748	0.5	5	0	95.0	90	110	0				
Sulfate	10.2	0.5	10	0	102	90	110	0				

Sample ID	LCS	Batch ID: R12992	Test Code: E300	Units: mg/L	Analysis Date	9/2/2004 10:03:46 PM	Prep Date					
Client ID:			Run ID: LC_040902B		SeqNo:	302201						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Fluoride	0.4428	0.1	0.5	0	88.6	90	110	0			S	
Chloride	4.819	0.1	5	0	96.4	90	110	0				
Nitrogen, Nitrite (As N)	0.915	0.1	1	0	91.5	90	110	0				
Bromide	2.321	0.1	2.5	0	92.9	90	110	0				
Nitrogen, Nitrate (As N)	2.385	0.1	2.5	0	95.4	90	110	0				
Phosphorus, Orthophosphate (As P)	4.685	0.5	5	0	93.7	90	110	0				
Sulfate	9.743	0.5	10	0	97.4	90	110	0				

Sample ID	LCS-6424	Batch ID: 6424	Test Code: SW8080A	Units: mg/Kg	Analysis Date	9/4/2004 10:28:31 AM	Prep Date	9/2/2004				
Client ID:			Run ID: ECD(17A)_040903A		SeqNo:	302930						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aroclor 1016	0.1383	0.05	0.125	0	111	48.5	120	0				
Aroclor 1260	0.1402	0.05	0.125	0	112	51.3	147	0				

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Kleinfelder
Work Order: 0409024
Project: R-34

QC SUMMARY REPORT
 Laboratory Control Spike - generic

Sample ID	LCS-6426	Batch ID: 6426	Test Code: SW8080A	Units: µg/L	Analysis Date	9/13/2004 6:52:53 AM	Prep Date	9/3/2004			
Client ID:		Run ID:	ECD(17A)_040913A	SeqNo:	304523						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	4.104	1	5	0	82.1	27.4	132	0			
Aroclor 1260	5.224	1	5	0	104	52.1	148	0			

Sample ID	LCSD-6426	Batch ID: 6426	Test Code: SW8080A	Units: µg/L	Analysis Date	9/13/2004 7:39:08 AM	Prep Date	9/3/2004				
Client ID:		Run ID:	ECD(17A)_040913A		SeqNo:	304524						
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016		3.636	1	5	0	72.7	27.4	132	4.104	12.1	45.7	
Aroclor 1260		4.932	1	5	0	98.6	52.1	148	5.224	5.75	30	

Sample ID	Ics-6420	Batch ID:	6420	Test Code:	SW8260B	Units:	mg/Kg	Analysis Date	9/3/2004	Prep Date	9/2/2004	
Client ID:		Run ID:	THOR_040903A	SeqNo:	302787							
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene		0.9633	0.05	1	0	96.3	75.3	121	0			
Toluene		0.9827	0.05	1	0	98.3	65.5	123	0			
Chlorobenzene		0.9915	0.05	1	0	99.2	78.3	124	0			
1,1-Dichloroethene		0.8813	0.05	1	0	88.1	70	106	0			
Trichloroethene (TCE)		0.8322	0.05	1	0	83.2	70.8	118	0			

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Kleinfelder
Work Order: 0409024
Project: R-34

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID 100ng lcs	Batch ID: R13014	Test Code: SW8260B	Units: µg/L	Analysis Date 9/3/2004				Prep Date			
Client ID:		Run ID: VAL_040903A		SeqNo: 302632							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	18.48	1	20	0	92.4	75.3	128	0			
Toluene	19.04	1	20	0	95.2	77.8	122	0			
Chlorobenzene	17.9	1	20	0	89.5	76.2	130	0			
1,1-Dichloroethene	17.49	1	20	0	87.4	70.2	119	0			
Trichloroethene (TCE)	16.52	1	20	0	82.6	76.9	130	0			

Sample ID lcs-6425	Batch ID: 6425	Test Code: SW8270C	Units: mg/Kg	Analysis Date 9/8/2004				Prep Date 9/2/2004			
Client ID:		Run ID: ELMO_040908A		SeqNo: 303803							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.7737	0.2	1.67	0	46.3	54	95.8	0			S
4-Chloro-3-methylphenol	1.607	0.2	3.33	0	48.3	55.8	98	0			S
2-Chlorophenol	1.705	0.2	3.33	0	51.2	51.4	98.7	0			S
1,4-Dichlorobenzene	0.8857	0.2	1.67	0	53.0	45.9	93.1	0			
2,4-Dinitrotoluene	0.9453	0.2	1.67	0	56.6	59.3	99.9	0			S
N-Nitrosodi-n-propylamine	0.7937	0.2	1.67	0	47.5	52.7	92.5	0			S
4-Nitrophenol	1.685	0.2	3.33	0	50.6	62.1	101	0			S
Pentachlorophenol	1.58	0.5	3.33	0	47.4	53.9	111	0			S
Phenol	1.758	0.2	3.33	0	52.8	48.8	97	0			
Pyrene	0.8227	0.2	1.67	0	49.3	61.9	102	0			S
1,2,4-Trichlorobenzene	0.796	0.2	1.67	0	47.7	45.2	93.6	0			

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Kleinfelder
 Work Order: 0409024
 Project: R-34

QC SUMMARY REPORT

Laboratory Control Spike Duplicate

Sample ID	lcsd-6425	Batch ID: 6425	Test Code: SW8270C	Units: mg/Kg	Analysis Date 9/8/2004				Prep Date 9/2/2004		
Client ID:			Run ID: ELMO_040908A			SeqNo: 303805					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	0.829	0.2	1.67	0	49.6	54	95.8	0.7737	6.91	25	S
4-Chloro-3-methylphenol	1.818	0.2	3.33	0	54.6	55.8	98	1.607	12.3	25	S
2-Chlorophenol	1.772	0.2	3.33	0	53.2	51.4	98.7	1.705	3.83	25	
1,4-Dichlorobenzene	0.8543	0.2	1.67	0	51.2	45.9	93.1	0.8857	3.60	25	
2,4-Dinitrotoluene	0.955	0.2	1.67	0	57.2	59.3	99.9	0.9453	1.02	25	S
N-Nitrosodi-n-propylamine	0.843	0.2	1.67	0	50.5	52.7	92.5	0.7937	6.03	25	S
4-Nitrophenol	1.862	0.2	3.33	0	55.9	62.1	101	1.685	9.98	25	S
Pentachlorophenol	1.792	0.5	3.33	0	53.8	53.9	111	1.58	12.6	25	S
Phenol	1.779	0.2	3.33	0	53.4	48.8	97	1.758	1.19	25	
Pyrene	0.839	0.2	1.67	0	50.2	61.9	102	0.8227	1.97	25	S
1,2,4-Trichlorobenzene	0.8457	0.2	1.67	0	50.6	45.2	93.6	0.796	6.05	25	

Sample ID	LCS-6430	Batch ID: 6430	Test Code: SW7471	Units: mg/Kg	Analysis Date 9/3/2004				Prep Date 9/3/2004		
Client ID:			Run ID: MI-LA254_040903A			SeqNo: 302601					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.172	0.033	0.1667	0	103	80.8	122	0			

Sample ID	LCSD-6430	Batch ID: 6430	Test Code: SW7471	Units: mg/Kg	Analysis Date	9/3/2004	Prep Date	9/3/2004			
Client ID:			Run ID:	MI-LA254_040903A	SeqNo:	302611					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.1773	0.033	0.1667	0	106	80.8	122	0.172	3.04	20	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

CLIENT: Kleinfelder
Work Order: 0409024
Project: R-34

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID	LCS-6436	Batch ID: 6436	Test Code: SW7470	Units: mg/L		Analysis Date	9/7/2004		Prep Date	9/7/2004		
Client ID:			Run ID:	MI-LA254_040907A		SeqNo:	302915					
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		0.005726	0.0002	0.005	0.0001224	112	75.2	134	0			

Sample ID	LCSD-6439	Batch ID: 6436	Test Code: SW7470	Units: mg/L		Analysis Date	9/7/2004		Prep Date	9/7/2004		
Client ID:			Run ID:	MI-LA254_040907A		SeqNo:	302927					
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		0.005047	0.0002	0.005	0.0001224	98.5	75.2	134	0.005726	12.6	0	

Sample ID	LCS-6438	Batch ID: 6438	Test Code: SW7470	Units: mg/L		Analysis Date	9/7/2004		Prep Date	9/7/2004		
Client ID:			Run ID:	MI-LA254_040807A		SeqNo:	303035					
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		0.004143	0.002	0.005	0	82.9	80	120	0			

Sample ID	LCSD-6438	Batch ID: 6438	Test Code: SW7470	Units: mg/L		Analysis Date	9/7/2004		Prep Date	9/7/2004		
Client ID:			Run ID:	MI-LA254_040807A		SeqNo:	303043					
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		0.005604	0.004	0.005	0	112	80	120	0.004143	30.0	20	R

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Kleinfelder
Work Order: 0409024
Project: R-34

QC SUMMARY REPORT
 Laboratory Control Spike - generic

Sample ID	LCS-6446	Batch ID:	6446	Test Code:	SW6010A	Units:	mg/Kg	Analysis Date	9/9/2004 12:27:09 PM	Prep Date	9/8/2004
Client ID:		Run ID:	ICP_040909A	SeqNo:	303931						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	26.4	3	25	0	108	80	120	0			
Arsenic	25.18	2.5	25	0	101	80	120	0			
Barium	24.4	0.1	25	0	97.6	80	120	0			
Beryllium	26.96	0.15	25	0	108	80	120	0			
Cadmium	25.29	0.1	25	0	101	80	120	0			
Chromium	24.49	0.3	25	0	98.0	80	120	0			
Cobalt	23.73	0.3	25	0	94.9	80	120	0			
Copper	24.93	0.3	25	0.2864	98.6	80	120	0			
Iron	26.74	1	25	10.22	66.1	80	120	0			BS
Lead	24.37	0.25	25	0.1711	96.8	80	120	0			
Nickel	23.51	0.5	25	0.1415	93.5	80	120	0			
Selenium	23.14	2.5	25	0	92.6	80	120	0			
Silver	25.34	0.25	25	0.1761	101	80	120	0			
Thallium	24.03	0.5	25	0	96.1	80	120	0			
Uranium	240.6	5	250	0	96.2	80	120	0			
Vanadium	24.55	2.5	25	0	98.2	80	120	0			
Zinc	24.45	2.5	25	0	97.8	80	120	0			

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

CLIENT: Kleinfelder
Work Order: 0409024
Project: R-34

QC SUMMARY REPORT

Laboratory Control Spike Duplicate

Sample ID	LCSD-6446	Batch ID:	6446	Test Code:	SW6010A	Units:	mg/Kg	Analysis Date	9/9/2004 12:30:20 PM	Prep Date	9/8/2004
Client ID:		Run ID:	ICP_040909A	SeqNo:	303932						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	25.93	3	25	0	104	80	120	26.4	1.81	20	
Arsenic	23.12	2.5	25	0	92.5	80	120	25.18	8.55	20	
Barium	23.82	0.1	25	0	95.3	80	120	24.4	2.43	20	
Beryllium	26.06	0.15	25	0	104	80	120	26.96	3.39	20	
Cadmium	24.5	0.1	25	0	98.0	80	120	25.29	3.17	20	
Chromium	23.63	0.3	25	0	94.5	80	120	24.49	3.58	20	
Cobalt	22.95	0.3	25	0	91.8	80	120	23.73	3.38	20	
Copper	24.14	0.3	25	0.2864	95.4	80	120	24.93	3.19	20	
Iron	27.77	1	25	10.22	70.2	80	120	26.74	3.78	20	BS
Lead	23.66	0.25	25	0.1711	94.0	80	120	24.37	2.96	20	
Nickel	22.82	0.5	25	0.1415	90.7	80	120	23.51	3.01	20	
Selenium	22.74	2.5	25	0	91.0	80	120	23.14	1.76	20	
Silver	24.61	0.25	25	0.1761	97.7	80	120	25.34	2.91	20	
Thallium	23.68	0.5	25	0	94.7	80	120	24.03	1.46	20	
Uranium	226.6	5	250	0	90.7	80	120	240.6	5.97	20	
Vanadium	23.93	2.5	25	0	95.7	80	120	24.55	2.54	20	
Zinc	23.86	2.5	25	0	95.4	80	120	24.45	2.45	20	

Sample ID	LCS-6446	Batch ID:	6446	Test Code:	SW6010A	Units:	mg/Kg	Analysis Date	9/13/2004 4:26:46 PM	Prep Date	9/8/2004
Client ID:		Run ID:	ICP_040913C	SeqNo:	304924						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	21.43	0.5	25	0.3299	84.4	80	120	0			
Calcium	2400	50	2500	35.06	94.6	80	120	0			
Magnesium	2495	25	2500	0	99.8	80	120	0			
Manganese	24.18	0.25	25	0.2232	95.8	80	120	0			
Potassium	2475	50	2500	0	99.0	80	120	0			
Sodium	2754	25	2500	0	110	80	120	0			

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Kleinfelder
Work Order: 0409024
Project: R-34

QC SUMMARY REPORT

Laboratory Control Spike Duplicate

Sample ID	LCSD-6446	Batch ID:	6446	Test Code:	SW6010A	Units:	mg/Kg	Analysis Date	9/13/2004 4:30:01 PM	Prep Date	9/8/2004
Client ID:		Run ID:	ICP_040913C	SeqNo:	304925						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	20.88	0.5	25	0.3299	82.2	80	120	0	0	20	
Calcium	2283	50	2500	35.06	89.9	80	120	0	0	20	
Magnesium	2374	25	2500	0	95.0	80	120	0	0	20	
Manganese	23.52	0.25	25	0.2232	93.2	80	120	0	0	20	
Potassium	2357	50	2500	0	94.3	80	120	0	0	20	
Sodium	2614	25	2500	0	105	80	120	0	0	20	

Sample ID	LCS-6439	Batch ID:	6439	Test Code:	SW1311/6010	Units:	mg/L	Analysis Date	9/8/2004 10:14:10 AM	Prep Date	9/7/2004
Client ID:		Run ID:	ICP_040908B	SeqNo:	303260						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.4817	0.2	0.5	0	96.3	80	120	0			
Barium	0.4703	0.2	0.5	0	94.1	80	120	0			
Cadmium	0.4741	0.2	0.5	0	94.8	80	120	0			
Chromium	0.4715	0.2	0.5	0	94.3	80	120	0			
Lead	0.4289	0.2	0.5	0	85.8	80	120	0			
Selenium	0.4104	0.2	0.5	0	82.1	80	120	0			
Silver	0.5026	0.2	0.5	0	101	80	120	0			

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

CLIENT: Kleinfelder
Work Order: 0409024
Project: R-34

QC SUMMARY REPORT
Laboratory Control Spike Duplicate

Sample ID	LCSD-6439	Batch ID: 6439	Test Code: SW1311/6010	Units: mg/L	Analysis Date	9/8/2004 10:16:58 AM	Prep Date	9/7/2004			
Client ID:		Run ID: ICP_040908B			SeqNo:	303261					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.488	0.2	0.5	0	97.6	80	120	0.4817	1.29	20	
Barium	0.4687	0.2	0.5	0	93.7	80	120	0.4703	0.354	20	
Cadmium	0.4804	0.2	0.5	0	96.1	80	120	0.4741	1.32	20	
Chromium	0.4728	0.2	0.5	0	94.6	80	120	0.4715	0.277	20	
Lead	0.4277	0.2	0.5	0	85.5	80	120	0.4289	0.298	20	
Selenium	0.4102	0.2	0.5	0	82.0	80	120	0.4104	0.0373	20	
Silver	0.5104	0.2	0.5	0	102	80	120	0.5026	1.54	20	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

Hall Environmental Analysis Laboratory

Date: 28-Sep-04

CLIENT: Kleinfelder
 Work Order: 0409024
 Project: R-34

QC SUMMARY REPORT
 Laboratory Control Spike - generic

Sample ID: LCS	Batch ID: R13290	Test Code: SW6010A	Units: mg/L		Analysis Date: 9/30/2004 1:15:07 PM				Prep Date:		
Client ID:		Run ID: ICP_040930A			SeqNo: 308928						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.4701	0.02	0.5	0	94.0	80	120	0			
Antimony	0.4366	0.01	0.5	0	87.3	80	120	0			
Arsenic	0.4343	0.02	0.5	0	86.9	80	120	0			
Barium	0.4353	0.002	0.5	0	87.1	80	120	0			
Beryllium	0.4423	0.003	0.5	0	88.5	80	120	0			
Cadmium	0.4534	0.002	0.5	0	90.7	80	120	0			
Calcium	52.41	1	50.5	0.07011	104	80	120	0			
Chromium	0.4399	0.006	0.5	0	88.0	80	120	0			
Cobalt	0.4363	0.006	0.5	0	87.3	80	120	0			
Copper	0.4423	0.006	0.5	0	88.5	80	120	0			
Iron	0.4337	0.02	0.5	0	86.7	80	120	0			
Lead	0.4491	0.005	0.5	0.001549	89.5	80	120	0			
Magnesium	53.74	1	50.5	0.07262	106	80	120	0			
Manganese	0.4448	0.002	0.5	0	89.0	80	120	0			
Nickel	0.4283	0.01	0.5	0	85.7	80	120	0			
Potassium	53.99	1	55	0	98.2	80	120	0			
Selenium	0.4507	0.05	0.5	0	90.1	80	120	0			
Silver	0.5563	0.005	0.5	0	111	80	120	0			
Sodium	52.45	1	50.5	0.07177	104	80	120	0			
Thallium	0.4765	0.02	0.5	0.005566	94.2	80	120	0			
Vanadium	0.4482	0.05	0.5	0	89.6	80	120	0			
Zinc	0.4362	0.005	0.5	0	87.2	80	120	0			
Yttrium	97.71	0	100	0	97.7	70	130	0			
Yttrium Radial	100.5	0	100	0	100	70	130	0			

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Kleinfelder
Work Order: 0409024
Project: R-34

QC SUMMARY REPORT

Laboratory Control Spike Duplicate

Sample ID: LCSD		Batch ID: R13290		Test Code: SW6010A		Units: mg/L		Analysis Date: 9/30/2004 1:16:57 PM		Prep Date:	
Client ID:		Run ID:		ICP_040930A		SeqNo:		308929			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.4914	0.02	0.5	0	98.3	80	120	0.4701	4.44	20	
Antimony	0.4693	0.01	0.5	0	93.9	80	120	0.4366	7.21	20	
Arsenic	0.4631	0.02	0.5	0	92.6	80	120	0.4343	6.42	20	
Barium	0.451	0.002	0.5	0	90.2	80	120	0.4353	3.56	20	
Beryllium	0.4594	0.003	0.5	0	91.9	80	120	0.4423	3.79	20	
Cadmium	0.4676	0.002	0.5	0	93.5	80	120	0.4534	3.09	20	
Calcium	52.63	1	50.5	0.07011	104	80	120	52.41	0.421	20	
Chromium	0.4533	0.006	0.5	0	90.7	80	120	0.4399	3.00	20	
Cobalt	0.4518	0.006	0.5	0	90.4	80	120	0.4363	3.49	20	
Copper	0.4561	0.006	0.5	0	91.2	80	120	0.4423	3.08	20	
Iron	0.4528	0.02	0.5	0	90.6	80	120	0.4337	4.30	20	
Lead	0.4583	0.005	0.5	0.001549	91.3	80	120	0.4491	2.03	20	
Magnesium	53.95	1	50.5	0.07262	107	80	120	53.74	0.393	20	
Manganese	0.461	0.002	0.5	0	92.2	80	120	0.4448	3.58	20	
Nickel	0.4412	0.01	0.5	0	88.2	80	120	0.4283	2.97	20	
Potassium	54.4	1	55	0	98.9	80	120	53.99	0.767	20	
Selenium	0.4748	0.05	0.5	0	95.0	80	120	0.4507	5.20	20	
Silver	0.5278	0.005	0.5	0	106	80	120	0.5563	5.26	20	
Sodium	52.74	1	50.5	0.07177	104	80	120	52.45	0.564	20	
Thallium	0.4897	0.02	0.5	0.005566	96.8	80	120	0.4765	2.75	20	
Vanadium	0.4646	0.05	0.5	0	92.9	80	120	0.4482	3.60	20	
Zinc	0.4507	0.005	0.5	0	90.1	80	120	0.4362	3.28	20	
Yttrium	98.06	0	100	0	98.1	70	130	97.71	0.361	0	
Yttrium Radial	100.2	0	100	0	100	70	130	100.5	0.260	0	

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

Hall Environmental Analysis Laboratory

Date: 28-Sep-04

CLIENT: Kleinfelder
Work Order: 0409024
Project: R-34

QC SUMMARY REPORT
Laboratory Control Spike - generic

Sample ID: LCS-6490	Batch ID: 6490	Test Code: SW8270A	Units: µg/L	Analysis Date: 9/23/2004	Prep Date: 9/15/2004						
Client ID:	Run ID: ELMO_040922A	SeqNo: 308232									
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	83.12	10	100	0	83.1	12.5	87.4	0			
4-Chloro-3-methylphenol	166.5	20	200	0	83.3	15.4	119	0			
2-Chlorophenol	200.7	10	200	0	100	12.2	122	0			
1,4-Dichlorobenzene	76.22	10	100	0	76.2	16.9	100	0			
2,4-Dinitrotoluene	90.8	10	100	0	90.8	13	138	0			
N-Nitrosodi-n-propylamine	87.56	10	100	0	87.6	9.93	122	0			
4-Nitrophenol	ND	50	200	0	0	0	0	0			
Pentachlorophenol	145.9	50	200	0	73.0	3.55	114	0			
Phenol	103.8	10	200	0	51.9	7.53	73.1	0			
Pyrene	95.96	15	100	0	96.0	12.6	140	0			
1,2,4-Trichlorobenzene	69.46	10	100	0	69.5	17.4	98.7	0			

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CHAIN-OF-CUSTODY RECORD	Accreditation Applied: NELAC <input type="checkbox"/> USACE <input type="checkbox"/>
	Other: _____
Client: Kleinfelder	Project Name: R-34
Address: 8300 Jefferson NE Ste B Albuquerque NM 87113	Project #: 37151
	Project Manager: B. Bockish
Phone #: 505 344 7373	Sampler: B. Bockish / S. Dorst
Fax #:	Sample Temperature: 3 rd

NELAC ☐ USACE ☐

Other:

Project Name:

R-34

Project #:

37151

Project Manager:

B. Bodwish

Sampler: B. Bockish/K. Dargatz

Sample Temperature:

[illegible]

BTEX + MTBE + TMB's (8021)

BTEX + MTBE + TPH (Gasoline Only)

TPPH Method 8015B (Gas/Diesel)

TPH (Method 418.1)

EDB (Method 504.1)

EDC (Method 8021)

8310 (PNA or PAH)

RCRA 8 Metals

Anions (F, Cl, NO₃, PO₄, SO₄)

8081 Pesticides / PCB's (8082)

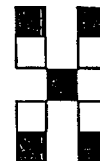
82608 (VDA)

B270 (Semi-VDA)





*

Air Bubbles or Headspace (Y or N)

ANALYSIS REQUEST



4901 Hawkins NE, Suite D
Albuquerque, New Mexico 87109
Tel. 505.345.3975 Fax 505.345.4107
www.hallenvironmental.com

Date: 9-1-04	Time: 1630	Relinquished By: (Signature) 	Received By: (Signature) 
Date: -2-04	Time: 9:10	Relinquished By: (Signature) 	Received By: (Signature)  9-2-04 9:10

Remarks: * /w have our analysis request on file.

- no samples were field filtered

Client: Kleinfelder

NELAC ☐ USACE ☐

Other:

Project Name:

R-34

Address: 8300 Jefferson NE Ste B
Albuquerque NM 87113

Project #:

37151

Project Manager:

B. Bodrish

Phone #: 505 344 7373

Sampler: B. Bockish/S. Darst

Fax #:

Sample Temperature:

34

[illegible]

Date:	Time:	Relinquished By: (Signature)
-------	-------	------------------------------

DATE:	TIME:
9-1-04	1630

Received By: (Signature)

Com Rm L

Date:	Time:	Relinquished By: (Signature)
-------	-------	------------------------------

Date:	Time:
-2-04	9:10

Received By: (Signature)

Received by: (original)

Remarks: *Analysis Request is on file with you, none of the samples were field filtered



4901 Hawkins NE, Suite D
Albuquerque, New Mexico 87109
Tel. 505.345.3975 Fax 505.345.4107
www.hallenvironmental.com

Hall Environmental Analysis Laboratory

Sample Receipt Checklist

Client Name KLEIN


Date and Time Received:

9/2/2004

Work Order Number 0409024

Received by AT

Checklist completed by



9/2/04

Signature

Date

Matrix

Carrier name Client drop-off

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>	
Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>	Not Shipped <input checked="" type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Water - VOA vials have zero headspace?	No VOA vials submitted <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	
Container/Temp Blank temperature?	3°	4° C ± 2 Acceptable		If given sufficient time to cool.

COMMENTS:

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments: _____

Corrective Action _____

Hall Environmental Analysis Laboratory

DATE: 28-Sep-04

INVOICE

Remit To: Hall Environmental Analysis
4901 Hawkins NE, Suite D
Albuquerque, New Mexico 87109-
Attn: Accounts Receivable
TEL: (505) 345-3975 FAX: (505) 345-4107

Invoice TO: Kleinfelder
8300 Jefferson, NE Suite B
Albuquerque, NM 87113
Attn: Mark Everett
Phone: (505) 344-7373

Work Order: 0409024
PO Number: 37151
Delivery Order
Project Name DOE Deep Wells
Date Received 9/2/2004

Invoice No: 0409024

Invoice Date:

Payment Terms: Net 30 Days

Item	Remarks	Matrix	Qty	Unit Price	Mult	Quoted	Test Total
AQPREP LIQ-LIQ: PCB.		Aqueous	1	\$0.00	1	\$0.00	\$0.00
AQPREP SEP FUNNEL: BNA		Aqueous	1	\$0.00	1	\$0.00	\$0.00
EPA 8330: Explosives (Aq)		Aqueous	1	\$225.00	1	\$225.00	\$225.00
EPA 8330: Explosives (Soil)		Soil	1	\$125.00	2	\$250.00	\$250.00
EPA Method 300.0: Anions		Aqueous	1	\$105.00	1	\$105.00	\$105.00
EPA Method 314.0: Perchlorate		Aqueous	1	\$60.00	2	\$120.00	\$120.00
EPA Method 6010C: Dissolved Metals		Aqueous	1	\$100.00	2	\$200.00	\$200.00
EPA Method 6010C: Soil Metals		Soil	1	\$100.00	2	\$200.00	\$200.00
EPA Method 7470: Mercury		Aqueous	1	\$20.00	2	\$40.00	\$40.00
EPA Method 7471: Mercury		Soil	1	\$20.00	1	\$20.00	\$20.00
EPA Method 8082: PCB's		Aqueous	1	\$70.00	1.5	\$105.00	\$105.00
EPA Method 8082: PCB's		Soil	1	\$70.00	1.5	\$105.00	\$105.00
EPA Method 8260B: VOLATILES		Aqueous	1	\$100.00	1	\$100.00	\$100.00
EPA Method 8260B: VOLATILES		Aqueous	1	\$0.00	1	\$0.00	\$0.00
EPA Method 8260B: VOLATILES		Soil	1	\$100.00	1	\$100.00	\$100.00
EPA Method 8270C: Semivolatiles		Aqueous	1	\$240.00	1.5	\$360.00	\$360.00
EPA Method 8270C: Semivolatiles		Soil	1	\$240.00	1.5	\$360.00	\$360.00
Gamma		Aqueous	1	\$95.00	2	\$190.00	\$190.00
Gamma CS-137		Soil	1	\$90.00	2	\$180.00	\$180.00
Gross Alpha & Beta		Aqueous	1	\$60.00	2	\$120.00	\$120.00
Mercury Soil Digestion		Soil	1	\$0.00	1	\$0.00	\$0.00
Mercury Water Digestion		Aqueous	1	\$0.00	1	\$0.00	\$0.00
Methanol Extraction		Solid	1	\$0.00	1	\$0.00	\$0.00
PCB Prep Soxhlet		Soil	1	\$0.00	1	\$0.00	\$0.00
PU 238,239 & AM 241		Aqueous	1	\$500.00	1.5	\$750.00	\$750.00
SOPREP SONICATION BATH: 8330		Soil	1	\$0.00	1	\$0.00	\$0.00
SOPREP SOXHLET: BNA		Soil	1	\$0.00	1	\$0.00	\$0.00
Strontium			1	\$100.00	1.5	\$150.00	\$150.00
TCLP RCRA 8 Metals		Soil	1	\$190.00	1	\$190.00	\$190.00
Thorium 232		Soil	1	\$120.00	1.5	\$180.00	\$180.00
Total Metals Digestion (Soil)		Soil	1	\$0.00	1	\$0.00	\$0.00

Invoice TO: Kleinfelder
8300 Jefferson, NE Suite B
Albuquerque, NM 87113
Attn: Mark Everett
Phone: (505) 344-7373

Work Order: 0409024
PO Number: 37151
Delivery Order
Project Name DOE Deep Wells
Date Received 9/2/2004

Invoice No: 0409024

Invoice Date:

Payment Terms: Net 30 Days

Item	Remarks	Matrix	Qty	Unit Price	Mult	Quoted	Test Total
Tritium		Aqueous	2	\$60.00	2	\$120.00	\$240.00
Uranium 234,235,238		Aqueous	1	\$120.00	1.5	\$180.00	\$180.00

Order TOTAL: \$4,470.00

Discount: 0.00%

Sales Tax: 0.00%

Misc Charges: \$30.00

Misc Comments Filter fee.

Subtotal: \$4,500.00

Payment Received: \$0.00

INVOICE Total \$4,500.00

All invoices are due and payable net 30 days from receipt.



PARAGON ANALYTICS

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

September 22, 2004

Ms. Nancy McDuffie
Hall Environmental Analysis Laboratory
4901 Hawkins NE, Suite D
Albuquerque, NM 87109

Re: Paragon Workorder: 04-09-037
Client Project Name: R-34
Client Project Number: None Submitted

Dear Ms. McDuffie:

One water and one soil sample was received from Hall Environmental Analysis Laboratory on September 3, 2004. The samples were scheduled for the following analyses:

Tritium	pages 1-13	Isotopic Plutonium	pages 1-8
Inorganics	pages 1-8	Isotopic Americium	pages 1-8
Strontium-90	pages 1-6	Explosives by HPLC	pages 1-13
Isotopic Thorium	pages 1-8	Gamma Spectroscopy_soil	pages 1-17
Isotopic Uranium	pages 1-8	Gamma Spectroscopy_water	pages 1-17
Gross Alpha/Beta	pages 1-6		

The results for these analyses are contained in the enclosed reports.

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

Sincerely,

Paragon Analytics
Debbie Fazio
Project Manager

DJF/ja
Enclosure: Report

Paragon Analytics

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client Project Name: R-34

Client Project Number:

Client PO Number:

Client Sample	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
R-34 Water	0409037-1		WATER	01-Sep-04	16:00
R-34 Cuttings	0409037-2		SOIL	01-Sep-04	16:00

Hall Environmental Analysis Laboratory

4901 Hawkins NE, Suite D
Albuquerque, New Mexico 87109-
(505) 345-3975

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

0409037

Subcontractor:

Paragon Analytics Inc.
225 Commerce Dr.

TEL: (970) 490-1511
FAX:

Project Name: R-34
Required QC: STD

Fort Collins, CO 80524

Acct #:

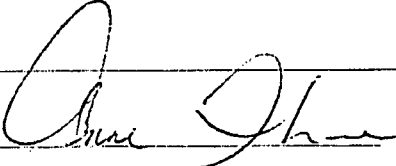
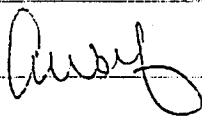
02-Sep-04

Client Samp ID	LAB ID	Matrix	Collection Date	Bottle Type	Requested Tests
1 R-34 Water	0409024-01D	Aqueous	9/1/2004 4:00:00 PM	1LHDPEHNO3	SEE BELOW
2 R-34 Cuttings	0409024-02B	Soil	9/1/2004 4:00:00 PM	8OZGU	SEE BELOW

Analytical
Comments:

SEE ATTACHED LIST QUOTE #040901-1

Comments: 7 day TAT. Please fax (505) 345-4107 results when completed, or email to lab@hallenvironmental.com. Thank you.

Relinquished by: 	Date/Time: 9/2/04	Received by: 	Date/Time: 9-3-04 @ 0930
Relinquished by: _____	12/3	Received by: _____	

0409037

Analyte	Method	Matrix	RL	Units
Am-241	Alpha Spec HASL 300	soil	1	pCi/g
Cs-137	Gamma Spec EPA 901.1	soil	0.1	pCi/g
Pu-238, 239	Alpha Spec HASL 300	soil	1	pCi/g
Sr-90	Gas Flow EPA 905.0	soil	2	pCi/g
Tritium	LSC EPA 906.0	soil	6	pCi/g
Th-232	Alpha Spec HASL 300	soil	1	pCi/g
U-234, 235, 238	Alpha Spec HASL 300	soil	1	pCi/g
Explosives	8330	soil	80	ug/kg

Explosives	8330	water		ug/L
Gamma Spec	Gamma Spec EPA 901.1	water	10 to 50	pCi/L
Gross Alpha/Beta	EPA 900.0 gas flow	water	5	pCi/L
Tritium	LSC EPA 906.0	water	700	pCi/L
Perchlorate	314.0	water	4	ug/L

CONDITION OF SAMPLE UPON RECEIPT FORM

Paragon Analytics

Client: Hall Env.Workorder No: 0409037Project Manager: Loi PachecoInitials: LP Date: 9-3-04

1. Does this project require any special handling in addition to standard Paragon procedures?	YES	<input checked="" type="radio"/> NO
2. Is pre-screening required per SOP 008?	YES	NO
3. Are custody seals on shipping containers intact?	N/A	<input checked="" type="radio"/> YES
4. Are custody seals on sample containers intact?	<input checked="" type="radio"/> N/A	YES
5. Is there a COC (Chain-of-Custody) present or other representative documents?	<input checked="" type="radio"/> YES	NO
6. Is the COC (if applicable) complete and legible?	N/A	<input checked="" type="radio"/> YES
7. Are bottle IDs legible and in agreement with COC sample IDs?	N/A	<input checked="" type="radio"/> YES
8. Is the COC in agreement with samples received? (# of samples, # of containers, matrix)	N/A	<input checked="" type="radio"/> YES
9. Were airbills present and/or removable?	N/A	<input checked="" type="radio"/> YES
10. Are all aqueous samples requiring preservation preserved correctly? (excluding volatile organics)	N/A	<input checked="" type="radio"/> YES
11. Are all aqueous non-preserved samples at the correct pH?	N/A	<input checked="" type="radio"/> YES
12. Is there sufficient sample for the requested analyses?	YES	<input checked="" type="radio"/> NO
13. Were all samples placed in the proper containers for the requested analyses?	<input checked="" type="radio"/> YES	NO
14. Are all samples within holding times for the requested analyses?	<input checked="" type="radio"/> YES	NO
15. Were all sample containers received intact? (not broken or leaking, etc.)	<input checked="" type="radio"/> YES	NO
16. Are all samples requiring no headspace (volatiles, reactive cyanide/sulfide, radon), headspace free? Size of bubble: <u>< green pea</u> <u>> green pea</u>	<input checked="" type="radio"/> N/A	YES
17. Were samples checked for and free from the presence of residual chlorine? (Applicable when PM has indicated samples are from a chlorinated water source; note if field preservation with sodium thiosulfate was not observed.)	<input checked="" type="radio"/> N/A	YES
18. Were the sample(s) shipped on ice?	N/A	<input checked="" type="radio"/> YES
19. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #1 <u>#2</u>	N/A	<input checked="" type="radio"/> YES
*IR Gun #1: Raytek, SN SC-PM3/T29403 Cooler #: <u>1</u>		
*IR Gun #2: Oakton, SN 2SCIR1201 Temperature (°C): <u>1.6°</u>		
No. of custody seals on cooler: <u>1</u>		
External µR/hr reading: <u>20</u>		
Background µR/hr reading: <u>12</u>		
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? <input checked="" type="radio"/> YES / NO (If no, see Form 008.)		

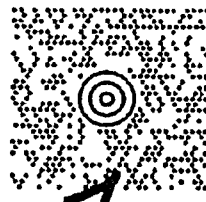
Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE EXCEPT #1 AND #2.

- Possible limited volume on Sample # 2 (R-34 cuttings, matrix - soil) for all requested analyses.
- Sample # 1 (R-34 water) the unpreserved bottle is poly. Poly bottle is standard for perchlorate. Tritium standard is amber glass.

If applicable, was the client contacted? YES / NO / NA Contact Name: N. McDuffie Date/Time: 9/3/04
 Project Manager Signature/ Date: [Signature] 9/3/04 Via Email

FROM:
ANDY FREEMAN
(505) 345-3975
HALL ENVIRONMENTAL (HEAL)
4901 HAWKINS NE
ALBUQUERQUE NM 87109-4337

39 LBS 1 OF 1



CO 805 0-01



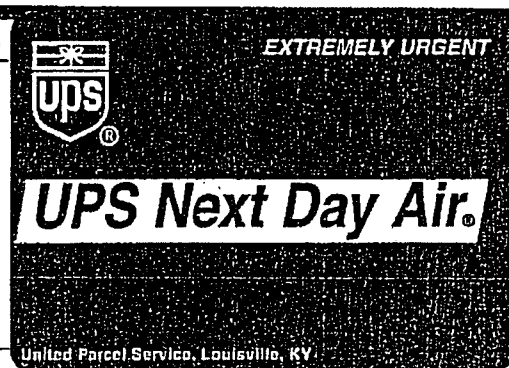
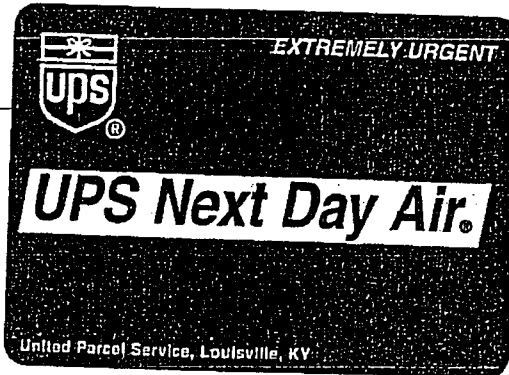
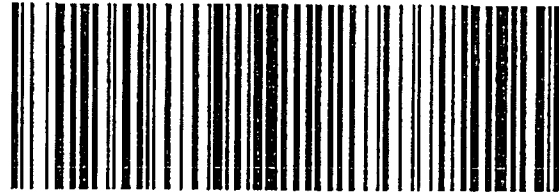
SHIP TO:

SAMPLE RECIEVE
(970) 490-1511
PARAGON ANALYTICS INC.
225 COMMERCE DR.
FORT COLLINS CO 80524-2762

UPS NEXT DAY AIR

TRACKING #: 1Z 1AF 802 01 4141 0513

1



opara Mita 33.0A 07/2004

Fold here and place in label pouch



Paragon Analytics

Radiochemistry Case Narrative

Tritium

Hall Environmental Analysis Laboratory

R-34

Paragon WO 0409037

1. This report consists of the analytical results and supporting documentation for one water sample and one soil sample received by Paragon on 9/3/04.
2. These samples were prepared according to Paragon Analytics procedures SOP754R3 and SOP700R9.
3. The samples were analyzed for the presence of tritium according to Paragon Analytics procedure SOP704R6. The analyses were completed on 9/10/04.
4. The analysis results for the soil sample are reported on a 'dry weight' basis in units of pCi/gram. The analysis results for the water sample are reported in units of pCi/L. The water sample was not filtered prior to analysis.
5. Due to insufficient sample volume, a duplicate laboratory control sample (LCS) was prepared in lieu of a client sample duplicate for batches 3H040907-1 and 3H040908-1. Please refer to QASS 275775 and 275776.
6. No anomalous situations were encountered during the preparation or analysis of these samples. All 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 certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Leah Balko
Leah Balko
Radiochemistry Instrument Technician

9/10/04
Date

[Signature]
Radiochemistry Final Data Review

9-10-04
Date

Paragon Analytics, Inc.

QUALITY ASSURANCE SUMMARY SHEET

275775

PAI W.O. # / BATCH 0409037 / 3H040907-1
TEST 3H
METHOD Prep
SOP/REV (PREP) 700R9
SOP/REV (ANAL)

Briefly document any QA or other problems or deviations associated with the analysis of samples. Problems could result from: log-in, color, odor, dilution, consistency, scheduling, equipment, or instrumentation, or may include documentation of minor deviations necessary due to unique DQO's or sample characteristics.

Due to limited sample volume, a MS and Duplicate were not prepared. A LCSD was prepared instead.

JLK 9/9/04

TECHNICIAN/ANALYST

Julie Kellogg

DATE

9/9/04

DEPARTMENT MANAGER

Nicholas Koch

DATE

9/9/07

QUALITY ASSURANCE SUMMARY SHEET

275776

PAI W.O. # / BATCH 0409037 / 3H040808-1
TEST 3H
METHOD Pup
SOP/REV (PREP) 700R9
SOP/REV (ANAL) _____

Briefly document any QA or other problems or deviations associated with the analysis of samples. Problems could result from: log-in, color, odor, dilution, consistency, scheduling, equipment, or instrumentation, or may include documentation of minor deviations necessary due to unique DQO's or sample characteristics.

Due to limited sample volume, a MS and Duplicate
were not prepared for WO# 0409037. An LCSD
was prepared instead.

JLK 9/9/04

TECHNICIAN/ANALYST

Julie Kellogg

DATE

9/9/04

DEPARTMENT MANAGER

Patricia Rich

DATE

9/9/04

Tritium Analysis By Liquid Scintillation

PAI 704 Rev 6

Method Blank Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Lab ID: 3H040907-1MB

Sample Matrix: SOIL

Prep SOP: PAI 754 Rev 3

Date Collected: 07-Sep-04

Date Prepared: 07-Sep-04

Date Analyzed: 09-Sep-04

Prep Batch: 3H040907-1

QC Batch ID: 3H040907-1-1

Run ID: 3h040907-1b

Count Time: 15 minutes

Final Aliquot: 40.1 g

Result Units: pCi/g

File Name: yu0490901

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
10028-17-8	H-3	-0.10 +/- 0.12	0.22	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Data Package ID: H3S0409037-1

Date Printed: Friday, September 10, 2004

Paragon Analytics

LIMS Version: 5.059A

Page 1 of 2

000004

Tritium Analysis By Liquid Scintillation

PAI 704 Rev 6

Method Blank Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client Project ID: R-34

Lab ID: 3H040908-1MB

Sample Matrix: WATER

Prep SOP: PAI 700 Rev 9

Date Collected: 08-Sep-04

Date Prepared: 08-Sep-04

Date Analyzed: 10-Sep-04

Prep Batch: 3H040908-1

QCBatchID: 3H040908-1-1

Run ID: 3H040908-1a

Count Time: 25 minutes

Final Aliquot: 10.0 ml

Result Units: pCi/l

File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
10028-17-8	H-3	80 +/- 400	670	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Data Package ID: H3S0409037-1

Tritium Analysis By Liquid Scintillation

PAI 704 Rev 6

Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Lab ID: 3H040907-1LCS

Sample Matrix: SOIL

Prep SOP: PAI 754 Rev 3

Date Collected: 07-Sep-04

Date Prepared: 07-Sep-04

Date Analyzed: 09-Sep-04

Prep Batch: 3H040907-1

QCBatchID: 3H040907-1-1

Run ID: 3h040907-1b

Count Time: 15 minutes

Final Aliquot: 39.7 g

Result Units: pCi/g

File Name: yu0490901

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
10028-17-8	H-3	2.08 +/- 0.38	0.22	2.00	104	85 - 115	P

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS Recovery within control limits.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: H3S0409037-1

Tritium Analysis By Liquid Scintillation

PAI 704 Rev 6

Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Lab ID: 3H040907-1LCSD

Sample Matrix: SOIL

Prep SOP: PAI 754 Rev 3

Date Collected: 07-Sep-04

Date Prepared: 07-Sep-04

Date Analyzed: 09-Sep-04

Prep Batch: 3H040907-1

QCBatchID: 3H040907-1-1

Run ID: 3h040907-1b

Count Time: 15 minutes

Final Aliquot: 39.9 g

Result Units: pCi/g

File Name: yu0490901

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
10028-17-8	H-3	1.85 +/- 0.35	0.22	1.99	92.9	85 - 115	P

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS Recovery within control limits.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: H3S0409037-1

Tritium Analysis By Liquid Scintillation

PAI 704 Rev 6

Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Lab ID: 3H040908-1LCS

Sample Matrix: WATER

Prep SOP: PAI 700 Rev 9

Date Collected: 08-Sep-04

Date Prepared: 08-Sep-04

Date Analyzed: 10-Sep-04

Prep Batch: 3H040908-1

QCBatchID: 3H040908-1-1

Run ID: 3h040908-1a

Count Time: 25 minutes

Final Aliquot: 9.90 ml

Result Units: pCi/l

File Name: Manual Entry

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
10028-17-8	H-3	8000 +/- 1400	700	8030	99.3	85 - 115	P

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
LT - Result is less than Requested MDC, greater than sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS Recovery within control limits.
M - The requested MDC was not met.
M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: H3S0409037-1

000008

Tritium Analysis By Liquid Scintillation

PAI 704 Rev 6

Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Lab ID: 3H040908-1LCSD

Sample Matrix: WATER

Prep SOP: PAI 700 Rev 9

Date Collected: 08-Sep-04

Date Prepared: 08-Sep-04

Date Analyzed: 10-Sep-04

Prep Batch: 3H040908-1

QCBatchID: 3H040908-1-1

Run ID: 3h040908-1a

Count Time: 25 minutes

Final Aliquot: 9.90 ml

Result Units: pCi/l

File Name: Manual Entry

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
10028-17-8	H-3	8000 +/- 1400	700	8030	99.6	85 - 115	P

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS Recovery within control limits.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: H3S0409037-1

Tritium Analysis By Liquid Scintillation

PAI 704 Rev 6

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID:
Lab ID: 3H040907-1LCSD

Sample Matrix: SOIL
Prep SOP: PAI 754 Rev 3
Date Collected: 07-Sep-04
Date Prepared: 07-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: 3H040907-1
QCBatchID: 3H040907-1-1
Run ID: 3h040907-1b
Count Time: 15 minutes

Final Aliquot: 39.9 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: yu0490901

CASNO	Analyte	Sample Result +/- 2 s TPU	Duplicate Result +/- 2 s TPU	DER	Control Limit	Lab Qualifiers
10028-17-8	H-3	2.08 +/- 0.38	1.85 +/- 0.35	0.45	2.13	P

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13
LT - Result is less than Request MDC, greater than sample specific MDC
M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
DER - Duplicate Error Ratio
BDL - Below Detection Limit
NR - Not Reported

Data Package ID: H3S0409037-1

Tritium Analysis By Liquid Scintillation

PAI 704 Rev 6

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID:

Lab ID: 3H040908-1LCSD

Sample Matrix: WATER

Prep SOP: PAI 700 Rev 9

Date Collected: 08-Sep-04

Date Prepared: 08-Sep-04

Date Analyzed: 10-Sep-04

Prep Batch: 3H040908-1

QCBatchID: 3H040908-1-1

Run ID: 3h040908-1a

Count Time: 25 minutes

Final Aliquot: 9.90 ml

Prep Basis: Unfiltered

Moisture(%): NA

Result Units: pCi/l

File Name: Manual Entry

CASNO	Analyte	Sample Result +/- 2 s TPU	Duplicate Result +/- 2 s TPU	DER	Control Limit	Lab Qualifiers
10028-17-8	H-3	8000 +/- 1400	8000 +/- 1400	0.01	2.13	P

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

LT - Result is less than Request MDC, greater than sample specific MDC

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

DER - Duplicate Error Ratio

BDL - Below Detection Limit

NR - Not Reported

Data Package ID: H3S0409037-1

Tritium Analysis By Liquid Scintillation

PAI 704 Rev 6
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0409037
Client Name: Hall Environmental Analysis Laboratory
ClientProject ID: R-34

Field ID: R-34 Water	Sample Matrix: WATER	Prep Batch: 3H040908-1	Final Aliquot: 10.0 ml
Lab ID: 0409037-1	Prep SOP: PAI 700 Rev 9	QCBatchID: 3H040908-1-1	Prep Basis: Unfiltered
	Date Collected: 01-Sep-04	Run ID: 3h040908-1a	Moisture(%): 100.000
	Date Prepared: 08-Sep-04	Count Time: 25 minutes	Result Units: pCi/l
	Date Analyzed: 10-Sep-04	Report Basis: Unfiltered	File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
10028-17-8	H-3	-140 +/- 390	670	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)
BDL - Below Detection Limit

Data Package ID: H3S0409037-1

000012

Tritium Analysis By Liquid Scintillation

PAI 704 Rev 6
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID: R-34 Cuttings	Sample Matrix: SOIL	Prep Batch: 3H040907-1	Final Aliquot: 25.7 g
Lab ID: 0409037-2	Prep SOP: PAI 754 Rev 3	QCBatchID: 3H040907-1-1	Prep Basis: As Received
	Date Collected: 01-Sep-04	Run ID: 3h040907-1b	Moisture(%): 9.100
	Date Prepared: 07-Sep-04	Count Time: 15 minutes	Result Units: pCi/g
	Date Analyzed: 09-Sep-04	Report Basis: Dry Weight	File Name: yu0490901

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
10028-17-8	H-3	-0.07 +/- 0.21	0.37	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: H3S0409037-1



Paragon Analytics

INORGANICS CASE NARRATIVE

Hall Environmental Analysis Laboratory

R-34

Order Number - 0409037

1. This report consists of 1 water sample.
2. The sample was received cool and intact on 09/03/04.
3. The sample was prepared for analysis based on Methods for the Chemical Analysis of Waters and Wastes (MCAWW), May 1994 procedures.
4. The sample was analyzed following MCAWW procedures for the following method:

<u>Analyte</u>	<u>Method</u>	<u>SOP #</u>
Perchlorate	314.0	1125 Rev 2

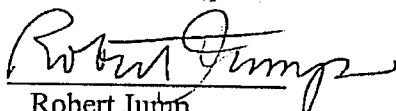
5. All standards and solutions were used within their recommended shelf life.
6. The sample was prepared and analyzed within the established hold time for this analysis.

All in house quality control procedures were followed, as described below.

7. General quality control procedures.
 - A preparation (method) blank and laboratory control sample (LCS) were prepared and analyzed with the samples in this preparation batch. There were not more than 20 samples in this preparation batch.
 - The method blank associated with this batch was below the reporting limit for the requested analyte. This indicates that no contaminants were introduced to the sample during preparation and analysis.
 - The LCS was within the acceptance limits for this analysis.
 - All initial and continuing calibration blanks (ICB/CCB) associated with this analytical batch were below the reporting limit for the requested analyte.
 - All initial and continuing calibration verifications (ICV/CCV) associated with this analytical batch were within the acceptance criteria for the requested analyte. This indicates a valid calibration and stable instrument conditions.

- The instrument performance-check solution (IPC) associated with the perchlorate batch was within the acceptance criteria for the requested analyte.
 - The initial calibration check standard (ICCS) was within the acceptance limits for the perchlorate analysis.
8. Matrix specific quality control procedures.
- Sample 0409037-1 was designated as the quality control sample for this analysis.
- A matrix spike (MS) and matrix spike duplicate (MSD) were prepared and analyzed with this batch. All guidance criteria for precision and accuracy were met.
9. Sample dilutions were not required for the requested analysis.
10. Manual integrations are performed when needed to provide consistent and defensible data following the guidelines in Paragon Analytics Standard Operating Procedure 939 Revision 1.

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


Robert Jump
Inorganic Analyst

9-13-04
Date

CK
Reviewer's Initials

09-13-04
Date

000002

Paragon Analytics

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client Project Name: R-34

Client Project Number:

Client PO Number:

Client Sample	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
R-34 Water	0409037-1		WATER	01-Sep-04	16:00
R-34 Cuttings	0409037-2		SOIL	01-Sep-04	16:00

Inorganic Data Reporting Qualifiers

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

- Concentration qualifier -- If the analyte was analyzed for but not detected a "U" is entered.
- QC qualifier -- Specified entries and their meanings are as follows:
 - N - Spiked sample recovery not within control limits.
 - * - Duplicate analysis (relative percent difference) not within control limits.
 - B - The method blank for the analysis contained the analyte of interest above the reporting limit.
 - Z - Calibration spike recovery not within control limits.

000004

Perchlorate

Method EPA314.0

Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID: R-34 Water

Lab ID: 0409037-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 01-Sep-04

Date Extracted: 09-Sep-04

Date Analyzed: 09-Sep-04

Prep Method: NONE

Prep Batch: PC040909-1

QCBatchID: PC040909-1-1

Run ID: PC040909-1A

Cleanup: NONE

Basis: As Received

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: mg/l

Clean DF: 1

File Name: p\sep_09_0

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
	PERCHLORATE	1	0.004	0.004	U	

Data Package ID: PC0409037-1

Date Printed: Friday, September 10, 2004

Paragon Analytics

LIMS Version: 5.059A

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000005

Perchlorate

Method EPA314.0

Method Blank

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Lab ID: PC040909-1MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/09/2004

Date Analyzed: 09/09/2004

Prep Batch: PC040909-1

QCBatchID: PC040909-1-1

Run ID: PC040909-1A

Cleanup: NONE

Basis: N/A

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: mg/l

Clean DF: 1

File Name: p\sep_09_0

CASNO	Target Analyte	DF	Result	Reporting Limit	Result Qualifier	EPA Qualifier
	PERCHLORATE	1	0.004	0.004	U	

Data Package ID: PC0409037-1

Date Printed: Friday, September 10, 2004

Paragon Analytics

LIMS Version: 5.059A

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Perchlorate
Method EPA314.0
Laboratory Control Sample

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Lab ID: PC040909-1LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/09/2004

Date Analyzed: 09/09/2004

Prep Batch: PC040909-1

QCBatchID: PC040909-1-1

Run ID: PC040909-1A

Cleanup: NONE

Basis: N/A

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: mg/l

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
	PERCHLORATE	0.025	0.0273	0.004		109	85 - 115%

Data Package ID: PC0409037-1

Date Printed: Friday, September 10, 2004

Paragon Analytics

LIMS Version: 5.059A

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000007

Perchlorate

Method EPA314.0

Matrix Spike And Matrix Spike Duplicate

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID: R-34 Water	Sample Matrix: WATER	Prep Batch: PC040909-1	Sample Aliquot: 5 ml
LabID: 0409037-1MS	% Moisture: N/A	QCBatchID: PC040909-1-1	Final Volume: 5 ml
	Date Collected: 01-Sep-04	Run ID: PC040909-1A	Result Units: mg/l
	Date Extracted: 09-Sep-04	Cleanup: NONE	
	Date Analyzed: 09-Sep-04	Basis: As Received	
	Prep Method: NONE		

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
	PERCHLORATE	0.004	U	0.0291		0.004	0.025	117	80 - 120%

MSD Lab ID: 0409037-1MSD

Sample Aliquot: 5 ml
Final Volume: 5 ml

CASNO	Target Analyte	Spike Added	MSD Result	MSD Qual	Reporting Limit	MSD % Rec.	RPD	RPD Limits
	PERCHLORATE	0.025	0.0277		0.004	111	5	15

Data Package ID: PC0409037-1

Date Printed: Friday, September 10, 2004

Paragon Analytics

LIMS Version: 5.059A

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Paragon Analytics

Radiochemistry Case Narrative

Strontium-90

Hall Environmental Analysis Laboratory

R-34

PAI WO 0409037

1. This report consists of the analytical results for one soil sample received by Paragon on 9/3/04.
2. This sample was prepared according to Paragon Analytics procedure SOP707R7.
3. This sample was analyzed for the presence of Strontium-90 according to Paragon Analytics procedure SOP724R8. The analyses were completed on 9/9/04.
4. Total radiostrontium is reported as Strontium-90. The presence of other radioisotopes of strontium may cause positive bias in the measured strontium concentration.
5. The analysis results for this sample are reported on a 'dry weight' basis in units of pCi/gram.
6. Sample volume was insufficient to allow preparation of a duplicate. A Laboratory Control Sample Duplicate (LCS D) was prepared in lieu of a client sample duplicate.
7. ICP-AES measurement of strontium concentrations prior to chemical separation for LCS SR040907-1LCS showed concentrations less than the amount known to have been added to the sample in the form of strontium carrier. To avoid a low bias in the final analytical results the known concentration of the carrier was used in chemical yield calculations in lieu of the pre-separation measurement.
8. Due to uncertainty associated with the ICP-AES determination of strontium concentration in the samples, the calculated yield for this sample fell between 100% and 110%. To minimize the potential for low bias, results have been calculated conservatively assuming quantitative chemical yield (100%). The magnitude of the low bias is estimated to be less than 10% of the reported value and is acceptable according to the Paragon LQAP. This sample is identified with a "Y1" flag on the final reports.
9. No problems were encountered during the preparation and analysis of this sample. All 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 certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

K. J. Hill
Radiochemistry Instrument Technician

9.10.04
Date

Leah Baehr
Radiochemistry Final Data Review

9/10/04
Date

Strontium-90 Analysis by GFPC

PAI 724 Rev 8

Method Blank Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Lab ID: SR040907-1MB

Sample Matrix: SOIL

Prep SOP: PAI 707 Rev 7

Date Collected: 07-Sep-04

Date Prepared: 07-Sep-04

Date Analyzed: 09-Sep-04

Prep Batch: SR040907-1

QCBatchID: SR040907-1-1

Run ID: sr040907-1a

Count Time: 150 minutes

Final Aliquot: 1.96 g

Result Units: pCi/g

File Name: sra0909a

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
10098-97-2	Sr-90	0.01 +/- 0.11	0.24	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
STRONTIUM	971.9	947.0	ug	97.4	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Data Package ID: SR900409037-1

Strontium-90 Analysis by GFPC

PAI 724 Rev 8

Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client/Project ID: R-34

Lab ID: SR040907-1LCS	Sample Matrix: SOIL Prep SOP: PAI 707 Rev 7 Date Collected: 07-Sep-04 Date Prepared: 07-Sep-04 Date Analyzed: 09-Sep-04	Prep Batch: SR040907-1 QCBatchID: SR040907-1-1 Run ID: sr040907-1a Count Time: 150 minutes	Final Aliquot: 1.96 g Result Units: pCi/g File Name: sra0909a
-----------------------	---	---	---

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
10098-97-2	Sr-90	5.2 +/- 1.3	0.2	5.32	97.8	75 - 125	P

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
STRONTIUM	968.0	944.5	ug	97.6	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
LT - Result is less than Requested MDC, greater than sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS Recovery within control limits.
M - The requested MDC was not met.
M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: SR900409037-1

Strontium-90 Analysis by GFPC

PAI 724 Rev 8

Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Lab ID: SR040907-1LCSD

Sample Matrix: SOIL

Prep SOP: PAI 707 Rev 7

Date Collected: 07-Sep-04

Date Prepared: 07-Sep-04

Date Analyzed: 09-Sep-04

Prep Batch: SR040907-1

QCBatchID: SR040907-1-1

Run ID: sr040907-1a

Count Time: 150 minutes

Final Aliquot: 1.96 g

Result Units: pCi/g

File Name: sra0909a

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
10098-97-2	Sr-90	5.0 +/- 1.2	0.2	5.32	93.5	75 - 125	P

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
STRONTIUM	963.0	942.7	ug	97.9	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS Recovery within control limits.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: SR900409037-1

Strontium-90 Analysis by GFPC

PAI 724 Rev 8

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client/Project ID: R-34

Field ID:
Lab ID: SR040907-1LCSD

Sample Matrix: SOIL
Prep SOP: PAI 707 Rev 7
Date Collected: 07-Sep-04
Date Prepared: 07-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: SR040907-1
QCBatchID: SR040907-1-1
Run ID: sr040907-1a
Count Time: 150 minutes

Final Aliquot: 1.96 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: sra0909a

CASNO	Analyte	Sample Result +/- 2s TPU	Duplicate Result +/- 2s TPU	DER	Control Limit	Lab Qualifiers
10098-97-2	Sr-90	5.2 +/- 1.3	5.0 +/- 1.2	0.13	2.13	P

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13
LT - Result is less than Request MDC, greater than sample specific MDC
M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
DER - Duplicate Error Ratio
BDL - Below Detection Limit
NR - Not Reported

Data Package ID: SR900409037-1

Strontium-90 Analysis by GFPC

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client/Project ID: R-34

Field ID: R-34 Cuttings	Sample Matrix: SOIL	Prep Batch: SR040907-1	Final Aliquot: 1.98 g
Lab ID: 0409037-2	Prep SOP: PAI 707 Rev 7	QCBatchID: SR040907-1-1	Prep Basis: Dry Weight
	Date Collected: 01-Sep-04	Run ID: sr040907-1a	Moisture(%): NA
	Date Prepared: 07-Sep-04	Count Time: 150 minutes	Result Units: pCi/g
	Date Analyzed: 09-Sep-04	Report Basis: Dry Weight	File Name: sra0909a

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
10098-97-2	Sr-90	-0.04 +/- 0.10	0.24	Y1,U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
STRONTIUM	1004	1009	ug	100	40 - 110 %	Y1

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: SR900409037-1



Paragon Analytics

Radiochemistry Case Narrative

Isotopic Thorium

Hall Environmental Analysis Laboratory

R-34

PA WO 0409037

1. This report consists of the analytical results for one soil sample received by Paragon on 09/03/04.
2. This sample was prepared according to Paragon Analytics procedures PA SOP773R8, PA SOP777R7, and PA SOP721R11.
3. The sample was analyzed for the presence of isotopic thorium according to Paragon Analytics procedure PA SOP714R9. The analyses were completed on 09/10/04.
4. The isotopic analysis results for this sample are reported on a dry weight basis in units of pCi/gram.
5. In order to meet client data quality objectives, a duplicate laboratory control sample (LCSD) was prepared and analyzed with this sample.
6. No anomalous situations were encountered during the preparation or analysis of this sample. All 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 certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Sharon Muller
Sharon Muller
Radiochemistry Instrumentation

John Peltier
Radiochemistry Final Data Review

9/10/04
Date

9/13/04
Date

000001

PARAGON ANALYTICS

Isotopic Thorium By Alpha Spectroscopy

PAI 714 Rev 9

Method Blank Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Lab ID: AS040907-6MB

Sample Matrix: SOIL

Prep SOP: PAI 777 Rev 7

Date Collected: 07-Sep-04

Date Prepared: 07-Sep-04

Date Analyzed: 09-Sep-04

Prep Batch: AS040907-6

QCBatchID: AS040907-6-1

Run ID: AS040907-6A

Count Time: 300 minutes

Final Aliquot: 2.00 g

Result Units: pCi/g

File Name: T9076B

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
14274-82-9	Th-228	0.025 +/- 0.030	0.056	U
14269-63-7	Th-230	0.011 +/- 0.036	0.079	U
7440-29-1	Th-232	0.005 +/- 0.013	0.023	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Th-229	2.252	1.57	pCi/g	69.9	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Data Package ID: TH0409037-1

Date Printed: Friday, September 10, 2004

Paragon Analytics

LIMS Version: 5.059A

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Isotopic Thorium By Alpha Spectroscopy

PAI 714 Rev 9

Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client Project ID: R-34

Lab ID: AS040907-6LCS

Sample Matrix: SOIL
Prep SOP: PAI 777 Rev 7
Date Collected: 07-Sep-04
Date Prepared: 07-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: AS040907-6
QCBatchID: AS040907-6-1
Run ID: AS040907-6A
Count Time: 300 minutes

Final Aliquot: 2.00 g
Result Units: pCi/g
File Name: T9076L

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
14269-63-7	Th-230	2.32 +/- 0.42	0.07	2.25	103	85 - 121	P

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Th-229	2.252	1.73	pCi/g	76.8	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
LT - Result is less than Requested MDC, greater than sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS Recovery within control limits.
M - The requested MDC was not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: TH0409037-1

Isotopic Thorium By Alpha Spectroscopy

PAI 714 Rev 9

Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client/Project ID: R-34

Lab ID: AS040907-6LCS0

Sample Matrix: SOIL

Prep SOP: PAI 777 Rev 7

Date Collected: 07-Sep-04

Date Prepared: 07-Sep-04

Date Analyzed: 10-Sep-04

Prep Batch: AS040907-6

QCBatchID: AS040907-6-1

Run ID: AS040907-6A

Count Time: 180 minutes

Final Aliquot: 2.00 g

Result Units: pCi/g

File Name: T9076LD

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
14269-63-7	Th-230	2.30 +/- 0.47	0.10	2.25	102	85 - 121	P

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Th-229	2.252	1.73	pCi/g	76.8	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS Recovery within control limits.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: TH0409037-1

Isotopic Thorium By Alpha Spectroscopy

PAI 714 Rev 9

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID: R-34 Cuttings

Lab ID: 0409037-2DUP

Sample Matrix: SOIL

Prep SOP: PAI 777 Rev 7

Date Collected: 01-Sep-04

Date Prepared: 07-Sep-04

Date Analyzed: 09-Sep-04

Prep Batch: AS040907-6

QCBatchID: AS040907-6-1

Run ID: AS040907-6A

Count Time: 300 minutes

Final Aliquot: 2.01 g

Prep Basis: Dry Weight

Moisture(%): NA

Result Units: pCi/g

File Name: T90372D

CASNO	Analyte	Sample Result +/- 2s TPU	Duplicate Result +/- 2s TPU	DER	Control Limit	Lab Qualifiers
14274-82-9	Th-228	0.92 +/- 0.21	0.81 +/- 0.18	0.42	2.13	
14269-63-7	Th-230	0.69 +/- 0.17	0.63 +/- 0.15	0.25	2.13	
7440-29-1	Th-232	0.86 +/- 0.19	0.83 +/- 0.18	0.10	2.13	

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

LT - Result is less than Request MDC, greater than sample specific MDC

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

DER - Duplicate Error Ratio

BDL - Below Detection Limit

NR - Not Reported

Data Package ID: TH0409037-1

Isotopic Thorium By Alpha Spectroscopy

PAI 714 Rev 9

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID:
Lab ID: AS040907-6LCSD

Sample Matrix: SOIL
Prep SOP: PAI 777 Rev 7
Date Collected: 07-Sep-04
Date Prepared: 07-Sep-04
Date Analyzed: 10-Sep-04

Prep Batch: AS040907-6
QCBatchID: AS040907-6-1
Run ID: AS040907-6A
Count Time: 180 minutes

Final Allquot: 2.00 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: T9076LD

CASNO	Analyte	Sample Result +/- 2s TPU	Duplicate Result +/- 2s TPU	DER	Control Limit	Lab Qualifiers
14269-63-7	Th-230	2.32 +/- 0.42	2.30 +/- 0.47	0.04	2.13	P

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13
LT - Result is less than Request MDC, greater than sample specific MDC
M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
DER - Duplicate Error Ratio
BDL - Below Detection Limit
NR - Not Reported

Data Package ID: TH0409037-1

Isotopic Thorium By Alpha Spectroscopy

PAI 714 Rev 9
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0409037
Client Name: Hall Environmental Analysis Laboratory
ClientProject ID: R-34

Field ID: R-34 Cuttings	Sample Matrix: SOIL	Prep Batch: AS040907-6	Final Aliquot: 2.02 g
Lab ID: 0409037-2	Prep SOP: PAI 777 Rev 7	QCBatchID: AS040907-6-1	Prep Basis: Dry Weight
	Date Collected: 01-Sep-04	Run ID: AS040907-6A	Moisture(%): NA
	Date Prepared: 07-Sep-04	Count Time: 300 minutes	Result Units: pCi/g
	Date Analyzed: 09-Sep-04	Report Basis: Dry Weight	File Name: T90372

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
14274-82-9	Th-228	0.92 +/- 0.21	0.08	
14269-63-7	Th-230	0.69 +/- 0.17	0.09	
7440-29-1	Th-232	0.86 +/- 0.19	0.03	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Th-229	2.231	1.23	pCi/g	55.1	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)
BDL - Below Detection Limit

Data Package ID: TH0409037-1

Isotopic Thorium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Duplicate Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID: R-34 Cuttings

Lab ID: 0409037-2DUP

Sample Matrix: SOIL

Prep SOP: PAI 777 Rev 7

Date Collected: 01-Sep-04

Date Prepared: 07-Sep-04

Date Analyzed: 09-Sep-04

Prep Batch: AS040907-6

QCBatchID: AS040907-6-1

Run ID: AS040907-6A

Count Time: 300 minutes

Report Basis: Dry Weight

Final Aliquot: 2.01 g

Prep Basis: Dry Weight

Moisture(%): NA

Result Units: pCi/g

File Name: T90372D

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
14274-82-9	Th-228	0.81 +/- 0.18	0.09	
14269-63-7	Th-230	0.63 +/- 0.15	0.09	
7440-29-1	Th-232	0.83 +/- 0.18	0.03	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Th-229	2.241	1.36	pCi/g	60.6	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: TH0409037-1



Paragon Analytics

Radiochemistry Case Narrative

Isotopic Uranium


Hall Environmental Analysis Laboratory


R-34


PA WO 0409037

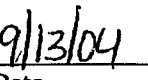
1. This report consists of the analytical results for one soil sample received by Paragon on 09/03/04.
2. This sample was prepared according to Paragon Analytics procedures PA SOP721R11, PA SOP773R8, and PA SOP778R9.
3. The sample was analyzed for the presence of isotopic uranium according to Paragon Analytics procedure PA SOP714R9. The analyses were completed on 09/09/04.
4. The isotopic analysis results for this sample are reported on a dry weight basis in units of pCi/gram.
5. In order to meet client data quality objectives, a duplicate laboratory control sample (LCSD) was prepared and analyzed with this sample.
6. This analytical method quantifies U-235 alpha activity in a specific region of interest corresponding to emission energies between those of U-234 and U-238. A potential limitation of this method is that measurable amounts of U-234 in the sample may cause a small amount of characteristic activity in the U-235 region of interest due to poorly resolved alpha activity at the boundary between the two regions. To minimize the potential for a high bias in the U-235 analytical results, the U-235 region of interest has been narrowed and limited to a lower energy region. An 85.1% abundance correction has been made to the final U-235 results.
7. No anomalous situations were encountered during the preparation or analysis of this sample. All 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 certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.


Sharon Muller
Radiochemistry Instrumentation


Date


Radiochemistry Final Data Review


Date

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Method Blank Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Lab ID: AS040907-5MB

Sample Matrix: SOIL

Prep SOP: PAI 778 Rev 9

Date Collected: 07-Sep-04

Date Prepared: 07-Sep-04

Date Analyzed: 09-Sep-04

Prep Batch: AS040907-5

QCBatchID: AS040907-5-1

Run ID: AS040907-5A

Count Time: 300 minutes

Final Aliquot: 2.00 g

Result Units: pCi/g

File Name: U9075B

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	0.016 +/- 0.017	0.023	U
15117-96-1	U-235	0.004 +/- 0.016	0.012	U
7440-61-1	U-238	0.001 +/- 0.013	0.023	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.257	3.46	pCi/g	81.3	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Data Package ID: UR0409037-1

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Lab ID: AS040907-SLCS	Sample Matrix: SOIL Prep SOP: PAI 778 Rev 9 Date Collected: 07-Sep-04 Date Prepared: 07-Sep-04 Date Analyzed: 09-Sep-04	Prep Batch: AS040907-5 QCBatchID: AS040907-5-1 Run ID: AS040907-5A Count Time: 300 minutes	Final Aliquot: 2.00 g Result Units: pCi/g File Name: U9075L
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CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
13966-29-5	U-234	4.42 +/- 0.73	0.04	4.34	102	82 - 122	P
7440-61-1	U-238	4.46 +/- 0.73	0.03	4.50	99.0	82 - 122	P

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.257	3.41	pCi/g	80.2	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
LT - Result is less than Requested MDC, greater than sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS Recovery within control limits.
M - The requested MDC was not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: UR0409037-1

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Lab ID: AS040907-5LCSD

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 07-Sep-04
Date Prepared: 07-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: AS040907-5
QCBatchID: AS040907-5-1
Run ID: AS040907-5A
Count Time: 300 minutes

Final Aliquot: 2.00 g
Result Units: pCi/g
File Name: U9075LD

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
13986-29-5	U-234	4.11 +/- 0.68	0.02	4.34	94.7	82 - 122	P
7440-81-1	U-238	4.56 +/- 0.75	0.01	4.50	101	82 - 122	P

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.257	3.52	pCi/g	82.7	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
LT - Result is less than Requested MDC, greater than sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS Recovery within control limits.
M - The requested MDC was not met.
M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: UR0409037-1

000004

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID: R-34 Cuttings

Lab ID: 0409037-2DUP

Sample Matrix: SOIL

Prep SOP: PAI 778 Rev 9

Date Collected: 01-Sep-04

Date Prepared: 07-Sep-04

Date Analyzed: 09-Sep-04

Prep Batch: AS040907-5

QCBatchID: AS040907-5-1

Run ID: AS040907-5A

Count Time: 300 minutes

Final Aliquot: 2.01 g

Prep Basis: Dry Weight

Moisture(%): NA

Result Units: pCi/g

File Name: U90372D

CASNO	Analyte	Sample Result +/- 2 s TPU	Duplicate Result +/- 2 s TPU	DER	Control Limit	Lab Qualifiers
13966-29-5	U-234	0.61 +/- 0.13	0.59 +/- 0.13	0.08	2.13	
15117-96-1	U-235	0.039 +/- 0.025	0.038 +/- 0.025	0.01	2.13	LT
7440-61-1	U-238	0.58 +/- 0.12	0.57 +/- 0.12	0.05	2.13	

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

LT - Result is less than Request MDC, greater than sample specific MDC

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

DER - Duplicate Error Ratio

BDL - Below Detection Limit

NR - Not Reported

Data Package ID: UR0409037-1

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID:
Lab ID: AS040907-5LCSD

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 07-Sep-04
Date Prepared: 07-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: AS040907-5
QCBatchID: AS040907-5-1
Run ID: AS040907-5A
Count Time: 300 minutes

Final Aliquot: 2.00 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U9075LD

CASNO	Analyte	Sample Result +/- 2 s TPU	Duplicate Result +/- 2 s TPU	DER	Control Limit	Lab Qualifiers
13966-29-5	U-234	4.42 +/- 0.73	4.11 +/- 0.68	0.31	2.13	P
7440-61-1	U-238	4.46 +/- 0.73	4.56 +/- 0.75	0.10	2.13	P

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13
LT - Result is less than Request MDC, greater than sample specific MDC
M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
DER - Duplicate Error Ratio
BDL - Below Detection Limit
NR - Not Reported

Data Package ID: UR0409037-1

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID: R-34 Cuttings

Lab ID: 0409037-2

Sample Matrix: SOIL

Prep SOP: PAI 778 Rev 9

Date Collected: 01-Sep-04

Date Prepared: 07-Sep-04

Date Analyzed: 09-Sep-04

Prep Batch: AS040907-5

QCBatchID: AS040907-5-1

Run ID: AS040907-5A

Count Time: 300 minutes

Report Basis: Dry Weight

Final Aliquot: 2.00 g

Prep Basis: Dry Weight

Moisture(%): NA

Result Units: pCi/g

File Name: U90372

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	0.61 +/- 0.13	0.02	
15117-96-1	U-235	0.039 +/- 0.025	0.019	LT
7440-61-1	U-238	0.58 +/- 0.12	0.01	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.252	3.56	pCi/g	83.7	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: UR0409037-1

Isotopic Uranium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Duplicate Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID: R-34 Cuttings
Lab ID: 0409037-2DUP

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 01-Sep-04
Date Prepared: 07-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: AS040907-5
QCBatchID: AS040907-5-1
Run ID: AS040907-5A
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 2.01 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: U90372D

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13966-29-5	U-234	0.59 +/- 0.13	0.02	
15117-96-1	U-235	0.038 +/- 0.025	0.019	LT
7440-61-1	U-238	0.57 +/- 0.12	0.02	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
U-232	4.242	3.56	pCi/g	84.0	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: UR0409037-1

000008



Paragon Analytics

Radiochemistry Case Narrative

Gross Alpha/Beta

Hall Environmental Analysis Laboratory

R-34

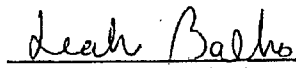
PAI WO 0409037

1. This report consists of the analytical results for one water sample received by Paragon on 9/3/04.
2. This sample was prepared according to Paragon Analytics procedure SOP702R16.
3. The sample was analyzed for gross alpha and beta activity by gas flow proportional counting according to Paragon Analytics procedure SOP724R8. The analyses were completed on 9/9/04. Gross alpha results are referenced to ^{241}Am . Gross beta results are referenced to $^{90}\text{Sr/Y}$.
4. The analysis results for this sample are reported in units of pCi/L. The sample was not filtered prior to analysis.
5. Sample volume was insufficient to allow preparation of a duplicate. A Laboratory Control Sample Duplicate (LCSD) was prepared in lieu of a client sample duplicate.
6. No anomalous situations were encountered during the preparation or analysis of this sample. All 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 certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.


Radiochemistry Instrument Technician

9.10.04
Date


Radiochemistry Final Data Review

9/10/04
Date

Gross Alpha/Beta Analysis by GFPC

PAI 724 Rev 8

Method Blank Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Lab ID: AB040907-5MB

Sample Matrix: WATER

Prep Batch: AB040907-5

Final Aliquot: 200 ml

Prep SOP: PAI 702 Rev 16

QCBatchID: AB040907-5-1

Result Units: pCi/l

Date Collected: 07-Sep-04

Run ID: ab040907-5b

File Name: abb0909b

Date Prepared: 07-Sep-04

Count Time: 300 minutes

Date Analyzed: 09-Sep-04

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	-0.01 +/- 0.50	1.12	U
12587-47-2	GROSS BETA	0.02 +/- 0.89	1.85	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Data Package ID: ABW0409037-1

Gross Alpha/Beta Analysis by GFPC

PAI 724 Rev 8

Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Lab ID: AB040907-5LCS

Sample Matrix: WATER

Prep SOP: PAI 702 Rev 16

Date Collected: 07-Sep-04

Date Prepared: 07-Sep-04

Date Analyzed: 09-Sep-04

Prep Batch: AB040907-5

QCBatchID: AB040907-5-1

Run ID: ab040907-5b

Count Time: 300 minutes

Final Aliquot: 200 ml

Result Units: pCi/l

File Name: abb0909b

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
12587-46-1	GROSS ALPHA	217 +/- 35	1	229	94.8	70 - 130	P
12587-47-2	GROSS BETA	227 +/- 37	4	213	107	70 - 130	P

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS Recovery within control limits.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: ABW0409037-1

Gross Alpha/Beta Analysis by GFPC

PAI 724 Rev 8

Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Lab ID: AB040907-5LCSD

Sample Matrix: WATER

Prep SOP: PAI 702 Rev 16

Date Collected: 07-Sep-04

Date Prepared: 07-Sep-04

Date Analyzed: 09-Sep-04

Prep Batch: AB040907-5

QCBatchID: AB040907-5-1

Run ID: ab040907-5b

Count Time: 300 minutes

Final Aliquot: 200 ml

Result Units: pCi/l

File Name: abb0909b

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
12587-46-1	GROSS ALPHA	216 +/- 35	1	229	94.4	70 - 130	P
12587-47-2	GROSS BETA	230 +/- 37	4	213	108	70 - 130	P

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS Recovery within control limits.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: ABW0409037-1

Gross Alpha/Beta Analysis by GFPC

PAI 724 Rev 8

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID:

Lab ID: AB040907-5LCSD

Sample Matrix: WATER

Prep SOP: PAI 702 Rev 16

Date Collected: 07-Sep-04

Date Prepared: 07-Sep-04

Date Analyzed: 09-Sep-04

Prep Batch: AB040907-5

QCBatchID: AB040907-5-1

Run ID: ab040907-5b

Count Time: 300 minutes

Final Aliquot: 200 ml

Prep Basis: Unfiltered

Moisture(%): NA

Result Units: pCi/l

File Name: abb0909b

CASNO	Analyte	Sample Result +/- 2 s TPU	Duplicate Result +/- 2 s TPU	DER	Control Limit	Lab Qualifiers
12587-46-1	GROSS ALPHA	217 +/- 35	216 +/- 35	0.02	2.13	P
12587-47-2	GROSS BETA	227 +/- 37	230 +/- 37	0.06	2.13	P

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

LT - Result is less than Request MDC, greater than sample specific MDC

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

DER - Duplicate Error Ratio

BDL - Below Detection Limit

NR - Not Reported

Data Package ID: ABW0409037-1

Gross Alpha/Beta Analysis by GFPC

PAI 724 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0409037
Client Name: Hall Environmental Analysis Laboratory
ClientProject ID: R-34

Field ID: R-34 Water
Lab ID: 0409037-1

Sample Matrix: WATER
Prep SOP: PAI 702 Rev 16
Date Collected: 01-Sep-04
Date Prepared: 07-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: AB040907-5
QCBatchID: AB040907-5-1
Run ID: ab040907-5b
Count Time: 300 minutes
Report Basis: Unfiltered

Final Aliquot: 200 ml
Prep Basis: Unfiltered
Moisture(%): NA
Result Units: pCi/l
File Name: abb0909b

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	0.76 +/- 0.52	0.87	U
12587-47-2	GROSS BETA	4.2 +/- 1.2	1.9	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)
BDL - Below Detection Limit

Data Package ID: ABW0409037-1



Paragon Analytics

Radiochemistry Case Narrative

Isotopic Plutonium

Hall Environmental Analysis Laboratory

R-34

PA WO 0409037

1. This report consists of the analytical results for one soil sample received by Paragon on 09/03/04.
2. This sample was prepared according to Paragon Analytics procedures PA SOP721R11, PA SOP773R8, and PA SOP778R9.
3. The sample was analyzed for the presence of isotopic plutonium according to Paragon Analytics procedure PA SOP714R9. The analyses were completed on 09/09/04.
4. The isotopic analysis results for this sample are reported on a dry weight basis in units of pCi/gram.
5. In order to meet client data quality objectives, a duplicate laboratory control sample (LCSD) was prepared and analyzed with this sample.
6. No anomalous situations were encountered during the preparation or analysis of this sample. All 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 certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Sharon Muller
Sharon Muller
Radiochemistry Instrumentation
John Reda
Radiochemistry Final Data Review

9/10/04
Date

9/13/04
Date

Isotopic Plutonium By Alpha Spectroscopy

PAI 714 Rev 9

Method Blank Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Lab ID: AS040907-5MB

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 07-Sep-04
Date Prepared: 07-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: AS040907-5
QCBatchID: AS040907-5-1
Run ID: AS040907-5A
Count Time: 300 minutes

Final Aliquot: 2.00 g
Result Units: pCi/g
File Name: P9075B

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13981-16-3	Pu-238	0 +/- 0.013	0.010	U
15117-48-3	Pu-239	0 +/- 0.013	0.010	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Pu-242	2.252	1.46	pCi/g	64.6	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Data Package ID: PU0409037-1

Isotopic Plutonium By Alpha Spectroscopy

PAI 714 Rev 9

Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Lab ID: AS040907-5LCS

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 07-Sep-04
Date Prepared: 07-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: AS040907-5
QCBatchID: AS040907-5-1
Run ID: AS040907-5A
Count Time: 300 minutes

Final Aliquot: 2.00 g
Result Units: pCi/g
File Name: P9075L

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
15117-48-3	Pu-239	2.17 +/- 0.41	0.01	2.25	96.3	82 - 118	P

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Pu-242	2.252	1.44	pCi/g	63.8	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
LT - Result is less than Requested MDC, greater than sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS Recovery within control limits.
M - The requested MDC was not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: PU0409037-1

Isotopic Plutonium By Alpha Spectroscopy

PAI 714 Rev 9

Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client/Project ID: R-34

Lab ID: AS040907-5LCSD

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 07-Sep-04
Date Prepared: 07-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: AS040907-5
QCBatchID: AS040907-5-1
Run ID: AS040907-5A
Count Time: 300 minutes

Final Aliquot: 2.00 g
Result Units: pCi/g
File Name: P9075LD

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
15117-48-3	Pu-239	2.17 +/- 0.40	0.03	2.25	96.5	82 - 118	P

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Pu-242	2.252	1.48	pCi/g	65.8	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
LT - Result is less than Requested MDC, greater than sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS Recovery within control limits.
M - The requested MDC was not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: PU0409037-1

Isotopic Plutonium By Alpha Spectroscopy

PAI 714 Rev 9

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID: R-34 Cuttings
Lab ID: 0409037-2DUP

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 01-Sep-04
Date Prepared: 07-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: AS040907-5
QCBatchID: AS040907-5-1
Run ID: AS040907-5A
Count Time: 300 minutes

Final Aliquot: 2.01 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: P90372D

CASNO	Analyte	Sample Result +/- 2 s TPU	Duplicate Result +/- 2 s TPU	DER	Control Limit	Lab Qualifiers
13981-16-3	Pu-238	-0.001 +/- 0.012	0.006 +/- 0.012	0.39	2.13	U
15117-48-3	Pu-239	-0.001 +/- 0.012	-0.001 +/- 0.012	0.00	2.13	U

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13
LT - Result is less than Request MDC, greater than sample specific MDC
M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
DER - Duplicate Error Ratio
BDL - Below Detection Limit
NR - Not Reported

Data Package ID: PU0409037-1

Isotopic Plutonium By Alpha Spectroscopy

PAI 714 Rev 9

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID:

Lab ID: AS040907-5LCSD

Sample Matrix: SOIL

Prep SOP: PAI 778 Rev 9

Date Collected: 07-Sep-04

Date Prepared: 07-Sep-04

Date Analyzed: 09-Sep-04

Prep Batch: AS040907-5

QCBatchID: AS040907-5-1

Run ID: AS040907-5A

Count Time: 300 minutes

Final Aliquot: 2.00 g

Prep Basis: Dry Weight

Moisture(%): NA

Result Units: pCi/g

File Name: P9075LD

CASNO	Analyte	Sample Result +/- 2 s TPU	Duplicate Result +/- 2 s TPU	DER	Control Limit	Lab Qualifiers
15117-48-3	Pu-239	2.17 +/- 0.41	2.17 +/- 0.40	0.01	2.13	P

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13
LT - Result is less than Request MDC, greater than sample specific MDC
M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
DER - Duplicate Error Ratio
BDL - Below Detection Limit
NR - Not Reported

Data Package ID: PU0409037-1

Isotopic Plutonium By Alpha Spectroscopy

PAI 714 Rev 9
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0409037
Client Name: Hall Environmental Analysis Laboratory
Client Project ID: R-34

Field ID: R-34 Cuttings
Lab ID: 0409037-2

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 01-Sep-04
Date Prepared: 07-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: AS040907-5
QCBatchID: AS040907-5-1
Run ID: AS040907-5A
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 2.00 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: P90372

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13981-16-3	Pu-238	-0.001 +/- 0.012	0.018	U
15117-48-3	Pu-239	-0.001 +/- 0.012	0.018	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Pu-242	2.250	1.65	pCi/g	73.4	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)
BDL - Below Detection Limit

Data Package ID: PU0409037-1

Isotopic Plutonium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Duplicate Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client/Project ID: R-34

Field ID: R-34 Cuttings
Lab ID: 0409037-2DUP

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 01-Sep-04
Date Prepared: 07-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: AS040907-5
QCBatchID: AS040907-5-1
Run ID: AS040907-5A
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 2.01 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: P90372D

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
13981-16-3	Pu-238	0.006 +/- 0.012	0.018	U
15117-48-3	Pu-239	-0.001 +/- 0.012	0.018	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Pu-242	2.244	1.60	pCi/g	71.2	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.
M - The requested MDC was not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)
BDL - Below Detection Limit

Data Package ID: PU0409037-1



Paragon Analytics

Radiochemistry Case Narrative

Isotopic Americium

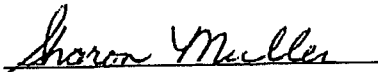
Hall Environmental Analysis Laboratory

R-34


PA WO 0409037

1. This report consists of the analytical results for one soil sample received by Paragon on 09/03/04.
2. This sample was prepared according to Paragon Analytics procedures PA SOP721R11, PA SOP773R8, PA SOP778R9, and PA SOP751R0.
3. The sample was analyzed for the presence of isotopic americium according to Paragon Analytics, Inc. procedure PA SOP714R9. The analyses were completed on 09/12/04.
4. The isotopic analysis results for this sample are reported on a dry weight basis in units of pCi/gram.
5. In order to meet client data quality objectives, a duplicate laboratory control sample (LCSD) was prepared and analyzed with this sample.
6. No anomalous situations were encountered during the preparation or analysis of this sample. All 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 certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.


Sharon Muller
Radiochemistry Instrumentation

9/13/04
Date


Radiochemistry Final Data Review

9/13/04
Date

000001

PARAGON ANALYTICS

Isotopic Americium By Alpha Spectroscopy

PAI 714 Rev 9

Method Blank Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Lab ID: AS040907-5MB

Sample Matrix: SOIL

Prep SOP: PAI 778 Rev 9

Date Collected: 07-Sep-04

Date Prepared: 07-Sep-04

Date Analyzed: 12-Sep-04

Prep Batch: AS040907-5

QCBatchID: AS040907-5-1

Run ID: AS040907-5C

Count Time: 300 minutes

Final Aliquot: 2.00 g

Result Units: pCi/g

File Name: A9075B

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
14596-10-2	Am-241	0.009 +/- 0.016	0.012	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Am-243	2.287	1.19	pCi/g	51.8	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Data Package ID: AM0409037-1

Isotopic Americium By Alpha Spectroscopy

PAI 714 Rev 9

Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client Project ID: R-34

Lab ID: AS040907-5LCS

Sample Matrix: SOIL

Prep SOP: PAI 778 Rev 9

Date Collected: 07-Sep-04

Date Prepared: 07-Sep-04

Date Analyzed: 12-Sep-04

Prep Batch: AS040907-5

QC Batch ID: AS040907-5-1

Run ID: AS040907-5C

Count Time: 300 minutes

Final Aliquot: 2.00 g

Result Units: pCi/g

File Name: A9075L

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
14596-10-2	Am-241	2.08 +/- 0.40	0.02	2.23	93.0	79 - 118	P

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Am-243	2.287	1.33	pCi/g	58.3	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS Recovery within control limits.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: AM0409037-1

Date Printed: Monday, September 13, 2004

Paragon Analytics

LIMS Version: 5.060A

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Isotopic Americium By Alpha Spectroscopy

PAI 714 Rev 9

Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client/Project ID: R-34

Lab ID: AS040907-5LCSD

Sample Matrix: SOIL

Prep SOP: PAI 778 Rev 9

Date Collected: 07-Sep-04

Date Prepared: 07-Sep-04

Date Analyzed: 12-Sep-04

Prep Batch: AS040907-5

QCBatchID: AS040907-5-1

Run ID: AS040907-5C

Count Time: 300 minutes

Final Aliquot: 2.00 g

Result Units: pCi/g

File Name: A9075LD

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
14598-10-2	Am-241	2.26 +/- 0.42	0.01	2.23	101	79 - 118	P

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Am-243	2.287	1.48	pCi/g	64.6	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS Recovery within control limits.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

Data Package ID: AM0409037-1

Isotopic Americium By Alpha Spectroscopy

PAI 714 Rev 9

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID: R-34 Cuttings

Lab ID: 0409037-2DUP

Sample Matrix: SOIL

Prep SOP: PAI 778 Rev 9

Date Collected: 01-Sep-04

Date Prepared: 07-Sep-04

Date Analyzed: 12-Sep-04

Prep Batch: AS040907-5

QC Batch ID: AS040907-5-1

Run ID: AS040907-5C

Count Time: 300 minutes

Final Aliquot: 2.01 g

Prep Basis: Dry Weight

Moisture(%): NA

Result Units: pCi/g

File Name: A90372D

CASNO	Analyte	Sample Result +/- 2 s TPU	Duplicate Result +/- 2 s TPU	DER	Control Limit	Lab Qualifiers
14596-10-2	Am-241	0.008 +/- 0.014	0.007 +/- 0.012	0.05	2.13	U

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13
LT - Result is less than Request MDC, greater than sample specific MDC
M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
DER - Duplicate Error Ratio
BDL - Below Detection Limit
NR - Not Reported

Data Package ID: AM0409037-1

Isotopic Americium By Alpha Spectroscopy

PAI 714 Rev 9

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID:

Lab ID: AS040907-5LCSD

Sample Matrix: SOIL

Prep SOP: PAI 778 Rev 9

Date Collected: 07-Sep-04

Date Prepared: 07-Sep-04

Date Analyzed: 12-Sep-04

Prep Batch: AS040907-5

QCBatchID: AS040907-5-1

Run ID: AS040907-5C

Count Time: 300 minutes

Final Allquot: 2.00 g

Prep Basis: Dry Weight

Moisture(%): NA

Result Units: pCi/g

File Name: A9075LD

CASNO	Analyte	Sample Result +/- 2 s TPU	Duplicate Result +/- 2 s TPU	DER	Control Limit	Lab Qualifiers
14596-10-2	Am-241	2.08 +/- 0.40	2.26 +/- 0.42	0.32	2.13	P

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

LT - Result is less than Request MDC, greater than sample specific MDC

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

DER - Duplicate Error Ratio

BDL - Below Detection Limit

NR - Not Reported

Data Package ID: AM0409037-1

Isotopic Americium By Alpha Spectroscopy

PAI 714 Rev 9
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0409037
Client Name: Hall Environmental Analysis Laboratory
Client Project ID: R-34

Field ID: R-34 Cuttings	Sample Matrix: SOIL	Prep Batch: AS040907-5	Final Aliquot: 2.00 g
Lab ID: 0409037-2	Prep SOP: PAI 778 Rev 9	QCBatchID: AS040907-5-1	Prep Basis: Dry Weight
	Date Collected: 01-Sep-04	Run ID: AS040907-5C	Moisture(%): NA
	Date Prepared: 07-Sep-04	Count Time: 300 minutes	Result Units: pCi/g
	Date Analyzed: 12-Sep-04	Report Basis: Dry Weight	File Name: A90372

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
14596-10-2	Am-241	0.008 +/- 0.014	0.010	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Am-243	2.284	1.51	pCi/g	65.9	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)
BDL - Below Detection Limit

Data Package ID: AM0409037-1

Isotopic Americium By Alpha Spectroscopy

PAI 714 Rev 9

Sample Duplicate Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client Project ID: R-34

Field ID: R-34 Cuttings
Lab ID: 0409037-2DUP

Sample Matrix: SOIL
Prep SOP: PAI 778 Rev 9
Date Collected: 01-Sep-04
Date Prepared: 07-Sep-04
Date Analyzed: 12-Sep-04

Prep Batch: AS040907-5
QCBatchID: AS040907-5-1
Run ID: AS040907-5C
Count Time: 300 minutes
Report Basis: Dry Weight

Final Aliquot: 2.01 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: A90372D

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
14596-10-2	Am-241	0.007 +/- 0.012	0.009	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Am-243	2.279	1.63	pCi/g	71.5	30 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: AM0409037-1



Paragon Analytics

Explosives by HPLC Case Narrative

Hall Environmental Analysis Laboratory

R-34

Order Number - 0409037

1. This report consists of 1 water sample and 1 soil sample. The samples were received cool and intact by Paragon on 09/03/2004.
2. These samples were extracted and analyzed according to SW-846, 3rd Edition procedures. Specifically, the samples were extracted according to Paragon Analytics Standard Operating Procedure 665 Revision 5 based on Method 8330.
3. Extracts from aqueous samples are prepared for analysis by mixing with reagent grade water (1 part water to 1 part extract). Our reporting limits for water samples, as well as all results for water samples are based on the final volume of the extract/reagent water mixture (typically 3mL) and not on the original volume of extract (typically 1.5mL).

The water and the soil extracts were then analyzed using HPLC with a UV detector (254nm) and a C₁₈ column according to Paragon Analytics Standard Operating Procedure 404 Revision 11 based on SW-846 Method 8330. All positive results were then confirmed on an ether-linked phenyl phase column. Quantitations were reported from the primary column. The results reported are based upon regression equations calculated from a six point initial calibration.

4. Calibration is verified when all compounds are within 15%D or when the average of the %D for all compounds is within 15%. If any individual compounds exceeded 15%, the compound(s) are listed by calibration verification below:
 - Continuing calibration 09/08/04-1CCV – 2,4,6-TNT were out high on the ether-linked phenyl phase column.
 - Continuing calibration 09/08/04-2CCV – 2,4,6-TNT were out high on the ether-linked phenyl phase column.
5. The method blanks associated with this project were below the MDL for all analytes.

6. All laboratory control spike and laboratory control spike duplicate recoveries and RPDs were within the acceptance criteria.
7. Matrix spikes and matrix spike duplicates were not designated for this sample delivery group. A laboratory control spike and laboratory control spike duplicate were performed instead.
8. All samples were extracted and analyzed within the established holding times.
9. All surrogate recoveries were within acceptance criteria.
10. Manual integrations are performed when needed to provide consistent and defensible data following the guidelines in Paragon Analytics Standard Operating Procedure 939 Revision 1.

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

B. Pirasteh
Bahman Pirasteh
HPLC Analyst

9.14.04
Date

mm
Reviewer's Initials

9.14.04
Date

000002

Paragon Analytics, Inc.
Data Qualifier Flags
Chromatography and Mass Spectrometry

- U or ND:** This flag indicates that the compound was analyzed for but not detected.
- J:** This flag indicates an estimated value. This flag is used as follows : (1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; (2) when the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the reporting limit (RL) but greater than the method detection limit (MDL); (3) when the retention time data indicate the presence of a compound that meets the GC identification criteria, and the result is less than the RL but greater than the MDL; and (4) the reported value is estimated.
- B:** This flag is used when the analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user. This flag shall be used for a tentatively identified compound (TIC) as well as for a positively identified target compound.
- E:** This flag identifies compounds whose concentration exceeds the upper level of the calibration range.
- A:** This flag indicates that a tentatively identified compound is a suspected aldol-condensation product.
- X:** This flag indicates that the analyte was diluted below an accurate quantitation level.
- *:** This flag indicates that a spike recovery is equal to or outside the control criteria used.
- ±:** This flag indicates that the relative percent difference (RPD) equals or exceeds the control criteria.

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Paragon Analytics

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client Project Name: R-34

Client Project Number:

Client PO Number:

Client Sample	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
R-34 Water	0409037-1		WATER	01-Sep-04	16:00
R-34 Cuttings	0409037-2		SOIL	01-Sep-04	16:00

HPLC Explosives

Method SW8330

Method Blank

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client/Project ID: R-34

Lab ID: EX040907-3MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/07/2004

Date Analyzed: 09/08/2004

Prep Batch: EX040907-3

QC Batch ID: EX040907-3-1

Run ID: HP040908-4

Cleanup: NONE

Basis: N/A

Sample Aliquot: 350 ml

Final Volume: 3 ml

Result Units: UG/L

Clean DF: 1

File Name: 4H006788

CASNO	Target Analyte	DF	Result	Reporting Limit	Result Qualifier	EPA Qualifier
2691-41-0	HMX	1	0.25	0.25	U	
121-82-4	RDX	1	0.25	0.25	U	
99-35-4	1,3,5-TRINITROBENZENE	1	0.25	0.25	U	
99-65-0	1,3-DINITROBENZENE	1	0.1	0.1	U	
479-45-8	TETRYL	1	0.5	0.5	U	
98-95-3	NITROBENZENE	1	0.25	0.25	U	
118-96-7	2,4,6-TRINITROTOLUENE	1	0.1	0.1	U	
19406-51-0	4-AMINO-2,6-DNT	1	0.1	0.1	U	
35572-78-2	2-AMINO-4,6-DNT	1	0.1	0.1	U	
606-20-2	2,6-DINITROTOLUENE	1	0.25	0.25	U	
121-14-2	2,4-DINITROTOLUENE	1	0.1	0.1	U	
88-72-2	2-NITROTOLUENE	1	0.25	0.25	U	
99-99-0	4-NITROTOLUENE	1	0.25	0.25	U	
99-08-1	3-NITROTOLUENE	1	0.25	0.25	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	1.91		2.14	89	52 - 123

Data Package ID: HP0409037-1

Date Printed: Tuesday, September 14, 2004

Paragon Analytics

LIMS Version: 5.060A

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HPLC Explosives

Method SW8330

Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID: R-34 Water

Lab ID: 0409037-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 01-Sep-04

Date Extracted: 07-Sep-04

Date Analyzed: 08-Sep-04

Prep Method: METHOD

Prep Batch: EX040907-3

QCBatchID: EX040907-3-1

Run ID: HP040908-4

Cleanup: NONE

Basis: As Received

Sample Aliquot: 350 ml

Final Volume: 3 ml

Result Units: UG/L

Clean DF: 1

File Name: 4H006786

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
2691-41-0	HMX	1	0.25	0.25	U	
121-82-4	RDX	1	0.25	0.25	U	
99-35-4	1,3,5-TRINITROBENZENE	1	0.25	0.25	U	
99-65-0	1,3-DINITROBENZENE	1	0.1	0.1	U	
479-45-8	TETRYL	1	0.5	0.5	U	
98-95-3	NITROBENZENE	1	0.25	0.25	U	
118-96-7	2,4,6-TRINITROTOLUENE	1	0.1	0.1	U	
19406-51-0	4-AMINO-2,6-DNT	1	0.1	0.1	U	
35572-78-2	2-AMINO-4,6-DNT	1	0.1	0.1	U	
606-20-2	2,6-DINITROTOLUENE	1	0.25	0.25	U	
121-14-2	2,4-DINITROTOLUENE	1	0.1	0.1	U	
88-72-2	2-NITROTOLUENE	1	0.25	0.25	U	
99-99-0	4-NITROTOLUENE	1	0.25	0.25	U	
99-08-1	3-NITROTOLUENE	1	0.25	0.25	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	1.97		2.14	92	52 - 123

Data Package ID: HP0409037-1

000006

HPLC Explosives

Method SW8330

Method Blank

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client Project ID: R-34

Lab ID: EX040907-11MB

Sample Matrix: SOIL

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/07/2004

Date Analyzed: 09/08/2004

Prep Batch: EX040907-11

QC Batch ID: EX040907-11-1

Run ID: HP040908-4

Cleanup: NONE

Basis: N/A

Sample Aliquot: 2 g

Final Volume: 20 ml

Result Units: mg/kg

Clean DF: 1

File Name: 4H006791

CASNO	Target Analyte	DF	Result	Reporting Limit	Result Qualifier	EPA Qualifier
2691-41-0	HMX	1	0.25	0.25	U	
121-82-4	RDX	1	0.25	0.25	U	
99-35-4	1,3,5-TRINITROBENZENE	1	0.25	0.25	U	
99-65-0	1,3-DINITROBENZENE	1	0.25	0.25	U	
479-45-8	TETRYL	1	0.25	0.25	U	
98-95-3	NITROBENZENE	1	0.25	0.25	U	
118-96-7	2,4,6-TRINITROTOLUENE	1	0.25	0.25	U	
19406-51-0	4-AMINO-2,6-DNT	1	0.25	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	1	0.25	0.25	U	
606-20-2	2,6-DINITROTOLUENE	1	0.25	0.25	U	
121-14-2	2,4-DINITROTOLUENE	1	0.25	0.25	U	
88-72-2	2-NITROTOLUENE	1	0.25	0.25	U	
99-99-0	4-NITROTOLUENE	1	0.25	0.25	U	
99-08-1	3-NITROTOLUENE	1	0.25	0.25	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	2.33		2.5	93	49 - 147

Data Package ID: HP0409037-2

Date Printed: Tuesday, September 14, 2004

Paragon Analytics

LIMS Version: 5.060A

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HPLC Explosives

Method SW8330

Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID: R-34 Cullings

Lab ID: 0409037-2

Sample Matrix: SOIL

% Moisture: 9.1

Date Collected: 01-Sep-04

Date Extracted: 07-Sep-04

Date Analyzed: 08-Sep-04

Prep Method: METHOD

Prep Batch: EX040907-11

QCBatchID: EX040907-11-1

Run ID: HP040908-4

Cleanup: NONE

Basis: Dry Weight

Sample Aliquot: 2.01 g

Final Volume: 20 ml

Result Units: mg/kg

Clean DF: 1

File Name: 4H006787

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
2691-41-0	HMX	1	0.25	0.25	U	
121-82-4	RDX	1	0.25	0.25	U	
99-35-4	1,3,5-TRINITROBENZENE	1	0.25	0.25	U	
99-65-0	1,3-DINITROBENZENE	1	0.25	0.25	U	
479-45-8	TETRYL	1	0.25	0.25	U	
98-95-3	NITROBENZENE	1	0.25	0.25	U	
118-96-7	2,4,6-TRINITROTOLUENE	1	0.25	0.25	U	
19406-51-0	4-AMINO-2,6-DNT	1	0.25	0.25	U	
35572-78-2	2-AMINO-4,6-DNT	1	0.25	0.25	U	
606-20-2	2,6-DINITROTOLUENE	1	0.25	0.25	U	
121-14-2	2,4-DINITROTOLUENE	1	0.25	0.25	U	
88-72-2	2-NITROTOLUENE	1	0.25	0.25	U	
99-99-0	4-NITROTOLUENE	1	0.25	0.25	U	
99-08-1	3-NITROTOLUENE	1	0.25	0.25	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
100-25-4	1,4-DINITROBENZENE	2.37		2.49	95	49 - 147

Data Package ID: HP0409037-2

Date Printed: Tuesday, September 14, 2004

Paragon Analytics
LIMS Version: 5.060A

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HPLC Explosives

Method SW8330

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client Project ID: R-34

Lab ID: EX040907-3LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/07/2004

Date Analyzed: 09/08/2004

Prep Batch: EX040907-3

QCBatchID: EX040907-3-1

Run ID: HP040908-4

Cleanup: NONE

Basis: N/A

Sample Aliquot: 350 ml

Final Volume: 3 ml

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
2691-41-0	HMX	4.29	4.67	0.25		109	55 - 125%
121-82-4	RDX	4.29	4.4	0.25		103	47 - 122%
99-35-4	1,3,5-TRINITROBENZENE	4.29	3.97	0.25		93	51 - 116%
99-65-0	1,3-DINITROBENZENE	4.29	4.41	0.1		103	55 - 113%
479-45-8	TETRYL	4.29	3.07	0.5		72	19 - 120%
98-95-3	NITROBENZENE	4.29	4.1	0.25		96	51 - 103%
118-96-7	2,4,6-TRINITROTOLUENE	4.29	4.41	0.1		103	51 - 113%
19406-51-0	4-AMINO-2,6-DNT	4.29	4.96	0.1		116	54 - 133%
35572-78-2	2-AMINO-4,6-DNT	4.29	4.63	0.1		108	56 - 122%
606-20-2	2,6-DINITROTOLUENE	4.29	4.55	0.25		106	47 - 123%
121-14-2	2,4-DINITROTOLUENE	4.29	4.51	0.1		105	56 - 113%
88-72-2	2-NITROTOLUENE	4.29	4.39	0.25		102	54 - 115%
99-99-0	4-NITROTOLUENE	4.29	4.39	0.25		102	53 - 109%
99-08-1	3-NITROTOLUENE	4.29	4.4	0.25		103	57 - 116%

Data Package ID: HP0409037-1

Date Printed: Tuesday, September 14, 2004

Paragon Analytics

LIMS Version: 5.060A

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HPLC Explosives

Method SW8330

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client Project ID: R-34

Lab ID: EX040907-3LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/07/2004

Date Analyzed: 09/08/2004

Prep Batch: EX040907-3

QCBatchID: EX040907-3-1

Run ID: HP040908-4

Cleanup: NONE

Basis: N/A

Sample Aliquot: 350 ml

Final Volume: 3 ml

Result Units: UG/L

Clean DF: 1

Lab ID: EX040907-3LCSD

CASNO	Target Analyte	Spike Added	LCSD Result	Reporting Limit	LCSD % Rec.	Result Qualifier	RPD	RPD Limits
2691-41-0	HMX	4.29	4.67	0.25	109		0	30
121-82-4	RDX	4.29	4.55	0.25	106		3	30
99-35-4	1,3,5-TRINITROBENZENE	4.29	3.74	0.25	87		6	30
99-65-0	1,3-DINITROBENZENE	4.29	4.26	0.1	99		4	30
479-45-8	TETRYL	4.29	2.91	0.5	68		5	30
98-95-3	NITROBENZENE	4.29	3.85	0.25	90		6	30
118-96-7	2,4,6-TRINITROTOLUENE	4.29	4.17	0.1	97		6	30
19406-51-0	4-AMINO-2,6-DNT	4.29	4.74	0.1	111		5	30
35572-78-2	2-AMINO-4,6-DNT	4.29	4.44	0.1	104		4	30
606-20-2	2,6-DINITROTOLUENE	4.29	4.24	0.25	99		7	30
121-14-2	2,4-DINITROTOLUENE	4.29	4.27	0.1	100		5	30
88-72-2	2-NITROTOLUENE	4.29	4.18	0.25	97		5	30
99-99-0	4-NITROTOLUENE	4.29	4.23	0.25	99		4	30
99-08-1	3-NITROTOLUENE	4.29	4.25	0.25	99		3	30

Surrogate Recovery LCS/LCSD

CASNO	Target Analyte	Spike Added	LCS % Rec.	LCS Flag	LCSD % Rec.	LCSD Flag	Control Limits
100-25-4	1,4-DINITROBENZENE	2.14	88		86		52 - 123

Data Package ID: HP0409037-1

Date Printed: Tuesday, September 14, 2004

Paragon Analytics

LIMS Version: 5.060A

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HPLC Explosives

Method SW8330

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client/Project ID: R-34

Lab ID: EX040907-11LCS

Sample Matrix: SOIL

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/07/2004

Date Analyzed: 09/08/2004

Prep Batch: EX040907-11

QCBatchID: EX040907-11-1

Run ID: HP040908-4

Cleanup: NONE

Basis: N/A

Sample Aliquot: 2 g

Final Volume: 20 ml

Result Units: mg/kg

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
2691-41-0	HMX	5	4.88	0.25		98	84 - 124%
121-82-4	RDX	5	4.77	0.25		95	82 - 116%
99-35-4	1,3,5-TRINITROBENZENE	5	4.39	0.25		88	81 - 127%
99-65-0	1,3-DINITROBENZENE	5	4.63	0.25		93	79 - 124%
479-45-8	TETRYL	5	3.57	0.25		71	36 - 158%
98-95-3	NITROBENZENE	5	4.5	0.25		90	77 - 127%
118-96-7	2,4,6-TRINITROTOLUENE	5	4.6	0.25		92	61 - 136%
19406-51-0	4-AMINO-2,6-DNT	5	5.19	0.25		104	79 - 129%
35572-78-2	2-AMINO-4,6-DNT	5	4.75	0.25		95	78 - 124%
606-20-2	2,6-DINITROTOLUENE	5	4.82	0.25		96	81 - 117%
121-14-2	2,4-DINITROTOLUENE	5	4.82	0.25		96	75 - 129%
88-72-2	2-NITROTOLUENE	5	4.67	0.25		93	78 - 123%
99-99-0	4-NITROTOLUENE	5	4.64	0.25		93	72 - 126%
99-08-1	3-NITROTOLUENE	5	4.59	0.25		92	81 - 125%

Data Package ID: HP0409037-2

Date Printed: Tuesday, September 14, 2004

Paragon Analytics

LIMS Version: 5.060A

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HPLC Explosives

Method SW8330

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client/Project ID: R-34

Lab ID: EX040907-11LCS

Sample Matrix: SOIL

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/07/2004

Date Analyzed: 09/08/2004

Prep Batch: EX040907-11

QCBatchID: EX040907-11-1

Run ID: HP040908-4

Cleanup: NONE

Basis: N/A

Sample Aliquot: 2 g

Final Volume: 20 ml

Result Units: mg/kg

Clean DF: 1

Lab ID: EX040907-11LCSD

CASNO	Target Analyte	Spike Added	LCSD Result	Reporting Limit	LCSD % Rec.	Result Qualifier	RPD	RPD Limits
2691-41-0	HMX	5	4.87	0.25	97		0	30
121-82-4	RDX	5	4.76	0.25	95		0	30
99-35-4	1,3,5-TRINITROBENZENE	5	4.28	0.25	86		2	30
99-65-0	1,3-DINITROBENZENE	5	4.67	0.25	93		1	30
479-45-8	TETRYL	5	3.65	0.25	73		2	30
98-95-3	NITROBENZENE	5	4.52	0.25	90		0	30
118-96-7	2,4,6-TRINITROTOLUENE	5	4.57	0.25	91		1	30
19406-51-0	4-AMINO-2,6-DNT	5	5.02	0.25	100		3	30
35572-78-2	2-AMINO-4,6-DNT	5	4.59	0.25	92		3	30
606-20-2	2,6-DINITROTOLUENE	5	4.61	0.25	92		4	30
121-14-2	2,4-DINITROTOLUENE	5	4.65	0.25	93		4	30
88-72-2	2-NITROTOLUENE	5	4.65	0.25	93		0	30
99-99-0	4-NITROTOLUENE	5	4.69	0.25	94		1	30
99-08-1	3-NITROTOLUENE	5	4.77	0.25	95		4	30

Surrogate Recovery LCS/LCSD

CASNO	Target Analyte	Spike Added	LCS % Rec.	LCS Flag	LCSD % Rec.	LCSD Flag	Control Limits
100-25-4	1,4-DINITROBENZENE	2.5	92		94		49 - 147

Data Package ID: HP0409037-2

Date Printed: Tuesday, September 14, 2004

Paragon Analytics

LIMS Version: 5.060A

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Percent Moisture

Method SOP642

Lab Name: Paragon Analytics

Date Extracted: 09/04/2004

Date Analyzed: 09/04/2004

Analyst: Crystal Halverson

Validated By: ckh

Validation Date: 09/14/2004

Validation Time: 2:26:12 PM

Run ID	Prep Batch ID	QC Batch ID	Lab ID	QC Type	Dish Wt	Wet Wt	Dry Wt	Dry Wt-Dish Wt	Percent Moisture	Percent Solids	RPD
ex040903-11a	ex040903-11	ex040903-11-1	0409037-2	DUP	1.265	16.3	16.20	14.94	8.3	91.7	9
ex040903-11a	ex040903-11	ex040903-11-1	0409037-2	SMP	1.27	13.18	13.25	11.98	9.1	90.9	
ex040903-11a	ex040903-11	ex040903-11-1	ex040903-11	MB	1.274	1.274	1.273	0.00	100.0	0.0	

QC Types

CAR	Carrier reference sample
LCS	Laboratory Control Sample
MB	Method Blank
MSD	Laboratory Matrix Spike Duplicate
SMP	Field Sample

DUP	Laboratory Duplicate
LCSD	Laboratory Control Sample Duplicate
MS	Laboratory Matrix Spike
REP	Sample replicate
SYS	Sample Yield Spike

Comments:

DUP = Sample Duplicate

Wet Wt = Sample Wet Wt - Dish Wt

Dry Wt = Sample Dry Wt + Dish Wt

Dry Wt - Dish Wt = Sample Dry Wt - Dish Wt

All weight values shown above are expressed in grams.

000013



Paragon Analytics

Radiochemistry Case Narrative Gamma Spectroscopy

Hall Environmental Analysis Laboratory

R-34

Paragon Work Order 0409037

1. This report consists of analysis results for one soil sample received by Paragon Analytics on 9/3/04. The analysis results for this sample are reported on a 'dry weight' basis in units of pCi/gram.
2. This sample was prepared according to Paragon Analytics procedure PA SOP739R8.
3. The sample was analyzed for the presence of gamma emitting radionuclides according to Paragon Analytics procedure PA SOP713R8. The analyses were completed on 9/13/04.
4. Duplicate analysis results above the DER warning limit of 1.42 have been flagged as "W" for Warn. For gamma spectroscopic analysis, SOP 715R13 states that 75% of the nuclides must be within the 2-sigma control limit to meet DER requirements. Elevated DER values may be attributable to sample inhomogeneity.
5. Activity concentrations above the calculated MDC are reported in some instances where minimum nuclide identification criteria are not met. Such tentative identifications result when the software attempts to calculate net activity concentrations for analytes where either one or both of the following criteria are not satisfied: the 'diagnostic' peak for a nuclide must be identified above the critical level, or the minimum library peak abundance must be attained. Nuclides not meeting these requirements have been flagged with a "TT" qualifier.
6. Paragon Analytics has found there to be a significant low bias to Pb-214 and Bi-214 results when using a mixed nuclide gamma source for efficiency calibrations. The magnitude of this bias has been determined to be approximately 32% for Bi-214, and 23% for Pb-214. Therefore, any reported results for Pb-214 and Bi-214 are flagged with a "J" qualifier, indicating the activity values to be an estimated value. Results are reported without further qualification.
7. There are cases where the sample density is less than the associated calibration standard density. Cases that exceed the limit of +/- 15% of the density of the calibration standard are flagged with a 'G', denoting a significant density difference between the sample and calibration standard. Consequently, the results may be biased high for the flagged results in this workorder. If requested, Paragon Analytics will perform a transmission spike in order to estimate a magnitude of this bias. The results are reported without further qualification.
8. Paragon Analytics follows the convention outlined in ANSI N42.23 for reporting significant digits in the TPU and MDC results. ANSI N42.23 states that the TPU result should be rounded to two significant digits and that the MDC result should be rounded to the same decimal place as the TPU result. In practice, this could result in an MDC result with a


reported value of 0 for samples with significant activity, including the batch laboratory control sample.

9. As an additional quality assurance measure, a duplicate analysis of the laboratory control sample (LCS) was performed per client request. All LCS standards for gamma spectroscopic analysis are obtained through an independent supplier. Thus, an actual prepared LCS duplicate was not available and a duplicate count of the LCS was performed.
10. There are cases where the magnitude of negative activity is greater than the 2-sigma TPU. Under typical conditions, where background data is normally distributed and analyzed by paired observations, this event is likely to occur at least 2.5% of the time. Review of the data does not indicate a problem with the instrument or reporting systems and results are reported without further qualification.
11. No problems were encountered with either the client sample or the associated quality control samples. All 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 certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.


Radiochemistry Instrument Technician

9-21-04
Date


Radiochemistry Final Data Review

9/21/04
Date

000002

Gamma Spectroscopy Results

PAI 713 Rev 8

Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID: R-34 Cuttings
Lab ID: 0409037-2

Sample Matrix: SOIL
Prep SOP: PAI 739 Rev 8
Date Collected: 01-Sep-04
Date Prepared: 08-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: GS040908-4
QCBatchID: GS040908-4-1
Run ID: GS040908-4X
Count Time: 120 minutes
Report Basis: Dry Weight

Final Aliquot: 84.8 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: 041560D02A

Library: FANP

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
14331-83-0	Ac-228	0.68 +/- 0.20	0.37	G
14391-76-5	Ag-110m	0 +/- 0.044	0.079	U,G
14682-66-7	Al-26	0.012 +/- 0.049	0.090	U,G
14596-10-2	Am-241	0.03 +/- 0.28	0.48	U,G
13966-02-4	Be-7	0.07 +/- 0.33	0.58	U,G
14913-49-6	Bi-212	0.56 +/- 0.67	1.09	U,G
14733-03-0	Bi-214	0.53 +/- 0.16	0.21	G,J
13982-30-4	Ce-139	-0.012 +/- 0.027	0.049	U,G
14762-78-8	Ce-144	-0.01 +/- 0.18	0.31	U,G
14093-03-9	Co-56	-0.03 +/- 0.12	0.22	U,G
13981-50-5	Co-57	0.001 +/- 0.024	0.042	U,G
13981-38-9	Co-58	-0.016 +/- 0.046	0.086	U,G
10198-40-0	Co-60	0.023 +/- 0.056	0.097	U,G
14392-02-0	Cr-51	0.03 +/- 0.35	0.60	U,G
13967-70-9	Cs-134	-0.014 +/- 0.048	0.086	U,G

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)
BDL - Below Detection Limit

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide Identification and/or quantitation is tentative.

TI - Nuclide Identification is tentative.

R - Nuclide has exceeded 8 half-lives.

G - Sample density differs by more than 15% of LCS density.

Data Package ID: GSS0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0409037
Client Name: Hall Environmental Analysis Laboratory
ClientProject ID: R-34

Field ID: R-34 Cuttings
Lab ID: 0409037-2

Sample Matrix: SOIL
Prep SOP: PAI 739 Rev 8
Date Collected: 01-Sep-04
Date Prepared: 08-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: GS040908-4
QCBatchID: GS040908-4-1
Run ID: GS040908-4X
Count Time: 120 minutes
Report Basis: Dry Weight

Final Aliquot: 84.8 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: 041560D02A

Library: FANP

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
10045-97-3	Cs-137	-0.040 +/- 0.045	0.087	U,G
14683-23-9	Eu-152	0.02 +/- 0.26	0.47	U,G
15585-10-1	Eu-154	-0.25 +/- 0.29	0.57	U,G
14391-16-3	Eu-155	-0.02 +/- 0.10	0.18	U,G
14596-12-4	Fe-59	0.04 +/- 0.10	0.18	U,G
10043-66-0	I-131	-0.010 +/- 0.082	0.145	U,G
13966-00-2	K-40	19.3 +/- 2.9	1.2	G
13966-31-9	Mn-54	-0.036 +/- 0.047	0.090	U,G
13966-32-0	Na-22	-0.018 +/- 0.055	0.104	U,G
14681-63-1	Nb-94	0.029 +/- 0.052	0.087	U,G
13967-76-5	Nb-95	-0.028 +/- 0.052	0.097	U,G
15100-28-4	Pa-234m	5.1 +/- 9.2	15.5	U,G
15092-94-1	Pb-212	0.79 +/- 0.14	0.11	G
15067-28-4	Pb-214	0.62 +/- 0.13	0.18	G,J
13967-48-1	Ru-106	-0.08 +/- 0.41	0.74	U,G

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)
BDL - Below Detection Limit

SQ - Spectral quality prevents accurate quantitation.
SI - Nuclide Identification and/or quantitation is tentative.
TI - Nuclide Identification is tentative.
R - Nuclide has exceeded 8 half-lives.
G - Sample density differs by more than 15% of LCS density.

Data Package ID: GSS0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0409037
Client Name: Hall Environmental Analysis Laboratory
Client/Project ID: R-34

Field ID: R-34 Cuttings
Lab ID: 0409037-2

Sample Matrix: SOIL
Prep SOP: PAI 739 Rev 8
Date Collected: 01-Sep-04
Date Prepared: 08-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: GS040908-4
QCBatchID: GS040908-4-1
Run ID: GS040908-4X
Count Time: 120 minutes
Report Basis: Dry Weight

Final Aliquot: 84.8 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: 041560D02A

Library: FANP

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
14683-10-4	Sb-124	0.015 +/- 0.052	0.089	U,G
14234-35-6	Sb-125	-0.05 +/- 0.12	0.21	U,G
13967-63-0	Sc-46	0.032 +/- 0.049	0.082	U,G
15623-47-9	Th-227	0.02 +/- 0.20	0.34	U,G
15065-10-8	Th-234	0.84 +/- 0.91	1.47	U,G
14913-50-9	Tl-208	0.240 +/- 0.077	0.096	G
15117-96-1	U-235	0.15 +/- 0.20	0.33	U,G
13982-39-3	Zn-65	-0.20 +/- 0.14	0.27	U,G

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)
BDL - Below Detection Limit

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide Identification and/or quantitation is tentative.

T1 - Nuclide Identification is tentative.

R - Nuclide has exceeded 8 half-lives.

G - Sample density differs by more than 15% of LCS density.

Data Package ID: GSS0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8

Sample Duplicate Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID: R-34 Cuttings
Lab ID: 0409037-2DUP

Sample Matrix: SOIL
Prep SOP: PAI 739 Rev 8
Date Collected: 01-Sep-04
Date Prepared: 08-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: GS040908-4
QCBatchID: GS040908-4-1
Run ID: GS040908-4X
Count Time: 120 minutes
Report Basis: Dry Weight

Final Aliquot: 81.7 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: 041748D04A

Library: FANP

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
14331-83-0	Ac-228	0.76 +/- 0.20	0.33	G
14391-76-5	Ag-110m	-0.036 +/- 0.048	0.091	U,G
14682-66-7	Al-26	-0.012 +/- 0.053	0.106	U,G
14596-10-2	Am-241	0 +/- 0.18	0.31	U,G
13966-02-4	Be-7	0.22 +/- 0.38	0.64	U,G
14913-49-6	Bi-212	0.67 +/- 0.72	1.15	U,G
14733-03-0	Bi-214	0.47 +/- 0.16	0.25	G,J
13982-30-4	Ce-139	0.015 +/- 0.026	0.043	U,G
14762-78-8	Ce-144	-0.06 +/- 0.17	0.31	U,G
14093-03-9	Co-56	0.14 +/- 0.13	0.20	U,G
13981-50-5	Co-57	-0.012 +/- 0.022	0.040	U,G
13981-38-9	Co-58	-0.008 +/- 0.053	0.096	U,G
10198-40-0	Co-60	0.034 +/- 0.056	0.095	U,G

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 half-lives.

G - Sample density differs by more than 15% of LCS density.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: GSS0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8

Sample Duplicate Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID: R-34 Cuttings
Lab ID: 0409037-2DUP

Sample Matrix: SOIL
Prep SOP: PAI 739 Rev 8
Date Collected: 01-Sep-04
Date Prepared: 08-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: GS040908-4
QCBatchID: GS040908-4-1
Run ID: GS040908-4X
Count Time: 120 minutes
Report Basis: Dry Weight

Final Aliquot: 81.7 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: 041748D04A

Library: FANP

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
14392-02-0	Cr-51	0.03 +/- 0.33	0.58	U,G
13967-70-9	Cs-134	-0.02 +/- 0.38	0.63	U,G
10045-97-3	Cs-137	-0.020 +/- 0.052	0.095	U,G
14683-23-9	Eu-152	0.26 +/- 0.27	0.42	U,G
15585-10-1	Eu-154	-0.09 +/- 0.27	0.50	U,G
14391-16-3	Eu-155	0.02 +/- 0.10	0.18	U,G
14596-12-4	Fe-59	-0.07 +/- 0.13	0.24	U,G
10043-66-0	I-131	-0.078 +/- 0.078	0.146	U,G
13966-00-2	K-40	20.2 +/- 3.1	1.3	G
13966-31-9	Mn-54	-0.016 +/- 0.052	0.095	U,G
13966-32-0	Na-22	-0.075 +/- 0.066	0.132	U,G
14681-63-1	Nb-94	0.018 +/- 0.048	0.082	U,G
13967-76-5	Nb-95	-0.043 +/- 0.059	0.110	U,G

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.
M - The requested MDC was not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13

SQ - Spectral quality prevents accurate quantitation.
SI - Nuclide identification and/or quantitation is tentative.
TI - Nuclide identification is tentative.
R - Nuclide has exceeded 8 half-lives.
G - Sample density differs by more than 15% of LCS density.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)
BDL - Below Detection Limit

Data Package ID: GSS0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8

Sample Duplicate Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID: R-34 Cuttings	Sample Matrix: SOIL	Prep Batch: GS040908-4	Final Aliquot: 81.7 g
Lab ID: 0409037-2DUP	Prep SOP: PAI 739 Rev 8	QCBatchID: GS040908-4-1	Prep Basis: Dry Weight
	Date Collected: 01-Sep-04	Run ID: GS040908-4X	Moisture(%): NA
	Date Prepared: 08-Sep-04	Count Time: 120 minutes	Result Units: pCi/g
Library: FANP	Date Analyzed: 09-Sep-04	Report Basis: Dry Weight	File Name: 041748D04A

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
15100-28-4	Pa-234m	3.8 +/- 9.1	15.6	U,G
15092-94-1	Pb-212	0.68 +/- 0.13	0.11	G
15067-28-4	Pb-214	0.47 +/- 0.12	0.17	G,J
13967-48-1	Ru-106	-0.41 +/- 0.47	0.89	U,G
14683-10-4	Sb-124	0.012 +/- 0.057	0.098	U,G
14234-35-6	Sb-125	0.02 +/- 0.11	0.19	U,G
13967-63-0	Sc-46	0.032 +/- 0.056	0.094	U,G
15623-47-9	Th-227	0.21 +/- 0.21	0.34	U,G
15065-10-8	Th-234	0.49 +/- 0.79	1.31	U,G
14913-50-9	Tl-208	0.212 +/- 0.074	0.096	G
15117-96-1	U-235	0.07 +/- 0.17	0.29	U,G
13982-39-3	Zn-65	0.20 +/- 0.21	0.34	U,W,G

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide Identification and/or quantitation is tentative.

TI - Nuclide Identification is tentative.

R - Nuclide has exceeded 8 half-lives.

G - Sample density differs by more than 15% of LCS density.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: GSS0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8

Method Blank Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Lab ID: GS040908-4MB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 8

Date Collected: 08-Sep-04

Date Prepared: 08-Sep-04

Date Analyzed: 09-Sep-04

Prep Batch: GS040908-4

QCBatchID: GS040908-4-1

Run ID: GS040908-4X

Count Time: 120 minutes

Final Aliquot: 100 g

Result Units: pCi/g

File Name: 041568D07A

Library: FANP

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
14331-83-0	Ac-228	0 +/- 0.21	0.38	U
14391-76-5	Ag-110m	-0.006 +/- 0.042	0.077	U
14682-66-7	Al-26	-0.002 +/- 0.057	0.113	U
14596-10-2	Am-241	0.020 +/- 0.043	0.073	U
13966-02-4	Ba-7	-0.15 +/- 0.31	0.58	U
14913-49-6	Bi-212	-0.43 +/- 0.63	1.23	U
14733-03-0	Bi-214	0.06 +/- 0.11	0.19	U,J
13982-30-4	Ce-139	0.009 +/- 0.021	0.036	U
14762-78-8	Ce-144	0.02 +/- 0.14	0.24	U
14093-03-9	Co-56	0 +/- 0.081	0.152	U
13981-50-5	Co-57	-0.002 +/- 0.017	0.030	U
13981-38-9	Co-58	-0.022 +/- 0.043	0.084	U
10198-40-0	Co-60	-0.048 +/- 0.043	0.099	U
14392-02-0	Cr-51	-0.25 +/- 0.27	0.51	U
13967-70-9	Cs-134	-0.028 +/- 0.047	0.088	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 half-lives.

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: GSS0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8
Method Blank Results

Lab Name: Paragon Analytics
Work Order Number: 0409037
Client Name: Hall Environmental Analysis Laboratory
ClientProject ID: R-34

Lab ID: GS040908-4MB

Sample Matrix: SOIL
Prep SOP: PAI 739 Rev 8
Date Collected: 08-Sep-04
Date Prepared: 08-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: GS040908-4
QCBatchID: GS040908-4-1
Run ID: GS040908-4X
Count Time: 120 minutes

Final Aliquot: 100 g
Result Units: pCi/g
File Name: 041568D07A

Library: FANP

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
10045-97-3	Cs-137	0.004 +/- 0.040	0.073	U
14683-23-9	Eu-152	0.07 +/- 0.22	0.40	U
15585-10-1	Eu-154	-0.04 +/- 0.22	0.43	U
14391-16-3	Eu-155	-0.045 +/- 0.066	0.121	U
14596-12-4	Fe-59	-0.01 +/- 0.10	0.19	U
10043-66-0	I-131	-0.025 +/- 0.037	0.069	U
13966-00-2	K-40	-0.22 +/- 0.71	1.35	U
13966-31-9	Mn-54	-0.002 +/- 0.046	0.085	U
13966-32-0	Na-22	-0.032 +/- 0.051	0.106	U
14681-63-1	Nb-94	0.007 +/- 0.049	0.086	U
13967-76-5	Nb-95	-0.016 +/- 0.039	0.075	U
15100-28-4	Pa-234m	0.6 +/- 7.3	13.5	U
15092-94-1	Pb-212	0.107 +/- 0.059	0.085	TI
15067-28-4	Pb-214	0.018 +/- 0.096	0.165	U,J
13967-48-1	Ru-106	-0.35 +/- 0.43	0.83	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.
SQ - Spectral quality prevents accurate quantitation.
SI - Nuclide identification and/or quantitation is tentative.
TI - Nuclide identification is tentative.
R - Nuclide has exceeded 5 half-lives.
M - Requested MDC not met.
B - Analyte concentration greater than MDC.
B3 - Analyte concentration greater than MDC but less than Requested MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)
BDL - Below Detection Limit

Data Package ID: GSS0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8

Method Blank Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Lab ID: GS040908-4MB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 8

Date Collected: 08-Sep-04

Date Prepared: 08-Sep-04

Date Analyzed: 09-Sep-04

Prep Batch: GS040908-4

QCBatchID: GS040908-4-1

Run ID: GS040908-4X

Count Time: 120 minutes

Final Aliquot: 100 g

Result Units: pCi/g

File Name: 041568D07A

Library: FANP

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
14683-10-4	Sb-124	0.002 +/- 0.047	0.083	U
14234-35-6	Sb-125	-0.005 +/- 0.088	0.161	U
13967-63-0	Sc-46	-0.016 +/- 0.046	0.088	U
15623-47-9	Th-227	-0.24 +/- 0.20	0.38	U
15065-10-8	Th-234	-0.15 +/- 0.37	0.65	U
14913-50-9	Ti-208	0.012 +/- 0.052	0.090	U
15117-96-1	U-235	0.06 +/- 0.17	0.28	U
13982-39-3	Zn-65	0 +/- 0.12	0.22	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide Identification and/or quantitation is tentative.

TI - Nuclide Identification is tentative.

R - Nuclide has exceeded 8 half-lives.

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: GSS0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8

Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Lab ID: GS040908-4LCS	Sample Matrix: SOIL Prep SOP: PAI 739 Rev 8 Date Collected: 08-Sep-04 Date Prepared: 08-Sep-04 Date Analyzed: 09-Sep-04	Prep Batch: GS040908-4 QCBatchID: GS040908-4-1 Run ID: GS040908-4X Count Time: 30 minutes	Final Aliquot: 100 g Result Units: pCi/g File Name: 041569D07A
Library: ANALYTICAL			

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
14596-10-2	Am-241	970 +/- 110	0	976	99.4	85 - 115	P
10198-40-0	Co-60	478 +/- 56	1	480	99.6	85 - 115	P
10045-97-3	Cs-137	403 +/- 47	2	399	101	85 - 115	P,M3

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS Recovery within control limits.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide Identification and/or quantitation is tentative.

TI - Nuclide Identification is tentative.

R - Nuclide has exceeded 8 half-lives.

Data Package ID: GSS0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8

Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Lab ID: GS040908-4LCSD

Sample Matrix: SOIL

Prep Batch: GS040908-4

Final Aliquot: 100 g

Prep SOP: PAI 739 Rev 8

QCBatchID: GS040908-4-1

Result Units: pCi/g

Date Collected: 08-Sep-04

Run ID: GS040908-4X

File Name: 041572D02A

Date Prepared: 08-Sep-04

Count Time: 30 minutes

Date Analyzed: 13-Sep-04

Library: ANALYTICAL

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
14596-10-2	Am-241	940 +/- 110	10	976	96.2	85 - 115	P
10198-40-0	Co-60	465 +/- 54	1	479	97.1	85 - 115	P
10045-97-3	Cs-137	408 +/- 48	2	399	102	85 - 115	P,M3

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS Recovery within control limits.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide Identification and/or quantitation is tentative.

TI - Nuclide Identification is tentative.

R - Nuclide has exceeded 8 half-lives.

Data Package ID: GSS0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client/Project ID: R-34

Field ID: R-34 Cuttings
Lab ID: 0409037-2DUP

Sample Matrix: SOIL
Prep SOP: PAI 739 Rev 8
Date Collected: 01-Sep-04
Date Prepared: 08-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: GS040908-4
QCBatchID: GS040908-4-1
Run ID: GS040908-4X
Count Time: 120 minutes

Final Aliquot: 81.7 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: 041748D04A

Library: FANP

CASNO	Analyte	Sample Result +/- 2s TPU	Duplicate Result +/- 2s TPU	DER	Control Limit	Lab Qualifiers
14331-83-0	Ac-228	0.68 +/- 0.20	0.76 +/- 0.20	0.29	2.13	G
14391-76-5	Ag-110m	0 +/- 0.044	-0.036 +/- 0.048	0.55	2.13	U,G
14682-68-7	Al-26	0.012 +/- 0.049	-0.012 +/- 0.053	0.34	2.13	U,G
14596-10-2	Am-241	0.03 +/- 0.28	0 +/- 0.18	0.10	2.13	U,G
13968-02-4	Be-7	0.07 +/- 0.33	0.22 +/- 0.38	0.31	2.13	U,G
14913-49-6	Bi-212	0.56 +/- 0.67	0.67 +/- 0.72	0.12	2.13	U,G
14733-03-0	Bi-214	0.53 +/- 0.16	0.47 +/- 0.16	0.28	2.13	G,J
13982-30-4	Ce-139	-0.012 +/- 0.027	0.015 +/- 0.028	0.72	2.13	U,G
14762-78-8	Ce-144	-0.01 +/- 0.18	-0.06 +/- 0.17	0.20	2.13	U,G
14093-03-9	Co-56	-0.03 +/- 0.12	0.14 +/- 0.13	0.93	2.13	U,G
13981-50-5	Co-57	0.001 +/- 0.024	-0.012 +/- 0.022	0.38	2.13	U,G
13981-38-9	Co-58	-0.016 +/- 0.048	-0.008 +/- 0.053	0.11	2.13	U,G
10198-40-0	Co-60	0.023 +/- 0.056	0.034 +/- 0.056	0.14	2.13	U,G
14392-02-0	Cr-51	0.03 +/- 0.35	0.03 +/- 0.33	0.00	2.13	U,G
13967-70-9	Cs-134	-0.014 +/- 0.048	-0.02 +/- 0.38	0.01	2.13	U,G
10045-97-3	Cs-137	-0.040 +/- 0.045	-0.020 +/- 0.052	0.29	2.13	U,G
14683-23-9	Eu-152	0.02 +/- 0.26	0.26 +/- 0.27	0.65	2.13	U,G

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13
LT - Result is less than Request MDC, greater than sample specific MDC
M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
DER - Duplicate Error Ratio
BDL - Below Detection Limit
NR - Not Reported

SQ - Spectral quality prevents accurate quantitation.
SI - Nuclide Identification and/or quantitation is tentative.
TI - Nuclide Identification is tentative.
R - Nuclide has exceeded 8 half-lives.
G - Sample density differs by more than 15% of LCS density.

Data Package ID: GSS0409037-1

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Gamma Spectroscopy Results

PAI 713 Rev 8

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client Project ID: R-34

Field ID: R-34 Cuttings
Lab ID: 0409037-2DUP

Sample Matrix: SOIL
Prep SOP: PAI 739 Rev 8
Date Collected: 01-Sep-04
Date Prepared: 08-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: GS040908-4
QCBatchID: GS040908-4-1
Run ID: GS040908-4X
Count Time: 120 minutes

Final Aliquot: 81.7 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: 041748D04A

Library: FANP

15585-10-1	Eu-154	-0.25 +/- 0.29	-0.09 +/- 0.27	0.42	2.13	U,G
14391-16-3	Eu-155	-0.02 +/- 0.10	0.02 +/- 0.10	0.28	2.13	U,G
14596-12-4	Fe-59	0.04 +/- 0.10	-0.07 +/- 0.13	0.72	2.13	U,G
10043-66-0	I-131	-0.010 +/- 0.082	-0.078 +/- 0.078	0.59	2.13	U,G
13966-00-2	K-40	19.3 +/- 2.9	20.2 +/- 3.1	0.22	2.13	G
13966-31-9	Mn-54	-0.036 +/- 0.047	-0.016 +/- 0.052	0.28	2.13	U,G
13966-32-0	Na-22	-0.018 +/- 0.055	-0.075 +/- 0.066	0.66	2.13	U,G
14681-63-1	Nb-94	0.029 +/- 0.052	0.018 +/- 0.048	0.16	2.13	U,G
13967-76-5	Nb-95	-0.028 +/- 0.052	-0.043 +/- 0.059	0.19	2.13	U,G
15100-28-4	Pa-234m	5.1 +/- 9.2	3.8 +/- 9.1	0.10	2.13	U,G
15092-94-1	Pb-212	0.79 +/- 0.14	0.68 +/- 0.13	0.57	2.13	G
15067-28-4	Pb-214	0.62 +/- 0.13	0.47 +/- 0.12	0.84	2.13	G,J
13967-48-1	Ru-106	-0.08 +/- 0.41	-0.41 +/- 0.47	0.52	2.13	U,G
14683-10-4	Sb-124	0.015 +/- 0.052	0.012 +/- 0.057	0.04	2.13	U,G
14234-35-6	Sb-125	-0.05 +/- 0.12	0.02 +/- 0.11	0.44	2.13	U,G
13967-63-0	Sc-46	0.032 +/- 0.049	0.032 +/- 0.056	0.00	2.13	U,G
15623-47-9	Th-227	0.02 +/- 0.20	0.21 +/- 0.21	0.66	2.13	U,G
15065-10-8	Th-234	0.84 +/- 0.91	0.49 +/- 0.79	0.29	2.13	U,G
14913-50-9	Tl-208	0.240 +/- 0.077	0.212 +/- 0.074	0.27	2.13	G

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13
LT - Result is less than Request MDC, greater than sample specific MDC
M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits

SQ - Spectral quality prevents accurate quantitation.
SI - Nuclide identification and/or quantitation is tentative.
TI - Nuclide identification is tentative.
R - Nuclide has exceeded 8 half-lives.
G - Sample density differs by more than 15% of LCS density.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
DER - Duplicate Error Ratio
BDL - Below Detection Limit
NR - Not Reported

Data Package ID: GSS0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client/Project ID: R-34

Field ID: R-34 Cuttings
Lab ID: 0409037-2DUP

Sample Matrix: SOIL
Prep SOP: PAI 739 Rev 8

Date Collected: 01-Sep-04

Date Prepared: 08-Sep-04

Date Analyzed: 09-Sep-04

Prep Batch: GS040908-4

QCBatchID: GS040908-4-1

Run ID: GS040908-4X

Count Time: 120 minutes

Final Allquot: 81.7 g

Prep Basis: Dry Weight

Moisture(%): NA

Result Units: pCi/g

File Name: 041748D04A

Library: FANP

15117-96-1	U-235	0.15 +/- 0.20	0.07 +/- 0.17	0.32	2.13	U,G
13982-39-3	Zn-65	-0.20 +/- 0.14	0.20 +/- 0.21	1.60	2.13	U,W,G

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

LT - Result is less than Request MDC, greater than sample specific MDC

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

DER - Duplicate Error Ratio

BDL - Below Detection Limit

NR - Not Reported

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 half-lives.

G - Sample density differs by more than 15% of LCS density.

Data Package ID: GSS0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID:
Lab ID: GS040908-4LCSD

Sample Matrix: SOIL
Prep SOP: PAI 739 Rev 8
Date Collected: 08-Sep-04
Date Prepared: 08-Sep-04
Date Analyzed: 13-Sep-04

Prep Batch: GS040908-4
QCBatchID: GS040908-4-1
Run ID: GS040908-4X
Count Time: 30 minutes

Final Aliquot: 100 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: 041572D02A

Library: ANALYTICAL

CASNO	Analyte	Sample Result +/- 2 s TPU	Duplicate Result +/- 2 s TPU	DER	Control Limit	Lab Qualifiers
14596-10-2	Am-241	970 +/- 110	940 +/- 110	0.20	2.13	P
10198-40-0	Co-60	478 +/- 56	465 +/- 54	0.16	2.13	P
10045-97-3	Cs-137	403 +/- 47	408 +/- 48	0.07	2.13	P,M3

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13
LT - Result is less than Request MDC, greater than sample specific MDC
M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
DER - Duplicate Error Ratio
BDL - Below Detection Limit
NR - Not Reported

SQ - Spectral quality prevents accurate quantitation.
SI - Nuclide identification and/or quantitation is tentative.
TI - Nuclide identification is tentative.
R - Nuclide has exceeded 8 half-lives.
G - Sample density differs by more than 15% of LCS density.

Data Package ID: GSS0409037-1

000017



Paragon Analytics

Radiochemistry Case Narrative Gamma Spectroscopy

Hall Environmental Analysis Laboratory

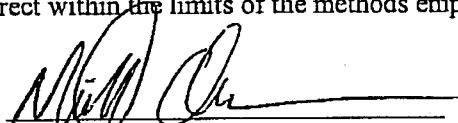
R-34

Paragon Work Order 0409037

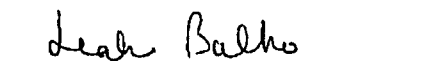
1. This report consists of analysis results for one water sample received by Paragon Analytics on 9/3/04. The analysis results for this sample are reported in units of pCi/L. The sample was not filtered prior to analysis.
2. This sample was prepared according to Paragon Analytics procedure PA SOP739R8.
3. The samples were analyzed for the presence of gamma emitting radionuclides according to Paragon Analytics procedure PA SOP713R8. The analyses were completed on 9/21/04.
4. Sample volumes were insufficient to allow preparation of a duplicate. A duplicate analysis of sample R-34 Water (PA ID 0409037-1) was performed in lieu of a prepared duplicate.
5. Duplicate analysis results above the DER warning limit of 1.42 have been flagged as "W" for Warn. For gamma spectroscopic analysis, SOP 715R13 states that 75% of the nuclides must be within the 2-sigma control limit to meet DER requirements. Elevated DER values may be attributable to sample inhomogeneity.
6. Activity concentrations above the calculated MDC are reported in some instances where minimum nuclide identification criteria are not met. Such tentative identifications result when the software attempts to calculate net activity concentrations for analytes where either one or both of the following criteria are not satisfied: the 'diagnostic' peak for a nuclide must be identified above the critical level, or the minimum library peak abundance must be attained. Nuclides not meeting these requirements have been flagged with a "TP" qualifier.
7. Paragon Analytics has found there to be a significant low bias to Pb-214 and Bi-214 results when using a mixed nuclide gamma source for efficiency calibrations. The magnitude of this bias has been determined to be approximately 32% for Bi-214, and 23% for Pb-214. Therefore, any reported results for Pb-214 and Bi-214 are flagged with a "J" qualifier, indicating the activity values to be an estimated value. Results are reported without further qualification.
8. Paragon Analytics follows the convention outlined in ANSI N42.23 for reporting significant digits in the TPU and MDC results. ANSI N42.23 states that the TPU result should be rounded to two significant digits and that the MDC result should be rounded to the same decimal place as the TPU result. In practice, this could result in an MDC result with a reported value of 0 for samples with significant activity, including the batch laboratory control sample.

9. As an additional quality assurance measure, a duplicate analysis of the laboratory control sample (LCS) was performed per client request. All LCS standards for gamma spectroscopic analysis are obtained through an independent supplier. Thus, an actual prepared LCS duplicate was not available and a duplicate count of the LCS was performed.
10. There are cases where the magnitude of negative activity is greater than the 2-sigma TPU. Under typical conditions, where background data is normally distributed and analyzed by paired observations, this event is likely to occur at least 2.5% of the time. Review of the data does not indicate a problem with the instrument or reporting systems and results are reported without further qualification.
11. No problems were encountered with either the client samples or the associated quality control samples. All 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 certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.


Radiochemistry Instrument Technician

9-22-04
Date


Radiochemistry Final Data Review

9/22/04
Date

000002

Gamma Spectroscopy Results

PAI 713 Rev 8
Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0409037
Client Name: Hall Environmental Analysis Laboratory
ClientProject ID: R-34

Field ID: R-34 Water
Lab ID: 0409037-1

Sample Matrix: WATER
Prep SOP: PAI 739 Rev 8
Date Collected: 01-Sep-04
Date Prepared: 08-Sep-04
Date Analyzed: 21-Sep-04

Prep Batch: GS040908-5
QCBatchID: GS040908-5-1
Run ID: GS040908-5A
Count Time: 400 minutes
Report Basis: Unfiltered

Final Aliquot: 960 ml
Prep Basis: Unfiltered
Moisture(%): NA
Result Units: pCi/l
File Name: 040399D09A

Library: FANP

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
14331-83-0	Ac-228	-2 +/- 24	41	U
14391-76-5	Ag-110m	0.7 +/- 4.1	7.0	U
14682-66-7	Al-26	1.1 +/- 5.4	9.3	U
14596-10-2	Am-241	51 +/- 92	152	U
13966-02-4	Be-7	5 +/- 40	69	U
14913-49-6	Bi-212	-8 +/- 63	109	U
14733-03-0	Bi-214	6 +/- 17	28	U,J
13982-30-4	Ce-139	1.2 +/- 4.0	6.7	U
14762-78-8	Ce-144	-17 +/- 25	43	U
14093-03-9	Co-56	2.5 +/- 9.6	16.4	U
13981-50-5	Co-57	-5.6 +/- 3.6	6.4	U
13981-38-9	Co-58	0.8 +/- 4.7	8.0	U
10198-40-0	Co-60	-1.7 +/- 4.7	8.5	U
14392-02-0	Cr-51	20 +/- 50	83	U
13967-70-9	Cs-134	-5.0 +/- 5.7	10.1	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)
BDL - Below Detection Limit

SQ - Spectral quality prevents accurate quantitation.
SI - Nuclide identification and/or quantitation is tentative.
TI - Nuclide identification is tentative.
R - Nuclide has exceeded 8 half-lives.
G - Sample density differs by more than 15% of LCS density.

Data Package ID: GSW0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8

Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client/Project ID: R-34

Field ID: R-34 Water
Lab ID: 0409037-1

Sample Matrix: WATER
Prep SOP: PAI 739 Rev 8
Date Collected: 01-Sep-04
Date Prepared: 08-Sep-04
Date Analyzed: 21-Sep-04

Prep Batch: GS040908-5
QCBatchID: GS040908-5-1
Run ID: GS040908-5A
Count Time: 400 minutes
Report Basis: Unfiltered

Final Aliquot: 960 ml
Prep Basis: Unfiltered
Moisture(%): NA
Result Units: pCi/l
File Name: 040399D09A

Library: FANP

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
10045-97-3	Cs-137	-0.8 +/- 4.3	7.4	U
14683-23-9	Eu-152	8 +/- 23	39	U
15585-10-1	Eu-154	-8 +/- 23	42	U
14391-16-3	Eu-155	-3 +/- 18	31	U
14596-12-4	Fe-59	4 +/- 11	19	U
10043-66-0	I-131	-11 +/- 21	37	U
13966-00-2	K-40	20 +/- 91	153	U
13966-31-9	Mn-54	-1.5 +/- 4.3	7.6	U
13966-32-0	Na-22	-0.8 +/- 4.4	7.9	U
14681-83-1	Nb-94	2.3 +/- 4.0	6.6	U
13967-76-5	Nb-95	0.4 +/- 4.8	8.3	U
15100-28-4	Pa-234m	220 +/- 700	1200	U
15092-94-1	Pb-212	3 +/- 10	17	U
15067-28-4	Pb-214	4.1 +/- 8.7	14.4	U,J
13967-48-1	Ru-106	-14 +/- 40	70	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)
BDL - Below Detection Limit

SQ - Spectral quality prevents accurate quantitation.
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TI - Nuclide Identification is tentative.
R - Nuclide has exceeded 8 half-lives.
G - Sample density differs by more than 15% of LCS density.

Data Package ID: GSW0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8

Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID: R-34 Water
Lab ID: 0409037-1

Sample Matrix: WATER
Prep SOP: PAI 739 Rev 8
Date Collected: 01-Sep-04
Date Prepared: 08-Sep-04
Date Analyzed: 21-Sep-04

Prep Batch: GS040908-5
QC Batch ID: GS040908-5-1
Run ID: GS040908-5A
Count Time: 400 minutes
Report Basis: Unfiltered

Final Aliquot: 960 ml
Prep Basis: Unfiltered
Moisture(%): NA
Result Units: pCi/l
File Name: 040399D09A

Library: FANP

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
14683-10-4	Sb-124	2.6 +/- 7.5	12.3	U
14234-35-6	Sb-125	-2 +/- 10	18	U
13967-63-0	Sc-46	0.5 +/- 4.7	8.0	U
15623-47-9	Th-227	-30 +/- 39	67	U
15065-10-8	Th-234	170 +/- 100	160	TI
14913-50-9	Tl-208	4.8 +/- 4.3	6.9	U
15117-96-1	U-235	13 +/- 23	38	U
13982-39-3	Zn-65	-1.0 +/- 9.7	17.0	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
M - The requested MDC was not met.

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide Identification and/or quantitation is tentative.

TI - Nuclide Identification is tentative.

R - Nuclide has exceeded 8 half-lives.

G - Sample density differs by more than 15% of LCS density.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: GSW0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8

Sample Duplicate Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID: R-34 Water
Lab ID: 0409037-1DUP

Sample Matrix: WATER
Prep SOP: PAI 739 Rev 8
Date Collected: 01-Sep-04
Date Prepared: 08-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: GS040908-5
QCBatchID: GS040908-5-1
Run ID: GS040908-5A
Count Time: 400 minutes
Report Basis: Unfiltered

Final Aliquot: 960 ml
Prep Basis: Unfiltered
Moisture(%): NA
Result Units: pCi/l
File Name: 041570D07A

Library: FANP

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
14331-83-0	Ac-228	-3 +/- 28	48	U
14391-76-5	Ag-110m	-0.5 +/- 4.1	7.2	U
14682-66-7	Al-26	1.8 +/- 5.7	10.0	U
14596-10-2	Am-241	3.4 +/- 3.8	6.2	U
13966-02-4	Be-7	9 +/- 34	58	U
14913-49-6	Bi-212	20 +/- 64	109	U
14733-03-0	Bi-214	9 +/- 14	23	U,J
13982-30-4	Ce-139	-0.7 +/- 2.6	4.5	U
14762-78-8	Ce-144	10 +/- 17	28	U
14093-03-9	Co-56	3.7 +/- 8.8	15.0	U
13981-50-5	Co-57	-1.8 +/- 2.2	3.8	U
13981-38-9	Co-58	-2.6 +/- 4.5	8.1	U
10198-40-0	Co-60	-1.3 +/- 5.5	9.9	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.
M - The requested MDC was not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13

SQ - Spectral quality prevents accurate quantitation.
SI - Nuclide Identification and/or quantitation is tentative.
TI - Nuclide Identification is tentative.
R - Nuclide has exceeded 8 half-lives.
G - Sample density differs by more than 15% of LCS density.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)
BDL - Below Detection Limit

Data Package ID: GSW0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8

Sample Duplicate Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client/Project ID: R-34

Field ID: R-34 Water
Lab ID: 0409037-1DUP

Sample Matrix: WATER
Prep SOP: PAI 739 Rev 8
Date Collected: 01-Sep-04
Date Prepared: 08-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: GS040908-5
QCBatchID: GS040908-5-1
Run ID: GS040908-5A
Count Time: 400 minutes
Report Basis: Unfiltered

Final Aliquot: 960 ml
Prep Basis: Unfiltered
Moisture(%): NA
Result Units: pCi/l
File Name: 041570D07A

Library: FANP

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
14392-02-0	Cr-51	-7 +/- 35	60	U
13967-70-9	Cs-134	-0.1 +/- 4.2	7.3	U
10045-97-3	Cs-137	2.7 +/- 4.7	7.8	U
14683-23-9	Eu-152	-34 +/- 26	51	U
15585-10-1	Eu-154	-16 +/- 26	48	U
14391-16-3	Eu-155	2.0 +/- 9.4	15.8	U
14596-12-4	Fe-59	0 +/- 11	20	U
10043-66-0	I-131	-2.2 +/- 7.9	13.6	U
13966-00-2	K-40	24 +/- 89	151	U
13966-31-9	Mn-54	1.9 +/- 4.3	7.3	U
13966-32-0	Na-22	-0.5 +/- 5.2	9.3	U
14681-63-1	Nb-94	-0.1 +/- 4.6	7.9	U
13967-76-5	Nb-95	1.0 +/- 4.8	8.1	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide Identification and/or quantitation is tentative.

TI - Nuclide Identification is tentative.

R - Nuclide has exceeded 8 half-lives.

G - Sample density differs by more than 15% of LCS density.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: GSW0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8

Sample Duplicate Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID: R-34 Water
Lab ID: 0409037-1DUP

Sample Matrix: WATER
Prep SOP: PAI 739 Rev 8
Date Collected: 01-Sep-04
Date Prepared: 08-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: GS040908-5
QCBatchID: GS040908-5-1
Run ID: GS040908-5A
Count Time: 400 minutes
Report Basis: Unfiltered

Final Aliquot: 960 ml
Prep Basis: Unfiltered
Moisture(%): NA
Result Units: pCi/l
File Name: 041570D07A

Library: FANP

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
15100-28-4	Pa-234m	520 +/- 790	1300	U
15092-94-1	Pb-212	-0.9 +/- 8.3	14.0	U
15067-28-4	Pb-214	-3 +/- 12	21	U,J
13967-48-1	Ru-106	-18 +/- 40	72	U
14683-10-4	Sb-124	-0.9 +/- 4.6	7.9	U
14234-35-6	Sb-125	6 +/- 10	17	U
13967-63-0	Sc-46	-5.9 +/- 4.8	9.1	U
15623-47-9	Th-227	2 +/- 20	33	U
15065-10-8	Th-234	-12 +/- 55	92	U,W
14913-50-9	Ti-208	-0.3 +/- 5.8	9.9	U
15117-96-1	U-235	4 +/- 23	39	U
13982-39-3	Zn-65	-1 +/- 11	19	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.
M - The requested MDC was not met.
M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13

SQ - Spectral quality prevents accurate quantitation.
SI - Nuclide identification and/or quantitation is tentative.
TI - Nuclide Identification is tentative.
R - Nuclide has exceeded 8 half-lives.
G - Sample density differs by more than 15% of LCS density.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)
BDL - Below Detection Limit

Data Package ID: GSW0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8

Method Blank Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client/Project ID: R-34

Lab ID: GS040908-5MB

Sample Matrix: WATER
Prep SOP: PAI 739 Rev 8
Date Collected: 08-Sep-04
Date Prepared: 08-Sep-04
Date Analyzed: 08-Sep-04

Prep Batch: GS040908-5
QCBatchID: GS040908-5-1
Run ID: GS040908-5A
Count Time: 400 minutes

Final Aliquot: 1000 ml
Result Units: pCi/l
File Name: 041560D07A

Library: FANP

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
14331-83-0	Ac-228	-14 +/- 27	48	U
14391-76-5	Ag-110m	1.4 +/- 4.0	6.8	U
14682-66-7	Al-26	-0.5 +/- 5.2	9.6	U
14596-10-2	Am-241	1.7 +/- 5.0	8.4	U
13966-02-4	Be-7	0 +/- 30	51	U
14913-49-6	Bi-212	4 +/- 58	100	U
14733-03-0	Bi-214	10 +/- 14	23	U,J
13982-30-4	Ce-139	-0.9 +/- 2.4	4.1	U
14762-78-8	Ce-144	-4 +/- 16	27	U
14093-03-9	Co-56	1.7 +/- 7.1	12.3	U
13981-50-5	Co-57	-1.5 +/- 2.0	3.5	U
13981-38-9	Co-58	1.4 +/- 3.9	6.7	U
10198-40-0	Co-60	0.2 +/- 4.9	8.7	U
14392-02-0	Cr-51	27 +/- 28	45	U
13967-70-9	Cs-134	0.8 +/- 5.4	9.1	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.
SQ - Spectral quality prevents accurate quantitation.
SI - Nuclide Identification and/or quantitation is tentative.
TI - Nuclide Identification is tentative.
R - Nuclide has exceeded 8 half-lives.
M - Requested MDC not met.
B - Analyte concentration greater than MDC.
B3 - Analyte concentration greater than MDC but less than Requested MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)
BDL - Below Detection Limit

Data Package ID: GSW0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8

Method Blank Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client/Project ID: R-34

Lab ID: GS040908-5MB

Sample Matrix: WATER

Prep SOP: PAI 739 Rev 8

Date Collected: 08-Sep-04

Date Prepared: 08-Sep-04

Date Analyzed: 08-Sep-04

Prep Batch: GS040908-5

QC Batch ID: GS040908-5-1

Run ID: GS040908-5A

Count Time: 400 minutes

Final Aliquot: 1000 ml

Result Units: pCi/l

File Name: 041560D07A

Library: FANP

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
10045-97-3	Cs-137	3.7 +/- 4.5	7.3	U
14683-23-9	Eu-152	14 +/- 25	42	U
15585-10-1	Eu-154	1 +/- 23	40	U
14391-16-3	Eu-155	-2.0 +/- 8.7	14.8	U
14596-12-4	Fe-59	4.3 +/- 9.4	15.9	U
10043-66-0	I-131	0.7 +/- 3.4	5.8	U
13966-00-2	K-40	4 +/- 84	144	U
13966-31-9	Mn-54	0.7 +/- 3.7	6.3	U
13966-32-0	Na-22	-1.6 +/- 5.0	9.1	U
14681-63-1	Nb-94	0.9 +/- 4.4	7.5	U
13967-76-5	Nb-95	-0.4 +/- 3.9	6.8	U
15100-28-4	Pa-234m	-30 +/- 700	1230	U
15092-94-1	Pb-212	-2.5 +/- 7.5	12.8	U
15067-28-4	Pb-214	-11 +/- 12	20	U,J
13967-48-1	Ru-106	34 +/- 39	63	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 half-lives.

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: GSW0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8

Method Blank Results

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client/Project ID: R-34

Lab ID: GS040908-SMB

Sample Matrix: WATER
Prep SOP: PAI 739 Rev 8

Prep Batch: GS040908-5
QC Batch ID: GS040908-5-1

Final Aliquot: 1000 ml
Result Units: pCi/l

Date Collected: 08-Sep-04

Run ID: GS040908-5A

File Name: 041560D07A

Date Prepared: 08-Sep-04

Count Time: 400 minutes

Date Analyzed: 08-Sep-04

Library: FANP

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
14683-10-4	Sb-124	2.5 +/- 3.7	6.2	U
14234-35-6	Sb-125	-1.2 +/- 9.0	15.6	U
13967-63-0	Sc-46	-0.3 +/- 4.2	7.4	U
15623-47-9	Th-227	25 +/- 18	29	U
15065-10-8	Th-234	-7 +/- 54	90	U
14913-50-9	Ti-208	3.6 +/- 5.8	9.6	U
15117-96-1	U-235	-9 +/- 22	37	U
13982-39-3	Zn-65	6.4 +/- 9.3	15.4	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 half-lives.

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: GSW0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8

Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Lab ID: GS040908-5LCS

Sample Matrix: WATER
Prep SOP: PAI 739 Rev 8
Date Collected: 08-Sep-04
Date Prepared: 08-Sep-04
Date Analyzed: 13-Sep-04

Prep Batch: GS040908-5
QCBatchID: GS040908-5-1
Run ID: GS040908-5A
Count Time: 30 minutes

Final Aliquot: 1000 ml
Result Units: pCi/l
File Name: 041586D07A

Library: ANALYTICAL

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
14596-10-2	Am-241	100000 +/- 12000	1000	98200	102	85 - 115	P
10198-40-0	Co-60	49000 +/- 5800	200	48200	102	85 - 115	P
10045-97-3	Cs-137	40200 +/- 4700	200	40100	100	85 - 115	P,M3

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU
LT - Result is less than Requested MDC, greater than sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS Recovery within control limits.
M - The requested MDC was not met.
M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

SQ - Spectral quality prevents accurate quantitation.
SI - Nuclide Identification and/or quantitation is tentative.
TI - Nuclide identification is tentative.
R - Nuclide has exceeded 8 half-lives.

Data Package ID: GSW0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8

Laboratory Control Sample(s)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Lab ID: GS040908-5LCSD

Sample Matrix: WATER
Prep SOP: PAI 739 Rev 8
Date Collected: 08-Sep-04
Date Prepared: 08-Sep-04
Date Analyzed: 13-Sep-04

Prep Batch: GS040908-5
QCBatchID: GS040908-5-1
Run ID: GS040908-5A
Count Time: 30 minutes

Final Aliquot: 1000 ml
Result Units: pCi/l
File Name: 041551D08A

Library: ANALYTICAL

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
14596-10-2	Am-241	94000 +/- 11000	0	98200	96.1	85 - 115	P
10198-40-0	Co-60	48600 +/- 5700	100	48200	101	85 - 115	P
10045-97-3	Cs-137	41200 +/- 4800	200	40100	103	85 - 115	P,M3

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU
LT - Result is less than Requested MDC, greater than sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS Recovery within control limits.
M - The requested MDC was not met.
M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

SQ - Spectral quality prevents accurate quantitation.
SI - Nuclide identification and/or quantitation is tentative.
TI - Nuclide identification is tentative.
R - Nuclide has exceeded 8 half-lives.

Data Package ID: GSW0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client/Project ID: R-34

Field ID: R-34 Water
Lab ID: 0409037-1DUP

Sample Matrix: WATER
Prep SOP: PAI 739 Rev 8
Date Collected: 01-Sep-04
Date Prepared: 08-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: GS040908-5
QCBatchID: GS040908-5-1
Run ID: GS040908-5A
Count Time: 400 minutes

Final Aliquot: 960 ml
Prep Basis: Unfiltered
Moisture(%): NA
Result Units: pCi/l
File Name: 041570D07A

Library: FANP

CASNO	Analyte	Sample Result +/- 2s TPU	Duplicate Result +/- 2s TPU	DER	Control Limit	Lab Qualifiers
14331-83-0	Ac-228	-2 +/- 24	-3 +/- 28	0.04	2.13	U
14391-76-5	Ag-110m	0.7 +/- 4.1	-0.5 +/- 4.1	0.20	2.13	U
14682-66-7	Al-26	1.1 +/- 5.4	1.8 +/- 5.7	0.10	2.13	U
14596-10-2	Am-241	51 +/- 92	3.4 +/- 3.8	0.52	2.13	U
13966-02-4	Ba-7	5 +/- 40	9 +/- 34	0.08	2.13	U
14913-49-6	Bi-212	-8 +/- 63	20 +/- 64	0.30	2.13	U
14733-03-0	Bi-214	6 +/- 17	9 +/- 14	0.14	2.13	U,J
13982-30-4	Ce-139	1.2 +/- 4.0	-0.7 +/- 2.6	0.39	2.13	U
14762-78-8	Ce-144	-17 +/- 25	10 +/- 17	0.90	2.13	U
14093-03-9	Co-56	2.5 +/- 9.6	3.7 +/- 8.8	0.09	2.13	U
13981-50-5	Co-57	-5.6 +/- 3.6	-1.8 +/- 2.2	0.88	2.13	U
13981-38-9	Co-58	0.8 +/- 4.7	-2.6 +/- 4.5	0.53	2.13	U
10198-40-0	Co-60	-1.7 +/- 4.7	-1.3 +/- 5.5	0.06	2.13	U
14392-02-0	Cr-51	20 +/- 50	-7 +/- 35	0.45	2.13	U
13967-70-9	Cs-134	-5.0 +/- 5.7	-0.1 +/- 4.2	0.70	2.13	U
10045-97-3	Cs-137	-0.8 +/- 4.3	2.7 +/- 4.7	0.56	2.13	U
14683-23-9	Eu-152	8 +/- 23	-34 +/- 26	1.21	2.13	U

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13
LT - Result is less than Request MDC, greater than sample specific MDC
M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
DER - Duplicate Error Ratio
BDL - Below Detection Limit
NR - Not Reported

SQ - Spectral quality prevents accurate quantitation.
SI - Nuclide identification and/or quantitation is tentative.
TI - Nuclide identification is tentative.
R - Nuclide has exceeded 8 half-lives.
G - Sample density differs by more than 15% of LCS density.

Data Package ID: GSW0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

Client/Project ID: R-34

Field ID: R-34 Water
Lab ID: 0409037-1DUP

Sample Matrix: WATER
Prep SOP: PAI 739 Rev 8
Date Collected: 01-Sep-04
Date Prepared: 08-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: GS040908-5
QCBatchID: GS040908-5-1
Run ID: GS040908-5A
Count Time: 400 minutes

Final Aliquot: 960 ml
Prep Basis: Unfiltered
Moisture(%): NA
Result Units: pCi/l
File Name: 041570D07A

Library: FANP

15585-10-1	Eu-154	-8 +/- 23	-16 +/- 26	0.23	2.13	U
14391-16-3	Eu-155	-3 +/- 18	2.0 +/- 9.4	0.23	2.13	U
14596-12-4	Fe-59	4 +/- 11	0 +/- 11	0.27	2.13	U
10043-66-0	I-131	-11 +/- 21	-2.2 +/- 7.9	0.38	2.13	U
13966-00-2	K-40	20 +/- 91	24 +/- 89	0.03	2.13	U
13966-31-9	Mn-54	-1.5 +/- 4.3	1.9 +/- 4.3	0.56	2.13	U
13966-32-0	Na-22	-0.8 +/- 4.4	-0.5 +/- 5.2	0.04	2.13	U
14681-63-1	Nb-94	2.3 +/- 4.0	-0.1 +/- 4.6	0.39	2.13	U
13967-76-5	Nb-95	0.4 +/- 4.8	1.0 +/- 4.8	0.10	2.13	U
15100-28-4	Pa-234m	220 +/- 700	520 +/- 790	0.28	2.13	U
15092-94-1	Pb-212	3 +/- 10	-0.9 +/- 8.3	0.26	2.13	U
15067-28-4	Pb-214	4.1 +/- 8.7	-3 +/- 12	0.51	2.13	U,J
13967-48-1	Ru-106	-14 +/- 40	-18 +/- 40	0.07	2.13	U
14683-10-4	Sb-124	2.6 +/- 7.5	-0.9 +/- 4.6	0.41	2.13	U
14234-35-6	Sb-125	-2 +/- 10	6 +/- 10	0.55	2.13	U
13967-63-0	Sc-46	0.5 +/- 4.7	-5.9 +/- 4.8	0.94	2.13	U
15623-47-9	Th-227	-30 +/- 39	2 +/- 20	0.74	2.13	U
15065-10-8	Th-234	170 +/- 100	-12 +/- 55	1.64	2.13	U,W
14913-50-9	Tl-208	4.8 +/- 4.3	-0.3 +/- 5.8	0.70	2.13	U

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13
LT - Result is less than Request MDC, greater than sample specific MDC
M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
DER - Duplicate Error Ratio
BDL - Below Detection Limit
NR - Not Reported

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide Identification and/or quantitation is tentative.

TI - Nuclide Identification is tentative.

R - Nuclide has exceeded 8 half-lives.

G - Sample density differs by more than 15% of LCS density.

Data Package ID: GSW0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID: R-34 Water
Lab ID: 0409037-1DUP

Sample Matrix: WATER
Prep SOP: PAI 739 Rev 8
Date Collected: 01-Sep-04
Date Prepared: 08-Sep-04
Date Analyzed: 09-Sep-04

Prep Batch: GS040908-5
QCBatchID: GS040908-5-1
Run ID: GS040908-5A
Count Time: 400 minutes

Final Aliquot: 960 ml
Prep Basis: Unfiltered
Moisture(%): NA
Result Units: pCi/l
File Name: 041570D07A

Library: FANP

15117-96-1	U-235	13 +/- 23	4 +/- 23	0.27	2.13	U
13982-39-3	Zn-65	-1.0 +/- 9.7	-1 +/- 11	0.02	2.13	U

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
D - DER is greater than Control Limit of 2.13
LT - Result is less than Request MDC, greater than sample specific MDC
M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
DER - Duplicate Error Ratio
BDL - Below Detection Limit
NR - Not Reported

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SI - Nuclide Identification and/or quantitation is tentative.
TI - Nuclide Identification is tentative.
R - Nuclide has exceeded 8 half-lives.
G - Sample density differs by more than 15% of LCS density.

Data Package ID: GSW0409037-1

Gamma Spectroscopy Results

PAI 713 Rev 8

Duplicate Sample Results (DER)

Lab Name: Paragon Analytics

Work Order Number: 0409037

Client Name: Hall Environmental Analysis Laboratory

ClientProject ID: R-34

Field ID:

Lab ID: GS040908-5LCSD

Sample Matrix: WATER

Prep SOP: PAI 739 Rev 8

Date Collected: 08-Sep-04

Date Prepared: 08-Sep-04

Date Analyzed: 13-Sep-04

Prep Batch: GS040908-5

QCBatchID: GS040908-5-1

Run ID: GS040908-5A

Count Time: 30 minutes

Final Aliquot: 1000 ml

Prep Basis: Unfiltered

Moisture(%): NA

Result Units: pCi/l

File Name: 041551D08A

Library: ANALYTICAL

CASNO	Analyte	Sample Result +/- 2s TPU	Duplicate Result +/- 2s TPU	DER	Control Limit	Lab Qualifiers
14596-10-2	Am-241	100000 +/- 12000	94000 +/- 11000	0.34	2.13	P
10198-40-0	Co-60	49000 +/- 5800	48600 +/- 5700	0.05	2.13	P
10045-97-3	Cs-137	40200 +/- 4700	41200 +/- 4800	0.14	2.13	P,M3

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

LT - Result is less than Request MDC, greater than sample specific MDC

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

DER - Duplicate Error Ratio

BDL - Below Detection Limit

NR - Not Reported

SO - Spectral quality prevents accurate quantitation.

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TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 half-lives.

G - Sample density differs by more than 15% of LCS density.

Data Package ID: GSW0409037-1