

FLUOR GLOBAL SERVICES

April 24, 2001

FH-0102362

Ms. J. H. Kessner, Program Manager
Analytical Services
Bechtel Hanford
3190 George Washington Way H9-03
Richland, Washington 99352



Dear Ms. Kessner:

FINAL RESULTS FOR THE 221-U TANK 5-6 SLUDGE SAMPLE – SDG3

- References: (1) Letter, J. J. McGuire (BHI) to J. L. Jacobsen (FDH), "Letter of Instruction for the 221-U Canyon Disposition Initiative Sample Analysis", 081727, August 31, 2000.
- (2) HNF-SD-CD-QAPP-016, Rev. 4A, 222-S Laboratory Quality Assurance Plan, January 4, 2001.

This letter and attachments present the final results for the tank 5-6 sludge sample (B118T8) received from the 221-U Facility on January 25, 2001. The sample was analyzed for those analytes indicated on the attached copy of the chain of custody form in accordance with the *Letter of Instruction for the 221-U Canyon Disposition Initiative Sample Analysis* referenced above. An additional analysis for isotopic plutonium was requested by email correspondence and is included as Attachment 7.

If you have any questions regarding this report, please feel free to call me on 373-4314.

Sincerely,

Ruth A Esch, Project Coordinator
Analytical Services

RAE:lda

Attachments (7)

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ATTACHMENT 1

NARRATIVE

Consisting of 7 pages,
Including cover page

FINAL RESULTS FOR THE 221-U TANK 5-6 SLUDGE SAMPLE – SDG3

A sludge sample (B118T8) from Tank 5-6 at the 221-U Facility was received at the 222-S Laboratory on January 25, 2001. The sample was analyzed for those analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Letter of Instruction for the 221-U Canyon Disposition Initiative Sample Analysis (LOI)*, referenced in the cover letter.

A Data Summary Report was included as Attachment 2. The correlation between customer sample identification numbers and laboratory identification numbers was presented in the sample breakdown diagram included as Attachment 3. Tentatively identified compounds (TICs) for the semi-volatile organic analysis were included as Attachment 4. Quality control data and TICs for the volatile organic analysis were included as Attachment 5. Copies of the chain of custody and Request for Sample Analysis forms were included as Attachment 6. An additional analysis for isotopic plutonium by alpha energy analysis (AEA) was requested by email correspondence, which was included in Attachment 7.

The sample was analyzed for polychlorinated biphenyls (PCB). Aroclor 1254 was observed in the sample with an average concentration of approximately 43 µg/g based on the sample as received. The gravimetric percent solids test was not requested on the chain of custody and a correction to dry weight basis could not be made. However, since the results were very near the 50 µg/g TSCA regulated limit and the sample was very moist (if > 14% moisture, dry weight corrected results would be greater than 50 µg/g), the 222-S Laboratory PCB Status of the unused sample, sample digests and waste generated from the analyses was changed to "Known PCB".

Sample Appearance and Handling

B118T8: The sample had the appearance of a reddish-brown wet soil with approximately 95% settled solids with standing liquid above. No floating organic layer was observed. The particle size of the soil matrix varied from sand to small pebbles. The sample also contained three green plastic thimble-like objects that were on top of the solids. These objects were not homogenized with the sample and were not included as representative of the sample matrix.

Analytical Results

Holding Times

As indicated in the email correspondence (Attachment 7), the seven-day delay in receipt of the sample and the analytical backlog for these analyses resulted in missing the SW-846 holding times for pH (24 hours), nitrate (48 hours), volatile organic analysis (VOA) (14 days) and PCB and semi-volatile organic analysis (SVOA) extractions (14 days).

Quality Control Results

Standard Recovery

All laboratory control standard (LCS) recoveries were acceptable in accordance with the 222-S Laboratory Quality Assurance Plan (QAPP-016 2000), except as noted below.

The recoveries for most of the SVOA LCS compounds were greater than 70% recovery. However, the recoveries for phenol, 2-chlorophenol, N-nitroso-di-n-propylamine and 1,4-dichlorobenzene were between 60% and 66% recovery. These recoveries were lower than the default acceptance limits of 70% - 130% recovery that were set in the Laboratory LIMS system. However, based on typical performance, the results were considered acceptable. There were insufficient data points to recalculate the statistical control limits in accordance with QAPP-016 (Clark 2001) at this time. With the procedure currently available, a reanalysis would not improve the sample results because of the dilution required for the sample analysis, and a reanalysis would not necessarily improve the LCS recoveries.

For the VOA analysis, a continuing calibration check standard (CCV) was analyzed in place of the LCS. The results for the CCV were included in Attachment 5. All CCV recoveries were acceptable.

Preparation Blanks

Low levels of contamination from fluoride, chloride, nitrite and gross alpha activity were detected in the preparation blanks analyzed with the ion chromatography (IC) and gross alpha analyses. Since the concentration of these analytes detected in the blanks were less than 5% of those detected for the sample, the contamination was considered insignificant and no reanalysis was requested.

For the VOA analysis, acetone, 2-butanone, benzene, chlorobenzene, ethylbenzene and total xylenes were detected in the method blank. All of these compounds, except 2-butanone, were reported as estimated quantities below the low calibration standard. All of these compounds were also detected in the sample. Both acetone and 2-butanone were detected above the low calibration standard in the sample.

The VOA contaminants found in the blank were significant with respect to the results reported for the sample. Since the concentrations of contaminants in the blank were the same order of magnitude as the results reported for the sample, the contamination was attributed to either unavoidable detection of vapors picked up by the gas chromatograph from diesel engines running outside, or analyses taking place elsewhere in the laboratory or, in the case of 2-butanone, from possible contamination of the methanol used for making dilutions. Contamination from vapors present in the lab is difficult to avoid because the laboratory is designed for radionuclide contamination control rather than for volatile organic control. The source for the 2-butanone contamination has not been clearly identified and has not yet been eliminated. Therefore, a reanalysis was not expected to improve the reported results, and was not requested.

Relative Percent Difference (RPD)

The relative percent difference (RPD) between sample and duplicate results were greater than the limit of 20% listed in QAPP-016 (Clark 2001) for uranium-235, uranium-238, aluminum, barium, cadmium, lead, cesium-137, total beta, and many of the VOA compounds. Although some of these analytes had sample concentrations that were less than ten times the detection limit, in which case the RPD criterion was not applicable, the high RPDs were mainly attributed to the non-homogenous sample matrix (refer to the sample description). For the VOA compounds, the high RPDs were attributed to laboratory contamination of the sample. No re-preparation with reanalysis was requested because, based on the sample description, a reanalysis was not expected to improve the analytical results.

Matrix Spike Recoveries

The matrix spike recoveries for many analytes were outside of the acceptance limits listed in QAPP-016. The analytes that failed were silver (Ag), aluminum (Al), chromium (Cr), phosphorus (P), uranium-235 (^{235}U), uranium-238 (^{238}U), pyrene, 2,4-dinitrotoluene, tri-n-butylphosphate (TBP), and toluene. The failures were attributed to the non-homogenous sample matrix. High variability in analyte concentration between individual sample aliquots not only affect precision, but will also affect the calculation for matrix spike recovery because of the inaccuracy of assuming that the analyte concentration in the two aliquots was the same. Another factor that affected the matrix spike recoveries for ^{235}U , ^{238}U , Al, Cr, P and TBP was that the analyte concentrations were greater than four times the concentration of the matrix spike added. In this situation, the recovery criteria were not applicable, and no reanalyses were requested. For the SVOA and VOA compounds, variability in the composition of the matrix that affected certain compounds may have been an additional contributor to poor matrix spike recoveries.

The post-digest spike recoveries for ^{235}U , Ag, Al, Cr, and P were all within the appropriate acceptance limits. The post-digest spike recovery for the ^{238}U (70%) was still slightly outside of the acceptance limits of 75% - 125% recovery. This was attributed to matrix effects.

Surrogate Recoveries

For the VOA, SVOA and PCB analysis, surrogate standards were added to the samples to assess the accuracy of the method. Surrogate recoveries were presented in Tables 1, 2 and 3. All of the surrogate recoveries were within the acceptance limits of 50% - 150% recovery, except as noted below.

For the SVOA, all of the surrogate recoveries for the method blank and the surrogate recovery for 2-fluorobiphenyl in the sample aliquot were outside of the acceptance limits of 50% - 150%. The results were qualified with a "D" to indicate that a dilution was made. However, for the blank, the bench sheet from the laboratory indicated that some of the volume of the blank was lost due to a loose lid on the vial. The low surrogate recoveries for the blank were, therefore, attributed to this loss in volume. For the sample, a large dilution was required to reduce the radionuclide activity for analysis at the Waste Sampling and Characterization Facility. Since the recovery for 2-fluorobiphenyl, and all of the other surrogate recoveries for the sample, met the acceptance criteria, no re-preparation or reanalysis was requested.

Surrogate	ES	ES/MS	ES/MS/MS	ES/MS/MS/MS
Dibromofluoromethane (Surr)	92	91	90	119
4-Bromofluorobenzene (Surr)	101	107	103	112
Toluene-d8 (Surr)	101	100	96	86

Surrogate	ES	ES/MS	ES/MS/MS	ES/MS/MS/MS	ES/MS/MS/MS/MS
2-Fluorophenol (Surr)	63	6D	82	82	61
Phenol-d5 (Surr)	58	6D	80	83	77
Nitrobenzene-d5 (Surr)	68	6D	108	100	95
2-Fluorobephenyl (Surr)	78	10D	133D	114	105
2,4,6-Tribromophenol (Surr)	72	2D	71	69	70
Terphenyl-d14 (Surr)	90	12D	127	125	127

D – indicates that the surrogate was diluted out

Surrogate	ES	ES/MS	ES/MS/MS	ES/MS/MS/MS	ES/MS/MS/MS/MS
Tetrachloro-m-xylene (Surr)	68.3	65.8	78.5	72.4	78.2
Decachlorobiphenyl (Surr)	97.7	108.6	81.6	127.8	130.0

Practical Quantitation Limits (PQL)

The LOI requested practical quantitation limits (PQL) be met for many of the requested analytes. For those analytes reported as non-detected, the customer requested practical quantitation limits (PQL) or detection limits (DL) were not met for isotopic plutonium (Pu), uranium (U) and thorium (Th) by the inductively coupled plasma/mass spectroscopy (ICP/MS) method and for nitrite by ion chromatography (IC). All other requested PQLs were met.

The high reported detection limits were the result of dilutions required to reduce the concentration of other analytes in the sample. A reanalysis was not performed because the laboratory used the least dilution, or the largest sample size possible.

Analytical Procedures

Table 4 presents the 222-S Laboratory analytical procedures used to generate the reported results.

Table 4. Analytical Procedures

Analysis	Preparation Procedure	Analysis Procedure
Inorganic Analyses		
pH	Direct	LA-212-105 Rev. C-4
Hg	Direct	LA-325-106 Rev. A-4
NH ₃	Water Digest	LA-631-001 Rev. D-2
IC	Water Digest	LA-533-107 Rev. B-0
ICP	Acid Digest	LA-505-161 Rev. C-5
ICP-MS	Acid Digest	LA-506-101 Rev. A-4
Radionuclide Analyses		
AT/TB	Acid Digest	LA-508-101 Rev. G-2
GEA	Acid Digest	LA-548-121 Rev. F-2
⁹⁰ Sr	Acid Digest	LA-220-101 Rev. E-5
²⁴¹ Am	Acid Digest	LA-953-104 Rev. B-4
^{239/240} Pu	Acid Digest	LA-953-104 Rev. B-4
Organic Analyses		
VOA	Direct	LA-523-118 Rev. A-0
SVOA	LA-523-115 Rev. B-3 †	LA-523-456 Rev. B-2 †
PCB	LA-523-115 Rev. C-0	LA-523-140 Rev. A-0 †

† - The procedure listed in the LOI for SVOA was not currently in use. The correct procedures for extraction and analysis were listed here.

‡ - The procedure listed reflects the method for PCB analysis used at the 222-S Laboratory.
This procedure became active after the LOI was released.

Water digest procedure – LA-504-101 Rev. G-3

Acid digest procedure – LA-505-163 Rev. C-0

Abbreviations

Hg – mercury

NH₃ – ammonia

IC – ion chromatography

ICP – inductively coupled plasma

ICP-MS – ICP-mass spectrometry

AT/TB – total alpha/total beta

GEA – gamma energy analysis

⁹⁰Sr – strontium-90

²⁴¹Am – americium-241

^{239/240}Pu – plutonium-239/240

VOA – volatile organic analysis

SVOA – semi-volatile organic analysis

PCB – polychlorinated biphenyl

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ATTACHMENT 2

DATA SUMMARY REPORT

Consisting of 5 pages,
Including cover page

Attachment 2. Data Summary Report
221U SDG3

CORE NUMBER: n/a
SEGMENT #: B118T8

SEGMENT PORTION: ACID DIGEST

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S01M000034	A		Strontium-89/90 High Level	uCi/g	102.3	<8.81E-4	12.80	10.50	11.65	19.7	n/a	1.77e-03	3.89E-01
S01M000034	A		Pu-239/240 by TRU-SPEC Resin	uCi/g	98.04	<1.66E-3	8.52e-02	7.99e-02	8.25e-02	6.42	n/a	6.28e-03	1.91E+00
S01M000034	A		Pu-238 by TRU-SPEC Resin IonEx	uCi/g	n/a	<1.66E-3	6.81e-02	7.36e-02	7.08e-02	7.76	n/a	6.28e-04	2.01E+00
S01M000034	A		Thorium-229 by ICP/MS	ug/g	n/a	<0.124	< 24.64	<24.7	n/a	n/a	n/a	24.64	n/a
S01M000034	A		Thorium-230 by ICP/MS	ug/g	n/a	<0.412	< 82.15	<82.2	n/a	n/a	n/a	82.15	n/a
S01M000034	A		Thorium-232 by ICP/MS	ug/g	n/a	<0.412	92.33	86.70	89.52	6.29	n/a	82.15	n/a
S01M000034	A		Uranium-233 by ICP/MS AcidD159	ug/g	n/a	<0.0989	< 19.72	<19.7	n/a	n/a	n/a	19.71	n/a
S01M000034	A		Uranium-234 by ICP/MS AcidD159	ug/g	n/a	<0.0989	< 19.72	<19.7	n/a	n/a	n/a	19.71	n/a
S01M000034	A		Uranium-235 by ICP/MS AcidD159	ug/g	93.61	<0.0989	8.73e+02	578.0	725.3	40.6	-2.31e+03	19.71	n/a
S01M000034	A		Uranium-236 by ICP/MS AcidD159	ug/g	n/a	<0.132	< 26.29	<26.3	n/a	n/a	n/a	26.29	n/a
S01M000034	A		Uranium-238 by ICP/MS AcidD159	ug/g	91.50	<0.0989	1.23e+05	8.05e+04	1.02e+05	41.9	-2.45e-01	19.71	n/a
S01M000034	A		Plutonium-239 by ICP/MS	ug/g	n/a	<0.412	< 82.15	<82.2	n/a	n/a	n/a	82.15	n/a
S01M000034	A		Plutonium-240 by ICP/MS	ug/g	n/a	<0.412	< 82.15	<82.2	n/a	n/a	n/a	82.15	n/a
S01M000034	A		Plutonium-242 by ICP/MS	ug/g	n/a	<0.412	< 82.15	<82.2	n/a	n/a	n/a	82.15	n/a
S01M000034	A		Pu/Am-241 by ICP/MS	ug/g	n/a	<0.412	< 82.15	<82.2	n/a	n/a	n/a	82.15	n/a
S01M000034	A		Pu 244/Cm 244 by ICP/MS	ug/g	n/a	<0.412	< 82.15	<82.2	n/a	n/a	n/a	82.15	n/a
S01M000034	A		Silver -ICP-Acid Digest	ug/g	80.50	<0.0100	1.07e+02	89.00	98.00	18.4	40.95	9.970	n/a
S01M000034	A		Aluminium -ICP-Acid Digest	ug/g	90.60	<0.0500	1.99e+03	1.50e+03	1.74e+03	28.1	48.69	49.80	n/a
S01M000034	A		Arsenic -ICP-Acid Digest	ug/g	89.70	<0.100	< 99.70	<99.8	n/a	n/a	n/a	89.01	99.70
S01M000034	A		Barium -ICP-Acid Digest	ug/g	89.40	<0.0500	98.30	72.40	85.35	30.3	84.61	49.80	n/a
S01M000034	A		Bismuth -ICP-Acid Digest	ug/g	87.60	<0.100	1.23e+02	106.0	114.5	14.8	90.48	99.70	n/a
S01M000034	A		Cadmium -ICP-Acid Digest	ug/g	89.50	<0.00500	33.00	24.30	28.65	30.4	91.00	4.980	n/a
S01M000034	A		Chromium -ICP-Acid Digest	ug/g	89.20	<0.0100	4.98e+02	564.0	531.0	12.4	69.01	9.970	n/a
S01M000034	A		Phosphorus -ICP-Acid Digest	ug/g	93.10	<0.200	2.07e+04	2.02e+04	2.04e+04	2.44	-4.15e-01	1.99e+03	n/a
S01M000034	A		Lead -ICP-Acid Digest	ug/g	88.00	<0.100	6.38e+02	486.0	562.0	27.0	75.61	99.70	n/a
S01M000034	A		Selenium -ICP-Acid Digest	ug/g	88.70	<0.100	< 99.70	<99.8	n/a	n/a	n/a	89.85	99.70
S01M000034	A		Cobalt-60 by GEA	uCi/g	101.1	<5.57e-3	1.37e-01	1.41e-01	1.39e-01	2.88	n/a	n/a	6.64
S01M000034	A		Cesium-137 by GEA	uCi/g	109.9	<8.58e-3	9.490	5.010	7.250	61.8	n/a	n/a	0.800
S01M000034	A		Europium-152 by GEA	uCi/g	n/a	<8.65e-3	<3.43e-02	<2.65e-2	n/a	n/a	n/a	3.43e-02	n/a
S01M000034	A		Europium-154 by GEA	uCi/g	n/a	<1.62e-2	<2.13e-02	<2.34e-2	n/a	n/a	n/a	2.13e-02	n/a
S01M000034	A		Europium-155 by GEA	uCi/g	n/a	<1.11e-2	<4.23e-02	<3.32e-2	n/a	n/a	n/a	4.23e-02	n/a
S01M000034	A		Am-241 by TRU-SPEC Resin IonEx	uCi/g	105.1	<7.48E-4	6.71e-02	6.95e-02	6.83e-02	3.51	n/a	4.57e-03	1.78E+00
S01M000034	A		Alpha of Digested Solid	uCi/g	84.97	6.95E-4	2.34e-01	2.28e-01	2.31e-01	2.60	91.77	8.14e-04	4.38E+00
S01M000034	A		Beta of Solid Sample	uCi/g	103.5	<4.30E-3	34.00	25.00	29.50	30.5	102.9	4.84e-03	2.80E-01

PARENT: PARENT

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S01M000032			Mercury by CVA4 (PE) with FIAS	ug/g	100.4	<1.0e-4	1.95e+02	194.7	194.9	0.21	92.00	4.100	n/a
S01M000032			pH on Solid Samples	pH	n/a	n/a	9.000	n/a	n/a	n/a	n/a	1.00e-02	n/a
S01M000032			Appearance of Sample-Smpl Prep		n/a	n/a	solid	n/a	n/a	n/a	n/a	n/a	n/a
S01M000032			Volume % Settled Solids	%	n/a	n/a	95.00	n/a	n/a	n/a	n/a	1.00e-01	n/a
S01M000032			Color of Sample		n/a	n/a	red/brown	n/a	n/a	n/a	n/a	n/a	n/a
S01M000032			Organic Vol Present/sampleprep	ml	n/a	n/a	0.00e+00	n/a	n/a	n/a	n/a	n/a	n/a

SVOA/PCB: SVOA/PCB

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S01M000035			Aroclor-1016 by SW-846 8082	ug/Kg	n/a	<50	<1.39e+02	<187	n/a	n/a	n/a	139.0	n/a
S01M000035			Aroclor-1221 by SW-846 8082	ug/Kg	n/a	<150	<4.17e+02	<562	n/a	n/a	n/a	417.0	n/a
S01M000035			Aroclor-1232 by SW-846 8082	ug/Kg	n/a	<140	<3.89e+02	<524	n/a	n/a	n/a	389.0	n/a
S01M000035			Aroclor-1242 by SW-846 8082	ug/Kg	n/a	<80	<2.22e+02	<300	n/a	n/a	n/a	222.0	n/a
S01M000035			Aroclor-1248 by SW-846 8082	ug/Kg	n/a	<40	<1.11e+02	<150	n/a	n/a	n/a	111.0	n/a
S01M000035			Aroclor-1254 by SW-846 8082	ug/Kg	110.3	<40	3.93e+04	4.73e+04	4.33e+04	18.4	158.8	20.00	n/a
S01M000035			Aroclor-1260 by SW-846 8082	ug/Kg	n/a	<50	<1.39e+02	<187	n/a	n/a	n/a	139.0	n/a
S01M000035			Aroclor-1262 by SW-846 8082	ug/Kg	n/a	<40	<1.11e+02	<150	n/a	n/a	n/a	111.0	n/a
S01M000035			bis-(2-Chloroethyl) ether	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			1,3-Dichlorobenzene	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			1,2-Dichlorobenzene	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			2,2'-oxybis(1-Chloropropane)	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			Isophorone	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			2,4-Dimethylphenol	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			bis(2-Chloroethoxy)methane	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			4-Chloroaniline	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			2-Methylnaphthalene	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			Hexachlorocyclopentadiene	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			2,4,6-Trichlorophenol	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			2-Chloronaphthalene	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			2-Nitroaniline	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			Dimethylphthalate	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			Acenaphthylene	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			2,6-Dinitrotoluene	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	1.56e+04	n/a
S01M000035			3-Nitroaniline	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			2,4-Dinitrophenol	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			Dibenzofuran	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			Diethylphthalate	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			4-Chlorophenyl-phenylether	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			Fluorene	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			4-Nitroaniline	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			4,6-Dinitro-2-methylphenol	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			N-Nitrosodiphenylamine	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			4-Bromophenyl-phenylether	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			Hexachlorobenzene	ug/Kg	n/a	ND	ND	ND	n/a	n/a	21.00	7.16e+04	n/a
S01M000035			Pentachlorophenol	ug/Kg	77.00	ND	ND	ND	n/a	n/a	93.00	1.14e+04	n/a
S01M000035			Phenol	ug/Kg	64.00	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			Phenanthrene	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			Anthracene	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			Di-n-butylphthalate	ug/Kg	n/a	ND	2.20e+04	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			Fluoranthene	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			Butylbenzylphthalate	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			3,3'-Dichlorobenzidine	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			Benzo(a)anthracene	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			Chrysene	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			bis(2-Ethylhexyl)phthalate	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	1.54e+04	n/a
S01M000035			2,4-Dichlorophenol	ug/Kg	n/a	n/a	ND	ND	n/a	n/a	n/a	1.31e+04	n/a
S01M000035			2-Nitrophenol	ug/Kg	n/a	n/a	ND	ND	n/a	n/a	n/a	1.72e+04	n/a
S01M000035			2-Chlorophenol	ug/Kg	60.00	ND	ND	ND	n/a	n/a	80.00	9.70e+03	n/a

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S01M000035			Pyrene	ug/Kg	96.00	ND	ND	ND	n/a	n/a	133.0	1.20e+04	n/a
S01M000035			N-Nitroso-di-n-propylamine	ug/Kg	66.00	ND	ND	ND	n/a	n/a	92.00	1.40e+04	n/a
S01M000035			1,2,4-Trichlorobenzene SV	ug/Kg	70.00	ND	ND	ND	n/a	n/a	95.00	2.74e+04	n/a
S01M000035			4-Chloro-3-methylphenol	ug/Kg	74.00	ND	ND	ND	n/a	n/a	87.00	2.03e+04	n/a
S01M000035			Acenaphthene	ug/Kg	76.00	ND	ND	ND	n/a	n/a	114.0	2.41e+04	n/a
S01M000035			4-Nitrophenol	ug/Kg	76.00	ND	ND	ND	n/a	n/a	n/a	8.00e+04	n/a
S01M000035			2,4-Dinitrotoluene	ug/Kg	72.00	ND	ND	ND	n/a	n/a	46.00	1.56e+04	n/a
S01M000035			2-Methylphenol	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	1.76e+04	n/a
S01M000035			3 & 4 Methylphenol Total	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	1.51e+04	n/a
S01M000035			1,4-Dichlorobenzene	ug/Kg	60.00	ND	ND	ND	n/a	n/a	92.00	2.68e+04	n/a
S01M000035			Di-n-octylphthalate	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	1.51e+04	n/a
S01M000035			Hexachloroethane	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	3.04e+04	n/a
S01M000035			Naphthalene	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	2.68e+04	n/a
S01M000035			Tri-n-butylphosphate	ug/Kg	n/a	ND	8.30e+05	7.20e+05	7.75e+05	14.0	-1.90e+07	7.00e+03	n/a
S01M000035			Benzo(b)fluoranthene	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			Benzo(k)fluoranthene	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			Benzo(a)pyrene	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			Indeno(1,2,3-cd)pyrene	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			Dibenz(a,h)anthracene	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			Benzo(g,h,i)perylene	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
S01M000035			Nitrobenzene	ug/Kg	n/a	n/a	ND	n/a	n/a	n/a	n/a	n/a	n/a
S01M000035			Hexachlorobutadiene	ug/Kg	n/a	n/a	ND	n/a	n/a	n/a	n/a	n/a	n/a
S01M000035			2,4,5-Trichlorophenol	ug/Kg	n/a	n/a	ND	n/a	n/a	n/a	n/a	n/a	n/a

VOA: VOA

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S01M000036			Vinyl Chloride	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	65.62	n/a
S01M000036			Chloromethane	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	65.62	n/a
S01M000036			Bromomethane	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	65.62	n/a
S01M000036			Chloroethane	ug/Kg	n/a	ND	ND	310.0	n/a	n/a	n/a	65.62	n/a
S01M000036			Methylene Chloride	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	65.62	n/a
S01M000036			Acetone	ug/Kg	n/a	27.82	80.60	17.80	49.20	128	n/a	65.62	n/a
S01M000036			1,1-Dichloroethane	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	65.62	n/a
S01M000036			1,2-Dichloroethene (cis & tran	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	65.62	n/a
S01M000036			Chloroform	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	65.62	n/a
S01M000036			1,2-Dichloroethane	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	65.62	n/a
S01M000036			2-Butanone	ug/Kg	n/a	191.34	4.09e+02	89.20	249.1	128	n/a	65.62	n/a
S01M000036			1,1,1-Trichloroethane	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	65.62	n/a
S01M000036			Carbon Tetrachloride	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	65.62	n/a
S01M000036			Bromodichloromethane	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	65.62	n/a
S01M000036			1,2-Dichloropropane	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	65.62	n/a
S01M000036			Trichloroethene	ug/Kg	n/a	ND	ND	26.60	n/a	n/a	70.00	65.62	n/a
S01M000036			Dibromochloromethane	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	65.62	n/a
S01M000036			1,1,2-Trichloroethane	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	65.62	n/a
S01M000036			Benzene	ug/Kg	n/a	2.56	17.83	ND	n/a	n/a	86.00	65.62	n/a
S01M000036			Bromoform	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	65.62	n/a
S01M000036			4-Methyl-2-pentanone	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	65.62	n/a
S01M000036			2-Hexanone	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	65.62	n/a
S01M000036			Tetrachloroethene	ug/Kg	n/a	ND	60.90	69.10	65.00	13.0	n/a	65.62	n/a
S01M000036			Toluene	ug/Kg	n/a	ND	12.80	7.040	9.920	58.0	61.00	65.62	n/a

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S01M000036			1,1,2,2-Tetrachloroethane	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	65.62	n/a
S01M000036			Chlorobenzene	ug/Kg	n/a	13.16	3.850	1.128	2.489	109	70.00	65.62	n/a
S01M000036			Ethylbenzene	ug/Kg	n/a	2.42	3.800	2.518	3.159	40.6	n/a	65.62	n/a
S01M000036			Styrene	ug/Kg	n/a	ND	ND	ND	n/a	n/a	n/a	65.62	n/a
S01M000036			Xylenes (total)	ug/Kg	n/a	28.48	34.74	18.76	26.75	59.7	n/a	65.62	n/a
S01M000036			1,1-Dichloroethene	ug/Kg	n/a	ND	ND	ND	n/a	n/a	127.0	65.62	n/a

WATER DIGEST: WATER DIGEST

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S01M000033	W		Ammonia-by ISE-Std Additions	ug/g	112.0	<1.00E+3	2.04e+03	1.78e+03	1.91e+03	13.6	n/a	1.00e+03	n/a
S01M000033	W		Fluoride IC SW846	ug/g	94.53	0.0500	34.01	<26.5	n/a	n/a	95.00	26.41	n/a
S01M000033	W		Chloride SW-846	ug/g	100.7	0.0600	4.90e+02	445.0	467.6	9.65	96.24	37.41	n/a
S01M000033	W		Nitrite IC SW846	ug/g	93.99	0.280	<2.38e+02	<238.	n/a	n/a	92.44	237.6	n/a
S01M000033	W		Nitrate by IC SW846	ug/g	100.5	<0.139	5.23e+03	4.71e+03	4.97e+03	10.4	106.1	305.9	n/a
S01M000033	W		Phosphate by IC SW846	ug/g	95.71	<0.120	9.18e+02	1.11e+03	1.01e+03	18.9	95.24	264.1	n/a
S01M000033	W		Sulfate by IC SW846	ug/g	98.38	<0.138	1.20e+03	1.10e+03	1.15e+03	8.86	97.06	303.7	n/a

FH-0102362

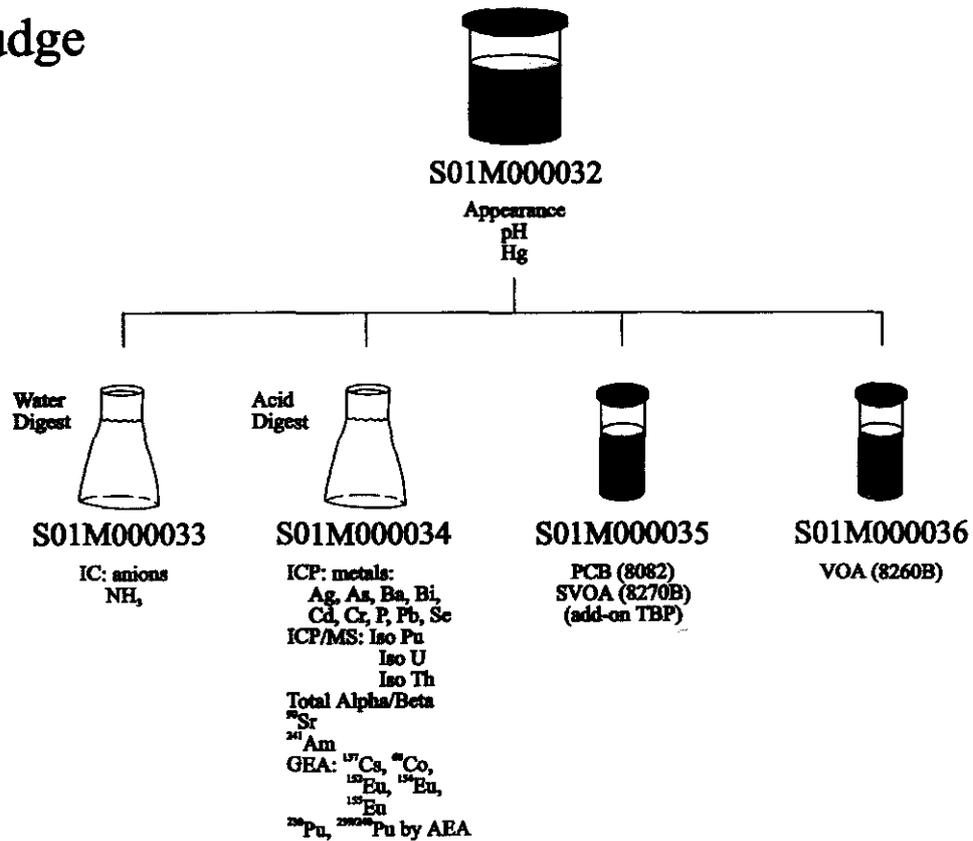
ATTACHMENT 3

SAMPLE BREAKDOWN DIAGRAM

Consisting of 2 pages,
Including cover page

221-U Facility Samples SDG3

Tank 5-6 Sludge
B118T8



FH-0102362

ATTACHMENT 4

**TENTATIVELY IDENTIFIED COMPOUNDS (TICs) FOR
SEMI-VOLATILE ORGANIC ANALYSIS**

Consisting of 5 pages,
Including cover page

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLK426

Lab Name: WSCF

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: SDG010226A

Matrix: (soil/water) SOIL

Lab Sample ID: SBLK426

Sample wt/vol: 1.0 (g/mL) G

Lab File ID: SBLK426

Level: (low/med) LOW

Date Received: _____

% Moisture: _____ decanted: (Y/N) _____

Date Extracted: 02/12/01

Concentrated Extract Volume: 2000 (uL)

Date Analyzed: 02/26/01

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 2.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.00	7700	J
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

FORM 7
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: 222-S LABORATORY

Contract:

Lab Code: VOA

Case No.:

SAS No.:

SDG No.: SDGA24843

Instrument ID: TROI

Calibration Date: 02/06/01 Time: 1017

Lab File ID: CCV1

Init. Calib. Date(s): 02/14/01 02/14/01

Heated Purge: (Y/N) N

Init. Calib. Times: 0939 1912

GC Column: ID: 2.00 (mm)

COMPOUND	SAMPLE AMOUNT	CAL500 AMOUNT	CURVE	%D	MAX %d	
Chloromethane	0.0000	500.00	LINR	100.0	20.0	<-
Vinyl Chloride	380.47	500.00	LINR	23.9	20.0	<-
Bromomethane	0.0000	500.00	2ORDR	100.0	20.0	<-
Benzene	0.0000	500.00	LINR	100.0	20.0	<-
Bromodichloromethane	0.0000	500.00	AVRG	100.0	20.0	<-
Bromoform	0.0000	500.00	LINR	100.0	20.0	<-
Carbon Tetrachloride	0.0000	500.00	LINR	100.0	20.0	<-
Chlorobenzene	0.0000	500.00	AVRG	100.0	20.0	<-
Chloroethane	0.0000	500.00	2ORDR	100.0	20.0	<-
Chloroform	436.55	500.00	LINR	12.7	20.0	
Dibromochloromethane	0.0000	500.00	AVRG	100.0	20.0	<-
1,1-Dichloroethane	0.0000	500.00	LINR	100.0	20.0	<-
1,2-Dichloroethane	0.0000	500.00	LINR	100.0	20.0	<-
1,1-Dichloroethene	459.89	500.00	LINR	8.0	20.0	
cis-1,2-Dichloroethene	0.0000	500.00	LINR	100.0	20.0	<-
trans-1,2-Dichloroethene	0.0000	500.00	LINR	100.0	20.0	<-
1,2-Dichloropropane	436.20	500.00	LINR	12.8	20.0	
Ethylbenzene	414.69	500.00	AVRG	17.1	20.0	
Methylene Chloride	0.0000	500.00	LINR	100.0	20.0	<-
Styrene	0.0000	500.00	LINR	100.0	20.0	<-
1,1,2,2-Tetrachloroethane	0.0000	500.00	LINR	100.0	20.0	<-
Tetrachloroethene	0.0000	500.00	AVRG	100.0	20.0	<-
Toluene	414.12	500.00	AVRG	17.2	20.0	
1,1,1-Trichloroethane	0.0000	500.00	LINR	100.0	20.0	<-
1,1,2-Trichloroethane	0.0000	500.00	LINR	100.0	20.0	<-
Trichloroethene	0.0000	500.00	LINR	100.0	20.0	<-
o-Xylene	0.0000	500.00	LINR	100.0	20.0	<-
m,p-Xylene	0.0000	500.00	LINR	100.0	20.0	<-
Acetone	0.0000	500.00	LINR	100.0	20.0	<-
2-Butanone	0.0000	500.00	LINR	100.0	20.0	<-
Methyl Isobutyl Ketone	0.0000	500.00	LINR	100.0	20.0	<-
2-Hexanone	0.0000	500.00	2ORDR	100.0	20.0	<-
Total 1,2-Dichloroethene	0.0000	500.00	LINR	100.0	20.0	<-
Total Xylenes	0.0000	500.00	LINR	100.0	20.0	<-
Bromofluorobenzene	504.89	500.00	LINR	1.0	20.0	
Dibromofluoromethane	485.68	500.00	LINR	2.9	20.0	

FORM 7
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: 222-S LABORATORY

Contract:

Lab Code: VOA

Case No.:

SAS No.:

SDG No.: SDGA24843

Instrument ID: TROI

Calibration Date: 02/07/01 Time: 1031

Lab File ID: VCCV2

Init. Calib. Date(s): 02/14/01 02/14/01

Heated Purge: (Y/N) N

Init. Calib. Times: 0939 1912

GC Column: ID: 2.00 (mm)

COMPOUND	SAMPLE AMOUNT	CAL500 AMOUNT	CURVE	%D	MAX %d	
Chloromethane	0.0000	500.00	LINR	100.0	20.0	<-
Vinyl Chloride	357.64	500.00	LINR	28.5	20.0	<-
Bromomethane	0.0000	500.00	2ORDR	100.0	20.0	<-
Benzene	0.0000	500.00	LINR	100.0	20.0	<-
Bromodichloromethane	0.0000	500.00	AVRG	100.0	20.0	<-
Bromoform	0.0000	500.00	LINR	100.0	20.0	<-
Carbon Tetrachloride	0.0000	500.00	LINR	100.0	20.0	<-
Chlorobenzene	0.0000	500.00	AVRG	100.0	20.0	<-
Chloroethane	0.0000	500.00	2ORDR	100.0	20.0	<-
Chloroform	429.44	500.00	LINR	14.1	20.0	
Dibromochloromethane	0.0000	500.00	AVRG	100.0	20.0	<-
1,1-Dichloroethane	0.0000	500.00	LINR	100.0	20.0	<-
1,2-Dichloroethane	0.0000	500.00	LINR	100.0	20.0	<-
1,1-Dichloroethene	458.69	500.00	LINR	8.3	20.0	
cis-1,2-Dichloroethene	0.0000	500.00	LINR	100.0	20.0	<-
trans-1,2-Dichloroethene	0.0000	500.00	LINR	100.0	20.0	<-
1,2-Dichloropropane	434.21	500.00	LINR	13.2	20.0	
Ethylbenzene	407.21	500.00	AVRG	18.6	20.0	
Methylene Chloride	0.0000	500.00	LINR	100.0	20.0	<-
Styrene	0.0000	500.00	LINR	100.0	20.0	<-
1,1,2,2-Tetrachloroethane	0.0000	500.00	LINR	100.0	20.0	<-
Tetrachloroethene	0.0000	500.00	AVRG	100.0	20.0	<-
Toluene	405.06	500.00	AVRG	19.0	20.0	
1,1,1-Trichloroethane	0.0000	500.00	LINR	100.0	20.0	<-
1,1,2-Trichloroethane	0.0000	500.00	LINR	100.0	20.0	<-
Trichloroethene	0.0000	500.00	LINR	100.0	20.0	<-
o-Xylene	0.0000	500.00	LINR	100.0	20.0	<-
m,p-Xylene	0.0000	500.00	LINR	100.0	20.0	<-
Acetone	0.0000	500.00	LINR	100.0	20.0	<-
2-Butanone	0.0000	500.00	LINR	100.0	20.0	<-
Methyl Isobutyl Ketone	0.0000	500.00	LINR	100.0	20.0	<-
2-Hexanone	0.0000	500.00	2ORDR	100.0	20.0	<-
Total 1,2-Dichloroethene	0.0000	500.00	LINR	100.0	20.0	<-
Total Xylenes	0.0000	500.00	LINR	100.0	20.0	<-
Bromofluorobenzene	517.60	500.00	LINR	3.5	20.0	
Dibromofluoromethane	501.27	500.00	LINR	0.2	20.0	

FORM 7
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: 222-S LABORATORY

Contract:

Lab Code: VOA

Case No.:

SAS No.:

SDG No.: SDGA24843

Instrument ID: TROI

Calibration Date: 02/07/01 Time: 1031

Lab File ID: VCCV2

Init. Calib. Date(s): 02/14/01 02/14/01

Heated Purge: (Y/N) N

Init. Calib. Times: 0939 1912

GC Column: ID: 2.00 (mm)

COMPOUND	SAMPLE AMOUNT	CAL500 AMOUNT	CURVE	%D	MAX %d
Toluene-d8	519.79	500.00	LINR	4.0	20.0

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: 222-S LABORATORY

Contract:

Lab Code: VOA

Case No.:

SAS No.:

SDG No.: SDGA24843

Lab File ID (Standard): CCV1

Date Analyzed: 02/06/01

Instrument ID: TROI

Time Analyzed: 1017

GC Column:

ID: 2.00 (mm)

Heated Purge: (Y/N) N

	IS4 (DCB) AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	326076	30.47				
UPPER LIMIT	652152	30.97				
LOWER LIMIT	163038	29.97				
CLIENT SAMPLE NO.						
01 020601VB1	328367	30.47				
02 S01M000036	268052	30.47				
03 S01M000036DU	295699	30.47				
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

IS4 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area

AREA LOWER LIMIT = - 50% of internal standard area

RT UPPER LIMIT = + 0.50 minutes of internal standard RT

RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.

* Values outside of QC limits.

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: 222-S LABORATORY

Contract:

Lab Code: VOA

Case No.:

SAS No.:

SDG No.: SDGA24843

Lab File ID (Standard): VCCV2

Date Analyzed: 02/07/01

Instrument ID: TROI

Time Analyzed: 1031

GC Column:

ID: 2.00 (mm)

Heated Purge: (Y/N) N

	IS4 (DCB) AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	341326	30.46				
UPPER LIMIT	682652	30.96				
LOWER LIMIT	170663	29.96				
CLIENT SAMPLE NO.						
01 S01M000036MS	113990*	30.46				
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

IS4 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area

AREA LOWER LIMIT = - 50% of internal standard area

RT UPPER LIMIT = + 0.50 minutes of internal standard RT

RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.

* Values outside of QC limits.

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

020601VB1

Lab Name: 222-S LABORATORY

Contract:

Lab Code: VOA

Case No.:

SAS No.:

SDG No.: SDGA24843

Matrix: (soil/water) SOIL

Lab Sample ID: 020601VB1

Sample wt/vol: 0.5 (g/mL) G

Lab File ID: VBLNK

Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 02/06/01

GC Column: ID: 2.00 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (mL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.83	1285.5	J
2.	UNKNOWN	5.07	20153	J
3.	UNKNOWN	16.13	430.18	J
4. 3789-85-3	BENZOIC ACID, 2-[(TRIMETHYLS	32.12	117.53	NJ
5.				
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FORM 7
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: 222-S LABORATORY

Contract:

Lab Code: VOA

Case No.:

SAS No.:

SDG No.: SDGA24843

Instrument ID: TROI

Calibration Date: 02/06/01 Time: 1017

Lab File ID: CCV1

Init. Calib. Date(s): 02/14/01 02/14/01

Heated Purge: (Y/N) N

Init. Calib. Times: 0939 1912

GC Column:

ID: 2.00 (mm)

COMPOUND	SAMPLE AMOUNT	CAL500 AMOUNT	CURVE	%D	MAX %d
Toluene-d8	507.76	500.00	LINR	1.6	20.0

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

S01M000036

Lab Name: 222-S LABORATORY

Contract:

Lab Code: VOA

Case No.:

SAS No.:

SDG No.: SDGA24843

Matrix: (soil/water) SOIL

Lab Sample ID: S01M000036

Sample wt/vol: 0.4 (g/mL) G

Lab File ID: S01M000036

Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 02/06/01

GC Column: ID: 2.00 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (mL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 20

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.83	1963.2	J
2.	UNKNOWN	5.06	61800	J
3.	1120-21-4 UNDECANE	31.36	1272.2	NJ
4.	2958-76-1 NAPHTHALENE, DECAHYDRO-2-MET	32.66	1858.2	NJ
5.	2958-76-1 NAPHTHALENE, DECAHYDRO-2-MET	33.10	1222.9	NJ
6.	112-40-3 DODECANE	33.56	2566.8	NJ
7.	54411-02-8 CYCLOHEXANE, 1-METHYL-3-PENT	33.74	1140.6	NJ
8.	17301-23-4 UNDECANE, 2,6-DIMETHYL-	33.85	3821.8	NJ
9.	54411-01-7 CYCLOHEXANE, 1-METHYL-2-PENT	34.07	1003.9	NJ
10.	1618-22-0 NAPHTHALENE, DECAHYDRO-2,6-D	34.15	1567.1	NJ
11.	54676-39-0 CYCLOHEXANE, 2-BUTYL-1,1,3-T	34.80	2629.3	NJ
12.	26730-14-3 TRIDECANE, 7-METHYL-	34.96	4912.6	NJ
13.	61142-66-3 CYCLOPENTENE, 5-HEXYL-3,3-DI	35.33	818.17	NJ
14.	629-50-5 TRIDECANE	35.40	1615.2	NJ
15.	50876-31-8 CYCLOHEXANE, 1,1,3,5-TETRAM	35.48	774.45	NJ
16.	7206-17-9 6-DODECENE, (E)-	35.80	2740.7	NJ
17.	74645-98-0 DODECANE, 2,7,10-TRIMETHYL-	36.72	3354.5	NJ
18.	629-59-4 TETRADECANE	37.04	1300.2	NJ
19.	54824-04-3 CYCLOHEXANE, 1-(CYCLOHEXYLME	37.37	976.34	NJ
20.	544-76-3 HEXADECANE	38.11	1027.8	NJ
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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

S01M000036DUP

Lab Name: 222-S LABORATORY Contract: _____

Lab Code: VOA Case No.: _____ SAS No.: _____ SDG No.: SDGA24843

Matrix: (soil/water) SOIL Lab Sample ID: S01M000036DUP

Sample wt/vol: 0.7 (g/mL) G Lab File ID: S01M000036DUP

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 02/06/01

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (mL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 20 CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.87	1061.1	J
2.	UNKNOWN	5.05	36704	J
3.	1120-21-4 UNDECANE	31.36	1008.5	NJ
4.	2958-76-1 NAPHTHALENE, DECAHYDRO-2-MET	32.66	1410.4	NJ
5.	2958-76-1 NAPHTHALENE, DECAHYDRO-2-MET	33.10	914.03	NJ
6.	112-40-3 DODECANE	33.57	1442.8	NJ
7.	54411-01-7 CYCLOHEXANE, 1-METHYL-2-PENT	33.74	514.50	NJ
8.	17301-23-4 UNDECANE, 2,6-DIMETHYL-	33.85	2724.9	NJ
9.	54411-00-6 CYCLOHEXANE, 1-METHYL-4-(1-M	34.07	610.07	NJ
10.	1008-80-6 NAPHTHALENE, DECAHYDRO-2,3-D	34.15	1017.2	NJ
11.	62199-51-3 CYCLOPENTANE, 1-PENTYL-2-PRO	34.52	523.83	NJ
12.	54676-39-0 CYCLOHEXANE, 2-BUTYL-1,1,3-T	34.80	1785.7	NJ
13.	26730-14-3 TRIDECANE, 7-METHYL-	34.96	3262.2	NJ
14.	1124-27-2 CYCLOHEXANE, 1-METHYL-4-(1-M	35.33	551.11	NJ
15.	629-50-5 TRIDECANE	35.40	1240.7	NJ
16.	19550-75-5 2,2-DIMETHYL-3-HEPTENE TRANS	35.81	1840.5	NJ
17.	6236-88-0 CYCLOHEXANE, 1-ETHYL-4-METHY	35.94	1618.4	NJ
18.	3891-98-3 DODECANE, 2,6,10-TRIMETHYL-	36.72	2262.4	NJ
19.	629-59-4 TETRADECANE	37.04	766.94	NJ
20.	61142-30-1 CYCLOPENTANE, 1,3-DIMETHYL-2	37.37	699.28	NJ
21.				
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FH-0102362

ATTACHMENT 6

**CHAIN OF CUSTODY AND
REQUEST FOR SAMPLE ANALYSIS FORMS**

Consisting of 3 pages,
Including cover page

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B01-039-01	Page 1 of 1
Collector Fahlberg	Company Contact D Jacques	Telephone No. 373-5299	Project Coordinator TRENT, SJ	Price Code 9N	Data Turnaround 45 Days		
Project Designation 221-U Tank 5-6 Sludge	Sampling Location 221 U	SAF No. B01-039	Air Quality <input type="checkbox"/>				
Ice Chest No. DOT Viking (10fl)	Field Logbook No. EL 1517-1	COA B200CS6100	Method of Shipment Government Vehicle				
Shipped To 222-S Lab Operations	Offsite Property No. RSR# 106524	Bill of Lading/Air Bill No. N/A					
POSSIBLE SAMPLE HAZARDS/REMARKS Sample could contain Kerosene, ammonium fluoride, Phosphoric Acid. Special Handling and/or Storage Caution: Sample Bottle is leaking		Preservation	None				
		Type of Container	G				Original sampler not available to Relinquish
		No. of Container(s)	1				Sample from 221 U RMA on 1/25/01
		Volume	125mL				
		See item (1) in Special Instructions					
SAMPLE ANALYSIS							
Sample No.	Matrix *	Sample Date	Sample Time				
B118T8	OTHER SOLID	01/18/01	1055	X			B118R7
B118T9	OTHER SOLID						
B118V0	OTHER SOLID						
B118V1	OTHER SOLID	01/18/01					
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS			Matrix *
Relinquished By R. Fahlberg / R. Fahlberg		Date/Time 1/18/01		Received By Stored in 221 U RMA		Date/Time 01/18/01	
Relinquished By N. Nelson		Date/Time 1-25-01 / 0855		Received By R. Nielsen / R. Nielsen		Date/Time 1/25/01	
Relinquished By R. Nielsen		Date/Time 1/25/01		Received By R. Nielsen		Date/Time 1/25/01	
Relinquished By H. Hodge		Date/Time 1-25-01 1335		Received By R. Nielsen		Date/Time 1-25-01	
Relinquished By R. Nielsen		Date/Time 1/25/01		Received By R. Nielsen		Date/Time 1/25/01	
Relinquished By		Date/Time		Received By		Date/Time	
LABORATORY SECTION				Received By			
FINAL SAMPLE DISPOSITION				Disposal Method			
				Title			
				Date/Time			
				Disposed By			
				Date/Time			
<p>** If a limited quantity of sample material is received, perform analyses in the order listed on the Field Sampling Requirements (FSR). Holding Times May Not Be Met.</p> <p>(1) Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Isotopic Plutonium; Isotopic Uranium; Isotopic Thorium; Americium-241; Strontium-89,90 - Sr-90; ICP Metals - 6010A (SW-846); ICP Metals - 6010A, ICP metals Add on Bismuth, Mercury 7471, ICP metals 300-0 Arsenic 350.1, Semi VOA 8270A, Semi VOA 8270A (Add on) Tributyl Phosphate, PCBs 8082 VOA 8260A, PH (soil) 9045</p>							
<ul style="list-style-type: none"> S - Soil SO - Sediment SQ - Soil M S - Sludge W - Water O - Oil A - Air DS - Dross Solids DL - Dross Liquids T - Tar W - Wipe L - Liquid V - Vegetation X - Other 							

REQUEST FOR SAMPLE ANALYSIS (RSA)

Group ID No. (For Lab Use Only)

1. Sample Origin: **221-U Tank 5-6 (BHI)** 2. Date Sampled: **01/18/01** 4. Requestor's Name: **S J TRENT** 6. CACN/COA: **DB1137** 7. Cost Center: _____

Customer/Project Code: _____ 3. Submitted By: **RT FAHLBERG** 5. Requestor's Phone/MSIN/FAX: **2-9651/H9-03/2-9487**

8. Customer ID No.	10. Volume of Sample	11. Matrix of Sample	12. Requested Analyses	13. Expected Range
B11878	40ml	sludge	see chain of custody	

14. Does sample have a MSDS?
 Yes HEHF assigned MSDS No. _____
 No Description of process that produced waste/sample:
Sludge from Tank 5-6 221-U Facility

Will radiochemistry results be used for unconditional release? Yes No

15. Is this sample RCRA listed? Yes No

Applicable Listed Waste Codes: Applicable Characteristic Codes:

Yes No P Codes: (list) _____ Yes No D001: (how determined) _____ Ignitable
 Yes No U Codes: (list) _____ Yes No D002: (how determined) _____ Corrosive
 Yes No K Codes: (list) _____ Yes No D003: (how determined) _____ Reactive
 Yes No F Codes: (list) _____ Yes No Toxic: (list codes) _____

PCB: Does this waste/sample contain PCBs?

Yes Over 500 ppm If YES, what is the source of the PCBs?
 Yes Over 50 ppm Transformer, capacitor, or ballast
 Yes PCBs are suspected Other, specify _____
 No PCBs are suspected Unknown

16. Sample Disposition: Sample(s) Above Release Contact: _____

Return to Customer
 Samples found to contain PCBs will be returned to the customer
 Dispose of per facility procedures with applied charges for analyses and disposal

HPT Signature: *[Signature]*

17. QC Required Per 222-S Laboratory Quality Assurance Plan (HNF-SD-CP-QAPP-016) **LOI for the 221-U Canyon**
 Other (list reference document or attach) **Disposition Initiative Sampling Analysis**

18. Special Instructions (Special Storage Requirements, Reporting format, holding times, etc.)
see chain of custody, approval for analyses
Lucinda Borronan 1/18/01

19. Requested Turnaround Time
 2 Weeks 4 Weeks
 Other **45 days Preliminary**
60 days Final

20. Sample Received By: *[Signature]* Date: **1/18/01** Time: **14:03**

21. Chain of Custody
 No Yes
 Number: **801-039-001**

FH-0102362

ATTACHMENT 7

INTERNAL EMAIL
“PU BY AEA METHOD FOR SAMPLE B118T8”
“HOLDING TIMES FOR 221U SAMPLE B118T8 ANALYSES”

Consisting of 3 pages
Including cover page

Esch, Ruth A

From: Trent, Stephen J
Sent: Friday, March 23, 2001 9:07 AM
To: Powell, Katherine L; Esch, Ruth A
Subject: Pu by AEA method for Sample B118T8

Kathy and Ruth:

Duane Jacques with the BHI SM&T project confirmed that he would like the laboratory to analyse sample B118T8 (the 221-U Tank 5-6 sludge sample) for isotopic Pu using the AEA method. The reason for this is that the ICP-MS detection limits for the Pu mass fractions do not meet the project data quality objectives.

Kathy, we'll need to have an estimated cost and schedule for these additional analyses (of course we would like to have these analyses performed as soon as possible...).

Regards,

Steve Trent
ERC Sample Management

Esch, Ruth A

From: Esch, Ruth A
Sent: Tuesday, January 30, 2001 12:06 PM
To: Trent, Stephen J
Cc: Powell, Katherine L; Fuller, Richard K (Keith); Prilucik, John R; Clark, Glen A
Subject: Holding Times for 221U Sample B118T8 Analyses

Importance: High

Steve,

Sample B118T8 was sampled on 1/18/01 and received at the 222-S Laboratory on 1/25/01. The chain of custody (COC) and Sampling Authorization Form (SAF) request of full suite of analyses for radionuclides, inorganics and organics. Several of these requested analyses have relatively short holding times.

<u>Analysis</u>	<u>Holding Time</u>
pH	ASAP
nitrate	48 hours
PCB	14 days to extraction
SVOA	14 days to extraction
VOA	14 days

The delay in delivery consumed 7 days of these very short holding times.

The SAF indicates that the ERC acknowledges the fact that holding times less than 14 days will not be met. The intent of this message is to inform you that due to limited resources and the current Laboratory priority for projects requiring analysis for VOA, SVOA and PCB the 222-S Laboratory will miss all of the holding times for the analyses listed above.

Ruth Esch

Project Coordinator, 222-S Laboratory
373-4314