LS&G Idaho, Inc.
FORM EG&G-2631 (Rev.12-88)

Project File No. _____
EDF Serial No. 639
Functional File Number _____

ENGINEERING DESIGN FILE

Date 06-17-93

Project/Task RADIOACTIVE WASTE MANAGEMENT COMPLEX (RWMC)
Subtask SEWER SYSTEMS

Subject: Sample Analysis Results from Sampling of the RWMC Septic Systems for Construction Upgrades.

RWMC, during April and May, sampled the Septic Systems for the construction activities beginning this year. Construction will replace the existing systems with a sewage lagoon that replaces all the currently existing septic tanks and drain fields. Sampling results are attached with letters EMS-016-93 and SG-17-93.

DISTRIBUTION (COMPLETE PACKAGE): Project EDF File Log

DISTRIBUTION (COVER SHEET ONLY): PROJECT EDF FILE LOG, EDF SERIAL NO.LOG:
Lois Van Deusen, MS 4201; S. B. French, MS 4202; J. C. Kvamme, MS 4201

AUTHOR	DEPT.	REVIEWED	DATE	APPROVED	DATE
Monson	RWMC	J. B. Taylor	RWMC	J. C. Kvamme	6/17/93
K D Monson	6/17/93	J B Taylor	6/17/93		

EG&G Idaho

"Providing research and development services to the government"

INTEROFFICE CORRESPONDENCE

Date: June 10, 1993

To: S. B. French, MS 4202

From: S. Garcia, MS 4110 SG

Subject: CLOSURE REPORT FOR THE SAMPLING OF THE RWMC SEPTIC TANKS; EMS-016-93 - SG-17-93

Attached is the report in response to the request for sampling and analysis of the RWMC septic tanks.

On April 16, 1993, an Environmental Monitoring Sampling team collected samples of two septic tanks, both liquids and solids. The material was sent to Analytical Technologies, Inc., Fort Collins, Colorado under full chain of custody for the following analysis: Total RCRA metals, Total VOA, and Total Semi-VOA's.

Samples labeled 01604059301 (liquids) and 01604059302 (solids) are from tank WMF-617. Samples labeled 01604059303 (liquids) and 01604059304 (solids) are from tank WMF-604. A review of the analytical results indicates that none of the samples exhibit the characteristics of a hazardous waste as described in 40 CFR 261. All samples are non-ignitable at 96.5° C.

The Radiation Measurements Laboratory (RML) data is attached for your review.

All data meets minimum quality assurance/quality control requirements.

If there are any questions or if you have other sampling and analysis needs, please feel free to contact me at 6-2616.

cj

Attachments:
As Stated

cc: (w/o Attach)
. V. Street, MS 4110

(with Attach)
S. L. Barrie, MS 3920
Central Files, MS 1651
S. Garcia Project File

AnalyticalTechnologies, Inc. 225 Commerce Drive Fort Collins, Colorado 80524 (303) 490-1511

April 30, 1993

WMF-604

Mr. Jay Johnson
EG & G Idaho, Inc.
P.O. Box 1625, MS 4133
Idaho Falls, ID 83415

RE: ATI Workorder: 93-04-042
EG & G Project Name: RWMC Septic Tanks
EG & G Project Number: Not Submitted

Dear Mr. Johnson:

One aqueous sample and one solid sample were received from EG & G Idaho, Inc. April 8, 1993. The aqueous sample was scheduled for Ignitability, Volatile Organics, Semivolatile Organics, and Total Metals analysis. The solid sample was scheduled for Ignitability, TCLP Volatile Organics, and TCLP Semivolatile Organics analysis. The results for these analyses are contained in the following report.

Please note that the results for the solid sample are reported on an as received (wet weight) basis.

Thank you for your confidence in Analytical Technologies, Inc. Should you have any questions, please call.

Sincerely yours,

Steven Fry, Ph.D.
Director of Client Services

SF/kci

DATA EVALUATION COMPLETE
REFER TO 56-17-93
FOR REVIEW COMMENTS
DATE: 6-10-93

AnalyticalTechnologies, Inc.

QUALITY ASSURANCE
DATA REVIEW

Date: 4-16-93

ATI Workorder: 93-04-042 Analysis: ignitability

The data contained in the following report have been reviewed and approved by the appropriate supervisory personnel listed below:

Robert Jump
General Chemistry Supervisor

CERTIFICATION

Analytical Technologies, Inc. certifies that the analyses reported herein are true, complete, and correct within the limits of the methods employed.

AnalyticalTechnologies, Inc.

QUALITY ASSURANCE
DATA REVIEW

Date: 4/20/93

ATI Workorder: 93-04-042 Analysis: RCRA metals

The data contained in the following report have been reviewed and approved by the appropriate supervisory personnel listed below:

Tim Holland
Metals Supervisor

CERTIFICATION

Analytical Technologies, Inc. certifies that the analyses reported herein are true, complete, and correct within the limits of the methods employed.

Analytical Technologies, Inc.

QUALITY ASSURANCE
DATA REVIEW

Date: 4-29-93

ATI Workorder: 93-04-042 Analysis: 8270

The data contained in the following report have been reviewed and approved by the appropriate supervisory personnel listed below:

Alex Blanche
GC/MS Supervisor

CERTIFICATION

Analytical Technologies, Inc. certifies that the analyses reported herein are true, complete, and correct within the limits of the methods employed.

Analytical Technologies, Inc.

QUALITY ASSURANCE
DATA REVIEW

Date: 4-21-93

ATI Workorder: 93-04-42 Analysis: 8240/TCLP

The data contained in the following report have been reviewed and approved by the appropriate supervisory personnel listed below:

Alex Blanche
GC/MS Supervisor

CERTIFICATION

Analytical Technologies, Inc. certifies that the analyses reported herein are true, complete, and correct within the limits of the methods employed.

IGNITABILITY
Method 1010

Lab Name: Analytical Technologies, Inc.

Date Collected: 04/05/93

Client Name: EG & G Idaho, Inc.

Date Analyzed: 04/09/93

Client Project ID: RWMC Septic Tanks

Sample Matrix: Water (01) Solid (02)

Lab Workorder Number: 93-04-042

Sample ID	Lab Sample ID	Ignitable At (deg C)	Non-ignitable Below (deg C)
01604059303	93-04-042-01		96.5
01604059304	93-04-042-02		96.5

VOLATILE ORGANICS

Method 8240

Sample ID

Reagent Blank

Lab Name: Analytical Technologies, Inc.
Client Name: EG & G Idaho, Inc.
Client Project ID: RWMC Septic Tanks
Lab Sample ID: WRB1 04/14/93

Date Collected: N/A
Date Analyzed: 04/14/93

Sample Matrix: Water
Sample Volume: 5 mL

Analyte	Results (ug/L)	Detection Limit (ug/L)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
Tetrachloroethene	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Toluene	ND	5
Chlorobenzene	ND	5
Ethylbenzene	ND	5
Styrene	ND	5
Total Xylenes	ND	5

SURROGATE RECOVERIES

Analyte	% Recovery	%Rec Limits
1,2-Dichloroethane-d4	98	76 - 114
Toluene-d8	99	88 - 110
Bromofluorobenzene	100	86 - 115

VOLATILE ORGANICS

Method 8240

Sample ID

01604059303

Lab Name: Analytical Technologies, Inc.
Client Name: EG & G Idaho, Inc.
Client Project ID: RWMC Septic Tanks
Lab Sample ID: 93-04-042-01

Date Collected: 04/05/93
Date Analyzed: 04/14/93

Sample Matrix: Water
Sample Volume: 5 mL

Analyte	Results (ug/L)	Detection Limit (ug/L)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
Tetrachloroethene	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Toluene	192	5
Chlorobenzene	ND	5
Ethylbenzene	ND	5
Styrene	ND	5
Total Xylenes	ND	5

SURROGATE RECOVERIES

Analyte	% Recovery	%Rec Limits
1,2-Dichloroethane-d4	100	76 - 114
Toluene-d8	99	88 - 110
Bromofluorobenzene	100	86 - 115

ND = Not Detected

VOLATILE MATRIX SPIKE RECOVERY

Method 8240

Sample ID

In House

Lab Name: Analytical Technologies, Inc.
Client Name: EG & G Idaho, Inc.
Client Project ID: RWMC Septic Tanks
Lab Sample ID: 93-04-077-01

Date Collected: 04/13/93
Date Analyzed: 04/14/93

Sample Matrix: Water
Sample Volume: 5 mL

Analyte	Spike Added (ug/L)	Sample Concentration (ug/L)	MS Concentration (ug/L)	MS % Rec	QC Limit Recovery
1,1-Dichloroethene	50.0	ND	51.5	103	61-145
Trichloroethene	50.0	ND	47.3	95	71-120
Benzene	50.0	2 J	53.6	107	76-127
Toluene	50.0	ND	50.3	101	76-125
Chlorobenzene	50.0	ND	50.4	101	75-130

Analyte	Spike Added (ug/L)	MSD Concentration (ug/L)	MSD % Recovery	% RPD	QC Limits RPD	QC Limits Rec
1,1-Dichloroethene	50.0	49.3	99	4	14	61-145
Trichloroethene	50.0	44.4	89	6	14	71-120
Benzene	50.0	50.6	101	6	11	76-127
Toluene	50.0	46.3	93	8	13	76-125
Chlorobenzene	50.0	46.2	92	9	13	75-130

ND = Not Detected
J = Estimated value; analyte found below detection limit.

SEMIVOLATILE ORGANICS

Method 8270

Sample ID

Reagent Blank

Lab Name: Analytical Technologies Inc.
Client Name: EG & G Idaho, Inc.
Client Project: RWMC Septic Tanks
Lab Sample ID.: WRB1 04/09/93

Date Collected: N/A
Date Extracted: 04/09/93
Date Analyzed: 04/26/93

Sample Matrix: Water
Cleanup: None

Sample Volume: 1000 mL
Final Volume: 1 mL

Analyte	Results (ug/L)	Detection Limit (ug/L)
o-Cresol	ND	10
m-Cresol	ND	10
p-Cresol	ND	10
Total o,mo,p - Cresol	ND	30
1,4-Dichlorobenzene	ND	10
2,4-Dinitrotoluene	ND	10
Hexachlorobenzene	ND	10
Hexachlorobutadiene	ND	10
Hexachloroethane	ND	10
Nitrobenzene	ND	10
Pentachlorophenol	ND	50
Pyridine	ND	10
2,4,5-Trichlorophenol	ND	50
2,4,6-Trichlorophenol	ND	10

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
2-Fluorophenol	55	21-110
Phenol-d5	54	10-110
Nitrobenzene-d5	61	35-114
2-Fluorobiphenyl	62	43-116
2,4,6-Tribromophenol	43	10-123
Terphenyl-d14	63	33-141

ND = Not Detected

SEMIVOLATILE ORGANICS

Method 8270

Sample ID

01604059303

Lab Name: Analytical Technologies Inc.
Client Name: EG & G Idaho, Inc.
Client Project: RWMC Septic Tanks
Lab Sample ID.: 93-04-042-01

Date Collected: 04/05/93
Date Extracted: 04/09/93
Date Analyzed: 04/26,27/93

Sample Matrix: Water
Cleanup: None

Sample Volume: 780 mL
Final Volume: 1 mL

Analyte	Results (ug/L)	Detection Limit (ug/L)
o-Cresol	ND	10
m-Cresol	ND	10
p-Cresol	400 *	320 *
Total o,m ,p - Cresol	400 *	340 *
1,4-Dichlorobenzene	ND	10
2,4-Dinitrotoluene	ND	10
Hexachlorobenzene	ND	10
Hexachlorobutadiene	ND	10
Hexachloroethane	ND	10
Nitrobenzene	ND	10
Pentachlorophenol	ND	60
Pyridine	ND	10
2,4,5-Trichlorophenol	ND	60
2,4,6-Trichlorophenol	ND	10

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
2-Fluorophenol	57	21-110
Phenol-d5	63	10-110
Nitrobenzene-d5	63	35-114
2-Fluorobiphenyl	54	43-116
2,4,6-Tribromophenol	74	10-123
Terphenyl-d14	39	33-141

ND = Not Detected
* – Compound analyzed at a 1:25 dilution.

SEMIVOLATILE ORGANICS BLANK SPIKE/BLANK SPIKE DUPLICATE RESULTS

Method 8270

Sample ID
Blank Spike

Lab Name: Analytical Technologies, Inc.
Client Name: EG & G Idaho, Inc.
Client Project: RWMC Septic Tanks
Lab Sample ID: WBS1 04/09/93

Date Collected: N/A
Date Extracted: 04/09/93
Date Analyzed: 04/27/93

Sample Matrix: Water
Cleanup: None

Sample Volume: 1000 mL
Final Volume: 1 mL

Analyte	Spike Added (ug/L)	Sample Concentration (ug/L)	BS Concentration (ug/L)	BS % Rec	QC Limit Recovery
Phenol	75.0	N/A	34.0	45	12-110
2-Chlorophenol	75.0	N/A	41.5	55	27-123
1,4-Dichlorobenzene	50.0	N/A	24.7	49	36- 97
N-Nitroso-di-n-propylamine	50.0	N/A	22.2	44	41-116
1,2,4-Trichlorobenzene	50.0	N/A	26.9	54	39- 98
4-Chloro-3-methylphenol	75.0	N/A	41.0	55	23- 97
Acenaphthene	50.0	N/A	25.9	52	46-118
4-Nitrophenol	75.0	N/A	34.2	46	10- 80
2,4-Dinitrotoluene	50.0	N/A	25.4	51	24- 96
Pentachlorophenol	75.0	N/A	31.9	43	9-103
Pyrene	50.0	N/A	22.0	44	26-127

Analyte	Spike Added (ug/L)	BSD Concentration (ug/L)	BSD % REC #	% RPD	QC LIMITS RPD REC.
Phenol	75.0	37.2	50	9	42 | 12 - 110
2-Chlorophenol	75.0	46.4	62	11	40 | 27 - 123
1,4-Dichlorobenzene	50.0	26.7	53	8	28 | 36 - 97
N-Nitroso-di-n-propylamine	50.0	25.2	50	13	38 | 41-116
1,2,4-Trichlorobenzene	50.0	29.2	58	8	28 | 39 - 98
4-Chloro-3-methylphenol	75.0	44.7	60	9	42 | 23 - 97
Acenaphthene	50.0	28.4	57	9	31 | 46 - 118
4-Nitrophenol	75.0	38.2	51	11	50 | 10 - 80
2,4-Dinitrotoluene	50.0	28.7	57	12	38 | 24 - 96
Pentachlorophenol	75.0	30.8	41	4	50 | 9 - 103
Pyrene	50.0	24.2	48	10	31 | 26 - 127

N/A = Not Applicable

AnalyticalTechnologies, Inc. 225 Commerce Drive Fort Collins, Colorado 80524 (303) 490-1511

Split on Second Sample
Collected on 4/22/93

April 30, 1993

Rad Data

Ms. Laurie Peterson Wright
EG & G Idaho, Inc.
P.O. Box 1625, MS 4133
Idaho Falls, ID 83415

RE: ATI Workorder: 93-04-151
EG & G Project Name: Not Submitted
EG & G Project Number: EMS-016-93

Dear Ms. Wright:

Two solid samples were received from EG & G Idaho, Inc. on April 23, 1993. The samples were scheduled for Gamma Spec and Isotopic Uranium analysis. The results for these analyses are contained in the following report.

Thank you for your confidence in Analytical Technologies, Inc. Should you have any questions, please call.

Sincerely yours,

S Milligan for

Steven Fry, Ph.D.
Director of Client Services

SF/bc

Enclosures

EG&G ..., Inc.

FORM EG&G 885
(Rev 10 92)

CHAIN OF CUSTODY FORM

Facility: ENVIRONMENTAL MONITORING
MS. 4110

Sampler: (Signature) Karen M. Smith

Project Name: RWMC SEPTIC TANKS

Sample No. Field	Sample No. Lab	Sampling Date	Sampling Time	Comp.	Grab	Sampling Location	Aqueous	Solid	Other	No. of Containers	TOTAL METALS (RCRA)	IGNITABILITY	total VOA	total SVOA (TCLP list only)	TCLP VOA	TCLP SVOA						
01604059303	01	4/5/93	1600	X		WMF604	X			4	X	X	X	X								
01604059304	02	↓	1605	X		WMF604		X		3		X			X	X						

KMS 4/5/93

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Karen M. Smith	4/7/93 1000	Fed-ex	Fed-ex		Chris Miller 4-8-93 1015
Relinquished by: (Signature)	Date/Time	Recieved by: (Signature)	Relinquished by: (Signature)	Date/Time	Recieved by: (Signature)

DISTRIBUTION: Original and Pink copies accompany sample shipment to laboratory. Original copy retained by customer. Yellow copy retained by Laboratory. Pink copy retained by samplers.

Analytical Technologies, Inc.

QUALITY ASSURANCE
DATA REVIEW

Date: 4/27/93

ATI Workorder: 93-04-151 Analysis: Gamma Spec

The data contained in the following report have been reviewed and approved by the appropriate supervisory personnel listed below:

Lance Steere
Radiochemistry Preparations Supervisor

Douglas Van Cleef
Radiochemistry Instrument Supervisor

CERTIFICATION

Analytical Technologies, Inc. certifies that the analyses reported herein are true, complete, and correct within the limits of the methods employed.

Analytical Technologies, Inc.

QUALITY ASSURANCE
DATA REVIEW

Date: 4/30/93

ATI Workorder: 93-04-151 Analysis: Isotopic Uranium

The data contained in the following report have been reviewed and approved by the appropriate supervisory personnel listed below:

Lance Steere
Radiochemistry Preparations Supervisor

Douglas Van Cleef
Radiochemistry Instrument Supervisor

CERTIFICATION

Analytical Technologies, Inc. certifies that the analyses reported herein are true, complete, and correct within the limits of the methods employed.

GAMMA SPECTROMETRY RESULTS SUMMARY

Method 901.1

Lab Name: Analytical Technologies, Inc.

Date Collected: 04/22/93 09:30

Client Name: EG&G Idaho, Inc.

Date Analyzed: 04/26/93 17:06

Lab Sample ID: 93-04-151-01

Sample Matrix: Soil

Client Sample ID: WMF613

Nuclide	Activity (pCi/g)	% Uncertainty
Th-234	0.092 ± 0.193	209.03
Pb-212	0.022 ± 0.033	146.42
Ra-226	< 0.155	BDL
Ra-228	< 0.050	BDL

BDL = Below Detection Limit; see method for DL determination

Remarks:

Th-234 and Pb-212 are naturally occurring radionuclides

GAMMA SPECTROMETRY RESULTS SUMMARY

Method 901.1

Lab Name: Analytical Technologies, Inc.

Date Collected: 04/22/93 09:45

Client Name: EG&G Idaho, Inc.

Date Analyzed: 04/26/93 17:06

Lab Sample ID: 93-04-151-02

Sample Matrix: Soil

Client Sample ID: WMF604

Nuclide	Activity (pCi/g)	% Uncertainty
Th-234	0.270 ± 0.218	80.97
Pb-212	0.025 ± 0.039	156.36
K-40	0.841 ± 0.355	42.20
Ra-226	< 0.186	BDL
Ra-228	< 0.060	BDL

BDL = Below Detection Limit; see method for DL determination

Remarks:

Th-234, Pb-212, and K-40 are naturally occurring radionuclides.

ISOTOPIC URANIUM RESULTS SUMMARY

Lab Name: Analytical Technologies, Inc. Date Collected: 04/22/93

Client Name: EG&G Idaho, Inc. Date Analyzed: 04/29/93

Client Project ID : EMS-016-93 Sample Matrix: Soil

Lab Workorder Number : 93-04-151

Client Sample ID	Lab Sample ID	U-234 (pCi/g)	U-235 (pCi/g)	U-238 (pCi/g)
WMF613	04-151-01	4.09 ± 0.50	< 0.49	1.95 ± 0.30
WMF604	04-151-02	3.91 ± 0.47	< 0.85	1.86 ± 0.29
Blank	04-151-B1	< 0.58	< 0.01	< 0.01
Duplicate	04-151-D1	4.00 ± 0.49	< 0.74	1.94 ± 0.30
Duplicate	04-151-D2	4.15 ± 0.51	< 0.80	1.86 ± 0.29

Remarks:

Sample 93-04-151-D1 is a duplicate of sample 93-04-151-01.
Sample 93-04-151-D2 is a duplicate of sample 93-04-151-02.

BDL = Below Detection Limit; see method for DL determination

ALPHA SPECTROSCOPY QA RESULTS SUMMARY

Lab Name: Analytical Technologies, Inc.

Date Collected: 04/26/93

Client Name: EG&G Idaho, Inc.

Date Analyzed : 04/29/93

Client Sample ID : Matrix Spike

Sample Matrix : Soil

Lab Sample ID : 93-04-151-S1

Units : gram

Nuclide	Known Value	Rep't Value	Control Range	Flag
U-234	2.4 ± 0.5	1.6 ± 0.3	1.4- 2.9	Pass
U-238	2.4 ± 0.5	1.6 ± 0.3	1.4- 2.9	Pass

Reported Uncertainties are at the 99 % Confidence Interval

ATI sets control limits for alpha spectroscopy measurements as follows :

Matrix Spike Control Limits = 60% to 120% of Known.
These control limits are based on historical matrix spike recovery data.

sotopic Uranium Blank Spike Data Sheet

Date: 04/26/93 Lab Workorder Number(s): 93-04-15

Standard Number	Source	Standard Manuf.	Standard Value (dps/ml)	Spike Volume (ml)	Total Volume (l or g)	Sample Matrix (S or W)	Spike Total pCi	U.S. EPA Standard Control Limit Low	High
S-056	U-238	Is. Prod.	0.35	0.500	2	S	2.4	1.4 -	2.8
S-056	U-234	Is. Prod.	0.35	0.500	2	S	2.4	1.4 -	2.8

Notes:

1) ATI sets control limits for U-238 blank spike measurements as follows:
Control Limits = Known (u) +/- 0.17 * u, for u > 0.1 pCi/l

ATI sets control limits for U-238 matrix spike measurements as follows:
Control Limits = 60% to 120% of known.

ATI sets control limits for U-234 blank spike measurements as follows:
Control Limits = Known (u) +/- 0.17 * u, for u > 0.1 pCi/l

ATI sets control limits for U-234 matrix spike measurements as follows:
Control Limits = 60% to 120% of known.

ATI uses these control limits for all isotopic uranium measurements.

EG&G Idaho, Inc.

FORM EG&G 885
(Rev. 10-92)

CHAIN OF CUSTODY FORM

Facility: Environmental Monitoring ZO+G

Sampler: (Signature) Steve Davis

Project Name: EMS-016-93

Sample No. Field	Sample No. Lab	Sampling Date	Sampling Time	Comp.	Grab	Sampling Location	Aqueous	Solid	Other	No. of Containers	Parameters: Total Spec	Gamma Spec	Isotopic U
WMF613	93B 01	4/22/93	0930	X		Rumc			X	1	X	X	X
WMF604	02	↓	0945	X		"			X	1	X	X	X

SC
4-22-93

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
[signature]	1/22/93 3:30PM	Fedex	Fedex		Jim W. Berg 4/23/93 0951
Relinquished by: (Signature)	Date/Time	Recieved by: (Signature)	Relinquished by: (Signature)	Date/Time	Recieved by: (Signature)

DISTRIBUTION: Original and Pink copies accompany sample shipment to laboratory. Origin[illegible] retained by customer. Yellow copy retained by Laboratory. Pink copy r[illegible] by samplers

AnalyticalTechnologies, Inc. 225 Commerce Drive Fort Collins, Colorado 80524 (303) 490-1511

WMF-617

April 29, 1993

Mr. Jay Johnson
EG & G Idaho, Inc.
P.O. Box 1625, MS 4133
Idaho Falls, ID 83415

RE: ATI Workorder: 93-04-036
EG & G Project ID: RWMC Septic Tanks

Dear Mr. Johnson:

One aqueous sample and one solid sample were received from EG & G Idaho on April 7, 1993. The aqueous sample was scheduled for the following analyses: Ignitability, Volatile Organics, Semivolatile Organics, and Total Metals. The solid sample was scheduled for Ignitability, TCLP Volatile Organics, TCLP Semivolatile Organics, and TCLP Metals. The results for these analyses are contained in the following report.

The Methylene Chloride detected in the Method 8240 results for sample "01604059301" is most likely laboratory contamination. Two surrogates in the Method 8270 analysis were lower than the acceptable recovery criteria. This is possibly a result of interference by hydrocarbons present in the sample.

Please note that the results for the solid sample are reported on an as received (wet weight) basis.

Thank you for your confidence in Analytical Technologies, Inc. Should you have any questions, please call.

Sincerely yours,

Steven Fry

Steven Fry, Ph.D.
Director of Client Services

SF/kci

Enclosures

DATA EVALUATION COMMITTEE
REFER TO _____
FOR REVIEW COMMENTS
DATE: _____

Analytical Technologies, Inc. - Fort Collins, Colorado

CONDITION OF SAMPLE UPON RECEIPT

CLIENT E&G&G SHIPPING CONTAINER ID Client

ORDER NO. 93-04-151 INITIALS JB DATE 4/23/93

1	Does this project require special handling according to NEESA, Level-3, or CLP protocols? If yes, complete a. and b. a. Cooler Temperature ____ b. Lot No's. ____		Yes	No
2	Are custody seals on cooler intact?	N/A	Yes	No
3	Are custody seals on sample containers intact?	N/A	Yes	No
4	Is there a Chain-of-Custody (COC)?*		Yes	No
5	Is the COC* complete? Relinquished: Yes ✓ No ____ Requested Analyses: Yes ✓ No ____		Yes	No
6	Is the COC* in agreement with the samples received? No. of Samples: Yes ✓ No ____ Sample ID's: Yes ✓ No ____ Matrix: yes ✓ No ____ No. of Containers: Yes ✓ No ____		Yes	No
7	Are the samples preserved correctly?	N/A	Yes	No
8	Is there enough sample for all the requested analyses?		Yes	No
9	Are all samples within holding times for the requested analyses:		Yes	No
10	Were the samples received cold?		Yes	No
1	Were all sample containers received intact? (not broken or leaking, etc.)		Yes	No
12	Are samples requiring no headspace, headspace free?	N/A	Yes	No
13	Do the samples require quarantine?		Yes	No
14	Do samples require ATI disposal?		~~Yes~~ 4/23	No

Describe "No" items (except No's 1, 13 & 14): 14- return Samples to client

Was client contacted? Yes ____ No ____

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

Describe actions taken or client instructions: ____

Group Leader's Signature: [signature] Date: 4-23

*Or other representative documents, letters or shipping memos.

Analytical Technologies, Inc.

QUALITY ASSURANCE
DATA REVIEW

Date: 4-16-93

ATI Workorder: 93-04-036 Analysis: ignitability

The data contained in the following report have been reviewed and approved by the appropriate supervisory personnel listed below:

Robert Jump
General Chemistry Supervisor

CERTIFICATION

Analytical Technologies, Inc. certifies that the analyses reported herein are true, complete, and correct within the limits of the methods employed.

Analytical Technologies, Inc.

QUALITY ASSURANCE
DATA REVIEW

Date: 4-21-93

ATI Workorder: 93-04-36 Analysis: TCLP / 8240

The data contained in the following report have been reviewed and approved by the appropriate supervisory personnel listed below:

Alex Blanche
GC/MS Supervisor

CERTIFICATION

Analytical Technologies, Inc. certifies that the analyses reported herein are true, complete, and correct within the limits of the methods employed.

TCLP METALS MATRIX SPIKE

Sample ID

01604059304

Lab Name: Analytical Technologies, Inc.

Prep Date: 05/21,25/93

Client Name: EG & G Idaho, Inc.

Date Analyzed: 05/224,25/93

Lab Sample ID: 93-05-150-01

Sample Matrix: TCLP Leachate

Analyte	Spike Added (mg/L)	Sample Concentration (mg/L)	MS Concentration (mg/L)	MS Percent Recovery
Arsenic	2.0	< 0.06	2.5	125
Barium	2.0	1	3	100
Cadmium	0.050	< 0.005	0.054	108
Chromium	0.20	< 0.01	0.21	105
Lead	0.50	< 0.05	0.58	116
Mercury	0.020	< 0.002	0.020	100
Selenium	2.0	< 0.1	2.4	120
Silver	0.20	< 0.01	0.16	80

Analyte	MSD Concentration (mg/L)	MSD Percent Recovery	RPD %
Arsenic	2.3	115	8
Barium	3	100	0
Cadmium	0.049	98	10
Chromium	0.20	100	5
Lead	0.54	108	7
Mercury	0.020	100	0
Selenium	2.1	105	13
Silver	0.16	80	0

TCLP METALS

Lab Name: Analytical Technologies, Inc.

Client Name: EG & G Idaho, Inc.

Client Project ID: EMS-016-93

Lab Sample ID: 93-05-150-01

Sample Matrix: TCLP Leachate

Sample ID

01604059304

Date Collected: 05/19/93

Prep Date: 05/21,25/93

Date Analyzed: 05/24,25/93

EPA HW Number	CAS Number	Analyte	Method	Concentration (mg/L)	Detection Limit (mg/L)
D004	7440-38-2	Arsenic	6010	ND	0.06
D005	7440-39-3	Barium	6010	1	1
D006	7440-43-9	Cadmium	6010	ND	0.005
D007	7440-47-3	Chromium	6010	ND	0.01
D008	7439-92-1	Lead	6010	ND	0.05
D009	7439-97-6	Mercury	7470	ND	0.002
D010	7782-49-2	Selenium	6010	ND	0.1
D011	7440-22-4	Silver	6010	ND	0.01

ND = Not Detected

TCLP METALS

Lab Name: Analytical Technologies, Inc.

Client Name: EG & G Idaho, Inc.

Client Project ID: EMS-016-93

Lab Sample ID: RB 93-05-150

Sample Matrix: TCLP Leachate

Sample ID

TCLP Blank

Date Collected: N/A

Prep Date: 05/21,25/93

Date Analyzed: 05/24,25/93

EPA HW Number	CAS Number	Analyte	Method	Concentration (mg/L)	Detection Limit (mg/L)
D004	7440-38-2	Arsenic	6010	ND	0.06
D005	7440-39-3	Barium	6010	ND	1
D006	7440-43-9	Cadmium	6010	ND	0.005
D007	7440-47-3	Chromium	6010	ND	0.01
D008	7439-92-1	Lead	6010	ND	0.05
D009	7439-97-6	Mercury	7470	ND	0.002
D010	7782-49-2	Selenium	6010	ND	0.1
D011	7440-22-4	Silver	6010	ND	0.01

ND= Not Detected

TCLP SEMIVOLATILE ORGANICS BLANK SPIKE

Method 8270

Sample ID

Blank Spike

Lab Name: Analytical Technologies, Inc.
Client Name: EG & G Idaho, Inc.
Client Project: RWMC Septic Tanks
Lab Sample ID: TBS1 04/12/93

Date Collected: N/A
Date Extracted: 04/12/93
Date Analyzed: 04/26/93

Sample Matrix: TCLP Leachate
Cleanup: None

Sample Volume 100 mL
Final Volume: 1 mL

Analyte	Spike Added (ug/L)	Sample Concentration (ug/L)	BS Concentration (ug/L)	BS % Rec	QC Limit Recovery
Phenol	750	N/A	454	61	12-110
2-Chlorophenol	750	N/A	518	69	27-123
1,4-Dichlorobenzene	500	N/A	325	65	36- 97
N-Nitroso-di-n-propyla	500	N/A	311	62	41-116
1,2,4-Trichlorobenzene	500	N/A	347	69	39- 98
4-Chloro-3-methylphen	750	N/A	473	63	23- 97
Acenaphthene	500	N/A	338	68	46-118
4-Nitrophenol	750	N/A	412	55	10- 80
2,4-Dinitrotoluene	500	N/A	342	68	24- 96
Pentachlorophenol	750	N/A	448	60	9-103
Pyrene	500	N/A	281	56	26-127

Analyte	Spike Added (ug/L)	BSD Concentration (ug/L)	BSD % Recovery #	% RPD	QC Limits RPD	QC Limits Rec
Phenol	750	461	62	2	42	12-110
2-Chlorophenol	750	524	70	1	40	27-123
1,4-Dichlorobenzene	500	315	63	3	28	36- 97
N-Nitroso-di-n-propyla	500	312	62	0	38	41-116
1,2,4-Trichlorobenzene	500	340	68	2	28	39- 98
4-Chloro-3-methylphen	750	480	64	2	42	23- 97
Acenaphthene	500	331	66	2	31	46-118
4-Nitrophenol	750	409	55	1	50	10- 80
2,4-Dinitrotoluene	500	331	66	3	38	24- 96
Pentachlorophenol	750	445	59	1	50	9-103
Pyrene	500	278	56	1	31	26-127

N/A = Not Applicable

TCLP SEMIVOLATILE ORGANICS
Method 8270

Sample ID

01604059304

Lab Name: Analytical Technologies, Inc.
Client Name: EG & G Idaho, Inc.
Client Project: RWMC Septic Tanks
Lab Sample ID.: 93-04-042-02

Date Collected: 04/05/93
Date Extracted: 04/12/93
Date Analyzed: 04/26/93

Sample Matrix: TCLP Leachate
Cleanup: None

Sample Volume: 100 mL
Extract Volume: 1 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D023	o-Cresol	95-48-7	ND	0.1
D024	m-Cresol	108-39-4	ND	0.1
D025	p-Cresol	106-44-5	1.5	0.1
D026	Total o,m,p - Cresol		1.5	0.3
D027	1,4-Dichlorobenzene	106-46-7	ND	0.1
D030	2,4-Dinitrotoluene	121-14-2	ND	0.1
D032	Hexachlorobenzene	118-74-1	ND	0.1
D033	Hexachlorobutadiene	87-68-3	ND	0.1
D034	Hexachloroethane	67-72-1	ND	0.1
D036	Nitrobenzene	98-95-3	ND	0.1
D037	Pentachlorophenol	87-86-5	ND	0.5
D038	Pyridine	110-86-1	ND	0.1
D041	2,4,5-Trichlorophenol	95-95-4	ND	0.5
D042	2,4,6-Trichlorophenol	88-06-2	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
2-Fluorophenol	66	21-110
Phenol-d5	71	10-110
Nitrobenzene-d5	75	35-114
2-Fluorobiphenyl	70	43-116
2,4,6-Tribromophenol	69	10-123

ND - not detected

TCLP SEMIVOLATILE ORGANICS
Method 8270

Sample ID

TCLP Blank

Lab Name: Analytical Technologies, Inc.
Client Name: EG & G Idaho, Inc.
Client Project: RWMC Septic Tanks
Lab Sample ID.: WTB1 04/12/93

Date Collected: N/A
Date Extracted: 04/12/93
Date Analyzed: 04/26/93

Sample Matrix: TCLP Leachate
Cleanup: None

Sample Volume: 100 mL
Extract Volume: 1 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D023	o-Cresol	95-48-7	ND	0.1
D024	m-Cresol	108-39-4	ND	0.1
D025	p-Cresol	106-44-5	ND	0.1
D026	Total o,m,p - Cresol		ND	0.3
D027	1,4-Dichlorobenzene	106-46-7	ND	0.1
D030	2,4-Dinitrotoluene	121-14-2	ND	0.1
D032	Hexachlorobenzene	118-74-1	ND	0.1
D033	Hexachlorobutadiene	87-68-3	ND	0.1
D034	Hexachloroethane	67-72-1	ND	0.1
D036	Nitrobenzene	98-95-3	ND	0.1
D037	Pentachlorophenol	87-86-5	ND	0.5
D038	Pyridine	110-86-1	ND	0.1
D041	2,4,5-Trichlorophenol	95-95-4	ND	0.5
D042	2,4,6-Trichlorophenol	88-06-2	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
2-Fluorophenol	71	21-110
Phenol-d5	69	10-110
Nitrobenzene-d5	74	35-114
2-Fluorobiphenyl	77	43-116
2,4,6-Tribromophenol	66	10-123

ND - not detected

TCLP VOLATILE ORGANICS MATRIX SPIKE
Method 8240

Lab Name: Analytical Technologies, Inc.
Client Name: EG & G Idaho, Inc.
Client Project: RWMC Septic Tanks
Lab Sample ID: 93-04-036-02

Sample ID
In House

Date Collected: 04/05/93
Date Extracted: 04/08/93
Date Analyzed: 04/14/93

Sample Matrix: TCLP Leachate
Sample Volume: 0.5 mL

Analyte	Spike Added (mg/L)	Sample Concentration (mg/L)	MS Concentration (mg/L)	MS % Rec	QC Limit Recovery
1,1-Dichloroethene	0.50	ND	0.31	63	61-145
Trichloroethene	0.50	ND	0.39	78	71-120
Benzene	0.50	ND	0.43	85	76-127
Toluene	0.50	ND	0.53	106	76-125
Chlorobenzene	0.50	ND	0.44	87	75-130

Analyte	Spike Added (mg/L)	MSD Concentration (mg/L)	MSD % Recovery	% RPD	QC Limits RPD	QC Limits Rec
1,1-Dichloroethene	0.50	0.32	64	3	14	61-145
Trichloroethene	0.50	0.40	81	3	14	71-120
Benzene	0.50	0.44	88	3	11	76-127
Toluene	0.50	0.54	108	1	13	76-125
Chlorobenzene	0.50	0.43	87	1	13	75-130

ND = Not Detected

TCLP VOLATILE ORGANICS
Method 8240

Sample ID

01604059304

Lab Name: Analytical Technologies, Inc.
Client Name: EG & G Idaho, Inc.
Client Project ID: RWMC Septic Tanks
Lab Sample ID: 93-04-042-02

Date Collected: 04/05/93
Date Extracted: 04/09/93
Date Analyzed: 04/14/93

Sample Matrix: TCLP Leachate
Sample Volume: 0.5 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D018	Benzene	71-43-2	ND	0.1
D019	Carbon tetrachloride	56-23-5	ND	0.1
D021	Chlorobenzene	108-90-7	ND	0.1
D022	Chloroform	67-66-3	ND	0.1
D028	1,2-Dichloroethane	107-06-2	ND	0.1
D029	1,1-Dichloroethylene	75-35-4	ND	0.1
D035	Methyl ethyl ketone	78-93-3	0.12 B	0.1
D039	Tetrachloroethylene	127-18-4	ND	0.1
D040	Trichloroethylene	79-01-6	ND	0.1
D043	Vinyl chloride	75-01-4	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
1,2-Dichloroethane-d4	99	76 - 114
Toluene-d8	100	88 - 110
Bromofluorobenzene	99	86 - 115

ND - Not Detected
B = analyte found in blank.

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TCLP VOLATILE ORGANICS
Method 8240

Sample ID

TCLP Blank

Lab Name: Analytical Technologies, Inc.
Client Name: EG & G Idaho, Inc.
Client Project ID: RWMC Septic Tanks
Lab Sample ID: STB1 04/09/93

Date Collected: N/A
Date Extracted: 04/09/93
Date Analyzed: 04/14/93

Sample Matrix: TCLP Leachate
Sample Volume: 0.5 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D018	Benzene	71-43-2	ND	0.1
D019	Carbon tetrachloride	56-23-5	ND	0.1
D021	Chlorobenzene	108-90-7	ND	0.1
D022	Chloroform	67-66-3	ND	0.1
D028	1,2-Dichloroethane	107-06-2	ND	0.1
D029	1,1-Dichloroethylene	75-35-4	ND	0.1
D035	Methyl ethyl ketone	78-93-3	0.13	0.1
D039	Tetrachloroethylene	127-18-4	ND	0.1
D040	Trichloroethylene	79-01-6	ND	0.1
D043	Vinyl chloride	75-01-4	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
1,2-Dichloroethane-d4	98	76 - 114
Toluene-d8	99	88 - 110
Bromofluorobenzene	98	86 - 115

ND - Not Detected

TCLP VOLATILE ORGANICS
Method 8240

Sample ID

Reagent Blank

Lab Name: Analytical Technologies, Inc.
Client Name: EG & G Idaho, Inc.
Client Project ID: RWMC Septic Tanks
Lab Sample ID: WRB1 04/14/93

Date Collected: N/A
Date Extracted: N/A
Date Analyzed: 04/14/93

Sample Matrix: Water
Sample Volume: 5 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D018	Benzene	71-43-2	ND	0.01
D019	Carbon tetrachloride	56-23-5	ND	0.01
D021	Chlorobenzene	108-90-7	ND	0.01
D022	Chloroform	67-66-3	ND	0.01
D028	1,2-Dichloroethane	107-06-2	ND	0.01
D029	1,1-Dichloroethylene	75-35-4	ND	0.01
D035	Methyl ethyl ketone	78-93-3	ND	0.01
D039	Tetrachloroethylene	127-18-4	ND	0.01
D040	Trichloroethylene	79-01-6	ND	0.01
D043	Vinyl chloride	75-01-4	ND	0.01

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
1,2-Dichloroethane-d4	98	76 - 114
Toluene-d8	99	88 - 110
Bromofluorobenzene	100	86 - 115

ND - Not Detected

TOTAL METALS MATRIX SPIKE

Sample ID

01604059303

Lab Name: Analytical Technologies, Inc.

Client Name: EG & G Idaho, Inc.

Lab Sample ID: 93-04-042-01

Prep Date: 04/12/93

Sample Matrix: Water

Date Analyzed: 04/12/93

Analyte	Spike Added (mg/L)	Sample Concentration (mg/L)	MS Concentration (mg/L)	MS Percent Recovery
Mercury	0.0020	0.0003	0.0020	85

Analyte	MSD Concentration (mg/L)	MSD Percent Recovery	RPD %
Mercury	0.002	85	0

TOTAL METALS MATRIX SPIKE

Sample ID

In House

Lab Name: Analytical Technologies, Inc.

Client Name: EG & G Idaho, Inc.

Lab Sample ID: 93-04-036-01

Prep Date: 04/13/93

Sample Matrix: Water

Date Analyzed: 04/14,19/93

Analyte	Spike Added (mg/L)	Sample Concentration (mg/L)	MS Concentration (mg/L)	MS Percent Recovery
Arsenic	0.040	< 0.01	0.032	80
Barium	2.0	< 0.01	2.2	110
Cadmium	0.050	< 0.005	0.05	100
Chromium	0.20	< 0.01	0.21	105
Lead	0.040	0.019	0.056	93
Selenium	0.040	< 0.005	0.031	78
Silver *	0.40	< 0.01	0.40	100

*Analytical (Post Digestion) Spike

Analyte	MSD Concentration (mg/L)	MSD Percent Recovery	RPD %
Arsenic	0.031	78	3
Barium	2.2	110	0
Cadmium	0.051	102	2
Chromium	0.20	100	5
Lead	0.054	88	4
Selenium	0.030	75	3

TOTAL METALS

Sample ID

01604059303

Lab Name: Analytical Technologies, Inc.

Client Name: EG & G Idaho, Inc.

Client Project ID: RWMC Septic Tanks

Lab Sample ID: 93-04-042-01

Sample Matrix: Water

Date Collected: 04/05/93

Prep Date: 04/12,13/93

Date Analyzed: 04/12,14,19/93

Analyte	Method	Concentration (mg/L)	Detection Limit (mg/L)
Arsenic	7060	ND	0.01*
Barium	6010	ND	0.01
Cadmium	6010	ND	0.005
Chromium	6010	ND	0.01
Lead	7421	ND	0.003
Mercury	7470	0.0003	0.0002
Selenium	7740	ND	0.005
Silver	6010	ND	0.01

ND = Not Detected

* Detection limit raised due to matrix interference.

TOTAL METALS

Sample ID

Reagent Blank

Lab Name: Analytical Technologies, Inc.

Client Name: EG & G Idaho, Inc.

Date Collected: N/A

Client Project ID: RWMC Septic Tanks

Prep Date: 04/12,13/93

Lab Sample ID: RB 93-04-042

Date Analyzed: 04/12,14,19/93

Sample Matrix: Water

Analyte	Method	Concentration (mg/L)	Detection Limit (mg/L)
Arsenic	7060	ND	0.005
Barium	6010	ND	0.01
Cadmium	6010	ND	0.005
Chromium	6010	ND	0.01
Lead	7421	ND	0.003
Mercury	7470	ND	0.0002
Selenium	7740	ND	0.005
Silver	6010	ND	0.01

ND = Not Detected

Analytical Technologies, Inc.

QUALITY ASSURANCE
DATA REVIEW

Date: 4-29-93

ATI Workorder: 93-04-036 Analysis: EPA 1/TCLP

The data contained in the following report have been reviewed and approved by the appropriate supervisory personnel listed below:

Alex Blanche
GC/MS Supervisor

CERTIFICATION

Analytical Technologies, Inc. certifies that the analyses reported herein are true, complete, and correct within the limits of the methods employed.

Analytical Technologies, Inc.

QUALITY ASSURANCE
DATA REVIEW

Date: 4/20/93

ATI Workorder: 93-04-036 Analysis: Total RCRA & TCLP metals

The data contained in the following report have been reviewed and approved by the appropriate supervisory personnel listed below:

Tim Holland
Metals Supervisor

CERTIFICATION

Analytical Technologies, Inc. certifies that the analyses reported herein are true, complete, and correct within the limits of the methods employed.

Analytical Technologies, Inc. - Fort Collins, Colorado

CONDITION OF SAMPLE UPON RECEIPT

CLIENT EG&G SHIPPING CONTAINER ID [illegible]

WORKORDER NO. 93-04-036 INITIALS RM DATE 4-7-93

			Yes	No
1	Does this project require special handling according to NEESA, Level-3, or CLP protocols? If yes, complete a. and b. a. Cooler Temperature ____ b. Lot No's. ____			✓
2	Are custody seals on cooler intact?	N/A	Yes	No
3	Are custody seals on sample containers intact?	N/A	Yes	No
4	Is there a Chain-of-Custody (COC)?*		Yes	No
5	Is the COC* complete? Relinquished: Yes ✓ No____ Requested Analyses: Yes ✓ No____		Yes	No
6	Is the COC* in agreement with the samples received? No. of Samples: Yes ✓ No____ Sample ID's: Yes ✓ No____ Matrix: yes ✓ No____ No. of Containers: Yes____ No____		Yes	No
7	Are the samples preserved correctly?	N/A	Yes	No
8	Is there enough sample for all the requested analyses?		Yes	No
9	Are all samples within holding times for the requested analyses:		Yes	No
10	Were the samples received cold?		Yes	No
11	Were all sample containers received intact? (not broken or leaking, etc.)		Yes	No
12	Are samples requiring no headspace, headspace free?	N/A	Yes	No
13	Do the samples require quarantine?		Yes	No
14	Do samples require ATI disposal?		Yes	No

Describe "No" items (except No's 1, 13 & 14): #7 samples not marked preserve

Was client contacted? Yes ____ No ____

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

Describe actions taken or client instructions: ____

Deb B 4/7/93

Group Leader's Signature Date

*Or other representative documents, letters or shipping memos.

ATI FRM 201 FC - Revision 21 - 02.04/

IGNITABILITY
Method 1010

Lab Name: Analytical Technologies, Inc.

Client Name: EG & G Idaho, Inc.

Client Project ID: RWMC Septic Tanks

Lab Workorder Number: 93-04-036

Date Collected: 04/05/93

Date Analyzed: 04/08/93

Sample Matrix: Water (01) Solid (02)

Sample ID	Lab Sample ID	Ignitable At (deg C)	Non-ignitable Below (deg C)
01604059301	93-04-036-01		96.5
01604059302	93-04-036-02		96.5

TCLP SEMIVOLATILE ORGANICS

Method 8270

Sample ID

01604059302

Lab Name: Analytical Technologies, Inc.
Client Name: EG & G Idaho, Inc.
Client Project: RWMC Septic Tanks
Lab Sample ID.: 93-04-036-02

Date Collected: 04/05/93
Date Extracted: 04/09/93
Date Analyzed: 04/26/93

Sample Matrix: TCLP Leachate
Cleanup: None

Sample Volume: 100 mL
Extract Volume: 1 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D023	o-Cresol	95-48-7	ND	0.1
D024	m-Cresol	108-39-4	ND	0.1
D025	p-Cresol	106-44-5	ND	0.1
D026	Cresol		ND	0.1
D027	1,4-Dichlorobenzene	106-46-7	ND	0.1
D030	2,4-Dinitrotoluene	121-14-2	ND	0.1
D032	Hexachlorobenzene	118-74-1	ND	0.1
D033	Hexachlorobutadiene	87-68-3	ND	0.1
D034	Hexachloroethane	67-72-1	ND	0.1
D036	Nitrobenzene	98-95-3	ND	0.1
D037	Pentachlorophenol	87-86-5	ND	0.5
D038	Pyridine	110-86-1	ND	0.1
D041	2,4,5-Trichlorophenol	95-95-4	ND	0.5
D042	2,4,6-Trichlorophenol	88-06-2	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
2-Fluorophenol	44	21-110
Phenol-d5	46	10-110
Nitrobenzene-d5	49	35-114
2-Fluorobiphenyl	54	43-116
2,4,6-Tribromophenol	57	10-123

ND - not detected

TCLP SEMIVOLATILE ORGANICS
Method 8270

Sample ID

TCLP Blank

Lab Name: Analytical Technologies, Inc.
Client Name: EG & G Idaho, Inc.
Client Project: RWMC Septic Tanks
Lab Sample ID.: WTB1 04/09/93

Date Collected: N/A
Date Extracted: 04/09/93
Date Analyzed: 04/26/93

Sample Matrix: TCLP Leachate
Cleanup: None

Sample Volume: 100 mL
Extract Volume: 1 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D023	o-Cresol	95-48-7	ND	0.1
D024	m-Cresol	108-39-4	ND	0.1
D025	p-Cresol	106-44-5	ND	0.1
D026	Cresol		ND	0.1
D027	1,4-Dichlorobenzene	106-46-7	ND	0.1
D030	2,4-Dinitrotoluene	121-14-2	ND	0.1
D032	Hexachlorobenzene	118-74-1	ND	0.1
D033	Hexachlorobutadiene	87-68-3	ND	0.1
D034	Hexachloroethane	67-72-1	ND	0.1
D036	Nitrobenzene	98-95-3	ND	0.1
D037	Pentachlorophenol	87-86-5	ND	0.5
D038	Pyridine	110-86-1	ND	0.1
D041	2,4,5-Trichlorophenol	95-95-4	ND	0.5
D042	2,4,6-Trichlorophenol	88-06-2	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
2-Fluorophenol	53	21-110
Phenol-d5	51	10-110
Nitrobenzene-d5	57	35-114
2-Fluorobiphenyl	59	43-116
2,4,6-Tribromophenol	49	10-123

ND - not detected

SEMIVOLATILE ORGANICS

Method 8270

Sample ID

01604059301

Lab Name: Analytical Technologies Inc.
Client Name: EG & G Idaho, Inc.
Client Project: RWMC Septic Tanks
Lab Sample ID.: 93-04-036-01

Date Collected: 04/05/93
Date Extracted: 04/07/93
Date Analyzed: 04/27/93

Sample Matrix: Water
Cleanup: None

Sample Volume: 900 mL
Final Volume: 1 mL

Analyte	Results (ug/L)	Detection Limit (ug/L)
o-Cresol	ND	10
m-Cresol	ND	10
p-Cresol	160	10
Cresol	ND	10
1,4-Dichlorobenzene	ND	10
2,4-Dinitrotoluene	ND	10
Hexachlorobenzene	ND	10
Hexachlorobutadiene	ND	10
Hexachloroethane	ND	10
Nitrobenzene	ND	10
Pentachlorophenol	ND	60
Pyridine	ND	10
2,4,5-Trichlorophenol	ND	60
2,4,6-Trichlorophenol	ND	10

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
2-Fluorophenol	43	21-110
Phenol-d5	48	10-110
Nitrobenzene-d5	49	35-114
2-Fluorobiphenyl	36	43-116
2,4,6-Tribromophenol	51	10-123
Terphenyl-d14	22	33-141

ND = Not Detected

SEMIVOLATILE ORGANICS BLANK SPIKE/BLANK SPIKE DUPLICATE RESULTS

Method 8270

Sample ID

Blank Spike

Lab Name: Analytical Technologies, Inc.
Client Name: EG & G Idaho, Inc.
Client Project: RWMC Septic Tanks
Lab Sample ID: WBS1 04/07/93

Date Collected: N/A
Date Extracted: 04/07/93
Date Analyzed: 04/27/93

Sample Matrix: Water
Cleanup: None

Sample Volume: 1000 mL
Final Volume: 1 mL

Analyte	Spike Added (ug/L)	Sample Concentration (ug/L)	BS Concentration (ug/L)	BS % Rec	QC Limit Recovery
Phenol	75	N/A	34	45	12-110
2-Chlorophenol	75	N/A	42	55	27-123
1,4-Dichlorobenzene	50	N/A	25	49	36- 97
N-Nitroso-di-n-propylamine	50	N/A	22	44	41-116
1,2,4-Trichlorobenzene	50	N/A	27	54	39- 98
4-Chloro-3-methylphenol	75	N/A	41	55	23- 97
Acenaphthene	50	N/A	26	52	46-118
4-Nitrophenol	75	N/A	34	46	10- 80
2,4-Dinitrotoluene	50	N/A	25	51	24- 96
Pentachlorophenol	75	N/A	32	43	9-103
Pyrene	50	N/A	22	44	26-127

Analyte	Spike Added (ug/L)	BSD Concentration (ug/L)	BSD % REC #	% RPD	QC LIMITS RPD REC.
Phenol	75	37	50	9	42 | 12 - 110
2-Chlorophenol	75	46	62	11	40 | 27 - 123
1,4-Dichlorobenzene	50	27	53	8	28 | 36 - 97
N-Nitroso-di-n-propylamine	50	25	50	13	38 | 41-116
1,2,4-Trichlorobenzene	50	29	58	8	28 | 39 - 98
4-Chloro-3-methylphenol	75	45	60	9	42 | 23 - 97
Acenaphthene	50	28	57	9	31 | 46 - 118
4-Nitrophenol	75	38	51	11	50 | 10 - 80
2,4-Dinitrotoluene	50	29	57	12	38 | 24 - 96
Pentachlorophenol	75	31	41	4	50 | 9 - 103
Pyrene	50	24	48	10	31 | 26 - 127

N/A = Not Applicable

SEMIVOLATILE ORGANICS

Method 8270

Sample ID

Reagent Blank

Lab Name: Analytical Technologies Inc.
Client Name: EG & G Idaho, Inc.
Client Project: RWMC Septic Tanks
Lab Sample ID.: WRB1 04/07/93

Date Collected: N/A
Date Extracted: 04/07/93
Date Analyzed: 04/27/93

Sample Matrix: Water
Cleanup: None

Sample Volume: 1000 mL
Final Volume: 1 mL

Analyte	Results (ug/L)	Detection Limit (ug/L)
o-Cresol	ND	10
m-Cresol	ND	10
p-Cresol	ND	10
Cresol	ND	10
1,4-Dichlorobenzene	ND	10
2,4-Dinitrotoluene	ND	10
Hexachlorobenzene	ND	10
Hexachlorobutadiene	ND	10
Hexachloroethane	ND	10
Nitrobenzene	ND	10
Pentachlorophenol	ND	50
Pyridine	ND	10
2,4,5-Trichlorophenol	ND	50
2,4,6-Trichlorophenol	ND	10

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
2-Fluorophenol	58	21-110
Phenol-d5	56	10-110
Nitrobenzene-d5	58	35-114
2-Fluorobiphenyl	63	43-116
2,4,6-Tribromophenol	52	10-123
Terphenyl-d14	67	33-141

ND = Not Detected

TCLP VOLATILE ORGANICS MATRIX SPIKE

Method 8240

Lab Name: Analytical Technologies, Inc.
Client Name: EG & G Idaho, Inc.
Client Project: RWMC Septic Tanks
Lab Sample ID: 93-04-036-02

Sample ID
01604059302

Date Collected: 04/05/93
Date Extracted: 04/08/93
Date Analyzed: 04/14/93

Sample Matrix: TCLP Leachate
Sample Volume: 0.5 mL

Analyte	Spike Added (mg/L)	Sample Concentration (mg/L)	MS Concentration (mg/L)	MS % Rec	QC Limit Recovery
1,1-Dichloroethene	0.50	ND	0.31	63	61-145
Trichloroethene	0.50	ND	0.39	78	71-120
Benzene	0.50	ND	0.43	85	76-127
Toluene	0.50	ND	0.53	106	76-125
Chlorobenzene	0.50	ND	0.44	87	75-130

Analyte	Spike Added (mg/L)	MSD Concentration (mg/L)	MSD % Recovery	% RPD	QC Limits RPD	QC Limits Rec
1,1-Dichloroethene	0.50	0.32	64	3	14	61-145
Trichloroethene	0.50	0.40	81	3	14	71-120
Benzene	0.50	0.44	88	3	11	76-127
Toluene	0.50	0.54	108	1	13	76-125
Chlorobenzene	0.50	0.43	87	1	13	75-130

ND = Not Detected

TCLP VOLATILE ORGANICS
Method 8240

Sample ID

01604059302

Lab Name: Analytical Technologies, Inc.
Client Name: EG & G Idaho, Inc.
Client Project ID: RWMC Septic Tanks
Lab Sample ID: 93-04-036-02

Date Collected: 04/05/93
Date Extracted: 04/08/93
Date Analyzed: 04/14/93

Sample Matrix: TCLP Leachate
Sample Volume: 0.5 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D018	Benzene	71-43-2	ND	0.1
D019	Carbon tetrachloride	56-23-5	ND	0.1
D021	Chlorobenzene	108-90-7	ND	0.1
D022	Chloroform	67-66-3	ND	0.1
D028	1,2-Dichloroethane	107-06-2	ND	0.1
D029	1,1-Dichloroethylene	75-35-4	ND	0.1
D035	Methyl ethyl ketone	78-93-3	ND	0.1
D039	Tetrachloroethylene	127-18-4	ND	0.1
D040	Trichloroethylene	79-01-6	ND	0.1
D043	Vinyl chloride	75-01-4	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
1,2-Dichloroethane-d4	98	76 - 114
Toluene-d8	99	88 - 110
Bromofluorobenzene	100	86 - 115

ND - Not Detected

TCLP VOLATILE ORGANICS
Method 8240

Sample ID

TCLP Blank

Lab Name: Analytical Technologies, Inc.
Client Name: EG & G Idaho, Inc.
Client Project ID: RWMC Septic Tanks
Lab Sample ID: STB1 04/08/93

Date Collected: N/A
Date Extracted: 04/08/93
Date Analyzed: 04/14/93

Sample Matrix: TCLP Leachate
Sample Volume: 0.5 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D018	Benzene	71-43-2	ND	0.1
D019	Carbon tetrachloride	56-23-5	ND	0.1
D021	Chlorobenzene	108-90-7	ND	0.1
D022	Chloroform	67-66-3	ND	0.1
D028	1,2-Dichloroethane	107-06-2	ND	0.1
D029	1,1-Dichloroethylene	75-35-4	ND	0.1
D035	Methyl ethyl ketone	78-93-3	0.13	0.1
D039	Tetrachloroethylene	127-18-4	ND	0.1
D040	Trichloroethylene	79-01-6	ND	0.1
D043	Vinyl chloride	75-01-4	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
1,2-Dichloroethane-d4	98	76 - 114
Toluene-d8	100	88 - 110
Bromofluorobenzene	99	86 - 115

ND - Not Detected

TCLP VOLATILE ORGANICS
Method 8240

Sample ID

Reagent Blank

Lab Name: Analytical Technologies, Inc.
Client Name: EG & G Idaho, Inc.
Client Project ID: RWMC Septic Tanks
Lab Sample ID: WRB1 04/14/93

Date Collected: N/A
Date Extracted: N/A
Date Analyzed: 04/14/93

Sample Matrix: Water
Sample Volume: 5 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D018	Benzene	71-43-2	ND	0.01
D019	Carbon tetrachloride	56-23-5	ND	0.01
D021	Chlorobenzene	108-90-7	ND	0.01
D022	Chloroform	67-66-3	ND	0.01
D028	1,2-Dichloroethane	107-06-2	ND	0.01
D029	1,1-Dichloroethylene	75-35-4	ND	0.01
D035	Methyl ethyl ketone	78-93-3	ND	0.01
D039	Tetrachloroethylene	127-18-4	ND	0.01
D040	Trichloroethylene	79-01-6	ND	0.01
D043	Vinyl chloride	75-01-4	ND	0.01

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
1,2-Dichloroethane-d4	98	76 - 114
Toluene-d8	99	88 - 110
Bromofluorobenzene	100	86 - 115

ND - Not Detected

-1R

VOLATILE MATRIX SPIKE RECOVERY

Method 8240

Sample ID

In House

Lab Name: Analytical Technologies, Inc.
Client Name: EG & G Idaho, Inc.
Client Project ID: RWMC Septic Tanks
Lab Sample ID: 93-04-077-01

Date Collected: 04/13/93
Date Analyzed: 04/14/93

Sample Matrix: Water
Sample Volume: 5 mL

Analyte	Spike Added (ug/L)	Sample Concentration (ug/L)	MS Concentration (ug/L)	MS % Rec	QC Limit Recovery
1,1-Dichloroethene	50.0	ND	51.5	103	61-145
Trichloroethene	50.0	ND	47.3	95	71-120
Benzene	50.0	2 J	53.6	107	76-127
Toluene	50.0	ND	50.3	101	76-125
Chlorobenzene	50.0	ND	50.4	101	75-130

Analyte	Spike Added (ug/L)	MSD Concentration (ug/L)	MSD % Recovery	% RPD	QC Limits RPD	QC Limits Rec
1,1-Dichloroethene	50.0	49.3	99	4	14	61-145
Trichloroethene	50.0	44.4	89	6	14	71-120
Benzene	50.0	50.6	101	6	11	76-127
Toluene	50.0	46.3	93	8	13	76-125
Chlorobenzene	50.0	46.2	92	9	13	75-130

ND = Not Detected
J = Estimated value; analyte found below detection limit.

-1h

VOLATILE ORGANICS

Method 8240

Sample ID

01604059301

Lab Name: Analytical Technologies, Inc.
Client Name: EG & G Idaho, Inc.
Client Project ID: RWMC Septic Tanks
Lab Sample ID: 93-04-036-01

Date Collected: 04/05/93
Date Analyzed: 04/14/93

Sample Matrix: Water
Sample Volume: 5 mL

Analyte	Results (ug/L)	Detection Limit (ug/L)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	6	5
Acetone	ND	10
Carbon disulfide	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
Tetrachloroethene	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Toluene	4 J	5
Chlorobenzene	ND	5
Ethylbenzene	ND	5
Styrene	ND	5
Total Xylenes	ND	5

SURROGATE RECOVERIES

Analyte	% Recovery	%Rec Limits
1,2-Dichloroethane-d4	97	76 - 114
Toluene-d8	100	88 - 110
Bromofluorobenzene	99	86 - 115

ND = Not Detected

VOLATILE ORGANICS

Method 8240

Sample ID

Reagent Blank

Lab Name: Analytical Technologies, Inc.
Client Name: EG & G Idaho, Inc.
Client Project ID: RWMC Septic Tanks
Lab Sample ID: WRB1 04/14/93

Date Collected: N/A
Date Analyzed: 04/14/93

Sample Matrix: Water
Sample Volume: 5 mL

Analyte	Results (ug/L)	Detection Limit (ug/L)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
Tetrachloroethene	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Toluene	ND	5
Chlorobenzene	ND	5
Ethylbenzene	ND	5
Styrene	ND	5
Total Xylenes	ND	5

SURROGATE RECOVERIES

Analyte	% Recovery	%Rec Limits
1,2-Dichloroethane-d4	98	76 - 114
Toluene-d8	99	88 - 110
Bromofluorobenzene	100	86 - 115

ND = Not Detected

TCLP SEMIVOLATILE ORGANICS BLANK SPIKE

Method 8270

Sample ID

Blank Spike

Lab Name: Analytical Technologies, Inc.
Client Name: EG & G Idaho, Inc.
Client Project: RWMC Septic Tanks
Lab Sample ID: WBS1 03/25/93

Date Collected: N/A
Date Extracted: 04/09/93
Date Analyzed: 04/26/93

Sample Matrix: TCLP Leachate
Cleanup: None

Sample Volume 100 mL
Final Volume: 1 mL

Analyte	Spike Added (ug/L)	Sample Concentration (ug/L)	BS Concentration (ug/L)	BS % Rec	QC Limit Recovery
Phenol	750	N/A	454	61	12-110
2-Chlorophenol	750	N/A	518	69	27-123
1,4-Dichlorobenzene	500	N/A	325	65	36- 97
N-Nitroso-di-n-propyla	500	N/A	311	62	41-116
1,2,4-Trichlorobenzene	500	N/A	347	69	39- 98
4-Chloro-3-methylphen	750	N/A	473	63	23- 97
Acenaphthene	500	N/A	338	68	46-118
4-Nitrophenol	750	N/A	412	55	10- 80
2,4-Dinitrotoluene	500	N/A	342	68	24- 96
Pentachlorophenol	750	N/A	448	60	9-103
Pyrene	500	N/A	281	56	26-127

Analyte	Spike Added (ug/L)	BSD Concentration (ug/L)	BSD % Recovery #	% RPD	QC Limits RPD	QC Limits Rec
Phenol	750	461	62	2	42	12-110
2-Chlorophenol	750	524	70	1	40	27-123
1,4-Dichlorobenzene	500	315	63	3	28	36- 97
N-Nitroso-di-n-propyla	500	312	62	0	38	41-116
1,2,4-Trichlorobenzene	500	340	68	2	28	39- 98
4-Chloro-3-methylphen	750	480	64	2	42	23- 97
Acenaphthene	500	331	66	2	31	46-118
4-Nitrophenol	750	409	55	1	50	10- 80
2,4-Dinitrotoluene	500	331	66	3	38	24- 96
Pentachlorophenol	750	445	59	1	50	9-103
Pyrene	500	278	56	1	31	26-127

N/A = Not Applicable

TOTAL METALS

Sample ID

Reagent Blank

Lab Name: Analytical Technologies, Inc.

Client Name: EG & G Idaho, Inc.

Client Project ID: RWMC Septic Tanks

Lab Sample ID: RB 93-04-036

Sample Matrix: Water

Date Collected: N/A

Prep Date: 04/12,13/93

Date Analyzed: 04/12,14,19/93

Analyte	Method	Concentration (mg/L)	Detection Limit (mg/L)
Arsenic	7060	ND	0.005
Barium	6010	ND	0.01
Cadmium	6010	ND	0.005
Chromium	6010	ND	0.01
Lead	7421	ND	0.003
Mercury	7470	ND	0.0002
Selenium	7740	ND	0.005
Silver	6010	ND	0.01

ND = Not Detected

TOTAL METALS MATRIX SPIKE

Sample ID

01604059301

Lab Name: Analytical Technologies, Inc.

Client Name: EG & G Idaho, Inc.

Lab Sample ID: 93-04-036-01

Prep Date: 04/13/93

Sample Matrix: Water

Date Analyzed: 04/14,19/93

Analyte	Spike Added (mg/L)	Sample Concentration (mg/L)	MS Concentration (mg/L)	MS Percent Recovery
Arsenic	0.040	< 0.01	0.032	80
Barium	2.0	0.34	2.2	93
Cadmium	0.050	< 0.005	0.05	100
Chromium	0.20	0.03	0.21	90
Lead	0.040	0.019	0.056	93
Selenium	0.040	< 0.005	0.031	78
Silver *	0.40	< 0.01	0.41	102

*Analytical (Post Digestion) Spike

Analyte	MSD Concentration (mg/L)	MSD Percent Recovery	RPD %
Arsenic	0.031	78	3
Barium	2.2	93	0
Cadmium	0.051	102	2
Chromium	0.2	85	5
Lead	0.054	88	4
Selenium	0.030	75	3

TOTAL METALS

Sample ID

01604059301

Lab Name: Analytical Technologies, Inc.

Client Name: EG & G Idaho, Inc.

Date Collected: 04/05/93

Client Project ID: RWMC Septic Tanks

Prep Date: 04/12,13/93

Lab Sample ID: 93-04-036-01

Date Analyzed: 04/12,14,19/93

Sample Matrix: Water

Analyte	Method	Concentration (mg/L)	Detection Limit (mg/L)
Arsenic	7060	ND	0.01*
Barium	6010	0.34	0.01
Cadmium	6010	ND	0.005
Chromium	6010	0.03	0.01
Lead	7421	0.019	0.003
Mercury	7470	0.0006	0.0002
Selenium	7740	ND	0.005
Silver	6010	ND	0.01

ND = Not Detected

* Detection limit raised due to matrix interference.

TOTAL METALS MATRIX SPIKE

Sample ID

In House

Lab Name: Analytical Technologies, Inc.

Client Name: EG & G Idaho, Inc.

Lab Sample ID: 93-04-042-01

Prep Date: 04/12/93

Sample Matrix: Water

Date Analyzed: 04/12/93

Analyte	Spike Added (mg/L)	Sample Concentration (mg/L)	MS Concentration (mg/L)	MS Percent Recovery
Mercury	0.0020	0.0003	0.002	85

Analyte	MSD Concentration (mg/L)	MSD Percent Recovery	RPD %
Mercury	0.002	85	0

TCLP METALS

Sample ID

TCLP Blank

Lab Name: Analytical Technologies, Inc.

Client Name: EG & G Idaho, Inc.

Client Project ID: RWMC Septic Tanks

Date Collected: N/A

Lab Sample ID: RB 93-04-036

Prep Date: 04/12,13/93

Sample Matrix: TCLP Leachate

Date Analyzed: 04/12,14/93

EPA HW Number	CAS Number	Analyte	Method	Concentration (mg/L)	Detection Limit (mg/L)
D004	7440-38-2	Arsenic	6010	ND	0.06
D005	7440-39-3	Barium	6010	ND	1.0
D006	7440-43-9	Cadmium	6010	ND	0.005
D007	7440-47-3	Chromium	6010	ND	0.01
D008	7439-92-1	Lead	6010	ND	0.05
D009	7439-97-6	Mercury	7470	ND	0.002
D010	7782-49-2	Selenium	6010	ND	0.1
D011	7440-22-4	Silver	6010	ND	0.01

ND= Not Detected

TCLP METALS

Sample ID

01604059302

Lab Name: Analytical Technologies, Inc.

Client Name: EG & G Idaho, Inc.

Client Project ID: RWMC Septic Tanks

Date Collected: 04/05/93

Lab Sample ID: 93-04-036-02

Prep Date: 04/12,13/93

Sample Matrix: TCLP Leachate

Date Analyzed: 04/12,14/93

EPA HW Number	CAS Number	Analyte	Method	Concentration (mg/L)	Detection Limit (mg/L)
D004	7440-38-2	Arsenic	6010	ND	0.06
D005	7440-39-3	Barium	6010	1.4	1.0
D006	7440-43-9	Cadmium	6010	ND	0.005
D007	7440-47-3	Chromium	6010	ND	0.01
D008	7439-92-1	Lead	6010	ND	0.05
D009	7439-97-6	Mercury	7470	ND	0.002
D010	7782-49-2	Selenium	6010	ND	0.1
D011	7440-22-4	Silver	6010	ND	0.01

ND = Not Detected

TCLP METALS MATRIX SPIKE

Sample ID

01604059302

Lab Name: Analytical Technologies, Inc.

Prep Date: 04/13/93

Client Name: EG & G Idaho, Inc.

Date Analyzed: 04/14/93

Lab Sample ID: 93-04-036-02

Sample Matrix: TCLP Leachate

Analyte	Spike Added (mg/L)	Sample Concentration (mg/L)	MS Concentration (mg/L)	MS Percent Recovery
Arsenic	2.0	< 0.06	2.2	110
Barium	2.0	1.4	3.6	110
Cadmium	0.050	< 0.005	0.054	108
Chromium	0.20	< 0.01	0.20	100
Lead	0.50	< 0.05	0.58	116
Selenium	2.0	< 0.1	2.2	110
Silver *	0.40	< 0.01	0.35	87

*Analytical (Post Digestion) Spike

Analyte	MSD Concentration (mg/L)	MSD Percent Recovery	RPD %
Arsenic	2.2	110	0
Barium	3.5	105	3
Cadmium	0.054	108	0
Chromium	0.20	100	0
Lead	0.55	110	5
Selenium	2.2	110	0

TCLP METALS MATRIX SPIKE

Sample ID

In House

Lab Name: Analytical Technologies, Inc.

Prep Date: 04/12/93

Client Name: EG & G Idaho, Inc.

Date Analyzed: 04/12/93

Lab Sample ID: 93-03-221-08

Sample Matrix: TCLP Leachate

Analyte	Spike Added (mg/L)	Sample Concentration (mg/L)	MS Concentration (mg/L)	MS Percent Recovery
Mercury	0.020	<0.002	0.020	100

Analyte	MSD Concentration (mg/L)	MSD Percent Recovery	RPD %
Mercury	0.020	100	0

EG&L , Inc.

FORM EG&G 885
(Rev. 10 92)

CHAIN OF CL DY FORM

Facility: ENVIRONMENTAL MONITORING
MS. 4110

Sampler: (Signature) Karen M. Smith

Project Name: RWMC SEPTIC TANKS

Sample No. Field	Sample No. Lab	Sampling Date	Sampling Time	Comp.	Grab	Sampling Location	Aqueous	Solid	Other	No. of Containers	TOTAL METALS (RCRA)	IGNITABILITY	TOTAL VOA - 8240	8270 total SVOA (TCLP List ONLY)	TCLP METALS	TCLP VOA	TCLP SVOA					
01604059301	01	4/5/93	1450	X		WMF-617	X			4	X	X	X	X								
01604059302	02	↓	1455	X		WMF-617		X		3		X			X	X	X					

1725. 4/5/93

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Karen M. Smith	4/6/93 1015	Chris Fiedler Fedex	Fed ex	4/7/93	Chris Fiedler 4/7/93 930
Relinquished by: (Signature)	Date/Time	Recieved by: (Signature)	Relinquished by: (Signature)	Date/Time	Recieved by: (Signature)

DISTRIBUTION: Original and Pink copies accompany sample shipment to laboratory. Original copy retained by customer. Yellow copy retained by Laboratory. Pink copy retained by samplers.

EG&G Idaho

"Providing research and development services to the government"

INTEROFFICE CORRESPONDENCE

Date: May 21, 1993

To: J. A. Johnson, MS 4110

From: T. J. Haney, MS 7111

Subject: RML GAMMA-RAY ANALYSIS OF TWO RWMC SEPTIC TANK SAMPLES - TJH-58-93

Ref.: L. D. Koeppen letter to R. N. Wilhelmsen (LDK-06-92) RML Gamma-Emitting Radionuclide Detection Limits for Radiological Environmental Surveillance Program (RESP) Samples, March 27, 1992

One liquid sample and one solid sample from the RWMC septic tanks were counted and analyzed by the Radiation Measurements Laboratory (RML) using high resolution gamma-ray spectrometry techniques. No manmade gamma-emitting radionuclide contaminants were detected above background. Refer to above mentioned RML detection limits.

ID	RML ID
01604299301	D4050393021
01604299302	A6050493030

If additional counting and analysis information is needed, please call the RML.

jd

cc: S. L. Barrie, MS 3920
S. B. French, MS 4202
L. D. Koeppen, MS 7111
M. D. McKenzie, MS 3920
R. S. Monson, MS 4201
JW Rogers, MS 7111
C. L. Rowsell, MS 7111
Central Files, MS 1651
T. J. Haney File

EG&G Idaho

INTEROFFICE CORRESPONDENCE

FIRST SET TAKEN ON 4/5/93

Date: April 21, 1993

To: J. Johnson, MS 4110

From: D. S. Sill, MS 7111 D.S.S.

Subject: RESULTS OF GROSS SPECTROMETRIC ALPHA ANALYSES. DSS-10-93

Enclosed are the results of the alpha analyses that were performed on your "RWMC Septic Tank" samples.

The uncertainties given are standard deviations and show the precision with which the measurements were made. They include all random uncertainties incurred anywhere in the entire measurement process. The results must be interpreted statistically at whatever confidence level is desired. If the result is less than twice the uncertainty, no activity was detected at the 95% confidence level, i.e., the result is "statistically zero" because "zero" is included in the range encompassed. If the result is greater than twice the uncertainty, statistically positive activity was detected at the 95% confidence level.

The chemical procedure used will include all of the actinides, except protactinium, in the final fraction that was counted. If an actinide is not listed in the results, the activity of that nuclide is at or below the detection limit of about 0.2 pCi/g. When the actinide activity in a particular sample is statistically zero, "Total" is used as the nuclide identifier and the activity listed on the result sheet represents the sum of all of the actinides, except protactinium, that was in the sample.

Below is a brief summary of your samples:

1) Sample 709 contained **enriched uranium.**

2) Sample 710 contained natural uranium and natural thorium.

3) Samples numbered 711 and 712 contained no statistically positive actinide activity.

If important decisions are to be made based on the results of sample 709, I would suggest reanalyzing the sample a few more times to determine if the enriched uranium activity in the sewage is reproducible.

If you have any questions, feel free to call me at 526-8031.

Attachment:
As stated,

cc: Tom Haney, MS 7111
Kerry Martin, MS 7113
Central Files, MS 1651
D.S. Sill File

EG&G Idaho

INTEROFFICE CORRESPONDENCE

First and Second Set of Samples

Date: April 27, 1993

To: J. Johnson, MS 4110

From: D. S. Sill, MS 7111 D.S.Sill

Subject: RESULTS OF GROSS SPECTROMETRIC ALPHA ANALYSES. DSS-11-93

Enclosed are the results of the alpha analyses that were performed on your second set of "RWMC Septic Tank" samples.

The uncertainties given are standard deviations and show the precision with which the measurements were made. They include all random uncertainties incurred anywhere in the entire measurement process. The results must be interpreted statistically at whatever confidence level is desired. If the result is less than twice the uncertainty, no activity was detected at the 95% confidence level, i.e., the result is "statistically zero" because "zero" is included in the range encompassed. If the result is greater than twice the uncertainty, statistically positive activity was detected at the 95% confidence level.

The chemical procedure used will include all of the actinides, except protactinium, in the final fraction that was counted. If an actinide is not listed in the results, the activity of that nuclide is at or below the detection limit of about 0.02 pCi/g. When the actinide activity in a particular sample is statistically zero, "Total" is used as the nuclide identifier and the activity listed on the result sheet represents the sum of all of the actinides, except protactinium, that was in the sample.

Below is a brief summary of your samples:

1) Samples numbered 713-716 are four different aliquots from the same sample container. Each individual aliquot that was analyzed had a known weight that varied from 5 to 10 grams. This increased sample size provided an aliquot that was more representative of the sample in the container than the standard one gram aliquot. This larger sample size also increased the sensitivity of the measurement and allowed U-235 to be detected.

SAMPLES SUBMITTED BY: J. Johnson

DATE 4-21-1993

SAMPLE NUMBER	SAMPLE DESCRIPTION	NUCLIDE	ACTIVITY
709	01604059304	U-238	4.3 +/- 0.4 E-1 pCi/g
		U-234	9.2 +/- 0.7 E-1 pCi/g
710	01604059302	U-238	2.1 +/- 0.2 E-1 pCi/g
		Th-232	1.03 +/- 0.17 E-1 pCi/g
		Th-228	1.6 +/- 0.2 E-1 pCi/g
		***	4.5 +/- 0.4 E-1 pCi/g
		***-Th-230 and/or U-234	
711	01604059303	Total	1.0 +/- 1.0 E-2 pCi/mL
712	01604059301	Total	0.8 +/- 1.1 E-2 pCi/mL

ANALYZED BY: David S. Sill

Uncertainties are ONE SIGMA.

EG&G Idaho

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INTEROFFICE CORRESPONDENCE

Date: April 20, 1993

To: J. A. Johnson, MS 4110

From: T. J. Haney, MS 7111

Subject: RML GAMMA-RAY ANALYSIS OF FOUR RWMC SEPTIC TANK SAMPLES - TJH-41-93

Ref.: L. D. Koeppen letter to R. N. Wilhelmsen (LDK-06-92) RML Gamma-Emitting Radionuclide Detection Limits for Radiological Environmental Surveillance Program (RESP) Samples, March 27, 1992

Two liquid and two solid samples from the RWMC septic tanks were counted and analyzed by the Radiation Measurements Laboratory (RML) using high resolution gamma-ray spectrometry techniques. No manmade gamma-emitting radionuclide contaminants were detected above background. Refer to above mentioned RML detection limits.

ID	RML ID
01604059301	A6040893055
01604059302	D3040893030
01604059303	D1040893056
01604059304	D4040893031

If additional counting and analysis information is needed, please call the RML.

jd

cc: S. B. French, MS 4202
S. D. Ingle, MS 4203
L. D. Koeppen, MS 7111
JW Rogers, MS 7111
C. L. Rowsell, MS 7111
Central Files, MS 1651
T. J. Haney File

FIRST SET TAKEN ON 4/5/93

SAMPLES SUBMITTED BY: J. Johnson

DATE 4-27-1993

SAMPLE NUMBER	SAMPLE DESCRIPTION	NUCLIDE	ACTIVITY
713	01604059304-1	U-238	3.4 +/- 0.2 E-1 pCi/g
		U-234	7.6 +/- 0.4 E-1 pCi/g
		U-235	1.4 +/- 0.2 E-2 pCi/g
714	01604059304-2	U-238	3.15 +/- 0.20 E-1 pCi/g
		U-234	7.0 +/- 0.4 E-1 pCi/g
		U-235	1.4 +/- 0.2 E-2 pCi/g
715	01604059304-3	U-238	2.61 +/- 0.17 E-1 pCi/g
		U-234	5.5 +/- 0.3 E-1 pCi/g
		U-235	1.30 +/- 0.20 E-2 pCi/g
716	01604059304-4	U-238	3.03 +/- 0.20 E-1 pCi/g
		U-234	6.8 +/- 0.4 E-1 pCi/g
		U-235	1.6 +/- 0.3 E-2 pCi/g
717	WMF 604	U-238	3.9 +/- 0.4 E-1 pCi/g
		U-234	6.9 +/- 0.6 E-1 pCi/g
718	WMF 613	U-238	5.3 +/- 0.6 E-1 pCi/g
		U-234	1.42 +/- 0.11 E 0 pCi/g
719	Blank	Total	1.7 +/- 1.7 E-2 pCi/g

ANALYZED BY: David S. Lil

Uncertainties are ONE SIGMA.

Second set of samples taken on 4/22/93 — Split with "ATI"

2) Samples 717 and 718 were new samples that were submitted for analyses. The sample size taken for analysis was about one gram.

3) Sample 719 was a laboratory control blank.

4) All of the samples (713-718) have ratios of activities of U-234 to U-238 that are greater than one.

When natural uranium is processed by man to make enriched uranium, most of the U-238 is separated and the "enriched uranium" contains mainly U-235 and U-234 with a little residual U-238. Enriched uranium for the nuclear industry is enriched with respect to U-235 and U-234. When this U-235 enriched uranium is analyzed by alpha spectrometry, U-234 is the predominant activity seen even though the enriched uranium is 90+% by mass U-235. The U-234 has a much higher specific activity than U-235; and this accounts for the high level of activity of U-234 even though a small mass of U-234 is present. Therefore, an alpha spectrum of U-235 enriched uranium has a ratio of the activities of U-234 to U-238 that is greater than one.

The uranium present in these samples is definitely enriched; and not natural as would be the case if the activity ratio was one. However, because of the following: the U-235 to U-238 ratio being about 20, the absence of any TRU activity, extremely homogeneous distribution of uranium between numerous samples from different locations and even different tanks, and the U-234 to U-238 activity ratios being constant, I have to conclude that the enriched uranium found in this sludge is from a natural source and is only enriched in U-234, not U-235, even though this is almost never the case.

Subsurface ground waters are known to be enriched with respect to U-234 only (not U-235), but at activities that are far below detectable levels using routine sample sizes. To detect these nuclides in ground water, many gallons of the ground water would have to be analyzed at one time. Based on the scientific evidence listed above, I must conclude that the septic tank system is, for some unknown reason, removing the "naturally enriched uranium" found in water at very low levels and concentrating it in the sludge. After the uranium from thousands of gallons of water has been deposited and concentrated in the sludge, the ratios of the activity of U-234 to U-238 have the appearance of U-235 enriched uranium from fuel or waste.

The absolute activity of the uranium is relatively very low and is of no consequence to anyone. In fact, every gram of common soil found anywhere on the earth has more U-234, U-235 and U-238

than was found in this sludge.

Attachment:
As stated,

cc: Tom Haney, MS 7111
Doug French, MS 4201
Kerry Martin, MS 7113
Central Files, MS 1651
D.S. Sill File

EG&G Idaho

"Providing research and development services to the government"

INTEROFFICE CORRESPONDENCE

Date: May 21, 1993

To: J. A. Johnson, MS 4110

From: T. J. Haney, MS 7111

Subject: RML GAMMA-RAY ANALYSIS OF TWO RWMC SEPTIC TANK SAMPLES - TJH-57-93

Ref.: L. D. Koeppen letter to R. N. Wilhelmsen (LDK-06-92) RML Gamma-Emitting Radionuclide Detection Limits for Radiological Environmental Surveillance Program (RESP) Samples, March 27, 1992

Two solid samples from the RWMC septic tanks were counted and analyzed by the Radiation Measurements Laboratory (RML) using high resolution gamma-ray spectrometry techniques. No manmade gamma-emitting radionuclide contaminants were detected above background. Refer to above mentioned RML detection limits.

ID	RML ID
WMF613	C5042293025
WMF664	D4042293026

If additional counting and analysis information is needed, please call the RML.

jd

cc: S. B. French, MS 4202
L. D. Koeppen, MS 7111 DK
JW Rogers, MS 7111
C. L. Rowsell, MS 7111
Central Files, MS 1651
T. J. Haney File

EG&G April 1, 1993 IDAHO INC. ENVIRONMENTAL MONITORING

QUALITY ASSURANCE SAMPLING AND ANALYSIS PLAN FOR THE SAMPLING OF TWO RWMC SEPTIC TANKS

No. EMS-016-93

Prepared by

Karen M. Smith
Environmental Monitoring
CFA-615, Mail Stop 4110
526-2296

Project Requester: Sean B. French
Charge Number: 331130600
Date of Request: 04-01-93

REVIEWS

	Signature	Date
Field Team Leader:	Karen M. Smith	
Sampling Operations:	Jay Johnson	
Internal Reviewer:	Laurie Peterson-Wright	4/4/93
Safety:	D. Shoop	

Safety to accompany sampling team
YES NO

APPROVAL

Requester: Sean B. French

1.0 Introduction

This sampling and analysis plan is for the sampling of material contained in two septic tanks located at RWMC. The material will be sampled and analyzed for the following analytes: Toxicity Characteristic Leaching Procedure (TCLP) metals, TCLP Volatile Organic Analysis (VOA),TCLP semi-VOA, Total Metals, Total VOA, and Total Semi-VOA. The sampling is being performed in order to characterize the material to aid in determining the proper treatment and/or disposal methods. Samples will be submitted to the Radiation Measurements Laboratory (RML) for total spectrometric analysis.

2.0 Project Organization and Responsibility

The following is a list of key project personnel and their corresponding responsibilities:

S&A Plan Preparation:	K. M. Smith
Project Requester:	S. B. French
Sampling Operations:	J. A. Johnson
Field Team Leader:	K. M. Smith
Internal Review:	L. J. Peterson-Wright
Safety:	D. Shoop
Laboratory:	ATI

3.0 Project Description

3.1 Sampling/Analysis Objective and Scope: The objective of this project is to provide technically representative sampling and analysis of the material before treatment and/or disposal. The sampling process is designed to address criteria for obtaining representative samples and maintaining sample quality and integrity, as well as safety considerations for field personnel.

3.2 Data Usage: The analytical results will be used to determine the proper treatment and/or disposal method for the material.

4.0 Health and Safety:

In order to provide for the health and safety of the samplers, the sampling will be performed in close consultation with a safety representative. A pre-sample briefing will be held to ensure all safety matters are addressed prior to sampling.

4.1 Precautions and Safety for Samplers: Samplers shall be trained as per 29 CFR Part 1910.120 and wear level D protective clothing and equipment. Level D for this sampling activity is comprised of safety glasses with side shields, latex gloves, and coveralls or an apron. Additional protective equipment will be determined by the safety representative based on sampling conditions. A briefing will be held prior to sampling to ensure that all sampling personnel have read and understood the sampling objectives. If there are any questions regarding the sampling activities, they shall be resolved at this time.

4.2 Safety Considerations: Eating, drinking, smoking or chewing will not be permitted in the sampling area and during the sampling activities. All team members will be required to be surveyed for radioactive contamination before leaving the area.

Any contact with potentially contaminated surfaces will be avoided. Team members will avoid sitting, leaning, or placing equipment on areas that are potentially contaminated.

Sample collection operations will be stopped in the event of an accident or if the Team Leader, safety representative determines conditions are unsafe.

4.3 Radiological Considerations: All samples will be scanned by an HP prior to the samples being shipped to the analytical lab for analysis. Samples will also be sent to the Radiation Measurements Laboratory (RML) for total spectrometric analysis.

5.0 Sampling Strategy and Procedures:

Two sets of samples will be collected (one set from each septic tank). The tanks will be sampled using a peristaltic pump, as per SOP-EM-SR 1.3, Collection of Samples Using a Peristaltic Pump, to extract the liquid from each tank. Precleaned, quality level B, tubing will be used in the pump. The tubing will be changed between the sampling of the tanks. The VOA samples will be collected first using teflon dippers. The material will be pumped into a small teflon beakers, as gently as possible, and then immediately placed into the 40 ml glass sample vials with septa lids. The remaining sample will then be collected by pumping the material into a teflon bucket while raising, lowering, and moving the weighted end of the tubing around in order to represent the contents of the each tank. After an adequate amount of liquid has been pumped into the bucket, the liquid will be stirred and then poured into the proper sample containers.

Solids will also be collected from each tank using a long handled teflon dipper as per SOP-EM-SR 1.4, Collection of Samples Using a Dipper. The VOA samples will be collected first using dippers and placed directly into the sample containers, avoiding any headspace in the containers. The remaining material will then be collected from different areas and depths from each tank. The material will be placed in an aluminum pans for compositing. The material will be mixed using stainless steel spoons/scoops and then placed into the sample containers.

The sampling times will then be recorded for the samples and the sample containers labeled, parafilmed, and then placed into a cooler with ice.

5.0 Sampling Strategy and Procedures (cont.): The chain of custody will then be filled out, recording all pertinent information. The samples will be scanned by an HP before the samples are shipped to the analytical laboratory.

After the samples have been released, proper shipping papers and documentation will be produced as per EMSP 13.1, Handling, Storing, and Shipping Samples, in order for the samples to be shipped to the analytical laboratory for analysis. Proper custody of the samples will be maintained at all times.

5.1 Decontamination: To prevent cross-contamination, all sampling equipment that comes in contact with the sample must be cleaned as per SOP-EM-SR 1.12, Decontamination Procedures.

5.2 Sampling Materials: The following is a list of equipment that will be needed during the sampling excursion:

a) (2) 1000 ml glass container for Total metals/ignit (liquids)

b) (2) 1000 ml glass container for Total semi-VOA (liquids)

c) (4) 40 ml glass vials with septa lids for Total VOA (liquids)

d) (2) 540 LDPE container for Total Spectrometric (liquids)

e) (2) 500 ml HDPE container for TCLP metals/ignit (solids)

f) (2) 500 ml glass container for TCLP semi-VOA (solids)

g) (2) 125 ml glass container for TCLP VOA (solids)

h) (2) 500 ml LDPE container for Total Spectrometric (solid)

i) Garbage bag

5.2 Sampling Materials (cont.):

j) Teriwipes or Kimwipes

k) Parafilm

l) Level D PPE

m) Cooler with blue ice

n) Field logbook

o) Sample labels

p) Chain-of-Custody Forms and Seals

q) Latex gloves

r) peristaltic pump with tubing

s) (2) Disposable Polypropylene funnels

t) (2) teflon buckets

u) (2) teflon dippers

v) (2) aluminum pans

5.4 Prerequisites: All team members will familiarize themselves with all reference material that pertains to the sampling task before the actual field work begins. All equipment will be prepared and will be in proper working order before proceeding to the sampling site. The sample containers will be inspected to ensure their integrity (ie. no cracks, no missing liners etc.)

6.0 Sample Analysis and Quality Control:

6.1 Analytical Procedure: All samples collected in this excursion shall be prepared and analyzed according to the guidelines set forth in USEPA SW-846, Test Methods for Evaluating Solid Waste, third edition, U.S. Environmental Protection Agency (USEPA), November 1986. It is imperative that the designated laboratory perform the analysis using these techniques to ensure quality, precision, accuracy, and correctness of the data. USEPA analytical level III is required for this project.

Analytical Methods

Parameter	Prep Method	Analysis Method
TOTAL metals Mercury	3010	6010 7470/7471
TOTAL VOA	NA	8240
TOTAL semi-VOA	NA	8270
TCLP metals mercury	1311 1311	6010 7470/7471
TCLP VOA	1311	8240
TCLP semi-VOA	1311	8270

6.2 Data Completeness: Data must be reported for all samples collected and submitted for analysis.

6.3 Data Representativeness: All sample collection, handling, and selected analytical protocols have been chosen so the results will be

as representative as possible of the media and conditions being measured.

6.4 Data Quality Control: The sampling teams and laboratory's quality control programs will be set up to meet the requirements stated in USEPA SW-846, Test Methods for Evaluating Solid Waste, third edition, U.S. Environmental Protection Agency, November 1986. USEPA analytical level III is required.

Sensitivity and Blanks

Parameter	Sensitivity	Method Blank
TCLP and TOTAL Metals (mercury)	*PQL by ICP PQL by cold vapor	< PQL < PQL
TCLP and TOTAL VOA	PQL by GC/MS	< PQL
TCLP and TOTAL semi-VOA	PQL by GC/MS	< PQL

7.0 Documentation:

7.1 Sample Security: All samples must be labeled, marked, and controlled as per EMSP 8.1, Identification and Control of Items and EMSP 13.1, Handling, Storing, and Shipping Samples to ensure the project objectives are met.

7.2 Field Records: All field activities must be recorded in indelible ink in the appropriate field logbook.

7.3 Corrective Action: Corrective actions are required whenever established control limits for an analysis are exceeded. Documentation of such corrective action is required and will be addressed in the final report.

8.0 Data Reduction and Validation:

Initial data reduction and data quality review will be performed by the laboratory. Data validation will be performed by EG&G Idaho's Environmental Monitoring Unit as per EMSP 15.1, Evaluation and Control of Data Originating From Environmental Sampling Efforts and EMSP 15.2, Validation and Assessment of Data Originating From Environmental Monitoring Sampling Efforts.

9.0 Data Reporting:

All analytical results, including raw data, chain of custody, and QC measurements for each sample analyzed are required within 20 to 25 working days after receipt of the samples by the laboratory. Data should be forwarded to Jay Johnson of EG&G Idaho, Environmental Monitoring Unit, CFA 615, MS 4110, Box 1625, Idaho Falls, Id. 83415-4110; telephone (208) 526-4815.

A letter report, including all data listed above, will be issued upon completion of the data evaluation by the Environmental Monitoring Unit to the requester, Mr. S. B. French.

REFERENCES

1. Environmental Monitoring Administration Manual, Environmental Monitoring Unit, EG&G, Idaho, Inc.

   EMSP 8.1, Identification and Control of Items.
   EMSP 13.1, Handling, Storing, and Shipping Samples.
   EMSP 15.1, Evaluation and Control of Data Originating From Environmental Sampling Efforts.
   EMSP 15.2, Validation and Assessment of Data Originating From Environmental Monitoring Sampling Efforts.

2. Environmental Monitoring Special Request Handbook at the Idaho National Engineering Laboratory, EGG-ESQ-9624, Environmental Monitoring Unit, EG&G, Idaho, Inc.

   SOP-EM-SR 1.12, Decontamination Procedures
   SOP-EM-SR 1.3, Collection of Samples Using a Peristaltic Pump
   SOP-EM-SR 2.1 Analytical Data Validation in support of Special Requests

3. EPA, 40 CFR Part 261.

4. OSHA, 29 CFR 1910.120.

5. USEPA SW-846, Test Methods for Evaluating Solid Waste, third edition, U.S. Environmental Protection Agency, November 1986.2