Characterization of Samples from Old Solvent Tanks S1 through S22

by

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S1 through S22**

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LIST OF ACRONYMS

ADS	Analytical Development Section
BTU	British Thermal Unit
CIF	Consolidated Incineration Facility
COC	Chain-of-Custody
CVAA	Cold Vapor Atomic Absorption
EML	Environmental Measurements Laboratory
FAA	Flame Atomic Absorption
FGE	Fissile Gram Equivalent
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
HLWE	High Level Waste Engineering
IC	Ion Chromatography
ICP-ES	Inductively Coupled Plasma-Emission Spectroscopy
ICP-MS	Inductively Coupled Plasma- Mass Spectrometry
LEPS	Low Energy Photon Spectroscopy
LIMS	Laboratory Information Management System
LSC	Liquid Scintillation Counting
MAPEP	Mixed Analyte Performance Evaluation Program
MTD	Measurements Technology Department
MWSB	Mixed Waste Storage Building(s)
MWSF	Mixed Waste Storage Facilities
ORWBG	Old Radioactive Waste Burial Ground
PCB's	Polychlorinated Biphenyls
PHA	Pulse Height Analysis
PUREX	Plutonium-Uranium Extraction
QAP	Quality Assessment Program
RESL	Radiological and Environmental Sciences Laboratory
SRTC	Savannah River Technology Center
SSTF	Solvent Storage Tank Facility
SVOA	Semi-Volatile Organics Analysis
SWB	Standard Waste Box
SWD	Solid Waste Division
TCLP	Toxicity Characteristic Leaching Procedure
TOC	Total Organic Carbon
TRU	Transuranic
WSRC	Westinghouse Savannah River Company
XRD	X-Ray Diffraction

1.0 INTRODUCTION

The Old Radioactive Waste Burial Ground (ORWBG, 643-E) contains 22 old solvent tanks (S1 – S22) which were used to receive and store spent PUREX solvent from F- and H-Canyons. The tanks are cylindrical, carbon-steel, single-wall vessels buried at varying depths. A detailed description of the tanks and their history can be found in Reference 1.

A Sampling and Analysis Plan for the characterization of the material contained in the old solvent tanks was developed by the Analytical Development Section (ADS) in October of 1997². The Sampling and Analysis Plan identified several potential disposal facilities for the organic and aqueous phases present in the old solvent tanks which included the Solvent Storage Tank Facility (SSTF), the Mixed Waste Storage Facilities (MWSF), Transuranic (TRU) Pad, and/or the Consolidated Incineration Facility (CIF). In addition, the 241-F/H Tank Farms, TRU Pads, and/or the MWSF were identified as potential disposal facilities for the sludge phases present in the tanks.

The purpose of this sampling and characterization was to obtain sufficient data on the material present in the old solvent tanks so that a viable path forward could be established for the closure of the tanks. Therefore, the parameters chosen for the characterization of the various materials present in the tanks were based upon the Waste Acceptance Criteria (WAC) of the SSTF³, TRU Pads⁴, MWSF⁵, CIF⁶, and/or 241-F/H Tank Farms⁷. Several of the WAC's have been revised, cancelled, or replaced by new procedures since October of 1997 and hence where required, the results of this characterization program were compared against the latest revision of the appropriate WAC.

The sampling campaign was essentially divided into three parts. The first part consisted of nine liquid samples from seven tanks while the second part consisted of six liquid samples from six additional tanks. Finally, the third part focussed on sludge sampling and also attempted to obtain liquid samples from those tanks that contained liquid but were not previously sampled. Thus, ADS of the Measurements Technology Department (MTD) of the Savannah River Technology Center (SRTC) received 17 liquid samples (from 15 different tanks) and 14 sludge samples (from 12 different tanks) for characterization. In some cases, only very small sample quantities were obtained. In these cases, only limited and/or qualitative analyses were performed; hence, a significant deviation from the Sampling and Analysis Plan resulted. This report discusses in detail the chemical and radiological characterization of all of the samples submitted to ADS for analyses.

Tables 1 and 2 list the identities of the liquid and sludge samples, respectively, submitted to ADS. These tables also have any general comments associated with the original samples.

Table 1. Liquid Sample Identification

Sample ID	Tank #	LIMS #	Comments
98018-1	S1	300103987	N/A
98018-2	S2	300105060	N/A
98018-3	S3	300104037	N/A
98018-4	S4	300109222	N/A
98018-5	S5	300119028	N/A
98018-6	S6	300109223	N/A
98018-7	S7	300109224	N/A
98018-8	S8	300109225	N/A
98018-11	S11	300118504	N/A
98018-13	S13	300109226	N/A
98018-14	S14	300103694	N/A
98018-19-O	S19	300104695	"Top" liquid layer, thought to be organic
98018-19-A	S19	300104696	"Bottom" liquid layer, thought to be aqueous
98018-20-T	S20	300104694	"Top" liquid layer, thought to be organic
98018-20-B	S20	300104693	"Bottom" liquid layer, thought to be aqueous
98018-21	S21	300104360	N/A
98018-22	S22	300109227	N/A

Table 2. Sludge Sample Identification

Sample ID	Tank #	LIMS #	Comments
98351-2	S2	300117917	N/A
98351-4	S4	300117919	Mostly liquid, limited analyses performed.
98351-7	S7	300117921	N/A
98351-8	S8	300117922	N/A
98351-11	S11	300117924	Same as 98018-11, treated as a liquid sample.
98351-13	S13	300117927	No significant sample, limited analyses performed.
98351-14	S14	300117928	Sample looks like an insect, limited analyses performed.
98351-15	S15	300117705	No significant sample, limited analyses performed.
98018-15B	S15	300118522	No significant sample, limited analyses performed.
98351-16B	S16	300119031	N/A
98351-19	S19	300117929	N/A
98351-20	S20	300117930	N/A
98351-21	S21	300117707	N/A
98351-22	S22	300117708	No significant sample, limited analyses performed.
98351-22B	S22	300118217	N/A

The sampling process was unsuccessful on multiple tanks. Tanks S10, S12, and S18 were not sampled for liquids due to the presence of only very minimal amounts of liquids in these tanks. Tanks S9 and S17 were not sampled for liquids because these tanks contained no liquids. For Tanks S15 and S16, initial sludge sampling indicated the

potential presence of liquids in both tanks. However, upon re-sampling, only sludge was obtained.

Typically for the sludges, the unsuccessful sampling events were caused by the presence of only very minimal amounts of solid material (<1/16" thickness). Sludge sampling was attempted in Tanks S3, S5, S10, S11 (see Table 2); and S12. However, due to the presence of only very minimal amounts of material in these tanks, sludge samples were not obtained. No sludge sampling was attempted from Tanks S1, S9, S17, and S18. All four of these tanks contained small amounts of sludge. Tanks S12, S13, S14, S15, and S16 were sampled twice due to unsuccessful sampling events. Even after two attempts, an acceptable sludge sample was not obtained from Tank S12; and the minimal amounts of sludge obtained from Tanks S13, S14, and S15 resulted in qualitative analytical results only. Finally, an attempt was made to sample Tank S6 but the tank was found to contain no sludge. Table 3 summarizes the unsuccessful sampling events. Section 3.2 discusses the quantities of liquids and solids present in each tank in detail.

Table 3. Unsuccessful Sampling Events

Sample ID	Tank #	Matrix	Comments
98351-3	S3	Sludge	Minimal solid present.
98351-5	S5	Sludge	Minimal solid present.
98351-6	S6	Sludge	Minimal solid present.
98351-10	S10	Sludge	Minimal solid present.
98351-12N	S12	Sludge	Minimal solid present.
98351-12S	S12	Sludge	Minimal solid present.
98351-13B	S13	Sludge	Minimal solid present.
98351-14B	S14	Sludge	Minimal solid present.
98018-15	S15	Aqueous	No liquid sample obtained, solid material only.
98018-16	S16	Aqueous	No liquid sample obtained, solid material only.
98351-16	S16	Sludge	Minimal solid obtained.

2.0 DISCUSSION

2.1 Overview of Liquid Sample Analysis Strategy

Upon receipt by ADS, the original liquid samples were logged into ADS's Laboratory Information Management System (LIMS) and assigned unique identification numbers by the LIMS computer. LIMS is an online sample management and tracking system that utilizes a relational database to store information and analyses results of samples received and analyzed by ADS. Tables 1, 2 and 3 list the unique LIMS numbers assigned to the Old Solvent Tank samples. Throughout this characterization project, control of the samples was maintained by the ADS sample custodians in 773-A, B-150 and by the various ADS personnel assigned to analyze these samples.

After login, a 10-mL aliquot (if available) of each liquid sample was filtered using a 0.45 μ m membrane (Millipore Type HA mixed cellulose esters, 47 mm) in order to separate the suspended solid material from the liquid phase. New LIMS numbers were subsequently assigned to each of the filtered liquid phases and the filtered solid material to facilitate tracking. These LIMS numbers are shown in Table 4. Only five milliliters of the original liquid sample from Tank S13 was filtered due to the limited amount of sample received by ADS. The original liquids from Tanks S5 and S11 had only very small amounts of suspended solid material; therefore the entire volume of both samples was filtered upon receipt by ADS. See the footnotes of Table 5 for more details on these samples. After filtration of the original liquid samples, the filtered liquid and solid materials were then independently characterized based upon the Sampling and Analysis Plan.

Table 4. Filtered Sample Identification

Sample ID	Tank #	Original LIMS #	Filtered Solid Material LIMS #	Filtered Liquid LIMS #
98018-1	S1	300103987	300104914	300104940
98018-2	S2	300105060	300105061	300105063
98018-3	S3	300104037	300104918	300104938
98018-4	S4	300109222	300109278	300109291
98018-5	S5	300119028	300119290	300119289
98018-6	S6	300109223	300109279	300109292
98018-7	S7	300109224	300109280	300109293
98018-8	S8	300109225	300109281	300109294
98018-11	S11	300118504	300118520	300118517
98018-13	S13	300109226	300109282	300109295
98018-14	S14	300103694	300103841	300104912
98018-19-O	S19	300104695	300104932	300104922
98018-19-A	S19	300104696	300104936	300104916
98018-20-T	S20	300104694	300104928	300104926
98018-20-B	S20	300104693	300104924	300104930
98018-21	S21	300104360	300104920	300104934
98018-22	S22	300109227	300109283	300109296

2.2 Filtered Solid Material

When the Sampling and Analysis Plan was conceived, it was anticipated that a large mass of sludge could be obtained with the raw liquid samples². In practice; however, it was discovered that only very fine suspended solid particles could be obtained with the raw liquid samples. The extremely small mass of suspended solid material thus limited the number of analyses that could be performed on this phase of the material. Thus, only

radiochemical characterization and ICP-MS were performed on the suspended solids. It was decided with the customer that this limited analytical data would be useful in answering potential TRU and fissile material concerns associated with the Old Solvent Tanks.

The recovered quantities of suspended solid material from each raw liquid sample are shown in Table 5. The remarkably limited quantities of suspended solids also significantly impacted the detection limits for the radiochemical and IPC-MS analyses. Thus, for radionuclides such as Cm-245 and Cm-246, the data is only of limited use because of the high detection limits.

Table 5. Mass of Suspended Solids Recovered from Original Samples

Sample #	Solid Material LIMS #	Mass of Suspended Solids Recovered per 10 mL of Sample
98018-1	300104914	0.0007 g
98018-2	300105061	0.0017 g
98018-3	300104918	0.0153 g
98018-4	300109278	0.002 g
98018-5	300119290	0.0017 g ^a
98018-6	300109279	0.157 g
98018-7	300109280	0.021 g
98018-8	300109281	0.010 g
98018-11	300118520	0.0074 g ^b
98018-13	300109282	0.001 g ^c
98018-14	300103841	0.0176 g ^d
98018-19-O	300104932	0.0132 g
98018-19-A	300104936	0.0116 g
98018-20-T	300104928	0.0176 g
98018-20-B	300104924	0.0022 g
98018-21	300104920	0.1046 g
98018-22	300109283	0.003 g

- a- The volume of original liquid filtered from Tank S5 was approximately 120 mL. This large volume was filtered due to the extremely low suspended solids content of the raw liquid.
- b- The volume of original liquid filtered from Tank S11 was approximately 105 mL. This large volume was filtered due to the extremely low suspended solids content of the raw liquid.
- c- The volume of original liquid filtered from Tank S13 was 5 mL because of the limited amount of sample received.
- d- The volume of original liquid filtered from Tank S14 was 100 mL.

Prior to subsequent analyses on the suspended solid material, the solids were dissolved in 5 mL of concentrated nitric acid. A gamma pulse height analysis was then performed on an aliquot of the dissolved solid material followed by a myriad of radiochemical analyses. In addition, IPC-MS was

Table 6. Target Analytes for Suspended Solids

Analyte	Technique	Procedure
Am-241	Gamma PHA	ADS-2420
Ce-144	Gamma PHA	ADS-2420
Co-60	Gamma PHA	ADS-2420
Cs-134	Gamma PHA	ADS-2420
Cs-137	Gamma PHA	ADS-2420
Eu-154	Gamma PHA	ADS-2420
Nb-94	Gamma PHA	ADS-2420
Np-237	Gamma PHA	ADS-2420
Ru-106	Gamma PHA	ADS-2420
Sb-125	Gamma PHA	ADS-2420
Sn-126	Gamma PHA	ADS-2420
U-235	Gamma PHA	ADS-2420
Am-243	Gamma PHA and ICP-MS	ADS-2420, ADS-1551
Am Series, Total	Gamma and Alpha PHA, ICP-MS	ADS-2420, ADS-2402, ADS-1551
C-14	Separation and LSC	Special work instruction
Cm-244	Alpha PHA and ICP-MS	ADS-2420, ADS-1551
Cm-245	ICP-MS	ADS-1551
Cm-246	ICP-MS	ADS-1551
Cm Series	Alpha PHA and ICP-MS	ADS-2402, ADS-1551
Gross Alpha and Beta	LSC	ADS-2424
H-3	Distillation and LSC	ADS-2444
I-129	Separation and LEPS	Special work instruction
Ni-59, Ni-63	Separation and Counting	ADS-2452
Plutonium, Total	Summation	N/A
Pu-238, Pu-239, Pu-240, Pu-242	Alpha PHA and ICP-MS	ADS-2402, ADS-1551
Pu-241	Separation and LSC	ADS-2453 (Modified)
Pm-147	Separation and LSC	SRT-ADS-98-0399
Se-79	Separation and LSC	SRT-ADS-98-0261
Sr-90	Separation and LSC	ADS-2441
Tc-99	Separation and LSC	ADS-2413
U-233, U-234, U-236, U-238	Alpha PHA and ICP-MS	ADS-2402, ADS-1551
U-235	Gamma and Alpha PHA, ICP-MS	ADS-2420, ADS-2402, ADS-1551

employed for detection of many heavier actinides ranging from Th-232 to Cm-246. The ICP-MS data also provided an independent analysis of nuclides such as U-235, U-238, Np-237, Am-243, and Cm-244 for comparison to the data obtained from traditional radiochemical techniques. Table 6 lists the analytes of interest for the suspended solid material as originally envisioned in the Sampling and Analysis Plan². As mentioned before, significant deviations from this plan did occur due to the extremely limited sample size. When necessary, prioritization was established for the various radiochemical and ICP-MS analyses so that the critical analyses (such as TRU and fissile nuclides) could be performed first on the small quantity of available sample.

2.3 Filtered Liquid Samples

Since the volume of filtered liquid samples was typically not a limiting factor, these samples were more extensively characterized (per the Sampling and Analysis Plan) than the suspended solid material described in Section 2.2. If time and sample volume permitted (see Section 2.4 for the exceptions noted on the liquid samples from Tanks S5 and S11), the filtered liquid samples were analyzed for essentially all of the parameters listed in Table 6 and the parameters shown in Table 7². As stated in Section 1.0, these parameters were chosen based upon potential disposal routes of the various phases present in the tanks.

The methodologies chosen were based solely on the analytes of interest listed in the various WAC's. No consideration was made for method requirements of the WAC's. The implication of this decision is discussed further in Section 5.2 in relation to the Solvent Storage Tanks WAC that has specific method requirements.

An instrument problem involving the ICP-ES occurred prior to the analysis of the liquid samples from Tanks S5 and S11. Due to this problem, these samples were analyzed for metals using ICP-MS. In addition, not all of the requested analyses on these two samples have been performed. Due to critical time and personnel constraints, the analyses on these two liquids were prioritized. Gross Alpha/Gross Beta, Gamma PHA, ICP-MS (Ag, As, Ba, Cd, Cr, Pb, Se, and heavy actinides), Pu Separation (Pu-238, Pu-241), GC/MS SVOA, GC/MS PCB, and Mercury analyses were performed on these samples first so that these critical parameters could be included in this report. All remaining analyses will be performed and reported at a later date.

Table 7 Additional Parameters for Filtered Liquids

Analyte	Technique	Procedure/ Technical Reference
Al, Sb, Ba, Be, B, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Ag, Na, Tl, U, Zn	ICP-ES	ADS-1509
Chloride, Nitrate, Phosphate	IC	ADS-2306
Cyanide	Complexation/Absorbance	ADS-2278
As, Se	ICP-MS	ADS-1551
Hg	CVAA	ADS-1556
Phenol/Phenoxide/ Nitrophenols	GC/MS	ADS-2657
Semi-Volatile Organics	GC/MS	ADS-2657
Total Inorganic Carbon/Total Organic Carbon	TIC/TOC	ADS-1200
Volatile Organics	GC/MS	ADS-2656
PCB's	GC, GC/MS	ADS-2659
Acidity	Titration	ADS-2301
Boiling Point	Heating Mantle/Condenser Tube	ADS-2280
BTU/lb	Calculation	N/A
Flash Point	Closed Cup	ADS-2250
Freezing Point	Ice Bath/Observation	ADS-2279
Paint Filter Liquids Test	EPA SW-846 Method 9095	ADS-2275
pH	Electrode	ADS-2309
Density	Known Volume/Analytical Balance	ADS-2219
Total Dissolved Solids	Filtration/Evaporation/Drying	Standard Method 2540 C
Total Insoluble/Suspended Solids	Filtration/Drying	Standard Method 2540 D
Ash Content	Modified ASTM Method D 482	Special Work Instruction
Water Weight Percent	Karl-Fischer	ADS-2210

2.4 Sludge Samples

Upon receipt by ADS, the sludge samples were logged into the ADS LIMS and assigned unique identification numbers by the LIMS computer. Table 2 lists the unique LIMS numbers assigned to these samples. As with the liquid samples, control of the sludge samples was maintained by the ADS sample custodians in 773-A, B-150 and by the various ADS personnel assigned to analyze these samples.

Table 8. Additional Parameters for Sludges

Analyte	Technique	Procedure/ Technical Reference
Al, Sb, Ba, Be, B, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Ag, Na, Ti, Tl, U, Zn	ICP-ES	ADS-1509
Ammonium, Chloride, Fluoride, Nitrate, Nitrite, Oxalate, Phosphate, Sulfate	IC	ADS-2306
Cyanide	Complexation/Absorbance	ADS-2278
As, Se	ICP-MS	ADS-1551
Hg	CVAA	ADS-1556
K	FAA	ADS-1549
Aluminate, Carbonate, Free Hydroxide	Titration	ADS-2312
Crystallography	XRD	ADS-1101
TCLP	Modified TCLP	ADS-2512
Phenol/Phenoxide/ Nitrophenols	GC/MS	ADS-2657
Semi-Volatile Organics	GC/MS	ADS-2657
Total Organic Carbon	TOC	ADS-1200
Volatile % Organics	Oil Content Analyzer	ADS-2213
Volatile Organics	GC/MS	ADS-2656
PCB's	GC, GC/MS	ADS-2659
pH	Electrode	ADS-2309
Density	Known Volume/Analytical Balance	ADS-2219
Total Dissolved Solids	Filtration/Evaporation/Drying	Standard Method 2540 C
Total Insoluble/Suspended Solids	Filtration/Drying	Standard Method 2540 D

Prior to subsequent analyses on the sludges, a small amount of the solid material was removed for XRD if the amount of sample warranted it. The remaining sample or a portion of it was then dissolved in acid for subsequent analyses.

The amount of sludge sample ultimately dictated which analyses would be performed; thus in some cases a significant deviation from the Sampling and Analysis Plan occurred. Tables 6 and 8 list the complete set of target analytes specified in the Sampling and Analysis Plan for the sludge phases². However, in order to deal with sample, time, and resource constraints on the sludge samples, the analytes listed in the Sampling and Analysis Plan were prioritized. Gross Alpha/Gross Beta, XRD (if the sample was a solid), Gamma PHA, ICP-MS (Ag, As, Ba, Cd, Cr, Pb, Se, and heavy actinides),

Pu Separation, Alpha PHA, GC-MS SVOA, GC/MS PCB's, and CVAA (Hg) were performed first so that the data could be included in this report. Originally, ICP-ES was to be used for the RCRA metals but a last minute instrument problem prohibited this and ICP-MS was employed. If the remaining sample size is sufficiently large, some or all other analyses not yet done on these samples will be performed and reported at a later date.

If sample size restricted the analyses further, prioritization was given to Gross Alpha/Gross Beta, Gamma PHA, ICP-MS, Pu Separation, and Alpha PHA. For the sludges from Tanks S13 and S14, only a qualitative Gross Alpha/Gross Beta analysis was performed. Qualitative Gross Alpha/Gross Beta and Gamma PHA were performed on the first sludge sample from Tank S15. On the second sludge sample from Tank S15, quantitative GC/MS SVOA and GC/MS PCB analyses were performed while qualitative Gamma PHA, Gross Alpha/Gross Beta, Alpha PHA, Pu Separation, and ICP-MS analyses were performed.

3.0 RESULTS

3.1 Analytical Results of Old Solvent Tank Samples

The analytical results of all samples analyzed are presented by tank number in Appendices A through Q. In each appendix, the data are presented for the unfiltered, original sample (suspended solids data only); filtered liquid sample; suspended solid material, and sludge, respectively. As mentioned previously, specific tanks may not have been successfully sampled for a particular phase. Therefore, not all of the Appendices will contain data for each sample type (original liquid sample, filtered liquid, filtered solids, and sludge). All errors reported are at the 95.5% confidence level (2-sigma).

Results reported without any qualifiers are positive values above detection limits for that particular method. Values preceded by a "<" are detection limits for the method under the conditions used for the measurement. Thus for these values, no signal above instrument background was seen. A "UL" listed after a radionuclide activity means the value is an upper limit only. Upper limits typically result when interfering nuclides prevent the quantification of another radionuclide. Radionuclide data followed by "MDA" are minimum detectable concentrations calculated using the methodology of Currie⁸. A "DL" following a radionuclide activity signifies a detection limit as reported by ICP-MS; hence, no positive signal above background was seen.

Typical detection limits for the methodologies employed in this characterization study are given in Table 1 of Reference 2. For those

methods requiring the dissolution of a solid sample, dilution factors for the sludges ranged from 12.5 to 133.8 while dilution factors for the suspended solids ranged from 31.8 to 7143. Thus, detection limits for a given nuclide had large ranges because of the various dilution factors involved for the different sample types. The large dilution factors for some of the suspended solid samples significantly impacted the usefulness of the analytical data. Detection limits from these large dilution factor samples were extremely high.

Total americium, total curium, and total plutonium activities represent sums of all positively identified isotopes of these elements. No detection limit or minimum detectable concentration values were included in these totals. However, if activities were reported as upper limits, they were included in the total for conservatism.

When originally sampled, it was thought that the two liquid samples from Tank S19 (98018-O and 98018-A) were from two different phases. Based upon previous information regarding the contents of the tank, each sample was taken from a different depth within the tank. The analytical data from the two samples clearly shows that these two samples are both from the aqueous phase of the tank. Thus, these samples can be considered duplicates and can be used to check the precision of the analytical results.

The two samples taken from Tank S20 (98018-20-B and 98018-20-T) appear to be from two different phases based upon the analytical data. These two samples were also taken at different depths within the tank. Thus, it was concluded that this tank definitely contains an organic phase and an aqueous phase. The volume of each phase, however, is unknown. Finally, the liquid obtained from Tank S11 was also organic; hence, this tank may also have two different liquid phases. However, only a single liquid sample was obtained from this tank and the presence of an aqueous phase could not be confirmed.

The XRD data from ten sludge samples are given in Table 9. Major, minor, and trace constituents present are reported. XRD was not required by any of the WAC's but was performed for possible investigations into grout formulations if that route is chosen for treatment. These data are useful for determining the physical makeup of the sludge material within the tanks. The data clearly shows the variety of material present in the various tanks.

Table 9. XRD Data on Sludge Samples

Sample ID	Tank #	LIMS #	Description of Solid
98351-2	S2	3-117917	Chernikovite, syn - $\text{H}_2(\text{UO}_2)_2(\text{PO}_4)_2 \cdot 8\text{H}_2\text{O}$ (Major) Metavanuralite - $\text{Al}(\text{UO}_2)_2\text{V}_2\text{O}_8(\text{OH}) \cdot 8\text{H}_2\text{O}$ (Major)
98351-7	S7	3-117921	Uranyl Oxonium Phosphate Hydrate - $\text{H}_3\text{OUO}_2\text{PO}_4 \cdot 3\text{-xH}_2\text{O}$ (Major) Silicon Oxide - SiO_2 (Major)
98351-8	S8	3-117922	Silicon Oxide - SiO_2 (Major) Magnetite, syn - Fe_3O_4 (Trace) Hematite, syn - Fe_2O_3 (Trace)
98351-15	S15	3-117705	Uranyl Oxonium Hydrogen Phosphate Hydrate - $\text{UO}_2\text{H}_x\text{PO}_4(\text{H}_3\text{O})_{1-x}\text{H}_2\text{O}$ (Major) Sodium Uranium Oxide - $\text{Na}_2\text{U}_2\text{O}_7$ (Major) Nickel Hydroxide - $\text{Ni}(\text{OH})_2$ (Major)
98351-16B	S16	3-119031	Sodium Uranium Oxide - $\text{Na}_6\text{U}_7\text{O}_{24}$ (Major) Nickel Hydroxide - $\text{Ni}(\text{OH})_2$ (Major) Uranyl Oxonium Hydrogen Phosphate Hydrate - $\text{UO}_2\text{H}_x\text{PO}_4(\text{H}_3\text{O})_{1-x}\text{H}_2\text{O}$ (Major)
98351-19	S19	3-117929	Sodium Uranyl Carbonate - $\text{Na}_4(\text{UO}_2)(\text{CO}_3)_3$ (Major) Sodium Uranium Oxide - $\text{Na}_6\text{U}_7\text{O}_{24}$ (Major)
98351-20	S20	3-117930	Sodium Uranium Oxide - $\text{Na}_6\text{U}_7\text{O}_{24}$ (Major) Gibbsite, syn - $\text{Al}(\text{OH})_3$ (Major) Halite, potassian, syn - $\text{K}_{0.2}\text{Na}_{0.8}\text{Cl}$ (Major)
98351-21	S21	3-117707	Gibbsite - $\text{Al}(\text{OH})_3$ (Major) Quartz, alpha, syn - SiO_2 (Major)
98351-22	S22	3-117708	Bayerite - $\text{Al}(\text{OH})_3$ (Major) Gibbsite - $\text{Al}(\text{OH})_3$ (Major)
98351-22B	S22	3-118217	Quartz, alpha, syn - SiO_2 (Major) Gibbsite - $\text{Al}(\text{OH})_3$ (Minor)

3.2 Estimated Radionuclide Inventory in Each Tank

Table 10 lists the estimated liquid volume and sludge mass of each tank^{9,10,11}. These data are based upon video and physical surveillances of the tanks. As can be seen from the data in this table, Tanks S9, S15, S16, and S17 contain sludge but no liquid while Tank S6 contains liquid but no sludge. All of the remaining tanks appear to have both liquid and sludge. The estimated sludge in the tanks ranges from 0 to greater than 2000 kg with a total sludge content of approximately 6750 kg. The estimated liquid ranges from 0 to over 7500 liters with a total liquid content in all of the tanks of approximately 21,300 liters. As mentioned previously, it should be noted that at least two of the tanks (S11 and S20) have organic liquid layers present. This was proven by the analytical results of this characterization study.

Table 10. Estimated Liquid and Sludge Content of Tanks S1 – S22

Tank #	Liquid Volume (liters)	Successfully Sampled?	Sludge Mass (kg)	Successfully Sampled?
S1	443.3	Yes	34.1	Not sampled
S2	422.8	Yes	251.4	Yes
S3	1506.2	Yes	28.0	No
S4	1397.6	Yes	43.9	Yes
S5	348.3	Yes	847.9	No
S6	1042.1	Yes	0	No sludge
S7	1200.0	Yes	11.4	Yes
S8	518.6	Yes	45.4	Yes
S9	0	No liquid	98.4	Not sampled
S10	37.9	Not sampled	234.7	No
S11	54.1 ^a	Yes	96.1	No
S12	18.9	Not sampled	37.9	No
S13	826.4	Yes	325.5	Yes
S14	1387.0	Yes	896.4	Yes
S15	0	No liquid	1098.5	Yes
S16	0	No liquid	2066.8	Yes
S17	0	No liquid	53.0	Not sampled
S18	18.9	Not sampled	15.1	Not sampled
S19	2170.6 ^b	Yes	203.7	Yes
S20	7551.9 ^b	Yes	68.1	Yes
S21	690.5	Yes	237.0	Yes
S22	1694.4	Yes	56.8	Yes
Total	21329.5	N/A	6750.1	N/A

a- This tank contains organic liquid. It is unknown whether any aqueous liquid is present in the tank.

b- The volumes listed for Tanks S19 and S20 represent the total liquid volume contained in these tanks. Tank S20 definitely contains an organic phase, however; it is unknown whether Tank S19 has an organic phase. Two liquid samples were taken from Tank S19 and both of them were aqueous. For Tanks S19 and S20, the fraction of the liquid that is organic and the fraction that is aqueous are unknown.

For the various tanks, the total estimated inventory of each radionuclide identified in the filtered liquid was calculated based upon the estimated volumes of the liquid phases and the activity concentrations of the radionuclides. This data is presented in the final columns of the filtered liquid spreadsheets in Appendices A through K and N through Q. Using Tank S1 as an example, the total aqueous phase activity of Am-241 was calculated by simply multiplying the activity per unit volume of this nuclide

($8.42 \times 10^{-3} \mu\text{Ci/mL}$) by the estimated volume (443,000 mL) to obtain $3.73 \times 10^3 \mu\text{Ci}$. Similarly, the total estimated inventory of each radionuclide identified in the filtered (suspended) solids was calculated based upon the estimated masses of the filtered solids and the activity concentrations of the radionuclides. This data is presented in the final columns of the filtered solids spreadsheets in Appendices A through K and N through Q. It should be noted that this inventory does not include the radionuclides contained in the sludge phase of each tank. The total estimated inventory of each identified radionuclide in the sludge material of each tank was calculated from the estimated mass of sludge present and the activity concentrations. These inventories are presented in the sludge spreadsheets in Appendices B, D, G, H, M, N, O, P, and Q. There was insufficient sample to determine a mass on the sludges obtained from Tanks S13, S14, and S15; hence, total activities per nuclide and total tank inventories could not be calculated. However, the qualitative radionuclide data for these three tanks are given in the sludge spreadsheets of Appendices J, K, and L.

The gross activity contained in the raw liquid (liquid phase plus the suspended solid material contained in the liquid phase) of each tank was calculated based upon the sum of the gross alpha and gross beta activities of the filtered liquid and suspended solid phases. The gross activity information of the raw liquids is summarized in Table 11.

Table 11. Calculated Gross Activity Content of Raw Liquids in Solvent Tanks

Tank #	Gross Raw Liquid Activity (Ci)
S1	1.12E+00
S2	3.50E-02
S3	1.08E+00
S4	2.27E-01
S5	1.00E+02
S6	9.49E-01
S7	9.89E-01
S8	7.51E-01
S11	8.67E+00
S13	1.36E+00
S14	1.24E+00
S19-O	6.16E+00
S19-A	5.36E+00
S20-T	<9.05E-01 ^a
S20-B	<8.41E+00
S21	5.00E+00
S22	2.23E+00

- a- The gross alpha and gross beta activity concentrations of the suspended solids could not be determined due to the immeasurably small amount of mass that was obtained for analysis after filtering the raw liquid from the organic phase of Tank S20. The activity concentrations were therefore calculated based upon the activity contained on the filter, suspended solids data of the raw liquid, density of the liquid, and volume of liquid filtered.

It should be noted that the gross beta activity contains the contribution from tritium. Only the total liquid volume present in Tank S20 has been estimated based upon the video and physical surveillances. The fraction of this volume that is organic and the fraction that is aqueous are not known. Thus in order to conservatively calculate the gross activity present in the tank, all of the liquid was assumed to be organic when calculating the gross raw liquid activity for sample 98018-20-T (organic liquid). Likewise, when calculating the gross raw liquid activity for sample 98018-20-B (aqueous liquid), all of the liquid in the tank was assumed to be aqueous. Hence, the gross raw liquid activities for these two tanks should be considered upper limits. No data are available on the liquids and suspended solids in Tanks S10, S12, and S18. These tanks were not sampled for liquids due to the presence of only very minimal amounts of liquids. See Section 1.0 for a more detailed discussion of the sampling events involving the liquids from the Old Solvent Tanks. Also data are not available for Tanks S9, S15, S16, and S17 because these tanks contained no liquids (and thus no suspended solids)^{9,10,11}.

The gross activity contained in the sludge of each analyzed tank was also calculated based upon the sum of the gross alpha and gross beta activities of the sludges. The gross activity information of the sludges is summarized in Table 12. Once again it should be noted that the gross beta activity contains the contribution from tritium.

Two sludge samples were taken from Tank S22 on two different dates. It is obvious from the gross activity data shown in Appendix Q that the activity is not homogeneously distributed in this solid material. In addition, the XRD data given in Table 9 supports the conclusion that these two solids were two different types of material. Thus, the value given in Table 12 was based upon the sample with the higher activity concentration (98351-22B). Note that no information is available on the sludges in Tanks S1, S3, S5, S9, S10, S11, S12, S17, and S18. Adequate sludge samples were not obtained for these tanks due to unsuccessful sampling events and/or the presence of only very minimal amounts of sludge. See Section 1.0 for a more detailed discussion of the sampling events involving the sludges from the Old Solvent Tanks. Also no data are available for Tank S6 because this tank

contained no sludge^{9,10,11}. Finally, insufficient sludge samples were obtained from Tanks S13, S14, and S15 for quantitative analyses. Thus, for these tanks, only qualitative data were obtained.

Table 12. Calculated Gross Activity Content of Sludges in Solvent Tanks

Tank #	Gross Sludge Activity (Ci)
S2	4.11E+01
S4	7.25E-03
S7	2.31E-02
S8	7.48E-01
S13	unknown ^a
S14	unknown ^a
S15	unknown ^a
S16	8.23E+00
S19	1.84E+01
S20	3.66E+00
S21	1.49E-01
S22	9.04E+00

a- The amount of sample obtained was insufficient to determine a mass, therefore activity concentrations and total activities could not be determined. Only relative activities are available for these tanks.

Table 13 shows the total activity in those tanks for which quantitative data was obtained for the raw liquid phase and/or the sludge phase. Note that according to the video and physical surveillances, Tank S6 has no sludge in it and Tanks S15 and S16 have no liquid in them^{9,10,11}. Thus the activities listed for these two phases in Table 13 are zero. The sludge phases from Tanks S1 and S11 were not sampled but the liquid phases from these tanks were sampled and analyzed. For the sludge phases in Tanks S3 and S5, the sludge phases were unsuccessfully sampled thus no analytical data were obtained for these phases. However, the liquids from both of these tanks were successfully sampled and analyzed.

It should be noted that the raw liquid data for Tank S19 represents the average of the two aqueous samples that were taken from this tank. The agreement of the data between these two samples was quite good. As stated before for Tank S20, two phases are present and the volume of each phase is unknown. However, the total volume of liquid in this tank has been estimated. Thus when the total activity of each liquid phase was calculated, it was assumed that the volume of each phase equaled the total liquid volume present in the tank. The raw liquid activity was then calculated by summing the upper limits of the total activity of the organic and aqueous

phases. Hence, the raw liquid value given in Table 13 represents an upper limit for the amount of activity in the two liquid phases of this tank. Since two sludge samples from Tank S22 were taken and the gross activities of these two samples differed significantly, the higher gross activity was used for the total activity calculation in this tank.

Table 13. Calculated Total Gross Activity Content of Sampled Solvent Tanks

Tank #	Raw Liquid Activity Ci	Sludge Activity Ci	Total Ci
S1	1.12E+00	Not sampled	≥1.12E+00
S2	3.50E-02	4.11E+01	4.11E+01
S3	1.08E+00	No sample obtained	≥1.08E+00
S4	2.27E-01	7.25E-03	2.34E-01
S5	1.00E+02	No sample obtained	≥1.00E+02
S6	9.49E-01	0.00E+00	9.49E-01
S7	9.89E-01	2.31E-02	1.01E+00
S8	7.51E-01	7.48E-01	1.50E+00
S11	8.67E+00	Not sampled	≥8.67E+00
S13	1.36E+00	Unknown ^a	≥1.36E+00
S14	1.24E+00	Unknown ^a	≥1.24E+00
S15	0.00E+00	Unknown ^a	Unknown
S16	0.00E+00	8.23E+00	8.23E+00
S19	5.76E+00	1.84E+01	2.42E+01
S20	<9.32E+00	3.66E+00	<1.30E+01
S21	5.00E+00	1.49E-01	5.15E+00
S22	2.23E+00	9.04E+00	1.13E+01

a- The amount of sample obtained was insufficient to determine a mass, therefore activity concentrations and total activities could not be determined. Only relative activities are available for these tanks.

3.3 Estimated TRU Content of Each Tank

The TRU content of the filtered liquid phase, the filtered solids contained in the liquid phase, and the raw liquid of each tank were calculated based upon the data contained in Appendices A through K and N through Q. These TRU data are presented in Table 14. Only positively identified transuranic nuclides (i.e. no detection limits were used) were included in the TRU calculations. Table 15 lists the TRU nuclides that were measured and considered for this characterization study of the Old Solvent Tanks. It should be noted that detection limits were quite high for some TRU nuclides especially for the filtered solid material due to the analytical technique used and the small amount of material obtained. Thus, the detection limit data for

these nuclides is only of limited value. For the liquid phases, activities per unit volume have been converted to activities per gram using the measured density of each liquid. For Tanks S5 and S11, a density measurement was not performed on the filtered liquid; therefore it was assumed that the density was equal to 1.00 g/cm³. It should be emphasized that this information does not include the TRU content of the sludge phase in each tank. As previously noted, no information is available on the liquids and suspended solids in Tanks S10, S12, and S18. These tanks were not sampled for liquids due to the presence of only very minimal amounts of liquids. See Section 1.0 for a more detailed discussion of the sampling events involving the liquids from the Old Solvent Tanks. Also data are not available for Tanks S9, S15, S16, and S17 because these tanks contained no liquids (and thus no suspended solids)^{9,10,11}.

Table 14. Calculated TRU Concentrations of Filtered Liquid Phases and Filtered Solids

Sample ID	Filtered Liquid TRU Concentration (nCi/g)	Filtered Solids TRU Concentration (nCi/g)	Raw Liquid TRU Concentration (nCi/g)
98018-1	7.70E+02	9.32E+04	7.80E+02
98018-2	1.46E+01 ^a	1.41E+05	4.28E+01
98018-3	1.99E+01	4.94E+04	8.89E+01
98018-4	1.54E+01	3.66E+04	2.27E+01
98018-5	3.87E+03	1.51E+05	3.87E+03
98018-6	1.16E+01	3.96E+04	5.89E+02
98018-7	2.85E+02	1.12E+04	3.06E+02
98018-8	2.51E+01	1.02E+05	1.17E+02
98018-11	2.94E+03	2.86E+04	2.94E+03
98018-13	6.86E+02	1.26E+06	9.38E+02
98018-14	1.18E+02	2.72E+05	1.67E+02
98018-19-O	1.86E+03	1.03E+05	1.98E+03
98018-19-A	1.86E+03	2.46E+04	1.89E+03
98018-20-T	2.90E+00	8.63E+02 ^b	4.44E+00
98018-20-B	5.51E+02	9.34E+04	5.70E+02
98018-21	4.55E+02	8.79E+04	1.29E+03
98018-22	2.61E+02	1.53E+05	3.07E+02

a- Limited analytical data available. This number should be considered a lower limit only.

b- The TRU activity concentration of the suspended solids could not be determined due to the immeasurably small amount of mass that was obtained for analysis after filtering the raw liquid from the organic phase of Tank S20. This value was therefore calculated based upon

the activity contained on the filter, suspended solids data of the raw liquid, density of the liquid, and volume of liquid filtered.

Table 15. TRU Nuclides Measured in this Characterization

Nuclide	Half Life¹² (yrs)
Np-237	2140000
Am-241	432.2
Am-243	7370
Cm-245	8500
Cm-246	4730
Pu-238	87.7
Pu-239	24110
Pu-240	6563
Pu-242	373300

Based on these characterization data, the raw aqueous liquids contained in Tanks S1, S5, S6, S7, S8, S13, S14, S19, S20, S21, and S22 have specific TRU activities of >100 nCi/g. In addition, the raw organic liquid contained in Tank S11 also has a TRU activity concentration of >100 nCi/g. The TRU concentration of the suspended solids in the organic phase of Tank S20 had to be calculated due to the immeasurably small mass of solids present after the suspended solids were filtered from the raw liquid. See Footnote b of Table 14 for more details regarding this calculation. It should also be emphasized; however, that Am-242m, Pu-244, Cm-243, Cm-247, Bk-247, Cm-248, Cf-249, and Cf-251 were not measured in this characterization study. The nuclides measured are the most predominate TRU nuclides in the material and those that were not measured are expected to be less than 10% of those measured.

The TRU content of the sludge phases present in the various tanks was also calculated based upon the data contained in Appendices B, D, G, H, M, N, O, P, and Q. These TRU data are presented in Table 16. As mentioned earlier, only positively identified transuranic nuclides (i.e. no detection limits were used) were included in the TRU calculations. Once again, only those TRU nuclides listed in Table 15 were measured and considered for this characterization study of the Old Solvent Tanks. Due to the analytical techniques used and the dilution factors involved, detection limits were quite high for some TRU nuclides especially for the sludge material. Thus, the detection limit data for these nuclides is only of limited value. As stated before, no information is available on the sludges from Tanks S1, S3, S5, S9, S10, S11, S12, S17, and S18. Adequate sludge samples were not obtained for these tanks due to unsuccessful sampling events and/or the presence of only very minimal amounts of sludge. See Section 1.0 for a more detailed discussion of the sampling events involving the sludges from

the Old Solvent Tanks. Also no data are available for Tank S6 because this tank contained no sludge^{9,10,11}. Finally, insufficient sludge samples were obtained from Tanks S13, S14, and S15 for quantitative analyses. Thus, for these tanks, only qualitative data were obtained.

Table 16. Calculated TRU Concentrations of Sludges

Sample ID	Sludge TRU Concentration (nCi/g)
98351-2	6.52E+04
98351-4 ^a	4.55E+01
98351-7	7.52E+02
98351-8	4.18E+02
98351-13	Unknown ^b
98351-14	Unknown ^b
98351-15	Unknown ^b
98351-15B	Unknown ^b
98351-16B	1.47E+03
98351-19	2.88E+04
98351-20	7.59E+03
98351-21	3.76E+02
98351-22B	7.20E+03

- a- Complete TRU data not available. This number should be considered a lower limit. TRU activity concentration was calculated from this liquid sample assuming a sludge density of 2.0 g/cm³.
- b- The amount of sample obtained was insufficient to determine a mass, therefore activity concentrations and total activities could not be determined. Only relative activities are available for these tanks.

3.4 Estimated Inventory of Heavier Nuclides

The fissile material content of the various phases in the Old Solvent Tanks must be measured before any treatment and/or disposal options can be considered. In addition, Fissile Gram Equivalent (FGE) Calculations are required by the WAC's of the potential disposal facilities for the material in the Old Solvent Tanks^{3,4,13,14}. It is important for criticality considerations to know if the mass of U-235 present in any of the tanks exceeds 700 grams or if the mass of Pu-239 in any of the tanks exceeds 450 grams. If either of these masses is exceeded, further analysis of the data needs to be performed. Thus, in order for ADS's customer to determine FGE quantities for the appropriate disposal facility, total activities and masses were calculated from published specific activities and the activity concentrations of the various heavier nuclides determined in this characterization study¹⁵. The

specific activities for the heavier radionuclides studied in this characterization are summarized in Table 17. It should be emphasized that nuclides such as Am-242m, Cm-242, Cm-243, Cm-247, Bk-247, Cf-249, Cf-250, Cf-251, and Cf-252 were not measured in this study; however, these nuclides are not expected to be important contributors to the material in the Old Solvent Tanks.

Conservatism was built into the total activity and mass calculations for the heavier radionuclides measured in this study in a twofold manner. The activity of a radionuclide known or suspected to be in the Old Solvent Tanks but not detected was assumed to be equal to the detection limit for that radionuclide for the measurement conditions used. And secondly, for those positively identified radionuclides, the 2-sigma measurement error was added to the activity before performing the total activity and mass calculations.

Table 17. Specific Activities for Mass Calculations

Nuclide	Specific Activity¹⁵ (Ci/g)
U-233	9.64E-03
U-234	6.24E-03
U-235	2.16E-06
U-236	6.47E-05
U-238	3.36E-07
Np-237	7.05E-04
Pu-238	1.71E+01
Pu-239	6.21E-02
Pu-240	2.27E-01
Pu-241	1.03E+02
Pu-242	3.93E-03
Am-241	3.44E+00
Am-243	2.00E-01
Cm-244	8.10E+01
Cm-245	1.72E-01
Cm-246	3.04E-01

Table 18 summarizes the results of the U-235, U-238, and Pu-239 mass calculations for the filtered liquid samples. The details of these calculations are given in Appendix R. For Tank S19 as stated before, samples 98018-19-O and 98018-19-A were both aqueous and can be considered duplicates. The results from these two samples can be used as an indication of the precision of the analytical results and homogeneity of the liquid in this tank. Tank S20 is known to contain both organic and aqueous liquid phases. However, only the total volume is known and the volume of each of the two liquid phases is unknown. Therefore, the nuclide masses

determined for samples 98018-20-T and 98018-20-B were calculated in a conservative manner. For sample 98018-20-T (organic phase), it was assumed that the entire volume of liquid in Tank S20 was organic when calculating the nuclide masses for this phase. Then, for sample 98018-20-B (aqueous phase), it was assumed that the entire volume was aqueous when calculating the total masses for the aqueous phase. These two values can then be summed to give a conservative upper limit of the nuclide content of the filtered liquid phases in this tank. No information is available on the liquids (and suspended solids) in Tanks S10, S12, and S18. These tanks were not sampled for liquids due to the presence of only very minimal amounts of liquids. See Section 1.0 for more details of the sampling events involving the liquids from the Old Solvent Tanks. Also, U-235, U-238, and Pu-239 mass data are not available for Tanks S9, S15, S16, and S17 because these tanks contained no liquids (or suspended solids)^{9,10,11}.

Table 18. U-235, U-238, and Pu-239 Masses Contained in the Filtered Liquids

Tank #	U-235 (g)	U-238 (g)	Pu-239 (g)
S1	2.11E+01	2.99E+03	1.49E-01
S2	3.72E+00	0.00E+00 ^a	<1.35E-02
S3	6.56E+01	9.95E+03	3.82E-01
S4	1.63E+02	3.32E+04	<1.02E+00
S5	6.50E+01	1.13E+04	1.53E+00
S6	2.13E+01	3.19E+03	<7.64E-01
S7	2.24E+02	4.80E+04	2.76E+00
S8	7.35E+00	1.12E+03	<3.80E-01
S11	6.07E-02	<7.83E+00	4.54E-02
S13	6.15E+01	9.95E+03	<6.05E-01
S14	3.92E+01	1.83E+04	2.93E-01
S19-O	3.68E+01	5.72E+04	3.12E-01
S19-A	3.71E+01	4.72E+04	2.50E-01
S20-T	<8.85E+00	<2.49E+02	<5.65E-02
S20-B	<1.93E+02	<4.12E+04	<2.21E+00
S21	2.04E+01	7.68E+03	2.10E-01
S22	4.96E+01	5.91E+03	<1.24E+00

a- Value not measured.

The U-235 masses in the filtered liquids range from 0.0607 grams in Tank S11 to 224 grams in Tank S7. The U-238 masses range from <7.83 grams in Tank S11 to 57,200 grams in one of the two samples from Tanks S19. The Pu-239 mass range is from <0.0135 grams in Tank S2 to 2.76 grams in Tank S7. Thus, none of the filtered liquids that were sampled and analyzed in this study contain more than 700 grams of U-235 or 450 grams of Pu-239.

Table 19 summarizes the results of the U-235, U-238, and Pu-239 mass calculations for the suspended solid samples. The details of these calculations are given in Appendix S. The U-235 masses range from 0.00192 grams in Tank S5 to 57.1 grams in Tank S6. The U-238 masses range from 0.0203 grams in Tank S11 to 12,600 grams in Tanks S6. The Pu-239 mass range is from 0.000127 grams in Tank S11 to 1.75 grams in Tank S6. Thus, none of the analyzed suspended solids in the tanks contain more than 700 grams of U-235 or 450 grams of Pu-239.

Table 19. U-235, U-238, and Pu-239 Masses Contained in the Suspended Solids

Tank #	U-235 (g)	U-238 (g)	Pu-239 (g)
S1	4.92E-02	7.30E+00	<4.05E-03
S2	3.40E-01	5.45E+01	9.04E-03
S3	8.14E+00	1.07E+03	3.69E-01
S4	7.05E-01	9.26E+01	1.84E-02
S5	1.92E-03	2.95E-01	4.63E-04
S6	5.71E+01	1.26E+04	1.75E+00
S7	5.56E+00	1.29E+02	2.63E-01
S8	6.76E-02	1.58E+01	1.10E-01
S11	1.17E-04	2.03E-02	1.27E-04
S13	1.68E+00	2.75E+02	2.30E-01
S14	2.54E-02	4.07E+00	7.72E-03
S19-O	3.01E+00	4.67E+02	1.22E-01
S19-A	1.54E+00	2.47E+02	4.10E-02
S20-T	<1.64E-01	<2.40E+01	<5.51E-02
S20-B	<1.24E+00	<2.12E+02	<1.11E-01
S21	5.21E+00	8.14E+02	4.99E-01
S22	1.99E-01	<2.24E+01	7.36E-02

The U-235, U-238, and Pu-239 mass calculation results for the sludges are shown in Table 20. The details of these calculations are given in Appendix T. The calculated U-235 mass values range from 0.184 grams in Tank S8 to 1020 grams in Tank S16. Tank S16 is the only tank that has more than 700 grams of U-235 in it. However, from the data, it appears that the uranium in this tank is depleted. Thus, the data from this tank will need further analysis to ensure that there is not a criticality concern with the contents of the tank. The U-238 mass values in the sludges range from 26.9 grams in Tank S8 to 187,000 grams in Tank S16. The Pu-239 mass values in the sludges range from <0.00224 grams in Tank S4 to 28.6 grams in Tank S16. As stated before, no information is available on the sludges in Tanks S1, S3, S5, S9, S10, S11, S12, S13, S14, S15, S17, and S18. Adequate sludge samples were not obtained for these tanks due to unsuccessful sampling events and/or the

presence of only very minimal amounts of sludge. See Section 1.0 for a more detailed discussion of the sampling events involving the sludges from the Old Solvent Tanks. Also no U-235, U-238, and Pu-239 mass data are available for Tank S6 because this tank contained no sludge^{9,10,11}.

Table 20. U-235, U-238, and Pu-239 Masses Contained in the Sludges

Tank #	U-235 (g)	U-238 (g)	Pu-239 (g)
S2	4.83E+00	7.40E+02	<1.23E+00
S4 ^a	<3.63E+00	9.65E+02	<2.24E-03
S7	3.66E+00	6.98E+02	8.89E-02
S8	1.84E-01	2.69E+01	3.21E-02
S16	1.02E+03	1.87E+05	2.86E+01
S19	3.28E+02	3.00E+04	3.81E+00
S20	1.89E+01	1.16E+04	1.07E+00
S21	1.89E+00	2.86E+02	2.74E-01
S22	9.50E-01	0.00E+00 ^b	3.09E-01

a- U-235, U-238, and Pu-239 masses were calculated from this liquid sample assuming a sludge density of 2.0 g/cm³.

b- Value not measured.

Table 21 shows the total U-235, U-238, and Pu-239 mass values in those tanks for which quantitative data was obtained for the raw liquid phase and the sludge phase. Note that Tank S6 has no sludge in it and Tank S16 has no liquid in it. Data was not obtained for the sludges from Tanks S1, S3, S5, S9, S10, S11, S12, S13, S14, S15, S17, and S18. Thus, the results listed in Table 21 for these tanks represent lower limits since they contain the contributions from the filtered liquids and suspended solids only.

As discussed previously, the raw liquid data for Tank S19 represents the average of two aqueous samples taken from this tank. The data for Tank S20 represents an upper limit only since there are two phases present in this tank and the volume of each phase is unknown. Thus when the various nuclide masses of each liquid phase were calculated, it was assumed that the volume of each phase equaled the total liquid volume present in the tank.

Note that Tank S16 is the only Tank that was analyzed with more than 700 grams of U-235 while none of the analyzed tanks contain over 30 grams of Pu-239 based upon the available analytical data. Thus, as stated previously, the data from Tank S16 will require further analysis by a qualified criticality expert.

Table 21. Total U-235, U-238, and Pu-239 Content of Sampled Solvent Tanks

Tank #	U-235 (g)	U-238 (g)	Pu-239 (g)
S1 ^a	≥2.11E+01	≥3.00E+03	≥1.53E-01
S2	8.89E+00	7.95E+02 ^c	<1.25E+00
S3 ^a	≥7.37E+01	≥1.10E+04	≥7.51E-01
S4	<1.67E+02	3.43E+04	<1.04E+00
S5 ^a	≥6.50E+01	≥1.13E+04	≥1.53E+00
S6	7.84E+01	1.58E+04	<2.51E+00
S7	2.33E+02	4.88E+04	3.11E+00
S8	7.60E+00	1.16E+03	<5.22E-01
S11 ^a	≥6.08E-02	≥7.85E+00	≥4.55E-02
S13 ^a	≥6.32E+01	≥1.02E+04	≥8.35E-01
S14 ^a	≥3.92E+01	≥1.83E+04	≥3.01E-01
S16	1.02E+03	1.87E+05	2.86E+01
S19	3.67E+02 ^b	8.26E+04	4.17E+00
S20	<2.22E+02	<5.33E+04	<3.50E+00
S21	2.75E+01	8.78E+03	9.83E-01
S22	5.07E+01	<5.93E+03 ^d	<1.62E+00

- a- Sludge data not available for this sample, see Section 1.0 for details.
- b- This value was calculated using the average values of the two liquid and suspended solid samples.
- c- U-238 not measured on the filtered liquid sample.
- d- U-238 not measured on the sludge sample.

5.0 COMPARISON OF DATA TO WAC'S

Once the analyses were complete for the raw liquids, filtered liquids, suspended solids, and sludges, a detailed comparison relative to the appropriate WAC's was needed. Therefore, the extensive analytical data from the filtered liquids were compared to the requirements of the latest revisions of the WAC's from CIF^{13,14}, SSTF³, MWSB¹⁴, and the TRU Pads⁴. For those tanks with sufficient data available for the sludges, a comparison to the latest revisions of the WAC's from the 241-F/H Tank Farms⁷, TRU Pads⁴, and MWSB¹⁴ was performed. Since only a limited amount of radionuclide data were available for the suspended solids and sludges, only a limited comparison to the requirements of the WAC's could be performed. Specifically, this comparison focused primarily on the contribution of the suspended solids and sludges to the radionuclide inventory. The results of the comparisons of the raw liquids, filtered liquids, suspended solids, and sludges are given below.

5.1 Comparison of Raw Liquid Data to CIF WAC

The raw liquid, filtered liquid, and suspended solids data were first compared to the waste acceptance criteria of the Consolidated Incineration Facility^{13,14}. Both WAC's had to be considered depending upon the nature of the material. Since the CIF cannot accept TRU waste, the first point of comparison was the activity concentration of the TRU components. For the aqueous raw liquids, Tanks S1, S5, S6, S7, S8, S13, S14, S19, S20, S21 and S22 have TRU activity concentrations of >100 nCi/g. Thus the raw liquids in these tanks are transuranic waste and are prohibited from incineration in the CIF. In addition, the organic raw liquid from Tank S11 also has a TRU activity concentration of >100 nCi/g. Because of their TRU status, these tanks will not be considered any further for candidate CIF waste and will not be compared against any other requirements of the CIF WAC's. Tanks S2, S3 and S4 have TRU activity concentrations of 42.8, 88.9, and 22.7 nCi/g respectively; hence, they are not considered TRU waste. As stated previously in Section 3.3, the TRU activity concentration had to be calculated for the suspended solids portion of the raw organic liquid in Tank S20. Based upon this calculation and for the purposes of this comparison, the raw organic liquid of Tank S20 was assumed not to be TRU (4.44 nCi/g).

The PCB content of the filtered liquids contained in Tanks S2, S3, S4 and S20 (organic phase) is <50 mg/L for all four liquids. This is within the acceptable limit specified in References 13 and 14 for the CIF.

According to References 13 and 14, CIF will not accept liquids with freezing points greater than 40 °F, boiling points less than 135 °F, total suspended solids greater than 10.0 weight percent, a sodium content of greater than 10 weight percent, and a fluorine content of greater than 3 weight percent. The filtered liquids in Tanks S2, S3, S4, and the filtered organic phase of Tank S20 are within these limits with one exception. The boiling point was not measured on the filtered liquid sample from Tank S4. However, since its composition is similar to the other aqueous filtered samples, it most likely has a similar boiling point (~160 °F). If required, this boiling point can be determined at a later date. As mentioned previously in Section 2.1, the total suspended solids determinations were performed on the raw liquids whereas the boiling point, freezing point, sodium, and fluorine determinations were performed on the filtered liquids only. The previous CIF WAC⁶ prohibited waste streams with greater than 2000 mg/L of Hexamethylene-1, 6-diisocyanate; p-Aminodiphenyl; Kepone; a-Naphthylamine; b-Naphthylamine; Nitrogen Mustard; Nitroso-dimethylamine; or p-Nitrosophenol. None of these compounds were detected in the filtered liquids from Tanks S2, S3, S4, or the organic phase of Tank S20 in the qualitative evaluation of the GC/MS data, supporting

their absence. The limits for these organic compounds are not in the latest revision of the WAC 3.17¹³. The latest revision of WAC 3.18 requires CIF notification prior to shipping waste containers with greater than 2000 ppm of these compounds¹⁴.

Both CIF WAC's require antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, manganese, mercury, nickel, selenium, silver, and thallium to be quantified if these metals are known or suspected to be present in the material^{13,14}. Since the Sampling and Analysis Plan was written before Revision 1 of WAC 3.17 and Revision 0 of WAC 3.18 were issued, cobalt was not quantified in many of the Old Solvent Tank samples. The metal concentration limits for CIF are shown in Table 25^{13,14}. Comparing the data for the filtered liquids given in Appendices B, C, D, and O with the data given in Table 22; one can clearly see that the filtered aqueous liquids in Tanks S2, S3, S4, and the filtered organic liquid in Tank S20 do not contain any of these metals above the CIF concentration limits.

Table 22. Metal Concentration Limits for CIF

Metal	Maximum Allowable Concentration mg/kg
Antimony	730
Arsenic	50
Barium	100,000
Beryllium	20
Cadmium	20
Chromium	2,500
Lead	10,000
Mercury	260
Silver	7,300
Thallium	730

WAC 3.17 requires BTU/lb, pH, estimated viscosity, estimated specific gravity, total suspended solids, total dissolved solids, total organic carbon, weight percent water, ash content, and total halogens weight percent to be determined/calculated. All of the above have been measured as specified by the Sampling and Analysis Plan² except viscosity, BTU/lb, and total halogens weight percent. Per a request by the customer, viscosity measurements were not performed on the liquid samples. However, the viscosity can be estimated from the analytical data, and if necessary, an analytical measurement can be made. Total halogen weight percent was not specified by the Sampling and Analysis Plan (because it was not a requirement in the previous revision of the CIF WAC⁶) and therefore was not determined. If necessary, total halogen weight percent can be determined at a later date. The BTU/lb for the aqueous liquids contained in

Tanks S2, S3, and S4 and the organic liquid in Tank S20 can be calculated based upon the available analytical data and published thermodynamic data if required.

Next the radiological control limits for the CIF had to be considered. For >55 gallons of liquid, CIF has a gross alpha limit of 5 nCi/g. Tanks S2, S3, and S4 contain >55 gallons of raw liquid and have gross alpha activity concentrations of 52.1, 230, and 24.3 nCi/g respectively. Thus, all three of the tanks fail to meet the gross alpha criterion of the CIF WAC's. Details of these calculations can be found in Appendix U. The volume of the organic phase in Tank S20 is unknown; therefore, the more restrictive WAC gross alpha limit (5 nCi/g) was used for comparison. The calculated gross alpha activity concentration for the organic phase of Tank S20 is 19.6 nCi/g. See Section 3.2 and Appendix U for details behind this calculation. Based upon the limited amount of data from the organic phase of Tank S20, it can be concluded that the gross alpha activity is above the CIF limit of 5 nCi/g.

For H-3 activity concentration, CIF has a limit of 1200 nCi/g for >55 gallons of liquid. As shown in Appendix U, Tanks S2 and S3 have H-3 activity concentrations of <0.804 and 0.853 nCi/g respectively. Only lower limits could be calculated for the H-3 activity concentrations of the liquid sample from Tank S4 and the organic phase of Tank S20. This is due to incomplete data. The remaining H-3 data from these two samples will be reported at a later date.

Taking the data from Appendix U, the total activity concentrations (Gross Alpha + Gross Beta) are 82.5, 686, and 150 nCi/g for Tanks S2, S3, and S4 respectively. For the organic phase of Tank S20 the total activity concentration is 147 nCi/g. All four of these values are well below the CIF WAC limit of 2600 nCi/g for liquid wastes with volumes greater than 55 gallons.

As specified in the CIF WAC's, the U-235 FGE of the waste must be calculated and submitted to CIF prior to waste acceptance^{13,14}. Currently, the nuclear safety limit for the CIF inventory of fissile nuclides is 700 FGE U-235. Using the data found in Section 3.3 and technical guidance from the appropriate CIF personnel, the U-235 FGE calculations can easily be performed. This exercise has been left up to the reader.

5.2 Comparison of Raw Liquid Data to SSTF WAC

The Solvent Storage Tank Facility is similar to the Old Solvent Tanks. This facility consists of four 30,000-gallon carbon steel tanks located next to the CIF. The SSTF is prohibited from receiving TRU waste³. As stated before in Section 5.1, the aqueous raw liquids in tanks S1, S5, S6, S7, S8, S13,

S14, S19, S20, S21, and S22 have TRU activity concentrations of >100 nCi/g. In addition, the organic raw liquid in Tank S11 has a TRU activity concentration of >100 nCi/g. Because of the TRU activity concentrations in these tanks, they will not be considered any further for storage in the SSTF and will not be compared against any other requirements of the SSTF WAC. The aqueous liquids contained in Tanks S2, S3, and S4 have TRU activity concentrations of 42.8, 88.9 and 22.7 nCi/g respectively, hence they are not considered TRU waste. In addition, as stated earlier, the TRU activity concentration had to be calculated for the suspended solids portion of the raw organic liquid in Tank S20 (see Section 3.2). Based upon this calculation and for the purposes of this comparison, the raw organic liquid of Tank S20 was assumed not to be TRU.

Section B.1 of the SSTF WAC lists 17 characteristics that are prohibited in waste that is acceptable to the SSTF³. The filtered aqueous liquids contained in Tanks S2, S3, and S4 and the filtered organic phase in Tank S20 do not have any of the prohibited characteristics according to best available information at the time of this report with the exception of beryllium. The filtered liquids in Tanks S2 and S4 both have very low levels (0.1 mg/kg and 1.1 mg/kg respectively) of beryllium.

Table 23. Physical and Chemical Criteria of SSTF

Parameter/Analyte	Acceptable Values
Specific Gravity	≤ 1.15
Freezing Point	≤ 40 °F
Boiling Point	≥ 135 °F
Flash Point	≥ 140 °F
Total Suspended Solids	≤ 10 wt%
BTU/lb	≥ 5000
pH	4 ≤ pH ≤ 12.5
Viscosity	0.002 – 0.045 Pas @ 25 °C
Antimony	≤ 730 mg/kg
Arsenic	≤ 50 mg/kg
Barium	≤ 1000 mg/kg
Beryllium	0 mg/kg (equip. detection limit)
Cadmium	≤ 20 mg/kg
Chromium	≤ 2500 mg/kg
Lead	≤ 10,000 mg/kg
Mercury	≤ 260 mg/kg
Silver	≤ 7300 mg/kg
Thallium	≤ 730 mg/kg

The physical and chemical criteria requirements are given in Section B.2 of the SSTF WAC³. These are summarized in Table 23. All of the parameters in Table 23 were measured as specified by the Sampling and Analysis Plan² except viscosity and BTU/lb. The analytical results for the filtered aqueous liquids in Tanks S2, S3, S4, and the filtered organic phase of Tank S20 are given in Appendices B, C, D, and O respectively.

ADS's customer requested that viscosity measurements not be performed on the liquid samples. However, the viscosity can be estimated from the analytical data, and if necessary, an analytical measurement can be made. The BTU/lb for the aqueous liquids (see Appendices B, C, and D) contained in Tanks S2, S3, and S4 and the organic liquid in Tank S20 (see Appendix O) can be calculated based upon the available analytical data and published thermodynamic data if required. As mentioned in Section 5.1, the boiling point was not measured on the filtered liquid sample from Tank S4. However, since its composition is similar to the other aqueous filtered samples, it most likely has a similar boiling point (~160 °F). If required, this boiling point can be determined at a later date. The total suspended solids were measured on the raw liquids. For Tanks S2, S3, S4, and the organic phase of Tanks S20, none of the limits on the measured physical and chemical criteria listed in Table 23 were exceeded except for Be in Tanks S2 and S4. As stated earlier, a very small amount was detected in these two filtered aqueous liquids.

It must be emphasized that Section B.2 of the SSTF WAC requires that an explicit set of analytical test methods be used when characterizing waste for specified physical and chemical criteria³. However, ADS of SRTC uses its own procedures/work instructions that may or may not be equivalent to the analytical test methods listed in Appendix I of the SSTF WAC. A comparison of the various methods may be needed prior to acceptance by SSTF if this route is chosen for some of the Old Solvent Tank material.

The SSTF WAC requires that "generators provide information regarding the radionuclides present in the waste and the number of curies of each radionuclide"³. The radionuclide data for the filtered liquids and suspended solid material for Tanks S2, S3, S4 and S20 are given in Appendices B, C, D, and O respectively.

As specified in the SSTF WAC, the U-235 FGE of the waste must not exceed the equivalence of 23 grams per 1000-gallon shipment. Using the data found in Section 3.3 and technical guidance from the appropriate SSTF personnel, the U-235 FGE calculations can easily be performed. This exercise has been left up to the reader.

5.3 Comparison of Raw Liquid Data to MWSB WAC

The MWSF include Mixed Waste Storage Buildings (MWSB) 643-29E, 643-43E, and 645-2N; and the mixed waste storage pads located in the Solid Waste Disposal Facility^{5,14}. In addition, Buildings 315-4M and 316-M are operated in partnership with the Reactor Materials Division. These facilities have the capability of storing low-level mixed waste. TRU waste is prohibited in the MWSB per Section 1.C.2.a of WAC 3.18¹⁴. Since the aqueous raw liquids in tanks S1, S5, S6, S7, S8, S13, S14, S19, S20, S21, and S22 have TRU activity concentrations of >100 nCi/g, these tanks will not be considered any further for storage in the MWSB. In addition, the organic raw liquid in Tank S11 is also TRU waste and will not be considered any further. As previously stated, the aqueous liquid in Tanks S2, S3, and S4 have TRU activity concentrations of 42.8, 88.9, and 22.7 nCi/g respectively, hence they are not considered TRU waste. Also, as stated earlier, the TRU activity concentration had to be calculated for the suspended solids portion of the raw organic liquid in Tank S20. Based upon this calculation and for the purposes of this comparison, the raw organic liquid of Tank S20 was assumed not to be TRU.

Section 1.C.1.a of the MWSB WAC lists multiple characteristics that are prohibited in waste that is acceptable to the MWSB¹⁴. Based upon the current analytical data, the filtered aqueous liquid contained in Tanks S2, S3, and S4 and the filtered organic liquid in Tank S20 do not have any of the prohibited characteristics. Attachment 3, Table 5, lists the hazardous waste codes acceptable at the MWSB¹⁴. Based upon the best available analytical data, the aqueous liquid in Tank S2 will carry D009 and potentially D010. The aqueous liquid in Tank S3 will carry D009. The aqueous liquid in Tank S4 will carry D004, D006, D007, D009, and potentially D010. Finally, the organic liquid in Tank S20 will be assigned a D009 code and potentially D010. The aqueous liquids from Tank S2 and S4 and the organic liquid from Tank S20 have total Selenium levels of <11, <21.3, and <1.2 mg/L respectively. However, the regulatory limit for Selenium is 1.0. It cannot be proven with current analytical data that these three liquids have less than the regulatory limit. Thus their status relative to carrying a D010 code is in question. At the current time, it is unknown if the organic liquid in Tank S20 carries any additional waste codes. Note that total metal concentrations were determined for these samples, not TCLP.

The MWSB WAC requires that "generators will provide information regarding the radionuclide distribution present in the waste and the total number of curies contained in each package"¹⁴. The radionuclide data for the filtered liquids and suspended solid material for Tanks S2, S3, S4, and S20 (organic layer) are given in Appendices B, C, D, and O respectively. It

should be noted that Appendices B, C, D, and O do not contain information regarding daughter radionuclides such as Y-90 and Ba-137m. However, these values can be easily calculated based upon radionuclide growth and decay equations.

The Nuclear Safety Criteria specified in the MWSB WAC are dependent upon container type. Using 55-gallon drums as an example, the U-235 FGE of the waste must not exceed 200 grams per container. Using the data found in Section 3.3 and technical guidance from the appropriate MWSB personnel, the U-235 FGE calculations can easily be performed. This exercise has been left up to the reader.

5.4 Comparison of Raw Liquid Data to Transuranic Pads WAC

As discussed previously, the aqueous raw liquids in S1, S5, S6, S7, S8, S13, S14, S19, S20, S21, and S22 have TRU activity concentrations of >100 nCi/g, thus these liquids cannot be considered low-level waste. In addition, the organic liquid in Tank S11 has a TRU activity concentration of >100 nCi/g. One possible disposal option for these TRU materials is the E-Area TRU Pads. The waste characteristics requirements for the TRU Pads are given in Section A of the TRU Pads Transuranic WAC⁴. Multiple chemical requirements are given in Section A.2. Only small quantities of liquid (<2 liters/55-gallon drum or <8 liters/SWB or <1 inch in any internal container) can be present in TRU waste. Thus in their current form, the aqueous raw liquids of S1, S5, S6, S7, S8, S13, S14, S19, S20, S21, and S22 and the organic raw liquid in Tank S11 would not be acceptable to the E-Area TRU Pads. The raw liquids would have to be treated in some manner to convert the liquid into a suitable solid.

It would be beneficial to separate the suspended solids from the liquids in Tanks S6 and S8. In both of these tanks the TRU content of the filtered liquid is <100 nCi/g while the TRU content of the suspended solids is much greater than 100 nCi/g. Without separation, the raw liquids from both of these tanks would be considered TRU waste. Separation of the suspended solids from the liquids would thus be an effective TRU volume reduction step.

The aqueous raw liquids in Tanks S2, S3, and S4 cannot be considered for disposal at the E-Area TRU Pads since both liquids are low level waste. In addition, since the TRU activity concentration of the organic raw liquid contained in Tank S20 was calculated to be <100 nCi/g, this liquid was not considered for disposal at the E-Area TRU Pads. However, separation of the organic liquid from the aqueous liquid in Tank S20 would be needed in order to consider disposal of the aqueous phase at the E-Area TRU Pads.

One technical challenge would thus be the identification of an efficient means to separate the organic and aqueous layers contained in this tank.

The TRU Pads WAC requires heat load calculations based upon the nuclide content of the waste container. This calculation is automatically performed by form OSR 29-90 once the radionuclide information (in grams) has been entered in the form. The TRU Pads WAC also requires that the waste contain less than or equal to 195 FGE of Pu-239 per 55-gallon drum⁴. Using the data found in Section 3.3 and technical guidance from the appropriate Solid Waste Division (SWD) personnel, the Pu-239 FGE calculations can easily be performed to verify the Pu-239 FGE content. This exercise has been left up to the reader. Some of the liquids contain trace amounts (ppm range) of beryllium and may require an approved deviation request prior to acceptance by the TRU Pads. SWD should be consulted on this matter.

5.5 Comparison of Sludge Data to 241-F/H Tank Farms WAC

As originally written, the Sampling and Analysis Plan considered four options for the sludge from the Old Solvent Tanks. These options were disposal at the 241-F/H Tank Farms, disposal at the E-Area TRU Pads, disposal at the MWSB, and in-place stabilization. Since it was technically very challenging to acquire adequate sludge samples, sludge was obtained from only twelve of the tanks (Tanks S2, S4, S7, S8, S13, S14, S15, S16, S19, S20, S21, and S22) for limited characterization. Of these twelve samples, three (Tanks S13, S14, and S15) had insufficient sample for quantitative radiological characterization. Sludge from Tanks S1, S3, S5, S6, S9, S10, S11, S12, S17, and S18 could not be obtained due to the absence of significant quantities of sludge or physical limitations of the tank geometries and riser pipes. Of the nine sludge samples for which a measurable mass was obtained, time restraints and limited sample quantities significantly impacted the number of analyses that could be performed. Hence, the comparison of the sludge data to the 241-F/H Tank Farms WAC will be of very limited scope.

The maximum organic concentration as stated in Section 13.2.3 of the 241-F/H Tank Farms WAC must be less than 0.5 vol % organic/aqueous. The organic content (if measured) of the nine sludge samples quantitatively characterized is shown in Table 24. The organic constituents of the sludge samples from Tanks S7, S8, S16, S21, and S22 can be found in Appendices G, H, M, P and Q. These five samples appear not meet the organic content requirement of the 241-F/H Tank Farms WAC. Additional sampling and analyses would be required to determine the organic content of the sludges from Tanks S2, S4, S19, and S20.

Table 24. Organic Content of Sludge Samples

Tank #	Organic Content
2 ^a	Unknown
4 ^a	Unknown
7	100%
8	>0.72%
16	100%
19 ^a	Unknown
20 ^a	Unknown
21	>1%
22	>23%

a- Semi-Volatile Organics analysis by GC/MS not performed on this sample due to sample size restrictions.

Section 13.3 of the 241-F/H Tank Farms WAC lists a Cs-137 activity concentration limit of 3.48×10^8 dpm/mL⁷. Table 25 lists the Cs-137 activity concentrations for the nine sludge samples quantitatively characterized in this study assuming a sludge density of 2.0 g/cm³. All nine sludges contain Cs-137 at activity concentrations less than the 241-F/H Tank Farms limit.

Table 25. Sludge Phase Cs-137 Activity Concentration

Tank #	Cs-137 Activity μCi/g	Cs-137 Activity dpm/mL
2	2.32E-01	1.03E+06
4	1.10E-01	4.88E+05
7	8.78E-02	3.90E+05
8	1.08E+01	4.80E+07
16	1.11E-01	4.93E+05
19	2.80E-01	1.24E+06
20	6.71E-01	2.98E+06
21	1.99E-02	8.84E+04
22	3.87E-01	1.72E+06

As shown in Table 25, none of the nine sludges exceeds the Cs-137 limit specified in the 241-F/H Tank Farms WAC.

Section 13.4 of the 241-F/H Tank Farms WAC lists the regulatory requirements from a RCRA standpoint. It must be emphasized that TCLP was not performed on these sludge samples. Instead, these samples were analyzed for total metals. Based upon the total metal results, several of the sludges fail to meet the 241-F/H Tank Farms RCRA requirements. Table 26 displays those parameters that fail to meet the RCRA requirements.

Table 26. RCRA Characteristics of Sludge Samples

Tank #	RCRA Parameter Failing to Meet Tank Farms WAC
2 ^a	As, Cd, Se(?)
4 ^b	Unknown
7 ^a	Cd, Se(?), (Hg not measured)
8 ^b	Unknown
16 ^c	As(?), Cd, Se(?)
19 ^a	Cd, Se(?)
20 ^a	Cd, Se(?)
21 ^a	Cd, Se(?)
22	Cd, Se

- a- Selenium detection limit above regulatory requirement for this sample.
- b- Metals analysis not performed on this sample due to sample size restrictions.
- c- Arsenic and selenium detection limits above regulatory requirement for this sample.

The sludges from Tanks S2, S7, S16, S19, S20, and S22 had ≥ 5 mg/kg of silver. The origin of the silver is unknown. Hence, the silver restriction as stated in Section 13.2.4 of the 241-F/H Tank Farms WAC might have an impact on the acceptability of the sludge from these six tanks.

Using the information provided in Section 3.4 of this report, additional criticality safety and Authorization Basis issues will be addressed by HLWE if and when it is decided to pursue the disposal of the sludge to the 241-F/H Tank Farms.

5.6 Comparison of Sludge Data to Transuranic Pads WAC

The calculated TRU content of the nine quantitatively characterized sludge samples was given in Table 16 of Section 3.3. All of the sludges are considered TRU except the sludge from Tank S4. This material was liquid in nature and the TRU component was calculated assuming that the density of the material was 2.0 g/cm^3 . Thus, only the sludges from Tanks S2, S7, S8, S16, S19, S20, S21, and S22 would meet the TRU requirements for disposal at the E-Area TRU Pads. The waste characteristics requirements for the TRU Pads are given in Section A of the TRU Pads Transuranic WAC⁴. Multiple chemical requirements are given in Section A.2. Due to the small sample quantities, only very limited analyses could be performed on these sludges. Thus, additional sampling and analyses may be required prior to further consideration of this disposal option. The TRU Pads WAC requires heat load calculations based upon the nuclide content of the waste container.

This calculation is automatically performed by form OSR 29-90 once the radionuclide information (in grams) has been entered in the form. The TRU Pads WAC also requires that the waste contain less than or equal to 195 FGE of Pu-239 per 55 gallon drum⁴. Using the data found in Section 3.3 and technical guidance from the appropriate SWD personnel, the Pu-239 FGE calculations can easily be performed. Additionally, due to the liquid restrictions of the TRU Pads WAC, a treatment and/or stabilization may be needed for the sludges prior to acceptance by the TRU Pads⁴.

One very important consideration for disposal of the sludges at the TRU Pads is the need to remove the sludges from the tanks. As the sludge sampling events demonstrated, the removal of the sludges from the tanks will represent a formidable technical challenge.

5.7 Comparison of Sludge Data to MWSB WAC

As mentioned in Section 5.6, only one of the nine quantitatively characterized sludge samples was not TRU. Thus, the sludge from Tank S4 could potentially be sent to the MWSB. Section 1.C.1.a of the MWSB WAC lists multiple characteristics that are prohibited in waste that is acceptable to the MWSF¹⁴. Based upon the current analytical data, the sludge contained in Tank S4 does not have any of the prohibited characteristics. Attachment 3, Table 5, lists the hazardous waste codes acceptable at the MWSB. The hazardous waste code assignments to this sludge are unknown at this time. Due to the very limited amount of sample obtained, a metals analysis and GC/MS SVOA were not performed on this sample.

The MWSB WAC requires that "generators will provide information regarding the radionuclide distribution present in the waste and the total number of curies contained in each package"¹³. The radionuclide data for the sludge from Tank S4 are given in Appendix D. It should be noted that Appendix D does not contain information regarding daughter radionuclides such as Y-90 and Ba-137m. However, these values can be easily calculated based upon radionuclide growth and decay equations.

The Nuclear Safety Criteria specified in the MWSB WAC are dependent upon container type. Using 55-gallon drums as an example, the U-235 FGE of the waste must not exceed 200 grams per container. Using the data found in Section 3.3 and technical guidance from the appropriate MWSB personnel, the U-235 FGE calculations can easily be performed. This exercise has been left up to the reader.

It is obvious from the above discussion that a more extensive characterization may be required on this material if disposal of the material

is going to be seriously considered at the MWSB. This will assume, of course, that it is physically possible to obtain a reasonably sized sample for characterization.

5.8 Summary of Comparisons to the Various WACS

Based upon the discussions of Section 5.1 through Section 5.7, summary tables were constructed for the liquids and sludges from the Old Solvent Tanks. Each table lists the parameters of each tank that fail to meet the criteria of the various WAC's. Table 27 summarizes the liquid data while Table 28 summarizes the sludge data.

Table 27. Liquid Parameters Failing to Meet WAC Requirements

Tank #	CIF WAC	SSTF WAC	MWSB WAC	TRU Pads WAC
1	TRU	TRU	TRU	Liquid Content
2	Gross Alpha	Beryllium	None	Non-TRU
3	Gross Alpha	None	None	Non-TRU
4	Gross Alpha	Beryllium	None	Non-TRU
5	TRU	TRU	TRU	Liquid Content
6	TRU	TRU	TRU	Liquid Content
7	TRU	TRU	TRU	Liquid Content
8	TRU	TRU	TRU	Liquid Content
11	TRU	TRU	TRU	Liquid Content
13	TRU	TRU	TRU	Liquid Content
14	TRU	TRU	TRU	Liquid Content
19	TRU	TRU	TRU	Liquid Content
20-Organic	Gross Alpha	N/A	None	Non-TRU
20-Aqueous	TRU	TRU	TRU	Liquid Content
21	TRU	TRU	TRU	Liquid Content
22	TRU	TRU	TRU	Liquid Content

Table 28. Sludge Parameters Failing to Meet WAC Requirements

Tank #	241-F/H Tank Farms WAC	TRU Pads WAC	MWSB WAC
2	Arsenic, Cadmium ^a	Liquid Content?	TRU
4	Only Limited Analyses Performed	Non-TRU	Limited Analyses
7	Organic Content, Cadmium ^{a,b}	Liquid Content?	TRU
8	Organic Content, Limited Analyses	Liquid Content?	TRU
16	Organic Content, Cadmium ^{a,c}	Liquid Content?	TRU
19	Cadmium ^a	Liquid Content?	TRU
20	Cadmium ^a	Liquid Content?	TRU
21	Organic Content, Cadmium ^a	Liquid Content?	TRU
22	Organic Content, Cadmium, Selenium	Liquid Content?	TRU

- a- The detection limit for selenium in this sample was higher than the regulatory limit, thus, this sample may or may not meet the RCRA requirements of the WAC.
- b- Mercury was not measured on this sample, hence it may or may not meet the RCRA requirements of the WAC.
- c- The detection limit for arsenic in this sample was higher than the regulatory limit, thus, this sample may or may not meet the RCRA requirements of the WAC.

6.0 QUALITY ASSURANCE

The Analytical Development Section has an extensive quality assurance program in order to produce and disseminate data of the highest quality. ADS uses a graded approach for implementing DOE Order 5700.6C, 10CFR830-120, and ASME NQA-1 Quality Assurance Requirements for Nuclear Facilities¹⁶.

Measurement and Test Equipment such as balances and pipets are controlled using the WSRC 1Q, Quality Assurance Manual, Procedure 12-1 (Control of Measuring and Test Equipment). Analytical Measurement Systems (i.e. gamma detectors, GC's, etc.) are controlled using the WSRC 1Q, Quality Assurance Manual, Procedure 2-7 (Program Requirements for Analytical Measurement Systems) and Procedure ADS-0114 (Measurement Control Program) of Manual ADS L16.1 (Analytical Development Section Analytical Operating Procedures). In addition, ADS instrument procedures specifically define calibration procedures and quality control requirements. Quality control charts are compiled on a monthly basis for review. These data are issued in the monthly ADS Sample Management and Quality Control Report.

Accuracy and precision of the various analytical methods used by ADS are routinely checked by bench/check standards, blind standards, split samples, replicate measurements, external sources/laboratories, inter-laboratory comparison samples, quality control charts, and/or spikes of known concentrations. ADS currently participates in the DOE Radiological and Environmental Sciences Laboratory (RESL) Mixed Analyte Performance Evaluation Program (MAPEP) for laboratories performing radiological, inorganic, and/or organic analyses in support of DOE environmental monitoring activities. In the past, ADS has also participated in the DOE Environmental Measurements Laboratory (EML) Quality Assessment Program (QAP) for laboratories performing environmental radiological analyses for DOE environmental monitoring activities.

7.0 RECOMMENDATIONS FOR PATH FORWARD

The sampling and characterization of liquid and sludge samples from the Old Solvent Tanks has brought to light many important considerations. The most important of these considerations is the immense difficulty in obtaining/removing both liquid and sludge

samples from the Old Solvent Tanks. In particular, it became very evident that the sludges contained in the tanks are extremely hard to remove. These lessons in conjunction with the physical condition of the tanks should heavily influence treatment/disposal options of the material within the Old Solvent Tanks. It must also be emphasized that bulk removal of the remaining liquids and solids in these tanks will present an even more stifling challenge. This is due to the relatively small volumes of material in the tanks compared to the volumes of the tanks themselves.

One major limiting factor for a majority of the liquids, suspended solids, and sludges characterized in this study is the TRU content of the material. The TRU nature of the majority of the raw liquids contained in the tanks excludes all of the facilities that can accept exclusively low level waste. Only the raw aqueous liquids in Tanks S2, S3, and S4 and the raw organic liquid in Tank S20 have TRU activity concentrations of less than 100 nCi/g. None of the suspended solids have TRU activity concentrations of less than or equal to 100 nCi/g and only the filtered liquids in Tanks S2, S3, S4, S6, S8, and S20 (organic phase only) have TRU activity concentrations of less than 100 nCi/g. Thus, one would gain nothing by filtering the suspended solids out of Tanks S2, S3, S4, and S20 (organic phase). In fact, it would be advantageous to leave the suspended solids in the liquids since these raw liquids are not considered TRU waste. It would appear advantageous, though, to filter the suspended solids out of the liquids from Tanks S6 and S8. The much smaller volume of suspended solids could be treated as TRU waste while the filtered, low-level liquid could potentially be treated at a low-level waste facility such as CIF. Blending all of the tanks will not be of use either since there is not enough non-TRU liquid to combine with the TRU liquid to result in the mixture being less than or equal to 100 nCi/g. It appears that such a blend would be over 600 nCi/g, assuming no other liquid or solid material is added to the mixture.

The TRU Pads appear to be one potential disposal option for the raw aqueous liquids contained in Tanks in S1, S5, S6, S7, S8, S13, S14, S19, S20, S21, and S22, as well as the organic liquid in Tank S11. However, the liquids would not be acceptable in their liquid form since the current E-Area TRU Pads WAC prohibits any significant amount of liquids. Treatment options would thus have to be considered in which the liquid is converted into a suitable solid. Of course this treatment option would require an efficient pumping mechanism for the removal of the raw liquids from the tanks. Thus, facilities would have to be built that are external to the currently existing tanks resulting in the generation of additional waste.

The TRU Pads are also a potential disposal option for the sludges contained in Tanks S2, S7, S8, S16, S19, S20, S21, and S22. One major technical challenge is the removal of the sludge from the Old Solvent Tanks. The sampling events for this characterization study have shown that the sludge is not amenable to easy removal. Assuming one could remove the sludge in a reasonable manner, only small quantities of liquid could be present in order for the sludge to be acceptable to the E-Area TRU Pads (see Section 5.4 for further discussion). Hence, the removal technique could have a significant impact on the physical form of the sludge.

CIF remains a potentially viable choice for the raw aqueous liquids in Tanks S2, S3, and S4, and for the organic liquid in Tank 20. A deviation request would have to be submitted for these liquids due to the high gross alpha content. Potentially, a minimum of ~3330 liters or approximately 16% of the total liquid volume contained in the Old Solvent Tanks could be disposed of in this manner. If the suspended solids are separated from the raw liquids from Tanks S6 and S8, potentially ~1560 additional liters could be disposed of at CIF bringing the total to ~4890 liters or approximately 23% of the total liquid volume in the Old Solvent Tanks.

It is obvious from the outcome of this characterization that whatever options are chosen for the various liquids and solids contained in the Old Solvent Tanks, additional sampling and characterization work could be required. In conclusion, this extensive characterization project on the material contained in the Old Solvent Tanks now makes it possible to reasonably evaluate the risks and costs associated with the treatment options for the closure of these tanks.

8.0 REFERENCES

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9.0 APPENDICES

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Tank S1

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Appendix A

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Tank S1					
Sample #	3-103987				
Customer ID	98018-1				
Description	Original Aqueous Sample				
Analyte	Concent.	Units			
Total Suspended Solids	0.01	wt %			

Sample #	3-104940				
Customer ID	98018-1				
Description	Filtered Aqueous Sample				
Total Volume in Tank	443.2717	liters			
Analyte	Concent.	Units			
Al	6	mg/kg			
Sb	<3	mg/kg			
As	<0.11	mg/kg			
Ba	<1	mg/kg			
Be	<1	mg/kg			
B	3	mg/kg			
Cd	<1	mg/kg			
Cl-	<20	mg/L			
Cr	<1	mg/kg			
Cu	4	mg/kg			
CN-	<10	ug/L			
F-	<20	mg/L			
Fe	3	mg/kg			
Pb	<1	mg/kg			
Mn	2	mg/kg			
Hg	97.18	mg/kg			
Ni	1.8	mg/L			
NO3-	386	mg/L			
PO4---	<100	mg/L			
Se	<1.1	mg/L			
Ag	<1	mg/kg			
Na	7103	mg/kg			
Tl	<1	mg/kg			
U	4619	mg/kg			
Zn	2	mg/kg			
Any known VOA's, >20 mg/L	No	N/A			
acetone	3.3	mg/L			
n-Butanol	<1.1	mg/L			
Phenol/phenoxide/nitrophenols	<50	mg/L			
SemiVOA	Required	N/A			
TBP	1.5	%	15000	mg/L	
Other	<50	mg/L			
Total Inorganic Carbon	967	mg/L			
Total Organic Carbon	13073	mg/L			
Volatile Organics	Required	N/A			
PCB's	<50	mg/L			
Kepone	<50	mg/L			
p-Nitrophenol	<50	mg/L			
Benzene	<0.140	mg/L			
MEK	3.6	mg/L			
PCE	<0.140	mg/L			
Acidity	<0.02	Molarity			
Ash Content	2.53	%			
Boiling Pt.	150.8	degrees F			

BTU/lb		N/A			
Flash Pt.	209	degrees F			
Freezing Pt.	<32	degrees F			
Free Liquid?	Yes	N/A			
pH	8.27	N/A			
Density	0.875	g/cm3			
TDS	5.40	%			
Water, wt%	90.7	%			
					Aqueous
					Phase
					Total
	Activity	Error	Activity	Error	Activity
Radionuclides	uCi/mL	uCi/mL	pCi/L	pCi/L	uCi
Total Am	8.52E-03	UL	8.52E+06	UL	3.78E+03
Am-241	8.42E-03	4.36E-04	8.42E+06	4.36E+05	3.73E+03
Am-243	9.95E-05	UL	9.95E+04	UL	4.41E+01
Ce-144	2.56E-04	MDA	2.56E+05	MDA	1.13E+02
Total Cm	2.04E-02	4.07E-02	2.04E+07	4.07E+07	9.04E+03
Cm-244	2.04E-02	4.07E-02	2.04E+07	4.07E+07	9.04E+03
Cm-245	7.88E-04	DL	7.88E+05	DL	3.49E+02
Cm-246	1.41E-03	DL	1.41E+06	DL	6.25E+02
Co-60	3.03E-05	9.17E-06	3.03E+04	9.17E+03	1.34E+01
Cs-134	3.91E-05	MDA	3.91E+04	MDA	1.73E+01
Cs-137	1.28E-02	4.47E-04	1.28E+07	4.47E+05	5.67E+03
Eu-154	1.62E-02	2.85E-04	1.62E+07	2.85E+05	7.18E+03
Eu-155	1.77E-03	8.13E-05	1.77E+06	8.13E+04	7.85E+02
GA	6.80E-01		6.80E+08	0.00E+00	3.01E+05
H-3	2.07E-04	2.07E-05	2.07E+05	2.07E+04	9.18E+01
GB	1.82E+00	7.30E-01	1.82E+09	7.30E+08	8.07E+05
Np-237	2.29E-04	1.15E-04	2.29E+05	1.15E+05	1.02E+02
Total Pu	8.25E-01	8.11E-02	8.25E+08	8.11E+07	3.66E+05
Pu-238	6.49E-01	6.49E-02	6.49E+08	6.49E+07	2.88E+05
Pu-239	1.39E-02	6.94E-03	1.39E+07	6.94E+06	6.16E+03
Pu-240	1.97E-03	9.86E-04	1.97E+06	9.86E+05	8.73E+02
Pu-241	1.60E-01	4.81E-02	1.60E+08	4.81E+07	7.09E+04
Pu-242	1.81E-05	DL	1.81E+04	DL	8.02E+00
Pm-147	6.31E-04	4.50E-04	6.31E+05	4.50E+05	2.80E+02
Ru-106	3.72E-04	MDA	3.72E+05	MDA	1.65E+02
Sb-125	8.69E-04	6.78E-05	8.69E+05	6.78E+04	3.85E+02
Se-79	9.01E-05	MDA	9.01E+04	MDA	3.99E+01
Sn-126	1.29E-04	MDA	1.29E+05	MDA	5.72E+01
Sr-90	6.26E-01	6.31E-02	6.26E+08	6.31E+07	2.77E+05
Tc-99	1.86E-03	3.86E-04	1.86E+06	3.86E+05	8.24E+02
Th-232	3.54E-08	7.08E-09	3.54E+01	7.08E+00	1.57E-02
U-233	5.05E-04	1.01E-04	5.05E+05	1.01E+05	2.24E+02
U-234	5.50E-03	1.10E-03	5.50E+06	1.10E+06	2.44E+03
U-235	8.56E-05	1.71E-05	8.56E+04	1.71E+04	3.79E+01
U-236	4.38E-05	8.77E-06	4.38E+04	8.77E+03	1.94E+01
U-238	1.89E-03	3.77E-04	1.89E+06	3.77E+05	8.38E+02
TRU	6.74E-01		6.74E+08		2.99E+05

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Appendix A

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MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					
TBP = Tributyl Phosphate					

Sample #	3-104914				
Customer ID	98018-1				
Description	Filtered Solids				
Estimated Solids	38.79 g		(based upon TSS, volume and density of liquid phase)		
					Suspended Solids
					Total
	Activity	Error	Activity	Error	Activity
Analyte	uCi/g	uCi/g	pCi/g	pCi/g	uCi
Total Am	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Am-241	5.05E+00	MDA	5.05E+06	MDA	1.96E+02
Am-243	2.08E+01	DL	2.08E+07	DL	8.07E+02
Ce-144	4.77E+00	MDA	4.77E+06	MDA	1.85E+02
Total Cm	1.18E+02	2.17E+01	1.18E+08	2.17E+07	4.58E+03
Cm-244	1.18E+02	2.17E+01	1.18E+08	2.17E+07	4.58E+03
Cm-245	1.79E+01	DL	1.79E+07	DL	6.94E+02
Cm-246	3.18E+01	DL	3.18E+07	DL	1.23E+03
Co-60	6.26E-01	MDA	6.26E+05	MDA	2.43E+01
Cs-134	1.07E+00	MDA	1.07E+06	MDA	4.15E+01
Cs-137	1.39E+00	MDA	1.39E+06	MDA	5.39E+01
Eu-154	3.61E+00	3.19E+00	3.61E+06	3.19E+06	1.40E+02
GA	2.38E+02	2.38E+01	2.38E+08	2.38E+07	9.23E+03
H-3	1.15E+00	MDA	1.15E+06	MDA	4.46E+01
GB	1.42E+02	5.69E+01	1.42E+08	5.69E+07	5.51E+03
Np-237	7.34E-02	DL	7.34E+04	DL	2.85E+00
Total Pu	1.29E+02	4.70E+01	1.29E+08	4.70E+07	5.00E+03
Pu-238	9.32E+01	2.80E+01	9.32E+07	2.80E+07	3.62E+03
Pu-239	6.49E+00	DL	6.49E+06	DL	2.52E+02
Pu-240	2.36E+01	DL	2.36E+07	DL	9.15E+02
Pu-241	3.57E+01	3.78E+01	3.57E+07	3.78E+07	1.38E+03
Pu-242	4.10E-01	DL	4.10E+05	DL	1.59E+01
Ru-106	8.83E+00	MDA	8.83E+06	MDA	3.43E+02
Sb-125	2.34E+00	MDA	2.34E+06	MDA	9.08E+01
Sn-126	1.83E+00	MDA	1.83E+06	MDA	7.10E+01
Sr-90	1.13E-02	2.70E-03	1.13E+04	2.70E+03	4.38E-01
Th-232	1.52E-04	3.05E-05	1.52E+02	3.05E+01	5.90E-03
U-233	6.35E-01	DL	6.35E+05	DL	2.46E+01
U-234	6.49E-01	DL	6.49E+05	DL	2.52E+01
U-235	2.28E-03	4.57E-04	2.28E+03	4.57E+02	8.84E-02
U-236	6.76E-03	DL	6.76E+03	DL	2.62E-01
U-238	5.27E-02	1.05E-02	5.27E+04	1.05E+04	2.04E+00
TRU	9.32E+01		9.32E+07		3.62E+03
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					

Tank S2					
Sample #	3-105060				
Customer ID	98018-2				
Description	Original Aqueous Sample				
Analyte	Concent.	Units			
Total Suspended Solids	0.02	wt %			

Sample #	3-105063				
Customer ID	98018-2				
Description	Filtered Aqueous Sample				
Total Volume in Tank	422.8305	liters			
Analyte	Concent.	Units			
Al	<1	mg/kg			
Sb	<3	mg/kg			
As	<2	mg/kg			
Ba	<0.1	mg/kg			
Be	0.1	mg/kg			
B	2	mg/kg			
Cd	<0.1	mg/kg			
Cl-	48	mg/L			
Cr	<0.1	mg/kg			
Cu	1	mg/kg			
CN-	<10	ug/L			
F-	10(a)	mg/L			
Fe	17	mg/kg			
Pb	<1	mg/kg			
Mn	1	mg/kg			
Hg	8.67	mg/kg			
Ni	0.3	mg/L			
NO3-	10(a)	mg/L			
PO4---	3773	mg/L			
Se	<11	mg/L			
Ag	<0.1	mg/kg			
Na	5014	mg/kg			
Tl	<3	mg/kg			
U	359	mg/kg			
Zn	1	mg/kg			
Any known VOA's, >20 mg/L	No	N/A			
n-Butanol	<1.1	mg/L			
Phenol/phenoxide/nitrophenols	<5	mg/L			
SemiVOA	Required	N/A			
TBP	<5	mg/L			
Other	<5	mg/L			
Total Inorganic Carbon	1145	mg/L			
Total Organic Carbon	12635	mg/L			
Volatile Organics	Required	N/A			
PCB's	<50	mg/L			
Kepone	<5	mg/L			
p-Nitrophenol	<5	mg/L			
Benzene	<0.140	mg/L			
MEK	<0.5	mg/L			
PCE	<0.140	mg/L			
Acidity	<0.02	Molarity			
Ash Content	1.53	%			
Boiling Pt.	150.8	degrees F			

Flash Pt.	>212	degrees F			
Freezing Pt.	<32	degrees F			
Free Liquid?	Yes	N/A			
pH	8.62	N/A			
Density	1.003	g/cm3			
TDS	3.12	%			
Water, wt%	77.4	%			
					Aqueous
					Phase
					Total
	Activity	Error	Activity	Error	Activity
	uCi/mL	uCi/mL	pCi/L	pCi/L	uCi
Am-241	3.14E-04	2.29E-05	3.14E+05	2.29E+04	1.33E+02
Ce-144	4.27E-05	MDA	4.27E+04	MDA	1.81E+01
Total Cm	2.37E-03	4.75E-04	2.37E+06	4.75E+05	1.00E+03
Cm-244	2.37E-03	4.75E-04	2.37E+06	4.75E+05	1.00E+03
Co-60	1.87E-06	MDA	1.87E+03	MDA	7.91E-01
Cs-134	2.88E-06	MDA	2.88E+03	MDA	1.22E+00
Cs-137	1.84E-02	6.30E-04	1.84E+07	6.30E+05	7.78E+03
Eu-154	2.91E-04	7.81E-06	2.91E+05	7.81E+03	1.23E+02
GA	1.98E-02		1.98E+07	0.00E+00	8.37E+03
H-3	7.21E-04	7.21E-05	7.21E+05	7.21E+04	3.05E+02
GB	2.94E-02	1.18E-02	2.94E+07	1.18E+07	1.24E+04
Np-237	1.03E-04	2.62E-05	1.03E+05	2.62E+04	4.36E+01
Pu-238	1.42E-02	2.84E-03	1.42E+07	2.84E+06	6.00E+03
Pu-239/240	1.98E-03	UL	1.98E+06	UL	8.37E+02
Pu-241	5.72E-03	2.52E-03	5.72E+06	2.52E+06	2.42E+03
Ru-106	7.66E-05	MDA	7.66E+04	MDA	3.24E+01
Sb-125	4.11E-05	MDA	4.11E+04	MDA	1.74E+01
Se-79	1.80E-04	MDA	1.80E+05	MDA	7.61E+01
Sn-126	1.42E-05	MDA	1.42E+04	MDA	6.00E+00
Sr-90	1.80E-03	9.01E-04	1.80E+06	9.01E+05	7.61E+02
Tc-99	9.46E-05	5.41E-05	9.46E+04	5.41E+04	4.00E+01
U-233/234	2.97E-03	1.78E-03	2.97E+06	1.78E+06	1.26E+03
U-235	1.37E-05	5.31E-06	1.37E+04	5.31E+03	5.79E+00
TRU	1.46E-02		1.46E+07		6.18E+03
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					
a = compound present but below quantitation limit					
TBP = Tributyl Phosphate					

Sample #	3-105061				
Customer ID	98018-2				
Description	Filtered Solids				
Estimated Solids	84.82 g	(based upon TSS, volume and density of liquid phase)			
					Suspended Solids
					Total
Analyte	Activity uCi/g	Error uCi/g	Activity pCi/g	Error pCi/g	Activity uCi
Total Am	2.31E+00	3.95E-01	2.31E+06	3.95E+05	1.96E+02
Am-241	2.31E+00	3.95E-01	2.31E+06	3.95E+05	1.96E+02
Am-243	8.56E+00	DL	8.56E+06	DL	7.26E+02
Ce-144	4.27E-01	MDA	4.27E+05	MDA	3.62E+01
Total Cm	2.54E+01	5.07E+00	2.54E+07	5.07E+06	2.15E+03
Cm-244	2.54E+01	5.07E+00	2.54E+07	5.07E+06	2.15E+03
Cm-245	7.39E+00	DL	7.39E+06	DL	6.27E+02
Cm-246	1.31E+01	DL	1.31E+07	DL	1.11E+03
Co-60	1.10E-01	MDA	1.10E+05	MDA	9.33E+00
Cs-134	9.10E-02	MDA	9.10E+04	MDA	7.72E+00
Cs-137	6.53E-01	9.43E-02	6.53E+05	9.43E+04	5.54E+01
Eu-154	1.82E+00	1.09E-01	1.82E+06	1.09E+05	1.54E+02
GA	1.62E+02	1.62E+01	1.62E+08	1.62E+07	1.37E+04
H-3	4.27E-01	MDA	4.27E+05	MDA	3.62E+01
GB	5.23E+00	5.43E+00	5.23E+06	5.43E+06	4.44E+02
Np-237	9.55E-02	DL	9.55E+04	DL	8.10E+00
Total Pu	1.74E+02	UL	1.74E+08	UL	1.48E+04
Pu-238	1.34E+02	1.36E+01	1.34E+08	1.36E+07	1.14E+04
Pu-239	4.73E+00	1.89E+00	4.73E+06	1.89E+06	4.01E+02
Pu-240	9.73E+00	DL	9.73E+06	DL	8.25E+02
Pu-241	3.53E+01	UL	3.53E+07	UL	2.99E+03
Pu-242	1.69E-01	DL	1.69E+05	DL	1.43E+01
Ru-106	9.19E-01	MDA	9.19E+05	MDA	7.79E+01
Sb-125	2.53E-01	MDA	2.53E+05	MDA	2.15E+01
Sn-126	1.97E-01	MDA	1.97E+05	MDA	1.67E+01
Sr-90	9.32E-04	1.81E-04	9.32E+02	1.81E+02	7.91E-02
Th-232	3.31E-04	6.61E-05	3.31E+02	6.61E+01	2.81E-02
U-233	3.05E-01	DL	3.05E+05	DL	2.59E+01
U-234	3.11E-01	DL	3.11E+05	DL	2.64E+01
U-235	7.21E-03	1.44E-03	7.21E+03	1.44E+03	6.12E-01
U-236	6.49E-03	DL	6.49E+03	DL	5.50E-01
U-238	1.80E-01	3.60E-02	1.80E+05	3.60E+04	1.53E+01
TRU	1.41E+02		1.41E+08		1.20E+04
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					

Sample #	3-117917				
Customer ID	98351-2				
Description	Sludge				
Total Mass in Tank	251351.3	grams			
Analyte	Concent.	Units			
As	8	mg/kg			
Ba	9	mg/kg			
Cd	2	mg/kg			
Cr	19	mg/kg			
Pb	27	mg/kg			
Hg	209	mg/kg			
Se	<20	mg/kg			
Ag	9	mg/kg			
					Sludge
					Phase
					Total
	Activity	Error	Activity	Error	Activity
	uCi/g	uCi/g	pCi/g	pCi/g	uCi
Total Am	5.74E+00	2.83E-01	5.74E+06	2.83E+05	1.44E+06
Am-241	5.32E+00	2.82E-01	5.32E+06	2.82E+05	1.34E+06
Am-243	4.19E-01	2.09E-02	4.19E+05	2.09E+04	1.05E+05
Ce-144	6.89E-02	MDA	6.89E+04	MDA	1.73E+04
Total Cm	7.43E+01	1.49E+01	7.43E+07	1.49E+07	1.87E+07
Cm-244	7.43E+01	1.49E+01	7.43E+07	1.49E+07	1.87E+07
Cm-245	1.05E-01	DL	1.05E+05	DL	2.64E+04
Cm-246	1.87E-01	DL	1.87E+05	DL	4.70E+04
Co-60	1.27E-02	MDA	1.27E+04	MDA	3.19E+03
Cs-134	1.93E-02	MDA	1.93E+04	MDA	4.85E+03
Cs-137	2.32E-01	2.21E-02	2.32E+05	2.21E+04	5.83E+04
Eu-154	4.86E+00	1.02E-01	4.86E+06	1.02E+05	1.22E+06
Eu-155	3.04E-01	5.72E-02	3.04E+05	5.72E+04	7.64E+04
GA	1.51E+02	3.03E+01	1.51E+08	3.03E+07	3.80E+07
Nb-94	5.63E-02	MDA	5.63E+04	MDA	1.42E+04
GB	1.22E+01	2.44E+00	1.22E+07	2.44E+06	3.07E+06
Np-237	1.07E-03	DL	1.07E+03	DL	2.69E+02
Total Pu	7.43E+01	2.45E+01	7.43E+07	2.45E+07	1.87E+07
Pu-238	5.95E+01	2.38E+01	5.95E+07	2.38E+07	1.50E+07
Pu-239	3.05E-01	DL	3.05E+05	DL	7.67E+04
Pu-240	7.52E-01	DL	7.52E+05	DL	1.89E+05
Pu-241	1.48E+01	5.91E+00	1.48E+07	5.91E+06	3.72E+06
Pu-242	2.41E-03	DL	2.41E+03	DL	6.06E+02
Ru-106	1.99E-01	MDA	1.99E+05	MDA	5.00E+04
Sb-125	5.05E-02	MDA	5.05E+04	MDA	1.27E+04
Sn-126	5.32E-02	MDA	5.32E+04	MDA	1.34E+04
Th-232	5.59E-05	DL	5.59E+01	DL	1.41E+01
U-233	5.90E-03	DL	5.90E+03	DL	1.48E+03
U-234	1.01E-02	DL	1.01E+04	DL	2.54E+03
U-235	3.46E-05	6.92E-06	3.46E+01	6.92E+00	8.70E+00

U-236	3.97E-05	DL	3.97E+01	DL	9.98E+00
U-238	8.24E-04	1.65E-04	8.24E+02	1.65E+02	2.07E+02
TRU	6.52E+01		6.52E+07		1.64E+07
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					

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Tank S3					
Sample #	3-104037				
Customer ID	98018-3				
Description	Original Aqueous Sample				
Analyte	Concent.	Units			
Total Suspended Solids	0.14	wt %			

Sample #	3-104938				
Customer ID	98018-3				
Description	Filtered Aqueous Sample				
Total Volume in Tank	1506.215	liters			
Analyte	Concent.	Units			
Al	45	mg/kg			
Sb	<5	mg/kg			
As	<0.096	mg/kg			
Ba	<1	mg/kg			
Be	<1	mg/kg			
B	6	mg/kg			
Cd	<1	mg/kg			
Cl-	52	mg/L			
Cr	<=1	mg/kg			
Cu	<2	mg/kg			
CN-	<10	ug/L			
F-	<20	mg/L			
Fe	12	mg/kg			
Pb	<2	mg/kg			
Mn	2	mg/kg			
Hg	2	mg/kg			
Ni	4.2	mg/L			
NO3-	2429	mg/L			
PO4---	88	mg/L			
Se	<0.96	mg/L			
Ag	<2	mg/kg			
Na	17595	mg/kg			
Tl	<2	mg/kg			
U	7727	mg/kg			
Zn	2	mg/kg			
Any known VOA's, >20 mg/L	Yes	N/A			
dodecane	50	mg/L			
n-Butanol	<1.1	mg/L			
Phenol/phenoxide/nitrophenols	<50	mg/L			
SemiVOA	Required	N/A			
TBP	2.1	%	21000	mg/L	
Other	<50	mg/L			
Total Inorganic Carbon	2257	mg/L			
Total Organic Carbon	37743	mg/L			
Volatile Organics	Required	N/A			
PCB's	<50	mg/L			
Kepone	<50	mg/L			
p-Nitrophenol	<50	mg/L			
Benzene	<0.140	mg/L			
MEK	1.8	mg/L			
PCE	<0.140	mg/L			
Acidity	<0.02	Molarity			
Ash Content	2.36	%			
Boiling Pt.	165.2	degrees F			

Flash Pt.	>212	degrees F			
Freezing Pt.	<32	degrees F			
Free Liquid?	Yes	N/A			
pH	10.03	N/A			
Density	1.042	g/cm3			
TDS	5.40	%			
Water, wt%	87.2	%			
					Aqueous
					Phase
					Total
	Activity	Error	Activity	Error	Activity
	uCi/mL	uCi/mL	pCi/L	pCi/L	uCi
Total Am	3.61E-05	UL	3.61E+04	UL	5.44E+01
Am-241	1.15E-04	MDA	1.15E+05	MDA	1.73E+02
Am-243	3.61E-05	UL	3.61E+04	UL	5.44E+01
Ce-144	1.41E-04	MDA	1.41E+05	MDA	2.12E+02
Total Cm	1.09E-02	1.53E-03	1.09E+07	1.53E+06	1.64E+04
Cm-244	1.09E-02	1.53E-03	1.09E+07	1.53E+06	1.64E+04
Cm-245	7.88E-04	DL	7.88E+05	DL	1.19E+03
Cm-246	1.41E-03	DL	1.41E+06	DL	2.12E+03
Co-60	9.01E-06	3.03E-06	9.01E+03	3.03E+03	1.36E+01
Cs-134	6.44E-06	MDA	6.44E+03	MDA	9.70E+00
Cs-137	2.89E-02	9.95E-04	2.89E+07	9.95E+05	4.35E+04
Eu-154	5.36E-05	1.03E-05	5.36E+04	1.03E+04	8.07E+01
GA	3.10E-02		3.10E+07	0.00E+00	4.67E+04
H-3	7.21E-04	7.21E-05	7.21E+05	7.21E+04	1.09E+03
GB	1.55E-01	6.18E-02	1.55E+08	6.18E+07	2.33E+05
Np-237	1.88E-04	9.39E-05	1.88E+05	9.39E+04	2.83E+02
Pb-212	1.45E-05	2.52E-05	1.45E+04	2.52E+04	2.18E+01
Total Pu	3.77E-02	1.48E-02	3.77E+07	1.48E+07	5.68E+04
Pu-238	1.00E-02	2.01E-03	1.00E+07	2.01E+06	1.51E+04
Pu-239	1.05E-02	5.25E-03	1.05E+07	5.25E+06	1.58E+04
Pu-240	1.05E-03	DL	1.05E+06	DL	1.58E+03
Pu-241	1.72E-02	1.37E-02	1.72E+07	1.37E+07	2.59E+04
Pu-242	1.81E-05	DL	1.81E+04	DL	2.73E+01
Ra-226	2.36E-03	3.60E-04	2.36E+06	3.60E+05	3.55E+03
Ru-106	2.33E-04	MDA	2.33E+05	MDA	3.51E+02
Sb-125	1.19E-04	MDA	1.19E+05	MDA	1.79E+02
Se-79	2.70E-04	MDA	2.70E+05	MDA	4.07E+02
Sn-126	4.82E-05	MDA	4.82E+04	MDA	7.26E+01
Sr-90	3.42E-02	9.04E-03	3.42E+07	9.04E+06	5.15E+04
Tc-99	3.15E-04	1.71E-04	3.15E+05	1.71E+05	4.74E+02
Th-232	5.54E-08	1.11E-08	5.54E+01	1.11E+01	8.34E-02
Th-234	1.71E-03	7.77E-04	1.71E+06	7.77E+05	2.58E+03
U-233	2.24E-03	4.48E-04	2.24E+06	4.48E+05	3.37E+03
U-234	2.04E-03	4.07E-04	2.04E+06	4.07E+05	3.07E+03
U-235	7.84E-05	1.57E-05	7.84E+04	1.57E+04	1.18E+02
U-236	3.93E-05	7.86E-06	3.93E+04	7.86E+03	5.92E+01
U-238	1.85E-03	3.70E-04	1.85E+06	3.70E+05	2.79E+03
TRU	2.07E-02		2.07E+07		3.12E+04

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MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					
a = compound present but below quantitation limit					
TBP = Tributyl Phosphate					

Sample #	3-104918				
Customer ID	98018-3				
Description	Filtered Solids				
Estimated Solids	2197.27 g		(based upon TSS, volume and density of liquid phase)		
					Suspended Solids
					Total
Analyte	Activity uCi/g	Error uCi/g	Activity pCi/g	Error pCi/g	Activity uCi
Total Am	1.59E+00	2.82E-01	1.59E+06	2.82E+05	3.50E+03
Am-241	1.06E+00	2.71E-01	1.06E+06	2.71E+05	2.33E+03
Am-243	5.32E-01	7.91E-02	5.32E+05	7.91E+04	1.17E+03
Ce-144	5.27E-01	MDA	5.27E+05	MDA	1.16E+03
Total Cm	9.46E+01	9.46E+00	9.46E+07	9.46E+06	2.08E+05
Cm-244	9.46E+01	9.46E+00	9.46E+07	9.46E+06	2.08E+05
Cm-245	8.20E-01	DL	8.20E+05	DL	1.80E+03
Cm-246	1.46E+00	DL	1.46E+06	DL	3.21E+03
Co-60	5.23E-02	MDA	5.23E+04	MDA	1.15E+02
Cs-134	6.04E-02	MDA	6.04E+04	MDA	1.33E+02
Cs-137	8.02E+00	4.04E-01	8.02E+06	4.04E+05	1.76E+04
Eu-154	2.31E-01	8.68E-02	2.31E+05	8.68E+04	5.08E+02
GA	1.43E+02	1.43E+01	1.43E+08	1.43E+07	3.14E+05
H-3	1.14E-01	4.58E-02	1.14E+05	4.58E+04	2.50E+02
GB	2.20E+02	8.79E+01	2.20E+08	8.79E+07	4.83E+05
Np-237	6.76E-02	1.35E-02	6.76E+04	1.35E+04	1.49E+02
Total Pu	5.79E+01	5.49E+00	5.79E+07	5.49E+06	1.27E+05
Pu-238	3.61E+01	4.33E+00	3.61E+07	4.33E+06	7.93E+04
Pu-239	8.69E+00	1.74E+00	8.69E+06	1.74E+06	1.91E+04
Pu-240	2.97E+00	5.94E-01	2.97E+06	5.94E+05	6.53E+03
Pu-241	1.01E+01	2.84E+00	1.01E+07	2.84E+06	2.22E+04
Pu-242	1.87E-02	DL	1.87E+04	DL	4.11E+01
Ru-106	6.98E-01	MDA	6.98E+05	MDA	1.53E+03
Sb-125	3.17E-01	MDA	3.17E+05	MDA	6.97E+02
Sn-126	2.00E-01	MDA	2.00E+05	MDA	4.39E+02
Sr-90	3.56E-01	4.51E-01	3.56E+05	4.51E+05	7.82E+02
Th-232	4.03E-04	8.06E-05	4.03E+02	8.06E+01	8.85E-01
U-233	2.91E-02	DL	2.91E+04	DL	6.39E+01
U-234	1.48E-01	2.96E-02	1.48E+05	2.96E+04	3.25E+02
U-235	6.67E-03	1.33E-03	6.67E+03	1.33E+03	1.47E+01
U-236	2.92E-03	5.84E-04	2.92E+03	5.84E+02	6.42E+00
U-238	1.36E-01	2.73E-02	1.36E+05	2.73E+04	2.99E+02
TRU	4.94E+01		4.94E+07		1.09E+05
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					

Tank S4

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Appendix D

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Tank S4					
Sample #	3-109222				
Customer ID	98018-4				
Description	Original Aqueous Sample				
Analyte	Concent.	Units			
Total Suspended Solids	0.02	wt %			

Sample #	3-109291				
Customer ID	98018-4				
Description	Filtered Aqueous Sample				
Total Volume in Tank	1397.574	liters			
Analyte	Concent.	Units			
Al	22.7	mg/kg			
Sb	<6.5	mg/kg			
As	15.2	mg/kg			
Ba	0.7	mg/kg			
Be	1.1	mg/kg			
B	10	mg/kg			
C2O4--	390	mg/L			
Cd	1.3	mg/kg			
Cl-	34	mg/L			
Cr	27.5	mg/kg			
Cu	1.9	mg/kg			
CN-	<1	mg/L			
COOH-	625	mg/L			
F-	<2	mg/L			
Fe	13.4	mg/kg			
Pb	<3.7	mg/kg			
Mn	3.3	mg/kg			
Hg	7.60	mg/kg			
Ni	8.3	mg/L			
NO2-	851	mg/L			
NO3-	4414	mg/L			
PO4---	<10	mg/L			
Se	<21.3	mg/L			
SO4--	104	mg/L			
Ag	<4.6	mg/kg			
Na	13070	mg/kg			
Tl	<5.6	mg/kg			
U	13530	mg/kg			
Any known VOA's, >20 mg/L	No	N/A			
n-Butanol	<2.5	mg/L			
Phenol/phenoxide/nitrophenols	<1	mg/L			
SemiVOA	Required	N/A			
TBP	71	mg/L			
AH	17	mg/L			
Other	<1	mg/L			
Total Inorganic Carbon	3077	mg/L			
Total Organic Carbon	8393	mg/L			
Volatile Organics	Required	N/A			
PCB's	<50	mg/L			
Kepone	<1	mg/L			
p-Nitrophenol	<1	mg/L			
Benzene	<0.500	mg/L			
MEK	<2.5	mg/L			

PCE	<0.500	mg/L			
Acidity	<0.001	Molarity			
Ash Content	4.19	%			
Flash Pt.	>212	degrees F			
Freezing Pt.	<32	degrees F			
Free Liquid?	Yes	N/A			
pH	10.42	N/A			
Density	1.079	g/cm3			
TDS	7.52	%			
Water, wt%	92.39	%			
					Aqueous
					Phase
					Total
	Activity	Error	Activity	Error	Activity
	uCi/mL	uCi/mL	pCi/L	pCi/L	uCi
Total Am	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Am-241	3.50E-04	MDA	3.50E+05	MDA	4.89E+02
Am-243	1.14E-04	MDA	1.14E+05	MDA	1.59E+02
Ce-144	4.55E-04	MDA	4.55E+05	MDA	6.36E+02
Total Cm	1.02E-03	2.05E-03	1.02E+06	2.05E+06	1.43E+03
Cm-244	1.02E-03	2.05E-03	1.02E+06	2.05E+06	1.43E+03
Cm-245	1.27E-01	DL	1.27E+08	DL	1.77E+05
Cm-246	2.25E-01	DL	2.25E+08	DL	3.14E+05
Co-60	2.10E-05	MDA	2.10E+04	MDA	2.93E+01
Cs-134	1.18E-05	MDA	1.18E+04	MDA	1.65E+01
Cs-137	9.91E-02	3.41E-03	9.91E+07	3.41E+06	1.38E+05
Eu-154	3.72E-05	MDA	3.72E+04	MDA	5.20E+01
GA	1.93E-02		1.93E+07	0.00E+00	2.70E+04
H-3	2.70E-03		2.70E+06	0.00E+00	3.77E+03
Nb-94	1.13E-05	MDA	1.13E+04	MDA	1.58E+01
GB	1.35E-01		1.35E+08	0.00E+00	1.89E+05
Np-237	2.40E-04	MDA	2.40E+05	MDA	3.35E+02
Total Pu	2.80E-02	UL	2.80E+07	UL	3.91E+04
Pu-238	1.66E-02	6.63E-03	1.66E+07	6.63E+06	2.32E+04
Pu-239	4.55E-02	DL	4.55E+07	DL	6.36E+04
Pu-240	1.67E-01	DL	1.67E+08	DL	2.33E+05
Pu-241	1.14E-02	UL	1.14E+07	UL	1.59E+04
Pu-242	2.90E-03	DL	2.90E+06	DL	4.05E+03
Ra-226	4.59E-03	UL	4.59E+06	UL	6.41E+03
Ru-106	7.03E-04	MDA	7.03E+05	MDA	9.82E+02
Sb-125	4.15E-04	MDA	4.15E+05	MDA	5.80E+02
Se-79	4.50E-04	MDA	4.50E+05	MDA	6.29E+02
Sn-126	1.65E-04	MDA	1.65E+05	MDA	2.31E+02
Sr-90	1.22E-02	4.50E-03	1.22E+07	4.50E+06	1.71E+04
Tc-99	7.84E-04	9.88E-05	7.84E+05	9.88E+04	1.10E+03
Th-232	8.06E-08	DL	8.06E+01	DL	1.13E-01
Th-234	2.84E-03	1.77E-03	2.84E+06	1.77E+06	3.97E+03
U-233	7.12E-03	DL	7.12E+06	DL	9.95E+03
U-234	4.59E-03	DL	4.59E+06	DL	6.41E+03

U-235	2.10E-04	4.20E-05	2.10E+05	4.20E+04	2.93E+02
U-236	9.41E-05	1.88E-05	9.41E+04	1.88E+04	1.32E+02
U-238	6.22E-03	1.77E-03	6.22E+06	1.77E+06	8.69E+03
TRU	1.66E-02		1.66E+07		2.32E+04
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					
TBP = Tributyl Phosphate					
AH = Aliphatic Hydrocarbons					

Sample #	3-109278				
Customer ID	98018-04				
Description	Filtered Solids				
Estimated Solids	301.60 g (based upon TSS, volume and density of liquid phase)				
					Suspended Solids
					Total
	Activity	Error	Activity	Error	Activity
Analyte	uCi/g	uCi/g	pCi/g	pCi/g	uCi
Total Am	2.58E-01	4.44E-02	2.58E+05	4.44E+04	7.78E+01
Am-241	2.58E-01	4.44E-02	2.58E+05	4.44E+04	7.78E+01
Am-243	3.71E-01	DL	3.71E+05	DL	1.12E+02
Ce-144	6.80E-02	MDA	6.80E+04	MDA	2.05E+01
Total Cm	3.23E-01	1.94E-01	3.23E+05	1.94E+05	9.74E+01
Cm-244	3.23E-01	1.94E-01	3.23E+05	1.94E+05	9.74E+01
Cm-245	3.19E-01	DL	3.19E+05	DL	9.62E+01
Cm-246	5.68E-01	DL	5.68E+05	DL	1.71E+02
Co-60	9.64E-03	MDA	9.64E+03	MDA	2.91E+00
Cs-137	2.38E+00	9.94E-02	2.38E+06	9.94E+04	7.18E+02
Eu-154	2.15E-02	MDA	2.15E+04	MDA	6.48E+00
GA	3.23E+01	6.47E+00	3.23E+07	6.47E+06	9.74E+03
Nb-94	1.07E-02	MDA	1.07E+04	MDA	3.23E+00
GB	5.45E+00	2.18E+00	5.45E+06	2.18E+06	1.64E+03
Np-237	4.03E-03	8.05E-04	4.03E+03	8.05E+02	1.22E+00
Total Pu	4.53E+01	7.34E+00	4.53E+07	7.34E+06	1.37E+04
Pu-238	3.18E+01	6.36E+00	3.18E+07	6.36E+06	9.59E+03
Pu-239	3.15E+00	6.31E-01	3.15E+06	6.31E+05	9.50E+02
Pu-240	1.35E+00	2.69E-01	1.35E+06	2.69E+05	4.07E+02
Pu-241	9.01E+00	3.60E+00	9.01E+06	3.60E+06	2.72E+03
Pu-242	7.30E-03	DL	7.30E+03	DL	2.20E+00
Ru-106	1.24E-02	MDA	1.24E+04	MDA	3.74E+00
Sn-126	8.60E-03	MDA	8.60E+03	MDA	2.59E+00
Sr-90	9.00E-01	MDA	9.00E+05	MDA	2.71E+02
Th-232	1.83E-04	3.66E-05	1.83E+02	3.66E+01	5.52E-02
U-233	4.55E-02	9.10E-03	4.55E+04	9.10E+03	1.37E+01
U-234	1.21E-01	2.42E-02	1.21E+05	2.42E+04	3.65E+01
U-235	4.21E-03	8.42E-04	4.21E+03	8.42E+02	1.27E+00
U-236	2.28E-03	4.57E-04	2.28E+03	4.57E+02	6.88E-01
U-238	8.60E-02	1.72E-02	8.60E+04	1.72E+04	2.59E+01
TRU	3.66E+01		3.66E+07		1.10E+04
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					

Sample #	3-117919				
Customer ID	98351-4				
Description	Sludge	(Sample was a liquid)			
Total Volume in Tank	21.95539	liters			
					Aqueous
					Phase
					Total
	Activity	Error	Activity	Error	Activity
	uCi/mL	uCi/mL	pCi/L	pCi/L	uCi
Total Am	5.05E-03	5.80E-04	5.05E+06	5.80E+05	1.11E+02
Am-241	5.05E-03	5.80E-04	5.05E+06	5.80E+05	1.11E+02
Am-243	1.26E-04	MDA	1.26E+05	MDA	2.77E+00
Ce-144	6.35E-04	MDA	6.35E+05	MDA	1.39E+01
Cm-244	2.37E-02	9.50E-03	2.37E+07	9.50E+06	5.20E+02
Co-60	4.68E-05	MDA	4.68E+04	MDA	1.03E+00
Cs-134	4.46E-05	MDA	4.46E+04	MDA	9.79E-01
Cs-137	1.10E-01	3.78E-03	1.10E+08	3.78E+06	2.42E+03
Eu-154	2.69E-04	5.68E-05	2.69E+05	5.68E+04	5.91E+00
GA	1.32E-01	2.64E-02	1.32E+08	2.64E+07	2.90E+03
Nb-94	4.02E-05	MDA	4.02E+04	MDA	8.83E-01
GB	1.98E-01	3.96E-02	1.98E+08	3.96E+07	4.35E+03
Np-237	3.29E-04	MDA	3.29E+05	MDA	7.22E+00
Pu-238	8.20E-02	3.48E-02	8.20E+07	3.48E+07	1.80E+03
Pu-239/240	3.96E-03	2.38E-03	3.96E+06	2.38E+06	8.69E+01
Ru-106	1.19E-03	MDA	1.19E+06	MDA	2.61E+01
Sb-125	5.54E-04	MDA	5.54E+05	MDA	1.22E+01
Sn-126	2.09E-04	MDA	2.09E+05	MDA	4.59E+00
U-233/234	9.23E-03	5.54E-03	9.23E+06	5.54E+06	2.03E+02
U-235	3.57E-04	UL	3.57E+05	UL	7.84E+00
U-238	9.23E-03	5.54E-03	9.23E+06	5.54E+06	2.03E+02
TRU	9.10E-02		9.10E+07		2.00E+03
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					

Tank S5

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Appendix E

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Tank S5					
Sample #	3-119028				
Customer ID	98018-5				
Description	Original Aqueous Sample				
Analyte	Concent.	Units			
Total Suspended Solids	0.001	wt %			

Sample #	3-119289				
Customer ID	98018-5				
Description	Filtered Aqueous Sample				
Total Volume in Tank	348.2579	liters			
Analyte	Concent.	Units			
As	0.08	mg/L			
Ba	1.3	mg/L			
Cd	0.4	mg/L			
Co	1	mg/L			
Cr	38	mg/L			
Pb	8.6	mg/L			
Hg	0.46	mg/L			
Se	0.9	mg/L			
Ag	0.1	mg/L			
Phenol/phenoxide/nitrophenols	<100	mg/L			
SemiVOA	Required	N/A			
	TBP	<0.01	%	<100	mg/L
	Other	<100	mg/L		
PCB's	<10	mg/L			
Kepone	<100	mg/L			
p-Nitrophenol	<100	mg/L			
					Aqueous
					Phase
					Total
	Activity	Error	Activity	Error	Activity
	uCi/mL	uCi/mL	pCi/L	pCi/L	uCi
Total Am	1.39E-01	5.60E-02	1.39E+08	5.60E+07	4.84E+04
Am-241	1.39E-01	5.60E-02	1.39E+08	5.60E+07	4.84E+04
Am-243	1.40E-01	DL	1.40E+08	DL	4.88E+04
Ce-144	1.46E-01	MDA	1.46E+08	MDA	5.08E+04
Cm-245	1.20E-01	DL	1.20E+08	DL	4.18E+04
Cm-246	2.14E-01	DL	2.14E+08	DL	7.45E+04
Co-60	1.63E-02	MDA	1.63E+07	MDA	5.68E+03
Cs-134	1.13E-02	MDA	1.13E+07	MDA	3.94E+03
Cs-137	1.14E+01	4.13E-01	1.14E+10	4.13E+08	3.97E+06
Eu-154	3.73E-02	MDA	3.73E+07	MDA	1.30E+04
GA	2.49E+02	4.98E+01	2.49E+11	4.98E+10	8.67E+07
Nb-94	1.30E-02	MDA	1.30E+07	MDA	4.53E+03
GB	3.93E+01	7.86E+00	3.93E+10	7.86E+09	1.37E+07
Np-237	4.95E-04	DL	4.95E+05	DL	1.72E+02
Total Pu	4.54E+00	1.35E+00	4.54E+09	1.35E+09	1.58E+06
Pu-238	3.28E+00	1.31E+00	3.28E+09	1.31E+09	1.14E+06
Pu-239	2.27E-01	4.55E-02	2.27E+08	4.55E+07	7.91E+04
Pu-240	2.24E-01	4.49E-02	2.24E+08	4.49E+07	7.80E+04
Pu-241	8.11E-01	3.24E-01	8.11E+08	3.24E+08	2.82E+05
Pu-242	2.75E-03	DL	2.75E+06	DL	9.58E+02
Ru-106	2.81E-01	MDA	2.81E+08	MDA	9.79E+04
Sb-125	1.27E-01	MDA	1.27E+08	MDA	4.42E+04

Sn-126	4.86E-02	MDA	4.86E+07	MDA	1.69E+04
Th-232	9.46E-07	1.89E-07	9.46E+02	1.89E+02	3.29E-01
U-233	1.12E-02	2.24E-03	1.12E+07	2.24E+06	3.90E+03
U-234	1.28E-02	2.57E-03	1.28E+07	2.57E+06	4.46E+03
U-235	3.36E-04	6.72E-05	3.36E+05	6.72E+04	1.17E+02
U-236	2.06E-04	4.12E-05	2.06E+05	4.12E+04	7.17E+01
U-238	9.10E-03	1.82E-03	9.10E+06	1.82E+06	3.17E+03
TRU	3.87E+00		3.87E+09		1.35E+06
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					

Sample #	3-119290				
Customer ID	98018-5				
Description	Filtered Solids				
Estimated Solids	3.48 g		(based upon TSS, volume and density of liquid phase)		
			(Assumes density =1.00 g/cm3)		
					Suspended
					Solids
					Total
	Activity	Error	Activity	Error	Activity
Analyte	uCi/g	uCi/g	pCi/g	pCi/g	uCi
Total Am	4.66E+00	0.322889	4.66E+06	3.23E+05	1.62E+01
Am-241	2.97E+00	2.96E-01	2.97E+06	2.96E+05	1.03E+01
Am-243	1.69E+00	1.29E-01	1.69E+06	1.29E+05	5.88E+00
Ce-144	2.52E-01	MDA	2.52E+05	MDA	8.77E-01
Total Cm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cm-244	2.55E+03	DL	2.55E+09	DL	8.87E+03
Cm-245	5.41E+00	DL	5.41E+06	DL	1.88E+01
Cm-246	9.64E+00	DL	9.64E+06	DL	3.35E+01
Co-60	3.26E-02	MDA	3.26E+04	MDA	1.13E-01
Cs-134	3.42E-02	MDA	3.42E+04	MDA	1.19E-01
Cs-137	1.71E+00	1.11E-01	1.71E+06	1.11E+05	5.95E+00
Eu-154	4.82E-01	5.56E-02	4.82E+05	5.56E+04	1.68E+00
GA	1.63E+02	3.26E+01	1.63E+08	3.26E+07	5.67E+02
Nb-94	5.27E-02	MDA	5.27E+04	MDA	1.83E-01
GB	2.57E+00	1.54E+00	2.57E+06	1.54E+06	8.94E+00
Np-237	2.22E-02	DL	2.22E+04	DL	7.73E-02
Total Pu	1.55E+02	5.16E+01	1.55E+08	5.16E+07	5.40E+02
Pu-238	1.29E+02	5.15E+01	1.29E+08	5.15E+07	4.49E+02
Pu-239	6.89E+00	1.38E+00	6.89E+06	1.38E+06	2.40E+01
Pu-240	1.01E+01	2.02E+00	1.01E+07	2.02E+06	3.51E+01
Pu-241	9.28E+00	UL	9.28E+06	UL	3.23E+01
Pu-242	1.24E-01	DL	1.24E+05	DL	4.32E-01
Ru-106	3.32E-01	MDA	3.32E+05	MDA	1.16E+00
Sb-125	1.23E-01	MDA	1.23E+05	MDA	4.28E-01
Sn-126	1.38E-01	MDA	1.38E+05	MDA	4.80E-01
Th-232	3.25E-04	6.50E-05	3.25E+02	6.50E+01	1.13E-03
U-233	3.04E-01	DL	3.04E+05	DL	1.06E+00
U-234	1.96E-01	DL	1.96E+05	DL	6.82E-01
U-235	9.95E-04	1.99E-04	9.95E+02	1.99E+02	3.46E-03
U-236	2.04E-03	DL	2.04E+03	DL	7.10E-03
U-238	2.37E-02	4.74E-03	2.37E+04	4.74E+03	8.25E-02
TRU	1.51E+02		1.51E+08		5.24E+02
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					

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Tank S6					
Sample #	3-109223				
Customer ID	98018-6				
Description	Original Aqueous Sample				
Analyte	Concent.	Units			
Total Suspended Solids	1.48	wt %			

Sample #	3-109292				
Customer ID	98018-6				
Description	Filtered Aqueous Sample				
Total Volume in Tank	1042.124 liters				
Analyte	Concent.	Units			
Al	<2.8	mg/kg			
Sb	<0.9	mg/kg			
As	3.2	mg/kg			
Ba	0.03	mg/kg			
Be	0.2	mg/kg			
B	3.5	mg/kg			
C2O4--	541	mg/L			
Cd	0.2	mg/kg			
Cl-	35	mg/L			
Cr	6.0	mg/kg			
Cu	2.2	mg/kg			
CN-	<1	mg/L			
COOH-	746	mg/L			
F-	<2	mg/L			
Fe	2.2	mg/kg			
Pb	<0.9	mg/kg			
Mn	0.5	mg/kg			
Hg	9.21	mg/kg			
Ni	1.3	mg/L			
NO2-	1113	mg/L			
NO3-	2801	mg/L			
PO4---	<10	mg/L			
Se	<3.7	mg/L			
SO4--	69	mg/L			
Ag	<0.9	mg/kg			
Na	17167	mg/kg			
Tl	<0.9	mg/kg			
U	2293	mg/kg			
Any known VOA's, >20 mg/L	No	N/A			
n-Butanol	<2.5	mg/L			
Phenol/phenoxide/nitrophenols	<100	mg/L			
SemiVOA	Required	N/A			
TBP	450	mg/L			
AH	5300	mg/L			
Other	<100	mg/L			
Total Inorganic Carbon	2942	mg/L			
Total Organic Carbon	13448	mg/L			
Volatile Organics	Required	N/A			
PCB's	<50	mg/L			
Kepone	<100	mg/L			
p-Nitrophenol	<100	mg/L			
Benzene	<0.500	mg/L			
MEK	<2.5	mg/L			
PCE	<0.500	mg/L			

Acidity	<0.001	Molarity			
Ash Content	3.97	%			
Flash Pt.	>212	degrees F			
Freezing Pt.	<32	degrees F			
Free Liquid?	Yes	N/A			
pH	11.00	N/A			
Density	1.070	g/cm3			
TDS	8.31	%			
Water, wt%	89.67	%			
					Aqueous
					Phase
					Total
	Activity	Error	Activity	Error	Activity
	uCi/mL	uCi/mL	pCi/L	pCi/L	uCi
Total Am	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Am-241	3.14E-04	MDA	3.14E+05	MDA	3.27E+02
Am-243	1.05E-04	MDA	1.05E+05	MDA	1.09E+02
Ce-144	4.28E-04	MDA	4.28E+05	MDA	4.46E+02
Total Cm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cm-244	6.17E-04	MDA	6.17E+05	MDA	6.43E+02
Cm-245	1.27E-01	DL	1.27E+08	DL	1.32E+05
Cm-246	2.25E-01	DL	2.25E+08	DL	2.34E+05
Co-60	1.46E-04	1.57E-05	1.46E+05	1.57E+04	1.52E+02
Cs-134	1.44E-05	2.98E-03	1.44E+04	2.98E+06	1.50E+01
Cs-137	8.65E-02	2.98E-03	8.65E+07	2.98E+06	9.01E+04
Eu-154	4.73E-05	MDA	4.73E+04	MDA	4.93E+01
GA	1.24E-02		1.24E+07	0.00E+00	1.29E+04
H-3	4.82E-03		4.82E+06	0.00E+00	5.02E+03
Nb-94	1.60E-05	MDA	1.60E+04	MDA	1.67E+01
GB	1.17E-01		1.17E+08	0.00E+00	1.22E+05
Np-237	2.25E-04	MDA	2.25E+05	MDA	2.34E+02
Total Pu	4.02E-02	1.71E-02	4.02E+07	1.71E+07	4.19E+04
Pu-238	1.24E-02	3.72E-03	1.24E+07	3.72E+06	1.29E+04
Pu-239	4.55E-02	DL	4.55E+07	DL	4.74E+04
Pu-240	1.67E-01	DL	1.67E+08	DL	1.74E+05
Pu-241	2.78E-02	1.67E-02	2.78E+07	1.67E+07	2.90E+04
Pu-242	2.90E-03	DL	2.90E+06	DL	3.02E+03
Ru-106	7.75E-04	MDA	7.75E+05	MDA	8.08E+02
Sb-125	3.85E-04	MDA	3.85E+05	MDA	4.01E+02
Se-79	9.01E-05	MDA	9.01E+04	MDA	9.39E+01
Sn-126	1.52E-04	MDA	1.52E+05	MDA	1.58E+02
Sr-90	9.91E-04	6.34E-05	9.91E+05	6.34E+04	1.03E+03
Tc-99	1.63E-03	1.60E-04	1.63E+06	1.60E+05	1.70E+03
Th-232	8.06E-08	DL	8.06E+01	DL	8.40E-02
U-233	7.12E-03	DL	7.12E+06	DL	7.42E+03
U-234	4.59E-03	DL	4.59E+06	DL	4.78E+03
U-235	3.68E-05	7.37E-06	3.68E+04	7.37E+03	3.84E+01
U-236	4.77E-05	DL	4.77E+04	DL	4.97E+01
U-238	8.56E-04	1.71E-04	8.56E+05	1.71E+05	8.92E+02
TRU	1.24E-02		1.24E+07		1.29E+04

MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					
TBP = Tributyl Phosphate					
AH = Aliphatic Hydrocarbons					

Sample #	3-109279				
Customer ID	98018-6				
Description	Filtered Solids				
Estimated Solids	16503.08 g	(based upon TSS, volume and density of liquid phase)			
					Suspended
					Solids
					Total
	Activity	Error	Activity	Error	Activity
Analyte	uCi/g	uCi/g	pCi/g	pCi/g	uCi
Total Am	7.30E-01	4.22E-02	7.30E+05	4.22E+04	1.20E+04
Am-241	6.71E-01	4.05E-02	6.71E+05	4.05E+04	1.11E+04
Am-243	5.90E-02	1.18E-02	5.90E+04	1.18E+04	9.74E+02
Ce-144	5.00E-03	MDA	5.00E+03	MDA	8.25E+01
Total Cm	1.16E+00	2.18E-01	1.16E+06	2.18E+05	1.92E+04
Cm-244	1.09E+00	2.18E-01	1.09E+06	2.18E+05	1.80E+04
Cm-245	2.26E-02	4.51E-03	2.26E+04	4.51E+03	3.73E+02
Cm-246	5.00E-02	1.00E-02	5.00E+04	1.00E+04	8.25E+02
Co-60	6.49E-03	3.31E-04	6.49E+03	3.31E+02	1.07E+02
Cs-137	7.97E-01	2.74E-02	7.97E+05	2.74E+04	1.32E+04
Eu-154	9.41E-02	2.15E-03	9.41E+04	2.15E+03	1.55E+03
Eu-155	3.98E-03	3.23E-03	3.98E+03	3.23E+03	6.57E+01
GA	3.64E+01	7.27E+00	3.64E+07	7.27E+06	6.01E+05
Nb-94	1.23E-04	MDA	1.23E+02	MDA	2.03E+00
GB	1.29E+01	5.17E+00	1.29E+07	5.17E+06	2.13E+05
Np-237	9.14E-03	1.83E-03	9.14E+03	1.83E+03	1.51E+02
Pb-212	3.31E-03	1.11E-03	3.31E+03	1.11E+03	5.46E+01
Total Pu	4.45E+01	1.01E+01	4.45E+07	1.01E+07	7.35E+05
Pu-238	3.24E+01	9.73E+00	3.24E+07	9.73E+06	5.35E+05
Pu-239	5.50E+00	1.10E+00	5.50E+06	1.10E+06	9.08E+04
Pu-240	8.78E-01	1.76E-01	8.78E+05	1.76E+05	1.45E+04
Pu-241	5.77E+00	2.65E+00	5.77E+06	2.65E+06	9.52E+04
Pu-242	1.31E-03	2.62E-04	1.31E+03	2.62E+02	2.16E+01
Ru-106	8.24E-03	MDA	8.24E+03	MDA	1.36E+02
Sr-90	3.31E+00	3.84E-01	3.31E+06	3.84E+05	5.46E+04
Th-232	1.43E-04	2.86E-05	1.43E+02	2.86E+01	2.36E+00
Tl-208	1.19E-03	2.96E-04	1.19E+03	2.96E+02	1.96E+01
U-233	4.55E-02	9.10E-03	4.55E+04	9.10E+03	7.51E+02
U-234	1.51E-01	3.03E-02	1.51E+05	3.03E+04	2.49E+03
U-235	6.71E-03	7.68E-04	6.71E+03	7.68E+02	1.11E+02
U-236	5.41E-03	1.08E-03	5.41E+03	1.08E+03	8.93E+01
U-238	2.22E-01	3.42E-02	2.22E+05	3.42E+04	3.66E+03
TRU	3.96E+01		3.96E+07		6.53E+05
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					

Tank S7					
Sample #	3-109224				
Customer ID	98018-7				
Description	Original Aqueous Sample				
Analyte	Concent.	Units			
Total Suspended Solids	0.19	wt %			

Sample #	3-109293			
Customer ID	98018-7			
Description	Filtered Aqueous Sample			
Total Volume in Tank	1199.976 liters			
Analyte	Concent.	Units		
Al	32.4	mg/kg		
Sb	<7.3	mg/kg		
As	18.6	mg/kg		
Ba	0.9	mg/kg		
Be	1.4	mg/kg		
B	11.7	mg/kg		
C2O4--	5391	mg/L		
Cd	1.7	mg/kg		
Cl-	12	mg/L		
Cr	33.4	mg/kg		
Cu	<2.7	mg/kg		
CN-	<1	mg/L		
COOH-	984	mg/L		
F-	<2	mg/L		
Fe	33.6	mg/kg		
Pb	<4.6	mg/kg		
Mn	9.2	mg/kg		
Hg	25.78	mg/kg		
Ni	11.1	mg/L		
NO2-	1409	mg/L		
NO3-	10194	mg/L		
PO4---	<10	mg/L		
Se	<26.5	mg/L		
SO4--	<5	mg/L		
Ag	<6.4	mg/kg		
Na	22170	mg/kg		
Tl	<6.4	mg/kg		
U	16455	mg/kg		
Any known VOA's, >20 mg/L	No	N/A		
n-Butanol	<2.5	mg/L		
Phenol/phenoxide/nitrophenols	<100	mg/L		
SemiVOA	Required	N/A		
TBP	<100	mg/L		
Other	<100	mg/L		
Total Inorganic Carbon	3110	mg/L		
Total Organic Carbon	23930	mg/L		
Volatile Organics	Required	N/A		
PCB's	<50	mg/L		
Kepone	<100	mg/L		
p-Nitrophenol	<100	mg/L		
Benzene	<0.500	mg/L		
MEK	<2.5	mg/L		
PCE	<0.500	mg/L		
Acidity	<0.001	Molarity		

Ash Content	7.11	%			
Flash Pt.	>212	degrees F			
Freezing Pt.	<32	degrees F			
Free Liquid?	Yes	N/A			
pH	8.05	N/A			
Density	1.094	g/cm3			
TDS	14.22	%			
Water, wt%	87.22	%			
					Aqueous
					Phase
					Total
	Activity	Error	Activity	Error	Activity
	uCi/mL	uCi/mL	pCi/L	pCi/L	uCi
Total Am	3.83E-02	1.94E-03	3.83E+07	1.94E+06	4.60E+04
Am-241	3.83E-02	1.94E-03	3.83E+07	1.94E+06	4.60E+04
Am-243	8.56E-05	MDA	8.56E+04	MDA	1.03E+02
Ce-144	2.73E-04	MDA	2.73E+05	MDA	3.28E+02
Total Cm	2.18E-03	2.18E-03	2.18E+06	2.18E+06	2.62E+03
Cm-244	2.18E-03	2.18E-03	2.18E+06	2.18E+06	2.62E+03
Cm-245	1.27E-01	DL	1.27E+08	DL	1.52E+05
Cm-246	2.25E-01	DL	2.25E+08	DL	2.70E+05
Co-60	1.79E-05	MDA	1.79E+04	MDA	2.15E+01
Cs-134	2.01E-05	MDA	2.01E+04	MDA	2.41E+01
Cs-137	1.51E-02	5.43E-04	1.51E+07	5.43E+05	1.81E+04
Eu-154	4.95E-04	3.32E-05	4.95E+05	3.32E+04	5.94E+02
GA	3.15E-01		3.15E+08	0.00E+00	3.78E+05
H-3	9.37E-04		9.37E+05	0.00E+00	1.12E+03
Nb-94	3.27E-05	MDA	3.27E+04	MDA	3.92E+01
GB	4.49E-01		4.49E+08	0.00E+00	5.39E+05
Np-237	6.76E-04	2.70E-04	6.76E+05	2.70E+05	8.11E+02
Total Pu	6.07E-01	1.67E-01	6.07E+08	1.67E+08	7.28E+05
Pu-238	1.71E-01	5.12E-02	1.71E+08	5.12E+07	2.05E+05
Pu-239	1.02E-01	4.07E-02	1.02E+08	4.07E+07	1.22E+05
Pu-240	1.67E-01	DL	1.67E+08	DL	2.00E+05
Pu-241	3.34E-01	1.54E-01	3.34E+08	1.54E+08	4.01E+05
Pu-242	2.90E-03	DL	2.90E+06	DL	3.48E+03
Ru-106	3.68E-04	MDA	3.68E+05	MDA	4.42E+02
Sb-125	1.74E-04	MDA	1.74E+05	MDA	2.09E+02
Se-79	4.50E-04	MDA	4.50E+05	MDA	5.40E+02
Sn-126	1.27E-04	MDA	1.27E+05	MDA	1.52E+02
Sr-90	1.55E-01	2.44E-03	1.55E+08	2.44E+06	1.86E+05
Tc-99	3.29E-02	2.61E-02	3.29E+07	2.61E+07	3.95E+04
Th-232	8.06E-08	DL	8.06E+01	DL	9.67E-02
U-233	7.12E-03	DL	7.12E+06	DL	8.54E+03
U-234	4.59E-03	DL	4.59E+06	DL	5.51E+03
U-235	2.32E-04	1.72E-04	2.32E+05	1.72E+05	2.78E+02
U-236	1.99E-04	3.97E-05	1.99E+05	3.97E+04	2.39E+02
U-238	1.12E-02	2.24E-03	1.12E+07	2.24E+06	1.34E+04
TRU	3.12E-01		3.12E+08		3.74E+05

Tank S7

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Appendix G

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MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					
TBP = Tributyl Phosphate					

Sample #	3-109280				
Customer ID	98018-7				
Description	Filtered Solids				
Estimated Solids	2494.27	g	(based upon TSS, volume and density of liquid phase)		
					Suspended Solids
					Total
Analyte	Activity	Error	Activity	Error	Activity
	uCi/g	uCi/g	pCi/g	pCi/g	uCi
Total Am	9.64E-01	5.21E-02	9.64E+05	5.21E+04	2.40E+03
Am-241	9.64E-01	5.21E-02	9.64E+05	5.21E+04	2.40E+03
Am-243	4.82E-02	DL	4.82E+04	DL	1.20E+02
Ce-144	1.34E-02	MDA	1.34E+04	MDA	3.34E+01
Total Cm	7.57E-02	UL	7.57E+04	UL	1.89E+02
Cm-244	7.57E-02	UL	7.57E+04	UL	1.89E+02
Cm-245	4.14E-02	DL	4.14E+04	DL	1.03E+02
Cm-246	7.34E-02	DL	7.34E+04	DL	1.83E+02
Co-60	9.19E-04	MDA	9.19E+02	MDA	2.29E+00
Cs-137	4.55E-01	1.74E-02	4.55E+05	1.74E+04	1.13E+03
Eu-154	9.19E-03	1.52E-03	9.19E+03	1.52E+03	2.29E+01
GA	7.57E+00	1.51E+00	7.57E+06	1.51E+06	1.89E+04
Nb-94	1.41E-03	MDA	1.41E+03	MDA	3.52E+00
GB	2.14E+01	8.58E+00	2.14E+07	8.58E+06	5.34E+04
Np-237	3.59E-03	7.18E-04	3.59E+03	7.18E+02	8.95E+00
Total Pu	2.25E+01	5.70E+00	2.25E+07	5.70E+06	5.62E+04
Pu-238	3.50E+00	2.66E+00	3.50E+06	2.66E+06	8.73E+03
Pu-239	5.45E+00	1.09E+00	5.45E+06	1.09E+06	1.36E+04
Pu-240	1.26E+00	2.51E-01	1.26E+06	2.51E+05	3.14E+03
Pu-241	1.23E+01	4.92E+00	1.23E+07	4.92E+06	3.07E+04
Pu-242	2.09E-03	4.19E-04	2.09E+03	4.19E+02	5.21E+00
Ra-226	9.19E-02	UL	9.19E+04	UL	2.29E+02
Ru-106	1.80E-02	MDA	1.80E+04	MDA	4.49E+01
Sn-126	1.38E-03	MDA	1.38E+03	MDA	3.44E+00
Sr-90	7.39E+00	8.57E-01	7.39E+06	8.57E+05	1.84E+04
Th-232	4.05E-06	8.09E-07	4.05E+00	8.09E-01	1.01E-02
U-233	2.32E-03	DL	2.32E+03	DL	5.79E+00
U-234	1.28E-01	2.56E-02	1.28E+05	2.56E+04	3.19E+02
U-235	4.01E-03	8.02E-04	4.01E+03	8.02E+02	1.00E+01
U-236	4.46E-03	8.92E-04	4.46E+03	8.92E+02	1.11E+01
U-238	1.45E-02	2.90E-03	1.45E+04	2.90E+03	3.62E+01
TRU	1.12E+01		1.12E+07		2.79E+04
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					

Sample #	3-117921				
Customer ID	98351-7				
Description	Sludge				
Total Mass in Tank	11356.24	grams			
Analyte	Concent.	Units			
As	<3	mg/kg			
Ba	12	mg/kg			
Cd	1	mg/kg			
Cr	15	mg/kg			
Pb	42	mg/kg			
Se	<38	mg/kg			
Ag	8	mg/kg			
Phenol/phenoxide/nitrophenols	<100	mg/kg			
SemiVOA	Required	N/A			
TBP	77	%	770000	mg/kg	
BAH	23	%	230000	mg/kg	
Other	<100	mg/kg			
Kepone	<100	mg/kg			
p-Nitrophenol	<100	mg/kg			
					Sludge
					Phase
					Total
	Activity	Error	Activity	Error	Activity
	uCi/g	uCi/g	pCi/g	pCi/g	uCi
Total Am	1.45E-01	8.79E-03	1.45E+05	8.79E+03	1.65E+03
Am-241	1.45E-01	8.79E-03	1.45E+05	8.79E+03	1.65E+03
Am-243	2.34E-01	DL	2.34E+05	DL	2.66E+03
Ce-144	2.45E-03	MDA	2.45E+03	MDA	2.78E+01
Total Cm	3.64E-02	1.46E-02	3.64E+04	1.46E+04	4.13E+02
Cm-244	3.64E-02	1.46E-02	3.64E+04	1.46E+04	4.13E+02
Cm-245	2.01E-01	DL	2.01E+05	DL	2.28E+03
Cm-246	3.58E-01	DL	3.58E+05	DL	4.07E+03
Co-60	1.40E-04	MDA	1.40E+02	MDA	1.59E+00
Cs-134	2.99E-04	MDA	2.99E+02	MDA	3.40E+00
Cs-137	8.78E-02	3.64E-03	8.78E+04	3.64E+03	9.97E+02
Eu-154	1.06E-03	3.81E-04	1.06E+03	3.81E+02	1.20E+01
GA	9.10E-01	1.82E-01	9.10E+05	1.82E+05	1.03E+04
Nb-94	2.36E-04	MDA	2.36E+02	MDA	2.68E+00
GB	1.13E+00	2.26E-01	1.13E+06	2.26E+05	1.28E+04
Np-237	8.24E-04	DL	8.24E+02	DL	9.36E+00
Total Pu	9.39E-01	1.75E-01	9.39E+05	1.75E+05	1.07E+04
Pu-238	2.02E-01	8.07E-02	2.02E+05	8.07E+04	2.29E+03
Pu-239	4.05E-01	8.09E-02	4.05E+05	8.09E+04	4.60E+03
Pu-240	2.66E-01	DL	2.66E+05	DL	3.02E+03
Pu-241	3.32E-01	1.33E-01	3.32E+05	1.33E+05	3.77E+03
Pu-242	4.59E-03	DL	4.59E+03	DL	5.21E+01
Ru-106	4.50E-03	MDA	4.50E+03	MDA	5.11E+01
Sb-125	1.96E-03	MDA	1.96E+03	MDA	2.23E+01
Sn-126	9.14E-04	MDA	9.14E+02	MDA	1.04E+01

Th-232	5.86E-07	1.17E-07	5.86E-01	1.17E-01	6.65E-03
U-233	1.13E-02	DL	1.13E+04	DL	1.28E+02
U-234	1.72E-02	3.43E-03	1.72E+04	3.43E+03	1.95E+02
U-235	5.81E-04	1.16E-04	5.81E+02	1.16E+02	6.60E+00
U-236	6.35E-04	1.27E-04	6.35E+02	1.27E+02	7.21E+00
U-238	1.72E-02	3.44E-03	1.72E+04	3.44E+03	1.95E+02
TRU	7.52E-01		7.52E+05		8.54E+03
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					
TBP = Tributyl Phosphate					
BAH = Branched Aliphatic Hydrocarbons					

Tank S8

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Appendix H

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Tank S8					
Sample #	3-109225				
Customer ID	98018-8				
Description	Original Aqueous Sample				
Analyte	Concent.	Units			
Total Suspended Solids	0.09	wt %			

Sample #	3-109294				
Customer ID	98018-8				
Description	Filtered Aqueous Sample				
Total Volume in Tank	518.6014	liters			
Analyte	Concent.	Units			
Al	<1.9	mg/kg			
Sb	<1.0	mg/kg			
As	2.9	mg/kg			
Ba	0.07	mg/kg			
Be	0.1	mg/kg			
B	4.9	mg/kg			
C2O4--	528	mg/L			
Cd	0.2	mg/kg			
Cl-	4	mg/L			
Cr	3.3	mg/kg			
Cu	1.0	mg/kg			
CN-	<1	mg/L			
COOH-	<10	mg/L			
F-	<2	mg/L			
Fe	3.7	mg/kg			
Pb	<1.0	mg/kg			
Mn	1.0	mg/kg			
Hg	3.04	mg/kg			
Ni	1.8	mg/L			
NO2-	46	mg/L			
NO3-	<10	mg/L			
PO4---	9686	mg/L			
Se	<2.9	mg/L			
SO4--	<5	mg/L			
Ag	<1.0	mg/kg			
Na	12482	mg/kg			
Tl	1.8	mg/kg			
U	1639	mg/kg			
Any known VOA's, >20 mg/L	No	N/A			
n-Butanol	<2.5	mg/L			
TCE	1.7	mg/L			
Phenol/phenoxide/nitrophenols	<100	mg/L			
SemiVOA	Required	N/A			
TBP	290	mg/L			
AH	1400	mg/L			
Other	<100	mg/L			
Total Inorganic Carbon	2130	mg/L			
Total Organic Carbon	6298	mg/L			
Volatile Organics	Required	N/A			
PCB's	<50	mg/L			
Kepone	<100	mg/L			
p-Nitrophenol	<100	mg/L			
Benzene	0.680	mg/L			
MEK	<2.5	mg/L			

PCE	12.0	mg/L			
Acidity	<0.001	Molarity			
Ash Content	2.80	%			
Flash Pt.	>212	degrees F			
Freezing Pt.	<32	degrees F			
Free Liquid?	Yes	N/A			
pH	8.89	N/A			
Density	1.051	g/cm3			
TDS	4.93	%			
Water, wt%	91.62	%			
					Aqueous
					Phase
					Total
	Activity	Error	Activity	Error	Activity
	uCi/mL	uCi/mL	pCi/L	pCi/L	uCi
Total Am	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Am-241	5.36E-03	MDA	5.36E+06	MDA	2.78E+03
Am-243	1.75E-03	MDA	1.75E+06	MDA	9.08E+02
Ce-144	7.21E-03	MDA	7.21E+06	MDA	3.74E+03
Total Cm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cm-244	2.25E-03	MDA	2.25E+06	MDA	1.17E+03
Cm-245	1.27E-01	DL	1.27E+08	DL	6.59E+04
Cm-246	2.25E-01	DL	2.25E+08	DL	1.17E+05
Co-60	3.57E-04	MDA	3.57E+05	MDA	1.85E+02
Cs-134	2.79E-04	MDA	2.79E+05	MDA	1.45E+02
Cs-137	8.47E-01	2.96E-02	8.47E+08	2.96E+07	4.39E+05
Eu-154	5.05E-04	MDA	5.05E+05	MDA	2.62E+02
GA	4.50E-02		4.50E+07	0.00E+00	2.33E+04
H-3	1.82E-03		1.82E+06	0.00E+00	9.44E+02
Nb-94	2.14E-04	MDA	2.14E+05	MDA	1.11E+02
GB	1.01E+00		1.01E+09	0.00E+00	5.24E+05
Np-237	5.18E-04	DL	5.18E+05	DL	2.69E+02
Total Pu	5.26E-01	7.80E-01	5.26E+08	7.80E+08	2.73E+05
Pu-238	2.64E-02	7.92E-03	2.64E+07	7.92E+06	1.37E+04
Pu-239	4.55E-02	DL	4.55E+07	DL	2.36E+04
Pu-240	1.67E-01	DL	1.67E+08	DL	8.66E+04
Pu-241	5.00E-01	7.80E-01	5.00E+08	7.80E+08	2.59E+05
Pu-242	2.90E-03	DL	2.90E+06	DL	1.50E+03
Ru-106	1.25E-02	MDA	1.25E+07	MDA	6.48E+03
Sb-125	6.62E-03	MDA	6.62E+06	MDA	3.43E+03
Se-79	9.01E-04	MDA	9.01E+05	MDA	4.67E+02
Sn-126	2.55E-03	MDA	2.55E+06	MDA	1.32E+03
Sr-90	9.64E-03	1.77E-03	9.64E+06	1.77E+06	5.00E+03
Tc-99	1.18E-03	1.72E-04	1.18E+06	1.72E+05	6.12E+02
Th-232	8.06E-08	DL	8.06E+01	DL	4.18E-02
U-233	7.12E-03	DL	7.12E+06	DL	3.69E+03
U-234	4.59E-03	DL	4.59E+06	DL	2.38E+03
U-235	2.55E-05	5.11E-06	2.55E+04	5.11E+03	1.32E+01
U-236	4.77E-05	DL	4.77E+04	DL	2.47E+01
U-238	6.04E-04	1.21E-04	6.04E+05	1.21E+05	3.13E+02

TRU	2.64E-02		2.64E+07		1.37E+04
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					
TBP = Tributyl Phosphate					
AH = Aliphatic Hydrocarbons					

Sample #	3-109281				
Customer ID	98018-8				
Description	Filtered Solids				
Estimated Solids	490.55 g		(based upon TSS, volume and density of liquid phase)		
					Suspended Solids
					Total
	Activity	Error	Activity	Error	Activity
Analyte	uCi/g	uCi/g	pCi/g	pCi/g	uCi
Total Am	1.95E+00	1.15E-01	1.95E+06	1.15E+05	9.57E+02
Am-241	1.95E+00	1.15E-01	1.95E+06	1.15E+05	9.57E+02
Am-243	1.14E-01	DL	1.14E+05	DL	5.59E+01
Ce-144	1.25E-01	MDA	1.25E+05	MDA	6.13E+01
Total Cm	9.01E-01	1.80E-01	9.01E+05	1.80E+05	4.42E+02
Cm-244	9.01E-01	1.80E-01	9.01E+05	1.80E+05	4.42E+02
Cm-245	9.86E-02	DL	9.86E+04	DL	4.84E+01
Cm-246	1.75E-01	DL	1.75E+05	DL	8.58E+01
Co-60	6.89E-03	2.71E-03	6.89E+03	2.71E+03	3.38E+00
Cs-137	4.15E+01	1.42E+00	4.15E+07	1.42E+06	2.04E+04
Eu-154	3.94E-01	1.40E-02	3.94E+05	1.40E+04	1.93E+02
GA	9.01E+01	1.80E+01	9.01E+07	1.80E+07	4.42E+04
Nb-94	1.01E-02	MDA	1.01E+04	MDA	4.95E+00
GB	3.25E+02	1.30E+02	3.25E+08	1.30E+08	1.59E+05
Np-237	1.61E-02	3.22E-03	1.61E+04	3.22E+03	7.90E+00
Total Pu	1.11E+02	1.78E+01	1.11E+08	1.78E+07	5.42E+04
Pu-238	8.60E+01	1.72E+01	8.60E+07	1.72E+07	4.22E+04
Pu-239	1.16E+01	2.32E+00	1.16E+07	2.32E+06	5.69E+03
Pu-240	2.85E+00	5.70E-01	2.85E+06	5.70E+05	1.40E+03
Pu-241	1.01E+01	4.05E+00	1.01E+07	4.05E+06	4.95E+03
Pu-242	2.26E-03	DL	2.26E+03	DL	1.11E+00
Ru-106	1.99E-01	MDA	1.99E+05	MDA	9.76E+01
Sn-126	8.60E-03	MDA	8.60E+03	MDA	4.22E+00
Sr-90	1.10E+02	9.01E-01	1.10E+08	9.01E+05	5.40E+04
Th-232	2.08E-04	4.16E-05	2.08E+02	4.16E+01	1.02E-01
U-233	1.65E-02	3.30E-03	1.65E+04	3.30E+03	8.09E+00
U-234	2.41E-02	4.81E-03	2.41E+04	4.81E+03	1.18E+01
U-235	2.48E-04	4.96E-05	2.48E+02	4.96E+01	1.22E-01
U-236	2.50E-04	5.00E-05	2.50E+02	5.00E+01	1.23E-01
U-238	5.41E-03	LL	5.41E+03	LL	2.65E+00
TRU	1.02E+02		1.02E+08		5.02E+04
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
LL= Lower Limit					

Sample #	3-117922				
Customer ID	98351-8				
Description	Sludge				
Total Mass in Tank	45424.94	grams			
Analyte	Concent.	Units			
Phenol/phenoxide/nitrophenols	<100	mg/kg			
SemiVOA	Required	N/A			
TBP	0.6	%	6000	mg/kg	
BAH	0.12	%	1200	mg/kg	
Other	<100	mg/kg			
Kepone	<100	mg/kg			
p-Nitrophenol	<100	mg/kg			
					Sludge
					Phase
					Total
	Activity	Error	Activity	Error	Activity
	uCi/g	uCi/g	pCi/g	pCi/g	uCi
Total Am	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Am-241	2.70E-02	MDA	2.70E+04	MDA	1.23E+03
Am-243	3.99E-02	DL	3.99E+04	DL	1.81E+03
Ce-144	4.82E-02	MDA	4.82E+04	MDA	2.19E+03
Total Cm	1.67E-02	6.67E-03	1.67E+04	6.67E+03	7.59E+02
Cm-244	1.67E-02	6.67E-03	1.67E+04	6.67E+03	7.59E+02
Cm-245	3.43E-02	DL	3.43E+04	DL	1.56E+03
Cm-246	6.08E-02	DL	6.08E+04	DL	2.76E+03
Co-60	1.22E-03	MDA	1.22E+03	MDA	5.54E+01
Cs-134	1.55E-03	MDA	1.55E+03	MDA	7.04E+01
Cs-137	1.08E+01	3.72E-01	1.08E+07	3.72E+05	4.91E+05
Eu-154	6.85E-03	MDA	6.85E+03	MDA	3.11E+02
GA	1.67E+00	3.33E-01	1.67E+06	3.33E+05	7.59E+04
Nb-94	1.31E-03	MDA	1.31E+03	MDA	5.95E+01
GB	1.48E+01	2.96E+00	1.48E+07	2.96E+06	6.72E+05
Np-237	2.09E-04	DL	2.09E+02	DL	9.49E+00
Total Pu	4.57E-01	UL	4.57E+05	UL	2.08E+04
Pu-238	3.81E-01	UL	3.81E+05	UL	1.73E+04
Pu-239	3.66E-02	7.32E-03	3.66E+04	7.32E+03	1.66E+03
Pu-240	4.55E-02	DL	4.55E+04	DL	2.07E+03
Pu-241	3.96E-02	UL	3.96E+04	UL	1.80E+03
Pu-242	7.84E-04	DL	7.84E+02	DL	3.56E+01
Ru-106	7.07E-02	MDA	7.07E+04	MDA	3.21E+03
Sb-125	4.86E-02	MDA	4.86E+04	MDA	2.21E+03
Sn-126	1.41E-02	MDA	1.41E+04	MDA	6.40E+02
Th-232	8.33E-07	1.67E-07	8.33E-01	1.67E-01	3.78E-02
U-233	1.92E-03	DL	1.92E+03	DL	8.72E+01
U-234	1.24E-03	DL	1.24E+03	DL	5.63E+01
U-235	7.30E-06	1.46E-06	7.30E+00	1.46E+00	3.32E-01
U-236	1.29E-05	DL	1.29E+01	DL	5.86E-01
U-238	1.66E-04	3.32E-05	1.66E+02	3.32E+01	7.54E+00
TRU	4.18E-01	UL	4.18E+05	UL	1.90E+04

MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					
TBP = Tributyl Phosphate					
BAH = Branched Aliphatic Hydrocarbons					

Tank S11					
Sample #	3-118504				
Customer ID	98018-11				
Description	Original Aqueous Sample				
Analyte	Concent.	Units			
Total Suspended Solids	0.007	wt %			

Sample #	3-118517				
Customer ID	98018-11				
Description	Filtered Organic Sample				
Total Volume in Tank	54.13139	liters			
Analyte	Concent.	Units			
As	3.00E-01	mg/L			
Ba	1.50E+00	mg/L			
Cd	3.00E-01	mg/L			
Co	2.50E+00	mg/L			
Cr	6.30E+01	mg/L			
Pb	8.90E+00	mg/L			
Hg	1.16	mg/L			
Se	2.40E+00	mg/L			
Ag	8.00E-01	mg/kg			
Phenol/phenoxide/nitrophenols	<100	mg/L			
SemiVOA	Required	N/A			
TBP	81	%	810000	mg/L	
Branched Aliph. Hydrocarbons	4.0	%	40000	mg/L	
Oxygenated Organics	15	%	150000	mg/L	
PCB's	<10	mg/L			
Kepone	<100	mg/L			
p-Nitrophenol	<100	mg/L			
					Organic
					Phase
					Total
	Activity	Error	Activity	Error	Activity
	uCi/mL	uCi/mL	pCi/L	pCi/L	uCi
Total Am	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Am-241	3.71E-03	MDA	3.71E+06	MDA	2.01E+02
Am-243	1.45E-03	MDA	1.45E+06	MDA	7.85E+01
Ce-144	5.77E-03	MDA	5.77E+06	MDA	3.12E+02
Total Cm	5.30E+00	1.02E+00	5.30E+09	1.02E+09	2.87E+05
Cm-244	5.09E+00	1.02E+00	5.09E+09	1.02E+09	2.76E+05
Cm-245	1.20E-01	DL	1.20E+08	DL	6.50E+03
Cm-246	2.14E-01	4.28E-02	2.14E+08	4.28E+07	1.16E+04
Co-60	6.31E-04	1.74E-04	6.31E+05	1.74E+05	3.42E+01
Cs-134	2.40E-04	MDA	2.40E+05	MDA	1.30E+01
Cs-137	9.82E-01	3.34E-02	9.82E+08	3.34E+07	5.32E+04
Eu-154	1.08E-03	MDA	1.08E+06	MDA	5.85E+01
GA	1.02E+01	2.04E+00	1.02E+10	2.04E+09	5.52E+05
Nb-94	2.44E-04	MDA	2.44E+05	MDA	1.32E+01
GB	1.50E+02	3.01E+01	1.50E+11	3.01E+10	8.12E+06
Np-237	4.95E-06	9.91E-07	4.95E+03	9.91E+02	2.68E-01
Total Pu	3.86E+00	6.80E-01	3.86E+09	6.80E+08	2.09E+05
Pu-238	2.52E+00	5.05E-01	2.52E+09	5.05E+08	1.36E+05
Pu-239	4.34E-02	8.68E-03	4.34E+07	8.68E+06	2.35E+03
Pu-240	1.59E-01	3.18E-02	1.59E+08	3.18E+07	8.61E+03
Pu-241	1.14E+00	4.54E-01	1.14E+09	4.54E+08	6.17E+04

Pu-242	2.75E-03	DL	2.75E+06	DL	1.49E+02
Ru-106	9.91E-03	MDA	9.91E+06	MDA	5.36E+02
Sb-125	5.14E-03	MDA	5.14E+06	MDA	2.78E+02
Sn-126	1.82E-03	MDA	1.82E+06	MDA	9.85E+01
Th-232	9.55E-08	1.91E-08	9.55E+01	1.91E+01	5.17E-03
U-233	6.76E-05	DL	6.76E+04	DL	3.66E+00
U-234	4.35E-05	8.70E-06	4.35E+04	8.70E+03	2.35E+00
U-235	2.02E-06	4.04E-07	2.02E+03	4.04E+02	1.09E-01
U-236	4.55E-07	9.10E-08	4.55E+02	9.10E+01	2.46E-02
U-238	4.86E-05	DL	4.86E+04	DL	2.63E+00
TRU	2.94E+00		2.94E+09		1.59E+05
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					

Sample #	3-118520				
Customer ID	98018-11				
Description	Filtered Solids				
Estimated Solids	3.79 g		(based upon TSS, volume and density of liquid phase)		
			(Assumed density = 1.00 g/cm ³)		
					Suspended Solids
					Total
	Activity	Error	Activity	Error	Activity
Analyte	uCi/g	uCi/g	pCi/g	pCi/g	uCi
Total Am	1.76E+00	1.33E-01	1.76E+06	1.33E+05	6.69E+00
Am-241	1.59E+00	1.30E-01	1.59E+06	1.30E+05	6.03E+00
Am-243	1.74E-01	2.68E-02	1.74E+05	2.68E+04	6.59E-01
Total Cm	6.81E+01	1.36E+01	6.81E+07	1.36E+07	2.58E+02
Cm-244	6.81E+01	1.36E+01	6.81E+07	1.36E+07	2.58E+02
Cm-245	4.14E-01	DL	4.14E+05	DL	1.57E+00
Cm-246	7.39E-01	DL	7.39E+05	DL	2.80E+00
Co-60	9.01E-03	MDA	9.01E+03	MDA	3.41E-02
Cs-134	1.43E-02	MDA	1.43E+04	MDA	5.42E-02
Cs-137	6.40E+00	2.30E-01	6.40E+06	2.30E+05	2.43E+01
Eu-154	7.70E-01	3.24E-02	7.70E+05	3.24E+04	2.92E+00
GA	7.84E+01	1.57E+01	7.84E+07	1.57E+07	2.97E+02
Nb-94	2.84E-02	MDA	2.84E+04	MDA	1.08E-01
GB	1.11E+02	2.22E+01	1.11E+08	2.22E+07	4.21E+02
Np-237	1.70E-03	DL	1.70E+03	DL	6.44E-03
Total Pu	3.63E+01	1.05E+01	3.63E+07	1.05E+07	1.37E+02
Pu-238	2.45E+01	9.78E+00	2.45E+07	9.78E+06	9.29E+01
Pu-239	1.49E+00	5.95E-01	1.49E+06	5.95E+05	5.65E+00
Pu-240	8.06E-01	3.23E-01	8.06E+05	3.23E+05	3.05E+00
Pu-241	9.46E+00	3.78E+00	9.46E+06	3.78E+06	3.59E+01
Pu-242	9.50E-03	DL	9.50E+03	DL	3.60E-02
Ru-106	2.08E-01	MDA	2.08E+05	MDA	7.88E-01
Sb-125	9.37E-02	MDA	9.37E+04	MDA	3.55E-01
Sn-126	8.29E-02	MDA	8.29E+04	MDA	3.14E-01
Th-232	4.41E-04	8.82E-05	4.41E+02	8.82E+01	1.67E-03
U-233	2.32E-02	DL	2.32E+04	DL	8.79E-02
U-234	1.50E-02	DL	1.50E+04	DL	5.69E-02
U-235	5.54E-05	1.11E-05	5.54E+01	1.11E+01	2.10E-04
U-236	1.56E-04	DL	1.56E+02	DL	5.91E-04
U-238	1.50E-03	3.01E-04	1.50E+03	3.01E+02	5.69E-03
TRU	2.86E+01		2.86E+07		1.08E+02
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					

Tank S13

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Appendix J

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Tank S13					
Sample #	3-109226				
Customer ID	98018-13				
Description	Original Aqueous Sample				
Analyte	Concent.	Units			
Total Suspended Solids	0.02	wt %			

Sample #	3-109295				
Customer ID	98018-13				
Description	Filtered Aqueous Sample				
Total Volume in Tank	826.3554 liters				
Analyte	Concent.	Units			
Al	<12.8	mg/kg			
Sb	<5.5	mg/kg			
As	14.1	mg/kg			
Ba	0.6	mg/kg			
Be	0.9	mg/kg			
B	10.9	mg/kg			
C2O4--	2836	mg/L			
Cd	1.1	mg/kg			
Cl-	151	mg/L			
Cr	21.8	mg/kg			
Cu	4.1	mg/kg			
CN-	<1	mg/L			
COOH-	2566	mg/L			
F-	<2	mg/L			
Fe	19.6	mg/kg			
Pb	<3.6	mg/kg			
Mn	3.4	mg/kg			
Hg	1.46	mg/kg			
Ni	8.4	mg/L			
NO2-	1657	mg/L			
NO3-	999	mg/L			
PO4--	217	mg/L			
Se	<17.3	mg/L			
SO4--	225	mg/L			
Ag	<3.6	mg/kg			
Na	23526	mg/kg			
Tl	<3.6	mg/kg			
U	10831	mg/kg			
Any known VOA's, >20 mg/L	No	N/A			
n-Butanol	<2.5	mg/L			
Phenol/phenoxide/nitrophenols	<100	mg/L			
SemiVOA	Required	N/A			
TBP	300	mg/L			
Other	<100	mg/L			
Total Inorganic Carbon	2049	mg/L			
Total Organic Carbon	31931	mg/L			
Volatile Organics	Required	N/A			
PCB's	<50	mg/L			
Kepone	<100	mg/L			
p-Nitrophenol	<100	mg/L			
Benzene	<0.500	mg/L			
MEK	1000 (j)	mg/L			
PCE	<0.500	mg/L			
Acidity	<0.001	Molarity			

Ash Content	6.76	%			
Flash Pt.	>212	degrees F			
Freezing Pt.	<32	degrees F			
Free Liquid?	Yes	N/A			
pH	8.94	N/A			
Density	1.096	g/cm3			
TDS	15.21	%			
Water, wt%	80.19	%			
					Aqueous
					Phase
					Total
	Activity	Error	Activity	Error	Activity
	uCi/mL	uCi/mL	pCi/L	pCi/L	uCi
Total Am	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Am-241	7.52E-04	MDA	7.52E+05	MDA	6.21E+02
Am-243	2.32E-04	MDA	2.32E+05	MDA	1.92E+02
Ce-144	9.37E-04	MDA	9.37E+05	MDA	7.74E+02
Total Cm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cm-244	2.26E-02	MDA	2.26E+07	MDA	1.87E+04
Cm-245	1.27E-01	DL	1.27E+08	DL	1.05E+05
Cm-246	2.25E-01	DL	2.25E+08	DL	1.86E+05
Co-60	1.04E-04	2.49E-05	1.04E+05	2.49E+04	8.59E+01
Cs-134	3.75E-05	MDA	3.75E+04	MDA	3.10E+01
Cs-137	1.36E-01	4.71E-03	1.36E+08	4.71E+06	1.12E+05
Eu-154	1.30E-04	MDA	1.30E+05	MDA	1.07E+02
GA	7.84E-01		7.84E+08	0.00E+00	6.48E+05
H-3	4.91E-04		4.91E+05	0.00E+00	4.06E+02
Nb-94	4.01E-05	MDA	4.01E+04	MDA	3.31E+01
GB	4.50E-01		4.50E+08	0.00E+00	3.72E+05
Np-237	4.91E-04	MDA	4.91E+05	MDA	4.06E+02
Total Pu	9.55E-01	1.71E-01	9.55E+08	1.71E+08	7.89E+05
Pu-238	7.52E-01	1.50E-01	7.52E+08	1.50E+08	6.21E+05
Pu-239	4.55E-02	DL	4.55E+07	DL	3.76E+04
Pu-240	1.67E-01	DL	1.67E+08	DL	1.38E+05
Pu-241	2.03E-01	8.13E-02	2.03E+08	8.13E+07	1.68E+05
Pu-242	2.90E-03	DL	2.90E+06	DL	2.40E+03
Ru-106	1.66E-03	MDA	1.66E+06	MDA	1.37E+03
Sb-125	6.58E-04	4.33E-04	6.58E+05	4.33E+05	5.44E+02
Se-79	9.01E-04	MDA	9.01E+05	MDA	7.45E+02
Sn-126	4.05E-05	MDA	4.05E+04	MDA	3.35E+01
Sr-90	2.84E-02	7.95E-04	2.84E+07	7.95E+05	2.35E+04
Tc-99	3.15E-03	9.02E-04	3.15E+06	9.02E+05	2.60E+03
Th-232	8.06E-08	DL	8.06E+01	DL	6.66E-02
U-233	8.60E-03	1.72E-03	8.60E+06	1.72E+06	7.11E+03
U-234	5.77E-03	1.15E-03	5.77E+06	1.15E+06	4.77E+03
U-235	1.34E-04	2.68E-05	1.34E+05	2.68E+04	1.11E+02
U-236	1.72E-04	3.43E-05	1.72E+05	3.43E+04	1.42E+02
U-238	3.37E-03	6.75E-04	3.37E+06	6.75E+05	2.78E+03
TRU	7.52E-01		7.52E+08		6.21E+05

MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					
j = value is less than the method's PQL for this dilution but above the					
IDL, and detected in the chromatographic data					
TBP = Tributyl Phosphate					

Sample #	3-109282				
Customer ID	98018-13				
Description	Filtered Solids				
Estimated Solids	181.14 g	(based upon TSS, volume and density of liquid phase)			
					Suspended Solids
					Total
Analyte	Activity uCi/g	Error uCi/g	Activity pCi/g	Error pCi/g	Activity uCi
Total Am	4.09E+01	2.02E+00	4.09E+07	2.02E+06	7.41E+03
Am-241	4.09E+01	2.02E+00	4.09E+07	2.02E+06	7.41E+03
Am-243	8.11E-01	DL	8.11E+05	DL	1.47E+02
Ce-144	3.76E-01	MDA	3.76E+05	MDA	6.81E+01
Total Cm	1.16E+01	UL	1.16E+07	UL	2.10E+03
Cm-244	1.16E+01	UL	1.16E+07	UL	2.10E+03
Cm-245	6.94E-01	DL	6.94E+05	DL	1.26E+02
Cm-246	1.24E+00	DL	1.24E+06	DL	2.25E+02
Co-60	3.56E-02	1.40E-02	3.56E+04	1.40E+04	6.45E+00
Cs-137	1.95E+01	7.04E-01	1.95E+07	7.04E+05	3.53E+03
Eu-154	2.73E+00	9.62E-02	2.73E+06	9.62E+04	4.95E+02
Eu-155	3.72E-01	8.25E-02	3.72E+05	8.25E+04	6.74E+01
GA	1.16E+03	2.32E+02	1.16E+09	2.32E+08	2.10E+05
Nb-94	8.56E-02	MDA	8.56E+04	MDA	1.55E+01
GB	7.16E+02	2.86E+02	7.16E+08	2.86E+08	1.30E+05
Np-237	1.20E-01	2.40E-02	1.20E+05	2.40E+04	2.17E+01
Total Pu	1.61E+03	2.75E+02	1.61E+09	2.75E+08	2.92E+05
Pu-238	1.13E+03	2.26E+02	1.13E+09	2.26E+08	2.05E+05
Pu-239	6.58E+01	1.32E+01	6.58E+07	1.32E+07	1.19E+04
Pu-240	2.48E+01	4.95E+00	2.48E+07	4.95E+06	4.49E+03
Pu-241	3.90E+02	1.56E+02	3.90E+08	1.56E+08	7.06E+04
Pu-242	9.23E-02	1.85E-02	9.23E+04	1.85E+04	1.67E+01
Ru-106	5.59E-01	MDA	5.59E+05	MDA	1.01E+02
Sb-125	1.62E-01	1.03E-01	1.62E+05	1.03E+05	2.93E+01
Sn-126	5.99E-02	MDA	5.99E+04	MDA	1.09E+01
Sr-90	1.25E+02	1.49E+01	1.25E+08	1.49E+07	2.26E+04
Th-232	5.05E-03	1.01E-03	5.05E+03	1.01E+03	9.15E-01
U-233	1.92E+00	3.85E-01	1.92E+06	3.85E+05	3.48E+02
U-234	7.66E-01	1.53E-01	7.66E+05	1.53E+05	1.39E+02
U-235	1.67E-02	3.34E-03	1.67E+04	3.34E+03	3.03E+00
U-236	2.28E-02	4.57E-03	2.28E+04	4.57E+03	4.13E+00
U-238	2.55E-01	LL	2.55E+05	LL	4.62E+01
TRU	1.26E+03		1.26E+09		2.29E+05
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
LL= Lower Limit					

Sample #	3-117927				
Customer ID	98351-13				
Description	Sludge	(Not enough sample to weigh)			
Estimated Solids	325.5 kg				
					Sludge
					Phase
					Total
	Activity	Error	Activity	Error	Activity
Analyte	uCi/unit	uCi/unit	pCi/unit	pCi/unit	uCi/unit
GA	8.65E+00	1.73E+00	8.65E+06	1.73E+06	8.65E+00
GB	4.44E+00	8.88E-01	4.44E+06	8.88E+05	4.44E+00
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					

Tank S14					
Sample #	3-103694				
Customer ID	98018-14				
Description	Original Aqueous Sample				
Analyte	Concent.	Units			
Total Suspended Solids	0.018	wt %			

Sample #	3-104912				
Customer ID	98018-14				
Description	Filtered Aqueous Sample				
Total Volume in Tank	1386.975	liters			
Analyte	Concent.	Units			
Al	<8	mg/kg			
Sb	<11	mg/kg			
As	7	mg/kg			
Ba	0.3	mg/kg			
Be	1	mg/kg			
B	5	mg/kg			
Cd	1	mg/kg			
Cl-	304	mg/L			
Cr	<2	mg/kg			
Cu	2	mg/kg			
CN-	<10	ug/L			
F-	<20	mg/L			
Fe	7	mg/kg			
Pb	<2	mg/kg			
Mn	2	mg/kg			
Hg	10.30	mg/kg			
Ni	7	mg/L			
NO3-	2242	mg/L			
PO4---	203	mg/L			
Se	<0.98	mg/L			
Ag	<1	mg/kg			
Na	17570	mg/kg			
Ti	<3	mg/kg			
U	11660	mg/kg			
Zn	1	mg/kg			
Any known VOA's, >20 mg/L	No	N/A			
n-Butanol	<1.1	mg/L			
Phenol/phenoxide/nitrophenols	<50	mg/L			
SemiVOA	Required	N/A			
TBP	2.9	%	29000	mg/L	
Other	<50	mg/L			
Total Inorganic Carbon	1861	mg/L			
Total Organic Carbon	20219	mg/L			
Volatile Organics	Required	N/A			
PCB's	<50	mg/L			
Kepone	<50	mg/L			
p-Nitrophenol	<50	mg/L			
Benzene	<0.140	mg/L			
MEK	0.670	mg/L			
PCE	<0.140	mg/L			
Acidity	<0.02	Molarity			
Ash Content	5.14	%			
Boiling Pt.	185	degrees F			
Flash Pt.	208	degrees F			

Freezing Pt.	<32	degrees F			
Free Liquid?	Yes	N/A			
pH	8.77	N/A			
Density	1.019	g/cm3			
TDS	11.07	%			
Water, wt%	86.2	%			
					Aqueous
					Phase
					Total
	Activity	Error	Activity	Error	Activity
	uCi/mL	uCi/mL	pCi/L	pCi/L	uCi
Total Am	1.49E-03	1.67E-04	1.49E+06	1.67E+05	2.07E+03
Am-241	1.41E-03	1.64E-04	1.41E+06	1.64E+05	1.96E+03
Am-243	8.33E-05	3.30E-05	8.33E+04	3.30E+04	1.16E+02
Ce-144	2.07E-04	MDA	2.07E+05	MDA	2.87E+02
Total Cm	6.62E-03	2.65E-03	6.62E+06	2.65E+06	9.18E+03
Cm-244	6.62E-03	2.65E-03	6.62E+06	2.65E+06	9.18E+03
Cm-245	7.88E-04	DL	7.88E+05	DL	1.09E+03
Cm-246	1.41E-03	DL	1.41E+06	DL	1.96E+03
Co-60	4.19E-05	5.55E-06	4.19E+04	5.55E+03	5.81E+01
Cs-134	1.58E-05	MDA	1.58E+04	MDA	2.19E+01
Cs-137	4.27E-02	1.46E-03	4.27E+07	1.46E+06	5.92E+04
Eu-154	1.23E-03	3.62E-05	1.23E+06	3.62E+04	1.71E+03
Eu-155	1.20E-04	4.29E-05	1.20E+05	4.29E+04	1.66E+02
GA	1.16E-01		1.16E+08	0.00E+00	1.61E+05
H-3	8.69E-04	8.69E-05	8.69E+05	8.69E+04	1.21E+03
GB	6.40E-01	2.56E-01	6.40E+08	2.56E+08	8.88E+05
Np-237	8.02E-04	4.01E-04	8.02E+05	4.01E+05	1.11E+03
Total Pu	1.42E-01	2.40E-02	1.42E+08	2.40E+07	1.97E+05
Pu-238	1.08E-01	2.16E-02	1.08E+08	2.16E+07	1.50E+05
Pu-239	8.74E-03	4.37E-03	8.74E+06	4.37E+06	1.21E+04
Pu-240	1.27E-03	6.35E-04	1.27E+06	6.35E+05	1.76E+03
Pu-241	2.39E-02	9.55E-03	2.39E+07	9.55E+06	3.31E+04
Pu-242	1.81E-05	DL	1.81E+04	DL	2.51E+01
Pm-147	9.01E-03	MDA	9.01E+06	MDA	1.25E+04
Ra-226	1.47E-03	1.83E-03	1.47E+06	1.83E+06	2.04E+03
Ru-106	3.05E-04	MDA	3.05E+05	MDA	4.23E+02
Sb-125	1.48E-04	MDA	1.48E+05	MDA	2.05E+02
Se-79	2.70E-04	MDA	2.70E+05	MDA	3.74E+02
Sn-126	7.84E-05	MDA	7.84E+04	MDA	1.09E+02
Sr-90	5.86E-02	2.71E-02	5.86E+07	2.71E+07	8.13E+04
Tc-99	1.12E-03	2.52E-04	1.12E+06	2.52E+05	1.55E+03
Th-232	2.59E-09	5.18E-10	2.59E+00	5.18E-01	3.59E-03
U-233	3.29E-04	6.58E-05	3.29E+05	6.58E+04	4.56E+02
U-234	2.17E-03	4.34E-04	2.17E+06	4.34E+05	3.01E+03
U-235	5.09E-05	1.02E-05	5.09E+04	1.02E+04	7.06E+01
U-236	5.95E-05	1.19E-05	5.95E+04	1.19E+04	8.25E+01
U-238	3.68E-03	7.62E-04	3.68E+06	7.62E+05	5.10E+03
TRU	1.20E-01		1.20E+08		1.67E+05

Tank S14

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Appendix K

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MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					
a = compound present but below quantitation limit					
TBP = Tributyl Phosphate					

Sample #	3-103841				
Customer ID	98018-14				
Description	Filtered Solids				
Estimated Solids	254.4 g		(based upon TSS, volume and density of liquid phase)		
					Suspended
					Solids
					Total
	Activity	Error	Activity	Error	Activity
Analyte	uCi/g	uCi/g	pCi/g	pCi/g	uCi
Total Am	1.97E+01	1.06E+00	1.97E+07	1.06E+06	5.01E+03
Am-241	1.86E+01	9.71E-01	1.86E+07	9.71E+05	4.73E+03
Am-243	1.08E+00	4.31E-01	1.08E+06	4.31E+05	2.75E+02
Ce-144	2.14E-01	MDA	2.14E+05	MDA	5.44E+01
Total Cm	1.36E+02	1.36E+01	1.36E+08	1.36E+07	3.46E+04
Cm-244	1.36E+02	1.36E+01	1.36E+08	1.36E+07	3.46E+04
Cm-245	7.12E-01	DL	7.12E+05	DL	1.81E+02
Cm-246	1.27E+00	DL	1.27E+06	DL	3.23E+02
Co-60	3.38E-02	2.43E-02	3.38E+04	2.43E+04	8.60E+00
Cs-134	5.18E-02	MDA	5.18E+04	MDA	1.32E+01
Cs-137	5.27E-01	4.86E-02	5.27E+05	4.86E+04	1.34E+02
Eu-154	1.76E+01	3.37E-01	1.76E+07	3.37E+05	4.48E+03
Eu-155	1.60E+00	4.54E-01	1.60E+06	4.54E+05	4.07E+02
GA	4.06E+02	4.06E+01	4.06E+08	4.06E+07	1.03E+05
GB	3.32E+02	1.33E+02	3.32E+08	1.33E+08	8.45E+04
Np-237	3.41E-03	1.36E-03	3.41E+03	1.36E+03	8.68E-01
Total Pu	2.53E+02	UL	2.53E+08	UL	6.44E+04
Pu-238	2.48E+02	2.68E+01	2.48E+08	2.68E+07	6.31E+04
Pu-239	1.57E+00	3.14E-01	1.57E+06	3.14E+05	3.99E+02
Pu-240	3.16E+00	1.26E+00	3.16E+06	1.26E+06	8.04E+02
Pu-241	2.75E-01	UL	2.75E+05	UL	7.00E+01
Pu-242	1.63E-02	DL	1.63E+04	DL	4.15E+00
Ru-106	5.45E-01	MDA	5.45E+05	MDA	1.39E+02
Sb-125	1.37E-01	MDA	1.37E+05	MDA	3.49E+01
Sn-126	4.64E-02	MDA	4.64E+04	MDA	1.18E+01
Th-232	2.31E-04	4.61E-05	2.31E+02	4.61E+01	5.88E-02
U-233	2.54E-02	DL	2.54E+04	DL	6.46E+00
U-234	2.58E-02	DL	2.58E+04	DL	6.56E+00
U-235	1.80E-04	3.60E-05	1.80E+02	3.60E+01	4.58E-02
U-236	2.68E-04	DL	2.68E+02	DL	6.82E-02
U-238	4.48E-03	8.95E-04	4.48E+03	8.95E+02	1.14E+00
TRU	2.72E+02		2.72E+08		6.93E+04
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					

Sample #	3-117928				
Customer ID	98351-14				
Description	Sludge	(Not enough sample to weigh)			
Estimated Solids	896.4 kg				
					Sludge
					Phase
					Total
	Activity	Error	Activity	Error	Activity
Analyte	uCi/unit	uCi/unit	pCi/unit	pCi/unit	uCi/unit
GA	1.36E+00	2.73E-01	1.36E+06	2.73E+05	1.36E+00
GB	1.72E+00	3.44E-01	1.72E+06	3.44E+05	1.72E+00
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					

Tank S15					
Sample #	3-118522				
Customer ID	98018-15B		(98018-15-Sludge)		
Description	Sludge				
Total Mass in Tank	1098527	grams	(Not enough sample to weigh)		
Analyte	Concent.	Units			
As	0.3	µg/unit			
Ba	18	µg/unit			
Cd	0.8	µg/unit			
Co	2	µg/unit			
Cr	9	µg/unit			
Pb	69	µg/unit			
Hg	106	µg/unit			
Se	3	µg/unit			
Ag	32	µg/unit			
Phenol/phenoxide/nitrophenols	<100	mg/kg			
SemiVOA	Required	N/A			
TBP	0.76	%	7600	mg/kg	
BAH	3.2	%	32000	mg/kg	
Other	<100	mg/kg			
PCB's	<10	mg/kg			
Kepone	<100	mg/kg			
p-Nitrophenol	<100	mg/kg			
					Sludge
					Phase
					Total
	Activity	Error	Activity	Error	Activity
	uCi/unit	uCi/unit	pCi/unit	pCi/unit	uCi/unit
Ac-228	2.51E-03	9.68E-04	2.51E+03	9.68E+02	2.51E-03
Total Am	1.73E+00	7.94E-02	1.73E+06	7.94E+04	1.73E+00
Am-241	1.65E+00	7.91E-02	1.65E+06	7.91E+04	1.65E+00
Am-243	7.75E-02	6.35E-03	7.75E+04	6.35E+03	7.75E-02
Ce-144	2.88E-03	MDA	2.88E+03	MDA	2.88E-03
Total Cm	5.68E+01	1.14E+01	5.68E+07	1.14E+07	5.68E+01
Cm-244	5.68E+01	1.14E+01	5.68E+07	1.14E+07	5.68E+01
Cm-245	1.20E-01	DL	1.20E+05	DL	1.20E-01
Co-60	7.84E-04	1.18E-04	7.84E+02	1.18E+02	7.84E-04
Cs-134	3.59E-04	MDA	3.59E+02	MDA	3.59E-04
Cs-137	4.19E-01	1.43E-02	4.19E+05	1.43E+04	4.19E-01
Eu-154	4.43E-03	1.15E-03	4.43E+03	1.15E+03	4.43E-03
Eu-155	6.62E-03	8.21E-04	6.62E+03	8.21E+02	6.62E-03
GA	2.76E+01	5.51E+00	2.76E+07	5.51E+06	2.76E+01
Nb-94	6.53E-04	MDA	6.53E+02	MDA	6.53E-04
GB	9.28E-01	UL	9.28E+05	UL	9.28E-01
Np-237	7.79E-04	1.56E-04	7.79E+02	1.56E+02	7.79E-04
Total Pu	2.09E+00	UL	2.09E+06	UL	2.09E+00
Pu-238	4.31E-01	4.31E-01	4.31E+05	4.31E+05	4.31E-01

Pu-239	5.72E-01	1.14E-01	5.72E+05	1.14E+05	5.72E-01
Pu-240	1.59E-01	3.18E-02	1.59E+05	3.18E+04	1.59E-01
Pu-241	9.28E-01	UL	9.28E+05	UL	9.28E-01
Pu-242	2.75E-03	DL	2.75E+03	DL	2.75E-03
Ru-106	4.73E-03	MDA	4.73E+03	MDA	4.73E-03
Sb-125	5.05E-03	8.07E-04	5.05E+03	8.07E+02	5.05E-03
Sn-126	1.33E-03	MDA	1.33E+03	MDA	1.33E-03
Ti-208	5.95E-04	3.25E-04	5.95E+02	3.25E+02	5.95E-04
U-233	6.76E-03	DL	6.76E+03	DL	6.76E-03
U-234	1.71E-02	DL	1.71E+04	DL	1.71E-02
U-235	5.77E-04	1.15E-04	5.77E+02	1.15E+02	5.77E-04
U-236	6.17E-04	1.23E-04	6.17E+02	1.23E+02	6.17E-04
U-238	1.73E-02	3.45E-03	1.73E+04	3.45E+03	1.73E-02
TRU	2.89E+00		2.89E+06		2.89E+00
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					
TBP = Tributyl Phosphate					
BAH = Branched Aliphatic Hydrocarbons					
Note: Due to the limited amount of material available, a weight could not be obtained for the dissolution, therefore, activity concentrations and metals concentrations could not be calculated.					

Sample #	3-117705				
Customer ID	98351-15				
Description	Sludge				
Total Mass in Tank	1098527	grams	(Not enough sample to weigh)		
					Sludge
					Phase
					Total
	Activity	Error	Activity	Error	Activity
Analyte	uCi/unit	uCi/unit	pCi/unit	pCi/unit	uCi/unit
Total Am	1.02E-01	6.17E-03	1.02E+05	6.17E+03	1.02E-01
Am-241	9.77E-02	6.14E-03	9.77E+04	6.14E+03	9.77E-02
Am-243	4.18E-03	6.04E-04	4.18E+03	6.04E+02	4.18E-03
Cs-137	9.64E-02	4.07E-03	9.64E+04	4.07E+03	9.64E-02
Eu-154	1.07E-03	3.54E-04	1.07E+03	3.54E+02	1.07E-03
GA	1.31E+00	2.62E-01	1.31E+06	2.62E+05	1.31E+00
GB	2.88E-01	5.77E-02	2.88E+05	5.77E+04	2.88E-01
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					

Tank S16					
Sample #	3-119031				
Customer ID	98351-16B				
Description	Sludge				
Total Mass in Tank	2066835 grams				
Analyte	Concent.	Units			
As	<16	mg/kg			
Ba	15	mg/kg			
Cd	4	mg/kg			
Cr	66	mg/kg			
Pb	263	mg/kg			
Hg	79	mg/kg			
Se	<214	mg/kg			
Ag	17	mg/kg			
Phenol/phenoxide/nitrophenols	<100	mg/kg			
SemiVOA	Required	N/A			
TBP	5.0	%	50000	mg/kg	
BAH	95	%	950000	mg/kg	
Other	<100	mg/kg			
Kepone	<100	mg/kg			
p-Nitrophenol	<100	mg/kg			
					Sludge
					Phase
					Total
	Activity	Error	Activity	Error	Activity
	uCi/g	uCi/g	pCi/g	pCi/g	uCi
Total Am	1.24E-02	6.99E-04	1.24E+04	6.99E+02	2.56E+04
Am-241	1.24E-02	6.99E-04	1.24E+04	6.99E+02	2.56E+04
Am-243	1.31E+00	DL	1.31E+06	DL	2.71E+06
Ce-144	7.52E-03	MDA	7.52E+03	MDA	1.55E+04
Total Cm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cm-244	5.32E+02	DL	5.32E+08	DL	1.10E+09
Cm-245	1.13E+00	DL	1.13E+06	DL	2.34E+06
Cm-246	2.00E+00	DL	2.00E+06	DL	4.13E+06
Co-60	1.14E-03	MDA	1.14E+03	MDA	2.36E+03
Cs-134	1.03E-03	MDA	1.03E+03	MDA	2.13E+03
Cs-137	1.11E-01	6.67E-03	1.11E+05	6.67E+03	2.29E+05
Eu-154	5.99E-03	1.44E-03	5.99E+03	1.44E+03	1.24E+04
GA	1.73E+00	3.47E-01	1.73E+06	3.47E+05	3.58E+06
Nb-94	1.60E-03	MDA	1.60E+03	MDA	3.31E+03
GB	2.25E+00	4.50E-01	2.25E+06	4.50E+05	4.65E+06
Np-237	3.15E-03	MDA	3.15E+03	MDA	6.51E+03
Total Pu	2.42E+00	UL	2.42E+06	UL	5.00E+06
Pu-238	7.39E-01	2.95E-01	7.39E+05	2.95E+05	1.53E+06
Pu-239	7.16E-01	1.43E-01	7.16E+05	1.43E+05	1.48E+06
Pu-240	1.49E+00	DL	1.49E+06	DL	3.08E+06
Pu-241	9.64E-01	UL	9.64E+05	UL	1.99E+06
Pu-242	2.58E-02	DL	2.58E+04	DL	5.33E+04

Ru-106	1.37E-02	MDA	1.37E+04	MDA	2.83E+04
Sb-125	5.68E-03	MDA	5.68E+03	MDA	1.17E+04
Sn-126	3.50E-03	MDA	3.50E+03	MDA	7.23E+03
Th-232	7.16E-07	DL	7.16E-01	DL	1.48E+00
U-233	6.31E-02	DL	6.31E+04	DL	1.30E+05
U-234	4.08E-02	DL	4.08E+04	DL	8.43E+04
U-235	8.87E-04	1.77E-04	8.87E+02	1.77E+02	1.83E+03
U-236	9.23E-04	1.85E-04	9.23E+02	1.85E+02	1.91E+03
U-238	2.54E-02	5.08E-03	2.54E+04	5.08E+03	5.25E+04
TRU	1.47E+00		1.47E+06		3.03E+06
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					
TBP = Tributyl Phosphate					
BAH = Branched Aliphatic Hydrocarbons					

Tank S19					
Sample #	3-104695				
Customer ID	98018-19-O				
Description	Original Sample				
Analyte	Concent.	Units			
Total Suspended Solids	0.12	wt %			

Sample #	3-104922				
Customer ID	98018-19-O				
Description	Filtered Top Sample				
Total Volume in Tank	2170.555 liters	(Assumes all liquid is aqueous)			
Analyte	Concent.	Units			
Al	22	mg/kg			
Sb	<8	mg/kg			
As	<0.091	mg/kg			
Ba	1	mg/kg			
Be	1	mg/kg			
B	18	mg/kg			
Cd	1	mg/kg			
Cl-	298	mg/L			
Cr	3	mg/kg			
Cu	<=3	mg/kg			
CN-	<10	ug/L			
F-	<20	mg/L			
Fe	16	mg/kg			
Pb	4	mg/kg			
Mn	8	mg/kg			
Hg	0.24	mg/kg			
Ni	9.8	mg/L			
NO3-	94	mg/L			
PO4---	1350	mg/L			
Se	<0.91	mg/L			
Ag	<3	mg/kg			
Na	38206	mg/kg			
Ti	<=4	mg/kg			
U	14237	mg/kg			
Zn	2	mg/kg			
Any known VOA's, >20 mg/L	No	N/A			
n-Butanol	<1.1	mg/L			
Phenol/phenoxide/nitrophenols	<50	mg/L			
SemiVOA	Required	N/A			
TBP	3.4	%	34000	mg/L	
Other	<50	mg/L			
Total Inorganic Carbon	4460	mg/L			
Total Organic Carbon	79390	mg/L			
Volatile Organics	Required	N/A			
PCB's	<50	mg/L			
Kepone	<50	mg/L			
p-Nitrophenol	<50	mg/L			
Benzene	0.067 (j)	mg/L			
MEK	2.4	mg/L			
PCE	<0.140	mg/L			
Acidity	<0.02	Molarity			
Ash Content	4.06	%			
Boiling Pt.	159.8	degrees F			
Flash Pt.	198	degrees F			

Freezing Pt.	<32	degrees F			
Free Liquid?	Yes	N/A			
pH	10.02	N/A			
Density	1.094	g/cm3			
TDS	8.30	%			
Water, wt%	74.4	%			
					Aqueous
					Phase
					Total
	Activity	Error	Activity	Error	Activity
	uCi/mL	uCi/mL	pCi/L	pCi/L	uCi
Total Am	1.04E-03	UL	1.04E+06	UL	2.26E+03
Am-241	9.05E-04	1.12E-04	9.05E+05	1.12E+05	1.96E+03
Am-243	1.34E-04	UL	1.34E+05	UL	2.91E+02
Ce-144	1.98E-04	MDA	1.98E+05	MDA	4.30E+02
Total Cm	8.11E-03	1.62E-02	8.11E+06	1.62E+07	1.76E+04
Cm-244	8.11E-03	1.62E-02	8.11E+06	1.62E+07	1.76E+04
Cm-245	7.88E-04	DL	7.88E+05	DL	1.71E+03
Cm-246	1.41E-03	DL	1.41E+06	DL	3.06E+03
Co-60	3.35E-04	1.27E-05	3.35E+05	1.27E+04	7.27E+02
Cs-134	1.37E-05	MDA	1.37E+04	MDA	2.97E+01
Cs-137	5.86E-02	2.00E-03	5.86E+07	2.00E+06	1.27E+05
Eu-154	7.48E-04	2.72E-05	7.48E+05	2.72E+04	1.62E+03
Eu-155	8.96E-05	4.26E-05	8.96E+04	4.26E+04	1.94E+02
GA	2.03E+00		2.03E+09	0.00E+00	4.41E+06
H-3	1.77E-03	1.77E-04	1.77E+06	1.77E+05	3.84E+03
GB	4.95E-01	1.98E-01	4.95E+08	1.98E+08	1.07E+06
Np-237	2.26E-04	1.13E-04	2.26E+05	1.13E+05	4.91E+02
Pb-212	1.19E-04	4.06E-05	1.19E+05	4.06E+04	2.58E+02
Total Pu	2.55E+00	2.55E-01	2.55E+09	2.55E+08	5.52E+06
Pu-238	2.02E+00	2.02E-01	2.02E+09	2.02E+08	4.38E+06
Pu-239	5.95E-03	2.97E-03	5.95E+06	2.97E+06	1.29E+04
Pu-240	1.43E-03	7.14E-04	1.43E+06	7.14E+05	3.10E+03
Pu-241	5.18E-01	1.55E-01	5.18E+08	1.55E+08	1.12E+06
Pu-242	1.81E-05	DL	1.81E+04	DL	3.93E+01
Ru-106	3.38E-04	MDA	3.38E+05	MDA	7.34E+02
Sb-125	3.35E-04	6.54E-05	3.35E+05	6.54E+04	7.27E+02
Se-79	3.60E-04	MDA	3.60E+05	MDA	7.81E+02
Sn-126	6.94E-05	MDA	6.94E+04	MDA	1.51E+02
Sr-90	3.15E-02	9.02E-03	3.15E+07	9.02E+06	6.84E+04
Tc-99	1.35E-03	9.00E-04	1.35E+06	9.00E+05	2.93E+03
Th-232	9.01E-08	1.80E-08	9.01E+01	1.80E+01	1.96E-01
Th-234	3.98E-03	1.68E-03	3.98E+06	1.68E+06	8.64E+03
Ti-208	4.55E-05	2.65E-05	4.55E+04	2.65E+04	9.88E+01
U-233	2.55E-03	5.10E-04	2.55E+06	5.10E+05	5.53E+03
U-234	1.59E-03	3.19E-04	1.59E+06	3.19E+05	3.45E+03
U-235	3.05E-05	6.11E-06	3.05E+04	6.11E+03	6.62E+01
U-236	3.08E-05	6.16E-06	3.08E+04	6.16E+03	6.69E+01
U-238	7.66E-03	1.20E-03	7.66E+06	1.20E+06	1.66E+04
TRU	2.03E+00		2.03E+09		4.40E+06

MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					
a = compound present but below quantitation limit					
j = value is less than the method's PQL for this dilution but above the					
IDL, and detected in the chromatographic data					
TBP = Tributyl Phosphate					

Sample #	3-104932				
Customer ID	98018-19-O				
Description	Filtered Solids				
Estimated Solids	2849.5 g	(based upon TSS, volume and density of liquid phase)			
					Suspended Solids
					Total
Analyte	Activity uCi/g	Error uCi/g	Activity pCi/g	Error pCi/g	Activity uCi
Total Am	4.69E+00	4.55E-01	4.69E+06	4.55E+05	1.33E+04
Am-241	4.14E+00	4.43E-01	4.14E+06	4.43E+05	1.18E+04
Am-243	5.45E-01	1.05E-01	5.45E+05	1.05E+05	1.55E+03
Ce-144	3.33E-01	MDA	3.33E+05	MDA	9.49E+02
Total Cm	1.18E+02	1.18E+01	1.18E+08	1.18E+07	3.36E+05
Cm-244	1.18E+02	1.18E+01	1.18E+08	1.18E+07	3.36E+05
Cm-245	9.50E-01	DL	9.50E+05	DL	2.71E+03
Cm-246	1.69E+00	DL	1.69E+06	DL	4.82E+03
Co-60	6.58E-02	MDA	6.58E+04	MDA	1.87E+02
Cs-134	7.21E-02	MDA	7.21E+04	MDA	2.05E+02
Cs-137	5.72E-01	9.60E-02	5.72E+05	9.60E+04	1.63E+03
Eu-154	2.73E+00	2.53E-01	2.73E+06	2.53E+05	7.78E+03
GA	2.22E+02	2.22E+01	2.22E+08	2.22E+07	6.33E+05
H-3	5.81E-02	MDA	5.81E+04	MDA	1.66E+02
GB	1.72E+01	6.86E+00	1.72E+07	6.86E+06	4.90E+04
Np-237	9.10E-01	3.42E-01	9.10E+05	3.42E+05	2.59E+03
Total Pu	1.26E+02	1.30E+01	1.26E+08	1.30E+07	3.58E+05
Pu-238	9.19E+01	9.19E+00	9.19E+07	9.19E+06	2.62E+05
Pu-239	2.21E+00	4.41E-01	2.21E+06	4.41E+05	6.30E+03
Pu-240	2.92E+00	5.85E-01	2.92E+06	5.85E+05	8.32E+03
Pu-241	2.86E+01	9.15E+00	2.86E+07	9.15E+06	8.15E+04
Pu-242	2.18E-02	DL	2.18E+04	DL	6.21E+01
Ru-106	8.47E-01	MDA	8.47E+05	MDA	2.41E+03
Sb-125	1.93E-01	MDA	1.93E+05	MDA	5.50E+02
Sn-126	2.13E-01	MDA	2.13E+05	MDA	6.07E+02
Th-232	2.20E-04	4.41E-05	2.20E+02	4.41E+01	6.27E-01
U-233	3.93E-02	1.57E-02	3.93E+04	1.57E+04	1.12E+02
U-234	6.85E-02	1.37E-02	6.85E+04	1.37E+04	1.95E+02
U-235	1.90E-03	3.79E-04	1.90E+03	3.79E+02	5.41E+00
U-236	1.59E-03	3.19E-04	1.59E+03	3.19E+02	4.53E+00
U-238	4.59E-02	9.19E-03	4.59E+04	9.19E+03	1.31E+02
TRU	1.03E+02		1.03E+08		2.92E+05
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					

Sample #	3-104696				
Customer ID	98018-19-A				
Description	Original Aqueous Sample				
Analyte	Concent.	Units			
Total Suspended Solids	0.11	wt %			

Sample #	3-104916				
Customer ID	98018-19-A				
Description	Filtered Aqueous Sample				
Total Volume in Tank	2170.555	liters	(Assumes all liquid is aqueous)		
Analyte	Concent.	Units			
Al	<18	mg/kg			
Sb	<8	mg/kg			
As	<0.091	mg/kg			
Ba	1	mg/kg			
Be	1	mg/kg			
B	17	mg/kg			
Cd	1	mg/kg			
Cl-	273	mg/L			
Cr	<2	mg/kg			
Cu	<3	mg/kg			
CN-	<10	ug/L			
F-	<2	mg/L			
Fe	5	mg/kg			
Pb	<=3	mg/kg			
Mn	8	mg/kg			
Hg	0.41	mg/kg			
Ni	9.9	mg/L			
NO3-	81	mg/L			
PO4---	1307	mg/L			
Se	<0.91	mg/L			
Ag	<3	mg/kg			
Na	37723	mg/kg			
Tl	<4	mg/kg			
U	13830	mg/kg			
Zn	2	mg/kg			
Any known VOA's, >20 mg/L	No	N/A			
n-Butanol	2.2	mg/L			
Phenol/phenoxide/nitrophenols	<50	mg/L			
SemiVOA	Required	N/A			
TBP	3.4	%	34000	mg/L	
AH	0.29	%	2900	mg/L	
AAH	0.020	%	200	mg/L	
OAH	0.15	%	1500	mg/L	
Other	<50	mg/L			
Total Inorganic Carbon	4821	mg/L			
Total Organic Carbon	78679	mg/L			
Volatile Organics	Required	N/A			
PCB's	<50	mg/L			
Kepone	<50	mg/L			
p-Nitrophenol	<50	mg/L			
Benzene	0.047 (j)	mg/L			
MEK	2.8	mg/L			
PCE	0.029 (j)	mg/L			
Acidity	<0.02	Molarity			

Ash Content	4.31	%			
Boiling Pt.	159.8	degrees F			
Flash Pt.	>212	degrees F			
Freezing Pt.	<32	degrees F			
Free Liquid?	Yes	N/A			
pH	10.16	N/A			
Density	1.097	g/cm3			
TDS	8.88	%			
Water, wt%	85.9	%			
					Aqueous
					Phase
					Total
	Activity	Error	Activity	Error	Activity
	uCi/mL	uCi/mL	pCi/L	pCi/L	uCi
Total Am	1.04E-03	UL	1.04E+06	UL	2.26E+03
Am-241	9.05E-04	1.08E-04	9.05E+05	1.08E+05	1.96E+03
Am-243	1.36E-04	UL	1.36E+05	UL	2.95E+02
Bi-212	7.79E-05	6.41E-05	7.79E+04	6.41E+04	1.69E+02
Ce-144	1.96E-04	MDA	1.96E+05	MDA	4.25E+02
Total Cm	8.15E-03	1.63E-02	8.15E+06	1.63E+07	1.77E+04
Cm-244	8.15E-03	1.63E-02	8.15E+06	1.63E+07	1.77E+04
Cm-245	7.88E-04	DL	7.88E+05	DL	1.71E+03
Cm-246	1.41E-03	DL	1.41E+06	DL	3.06E+03
Co-60	3.20E-04	1.23E-05	3.20E+05	1.23E+04	6.95E+02
Cs-134	1.33E-05	MDA	1.33E+04	MDA	2.89E+01
Cs-137	5.81E-02	1.99E-03	5.81E+07	1.99E+06	1.26E+05
Eu-154	7.16E-04	2.76E-05	7.16E+05	2.76E+04	1.55E+03
Eu-155	6.76E-05	4.55E-05	6.76E+04	4.55E+04	1.47E+02
GA	2.04E+00	4.08E-01	2.04E+09	4.08E+08	4.43E+06
H-3	1.47E-03	1.47E-04	1.47E+06	1.47E+05	3.19E+03
GB	3.50E-01	1.40E-01	3.50E+08	1.40E+08	7.60E+05
Np-237	2.49E-04	1.24E-04	2.49E+05	1.24E+05	5.40E+02
Pb-212	6.98E-05	3.69E-05	6.98E+04	3.69E+04	1.52E+02
Total Pu	2.56E+00	2.57E-01	2.56E+09	2.57E+08	5.56E+06
Pu-238	2.03E+00	2.03E-01	2.03E+09	2.03E+08	4.41E+06
Pu-239	4.77E-03	2.39E-03	4.77E+06	2.39E+06	1.04E+04
Pu-240	1.57E-03	7.84E-04	1.57E+06	7.84E+05	3.41E+03
Pu-241	5.23E-01	1.57E-01	5.23E+08	1.57E+08	1.14E+06
Pu-242	1.81E-05	DL	1.81E+04	DL	3.93E+01
Pm-147	2.25E-03	MDA	2.25E+06	MDA	4.88E+03
Ru-106	3.32E-04	MDA	3.32E+05	MDA	7.21E+02
Sb-125	2.94E-04	6.45E-05	2.94E+05	6.45E+04	6.38E+02
Se-79	2.70E-04	MDA	2.70E+05	MDA	5.86E+02
Sn-126	6.94E-05	MDA	6.94E+04	MDA	1.51E+02
Sr-90	3.33E-02	3.60E-03	3.33E+07	3.60E+06	7.23E+04
Tc-99	4.68E-04	9.93E-05	4.68E+05	9.93E+04	1.02E+03
Th-232	1.13E-07	2.26E-08	1.13E+02	2.26E+01	2.45E-01
Th-234	4.18E-03	1.75E-03	4.18E+06	1.75E+06	9.07E+03
Tl-208	3.87E-05	2.23E-05	3.87E+04	2.23E+04	8.40E+01
U-233	2.33E-03	4.66E-04	2.33E+06	4.66E+05	5.06E+03

U-234	1.64E-03	3.28E-04	1.64E+06	3.28E+05	3.56E+03
U-235	3.08E-05	6.15E-06	3.08E+04	6.15E+03	6.69E+01
U-236	2.97E-05	5.94E-06	2.97E+04	5.94E+03	6.45E+01
U-238	6.26E-03	1.05E-03	6.26E+06	1.05E+06	1.36E+04
TRU	2.04E+00		2.04E+09		4.42E+06
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					
a = compound present but below quantitation limit					
j = value is less than the method's PQL for this dilution but above the					
TBP = Tributyl Phosphate					
IDL, and detected in the chromatographic data					
AH = Aliphatic Hyrdocarbons					
AAH = Alkylated Aromatic hydrocarbons					
OAH = Oxygenated Aliphatic Hydrocarbons					

Sample #	3-104936				
Customer ID	98018-19-A				
Description	Filtered Solids				
Estimated Solids	2619.21 g		(based upon TSS, volume and density of liquid phase)		
					Suspended Solids
					Total
Analyte	Activity uCi/g	Error uCi/g	Activity pCi/g	Error pCi/g	Activity uCi
Total Am	1.01E+00	2.22E-01	1.01E+06	2.22E+05	2.65E+03
Am-241	1.01E+00	2.22E-01	1.01E+06	2.22E+05	2.65E+03
Am-243	1.26E+00	DL	1.26E+06	DL	3.30E+03
Ce-144	2.83E-01	MDA	2.83E+05	MDA	7.41E+02
Total Cm	3.03E+01	3.03E+00	3.03E+07	3.03E+06	7.94E+04
Cm-244	3.03E+01	3.03E+00	3.03E+07	3.03E+06	7.94E+04
Cm-245	1.08E+00	DL	1.08E+06	DL	2.83E+03
Cm-246	1.92E+00	DL	1.92E+06	DL	5.03E+03
Co-60	6.17E-02	MDA	6.17E+04	MDA	1.62E+02
Cs-134	6.44E-02	MDA	6.44E+04	MDA	1.69E+02
Cs-137	2.57E-01	7.13E-02	2.57E+05	7.13E+04	6.73E+02
Eu-154	5.90E-01	1.50E-01	5.90E+05	1.50E+05	1.55E+03
GA	5.63E+01	5.63E+00	5.63E+07	5.63E+06	1.47E+05
H-3	6.26E-02	MDA	6.26E+04	MDA	1.64E+02
GB	1.01E+01	4.04E+00	1.01E+07	4.04E+06	2.65E+04
Np-237	1.40E-02	2.79E-03	1.40E+04	2.79E+03	3.67E+01
Total Pu	3.72E+01	6.67E+00	3.72E+07	6.67E+06	9.74E+04
Pu-238	2.29E+01	2.29E+00	2.29E+07	2.29E+06	6.00E+04
Pu-239	6.94E-01	2.77E-01	6.94E+05	2.77E+05	1.82E+03
Pu-240	1.43E+00	DL	1.43E+06	DL	3.75E+03
Pu-241	1.36E+01	6.26E+00	1.36E+07	6.26E+06	3.56E+04
Pu-242	2.47E-02	DL	2.47E+04	DL	6.47E+01
Ru-106	5.09E-01	MDA	5.09E+05	MDA	1.33E+03
Sb-125	1.68E-01	MDA	1.68E+05	MDA	4.40E+02
Sn-126	1.18E-01	MDA	1.18E+05	MDA	3.09E+02
Th-232	4.86E-05	9.73E-06	4.86E+01	9.73E+00	1.27E-01
U-233	4.48E-02	1.79E-02	4.48E+04	1.79E+04	1.17E+02
U-234	4.55E-02	1.82E-02	4.55E+04	1.82E+04	1.19E+02
U-235	1.06E-03	2.12E-04	1.06E+03	2.12E+02	2.78E+00
U-236	9.50E-04	1.90E-04	9.50E+02	1.90E+02	2.49E+00
U-238	2.64E-02	5.28E-03	2.64E+04	5.28E+03	6.91E+01
TRU	2.46E+01		2.46E+07		6.45E+04
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					

Sample #	3-117929				
Customer ID	98351-19				
Description	Sludge				
Total Mass in Tank	203655.2	grams			
Analyte	Concent.	Units			
As	<2	mg/kg			
Ba	57	mg/kg			
Cd	6	mg/kg			
Cr	52	mg/kg			
Pb	433	mg/kg			
Hg	417	mg/kg			
Se	<23	mg/kg			
Ag	9	mg/kg			
					Sludge
					Phase
					Total
	Activity	Error	Activity	Error	Activity
	uCi/g	uCi/g	pCi/g	pCi/g	uCi
Total Am	3.86E+00	6.89E-01	3.86E+06	6.89E+05	7.86E+05
Am-241	3.41E+00	6.83E-01	3.41E+06	6.83E+05	6.94E+05
Am-243	4.49E-01	8.97E-02	4.49E+05	8.97E+04	9.14E+04
Ce-144	5.27E-02	MDA	5.27E+04	MDA	1.07E+04
Total Cm	7.57E+01	1.51E+01	7.57E+07	1.51E+07	1.54E+07
Cm-244	7.57E+01	1.51E+01	7.57E+07	1.51E+07	1.54E+07
Cm-245	1.19E-01	DL	1.19E+05	DL	2.42E+04
Cm-246	2.13E-01	DL	2.13E+05	DL	4.34E+04
Co-60	8.96E-03	MDA	8.96E+03	MDA	1.82E+03
Cs-134	1.22E-02	MDA	1.22E+04	MDA	2.48E+03
Cs-137	2.80E-01	2.07E-02	2.80E+05	2.07E+04	5.70E+04
Eu-154	1.49E+00	4.17E-02	1.49E+06	4.17E+04	3.03E+05
GA	7.75E+01	1.55E+01	7.75E+07	1.55E+07	1.58E+07
Nb-94	3.32E-02	MDA	3.32E+04	MDA	6.76E+03
GB	1.25E+01	2.50E+00	1.25E+07	2.50E+06	2.55E+06
Np-237	4.77E-03	9.55E-04	4.77E+03	9.55E+02	9.71E+02
Total Pu	3.15E+01	9.96E+00	3.15E+07	9.96E+06	6.42E+06
Pu-238	2.40E+01	9.60E+00	2.40E+07	9.60E+06	4.89E+06
Pu-239	9.68E-01	1.94E-01	9.68E+05	1.94E+05	1.97E+05
Pu-240	1.58E-01	DL	1.58E+05	DL	3.22E+04
Pu-241	6.58E+00	2.63E+00	6.58E+06	2.63E+06	1.34E+06
Pu-242	2.73E-03	DL	2.73E+03	DL	5.56E+02
Ru-106	1.22E-01	MDA	1.22E+05	MDA	2.48E+04
Sb-125	3.58E-02	MDA	3.58E+04	MDA	7.29E+03
Sn-126	3.54E-02	MDA	3.54E+04	MDA	7.21E+03
Th-232	1.94E-05	3.88E-06	1.94E+01	3.88E+00	3.95E+00
U-233	2.06E-01	4.12E-02	2.06E+05	4.12E+04	4.20E+04
U-234	1.32E-01	2.63E-02	1.32E+05	2.63E+04	2.69E+04
U-235	2.90E-03	5.80E-04	2.90E+03	5.80E+02	5.91E+02
U-236	3.04E-03	6.08E-04	3.04E+03	6.08E+02	6.19E+02
U-238	4.13E-02	8.25E-03	4.13E+04	8.25E+03	8.41E+03

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TRU	2.88E+01		2.88E+07		5.87E+06
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					

Tank S20					
Sample #	3-104694				
Customer ID	98018-20-T				
Description	Original Organic Sample				
Analyte	Concent.	Units			
Total Suspended Solids	0.18	wt %			

Sample #	3-104926			
Customer ID	98018-20-T			
Description	Filtered Top Sample (Organic)			
Total Volume in Tank	7551.897	liters	(Assumes all liquid is organic)	
Analyte	Concent.	Units		
Al	<4	mg/kg		
Sb	<4	mg/kg		
As	<0.12	mg/kg		
Ba	<1	mg/kg		
Be	<1	mg/kg		
B	<1	mg/kg		
Cd	<1	mg/kg		
Cl-	<2	mg/L		
Cr	<1	mg/kg		
Cu	25	mg/kg		
CN-	<10	ug/L		
F-	<20	mg/L		
Fe	5	mg/kg		
Pb	<2	mg/kg		
Mn	<1	mg/kg		
Hg	11.61	mg/kg		
Ni	<5.7	mg/L		
NO3-	<10	mg/L		
PO4---	<10	mg/L		
Se	<1.2	mg/L		
Ag	<1	mg/kg		
Na	132	mg/kg		
Tl	<4	mg/kg		
U	<41	mg/kg		
Zn	6	mg/kg		
Any known VOA's, >20 mg/L	No	N/A		
n-Butanol	<1.1	mg/L		
Phenol/phenoxide/nitrophenols	<50	mg/L		
SemiVOA	Required	N/A		
TBP	>90	%	>900000	mg/L
Paraffins	<10	%	<100000	mg/L
Other	<50	mg/L		
Total Inorganic Carbon	38	mg/L		
Total Organic Carbon	21073	mg/L		
Volatile Organics	Required	N/A		
PCB's	<50	mg/L		
Kepone	<50	mg/L		
p-Nitrophenol	<50	mg/L		
Benzene	0.370 (j)	mg/L		
MEK	7.3	mg/L		
PCE	0.054 (j)	mg/L		
Acidity	<0.02	Molarity		
Ash Content	1.35	%		
Boiling Pt.	159.8	degrees F		

Flash Pt.	180.9	degrees F			
Freezing Pt.	<32	degrees F			
Free Liquid?	Yes	N/A			
pH	8.538	N/A			
Density	0.818	g/cm3			
TDS	5.89	%			
Water, wt%	0.2	%			
					Upper
					Limit
					Organic
					Phase
					Total
	Activity	Error	Activity	Error	Activity
	uCi/mL	uCi/mL	pCi/L	pCi/L	uCi
Total Am	6.40E-04	4.17E-05	6.40E+05	4.17E+04	4.83E+03
Am-241	5.77E-04	4.12E-05	5.77E+05	4.12E+04	4.36E+03
Am-243	6.26E-05	6.51E-06	6.26E+04	6.51E+03	4.73E+02
Ce-144	2.62E-05	MDA	2.62E+04	MDA	1.98E+02
Total Cm	1.07E-02	1.73E-03	1.07E+07	1.73E+06	8.08E+04
Cm-244	1.07E-02	1.73E-03	1.07E+07	1.73E+06	8.08E+04
Cm-245	7.88E-04	DL	7.88E+05	DL	5.95E+03
Cm-246	1.41E-03	DL	1.41E+06	DL	1.06E+04
Co-60	4.45E-06	MDA	4.45E+03	MDA	3.36E+01
Cs-134	5.86E-06	MDA	5.86E+03	MDA	4.43E+01
Cs-137	7.93E-06	MDA	7.93E+03	MDA	5.99E+01
Eu-154	4.77E-04	1.64E-05	4.77E+05	1.64E+04	3.60E+03
Eu-155	4.82E-05	2.43E-05	4.82E+04	2.43E+04	3.64E+02
GA	1.27E-02		1.27E+07	0.00E+00	9.59E+04
GB	1.02E-01	4.07E-02	1.02E+08	4.07E+07	7.70E+05
Np-237	1.20E-05	5.99E-06	1.20E+04	5.99E+03	9.06E+01
Total Pu	2.20E-03	UL	2.20E+06	UL	1.66E+04
Pu-238	1.41E-03	7.50E-04	1.41E+06	7.50E+05	1.06E+04
Pu-239	3.10E-04	1.55E-04	3.10E+05	1.55E+05	2.34E+03
Pu-240	1.05E-03	MDA	1.05E+06	MDA	7.93E+03
Pu-241	4.77E-04	UL	4.77E+05	UL	3.60E+03
Pu-242	1.81E-05	MDA	1.81E+04	MDA	1.37E+02
Pm-147	2.70E-03	MDA	2.70E+06	MDA	2.04E+04
Ru-106	5.95E-05	MDA	5.95E+04	MDA	4.49E+02
Sb-125	1.61E-05	MDA	1.61E+04	MDA	1.22E+02
Se-79	1.80E-04	MDA	1.80E+05	MDA	1.36E+03
Sn-126	1.72E-05	MDA	1.72E+04	MDA	1.30E+02
Sr-90	1.71E-03	2.70E-04	1.71E+06	2.70E+05	1.29E+04
Tc-99	7.78E-04	7.77E-04	7.78E+05	7.77E+05	5.88E+03
Th-232	5.05E-10	MDA	5.05E-01	MDA	3.81E-03
U-233	1.62E-04	3.24E-05	1.62E+05	3.24E+04	1.22E+03
U-234	1.13E-04	2.25E-05	1.13E+05	2.25E+04	8.53E+02
U-235	2.11E-06	4.22E-07	2.11E+03	4.22E+02	1.59E+01
U-236	2.15E-06	4.31E-07	2.15E+03	4.31E+02	1.62E+01
U-238	9.23E-06	1.85E-06	9.23E+03	1.85E+03	6.97E+01
TRU	2.37E-03		2.37E+06		1.79E+04

MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					
a = compound present but below quantitation limit					
j = value is less than the method's PQL for this dilution but above the					
IDL, and detected in the chromatographic data					
TBP = Tributyl Phosphate					

Sample #	3-104928	Alternative Calculation			
Customer ID	98018-20-T				
Description	Filtered Solids				
Estimated Solids	11119.41 g	(based upon TSS, volume and			
Est. Solids on Filter	1.472E-02 g	density of liquid phase)			
					Suspended
					Solids
					Upper
					Limit
					Total
	Activity	Error	Activity	Error	Activity
Analyte	uCi/filter	uCi/filter	pCi/g	pCi/g	uCi (1)
Total Am	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Am-241	2.52E-03	MDA	1.71E+05	MDA	1.90E+03
Am-243	1.46E-02	DL	9.92E+05	DL	1.10E+04
Ce-144	2.52E-03	MDA	1.71E+05	MDA	1.90E+03
Total Cm	1.85E-02	1.85E-03	1.26E+06	1.26E+05	1.40E+04
Cm-244	1.85E-02	1.85E-03	1.26E+06	1.26E+05	1.40E+04
Cm-245	1.25E-02	DL	8.49E+05	DL	9.44E+03
Cm-246	2.23E-02	DL	1.51E+06	DL	1.68E+04
Co-60	7.14E-04	MDA	4.85E+04	MDA	5.39E+02
Cs-134	4.71E-04	MDA	3.20E+04	MDA	3.56E+02
Cs-137	1.02E-03	MDA	6.93E+04	MDA	7.71E+02
Eu-154	1.00E-03	MDA	6.79E+04	MDA	7.55E+02
GA	3.38E-02	3.38E-03	2.30E+06	2.30E+05	2.55E+04
H-3	7.27E-04	MDA	4.94E+04	MDA	5.49E+02
GB	1.76E-02	7.05E-03	1.20E+06	4.79E+05	1.33E+04
Np-237	5.16E-05	DL	3.51E+03	DL	3.90E+01
Total Pu	1.52E-02	8.03E-03	1.03E+06	5.46E+05	1.14E+04
Pu-238	1.27E-02	6.36E-03	8.63E+05	4.32E+05	9.59E+03
Pu-239	4.53E-03	DL	3.08E+05	DL	3.42E+03
Pu-240	1.66E-02	DL	1.13E+06	DL	1.25E+04
Pu-241	2.45E-03	4.91E-03	1.66E+05	3.34E+05	1.85E+03
Pu-242	2.86E-04	DL	1.94E+04	DL	2.16E+02
Ru-106	5.11E-03	MDA	3.47E+05	MDA	3.86E+03
Sb-125	1.35E-03	MDA	9.17E+04	MDA	1.02E+03
Sn-126	8.92E-04	MDA	6.06E+04	MDA	6.74E+02
Th-232	4.86E-08	9.73E-09	3.30E+00	6.61E-01	3.67E-02
U-233	4.46E-04	DL	3.03E+04	DL	3.37E+02
U-234	4.53E-04	DL	3.08E+04	DL	3.42E+02
U-235	3.36E-07	1.34E-07	2.28E+01	9.10E+00	2.54E-01
U-236	4.73E-06	DL	3.21E+02	DL	3.57E+00
U-238	8.90E-06	1.78E-06	6.05E+02	1.21E+02	6.72E+00
TRU	1.27E-02		8.63E+05		9.59E+03
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
No measureable mass was present on the filter, therefore the					
activity is reported in units of activity/filter.					

(1) The total activity calculation is based upon a filtered volume of 10 mL,			
a density of 0.818 g/mL, and 0.18 wt% TSS.			

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Sample #	3-104693				
Customer ID	98018-20-B				
Description	Original Aqueous Sample				
Analyte	Concent.	Units			
Total Suspended Solids	0.02	wt %			

Sample #	3-104930			
Customer ID	98018-20-B			
Description	Filtered Aqueous Sample			
Total Volume in Tank	7551.897	liters	(Assumes all liquid is aqueous)	
Analyte	Concent.	Units		
Al	29	mg/kg		
Sb	<2	mg/kg		
As	<0.095	mg/kg		
Ba	<1	mg/kg		
Be	<1	mg/kg		
B	5	mg/kg		
Cd	<1	mg/kg		
Cl-	201	mg/L		
Cr	<1	mg/kg		
Cu	35	mg/kg		
CN-	<10	ug/L		
F-	<20	mg/L		
Fe	2	mg/kg		
Pb	<1	mg/kg		
Mn	1	mg/kg		
Hg	1.82	mg/kg		
Ni	2.1	mg/L		
NO3-	729	mg/L		
PO4---	560	mg/L		
Se	<0.95	mg/L		
Ag	<1	mg/kg		
Na	21763	mg/kg		
Tl	<=1	mg/kg		
U	4234	mg/kg		
Zn	1	mg/kg		
Any known VOA's, >20 mg/L	No	N/A		
n-Butanol	2.1	mg/L		
Phenol/phenoxide/nitrophenols	<50	mg/L		
SemiVOA	Required	N/A		
TBP	1.4	%	14000	mg/L
Other	<50	mg/L		
Total Inorganic Carbon	2783	mg/L		
Total Organic Carbon	38247	mg/L		
Volatile Organics	Required	N/A		
PCB's	<50	mg/L		
Kepone	<50	mg/L		
p-Nitrophenol	<50	mg/L		
Benzene	<0.140	mg/L		
MEK	0.650	mg/L		
PCE	0.208	mg/L		
Acidity	<0.02	Molarity		
Ash Content	0.66	%		
Boiling Pt.	159.8	degrees F		
Flash Pt.	201.9	degrees F		

Freezing Pt.	<32	degrees F			
Free Liquid?	Yes	N/A			
pH	10.41	N/A			
Density	1.051	g/cm3			
TDS	1.73	%			
Water, wt%	89.3	%			
					Upper
					Limit
					Aqueous
					Phase
					Total
	Activity	Error	Activity	Error	Activity
	uCi/mL	uCi/mL	pCi/L	pCi/L	uCi
Total Am	1.55E-04	3.91E-05	1.55E+05	3.91E+04	1.17E+03
Am-241	1.55E-04	3.91E-05	1.55E+05	3.91E+04	1.17E+03
Am-243	9.19E-04	DL	9.19E+05	DL	6.94E+03
Ce-144	1.01E-04	MDA	1.01E+05	MDA	7.63E+02
Total Cm	4.28E-02	2.14E-02	4.28E+07	2.14E+07	3.23E+05
Cm-244	4.28E-02	2.14E-02	4.28E+07	2.14E+07	3.23E+05
Cm-245	7.88E-04	DL	7.88E+05	DL	5.95E+03
Cm-246	1.41E-03	DL	1.41E+06	DL	1.06E+04
Co-60	7.70E-06	3.77E-06	7.70E+03	3.77E+03	5.81E+01
Cs-134	7.43E-06	MDA	7.43E+03	MDA	5.61E+01
Cs-137	1.56E-02	5.39E-04	1.56E+07	5.39E+05	1.18E+05
Eu-154	2.40E-04	1.28E-05	2.40E+05	1.28E+04	1.81E+03
Eu-155	3.39E-05	2.85E-05	3.39E+04	2.85E+04	2.56E+02
GA	6.04E-01		6.04E+08	0.00E+00	4.56E+06
H-3	1.35E-03	1.35E-04	1.35E+06	1.35E+05	1.02E+04
GB	4.64E-01	1.86E-01	4.64E+08	1.86E+08	3.50E+06
Np-237	2.45E-04	1.22E-04	2.45E+05	1.22E+05	1.85E+03
Total Pu	7.18E-01	7.00E-02	7.18E+08	7.00E+07	5.42E+06
Pu-238	5.59E-01	5.59E-02	5.59E+08	5.59E+07	4.22E+06
Pu-239	1.21E-02	6.06E-03	1.21E+07	6.06E+06	9.14E+04
Pu-240	7.52E-03	3.76E-03	7.52E+06	3.76E+06	5.68E+04
Pu-241	1.39E-01	4.16E-02	1.39E+08	4.16E+07	1.05E+06
Pu-242	1.81E-05	DL	1.81E+04	DL	1.37E+02
Pm-147	4.05E-04	MDA	4.05E+05	MDA	3.06E+03
Ru-106	1.77E-04	MDA	1.77E+05	MDA	1.34E+03
Sb-125	8.83E-05	MDA	8.83E+04	MDA	6.67E+02
Se-79	4.50E-04	MDA	4.50E+05	MDA	3.40E+03
Sn-126	3.45E-05	MDA	3.45E+04	MDA	2.61E+02
Tc-99	6.89E-04	2.52E-04	6.89E+05	2.52E+05	5.20E+03
Th-232	1.57E-06	3.14E-07	1.57E+03	3.14E+02	1.19E+01
U-233	1.12E-02	2.24E-03	1.12E+07	2.24E+06	8.46E+04
U-234	3.26E-03	6.51E-04	3.26E+06	6.51E+05	2.46E+04
U-235	4.59E-05	9.19E-06	4.59E+04	9.19E+03	3.47E+02
U-236	5.32E-05	1.06E-05	5.32E+04	1.06E+04	4.02E+02
U-238	1.53E-03	3.05E-04	1.53E+06	3.05E+05	1.16E+04
TRU	5.79E-01		5.79E+08		4.37E+06

MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					
a = compound present by below quantitation limit					
TBP = Tributyl Phosphate					

Sample #	3-104924				
Customer ID	98018-20-B				
Description	Filtered Solids				
Estimated Solids	1587.41 g		(based upon TSS, volume and density of liquid phase)		
					Suspended Solids
					Upper Limit
					Total
Analyte	Activity uCi/g	Error uCi/g	Activity pCi/g	Error pCi/g	Activity uCi
Total Am	2.01E+00	8.52E-01	2.01E+06	8.52E+05	3.19E+03
Am-241	2.01E+00	8.52E-01	2.01E+06	8.52E+05	3.19E+03
Am-243	6.62E+00	DL	6.62E+06	DL	1.05E+04
Ce-144	1.47E+00	MDA	1.47E+06	MDA	2.33E+03
Total Cm	8.06E+01	8.06E+00	8.06E+07	8.06E+06	1.28E+05
Cm-244	8.06E+01	8.06E+00	8.06E+07	8.06E+06	1.28E+05
Cm-245	5.27E+00	DL	5.27E+06	DL	8.37E+03
Cm-246	1.01E+01	DL	1.01E+07	DL	1.60E+04
Co-60	3.63E-01	MDA	3.63E+05	MDA	5.76E+02
Cs-134	3.23E-01	MDA	3.23E+05	MDA	5.13E+02
Cs-137	2.08E+00	4.46E-01	2.08E+06	4.46E+05	3.30E+03
Eu-154	1.23E+00	3.16E-01	1.23E+06	3.16E+05	1.95E+03
GA	1.74E+02	1.74E+01	1.74E+08	1.74E+07	2.76E+05
H-3	3.67E-01	MDA	3.67E+05	MDA	5.83E+02
GB	4.34E+01	1.74E+01	4.34E+07	1.74E+07	6.89E+04
Np-237	2.56E-02	1.03E-02	2.56E+04	1.03E+04	4.06E+01
Total Pu	1.13E+02	1.05E+01	1.13E+08	1.05E+07	1.79E+05
Pu-238	8.83E+01	8.83E+00	8.83E+07	8.83E+06	1.40E+05
Pu-239	3.10E+00	1.24E+00	3.10E+06	1.24E+06	4.92E+03
Pu-240	7.52E+00	DL	7.52E+06	DL	1.19E+04
Pu-241	2.12E+01	5.52E+00	2.12E+07	5.52E+06	3.37E+04
Pu-242	1.31E-01	DL	1.31E+05	DL	2.08E+02
Ru-106	3.11E+00	MDA	3.11E+06	MDA	4.94E+03
Sb-125	9.05E-01	MDA	9.05E+05	MDA	1.44E+03
Sn-126	6.13E-01	MDA	6.13E+05	MDA	9.73E+02
Sr-90	6.76E-03	9.05E-04	6.76E+03	9.05E+02	1.07E+01
Tc-99	6.76E-04	4.50E-04	6.76E+02	4.50E+02	1.07E+00
Th-232	7.75E-04	1.55E-04	7.75E+02	1.55E+02	1.23E+00
U-233	2.03E-01	DL	2.03E+05	DL	3.22E+02
U-234	2.06E-01	DL	2.06E+05	DL	3.27E+02
U-235	1.41E-03	2.81E-04	1.41E+03	2.81E+02	2.24E+00
U-236	2.15E-03	DL	2.15E+03	DL	3.41E+00
U-238	3.73E-02	7.47E-03	3.73E+04	7.47E+03	5.92E+01
TRU	9.34E+01		9.34E+07		1.48E+05
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					

Sample #	3-117930				
Customer ID	98351-20				
Description	Sludge				
Total Mass in Tank	68137.41	grams			
Analyte	Concent.	Units			
As	<5	mg/kg			
Ba	45	mg/kg			
Cd	40	mg/kg			
Cr	223	mg/kg			
Pb	2856	mg/kg			
Hg	460	mg/kg			
Se	<61	mg/kg			
Ag	61	mg/kg			
					Sludge
					Phase
					Total
	Activity	Error	Activity	Error	Activity
	uCi/g	uCi/g	pCi/g	pCi/g	uCi
Total Am	1.00E+00	5.22E-02	1.00E+06	5.22E+04	6.81E+04
Am-241	9.23E-01	5.17E-02	9.23E+05	5.17E+04	6.29E+04
Am-243	7.66E-02	7.35E-03	7.66E+04	7.35E+03	5.22E+03
Ce-144	2.39E-02	MDA	2.39E+04	MDA	1.63E+03
Total Cm	1.68E+01	3.36E+00	1.68E+07	3.36E+06	1.14E+06
Cm-244	1.68E+01	3.36E+00	1.68E+07	3.36E+06	1.14E+06
Cm-245	3.21E-01	DL	3.21E+05	DL	2.19E+04
Cm-246	5.72E-01	DL	5.72E+05	DL	3.90E+04
Co-60	3.42E-03	MDA	3.42E+03	MDA	2.33E+02
Cs-134	4.35E-03	MDA	4.35E+03	MDA	2.96E+02
Cs-137	6.71E-01	2.68E-02	6.71E+05	2.68E+04	4.57E+04
Eu-154	5.05E-01	1.41E-02	5.05E+05	1.41E+04	3.44E+04
Eu-155	6.31E-02	7.82E-03	6.31E+04	7.82E+03	4.30E+03
GA	2.43E+01	4.86E+00	2.43E+07	4.86E+06	1.66E+06
Nb-94	1.00E-02	MDA	1.00E+04	MDA	6.81E+02
GB	2.94E+01	5.88E+00	2.94E+07	5.88E+06	2.00E+06
Np-237	2.02E-03	4.04E-04	2.02E+03	4.04E+02	1.38E+02
Total Pu	8.38E+00	2.42E+00	8.38E+06	2.42E+06	5.71E+05
Pu-238	5.77E+00	2.31E+00	5.77E+06	2.31E+06	3.93E+05
Pu-239	8.15E-01	1.63E-01	8.15E+05	1.63E+05	5.55E+04
Pu-240	4.24E-01	DL	4.24E+05	DL	2.89E+04
Pu-241	1.79E+00	7.15E-01	1.79E+06	7.15E+05	1.22E+05
Pu-242	7.34E-03	DL	7.34E+03	DL	5.00E+02
Ru-106	4.55E-02	MDA	4.55E+04	MDA	3.10E+03
Sb-125	1.57E-02	MDA	1.57E+04	MDA	1.07E+03
Sn-126	1.29E-02	MDA	1.29E+04	MDA	8.79E+02
Th-232	3.31E-05	6.61E-06	3.31E+01	6.61E+00	2.26E+00
U-233	1.80E-02	DL	1.80E+04	DL	1.23E+03
U-234	1.16E-02	DL	1.16E+04	DL	7.90E+02
U-235	5.00E-04	1.00E-04	5.00E+02	1.00E+02	3.41E+01
U-236	7.84E-04	1.57E-04	7.84E+02	1.57E+02	5.34E+01

U-238	4.77E-02	9.55E-03	4.77E+04	9.55E+03	3.25E+03
TRU	7.59E+00		7.59E+06		5.17E+05
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					

Tank S21

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Appendix P

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Tank S21					
Sample #	3-104360				
Customer ID	98018-21				
Description	Original Aqueous Sample				
Analyte	Concent.	Units			
Total Suspended Solids	0.96	wt %			

Sample #	3-104934			
Customer ID	98018-21			
Description	Filtered Aqueous Sample			
Total Volume in Tank	690.4591 liters			
Analyte	Concent.	Units		
Al	<2	mg/kg		
Sb	<1	mg/kg		
As	<0.093	mg/kg		
Ba	<1	mg/kg		
Be	<1	mg/kg		
B	8	mg/kg		
Cd	<1	mg/kg		
Cl-	265	mg/L		
Cr	<1	mg/kg		
Cu	31	mg/kg		
CN-	<10	ug/L		
F-	<20	mg/L		
Fe	<1	mg/kg		
Pb	<1	mg/kg		
Mn	<1	mg/kg		
Hg	0.49	mg/kg		
Ni	<1.1	mg/L		
NO3-	1580	mg/L		
PO4---	221	mg/L		
Se	<0.93	mg/L		
Ag	<1	mg/kg		
Na	30227	mg/kg		
Tl	<1	mg/kg		
U	1583	mg/kg		
Zn	<1	mg/kg		
Any known VOA's, >20 mg/L	No	N/A		
n-Butanol	<1.1	mg/L		
Phenol/phenoxide/nitrophenols	<50	mg/L		
SemiVOA	Required	N/A		
TBP	0.9	%	9000	mg/L
Other	<50	mg/L		
Total Inorganic Carbon	4810	mg/L		
Total Organic Carbon	43000	mg/L		
Volatile Organics	Required	N/A		
PCB's	<50	mg/L		
Kepone	<50	mg/L		
p-Nitrophenol	<50	mg/L		
Benzene	<0.140	mg/L		
MEK	1.8	mg/L		
PCE	<0.140	mg/L		
Acidity	<0.02	Molarity		
Ash Content	7.90	%		
Boiling Pt.	165.2	degrees F		

Flash Pt.	201.9	degrees F			
Freezing Pt.	<32	degrees F			
Free Liquid?	Yes	N/A			
pH	10.90	N/A			
Density	1.071	g/cm3			
TDS	15.3	%			
Water, wt%	86.4	%			
					Aqueous
					Phase
					Total
	Activity	Error	Activity	Error	Activity
	uCi/mL	uCi/mL	pCi/L	pCi/L	uCi
Total Am	1.78E-03	UL	1.78E+06	UL	1.23E+03
Am-241	1.13E-03	1.61E-04	1.13E+06	1.61E+05	7.80E+02
Am-243	6.49E-04	UL	6.49E+05	UL	4.48E+02
Bi-212	5.59E-05	5.08E-05	5.59E+04	5.08E+04	3.86E+01
Ce-144	1.93E-04	MDA	1.93E+05	MDA	1.33E+02
Total Cm	1.32E-01	3.97E-02	1.32E+08	3.97E+07	9.11E+04
Cm-244	1.32E-01	3.97E-02	1.32E+08	3.97E+07	9.11E+04
Cm-245	7.88E-04	DL	7.88E+05	DL	5.44E+02
Cm-246	1.41E-03	DL	1.41E+06	DL	9.74E+02
Co-60	1.06E-05	6.70E-06	1.06E+04	6.70E+03	7.32E+00
Cs-134	1.67E-05	MDA	1.67E+04	MDA	1.15E+01
Cs-137	5.63E-02	1.93E-03	5.63E+07	1.93E+06	3.89E+04
Eu-154	2.04E-03	5.43E-05	2.04E+06	5.43E+04	1.41E+03
Eu-155	2.66E-04	4.81E-05	2.66E+05	4.81E+04	1.84E+02
GA	6.04E-01	1.21E-01	6.04E+08	1.21E+08	4.17E+05
H-3	4.55E-03	4.55E-04	4.55E+06	4.55E+05	3.14E+03
GB	1.70E-01	6.81E-02	1.70E+08	6.81E+07	1.17E+05
Np-237	2.32E-04	1.16E-04	2.32E+05	1.16E+05	1.60E+02
Pb-212	5.68E-05	3.28E-05	5.68E+04	3.28E+04	3.92E+01
Total Pu	5.99E-01	1.49E-01	5.99E+08	1.49E+08	4.14E+05
Pu-238	4.68E-01	1.41E-01	4.68E+08	1.41E+08	3.23E+05
Pu-239	1.26E-02	6.28E-03	1.26E+07	6.28E+06	8.70E+03
Pu-240	4.73E-03	2.36E-03	4.73E+06	2.36E+06	3.27E+03
Pu-241	1.14E-01	4.77E-02	1.14E+08	4.77E+07	7.87E+04
Pu-242	1.81E-05	DL	1.81E+04	DL	1.25E+01
Pm-147	4.05E-03	MDA	4.05E+06	MDA	2.80E+03
Ru-106	3.43E-04	MDA	3.43E+05	MDA	2.37E+02
Sb-125	1.66E-04	MDA	1.66E+05	MDA	1.15E+02
Se-79	1.80E-04	MDA	1.80E+05	MDA	1.24E+02
Sn-126	7.25E-05	MDA	7.25E+04	MDA	5.01E+01
Sr-90	9.46E-03	9.08E-04	9.46E+06	9.08E+05	6.53E+03
Tc-99	6.76E-04	4.50E-04	6.76E+05	4.50E+05	4.67E+02
Th-232	9.19E-07	1.84E-07	9.19E+02	1.84E+02	6.35E-01
Th-234	2.02E-03	1.02E-03	2.02E+06	1.02E+06	1.39E+03
U-233	2.60E-03	5.21E-04	2.60E+06	5.21E+05	1.80E+03
U-234	1.95E-03	3.90E-04	1.95E+06	3.90E+05	1.35E+03
U-235	5.32E-05	1.06E-05	5.32E+04	1.06E+04	3.67E+01

U-236	4.59E-05	9.19E-06	4.59E+04	9.19E+03	3.17E+01
U-238	3.08E-03	6.58E-04	3.08E+06	6.58E+05	2.13E+03
TRU	4.87E-01		4.87E+08		3.36E+05
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					
TBP = Tributyl Phosphate					

Sample #	3-104920				
Customer ID	98018-21				
Description	Filtered Solids				
Estimated Solids	7099.02 g		(based upon TSS, volume and density of liquid phase)		
					Suspended Solids
					Total
Analyte	Activity uCi/g	Error uCi/g	Activity pCi/g	Error pCi/g	Activity uCi
Total Am	5.68E+00	5.10E-01	5.68E+06	5.10E+05	4.03E+04
Am-241	3.36E+00	2.11E-01	3.36E+06	2.11E+05	2.39E+04
Am-243	2.32E+00	4.64E-01	2.32E+06	4.64E+05	1.65E+04
Ce-144	1.14E-01	MDA	1.14E+05	MDA	8.09E+02
Total Cm	5.32E+02	1.06E+02	5.32E+08	1.06E+08	3.78E+06
Cm-244	5.32E+02	1.06E+02	5.32E+08	1.06E+08	3.78E+06
Cm-245	1.20E-01	DL	1.20E+05	DL	8.52E+02
Cm-246	2.48E-01	9.93E-02	2.48E+05	9.93E+04	1.76E+03
Co-60	1.42E-02	MDA	1.42E+04	MDA	1.01E+02
Cs-134	1.74E-02	MDA	1.74E+04	MDA	1.24E+02
Cs-137	3.58E-01	2.99E-02	3.58E+05	2.99E+04	2.54E+03
Eu-154	1.64E+00	6.03E-02	1.64E+06	6.03E+04	1.16E+04
GA	6.04E+02	6.04E+01	6.04E+08	6.04E+07	4.29E+06
H-3	1.91E-01	7.66E-02	1.91E+05	7.66E+04	1.36E+03
GB	2.50E+01	2.50E+01	2.50E+07	2.50E+07	1.77E+05
Np-237	2.92E-02	5.85E-03	2.92E+04	5.85E+03	2.07E+02
Total Pu	1.02E+02	1.94E+01	1.02E+08	1.94E+07	7.27E+05
Pu-238	6.85E+01	1.78E+01	6.85E+07	1.78E+07	4.86E+05
Pu-239	3.64E+00	7.28E-01	3.64E+06	7.28E+05	2.58E+04
Pu-240	9.77E+00	1.95E+00	9.77E+06	1.95E+06	6.94E+04
Pu-241	2.05E+01	7.38E+00	2.05E+07	7.38E+06	1.46E+05
Pu-242	2.74E-03	DL	2.74E+03	DL	1.95E+01
Ru-106	1.86E-01	MDA	1.86E+05	MDA	1.32E+03
Sb-125	5.27E-02	MDA	5.27E+04	MDA	3.74E+02
Sn-126	7.30E-02	MDA	7.30E+04	MDA	5.18E+02
Sr-90	3.60E-01	1.80E-01	3.60E+05	1.80E+05	2.56E+03
Th-232	3.37E-04	6.74E-05	3.37E+02	6.74E+01	2.39E+00
U-233	4.68E-02	9.37E-03	4.68E+04	9.37E+03	3.32E+02
U-234	3.89E-02	7.78E-03	3.89E+04	7.78E+03	2.76E+02
U-235	1.32E-03	2.64E-04	1.32E+03	2.64E+02	9.37E+00
U-236	1.40E-03	2.79E-04	1.40E+03	2.79E+02	9.94E+00
U-238	3.21E-02	6.41E-03	3.21E+04	6.41E+03	2.28E+02
TRU	8.79E+01		8.79E+07		6.24E+05
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					

Sample #	3-117707				
Customer ID	98351-21				
Description	Sludge				
Total Mass in Tank	236966.8	grams			
Analyte	Concent.	Units			
As	0.3	mg/kg			
Ba	4	mg/kg			
Cd	5	mg/kg			
Co	0.6	mg/kg			
Cr	329	mg/kg			
Pb	68	mg/kg			
Hg	<0.01	mg/kg			
Se	<14	mg/kg			
Ag	0.3	mg/kg			
Phenol/phenoxide/nitrophenols	<15	mg/kg			
SemiVOA	Required	N/A			
TBP	0.55	%	5500	mg/kg	
NPH	0.40	%	4000	mg/kg	
BAH	0.087	%	870	mg/kg	
Other	<15	mg/kg			
PCB's	<10	mg/kg			
Kepone	<15	mg/kg			
p-Nitrophenol	<15	mg/kg			
					Sludge
					Phase
					Total
	Activity	Error	Activity	Error	Activity
	uCi/g	uCi/g	pCi/g	pCi/g	uCi
Total Am	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Am-241	7.48E-03	MDA	7.48E+03	MDA	1.77E+03
Am-243	6.71E-02	MDA	6.71E+04	MDA	1.59E+04
Ce-144	5.72E-03	MDA	5.72E+03	MDA	1.36E+03
Total Cm	8.15E-02	1.63E-02	8.15E+04	1.63E+04	1.93E+04
Cm-244	8.15E-02	1.63E-02	8.15E+04	1.63E+04	1.93E+04
Cm-245	5.77E-02	DL	5.77E+04	DL	1.37E+04
Cm-246	1.03E-01	DL	1.03E+05	DL	2.44E+04
Co-60	2.01E-03	MDA	2.01E+03	MDA	4.76E+02
Cs-134	1.36E-03	MDA	1.36E+03	MDA	3.22E+02
Cs-137	1.99E-02	3.08E-03	1.99E+04	3.08E+03	4.72E+03
Eu-154	2.35E-03	MDA	2.35E+03	MDA	5.57E+02
GA	5.09E-01	1.02E-01	5.09E+05	1.02E+05	1.21E+05
Nb-94	1.09E-03	MDA	1.09E+03	MDA	2.58E+02
GB	1.19E-01	2.38E-02	1.19E+05	2.38E+04	2.82E+04
Np-237	2.37E-04	DL	2.37E+02	DL	5.62E+01
Total Pu	4.71E-01	3.35E-01	4.71E+05	3.35E+05	1.12E+05
Pu-238	3.16E-01	1.26E-01	3.16E+05	1.26E+05	7.49E+04
Pu-239	5.99E-02	1.20E-02	5.99E+04	1.20E+04	1.42E+04
Pu-240	7.66E-02	DL	7.66E+04	DL	1.82E+04

Pu-241	9.50E-02	3.80E-02	9.50E+04	3.80E+04	2.25E+04
Pu-242	1.32E-03	DL	1.32E+03	DL	3.13E+02
Ru-106	1.15E-02	MDA	1.15E+04	MDA	2.73E+03
Sb-125	3.94E-03	MDA	3.94E+03	MDA	9.34E+02
Sn-126	1.80E-03	MDA	1.80E+03	MDA	4.27E+02
Th-232	8.02E-07	1.60E-07	8.02E-01	1.60E-01	1.90E-01
U-233	3.25E-03	DL	3.25E+03	DL	7.70E+02
U-234	2.09E-03	DL	2.09E+03	DL	4.95E+02
U-235	1.23E-05	4.94E-06	1.23E+01	4.94E+00	2.91E+00
U-236	2.18E-05	DL	2.18E+01	DL	5.17E+00
U-238	3.38E-04	6.77E-05	3.38E+02	6.77E+01	8.01E+01
TRU	3.76E-01		3.76E+05		8.91E+04
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					
TBP = Tributyl Phosphate					
NPH = Normal Paraffin Hydrocarbons					
BAH = Branched Aliphatic Hydrocarbons					

Tank S22					
Sample #	3-109227				
Customer ID	98018-22				
Description	Original Aqueous Sample				
Analyte	Concent.	Units			
Total Suspended Solids	0.03	wt %			

Sample #	3-109296				
Customer ID	98018-22				
Description	Filtered Aqueous Sample				
Total Volume in Tank	1694.35	liters			
Analyte	Concent.	Units			
Al	3.7	mg/kg			
Sb	2.0	mg/kg			
As	3.3	mg/kg			
Ba	0.07	mg/kg			
Be	0.2	mg/kg			
B	5.0	mg/kg			
C2O4--	1383	mg/L			
Cd	0.2	mg/kg			
Cl-	121	mg/L			
Cr	4.4	mg/kg			
Cu	122.2	mg/kg			
CN-	<1	mg/L			
COOH-	1702	mg/L			
F-	<2	mg/L			
Fe	2.7	mg/kg			
Pb	<0.9	mg/kg			
Mn	0.6	mg/kg			
Hg	0.74	mg/kg			
Ni	1.4	mg/L			
NO2-	782	mg/L			
NO3-	535	mg/L			
PO4---	523	mg/L			
Se	<3.8	mg/L			
SO4--	336	mg/L			
Ag	<0.9	mg/kg			
Na	16082	mg/kg			
Tl	1.0	mg/kg			
U	2293	mg/kg			
Any known VOA's, >20 mg/L	No	N/A			
n-Butanol	<2.5	mg/L			
Phenol/phenoxide/nitrophenols	<100	mg/L			
SemiVOA	Required	N/A			
TBP	660	mg/L			
AH	1700	mg/L			
DE	330	mg/L			
Total Inorganic Carbon	2859	mg/L			
Total Organic Carbon	14611	mg/L			
Volatile Organics	Required	N/A			
PCB's	<50	mg/L			
Kepone	<100	mg/L			
p-Nitrophenol	<100	mg/L			
Benzene	<0.500	mg/L			
MEK	<2.5	mg/L			
PCE	<0.500	mg/L			

Acidity	<0.001	Molarity			
Ash Content	3.65	%			
Flash Pt.	>212	degrees F			
Freezing Pt.	<32	degrees F			
Free Liquid?	Yes	N/A			
pH	9.94	N/A			
Density	1.066	g/cm3			
TDS	8.18	%			
Water, wt%	87.01	%			
					Aqueous
					Phase
					Total
	Activity	Error	Activity	Error	Activity
	uCi/mL	uCi/mL	pCi/L	pCi/L	uCi
Total Am	1.66E-03	2.06E-04	1.66E+06	2.06E+05	2.82E+03
Am-241	6.53E-04	1.96E-04	6.53E+05	1.96E+05	1.11E+03
Am-243	1.01E-03	6.24E-05	1.01E+06	6.24E+04	1.71E+03
Ce-144	3.97E-04	MDA	3.97E+05	MDA	6.73E+02
Total Cm	2.76E-01	5.51E-02	2.76E+08	5.51E+07	4.68E+05
Cm-244	2.76E-01	5.51E-02	2.76E+08	5.51E+07	4.68E+05
Cm-245	1.27E-01	DL	1.27E+08	DL	2.15E+05
Cm-246	2.25E-01	DL	2.25E+08	DL	3.81E+05
Co-60	3.38E-05	1.22E-05	3.38E+04	1.22E+04	5.73E+01
Cs-134	1.80E-05	MDA	1.80E+04	MDA	3.05E+01
Cs-137	7.57E-02	2.60E-03	7.57E+07	2.60E+06	1.28E+05
Eu-154	5.27E-04	4.36E-05	5.27E+05	4.36E+04	8.93E+02
GA	5.81E-01		5.81E+08	0.00E+00	9.84E+05
H-3	4.64E-03		4.64E+06	0.00E+00	7.86E+03
Nb-94	3.15E-05	MDA	3.15E+04	MDA	5.34E+01
GB	1.22E-01		1.22E+08	0.00E+00	2.07E+05
Np-237	2.07E-04	MDA	2.07E+05	MDA	3.51E+02
Total Pu	3.40E-01	6.08E-02	3.40E+08	6.08E+07	5.77E+05
Pu-238	2.76E-01	5.51E-02	2.76E+08	5.51E+07	4.68E+05
Pu-239	4.55E-02	DL	4.55E+07	DL	7.71E+04
Pu-240	1.67E-01	DL	1.67E+08	DL	2.83E+05
Pu-241	6.44E-02	2.58E-02	6.44E+07	2.58E+07	1.09E+05
Pu-242	2.90E-03	DL	2.90E+06	DL	4.91E+03
Ru-106	7.12E-04	MDA	7.12E+05	MDA	1.21E+03
Sb-125	3.60E-04	MDA	3.60E+05	MDA	6.10E+02
Se-79	9.01E-04	MDA	9.01E+05	MDA	1.53E+03
Sn-126	1.49E-04	MDA	1.49E+05	MDA	2.52E+02
Sr-90	3.25E-03	4.56E-04	3.25E+06	4.56E+05	5.51E+03
Tc-99	4.95E-04	1.80E-04	4.95E+05	1.80E+05	8.39E+02
Th-232	7.21E-07	1.44E-07	7.21E+02	1.44E+02	1.22E+00
U-233	7.12E-03	DL	7.12E+06	DL	1.21E+04
U-234	4.59E-03	DL	4.59E+06	DL	7.78E+03
U-235	5.27E-05	1.05E-05	5.27E+04	1.05E+04	8.93E+01
U-236	4.77E-05	DL	4.77E+04	DL	8.08E+01
U-238	9.77E-04	1.95E-04	9.77E+05	1.95E+05	1.66E+03
TRU	2.78E-01		2.78E+08		4.70E+05

MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					
TBP = Tributyl Phosphate					
AH = Aliphatic Hydrocarbons					
DE = Diphenyl Ether					

Sample #	3-109283				
Customer ID	98018-22				
Description	Filtered Solids				
Estimated Solids	541.85 g		(based upon TSS, volume and density of liquid phase)		
					Suspended Solids Total
Analyte	Activity uCi/g	Error uCi/g	Activity pCi/g	Error pCi/g	Activity uCi
Total Am	1.64E+01	2.45E+00	1.64E+07	2.45E+06	8.87E+03
Am-241	4.27E+00	3.50E-01	4.27E+06	3.50E+05	2.31E+03
Am-243	1.21E+01	2.42E+00	1.21E+07	2.42E+06	6.56E+03
Ce-144	1.24E-01	MDA	1.24E+05	MDA	6.72E+01
Total Cm	1.77E+03	7.10E+02	1.77E+09	7.10E+08	9.60E+05
Cm-244	1.77E+03	7.10E+02	1.77E+09	7.10E+08	9.59E+05
Cm-245	2.32E-01	DL	2.32E+05	DL	1.26E+02
Cm-246	1.15E+00	2.30E-01	1.15E+06	2.30E+05	6.23E+02
Co-60	2.35E-02	9.05E-03	2.35E+04	9.05E+03	1.27E+01
Cs-137	2.25E+00	9.01E-02	2.25E+06	9.01E+04	1.22E+03
Eu-154	1.86E+00	5.93E-02	1.86E+06	5.93E+04	1.01E+03
Eu-155	2.73E-01	6.02E-02	2.73E+05	6.02E+04	1.48E+02
GA	1.87E+03	3.74E+02	1.87E+09	3.74E+08	1.01E+06
Nb-94	4.00E-02	MDA	4.00E+04	MDA	2.17E+01
GB	4.22E+01	1.69E+01	4.22E+07	1.69E+07	2.29E+04
Np-237	3.99E-03	7.98E-04	3.99E+03	7.98E+02	2.16E+00
Total Pu	1.50E+02	4.73E+01	1.50E+08	4.73E+07	8.10E+04
Pu-238	7.48E+01	4.49E+01	7.48E+07	4.49E+07	4.05E+04
Pu-239	7.03E+00	1.41E+00	7.03E+06	1.41E+06	3.81E+03
Pu-240	5.32E+01	1.06E+01	5.32E+07	1.06E+07	2.88E+04
Pu-241	1.45E+01	1.02E+01	1.45E+07	1.02E+07	7.86E+03
Pu-242	7.84E-03	1.57E-03	7.84E+03	1.57E+03	4.25E+00
Ru-106	1.63E-01	MDA	1.63E+05	MDA	8.83E+01
Sn-126	1.89E-02	MDA	1.89E+04	MDA	1.02E+01
Sr-90	6.85E-01	9.02E-02	6.85E+05	9.02E+04	3.71E+02
Th-232	4.15E-04	8.30E-05	4.15E+02	8.30E+01	2.25E-01
U-233	3.53E-02	7.06E-03	3.53E+04	7.06E+03	1.91E+01
U-234	2.40E-02	4.80E-03	2.40E+04	4.80E+03	1.30E+01
U-235	6.62E-04	1.32E-04	6.62E+02	1.32E+02	3.59E-01
U-236	5.81E-04	1.16E-04	5.81E+02	1.16E+02	3.15E-01
U-238	1.39E-02	UL	1.39E+04	UL	7.53E+00
TRU	1.53E+02		1.53E+08		8.27E+04
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					

Sample #	3-118217				
Customer ID	98351-22B				
Description	Sludge				
Total Mass in Tank	56781.18	grams			
Analyte	Concent.	Units			
As	3	mg/kg			
Ba	21	mg/kg			
Cd	70	mg/kg			
Co	6	mg/kg			
Cr	198	mg/kg			
Pb	497	mg/kg			
Hg	62	mg/kg			
Se	4	mg/kg			
Ag	6	mg/kg			
Phenol/phenoxide/nitrophenols	<100	mg/kg			
SemiVOA	Required	N/A			
TBP	5.5	%	55000	mg/kg	
BAH	16	%	160000	mg/kg	
DE	1.7	%	17000	mg/kg	
Other	<100	mg/kg			
PCB's	<10	mg/kg			
Kepone	<100	mg/kg			
p-Nitrophenol	<100	mg/kg			
					Sludge Phase
					Total
	Activity	Error	Activity	Error	Activity
	uCi/g	uCi/g	pCi/g	pCi/g	uCi
Total Am	8.67E-01	UL	8.67E+05	UL	4.92E+04
Am-241	1.69E-01	1.35E-02	1.69E+05	1.35E+04	9.60E+03
Am-243	6.98E-01	UL	6.98E+05	UL	3.96E+04
Ce-144	4.47E-03	MDA	4.47E+03	MDA	2.54E+02
Total Cm	1.37E+02	2.74E+01	1.37E+08	2.74E+07	7.78E+06
Cm-244	1.37E+02	2.74E+01	1.37E+08	2.74E+07	7.78E+06
Cm-245	6.35E-03	2.92E-03	6.35E+03	2.92E+03	3.61E+02
Cm-246	7.07E-02	DL	7.07E+04	DL	4.01E+03
Co-60	4.50E-04	1.62E-04	4.50E+02	1.62E+02	2.56E+01
Cs-134	5.90E-04	MDA	5.90E+02	MDA	3.35E+01
Cs-137	3.87E-01	1.55E-02	3.87E+05	1.55E+04	2.20E+04
Eu-154	1.18E-01	2.36E-03	1.18E+05	2.36E+03	6.70E+03
Eu-155	2.09E-02	2.09E-03	2.09E+04	2.09E+03	1.19E+03
GA	1.59E+02	3.18E+01	1.59E+08	3.18E+07	9.03E+06
Nb-94	1.14E-03	MDA	1.14E+03	MDA	6.47E+01
GB	2.06E-01	4.12E-02	2.06E+05	4.12E+04	1.17E+04
Np-237	3.45E-04	6.90E-05	3.45E+02	6.90E+01	1.96E+01
Total Pu	7.65E+00	1.051242	7.65E+06	1.05E+06	4.35E+05
Pu-238	4.64E+00	9.28E-01	4.64E+06	9.28E+05	2.63E+05
Pu-239	2.82E-01	5.64E-02	2.82E+05	5.64E+04	1.60E+04
Pu-240	2.10E+00	4.21E-01	2.10E+06	4.21E+05	1.19E+05

Pu-241	6.31E-01	2.52E-01	6.31E+05	2.52E+05	3.58E+04
Pu-242	2.68E-03	DL	2.68E+03	DL	1.52E+02
Ru-106	6.04E-03	MDA	6.04E+03	MDA	3.43E+02
Sb-125	2.29E-03	MDA	2.29E+03	MDA	1.30E+02
Sn-126	2.76E-03	MDA	2.76E+03	MDA	1.57E+02
Th-232	1.47E-05	2.95E-06	1.47E+01	2.95E+00	8.35E-01
Ti-208	1.17E-03	3.97E-04	1.17E+03	3.97E+02	6.64E+01
U-233	6.58E-03	DL	6.58E+03	DL	3.74E+02
U-234	1.35E-03	2.70E-04	1.35E+03	2.70E+02	7.67E+01
U-235	3.01E-05	6.03E-06	3.01E+01	6.03E+00	1.71E+00
U-236	1.19E-05	2.38E-06	1.19E+01	2.38E+00	6.76E-01
TRU	7.20E+00		7.20E+06		4.09E+05
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					
UL = Upper Limit					
TBP = Tributyl Phosphate					
BAH = Branched Aliphatic Hydrocarbons					
DE = Diphenyl Ether					

Sample #	3-117708				
Customer ID	98351-22				
Description	Sludge				
Estimated Solids	56781.18 g				
					Sludge Phase
					Total
Analyte	Activity uCi/g	Error uCi/g	Activity pCi/g	Error pCi/g	Activity uCi
GA	8.56E-01	1.71E-01	8.56E+05	1.71E+05	4.86E+04
GB	1.80E-01	3.60E-02	1.80E+05	3.60E+04	1.02E+04
MDA = Minimum Detectable Activity for the conditions used					
DL = Detection Limit					

Solvent Tank Nuclide Inventory Calculations - Filtered Liquids																
	Ci/g		Ci/g		Ci/g		Ci/g		Ci/g		Ci/g		Ci/g		Ci/g	
SPCAT	9.64E-03		6.24E-03		2.16E-06		6.47E-05		3.36E-07		7.05E-04		1.71E+01		6.21E-02	
	U-233	Error	U-234	Error	U-235	Error	U-236	Error	U-238	Error	Np-237	Error	Pu-238	Error	Pu-239	Error
Tank #	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L
S1	5.05E+05	1.01E+05	5.50E+06	1.10E+06	8.56E+04	1.71E+04	4.38E+04	8.77E+03	1.89E+06	3.77E+05	2.29E+05	1.15E+05	6.49E+08	6.49E+07	1.39E+07	6.94E+06
S2	0.00E+00	0.00E+00	2.97E+06	1.78E+06	1.37E+04	5.31E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.03E+05	2.62E+04	1.42E+07	2.84E+06	1.98E+06	0.00E+00
S3	2.24E+06	4.48E+05	2.04E+06	4.07E+05	7.84E+04	1.57E+04	3.93E+04	7.86E+03	1.85E+06	3.70E+05	1.88E+05	9.39E+04	1.00E+07	2.01E+06	1.05E+07	5.25E+06
S4	7.12E+06	0.00E+00	4.59E+06	0.00E+00	2.10E+05	4.20E+04	9.41E+04	1.88E+04	6.22E+06	1.77E+06	2.40E+05	0.00E+00	1.66E+07	6.63E+06	4.55E+07	0.00E+00
S5	1.12E+07	2.24E+06	1.28E+07	2.57E+06	3.36E+05	6.72E+04	2.06E+05	4.12E+04	9.10E+06	1.82E+06	4.95E+05	0.00E+00	3.28E+09	1.31E+09	2.27E+08	4.55E+07
S6	7.12E+06	0.00E+00	4.59E+06	0.00E+00	3.68E+04	7.37E+03	4.77E+04	0.00E+00	8.56E+05	1.71E+05	2.25E+05	0.00E+00	1.24E+07	3.72E+06	4.55E+07	0.00E+00
S7	7.12E+06	0.00E+00	4.59E+06	0.00E+00	2.32E+05	1.72E+05	1.99E+05	3.97E+04	1.12E+07	2.24E+06	6.76E+05	2.70E+05	1.71E+08	5.12E+07	1.02E+08	4.07E+07
S8	7.12E+06	0.00E+00	4.59E+06	0.00E+00	2.55E+04	5.11E+03	4.77E+04	0.00E+00	6.04E+05	1.21E+05	5.18E+05	0.00E+00	2.64E+07	7.92E+06	4.55E+07	0.00E+00
S11	6.76E+04	0.00E+00	4.35E+04	8.70E+03	2.02E+03	4.04E+02	4.55E+02	9.10E+01	4.86E+04	0.00E+00	4.95E+03	9.91E+02	2.52E+09	5.05E+08	4.34E+07	8.68E+06
S13	8.60E+06	1.72E+06	5.77E+06	1.15E+06	1.34E+05	2.68E+04	1.72E+05	3.43E+04	3.37E+06	6.75E+05	4.91E+05	0.00E+00	7.52E+08	1.50E+08	4.55E+07	0.00E+00
S14	3.29E+05	6.58E+04	2.17E+06	4.34E+05	5.09E+04	1.02E+04	5.95E+04	1.19E+04	3.68E+06	7.62E+05	8.02E+05	4.01E+05	1.08E+08	2.16E+07	8.74E+06	4.37E+06
S19-O	2.55E+06	5.10E+05	1.59E+06	3.19E+05	3.05E+04	6.11E+03	3.08E+04	6.16E+03	7.66E+06	1.20E+06	2.26E+05	1.13E+05	2.02E+09	2.02E+08	5.95E+06	2.97E+06
S19-A	2.33E+06	4.66E+05	1.64E+06	3.28E+05	3.08E+04	6.15E+03	2.97E+04	5.94E+03	6.26E+06	1.05E+06	2.49E+05	1.24E+05	2.03E+09	2.03E+08	4.77E+06	2.39E+06
S20-T	1.62E+05	3.24E+04	1.13E+05	2.25E+04	2.11E+03	4.22E+02	2.15E+03	4.31E+02	9.23E+03	1.85E+03	1.20E+04	5.99E+03	1.41E+06	7.50E+05	3.10E+05	1.55E+05
S20-B	1.12E+07	2.24E+06	3.26E+06	6.51E+05	4.59E+04	9.19E+03	5.32E+04	1.06E+04	1.53E+06	3.05E+05	2.45E+05	1.22E+05	5.59E+08	5.59E+07	1.21E+07	6.06E+06
S21	2.60E+06	5.21E+05	1.95E+06	3.90E+05	5.32E+04	1.06E+04	4.59E+04	9.19E+03	3.08E+06	6.58E+05	2.32E+05	1.16E+05	4.68E+08	1.41E+08	1.26E+07	6.28E+06
S22	7.12E+06	0.00E+00	4.59E+06	0.00E+00	5.27E+04	1.05E+04	4.77E+04	0.00E+00	9.77E+05	1.95E+05	2.07E+05	0.00E+00	2.76E+08	5.51E+07	4.55E+07	0.00E+00
Values listed in Bold Italics print are detection limits or upper limits.																
Tank S2 U-233 included in U-234 activity, Pu-240 included in Pu-239 activity. U-236, U-238, Pu-242, Am-243, Cm-245, Cm-246 not measured																
Tank S5 Cm-244 upper limit value estimated from Gross Alpha activity.																
The values calculated for samples S20-T and S20-B are upper limits.																

Ci/g		Ci/g		Ci/g		Ci/g		Ci/g		Ci/g		Ci/g		Ci/g	
2.27E-01		1.03E+02		3.93E-03		3.44E+00		2.00E-01		8.10E+01		1.72E-01		3.04E-01	
Pu-240	Error	Pu-241	Error	Pu-242	Error	Am-241	Error	Am-243	Error	Cm-244	Error	Cm-245	Error	Cm-246	Error
pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L
1.97E+06	9.86E+05	1.60E+08	4.81E+07	1.81E+04	0.00E+00	8.42E+06	4.36E+05	9.95E+04	0.00E+00	2.04E+07	4.07E+07	7.88E+05	0.00E+00	1.41E+06	0.00E+00
0.00E+00	0.00E+00	5.72E+06	2.52E+06	0.00E+00	0.00E+00	3.14E+05	2.29E+04	0.00E+00	0.00E+00	2.37E+06	4.75E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.05E+06	0.00E+00	1.72E+07	1.37E+07	1.81E+04	0.00E+00	1.15E+05	0.00E+00	3.61E+04	0.00E+00	1.09E+07	1.53E+06	7.88E+05	0.00E+00	1.41E+06	0.00E+00
1.67E+08	0.00E+00	1.14E+07	0.00E+00	2.90E+06	0.00E+00	3.50E+05	0.00E+00	1.14E+05	0.00E+00	1.02E+06	2.05E+06	1.27E+08	0.00E+00	2.25E+08	0.00E+00
2.24E+08	4.49E+07	8.11E+08	3.24E+08	2.75E+06	0.00E+00	1.39E+08	5.60E+07	1.40E+08	0.00E+00	2.49E+11	0.00E+00	1.20E+08	0.00E+00	2.14E+08	0.00E+00
1.67E+08	0.00E+00	2.78E+07	1.67E+07	2.90E+06	0.00E+00	3.14E+05	0.00E+00	1.05E+05	0.00E+00	6.17E+05	0.00E+00	1.27E+08	0.00E+00	2.25E+08	0.00E+00
1.67E+08	0.00E+00	3.34E+08	1.54E+08	2.90E+06	0.00E+00	3.83E+07	1.94E+06	8.56E+04	0.00E+00	2.18E+06	0.00E+00	1.27E+08	0.00E+00	2.25E+08	0.00E+00
1.67E+08	0.00E+00	5.00E+08	7.80E+08	2.90E+06	0.00E+00	5.36E+06	0.00E+00	1.75E+06	0.00E+00	2.25E+06	0.00E+00	1.27E+08	0.00E+00	2.25E+08	0.00E+00
1.59E+08	3.18E+07	1.14E+09	4.54E+08	2.75E+06	0.00E+00	3.71E+06	0.00E+00	1.45E+06	0.00E+00	5.09E+09	1.02E+09	1.20E+08	0.00E+00	2.14E+08	4.28E+07
1.67E+08	0.00E+00	2.03E+08	8.13E+07	2.90E+06	0.00E+00	7.52E+05	0.00E+00	2.32E+05	0.00E+00	2.26E+07	0.00E+00	1.27E+08	0.00E+00	2.25E+08	0.00E+00
1.27E+06	6.35E+05	2.39E+07	9.55E+06	1.81E+04	0.00E+00	1.41E+06	1.64E+05	8.33E+04	3.30E+04	6.62E+06	2.65E+06	7.88E+05	0.00E+00	1.41E+06	0.00E+00
1.43E+06	7.14E+05	5.18E+08	1.55E+08	1.81E+04	0.00E+00	9.05E+05	1.12E+05	1.34E+05	0.00E+00	8.11E+06	1.62E+07	7.88E+05	0.00E+00	1.41E+06	0.00E+00
1.57E+06	7.84E+05	5.23E+08	1.57E+08	1.81E+04	0.00E+00	9.05E+05	1.08E+05	1.36E+05	0.00E+00	8.15E+06	1.63E+07	7.88E+05	0.00E+00	1.41E+06	0.00E+00
1.05E+06	0.00E+00	4.77E+05	0.00E+00	1.81E+04	0.00E+00	5.77E+05	4.12E+04	6.26E+04	6.51E+03	1.07E+07	1.73E+06	7.88E+05	0.00E+00	1.41E+06	0.00E+00
7.52E+06	3.76E+06	1.39E+08	4.16E+07	1.81E+04	0.00E+00	1.55E+05	3.91E+04	9.19E+05	0.00E+00	4.28E+07	2.14E+07	7.88E+05	0.00E+00	1.41E+06	0.00E+00
4.73E+06	2.36E+06	1.14E+08	4.77E+07	1.81E+04	0.00E+00	1.13E+06	1.61E+05	6.49E+05	0.00E+00	1.32E+08	3.97E+07	7.88E+05	0.00E+00	1.41E+06	0.00E+00
1.67E+08	0.00E+00	6.44E+07	2.58E+07	2.90E+06	0.00E+00	6.53E+05	1.96E+05	1.01E+06	6.24E+04	2.76E+08	5.51E+07	1.27E+08	0.00E+00	2.25E+08	0.00E+00

Total Activity Including Error																
Volume Liters	U-233 Ci	U-234 Ci	U-235 Ci	U-236 Ci	U-238 Ci	Np-237 Ci	Pu-238 Ci	Pu-239 Ci	Pu-240 Ci	Pu-241 Ci	Pu-242 Ci	Am-241 Ci	Am-243 Ci	Cm-244 Ci	Cm-245 Ci	Cm-246 Ci
443.2717	2.69E-04	2.93E-03	4.55E-05	2.33E-05	1.00E-03	1.52E-04	3.16E-01	9.24E-03	1.31E-03	9.22E-02	8.02E-06	3.93E-03	4.41E-05	2.71E-02	3.49E-04	6.25E-04
422.8305	0.00E+00	2.01E-03	8.04E-06	0.00E+00	0.00E+00	5.46E-05	7.21E-03	8.37E-04	0.00E+00	3.48E-03	0.00E+00	1.42E-04	0.00E+00	1.20E-03	0.00E+00	0.00E+00
1506.215	4.05E-03	3.69E-03	1.42E-04	7.10E-05	3.34E-03	4.25E-04	1.81E-02	2.37E-02	1.58E-03	4.65E-02	2.73E-05	1.73E-04	5.44E-05	1.87E-02	1.19E-03	2.12E-03
1397.574	9.95E-03	6.41E-03	3.52E-04	1.58E-04	1.12E-02	3.35E-04	3.25E-02	6.36E-02	2.33E-01	1.59E-02	4.05E-03	4.89E-04	1.59E-04	4.29E-03	1.77E-01	3.14E-01
348.2579	4.68E-03	5.35E-03	1.40E-04	8.61E-05	3.80E-03	1.72E-04	1.60E+00	9.49E-02	9.36E-02	3.95E-01	9.58E-04	6.79E-02	4.88E-02	8.67E+01	4.18E-02	7.45E-02
1042.124	7.42E-03	4.78E-03	4.60E-05	4.97E-05	1.07E-03	2.34E-04	1.68E-02	4.74E-02	1.74E-01	4.64E-02	3.02E-03	3.27E-04	1.09E-04	6.43E-04	1.32E-01	2.34E-01
1199.976	8.54E-03	5.51E-03	4.85E-04	2.86E-04	1.61E-02	1.14E-03	2.67E-01	1.71E-01	2.00E-01	5.86E-01	3.48E-03	4.83E-02	1.03E-04	2.62E-03	1.52E-01	2.70E-01
518.6014	3.69E-03	2.38E-03	1.59E-05	2.47E-05	3.76E-04	2.69E-04	1.78E-02	2.36E-02	8.66E-02	6.64E-01	1.50E-03	2.78E-03	9.08E-04	1.17E-03	6.59E-02	1.17E-01
54.13139	3.66E-06	2.83E-06	1.31E-07	2.96E-08	2.63E-06	3.22E-07	1.64E-01	2.82E-03	1.03E-02	8.63E-02	1.49E-04	2.01E-04	7.85E-05	3.31E-01	6.50E-03	1.39E-02
826.3554	8.53E-03	5.72E-03	1.33E-04	1.70E-04	3.34E-03	4.06E-04	7.45E-01	3.76E-02	1.38E-01	2.35E-01	2.40E-03	6.21E-04	1.92E-04	1.87E-02	1.05E-01	1.86E-01
1386.975	5.48E-04	3.61E-03	8.47E-05	9.90E-05	6.16E-03	1.67E-03	1.80E-01	1.82E-02	2.64E-03	4.64E-02	2.51E-05	2.18E-03	1.61E-04	1.29E-02	1.09E-03	1.96E-03
2170.555	6.64E-03	4.14E-03	7.95E-05	8.02E-05	1.92E-02	7.36E-04	4.82E+00	1.94E-02	4.65E-03	1.46E+00	3.93E-05	2.21E-03	2.91E-04	5.28E-02	1.71E-03	3.06E-03
2170.555	6.07E-03	4.27E-03	8.02E-05	7.74E-05	1.59E-02	8.10E-04	4.85E+00	1.55E-02	5.11E-03	1.48E+00	3.93E-05	2.20E-03	2.95E-04	5.31E-02	1.71E-03	3.06E-03
7551.897	1.47E-03	1.02E-03	1.91E-05	1.95E-05	8.37E-05	1.36E-04	1.63E-02	3.51E-03	7.93E-03	3.60E-03	1.37E-04	4.67E-03	5.22E-04	9.39E-02	5.95E-03	1.06E-02
7551.897	1.01E-01	2.95E-02	4.16E-04	4.82E-04	1.39E-02	2.77E-03	4.64E+00	1.37E-01	8.52E-02	1.36E+00	1.37E-04	1.47E-03	6.94E-03	4.85E-01	5.95E-03	1.06E-02
690.4591	2.15E-03	1.62E-03	4.41E-05	3.80E-05	2.58E-03	2.40E-04	4.20E-01	1.30E-02	4.90E-03	1.12E-01	1.25E-05	8.91E-04	4.48E-04	1.19E-01	5.44E-04	9.74E-04
1694.35	1.21E-02	7.78E-03	1.07E-04	8.08E-05	1.99E-03	3.51E-04	5.61E-01	7.71E-02	2.83E-01	1.53E-01	4.91E-03	1.44E-03	1.82E-03	5.61E-01	2.15E-01	3.81E-01

Activity Concentration Including Error																
Tank #	U-233 Ci/L	U-234 Ci/L	U-235 Ci/L	U-236 Ci/L	U-238 Ci/L	Np-237 Ci/L	Pu-238 Ci/L	Pu-239 Ci/L	Pu-240 Ci/L	Pu-241 Ci/L	Pu-242 Ci/L	Am-241 Ci/L	Am-243 Ci/L	Cm-244 Ci/L	Cm-245 Ci/L	Cm-246 Ci/L
S1	6.06E-07	6.60E-06	1.03E-07	5.26E-08	2.27E-06	3.44E-07	7.14E-04	2.08E-05	2.96E-06	2.08E-04	1.81E-08	8.86E-06	9.95E-08	6.11E-05	7.88E-07	1.41E-06
S2	0.00E+00	4.75E-06	1.90E-08	0.00E+00	0.00E+00	1.29E-07	1.70E-05	1.98E-06	0.00E+00	8.24E-06	0.00E+00	3.37E-07	0.00E+00	2.85E-06	0.00E+00	0.00E+00
S3	2.69E-06	2.45E-06	9.41E-08	4.72E-08	2.22E-06	2.82E-07	1.20E-05	1.58E-05	1.05E-06	3.09E-05	1.81E-08	1.15E-07	3.61E-08	1.24E-05	7.88E-07	1.41E-06
S4	7.12E-06	4.59E-06	2.52E-07	1.13E-07	7.99E-06	2.40E-07	2.32E-05	4.55E-05	1.67E-04	1.14E-05	2.90E-06	3.50E-07	1.14E-07	3.07E-06	1.27E-04	2.25E-04
S5	1.34E-05	1.54E-05	4.03E-07	2.47E-07	1.09E-05	4.95E-07	4.59E-03	2.73E-04	2.69E-04	1.14E-03	2.75E-06	1.95E-04	1.40E-04	2.49E-01	1.20E-04	2.14E-04
S6	7.12E-06	4.59E-06	4.42E-08	4.77E-08	1.03E-06	2.25E-07	1.61E-05	4.55E-05	1.67E-04	4.45E-05	2.90E-06	3.14E-07	1.05E-07	6.17E-07	1.27E-04	2.25E-04
S7	7.12E-06	4.59E-06	4.04E-07	2.39E-07	1.34E-05	9.46E-07	2.22E-04	1.43E-04	1.67E-04	4.88E-04	2.90E-06	4.02E-05	8.56E-08	2.18E-06	1.27E-04	2.25E-04
S8	7.12E-06	4.59E-06	3.06E-08	4.77E-08	7.25E-07	5.18E-07	3.43E-05	4.55E-05	1.67E-04	1.28E-03	2.90E-06	5.36E-06	1.75E-06	2.25E-06	1.27E-04	2.25E-04
S11	6.76E-08	5.22E-08	2.42E-09	5.46E-10	4.86E-08	5.94E-09	3.03E-03	5.21E-05	1.91E-04	1.59E-03	2.75E-06	3.71E-06	1.45E-06	6.11E-03	1.20E-04	2.57E-04
S13	1.03E-05	6.92E-06	1.61E-07	2.06E-07	4.05E-06	4.91E-07	9.02E-04	4.55E-05	1.67E-04	2.84E-04	2.90E-06	7.52E-07	2.32E-07	2.26E-05	1.27E-04	2.25E-04
S14	3.95E-07	2.60E-06	6.11E-08	7.14E-08	4.44E-06	1.20E-06	1.30E-04	1.31E-05	1.91E-06	3.35E-05	1.81E-08	1.57E-06	1.16E-07	9.27E-06	7.88E-07	1.41E-06
S19-O	3.06E-06	1.91E-06	3.66E-08	3.70E-08	8.86E-06	3.39E-07	2.22E-03	8.92E-06	2.14E-06	6.73E-04	1.81E-08	1.02E-06	1.34E-07	2.43E-05	7.88E-07	1.41E-06
S19-A	2.80E-06	1.97E-06	3.70E-08	3.56E-08	7.31E-06	3.73E-07	2.23E-03	7.16E-06	2.35E-06	6.80E-04	1.81E-08	1.01E-06	1.36E-07	2.45E-05	7.88E-07	1.41E-06
S20-T	1.94E-07	1.36E-07	2.53E-09	2.58E-09	1.11E-08	1.80E-08	2.16E-06	4.65E-07	1.05E-06	4.77E-07	1.81E-08	6.18E-07	6.91E-08	1.24E-05	7.88E-07	1.41E-06
S20-B	1.34E-05	3.91E-06	5.51E-08	6.38E-08	1.84E-06	3.67E-07	6.15E-04	1.82E-05	1.13E-05	1.81E-04	1.81E-08	1.94E-07	9.19E-07	6.42E-05	7.88E-07	1.41E-06
S21	3.12E-06	2.34E-06	6.38E-08	5.51E-08	3.74E-06	3.48E-07	6.09E-04	1.89E-05	7.09E-06	1.62E-04	1.81E-08	1.29E-06	6.49E-07	1.72E-04	7.88E-07	1.41E-06
S22	7.12E-06	4.59E-06	6.32E-08	4.77E-08	1.17E-06	2.07E-07	3.31E-04	4.55E-05	1.67E-04	9.02E-05	2.90E-06	8.49E-07	1.07E-06	3.31E-04	1.27E-04	2.25E-04
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[illegible]

Tank #	U-233	U-234	U-235	U-236	U-238	Np-237	Pu-238	Pu-239	Pu-240	Pu-241	Pu-242	Am-241	Am-243	Cm-244
S1	6.29E-05	1.06E-03	4.75E-02	8.13E-04	6.75E+00	4.88E-04	4.17E-05	3.36E-04	1.30E-05	2.01E-06	4.61E-06	2.57E-06	4.98E-07	7.54E-07
S2	0.00E+00	7.61E-04	8.80E-03	0.00E+00	0.00E+00	1.83E-04	9.96E-07	3.19E-05	0.00E+00	7.97E-08	0.00E+00	9.79E-08	0.00E+00	3.51E-08
S3	2.79E-04	3.92E-04	4.36E-02	7.29E-04	6.61E+00	4.00E-04	7.02E-07	2.54E-04	4.63E-06	2.99E-07	4.61E-06	3.34E-08	1.81E-07	1.53E-07
S4	7.39E-04	7.36E-04	1.17E-01	1.74E-03	2.38E+01	3.40E-04	1.36E-06	7.33E-04	7.36E-04	1.10E-07	7.38E-04	1.02E-07	5.70E-07	3.79E-08
S5	1.39E-03	2.46E-03	1.87E-01	3.82E-03	3.25E+01	7.02E-04	2.68E-04	4.39E-03	1.18E-03	1.10E-05	7.00E-04	5.67E-05	7.00E-04	3.07E-03
S6	7.39E-04	7.36E-04	2.04E-02	7.37E-04	3.06E+00	3.19E-04	9.43E-07	7.33E-04	7.36E-04	4.30E-07	7.38E-04	9.13E-08	5.25E-07	7.62E-09
S7	7.39E-04	7.36E-04	1.87E-01	3.69E-03	4.00E+01	1.34E-03	1.30E-05	2.30E-03	7.36E-04	4.72E-06	7.38E-04	1.17E-05	4.28E-07	2.69E-08
S8	7.39E-04	7.36E-04	1.42E-02	7.37E-04	2.16E+00	7.35E-04	2.01E-06	7.33E-04	7.36E-04	1.24E-05	7.38E-04	1.58E-06	8.75E-06	2.78E-08
S11	7.01E-06	8.37E-06	1.12E-03	8.44E-06	1.45E+01	8.43E-06	1.77E-04	8.39E-04	8.41E-04	1.54E-05	7.00E-04	1.08E-06	7.25E-06	7.54E-05
S13	1.07E-03	1.11E-03	7.44E-02	3.19E-03	1.20E+01	6.96E-04	5.27E-05	7.33E-04	7.36E-04	2.75E-06	7.38E-04	2.19E-07	1.16E-06	2.79E-07
S14	4.10E-05	4.17E-04	2.83E-02	1.10E-03	1.32E+01	1.71E-03	7.58E-06	2.11E-04	8.39E-06	3.24E-07	4.61E-06	4.58E-07	5.82E-07	1.14E-07
S19-O	3.17E-04	3.06E-04	1.69E-02	5.71E-04	2.64E+01	4.81E-04	1.30E-04	1.44E-04	9.44E-06	6.51E-06	4.61E-06	2.98E-07	6.70E-07	3.00E-07
S19-A	2.90E-04	3.15E-04	1.71E-02	5.51E-04	2.18E+01	5.29E-04	1.31E-04	1.15E-04	1.04E-05	6.58E-06	4.61E-06	2.94E-07	6.80E-07	3.02E-07
S20-T	2.02E-05	2.17E-05	1.17E-03	3.99E-05	3.30E-02	2.55E-05	1.26E-07	7.49E-06	4.63E-06	4.61E-09	4.61E-06	1.80E-07	3.46E-07	1.53E-07
S20-B	1.39E-03	6.27E-04	2.55E-02	9.86E-04	5.46E+00	5.21E-04	3.60E-05	2.92E-04	4.97E-05	1.75E-06	4.61E-06	5.64E-08	4.60E-06	7.93E-07
S21	3.24E-04	3.75E-04	2.95E-02	8.51E-04	1.11E+01	4.94E-04	3.56E-05	3.04E-04	3.12E-05	1.56E-06	4.61E-06	3.75E-07	3.25E-06	2.12E-06
S22	7.39E-04	7.36E-04	2.93E-02	7.37E-04	3.49E+00	2.94E-04	1.94E-05	7.33E-04	7.36E-04	8.72E-07	7.38E-04	2.47E-07	5.36E-06	4.09E-06

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Values listed in ***Bold Italics*** print are detection limits or upper limits.
Tanks S8and S13 U-238 activity is a lower limit. Uncertainty of 100% has been assigned.
The values calculated for samples S20-T and S20-B are upper limits.

Ci/g		Ci/g		Ci/g		Ci/g		Ci/g		Ci/g		Ci/g		Ci/g	
2.27E-01		1.03E+02		3.93E-03		3.44E+00		2.00E-01		8.10E+01		1.72E-01		3.04E-01	
Pu-240	Error	Pu-241	Error	Pu-242	Error	Am-241	Error	Am-243	Error	Cm-244	Error	Cm-245	Error	Cm-246	Error
pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g
2.36E+07	0.00E+00	3.57E+07	3.78E+07	4.10E+05	0.00E+00	5.05E+06	0.00E+00	2.08E+07	0.00E+00	1.18E+08	2.17E+07	1.79E+07	0.00E+00	3.18E+07	0.00E+00
9.73E+06	0.00E+00	3.53E+07	0.00E+00	1.69E+05	0.00E+00	2.31E+06	3.95E+05	8.56E+06	0.00E+00	2.54E+07	5.07E+06	7.39E+06	0.00E+00	1.31E+07	0.00E+00
2.97E+06	5.94E+05	1.01E+07	2.84E+06	1.87E+04	0.00E+00	1.06E+06	2.71E+05	5.32E+05	7.91E+04	9.46E+07	9.46E+06	8.20E+05	0.00E+00	1.46E+06	0.00E+00
1.35E+06	2.69E+05	9.01E+06	3.60E+06	7.30E+03	0.00E+00	2.58E+05	4.44E+04	3.71E+05	0.00E+00	3.23E+05	1.94E+05	3.19E+05	0.00E+00	5.68E+05	0.00E+00
1.01E+07	2.02E+06	9.28E+06	0.00E+00	1.24E+05	0.00E+00	2.97E+06	2.96E+05	1.69E+06	1.29E+05	2.55E+09	0.00E+00	5.41E+06	0.00E+00	9.64E+06	0.00E+00
8.78E+05	1.76E+05	5.77E+06	2.65E+06	1.31E+03	2.62E+02	6.71E+05	4.05E+04	5.90E+04	1.18E+04	1.09E+06	2.18E+05	2.26E+04	4.51E+03	5.00E+04	1.00E+04
1.26E+06	2.51E+05	1.23E+07	4.92E+06	2.09E+03	4.19E+02	9.64E+05	5.21E+04	4.82E+04	0.00E+00	7.57E+04	0.00E+00	4.14E+04	0.00E+00	7.34E+04	0.00E+00
2.85E+06	5.70E+05	1.01E+07	4.05E+06	2.26E+03	0.00E+00	1.95E+06	1.15E+05	1.14E+05	0.00E+00	9.01E+05	1.80E+05	9.86E+04	0.00E+00	1.75E+05	0.00E+00
8.06E+05	3.23E+05	9.46E+06	3.78E+06	9.50E+03	0.00E+00	1.59E+06	1.30E+05	1.74E+05	2.68E+04	6.81E+07	1.36E+07	4.14E+05	0.00E+00	7.39E+05	0.00E+00
2.48E+07	4.95E+06	3.90E+08	1.56E+08	9.23E+04	1.85E+04	4.09E+07	2.02E+06	8.11E+05	0.00E+00	1.16E+07	0.00E+00	6.94E+05	0.00E+00	1.24E+06	0.00E+00
3.16E+06	1.26E+06	2.75E+05	0.00E+00	1.63E+04	0.00E+00	1.86E+07	9.71E+05	1.08E+06	4.31E+05	1.36E+08	1.36E+07	7.12E+05	0.00E+00	1.27E+06	0.00E+00
2.92E+06	5.85E+05	2.86E+07	9.15E+06	2.18E+04	0.00E+00	4.14E+06	4.43E+05	5.45E+05	1.05E+05	1.18E+08	1.18E+07	9.50E+05	0.00E+00	1.69E+06	0.00E+00
1.43E+06	0.00E+00	1.36E+07	6.26E+06	2.47E+04	0.00E+00	1.01E+06	2.22E+05	1.26E+06	0.00E+00	3.03E+07	3.03E+06	1.08E+06	0.00E+00	1.92E+06	0.00E+00
1.13E+06	0.00E+00	1.66E+05	3.34E+05	1.94E+04	0.00E+00	1.71E+05	0.00E+00	9.92E+05	0.00E+00	1.26E+06	1.26E+05	8.49E+05	0.00E+00	1.51E+06	0.00E+00
7.52E+06	0.00E+00	2.12E+07	5.52E+06	1.31E+05	0.00E+00	2.01E+06	8.52E+05	6.62E+06	0.00E+00	8.06E+07	8.06E+06	5.27E+06	0.00E+00	1.01E+07	0.00E+00
9.77E+06	1.95E+06	2.05E+07	7.38E+06	2.74E+03	0.00E+00	3.36E+06	2.11E+05	2.32E+06	4.64E+05	5.32E+08	1.06E+08	1.20E+05	0.00E+00	2.48E+06	9.93E+04
5.32E+07	1.06E+07	1.45E+07	1.02E+07	7.84E+03	1.57E+03	4.27E+06	3.50E+05	1.21E+07	2.42E+06	1.77E+09	7.10E+08	2.32E+05	0.00E+00	1.15E+06	2.30E+05

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Activity Concentration Including Error																

	U-233	U-234	U-235	U-236	U-238	Np-237	Pu-238	Pu-239	Pu-240	Pu-241	Pu-242	Am-241	Am-243	Cm-244	Cm-245	Cm-246
Tank #	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g
S1	2.56E-03	4.03E-03	4.92E-02	4.05E-03	7.30E+00	4.04E-03	2.75E-04	4.05E-03	4.03E-03	2.76E-05	4.05E-03	5.69E-05	4.03E-03	6.69E-05	4.04E-03	4.06E-03
S2	2.68E-03	4.23E-03	3.40E-01	8.51E-03	5.45E+01	1.15E-02	7.32E-04	9.04E-03	3.64E-03	2.90E-05	3.65E-03	6.67E-05	3.63E-03	3.19E-05	3.64E-03	3.66E-03
S3	6.63E-03	6.25E-02	8.14E+00	1.19E-01	1.07E+03	2.53E-01	5.20E-03	3.69E-01	3.45E-02	2.75E-04	1.05E-02	8.50E-04	6.71E-03	2.82E-03	1.05E-02	1.06E-02
S4	1.71E-03	7.02E-03	7.05E-01	1.28E-02	9.26E+01	2.07E-03	6.73E-04	1.84E-02	2.15E-03	3.68E-05	5.60E-04	2.65E-05	5.59E-04	1.93E-06	5.59E-04	5.64E-04
S5	1.10E-04	1.09E-04	1.92E-03	1.10E-04	2.95E-01	1.10E-04	3.67E-05	4.63E-04	1.86E-04	3.12E-07	1.10E-04	3.30E-06	3.17E-05	1.10E-04	1.09E-04	1.10E-04
S6	9.35E-02	4.79E-01	5.71E+01	1.66E+00	1.26E+04	2.57E-01	4.07E-02	1.75E+00	7.66E-02	1.34E-03	6.60E-03	3.41E-03	5.84E-03	2.66E-04	2.60E-03	3.26E-03
S7	6.00E-04	6.14E-02	5.56E+00	2.06E-01	1.29E+02	1.52E-02	8.99E-04	2.63E-01	1.66E-02	4.15E-04	1.59E-03	7.37E-04	6.01E-04	2.33E-06	6.00E-04	6.02E-04
S8	1.01E-03	2.27E-03	6.76E-02	2.27E-03	1.58E+01	1.34E-02	2.96E-03	1.10E-01	7.39E-03	6.71E-05	2.82E-04	2.94E-04	2.80E-04	6.55E-06	2.81E-04	2.82E-04
S11	9.12E-06	9.11E-06	1.17E-04	9.14E-06	2.03E-02	9.14E-06	7.60E-06	1.27E-04	1.88E-05	4.85E-07	9.16E-06	1.90E-06	3.81E-06	3.82E-06	9.12E-06	9.21E-06
S13	4.33E-02	2.67E-02	1.68E+00	7.66E-02	2.75E+02	3.70E-02	1.44E-02	2.30E-01	2.37E-02	9.57E-04	5.11E-03	2.26E-03	7.35E-04	2.59E-05	7.31E-04	7.39E-04
S14	6.70E-04	1.05E-03	2.54E-02	1.05E-03	4.07E+00	1.72E-03	4.09E-03	7.72E-03	4.95E-03	6.77E-07	1.06E-03	1.45E-03	1.92E-03	4.70E-04	1.05E-03	1.06E-03
S19-O	1.63E-02	3.75E-02	3.01E+00	8.41E-02	4.67E+02	5.06E+00	1.68E-02	1.22E-01	4.40E-02	1.04E-03	1.58E-02	3.80E-03	9.26E-03	4.57E-03	1.57E-02	1.58E-02
S19-A	1.70E-02	2.67E-02	1.54E+00	4.61E-02	2.47E+02	6.24E-02	3.86E-03	4.10E-02	1.65E-02	5.03E-04	1.65E-02	9.38E-04	1.65E-02	1.08E-03	1.64E-02	1.65E-02
S20-T	3.50E-02	5.49E-02	1.64E-01	5.52E-02	2.40E+01	5.54E-02	8.42E-04	5.51E-02	5.54E-02	5.38E-05	5.49E-02	5.53E-04	5.52E-02	1.90E-04	5.49E-02	5.52E-02
S20-B	3.34E-02	5.24E-02	1.24E+00	5.28E-02	2.12E+02	8.08E-02	9.02E-03	1.11E-01	5.26E-02	4.10E-04	5.29E-02	1.32E-03	5.25E-02	1.74E-03	4.86E-02	5.27E-02
S21	4.14E-02	5.31E-02	5.21E+00	1.84E-01	8.14E+02	3.53E-01	3.58E-02	4.99E-01	3.67E-01	1.91E-03	4.95E-03	7.37E-03	9.88E-02	5.59E-02	4.95E-03	6.02E-02
S22	2.38E-03	2.50E-03	1.99E-01	5.84E-03	2.24E+01	3.68E-03	3.79E-03	7.36E-02	1.52E-01	1.29E-04	1.30E-03	7.28E-04	3.93E-02	1.66E-02	7.31E-04	2.46E-03
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Tank S22 U-238 not measured.

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	Cm-245	Cm-246
g/(g waste)	g/(g waste)	g/(g waste)
S2	6.10E-07	6.15E-07
S4(1)	0.00E+00	0.00E+00
S7	1.17E-06	1.18E-06
S8	1.99E-07	2.00E-07
S16	6.57E-06	6.58E-06
S19	6.92E-07	7.01E-07
S20	1.87E-06	1.88E-06
S21	3.35E-07	3.39E-07
S22	5.39E-08	2.33E-07

Gross Alpha Specific Activity of Tanks S2, S3, S4, and S20-T								
	Filtered Liquid Activity (uCi)	Suspended Solids Activity (uCi)	Raw Liquid Activity (uCi)	Filtered Liquid Mass (g)	Suspended Solids Mass (g)	Raw Liquid Mass (g)	Gross Alpha Specific Activity uCi/g	Gross Alpha Specific Activity nCi/g
S2	8372.04	13740.81	22112.85	424098.49	84.82	424183.31	5.21E-02	5.21E+01
S3	46692.67	314209.10	360901.77	1569476.03	2197.27	1571673.30	2.30E-01	2.30E+02
S4	26973.18	9741.57	36714.74	1507982.35	301.60	1508283.95	2.43E-02	2.43E+01
S20-T	95909.09	25574.65	121483.74	6177451.75	11119.41	6188571.16	1.96E-02	1.96E+01
Gross Beta Specific Activity of Tanks S2, S3, S4, and S20-T								
	Filtered Liquid Activity (uCi)	Suspended Solids Activity (uCi)	Raw Liquid Activity (uCi)	Filtered Liquid Mass (g)	Suspended Solids Mass (g)	Raw Liquid Mass (g)	Gross Beta Specific Activity uCi/g	Gross Beta Specific Activity nCi/g
S2	12431.22	443.61	12874.83	424098.49	84.82	424183.31	3.04E-02	3.04E+01
S3	233463.30	483398.60	716861.90	1569476.03	2197.27	1571673.30	4.56E-01	4.56E+02
S4	188672.50	1643.70	190316.20	1507982.35	301.60	1508283.95	1.26E-01	1.26E+02
S20-T	770293.50	13343.30	783636.80	6177451.75	11119.41	6188571.16	1.27E-01	1.27E+02
Tritium Specific Activity of Tanks S2, S3, S4, and S20-T								
	Filtered Liquid Activity (uCi)	Suspended Solids Activity (uCi)	Raw Liquid Activity (uCi)	Filtered Liquid Mass (g)	Suspended Solids Mass (g)	Raw Liquid Mass (g)	Tritium Specific Activity uCi/g	Tritium Specific Activity nCi/g
S2	305.00	36.20	341.20	424098.49	84.82	424183.31	8.044E-04	8.04E-01
S3	1090.00	250.00	1340.00	1569476.03	2197.27	1571673.30	8.526E-04	8.53E-01
S4(1)	3770.00		3770.00	1507982.35	301.60	1508283.95	2.500E-03	2.50E+00
S20-T(1)		549.00	549.00	6177451.75	11119.41	6188571.16	8.871E-05	8.87E-02
(1) Data incomplete for this sample. The specific activity value should be treated as a lower limit.								
Values listed in Bold are detection limits.								