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Add. 1A

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

ANALYTICAL SERVICES

222-S CHARACTERIZATION OF 242-A EVAPORATOR SLURRY,
CAMPAIGN 94-1

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CASE NARRATIVE

ADDENDUM 1A,

ANALYSIS AND CHARACTERIZATION OF 242-A EVAPORATOR SLURRY, CAMPAIGN 94-1

CASE NARRATIVE

INTRODUCTION

SOURCE DOCUMENTATION

During the 242-A Evaporator's 94-1 campaign, five process samples were collected from the slurry stream for waste characterization. The five samples were collected over a 36 day time span, respectively on May 4, May 9, May 16, May 23, and June 9, 1994. Sample collections were performed per the protocol described in 242-A Evaporator Waste Analysis Plan, WHC-SD-WM-EV-060, Rev. 3 and in 242-A Evaporator Quality Assurance Project Plan, WHC-SD-WM-QAPP-009, Rev. 0. Slurry waste was characterized chemically and radiochemically by the Westinghouse Hanford Company, 222-S Laboratory as directed by four documents:

1. 242-A Evaporator Waste Analysis Plan (WAP), WHC-SD-WM-EV-060, Rev. 3
2. 242-A Evaporator Quality Assurance Project Plan (QAPjP), WHC-SD-WM-QAPP-009, Rev. 0.
3. 242-A Evaporator Project Analytical Services, Statement of Work (SOW), (WHC-SOW-93-0006, Rev. 1, and
4. Technical Project Plan for the 222-S Laboratory in Support of the 242-A Evaporator Waste Analysis Plan, WHC-SD-WM-EV-060, Revision 2, WHC-SD-WM-TPP-048, Rev. 0, Technical Project Plan (TPP).
5. Technical Project Plan, WHC-SD-WM-TPP-048, Rev. 0, Engineering Change Notice # 600949, written against Technical Project Plan on 08/26/94.

Laboratory operations at the 222-S Laboratory were/are performed according to the Technical Project Plan (TPP). For those activities not defined or specified in the TPP, the successive document priority (in high to low order) is WAP, QAPjP, SOW, QAPP-002 (Quality Assurance Project Plan for the Analysis of Highly Radioactive Samples in Support of Environmental Activities on the Hanford Site, WHC-SD-CP-QAPP-002). Deviations from these documented instructions are discussed in this narrative and are generally supported with additional documentation.

Physical, inorganic, organic, and radiochemical analyses were performed on evaporator slurry by the 222-S Laboratory.

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RELEVANCE TO SW-846 PROCEDURES

Although SW-846 methods are mentioned in the source documents as examples of the desired analytical technology to use in this characterization effort, it is clear that the evaporator program anticipated the use of in-house controlled procedures within the 222-S Laboratory. The WAP, section 5.1.2 states, "Laboratory operations and test procedures that are performed in carrying out the requested characterization activities will be determined by laboratory personnel and will be defined in the TPP".

Each analyses performed by the 222-S Laboratory was conducted using a controlled procedure. Some procedures were consistent with SW-846 guidance and others are patterned after U.S. Environmental Protection Agency, Contract Laboratory Program (CLP) methods. All procedures, however, use SW-846 analytical technology. Deviations from exact SW-846 procedures (such as sampling, aliquot size, sample holding time and sample preservation) are essential when handling samples containing dangerous levels of radioactive material, and are consistent with the final rule regarding "Hazardous Waste Management System; Testing and Monitoring Activities, 40 CFR Parts 260, 261, 264, 265, 268, and 270 as stated in the Federal Register, volume 58, number 167, Tuesday, August 31, 1993. Generally these deviations are practiced to limit exposure of personnel to ionizing radiation to an amount that is "as low as reasonably achievable" (ALARA).

CHANGE OF WORKSCOPE

Originally (prior to sampling) as directed in the Statement of Work (SOW), the 222-S laboratory was scheduled to receive and to analyze samples from all five slurry collections for physical, inorganic and radiochemical analytes, while Battelle's 325 Pacific Northwest Laboratory (PNL) was scheduled to receive and to analyze slurry samples from all five collections for organic analytes. By the time that the first set of slurry samples was to be collected, a pause in work at PNL had recently taken effect, whereby PNL was unable to perform the organic analyses. As a consequence, 222-S laboratory was directed to handle the organic workload with very little lead-time.

Although the 222-S laboratory was capable and approved for such work, the 222-S laboratory's Technical Project Plan (TPP), a formal work implementation plan, did not discuss the performance of organic analyses, because it was written in May 1993, which was several months prior to the work pause at PNL. Without a formal implementation document, and with insufficient time to revise the TPP prior to sampling, an attempt was made to quickly generate a work plan such that organic analyses could be conducted with approval from the program. The final version of Memorandum of Understanding (MOU): Documentation of How 222-S Laboratory Will Perform the Organic Analyses of 242-A Evaporator Slurry Samples was issued on June 16, 1994, with the final approval signature obtained on June 20, 1994. This MOU, included in the Communication Documents section of this data package, attempted both to direct organic analytical work as specified in the WAP and QAPjP, and to clarify inconsistent and ambiguous wording in these source documents. Although the major program aspects were

discussed, several other issues were not addressed in the MOU. Consequently the MOU was not an "all inclusive" implementation plan.

SAMPLING

Slurry samples were collected five times during the 94-1 campaign, and were designated as "slurry 1", "slurry 2", etc. for convenience of identification.

Slurry samples were collected as directed in Process Memos, which are included in the Communication Documents section of this data package. One Process Memo was issued for each of the five sampling efforts. Each slurry sample bottle was filled with approximately 60 milliliters. Field blanks were generated by placing laboratory deionized reagent water into sampling bottles and closed with the same caps used for the tank samples.

As directed by the WAP, samples were not preserved (neither acidified nor refrigerated) nor was there an attempt to assure the complete filling of the bottles so as to exclude all headspace. These actions were consistent with safety procedures, which attempt to limit personnel exposure to hazardous ionizing radiation. For more information, refer to the Sample Preservation section of this narrative.

Chain-of-Custody forms were generated by the sample collector. Samples were transported to the laboratory receiving door in pigs by the B-Plant sample truck.

Five bottles were collected for Slurry 1 on May 4, 1994 at 1430 hours. Two bottles of slurry were collected to provide a sufficient quantity for inorganic/radiochemical analyses, and were marked with the Laboratory Identification (Lab ID) Numbers of V81A and V81B, respectively. Two bottles of slurry were collected for organic analyses: one for volatile organic analysis (VOA), and one bottle for semi-volatile organic analysis (Semi-VOA) and total organic carbon (TOC). These two bottles were assigned Lab ID numbers V103 and V106, respectively, and were both labeled at the time of collection with the shipping number, PNL-S1. One bottle was prepared as the field (trip) blank for organic analyses, and was labeled with the shipping number of PNL-B1. Upon arrival at the laboratory, this field (trip) blank for VOA and TOC analyses was given the Lab ID number of V107.

Six bottles were collected for Slurry 2 on May 9, 1994 at 1130 hours. Two bottles of slurry were collected for inorganic/radiochemical analyses, and were marked with the Laboratory Identification (Lab ID) Numbers of V85 (A) and V85 (B), respectively. One bottle was prepared as the field blank for inorganic and radiochemical analyses, representing the entire sampling event (from 5/5/94 to 6/9/94). This bottle was labeled with the Lab ID number of V101. Two bottles of slurry were collected for organic analyses: one for volatile organic analysis (VOA), and one bottle for semi-volatile organic analysis (Semi-VOA) and total organic carbon (TOC). These two bottles were assigned Lab ID numbers V118 and V121, respectively, and were both labeled at the time of collection with the shipping number, PNL-S2. One bottle was prepared as the field (trip) blank for organic analyses, and was labeled with

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the shipping number of PNL-B2. Upon arrival at the laboratory, this field (trip) blank for semi-VOA and TOC analyses was given the Lab ID number of V122.

Six bottles were collected for Slurry 3 on May 16, 1994 at 1130 hours. Two bottles of slurry were collected for inorganic/radiochemical analyses, and were marked with the Laboratory Identification (Lab ID) Numbers of V89 (A) and V89 (B), respectively. Two bottles of slurry were collected for organic analyses: one for volatile organic analysis (VOA), and one bottle for semi-volatile organic analysis (Semi-VOA) and total organic carbon (TOC). These two bottles were assigned Lab ID numbers V123 and V126, respectively, and were both labeled at the time of collection with the shipping number, PNL-S3. Two bottles were prepared as the field (trip) blanks for organic analyses, and were labeled with the shipping number of PNL-B3. Upon arrival at the laboratory, one field (trip) blank for VOA was given the Lab ID number of V127, and the other for semi-VOA and TOC analyses was given the Lab ID number of V128.

Six bottles were collected for Slurry 4 on May 23, 1994 at 1215 hours. Two bottles of slurry were collected for inorganic/radiochemical analyses, and were marked with the Laboratory Identification (Lab ID) Numbers of V93 (A) and V93 (B), respectively. Two bottles of slurry were collected for organic analyses: one for volatile organic analysis (VOA), and one bottle for semi-volatile organic analysis (Semi-VOA) and total organic carbon (TOC). These two bottles were assigned Lab ID numbers V113 and V116, respectively, and were both labeled at the time of collection with the shipping number, PNL-S4. Two bottles were prepared as the field (trip) blanks for organic analyses, and were labeled with the shipping number of PNL-B4. Upon arrival at the laboratory, one field (trip) blank for VOA was given the Lab ID number of V117, and the other for semi-VOA and TOC analyses was given the Lab ID number of V129.

Six bottles were collected for Slurry 5 on June 9, 1994 at 1130 hours. Two bottles of slurry were collected for inorganic/radiochemical analyses, and were marked with the Laboratory Identification (Lab ID) Numbers of V97 (A) and V97 (B), respectively. Two bottles of slurry were collected for organic analyses: one for volatile organic analysis (VOA), and one bottle for semi-volatile organic analysis (Semi-VOA) and total organic carbon (TOC). These two bottles were assigned Lab ID numbers V108 and V111, respectively, and were both labeled at the time of collection with the shipping number, PNL-S5. Two bottles were prepared as the field (trip) blanks for organic analyses, and were labeled with the shipping number of PNL-B5. Upon arrival at the laboratory, one field (trip) blank for VOA was given the Lab ID number of V112, and the other for semi-VOA and TOC analyses was given the Lab ID number of V130.

LABORATORY OPERATIONS

ADDENDUM 1A,

SAMPLE TRACKING

RECEIVING PROCEDURES/CHAIN-OF-CUSTODY

Slurry samples were received from the B-Plant Truck driver into the 222-S Laboratory at door 13, where the laboratory sample custodian signed the Chain-of-Custody forms, becoming the new sample custodian. The Chain-of-Custody form is a legal document, which tracks the transfer of samples between individuals or organizations to establish sample ownership.

Shielded containers (pigs) containing the sample bottles were transported to a laboratory hood. The radioactive dose rate "over the top" of each pig's opening was measured by a Health Physics Technician (HPT), who determined that the dose rate for all samples was sufficiently low that the processing of samples in the hot cell was not required. These procedures and requirements are specified in 222-S Laboratory procedure number LO-080-112 and in Radiation Work Permit number RWP-006. Samples were removed from the pigs, labeled with the laboratory identification number, and transferred to the metal storage cabinets in a secured area. The determination not to process the samples through the hot cell, expedited the analyses. Hot cell processing of samples is required when the "over-the-top" dose rate exceeds 2 rem per hour or 25 rad per hour.

REQUEST FOR SPECIAL ANALYSIS

For each sample, Request for Special Analysis (RSA) forms were generated, which provided a laboratory identification number, stated the preparative and analytical procedures, set groups of samples into analytical batches, and stated the degree of quality control. RSAs served as the controlling documents for analytical operations. Sample preparation instructions on the RSAs included such things as dilutions and acid digestions. Hydroxide, arsenic, and tritium are examples of analytical procedures shown on the RSA sheet. Generally a maximum of three samples were included in a sample batch so that quality control determinations (such as a blank, standard(s), duplicate sample, spiked sample, and duplicate spiked sample) may be included. From the instructions on the RSA, traveler cards were generated.

SAMPLE IDENTIFICATION

As discussed above, slurry samples were identified by the sample collector using a shipping number which began with either "V" or "PNL". Table 1 references the shipping number to the sampling date and sample set (e.g. Slurry 1) for protocol slurry samples.

Table 1. Laboratory Identification of Protocol Slurry Samples			
Original Sample Number	Sample Set Number	Lab Sample Number	Laboratory Sample Description
- - -	1	V79	LMCS Standard for V81
- - -	1	V80	Reagent Blank for V81
V81	1	V81	Slurry (5/4/94): inorganic, radiochemistry
- - -	1	V82	Ending LMCS Standard for V81
- - -	2	V83	LMCS Standard for V85
- - -	2	V84	Reagent Blank for V85
V85	2	V85	Slurry (5/9/94): inorganic, radiochemistry
- - -	2	V86	Ending LMCS Standard for V85
- - -	3	V87	LMCS Standard for V89
- - -	3	V88	Reagent Blank for V89
V89	3	V89	Slurry (5/16/94): inorganic, radiochemistry
- - -	3	V90	Ending LMCS Standard for V89
- - -	4	V91	LMCS Standard for V93
- - -	4	V92	Reagent Blank for V93
V93	4	V93	Slurry (5/23/94): inorganic, radiochemistry
- - -	4	V94	Ending LMCS Standard for V93
- - -	5	V95	LMCS Standard for V97
- - -	5	V96	Reagent Blank for V97
V97	5	V97	Slurry (6/9/94): inorganic, radiochemistry
- - -	5	V98	Ending LMCS Standard for V97
- - -	2	V99	LMCS Standard for V101
- - -	2	V100	Reagent Blank for V101
V101	2	V101	Field Blank (5/9/94): inorganic, radiochem
- - -	2	V102	Ending LMCS Standard for V101
PNL-S1	1	V103	Slurry (5/4/94): VOA
- - -	1	V104	LMCS Standard for V106 TOC
- - -	1	V105	Reagent Blank for V106 TOC
PNL-S1	1	V106	Slurry (5/4/94): Semi-VOA, TOC

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Table 1. Laboratory Identification of Protocol Slurry Samples			
Original Sample Number	Sample Set Number	Lab Sample Number	Laboratory Sample Description
PNL-B1	1	V107	Field Blank for V103 VOA and for V106 TOC
PNL-S5	5	V108	Slurry (6/9/94): VOA
- - -	5	V109	LMCS Standard for V111 TOC
- - -	5	V110	Reagent Blank for V111 TOC
PNL-S5	5	V111	Slurry (6/9/94): Semi-VOA, TOC
PNL-B5	5	V112	Field Blank for V108
PNL-S4	4	V113	Slurry (5/23/94): VOA
- - -	4	V114	LMCS Standard for V116 TOC
- - -	4	V115	Reagent Blank for V116 TOC
PNL-S4	4	V116	Slurry (5/23/94): Semi-VOA, TOC
PNL-B4	4	V117	Field Blank for V113
PNL-S2	2	V118	Slurry (5/9/94): VOA
- - -	2	V119	LMCS Standard for V121 TOC
- - -	2	V120	Reagent Blank for V121 TOC
PNL-S2	2	V121	Slurry (5/9/94): Semi-VOA, TOC
PNL-B2	2	V122	Field Blank for V121
PNL-S3	3	V123	Slurry (5/16/94): VOA
- - -	3	V124	LMCS Standard for V126 TOC
- - -	3	V125	Reagent Blank for V126 TOC
PNL-S3	3	V126	Slurry (5/16/94): Semi-VOA, TOC
PNL-B3	3	V127	Field Blank for V123
PNL-B3	3	V128	Field Blank for V126
PNL-B4	4	V129	Field Blank for V116
PNL-B5	5	V130	Field Blank for V111

TRAVELER CARDS

ADDENDUM 1A,

Analyses were tracked in the laboratory using a serial number coding system placed on a "traveler" card. For physical, inorganic and radiochemical analyses, one card was generated for each analytical determination (sample, duplicate, spike, blank, and standard). Each card was identified with unique serial numbers, which allowed tracking within the Laboratory Customer Communication System (LCCS), a computerized information base. VOA and Semi-VOA determinations did not fully follow the coding system. This situation occurred because these analyses were among the last of the procedures to be approved, and by that time, there were too few code numbers available in the LCCS system to enable the assignment of a unique number to each type of quality control sample (e.g. direct, spike duplicate Semi-VOA).

The current general coding system was modified to accommodate samples originating from the 242-A Evaporator project, where a "V" is used as the initial code prefix. Following the V is a sequential number, which coded the sample source. This prefix, sequential number is listed on the RSA form as the Laboratory Identification Number.

An extension suffix (a decimal point followed by four numbers) was added to every sequential serial number. The first digit coded the type of sample preparation (e.g., acid digestion, fusion, direct, etc.). The second digit coded the quality control function of the sample (e.g., sample, spike, spike duplicate, blank, etc.). The last two digits coded the analysis type (e.g., ammonia, specific gravity, tritium, selenium, etc.).

An example of the serial number, which coded for direct analysis (no sample dilution or digestion) of a duplicate sample for total inorganic carbon on evaporator's laboratory sample number 85 (slurry set 2) was V85.5827.

Example:

V85.5827

Lab sample number	—				Analysis type (27=total inorganic carbon)
					Quality control function (8=sample duplicate)
					Sample preparation (5=direct)

Table 2 shows the coding used to identify each traveler card serial number.

Table 2. Serial Number Extension Codes for Evaporator Samples

Sample Preparation	Direct	Vxx.5xxx
	Water Leach (water dilution)	Vxx.7xxx
	Acid Digest	Vxx.8xxx
Quality Control Function	LMCS Standard	Vxx.x5xx
	Reagent Blank	Vxx.x6xx
	Sample	Vxx.x7xx
	Sample Duplicate	Vxx.x8xx
	Spike	Vxx.x9xx
	Spike Duplicate	Vxx.x0xx
Analysis Type	Appearance	Vxx.xx01
	VOA or Semi-VOA	Vxx.xx02
	Specific Gravity	Vxx.xx06
	Differ. Scanning Calorimetry	Vxx.xx11
	Total Beta	Vxx.xx20
	Total Alpha	Vxx.xx25
	Total Organic Carbon	Vxx.xx26
	Total Inorganic Carbon	Vxx.xx27
	Ammonia	Vxx.xx28
	Hydroxide	Vxx.xx29
	Gamma Energy Analysis	Vxx.xx30
	Uranium, total	Vxx.xx40
	Inductively Coupled Plasma	Vxx.xx50
	Ion Chromatography	Vxx.xx71
	Cyanide	Vxx.xx78
	Pu ^{239/240}	Vxx.xx81
	Am ²⁴¹	Vxx.xx82
	Np ²³⁷	Vxx.xx83
	Tc ⁹⁹	Vxx.xx84
	I ¹²⁹	Vxx.xx85
	Sr ⁹⁰	Vxx.xx86
	H ³	Vxx.xx87
	C ¹⁴	Vxx.xx88
	Se ⁷⁹	Vxx.xx89
	Arsenic	Vxx.xx95
	Selenium	Vxx.xx96
	Mercury	Vxx.xx97

There are exceptions to the coding system shown above. For visual appearance, the extension is always Vxx.1001. No extension code number was generated for curium-244, because it is a by-product of the americium-244 analysis and does not have a specific procedure number of its own. The code for VOA for all sample types (including QC samples) is Vxx.4502. The code for Semi-VOA for all sample types (including QC samples) is Vxx.3602.

When the codes for the evaporator project were generated on the computer, a code for a simple sample dilution was omitted because no controlled procedure for sample dilution was available. It was necessary to track all sample handling within the laboratory, including dilution factors, consequently the code for a water digestion (actually a water leach procedure for solid samples, LA-504-101) was used. It should be clearly understood that the slurry samples were *not* subjected to a leaching procedure, but the traveler cards, which were generated with the water digestion code, were used simply to document the dilution factors acquired during the sample preparation phase.

ANALYTICAL BATCH SHEET

An Analytical Batch sheet was prepared for each batch of traveler cards by a Lab Leader. Data were added to this sheet by the technician performing the analysis which describe analytical conditions (e.g., analyst, instrument, date, time, temperature, etc.) and procedures used (e.g., type of sample preparation, analytical procedure, and revision numbers).

ANALYTICAL BATCH SUMMARY SHEETS

Upon completion of each analytical batch, several data calculation or evaluation steps were performed. Raw data were converted to final values by technicians. In general, chemists reviewed the calculations for approval and then generated an Analytical Batch Summary Sheet for all determinations. This sheet brought together the final data from each of the traveler cards (representing each determination). Additional information from calculations of quality assurance parameters, such as percent recovery, relative percent difference (RPD), etc., was added to the summary sheet by the chemists. Occasionally, chemists include descriptive information on these sheets regarding analytical conditions during the analysis of the batch. This information is included in this case narrative.

The exceptions to this procedure are for inductively coupled plasma/emission spectrometry (ICP) and for gas chromatograph/mass spectrometry (GC/MS) analyses, such as VOA and Semi-VOA, where a computer program generates a Contract Laboratory Program (CLP) format data package for each batch. Due to the vast amount of data generated in each batch for these types of analyses, it is awkward to produce Batch Summary Sheets. A chemist's narrative also accompanies the CLP data package.

All data were reviewed by the chemists and the project coordinator to verify that correct values were transcribed from the traveler cards to the analytical batch summary sheets.

ANALYTICAL AND REPORT SCHEDULING

A computerized logic schedule was generated to plan each major event necessary to produce the final data package. Individuals were assigned responsibility to expedite each event. During the weekly scheduling meeting, each assignee was responsible for reporting progress on the assigned actions. Milestones were closely monitored to assure that targeted schedule dates were being met. Reports, which tracked the scheduling status, were published and distributed weekly throughout the WHC, Analytical Services division.

A preliminary report of data through the use of the LCCS was scheduled by the Statement of Work (SOW) to be due to the customer (the evaporator program) 85 days after collection of the last slurry sample. That date was September 2, 1994. In discussions with the customer, it was mutually agreed that an LCCS report would not be required, if instead the data package (as requested in the SOW) could be provided to the customer (and to WHC, Analytical Services) on or about the same date that the LCCS report would have been due. It was also understood that the package delivered to the customer at that time would not be a validated package, because validation would be performed by WHC, Analytical Services.

QUALITY ASSURANCE OF THE ANALYTICAL SYSTEM AND DATA

CONTROLLED PROCEDURES

Every analytical procedure used to develop data for the evaporator project was performed under the direction of written procedures (except for the dilution procedure) which are reviewed and approved at least every two years. Revisions to existing procedures were and are generated for corrections or updating as needed, and are distributed promptly to replace obsolete versions.

STATISTICAL EVALUATION - LMCS

Performance data have been gathered historically on each analytical procedure for which there is a Laboratory Measurement Control System (LMCS) standard available. The percent recovery (an assessment of procedure accuracy) has been determined and stored in the LMCS computer data base for each LMCS standard. On a yearly basis, a statistical evaluation of these data has been made to generate new acceptance control limits for future analyses of LMCS standards.

An evaluation of the mean and standard deviation values for each of the procedures has also been used to signal needed improvements in these procedures, when means deviate significantly from 100 percent or when standard deviations are relatively large.

REVIEW OF DATA

Each batch has been reviewed for accuracy at several levels. Chemists have reviewed not only analytical calculations, but have verified that the analytical system was performing appropriately, and that the laboratory technicians were following written procedures.

A team of technicians recalculated values on the traveler cards, and checked the information reported by the chemists for completeness.

The laboratory's Quality Control Officer performed the second general review of analytical data. He recalculated final values from the raw data as well as checked the information reported by the chemists and technicians for completeness.

A third general review was performed by the project coordinator, which included those items checked previously by others, but also included spreadsheet summaries of data. A peer review of this narrative was performed by other project coordinators in the 222-S Laboratory, Program Support Group.

The Quality and Technology Services group within 222-S Laboratory performed a topical review of the data package.

ANALYTICAL DATA REPORTING

LABORATORY CUSTOMER COMPUTER SYSTEM

Following the completion of Analytical Batch Summary Sheets, all data that were generated for each valid batch were delivered to a Lab Leader for keyboard entry into the Laboratory Customer Computer System (LCCS). Data in this computer system were accessible by the evaporator program staff as needed.

DATA SUMMARY SPREADSHEETS

Computer generated spreadsheets were provided in a tabular summary format to facilitate evaluation of both final and quality control data. All data were reviewed by the project coordinator to verify that these data were transcribed correctly from the batch summary sheets and ICP data package to the spreadsheets. These spreadsheets were placed in the Results of Analyses section of this narrative. Generally, each analyte is reported alone in its own table.

The tabular summaries do not include all sample data. When reruns were performed and the rerun data were superior to the original data, these rerun data were reported. When rerun data were not superior, the original data were reported.

Organic data were not summarized into the same tabular format nor were tables prepared for each analyte because of the large amount of data involved. Instead, Form I tables from the CLP data package for each *sample* were placed in the Results of Analyses section.

CASE NARRATIVE

This case narrative was prepared in accordance with the following source documents:

WAP, section 5.1.7,

QAPjP, sections 3.1, 3.2, 3.4, 3.6, 7.1, 7.3, and 8.1 (with the exception that the "QA Report" that was generated was not produced by a QA Officer),

SOW, sections 4.0 through 4.3, and

TPP, sections 2.2.4, 5.1 and 5.3.

The intent of this narrative is to:

- Present required analytical data
- Evaluate the quality of these data
- Document problems with procedures or the data generated from these procedures (including quality control data)
- Characterize the nature of the evaporator slurry constituents, and
- Interpret, whenever possible, the relevance or impact of these findings on the evaporator program.

ANALYTICAL REQUIREMENTS AND PROCEDURES

SAMPLE PRESERVATION

No preservation of samples (acidification or refrigeration) was performed at the time of sampling as discussed in the WAP, section 5.1.5.1.

No attempt was made to preserve the samples for inorganic and radiochemical analyses while they were held in the laboratory because of the small initial sample volume (120 ml). The project coordinator was concerned that if part of the sample was split for acid preservation, that likely there would be an insufficient sample volume remaining to perform all of the requested analyses. See the discussion below on Analytical Aliquots for further details. Although it was believed that sample preservation at 4°C for organic analyses was not essential to reduce analyte loss through volatility, such preservation was feasible and was observed because individual samples had been provided for the VOA and Semi-VOA analyses.

SAMPLE HOLDING TIME

The QAPjP, section 3.6 states the following:

"Holding times for samples that need not require processing in the hot cell shall be equivalent to SW-846 (EPA 1986) defined times. If no SW-846 holding time exists for a specific constituent, the holding time will be three months."

The 1986 version of SW-846 was superseded by the 1992 revision. For this project, the SW-846 maximum sample holding time limits that were applicable are found in volume IA, Table 2-21, for inorganic and radiochemical analytes. Volume IB, Chapter 4, Table 4-1, specifies holding times for organic analyses. It was determined that the slurry matrix is best classified as "sludge" for determining SW-846 holding time criteria.

Table 3. Maximum SW-846 Sample Holding Limits		
Parameter	Maximum Holding Time	Preservation
Chloride	28 days	none
Cyanide	14 days	4°C
Nitrate	48 hours	4°C
Sulfate	28 days	4°C
Mercury	38 days (in glass) 13 days (in plastic)	HNO ₃ to pH<2
Metals *	6 months	HNO ₃ to pH<2
Total Organic Carbon	28 days	4°C
Organics (VOA, and Semi-VOA)	14 days until extraction; 40 days after extraction (see note below)	4°C, 0.008% Na ₂ S ₂ O ₃
Total Alpha	6 months	HNO ₃ to pH<2
Total Beta	6 months	HNO ₃ to pH<2
Radium **	6 months	HNO ₃ to pH<2

* Other than Hg

** Radiological

Note: Section 3.6 of the QAPjP states the following regarding organic holding times:

"Furthermore, organic analysis holding times, as defined in SW-846, will be interpreted as follows: The holding times for any sample, whether original or rerun, begins at the end of extraction, where applicable."

Agreement within the scientific community is divided with regard to reasonable sample holding times. SW-846 holding times are based on worst-case scenarios and in many cases are excessively short. Note that SW-846 protocol expects samples are preserved at the time of collection for SW-846 holding times to be valid. However, slurry samples were intentionally not preserved with additives so as to limit the exposure of personnel to high dosage of ionizing radiation.

Sample degradation can occur due to many factors. One of these factors, biological degradation, is typically controlled by the addition of a strong acid, creating a hostile biological environment due to extreme pH. For biological degradation of slurry samples, it can be argued that sample preservation with the use of acid was unnecessary because of extreme pH (approximately 10.5) and ionizing radiation lethal to micro-organisms. In the case of cyanide, the native sample pH was a natural preservative because it prevented the formation of volatile HCN.

The sample holding time for each analyte is discussed individually in the Results of Analyses section later in this narrative.

ANALYTICAL ALIQUOTS

ADDENDUM 1A,

Because of the possibility of exhausting the sample before all of the analyses could be analyzed and accepted, analytical aliquots were minimized whenever possible. Aliquot size was generally not minimized when the analyte was considered by the project coordinator to be a significant constituent and the analyte concentration in the sample was expected to approach the detection limit.

PREPARATIVE METHODS

The TPP was written prior to sample collection, consequently it was necessary to decide which preparative procedures to use on the samples without having an opportunity to see them in advance. Such visual observations generally yield significant information, allowing better decisions regarding sample digestions; and so forth. For this reason, directions given in the TPP on preparative procedures should be considered as general guidance only.

TPP appendix table A.1 specifies which preparative method to use for each analyte. All sample preparations conformed to the TPP specifications except for ammonia, strontium-90 and total alpha. To conserve sample, a water dilution was performed on ammonia, rather than performing the analysis on the direct sample. When the samples were received, it was decided by the project coordinator and the cognizant scientist that an acid digestion of the samples for latter two procedures would more completely solubilize the sample analytes (rather than a direct or acid dilution preparation as directed in the TPP). It was believed that better solubilization would produce better analytical precision and accuracy.

Table 4 shows a comparison of the preparative procedures stated in the TPP with preparative procedures actually performed:

Table 4. TPP Cited Preparation Procedures vs. Actual Procedure Used		
Analytical Procedure	Procedure Stated in TPP	Actual Procedure Used
Appearance	direct	direct
Specific Gravity	direct	direct
Induct Coupled Plasma	acid digestion	acid digestion
Arsenic	acid digestion	acid digestion
Selenium	acid digestion	acid digestion
Mercury	direct	direct
Total Uranium	∅ (direct for slurry	direct
Ion Chromatography	direct or H ₂ O dilution	H ₂ O dilution
Ammonia *	direct or acid dilution	H ₂ O dilution
Cyanide	direct or H ₂ O dilution	H ₂ O dilution
CO ₃ (TIC)	direct or H ₂ O dilution	H ₂ O dilution
Hydroxide	direct or H ₂ O dilution	direct
Gamma Energy Analysis	acid dig, direct, or acid dil	acid digest
Pu ^{239/240}	acid dig, direct, or acid dil	acid digest
Am ²⁴¹	acid dig, direct, or acid dil	acid digest
Cm ²⁴⁴	∅ (acid dig for slurry	acid digest
Sr ⁹⁰ *	direct or acid dilution	acid digest
Tc ⁹⁹	∅ (direct for slurry	direct
Se ⁷⁹	∅ (direct for slurry	direct
C ¹⁴	∅ (direct for slurry	direct
H ³	direct or H ₂ O dilution	direct
I ¹²⁹	∅ (direct for slurry	direct
Total Alpha *	direct or acid dilution	acid digest
Total Beta	acid dig, direct, or acid dil	acid digest

* Deviations from stated procedure in TPP. These deviations should have no significant impact on either the quality of analyses or on the reported values as compared with the procedure stated in the TPP.

∅ Analyses of these analytes was not required in the WAP, QAPJP or TPP, and no preparation procedures were specified.

ANALYTICAL PROCEDURES

ADDENDUM 1A,

Each procedure used for this project was a controlled procedure. All procedures were evaluated and approved for a maximum period of two years. Procedures may be modified, or deleted as appropriate. Each time a procedure was modified, however, a new revision number was given to the procedure number. Upon review (at the end of the two year period), a procedure approval may be extended for another two year period without a change in revision number. During this project the following procedures were reviewed, approved, and extended without a revision number change.

Specific gravity	LA-510-112/C-2	Reviewed 6/26/92
Carbonate	LA-622-102/B-2	Reviewed 4/14/94
Total Organic Carbon	LA-344-105/B-2	Reviewed 4/14/94
Strontium-90	LA-220-101/D-0	Reviewed 6/22/93
Gamma energy analysis	LA-548-121/D-0	Reviewed 6/9/93
Uranium	LA-925-106/B-1	Reviewed 2/18/94

Analytical procedures which were proposed for use on evaporator project samples were listed in the TPP, Appendix C. The procedures that were actually used for slurry analyses are shown in Table 5.

ADDENDUM 1A,

Table 5. Slurry Procedure Listing

TPP Cited Procedure		Actual Procedure Used				
Procedure #	Procedure Title	Procedure #	Rev #	Procedure Title	Issue Date	Range of Analysis Dates
LA-505-151	ICP Emission Spectrometer Method for Trace Element Analysis	LA-505-151	D-1	ICP Emission Spectrometer Method for Trace Element Analysis	2-17-94	07-19-94
	Not Cited	LA-505-161	A-0	Inductively Coupled Plasma (ICP) Emission Spectrometric Method for the Thermal Jarrell Ash (TJA), Type 61E	03-22-94	06-10 to 06-24-94
LA-325-104	Mercury Analysis by Atomic Absorption (Manual Cold Vapor Technique)	LA-325-104	A-1	Mercury Analysis by Atomic Absorption (Manual Cold Vapor Technique)	03-12-93	05-28 to 06-06-94
LA-695-102	Microdistillation and Spectrophotometric Determination of CN	LA-695-102	B-2	Microdistillation and Spectrophotometric Determination of CN	02-24-94	05-19 to 06-27-94
LA-510-112	Specific Gravity of High Beta Gamma Caustic Samples	LA-510-112	C-2	Specific Gravity of High Beta Gamma Caustic Samples	Reviewed 06-26-92	05-08 to 05-31-94
LA-510-112	Specific Gravity of High Beta Gamma Caustic Samples	LA-510-112	C-3	Specific Gravity of High Beta Gamma Caustic Samples	06-13-94	06-16-94
LA-519-151	Visual Check and Over-The-Top Reading	LA-519-151	E-1	Visual Check and Over-The-Top Reading	02-22-93	05-13 to 06-10-94
LA-355-131	Arsenic Analysis by Hydride Generation Atomic Absorption	LA-355-131	B-1	Arsenic Analysis by Hydride Generation Atomic Absorption	12-09-92	08-11 to 08-16-94
LA-365-131	Selenium Analysis by Hydride Generation Atomic Absorption	LA-365-131	B-2	Selenium Analysis by Hydride Generation Atomic Absorption	12-09-92	06-10 to 07-06-94
LA-533-105	Anion Analysis of Dionex Model 4000i	LA-533-105	C-1	Anion Analysis of Dionex Model 4000i	08-24-93	05-23 to 06-18-94
LA-661-102 or LA-661-103	Determination of Hydroxide Ion in solutions containing Hydrolyzable Anions (Auto) Determination of OH Ion in Solutions by Potentiometric Titration Manual	LA-211-102	B-1	Determination of Acid/Base/pH Using Metrohm 682 Titroprocessor (Hydroxide)	08-18-93	05-07 to 06-13-94
LA-634-102	Ammonia by Kjeldahl	LA-634-102	D-2	Ammonia by Kjeldahl	10-18-93	05-14 to 07-07-94
LA-622-102	Determination of Carbonate in Solutions by Coulometry	LA-622-102	B-2	Determination of Carbonate in Solutions by Coulometry	Reviewed 04-14-94	05-13 to 06-21-94
	Not Cited	LA-505-158	A-3	Acid Digestion of Aqueous Samples and Extracts for Total Metals for Analysis by FLAA and ICP Spectroscopy	09-14-93	05-13 to 06-20-94
	Not Cited	LA-504-101	C-0	Water Leach of Solids with Residual Solids Collection.	06-22-93	05-12 to 06-10-94

ADDENDUM 1A,

Table 5. Slurry Procedure Listing

TPP Cited Procedure		Actual Procedure Used				
Procedure #	Procedure Title	Procedure #	Rev #	Procedure Title	Issue Date	Range of Analysis Dates
LA-548-121	Preparation of Sample Mounts for GE(Li) GEA - Low Level	LA-548-121	D-0	Preparation of Sample Mounts for GE(Li) GEA - Low Level (preparation for LA-508-052)	Reviewed 06-10-93	05-27 to 06-26-94
LA-508-101	Low Level Alpha and Beta in Water Samples (prep)	LA-508-101	D-0	Low Level Alpha and Beta in Water Samples (preparation for LA-508-114)	08-19-92	05-18 to 07-11-94
	Not Cited	LA-508-114	A-1	Operation of Gamma Products Alpha Beta Counting Systems Using PC Control (Subsequent to LA-508-101)	05-15-92	
LA-503-156	Determination of Pu and Am by Ion Exchange Solvent Extraction	LA-503-156	D-1	Determination of Pu and Am by Ion Exchange Solvent Extraction (also Cm-244)	05-23-94	05-26 to 08-29-94
LA-365-132	Determination of Se-79	LA-365-132	B-2	Determination of Se-79	06-09-94	08-04-94
LA-220-101	High Level Strontium-89, 90 in Aqueous Samples	LA-220-101	D-0	High Level Strontium-89, 90 in Aqueous Samples	Reviewed 06-22-93	06-03 to 06-30-94
LA-438-101	Determination of Tc-99 by Solvent Extraction and Liq. Scint Counting	LA-438-101	D-2	Determination of Tc-99 by Solvent Extraction and Liq. Scint Counting	05-27-94	07-18-94
LA-378-103	Determination of Iodine-129 in Waste Tank Samples	LA-378-103	B-3	Determination of Iodine-129 in Waste Tank Samples	11-02-93	07-19-94
LA-348-104	C-14 in Small Volume Samples by Persulfate Oxidation and Liq. Scint.	LA-348-104	B-1	C-14 in Small Volume Samples by Persulfate Oxidation and Liq. Scint.	05-03-94	07-09-94
LA-218-114	Tritium by Lachat Micro-Dist. and Liquid Scintillation Counting (LS)	LA-218-114	A-2	Tritium by Lachat Micro-Dist. and Liquid Scintillation Counting (LS)	01-14-93	05-07 to 05-11-94
LA-218-114	Tritium by Lachat Micro-Dist. and Liquid Scintillation Counting (LS)	LA-218-114	A-3	Tritium by Lachat Micro-Dist. and Liquid Scintillation Counting (LS)	05-25-94	06-07 to 08-31-94
LA-508-121	Operation of the Beckman Liquid Scintillation Counter	LA-508-121	B-0	Operation of the Beckman Liquid Scintillation Counter (subsequent to LA-218-114 & LA-348-104)	08-11-93	
LA-925-106	Determination of Uranium by Laser Fluorimetry	LA-925-106	B-1	Determination of Uranium by Laser Fluorimetry	Reviewed 02-18-94	07-10-94
	Not Cited	LA-523-406	A-0	Semivolatile Organics by Gas Chromatography/Mass Spectroscopy based on SW-846, Method 8270A	07-16-93	05-13 to 06-23-94
	Not Cited	LA-523-405	A-4	Volatile Organics by Gas Chromatography/Mass Spectroscopy using SW-846	05-09-94	05-12 to 06-22-94
	Not Cited	LA-344-105	B-2	Determination of Carbon in Solutions by Combustion and Coulometry	Reviewed 04-14-94	05-13 to 06-16-94
LA-645-001	Spectrophotometric Determination of Nitrite	Not Used		See LA-533-105		

DETECTION LIMITS

ADDENDUM 1A,

Detection limits were defined for each procedure without reference to a uniform laboratory protocol to determine such limits. ICP detection limits were derived from CLP protocol. Some of the procedures used the reagent blank value as the detection limit. Some procedures used the concentration of the lowest standard in the calibration curve as the detection limit. In no case was the matrix considered in generating the detection limit and therefore would not qualify as a "method detection limit". Wherever possible, and unless stated differently in the discussion of each analyte, the detection limit was modified by the typical dilution factor of the samples to provide a more representative value relative to the samples. All of those practices described above are allowed as estimated quantitation limits by SW-846 protocol.

SIGNIFICANT FIGURES

The QAPjP, page 6, states that the report must not contain a greater number of significant figures than is defined in the procedure. A review was made of each controlled procedure to insure compliance with any stated significant figure requirements. The only procedure which specified significant figures was specific gravity. For this parameter, the reported value must have three digits to the right of the decimal in standard numerical notation (not scientific notation) format. Specific gravity was reported with the specified number of significant figures.

CALIBRATION DATA

The QAPjP states that for manually generated calibration curves, sufficient data will be placed into the data package that will allow the recalculation of the slope, Y-intercept, and correlation coefficient (r^2); and that the r^2 is within specifications given in the procedure.

Raw calibration data were available on the analytical traveler cards, instrumentation printouts or summary sheets and are not given in this narrative. These cards and printouts are incorporated into the data package as an appendix for reference. For those parameters that a standard curve was manually generated, the slope, Y-intercept, and correlation coefficient (r^2) are provided in the Results of Analyses section of the narrative.

Only two of the 222-S analytical procedures stated a required correlation coefficient (r^2). The required correlation coefficient for mercury is $r^2 > 0.995$. Cyanide has a required r^2 of > 0.999 . During analyses, both cyanide and mercury had an r^2 value greater than the required value for all batches.

EVAPORATOR BOUNDARY CONDITIONS (LIMITS) ADDENDUM 1A,

To evaluate compliance with required slurry boundary conditions shown in table 6 for organic analytes, refer to the Results of Analyses section and to the Summary Data Tables.

Those boundary conditions shown in table 6 are derived from Section 4, Table 1, of the Waste Analysis Plan.

Table 6. Relevant Boundary Conditions for 242-A Evaporator Slurry	
Parameter	Boundary Limit
Acetone	160 mg/L
Cresol	3.2 mg/L
o-Cresol	5.6 mg/L
1-Butanol	2.6 mg/L
Methyl Ethyl Ketone	36 mg/L
Methyl Isobutyl Ketone	33 mg/L
Methylene Chloride	2.6 mg/L
Phenol	6.2 mg/L
Pyridine	16 mg/L
Tributyl Phosphate	N/A
1,1,1-Trichloroethane	5.6 mg/L

QUALITY CONTROL REQUIREMENTS

STANDARDS

The laboratory control standards (LCS) which were discussed in numerous places of the source documents (WAP, QAPjP, SOW, and TPP) were interpreted to mean Laboratory Measurement Control System (LMCS) standards, which are specific to the 222-S Laboratory. Statistical data on LMCS standards were discussed previously in the Statistical Evaluation section. These standards are generated in house by a special group within 222-S Laboratory using controlled procedures. Analyte concentrations in these standard solutions are known to the analysts.

LMCS control limits (typically 3σ) existing at the time of analysis were used to meet laboratory control standard (LCS) control limit requirements, as

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described in the TPP, section 4.2. For some procedures (for example ICP), an administrative control limit was used rather than a statistically derived limit. In the case of ICP, not enough analytical data had been produced to generate statistically valid control limits, so limits of 85 to 115 percent were set.

Quality control status assessment of the procedure was determined using percent recovery of the nondigested LMCS standards. If an LMCS standard failed the control criteria, no data were reported from that batch.

No LMCS standard was available for the following analytes: appearance, Cs¹³⁴, Ce¹⁴⁴, Ru¹⁰³, Ru¹⁰⁶, Nb⁹⁴, Eu¹⁵⁴, Eu¹⁵⁵, Se⁷⁹, Cm²⁴⁴, Ra²²⁶ and Pu²³⁸.

The QAPJP, section 3.1, states the following regarding acceptance criteria of LMCS standard data generated by ICP.

"When at least 10 analytes fail to meet the LCS recovery, the sample must be rerun. Only one rerun will be performed. If the rerun results are unacceptable and remain outside the QC specifications, the rerun set of results will be reported in the data package narrative as a potential quality control problem."

This statement was interpreted to mean that if 10 or more of the 12 required analytes determined by ICP fail to meet the 85 to 115 percent control limit criteria for LMCS standards, then those data will be rejected and one rerun be performed.

LMCS control limits for each analyte are discussed in the Results of Analyses section later in the narrative.

BLANKS

One reagent blank was analyzed with each batch of samples except for appearance and DSC. For some analytes, a method blank was substituted for the reagent blank. One preparation blank was analyzed with each batch of acid digested samples.

The QAPJP, section 8.2, required that the field blank be analyzed for only these ICP parameters: Ag, Al, As, Ba, Cd, Cr, Na, and Pb. During a telephone conversation in late June, 1993, between the evaporator project cognizant engineer and the 222-S Laboratory project coordinator prior to sampling, it was agreed that a single determination of the field blank (rather than duplicate) for each radiochemistry analysis would be performed whenever possible. It was also agreed that duplicate analyses of the field blank would be performed on each inorganic analysis whenever possible.

A field blank was analyzed for the following constituents: Specific Gravity, Appearance, Ag, Al, Ba, Ca, Cd, Cr, Fe, Mg, Mn, Na, Pb, Zn, As, Se, OH⁻, TIC,

CN⁻, NH₄⁺, F⁻, Cl⁻, NO₃⁻, NO₂⁻, PO₄⁻³, SO₄⁻², Cs¹³⁷, Ru¹⁰⁶, Pu^{239/240}, Am²⁴¹, Sr⁹⁰, H³, Total Alpha, Total Beta, Total Organic Carbon, Volatile Organics and Semi-Volatile Organics. The field blank (V101) was exhausted before a mercury analysis could be performed on it.

Blanks were considered by the project coordinator to be contaminated when any constituent was determined to be equal to or greater than 20 percent of the average concentration of that analyte in the sample. If both the blank and sample were detectable but very near the detection limit, the preceding criterion did not apply.

The definition given by the QAPjP, section 8.3, to contamination of blanks applied only to field blanks. It stated:

"Contamination shall be evaluated by comparison to a reagent blank run at the same time. The field blank is acceptable if the concentration of all analytes in the reagent blank is less than 20% of the concentration of the corresponding analytes in the field blank."

The mathematical interpretation of the QAPjP definition is that the field blank's constituents must be no greater than 5 times the reagent blank concentration. Although this definition is certainly more conservative than the definition used by the project coordinator, it is unrelated to the sample concentrations. The purpose of analyzing a field blank is to determine whether sampling conditions (in the field) inadvertently increase the sample's true concentration. Unless field blank analyte concentrations are relevant to the sample (rather than to a reagent blank), the designation of "contamination" is meaningless.

DUPLICATE ANALYSIS

Duplicate analyses were performed on every sample for every analyte except for appearance. No quality control criteria were specified for duplicate analyses in any of the source documents, and, no reruns were performed solely when it appeared that a significant difference occurred between a sample and its duplicate.

SPIKE/SPIKE DUPLICATE ANALYSIS

For slurry analyses, QAPjP sections 8.4, 8.5 and 8.7 required spike/spike duplicate analyses on the following parameters: each of the analytes by the ICP, atomic absorption spectrophotometry and ion chromatography procedures, and for TIC, CN⁻, U, NH₄⁺, H³, C¹⁴, total alpha, total beta, and Ru¹⁰⁶. Table 15A of the QAPjP has inconsistencies compared with the narrative in its

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sections 8.4, 8.5 and 8.7. When inconsistencies appeared, priority was given to the narrated sections. It should be noted that GEA analyses were exempted from spike/spike duplicate analyses (Table 15A and section 8.7), and that although Ru^{106} was not exempted in section 8.7, it too is analyzed by GEA. Consequently, no spiked data are available for Ru^{106} . The other GEA analytes for which spikes and spike duplicates were not provided are Cs^{137} , Cs^{134} , Co^{60} , Eu^{154} , and Eu^{155} .

At least one spike and one spike duplicate was performed for each of the procedures above (with the exception of Ru^{106}) for each sampling event. Sampling event was defined (consistent with QAPjP, section 8.2, paragraph 1) to mean all five sample collections during the 95-1 evaporator campaign. Not including the field blank, the number of spike/spike duplicates that were analyzed for each of the analytes are as follows:

- 3 for ICP analytes
- 1 for As
- 4 for Se
- 4 for Hg
- 5 for ion chromatography analytes
- 4 for TIC (carbonate)
- 4 for CN^-
- 3 for NH_4^+
- 5 for OH^-
- 4 for Am^{241}
- 4 for H^3
- 4 for Sr^{90}
- 4 for $\text{Pu}^{239/240}$
- 5 for total alpha
- 5 for total beta

The additional number of quality control analyses that were performed beyond those required in the QAPjP was accidental. A Request for Special Analysis (RSA) form was completed by the project coordinator to specify what analyses were to be performed on each sample as it arrived at the laboratory. For the first four slurry samples that were collected, the RSA forms did not specify the spike and spike duplicate analyses that were (or were not) to be performed, consequently when traveler cards were generated (and batches prepared), the technician incorrectly assumed that each sample was to have an associated spike and spike duplicate. The number of spike/spike duplicates per analyte differs because the analyses were in varying stages of completeness at the time that the mistake was recognized and corrected.

Spikes and spike duplicates were not provided for the following analytes because they were not requested for analyses in the WAP or QAPjP: C^{14} , Se^{79} , Tc^{99} , I^{129} , Cs^{134} , Co^{60} , Eu^{154} , and Eu^{155} and U. Additional information is provided on these analytes in the Special Analysis Requests section below.

For an evaluation of accuracy, the QAPjP required a recovery on all spiked samples of 75 to 125 percent. A stipulation was made in the TPP that the 75 - 125 percent recovery criteria were valid only when the analyte

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concentration in the spiked sample was increased by at least 25 percent more than the original sample concentration.

To evaluate precision, the QAPJP required a relative percent difference (RPD) between the spike and spike duplicate of equal to or less than 20 percent. A stipulation was made in the TPP that this criterion was valid only when the analyte concentrations of the spike and spike duplicate were greater than ten times the detection limit.

Difficulties also arose in determining the intent of the QAPJP with regard to spikes and spike duplicates for organic analyses. Table 3.1 in the QAPJP appeared to be inconsistent with section 8.6. The table stated that requirements for spike and spike duplicate analyses were not applicable, whereas the narrative in section 8.6 implies that the precision requirement was ≤ 20 RPD and the accuracy requirement was 100 percent recovery $\pm 25\%$. The footnote adds another layer of uncertainty by including poorly defined acceptance criteria for surrogate recoveries. It was not certain from the footnote whether the surrogate recoveries were to be assessed instead of (or in addition to) spike recoveries. The 222-S laboratory interpreted these citations to mean that a spike and a spike duplicate analysis was required once within the sampling event. A "sampling event" was interpreted to mean all (5) slurry samples collected during the 94-1 evaporator campaign. Although table 3.1, stated that there were no precision or accuracy acceptance criteria based on spikes and spike duplicates, it appeared that some evaluation of spikes and spike duplicates was expected (based on section 8.6), however unrealistic and undefined. Nowhere in the QAPJP does it specify the compounds which are to be spiked, or even how many. Moreover, the acceptance criteria appear to be arbitrary and capricious when compared to spike and spike duplicate requirements for the Contract Laboratory Program (CLP). Under normal circumstances, these questions would have been handled in the TPP, however (as was discussed in the Change of Workscope Section above) the TPP was not able to address these issues. The 222-S laboratory therefore determined that the most reasonable interpretation of these documents would be to perform accuracy (spike) and precision (spike duplicate) assessments as is clearly defined in CLP procedure protocol for volatile organic analyses (VOA) and for semivolatile organic analyses (Semi-VOA). The same decision was made regarding surrogate recoveries for the same reasons. Five compounds were spiked for VOA, as seen on Form III VOA-1 in the Organic Analyses Appendix. Eleven compounds were spiked for Semi-VOA, as seen on Form III SV-1. Three compounds were added as surrogates to every VOA sample, and the evaluation of percent recovery is shown on Form II VOA-1. Eight compounds were added as surrogates to every Semi-VOA sample, and the evaluation of percent recovery is shown on Form II SV-1.

SPECIAL ANALYSIS REQUESTS

A Letter of Instruction (LOI) from the Commercial Analytical Services branch of Hanford Analytical Services Management (HASM), dated February 4, 1994, gave

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additional direction regarding the analyses of slurry samples. A copy of this LOI is in the Communication Documents section of this data package. It directed that extra analyses would be necessary when precipitated solids in any of the samples exceeded 5% by volume. Such solids would be recovered from the sample and analyzed for aluminum, sodium, chloride, fluoride, nitrite, nitrate, phosphate, sulfate and TIC. None of the slurry samples had a solid precipitate except for the forth slurry sample collection (sample V93), which had less than 5% precipitated solids.

On June 6, 1994, a cc:Mail message was sent to the 222-S laboratory project coordinator from Waste Tank Systems Engineering (WTSE) directing the laboratory to perform additional analyses on the fifth slurry sample (V97), which were not specified in the WAP or QAPjP. A copy of this message is in the Communication Documents section of this data package. The message requested analytical data for nine analytes: total uranium, Cs¹³⁴, Co⁶⁰, Eu¹⁵⁴, Eu¹⁵⁵, Ru¹⁰⁶, C¹⁴, Se⁷⁹, Tc⁹⁹ and I¹²⁹. The message did not request that these analyses include quality control measurements, consequently these analyses were performed as if the samples were for process control, whereby data were collected without the corresponding spike, spike duplicate and field blank analyses. The results of these analyses are included in this data package.

RESULTS OF ANALYSES (DATA SUMMARY AND EVALUATION)

PHYSICAL ANALYSES

APPEARANCE/HOMOGENEITY

Observations were performed on the direct (unmodified) sample. No instruments were used, consequently there was no instrument calibration. No quality control criteria were defined in the source documents nor were they required.

Analyses for slurries 1 through 5 were performed respectively on days 9, 5, 1, 14, and 18. SW-846 does not define a holding time criteria for this parameter.

Analyses were performed by procedure number LA-519-151/E-1 at 24°C and are shown in Table 7.

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Table 7. Appearance/Homogeneity Analysis Summary				
Sample ID	Lab ID	Visual Observations	Dose Rate	Sample Size
V81	Slurry 1	Yellow, clear, no solids, no phases	250mRad	75 ml
V85	Slurry 2	Yellow, clear, no solids, no visible phases	100mRad	12 ml
V89	Slurry 3	Yellow, clear with < 100 μ L of solids, no phases	200mRad	200 ml
V93	Slurry 4	Yellow, clear, solids present (cloudy mass on bottom), 2 phases: solid and liquid	500mRad	45 ml
V97	Slurry 5	Yellow, clear, no solids, no phases	1350 mRad	125 ml
V101	Field Blank	Colorless, clear, no solids, no visible phases	<2mRad	30 ml

From the visual appearance, slurry samples 1, 2 and 5 were homogeneous. Slurry samples 3 and 4 had less than 5 percent solids by volume.

SPECIFIC GRAVITY

Specific gravity analyses were performed on direct samples. Sample holding times for slurry samples 1 through 5 were on days 4, 4, 10, 8, and 7 respectively. All analyses were completed between 5/8/94 and 6/16/94, using procedure/revision number LA-510-112/C-2 (reviewed on 6/26/92) and instrument number WA90787.

No unusual instances or problems occurred during the analyses of specific gravity.

For specific gravity EDP code number S332, the LMCS control limits are 96.81 to 100.53 percent recovery. Historically, the average recovery was 98.65 percent with a percent standard deviation of 0.5854.

For all slurry and field blank samples, LMCS standard recoveries (ranging from 96.97 to 99.57 percent) were within acceptance limits. The reagent blank values were 0.991 and 0.992 (relative to an expected value of 1.000 for pure water). Spiked samples were not required nor analyzed. Precision between each sample and its duplicate ranged from 0.0 to 1.18 relative percent difference. The Relative Percent Difference (RPD) quality control limit between samples and their duplicates was specified in the QAPjP at <20 percent. All slurry analyses met the precision quality control requirement.

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Specific gravity values for the samples were all greater than 1.000, as expected. The grand average of sample averages was 1.093.

INORGANIC ANALYSES

ION CHROMATOGRAPHY

All ion chromatography (IC) analyses were performed on water digestions (dilutions), using procedure/revision number LA-533-105/C-1, and instrument number WC41533. Field blank analyses for all analytes was completed on 5/23/94 giving a sample holding time of 14 days. The only analyte for which the sample holding time was exceeded in the field blank was nitrate. This sample was not preserved, and biodegradation of nitrate was possible, which is generally the greatest source of deterioration. The field blank was handled similar to that of the slurry samples (as per the QAPjP), consequently preservation was not desirable.

The detection limit for all of the IC analytes was set at the concentration equivalent to the lowest standard within the calibration curve multiplied by the dilution factor based on the "water leach" pretreatment. For some analytes, the *sample* detection limit was generated by multiplying the above detection limit by an additional factor based on the sample aliquot that was injected into the IC (that is to say, 11 or 101).

FLUORIDE

Slurry sample holding times for fluoride analyses on samples 1 through 5 were 34, 14, 22, 41, and 9 days, respectively. No sample holding time was specified in SW-846 for fluoride.

For fluoride (EDP code R974), the LMCS control limits were 84.01 to 114.39 percent recovery. LMCS recoveries for all samples were acceptable with values ranging from 98.2 percent to 103.4 percent.

Unexpectedly high sample concentrations caused the spikes to frequently exceed the calibration range. Analytical reruns for samples V81, V89, and V93 attempted to bring the spike concentrations within calibration range, but did not appear to be effective as evidenced by the unacceptable recoveries of the spike for samples V81 and V89, with recoveries of 241.0 and 157.3 percent, respectively. Spike recoveries for V85, V93, and V101 (field blank) were acceptable and ranged from 93.0 to 103.3 percent recovery.

Precision was also affected by the coelution condition, as indicated by the RPD between the spike and spike duplicate for samples V81 and V89, with 91.9 and 74.6 RPD respectively. Slurry samples, V85, V93 and V101 (field blank) had acceptable RPDs, ranging from 3.8 to 17.2. RPDs between the samples and their duplicates ranged from 0.5 to 7.3, suggesting good precision.

Reagent blank concentrations for samples V81, V85, V89, V97, and V101 (field blank) were less than the detection limit of 0.1 $\mu\text{g/ml}$. The reagent blank for sample V93 was less than the detection limit of 1.0 $\mu\text{g/ml}$ because that blank was diluted ten fold. The field blank fluoride concentration was less than the detection limit of 1 $\mu\text{g/ml}$. Evaluation of the concentrations in the all of the blanks indicates that fluoride contamination of the samples was not present.

The average fluoride concentrations of the slurry samples ranged from 4,800 to 12,400 $\mu\text{g/ml}$, with the grand average of 6,994 $\mu\text{g/ml}$. These fluoride values are questionable with regard to accuracy and should be used as estimates only.

CHLORIDE

Slurry sample holding times for chloride analyses on samples 1 through 5 were 23, 14, 22, 18, and 9 days, respectively. The sample holding time specified in SW-846 was 28 days for chloride, thus the sample holding time requirement was met for this analyte.

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

For chloride (EDP code R972), the LMCS control limits were 89.67 to 115.08 percent recovery. LMCS recoveries for all samples were acceptable with values ranging from 95.1 percent to 106.3 percent. The historical mean recovery was 99.66 percent.

Acceptable accuracy as indicated by spike recoveries for samples ranged from 83.3 percent to 100.0 percent.

Precision between all sample spikes and their corresponding spike duplicates was acceptable, ranging from 1.3 to 12.6 RPD. RPDs between the samples and their duplicates were reasonable with RPD values ranging from 0.4 to 15.1.

The reagent blanks for all samples except for V85 had chloride concentrations which were less than the detection limit of 0.2 $\mu\text{g/ml}$. The reagent blank concentration for V85 was 0.65 $\mu\text{g/ml}$, but was also much less than the corresponding sample concentration (998 $\mu\text{g/ml}$). The average chloride concentration in the field blank of 3.85 $\mu\text{g/ml}$ was also much less than the mean concentration of samples (623 $\mu\text{g/ml}$). Evaluation of the concentrations in the all of the blanks indicates that chloride contamination of the samples was not present.

The average chloride concentrations of the slurry samples ranged from 253 to 998 $\mu\text{g/ml}$, with the grand average of 623 $\mu\text{g/ml}$.

NITRATE

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Slurry sample holding times for nitrate analyses on samples 1 through 5 were 34, 14, 9, 11, and 9 days, respectively. The SW-846 required sample holding time for nitrate of 48 hours was not met for any of the samples.

For nitrate (EDP code R978), the LMCS control limits ranged from 87.36 to 114.65 percent recovery. LMCS recoveries for all samples were acceptable with values ranging from 98.4 percent to 102.1 percent.

Unexpectedly high sample concentrations caused the spikes to exceed the calibration range, causing two reruns. Acceptable accuracy was not achievable for sample V81, with a spike recovery of 156.5 percent. Acceptable accuracy for the other samples was indicated by spike recoveries, which ranged from 89.4 percent to 107.9 percent.

Except for sample V81, the precision between the spikes and corresponding spike duplicate was an acceptable, with values ranging from 1.4 RPD to 11.1 RPD. The relative percent difference for V81 was 38.1, indicating a precision failure. RPDs between the samples and their duplicates ranged from 0.0 to 6.7, indicating good precision.

The reagent blanks and field blank nitrate concentrations were less than the detection limit, indicating the absence of sample contamination.

Average nitrate concentrations of the samples ranged from 20,600 to 81,500 $\mu\text{g/ml}$, with the grand average of 39,400 $\mu\text{g/ml}$.

NITRITE

Slurry sample holding times for nitrite analyses on samples 1 through 5 were 34, 14, 9, 11, and 9 days, respectively. No sample holding time was specified in SW-846 for nitrite.

For nitrite (EDP code R968), the LMCS control limits ranged from 90.15 to 113.68 percent recovery. The historical mean recovery of the data LMCS base was 100.74 percent. LMCS recoveries for all samples were acceptable, with values ranging from 104.1 to 107.3 percent.

Unexpectedly high sample concentrations caused the spikes to exceed the calibration range, causing two reruns.

Acceptable accuracy for all samples was indicated by spike recoveries ranging from 100.6 percent to 121.0 percent.

Precision between all sample spikes and their corresponding spike duplicates was an acceptable, with values ranging from 0.5 RPD to 12.2 RPD. RPDs between the samples and their duplicates ranged from 0.8 to 6.5, indicating good precision.

The reagent blanks and field blank nitrite concentrations were all less than the detection limit, indicating the absence of sample contamination.

Average nitrite concentrations of the samples ranged from 5,790 to 22,000 $\mu\text{g/ml}$, with the grand average of 10,600 $\mu\text{g/ml}$.

PHOSPHATE (ORTHO-PHOSPHATE)

Slurry sample holding times for phosphate on samples 1 through 5 were 23, 14, 9, 18, and 9 days, respectively. No sample holding time was specified in SW-846 for phosphate.

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

For phosphate (EDP code R976), the LMCS control limits ranged from 87.80 to 115.45 percent recovery. LMCS recoveries for all samples were acceptable, ranging from 94.6 to 106.0 percent.

Acceptable accuracy was indicated by spike recoveries for all samples ranging from 80.8 percent to 101.7 percent.

Precision between the spikes and corresponding spike duplicates was acceptable for all samples with RPDs ranging from 0.5 to 3.3. RPDs between the samples and their duplicates were good with values ranging from 0.1 to 4.3 RPD.

The reagent blanks and field blank phosphate concentrations were less than the detection limit, indicating the absence of sample contamination.

Average phosphate concentrations of the samples ranged from 592 to 2,610 $\mu\text{g/ml}$, with the grand average of 1,370 $\mu\text{g/ml}$.

SULFATE

The slurry sample holding times for sulfate on samples 1 through 5 were 23, 14, 9, 18, and 9 days, respectively. The sample holding time specified in SW-846 was 28 days for sulfate, thus the sample holding time requirement was met for this analyte.

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

For sulfate (EDP code R970), the LMCS control limits ranged from 95.15 to 112.14 percent recovery. The historical mean recovery was 97.63 percent. LMCS recoveries for all samples were acceptable, ranging from 95.7 percent to 104.0 percent.

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Accuracy was acceptable for all samples as indicated by spike recoveries ranging from 87.1 to 106.8 percent.

Precision between the spikes and corresponding spike duplicates for all samples was acceptable, with values ranging from 1.0 to 8.1 RPD. RPDs between the samples and their duplicates was also good with values ranging from 1.9 to 9.2.

All reagent blanks (except for V81) and the field blank had sulfate concentrations which were less than the detection limit. The reagent blank for sample V81 had a concentration of 1.59 $\mu\text{g/ml}$, which was much less than V81's mean sample concentration (3,230 $\mu\text{g/ml}$). Evaluation of the concentrations in the all of the blanks indicates that sulfate contamination of the samples was not present.

Average sulfate concentrations of the samples ranged from 1,740 to 6,550 $\mu\text{g/ml}$, with the grand average of 3,760 $\mu\text{g/ml}$.

AMMONIA (by KJELDAHL and TITRATION)

Ammonia was analyzed on the direct samples using procedure/revision number LA-634-102/D-2. Instruments numbered AL-10696 and AL-10665 were used for all samples.

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

Sample holding times for slurry samples 1 through 5 were 11, 4, 17, 45, and 12 days, respectively. The field blank had a holding time of 13 days. All analyses were completed between 5/14/94 and 7/7/94. SW-846 does not specify a sample holding time for ammonia, however durations in the range of 4 to 45 days between sample collection and analysis seemed unacceptably long, especially for unpreserved samples. The accepted method for ammonia preservation is to acidify samples at the time of collection to pH <2 with nitric acid. Although biodegradation was not expected to be a significant factor in decomposition of slurry samples due to high pH (ranging from 11.7 to 12.2) and lethal radioactivity, it was expected and quite likely that, due to the high pH of these samples, sample degradation would occur due to chemical reactions. At high pH, ionic ammonia reacts with hydroxide to generate NH_3 , which is volatile and readily is dissipated at ambient temperature. Thus under the conditions of sample collection and storage prior to analyses, it is not unreasonable to believe that ammonia data are biased low.

It should be clearly understood, however, that those chemical reactions causing changes in the sample (noted above) have occurred naturally, and were indeed enhanced, during the slurry processing. Consequently, actual slurry ammonia concentrations may be represented quite well by the analytical data, which uniformly indicate that ammonia was not detected.

Statistically derived LMCS control limits for the ammonia standard (EDP code number S235) were 77.16 to 122.40 percent recovery with a historic mean recovery of 99.49 percent. Actual LMCS standard recoveries for slurry analyses were acceptable, ranging from 95.5 percent to 98.6 percent for all six batches.

Ammonia accuracy, as determined by evaluation of spike and spike duplicate recoveries, was acceptable with values ranging from 93.6 percent to 99.4 percent for the five batches that had spiked samples. Accuracy acceptance limits ranged from 75.0 to 125.0 percent recovery.

Precision was determined to be acceptable with values ranging from 0.0 to 1.3 RPD between the five spikes and their duplicates. Precision between samples and their duplicates was not able to be calculated because all values were "less than" values.

Ammonia concentration was less than the detection limit for all reagent blanks and for the field blank, indicating that contamination was not a problem for the ammonia analysis.

Average sample concentrations were also not able to be calculated, however all values were $<8000 \mu\text{g/ml NH}_3$.

HYDROXIDE (by TITRATION)

Hydroxide by procedure/revision number LA-211-102/B-1 was performed on the direct samples, using instruments, numbered AL10666, AL11210, WC06695, and AL10636.

The autotitrator pH was calibrated using standards of pH 7.00 and 10.00 with a slope and voltage offset as shown in the table 8 below:

Table 8. Hydroxide Calibration Parameters

Sample Number	Slope	Voltage Offset, mV
V81	0.951	8.2
V85	0.961	0.0
V89	0.946	-2.8
V93	0.956	-5.9
V97	Not Available	Not Available
V101	Not Available	Not Available

During sample analyses, all titration endpoints were within the calibration range of pH 7 to 10 (except for the blanks as expected, where the pH shift was extreme with a minute addition of HNO_3 titrant).

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

Slurry sample holding times for hydroxide on samples 1 through 5 were 3, 13, 17, 2, and 4 days, respectively. The sample holding time for the field blank was 4 days. No sample holding time was specified in SW-846 for hydroxide.

Statistically derived LMCS control limits for the hydroxide standard (EDP code number S273) ranged from 93.28 to 108.71 percent recovery. The historical mean recovery was 101.20 percent. Actual LMCS standard recoveries for all slurry samples were acceptable, with values ranging from 96.4 percent to 99.6 percent.

No spikes were required by the source documents, however, all samples except for V97 were spiked. Accuracy was acceptable for all samples as evidenced by spike recoveries ranging from 92.2 to 98.0 percent.

Precision between the spikes and corresponding spike duplicates for all samples, except for V81, was acceptable, with values ranging from 1.8 to 12.5 RPD. The RPD for V81 was 35.1 percent. RPDs between the samples and their duplicates was appeared good with values ranging from 0.5 to 3.6.

The reagent blanks and field blank hydroxide concentrations were less than the detection limit, suggesting the absence of sample contamination. The detection limits were generally quite high and varied greatly (from 42 to 1,250 $\mu\text{g/ml}$), depending on the sample aliquot used for analysis. Sample concentrations were not greater than 10 fold of the detection limit, consequently sample contamination may have been present but undetected.

Average sample hydroxide concentrations ranged from 4,200 to 19,400 $\mu\text{g/ml}$, with the grand average of 8,820 $\mu\text{g/ml}$.

CYANIDE (by DISTILLATION/SPECTROPHOTOMETRY)

Cyanide analyses were performed on water digested (diluted) samples using the procedure/revision number LA-695-102/B-2, and instrument number AL10724. Sample holding times for slurry samples 1 through 5 were 15, 10, 38, 29, and 18 days respectively. The field blank had a holding time of 16 days. All analyses were completed between 5/19/94 and 6/27/94. The maximum sample holding time specified in SW-846 for cyanide is 14 days. As a consequence, only samples V81 and V85 met the sample holding time criterion.

For this procedure, full calibration curves were not generated at the time of analysis. A single standard was prepared as a check against the original curve and, as stated by the cognizant chemist "to define the working range, and its linearity". For slurry samples 1 and 2 and the field blank (V81, V85 and V101), a standard curve was generated on December 16, 1993, where the following curve statistics were obtained: Y intercept = -0.00313, slope = 0.157645, and the correlation coefficient (r^2) = 0.999898. For slurry samples 3, 4 and 5 (V89, V93 and V97), a standard curve was generated on June 20,

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1994, where the following curve statistics were obtained: Y intercept = 0.006250, slope = 0.160059, and the correlation coefficient (r^2) = 0.999803.

For slurry cyanide analyses, the LMCS standard had additional importance because it also was used to check the validity of the standard curve which was generated in some cases several months prior. Accuracy of LMCS standard determinations was acceptable with percent recoveries ranging from 99.1 to 101.5. Statistically derived LMCS control limits for the cyanide standard (EDP code number S244) were 89.24 to 104.92 percent recovery. The historic mean recovery was 99.50 percent.

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

The concentrations of reagent blanks and field blanks were determined to be less than their detection limits of which all blanks were less than 1.5 $\mu\text{g/ml}$.

Accuracy of the spike and spike duplicate determinations were within acceptance limits with percent recoveries ranging from 99.5 to 102.8.

Precision between the six spikes and corresponding spike duplicates was acceptable with values ranging from 0.2 to 0.9 RPD. Precision between samples and their duplicates appeared to be good with RPDs ranging from 1.5 to 6.6.

Average sample values ranged from approximately 10 to 30 fold greater than the detection limit. Average sample values ranged from 2.49 to 37.8 $\mu\text{g/ml}$, with a grand average of 12.9 $\mu\text{g/ml}$.

TOTAL INORGANIC CARBON (CARBONATE)

Total inorganic carbon (TIC) analyses using instruments numbered WB39927 and AL-10656 were performed on direct samples by procedure/revision number LA-622-102/B-2. Sample holding times for slurry samples 1 through 5 were 9, 13, 18, 27, and 12 days respectively. The field blank had a holding time of 17 days. All analyses were completed between 5/13/94 and 6/21/94. A maximum sample holding time was not specified for this analyte in SW-846 protocol.

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

Statistically derived LMCS control limits for the carbonate standard (EDP code number S223) were 86.93 to 108.01 percent recovery. The historical mean was 102.22 percent recovery. Accuracy for the LMCS standard determinations was acceptable with recoveries ranging from 95.0 to 100.4 percent recovery.

Accuracy, as determined by the five spikes was acceptable with percent recoveries ranging from 95.2 to 107.3.

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Precision between the five spikes and corresponding spike duplicates was acceptable with RPDs ranging from 3.2 to 4.6. Precision between samples and their duplicates was also good with RPDs ranging from 0.5 to 14.2.

The field blank's carbonate concentration was less than the detection limit of 5 $\mu\text{g C/ml}$.

In calculating the sample carbonate concentrations, an instrument blank value is subtracted from the sample value. Values shown on the data summary sheet for each reagent blank are uncorrected. For the analysis of a reagent blank, however, this would cause the result to be subtracted from itself, yielding a corrected blank value of zero. Such a correction does not occur for the reagent blank. The reagent blank values for each of the samples were less than the detection limit.

Average carbonate concentration of the samples (based on rerun data only) ranged from 1,760 to 5,910 $\mu\text{g/ml}$, with a grand average of 2,920 $\mu\text{g/ml}$.

TOTAL URANIUM (by LASER FLUORIMETRY)

As discussed above in the Special Analysis Requests section, uranium was performed without the quality control requirements which are specified in the WAP and QAPjP. In the absence of customer specified QC limits, the 222-S Laboratory's QAPP-02 and QAPP-03 become the default requirements. The criterion for precision between the sample and its duplicate is ± 25 RPD.

Chemical (not radiochemical) analyses for total uranium were performed on the direct sample. These determinations were performed using instrument number WB88807 by procedure/revision number LA-925-106/B-1. There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

Only the fifth slurry sample (V97) was requested for testing. It was analyzed on 7/10/94, a sample holding time of 31 days. A maximum sample holding time was not specified for this analyte in SW-846 protocol.

LMCS standard recovery control limits for uranium (EDP code number S267) were 77.19 and 121.70 percent. The historical mean percent recovery was 99.45. LMCS standard accuracy was acceptable with a percent recovery of 92.8. Note that in the data summary spreadsheets, standard results are in g/L of uranium.

The reagent blank value was less than the detection limit. No field blank was analyzed.

Precision between sample and duplicate was acceptable with an RPD of 18.3.

The average sample (V97) value was 21.9 $\mu\text{g/ml}$ uranium.

ARSENIC (by HYDRIDE ATOMIC ABSORPTION SPECTROPHOTOMETRY)

Samples were acid digested prior to arsenic analyses to ensure complete solubility and better recovery. Sample holding times for slurry samples 1 through 5 were 99, 95, 88, 85 and 63 days, respectively. The sample holding time for the field blank was 29 days. SW-846 protocol require a sample holding time of six months or less for arsenic. All slurry samples were analyzed within the SW-846 required holding time.

Arsenic analyses were performed using procedure/revision number LA-355-131/B-1 and instruments numbered PE2280 (hydride AA) and WB27979. Instrument calibration data are as follows:

<u>Samples</u>	<u>Batch</u>	<u>Y-intercept</u>	<u>Slope</u>	<u>r²</u>
V79-V81	3894	0.1747	0.0215	0.9989
V83-V85	3140	0.1894	0.0250	0.9987
V87-V89	3159	0.1367	0.0232	0.9999
V91-V93	4238	0.1779	0.0257	0.9998
V95-V97	3916	0.1586	0.0227	0.9998
V99-V101	3211	0.0753	0.0332	0.9979

LMCS standard (EDP code R741) control limits were 76.35 to 132.94 percent recovery. The historical mean percent recovery was 100.72 percent. LMCS standards (undigested) analyzed with the samples yielded acceptable accuracy with percent recoveries ranging from 95.0 to 111.1. Percent recoveries of digested LMCS standards were essentially the same with percent recoveries ranging from 94.0 to 113.8, indicating the absence of contamination due to the digestion process.

Of the five samples, only samples V93 (slurry 4) and the field blank were spiked. The QAPJP requires that only one sample from the sampling event be spiked for an accuracy evaluation. Arsenic accuracy was acceptable as indicated by spike recoveries for these two samples of 81.0 and 96.3 percent.

Sample V93 was analyzed three times. For the initial two runs, the chemist's narrative for V93 commented that in addition to having too great a sample aliquot (off scale), another difficulty with spike recovery was due to insufficient spike addition relative to the sample's arsenic concentration.

Precision was acceptable between the two spikes and corresponding spike duplicates, with RPDs of 16.4 and 0.4 percent for V93 and V101, respectively. Precision between samples and their duplicates was good with RPDs ranging from 0.3 to 6.3.

The field blank and reagent blanks were uniformly below the detection limit, indicating the absence of sample contamination.

Average sample arsenic concentrations ranged from 0.907 $\mu\text{g/ml}$ to 5.85 $\mu\text{g/ml}$, with a grand average of 2.19 $\mu\text{g/ml}$.

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SELENIUM (by HYDRIDE ATOMIC ABSORPTION SPECTROPHOTOMETRY)

Samples were acid digested prior to selenium analyses to ensure complete solubility and better recovery. Sample holding times for slurry samples 1 through 5 were 37, 53, 51, 29, and 12 days respectively. The field blank had a holding time of 30 days. All analyses were completed between 6/8/94 and 7/6/94. All slurry samples were analyzed within the required holding time.

Selenium analyses were performed using procedure/revision number LA-365-131/B-2 and instruments numbered PE2280(Hydride) and WB27979. Instrument calibration data are as follows:

<u>Samples</u>	<u>Batch</u>	<u>Y-intercept</u>	<u>Slope</u>	<u>r²</u>
V79-V81	3122	0.0111	0.0138	0.9996
V83-V85	3141	0.0835	0.0321	0.9968
V87-V89	3160	0.0622	0.0340	0.9981
V91-93	3179	0.0216	0.0125	0.9985
V95-97	3198	0.0206	0.0138	0.9993
V99-101	3212	0.0073	0.0088	0.9988

LMCS standard (EDP code R743) control limits were 59.44 to 140.47 percent recovery. The historical mean percent recovery was 101.95 percent. The LMCS standards (undigested) yielded acceptable accuracy with percent recoveries ranging from 100.1 to 114.0. Percent recoveries of digested LMCS standards were lower with percent recoveries ranging from 80.0 to 99.2.

Accuracy of all five spikes were acceptable with percent recoveries ranging from 79.2 to 114.6.

Precision was acceptable between the five spikes and their corresponding spike duplicates with RPDs ranging from 0.2 to 12.2. It was not possible to determine precision between sample V85 and its duplicate because sample selenium concentrations were determined to be less than the detection limit of 0.05 µg/ml. The other sample precision values ranged from 3.3 to 37.1 RPD. Only V81 had an RPD greater than 25% (37.1%). No quality control requirements apply to sample duplicates, however because the sample concentration is very nearly the same as the detection limit, such variability is reasonable.

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

The field blank and reagent blanks were uniformly below the detection limit.

Average selenium concentrations in the samples ranged from 0.035 to 0.168 µg/ml, with a grand average of 0.068 µg/ml.

MERCURY (by COLD VAPOR ATOMIC ABSORPTION SPECTROPHOTOMETRY)

Although mercury analyses are noted on the batch sheets as being done on the direct sample (because no preparative work was performed by the Sample

Preparations Group), procedure/revision number LA-325-104/A-1, a CLP derived procedure, includes a substantial digestion phase. The instruments used were PE2380 (Hydride AA) and WB26847. Sample holding times for slurry samples 1 through 5 were 21, 26, 21, 10, and 11 days, respectively. The field blank was not analyzed because the sample was exhausted before it could be analyzed for mercury. SW-846 protocol require a maximum holding time of 38 days, consequently all mercury analyses were performed within the required holding time.

Calibration parameters for mercury analyses are shown in table 9. The correlation coefficient for each batch was acceptable with values greater than the minimum procedure required value of 0.995.

Table 9. Mercury Calibration Parameters

Samples	Batch	Y-intercept	Slope	r ²
V79-V81	3108	0.0054	0.0087	0.9996
V83-V85	3580	-0.0024	0.0089	0.9981
V87-V89	3590	0.0120	0.0082	0.9999
V91-V93	3165	0.0093	0.0088	0.9992
V95-V97	3184	0.0016	0.0090	0.9996

Statistically derived LMCS control limits for the mercury standard (EDP code number R716) were 76.57 to 121.40 percent recovery. The historical mean recovery was 98.70 percent. Actual LMCS standard recoveries for all samples were acceptable with values ranging from 98.0 percent to 107.2 percent.

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

Accuracy of the spikes was acceptable for all samples with percent recoveries ranging from 75.6 to 91.8. The spike and spike duplicate for V81 tend to indicate that accuracy may be biased low.

Precision between the spikes and corresponding spike duplicates was acceptable for all samples with values ranging in relative percent difference from 0.4 to 8.1. Precision between samples and their duplicates was not measurable because all sample values were less than the detection limit of 0.005 µg/ml.

All reagent blanks were less than 0.005 µg/ml, indicating the absence of contamination. Analysis of the field blank was not possible because of insufficient sample.

All samples yielded results of <0.005 µg/ml.

INDUCTIVELY COUPLED PLASMA/EMISSION SPECTROSCOPY (ICP)

An acid predigestion was performed on ICP samples prior to analysis. Because two different ICP instruments were used, this work was performed under two separate procedures. Samples V99-V102 were analyzed by procedure/revision number LA-505-151/D-0, using instrument number WB39939. Samples V79-V98 were analyzed by procedure/revision number LA-505-161/A-0, using instrument number WC38935.

All samples were analyzed between 6/10/94 and 7/19/94. Sample holding times for slurry samples 1 through 5 were 40, 46, 39, 18, and 7 days, respectively. The field blank had a sample holding time of 71 days. SW-846 protocol require that the holding time for these metals may not exceed six months. All ICP analyses were completed within the required holding time.

ICP data were reported using a CLP deliverable package produced by Ward™ Scientific, Ltd. The report generated by this software was referred to as the "Wards™ package".

The Wards™ package uses the concept of a sample delivery group (SDG), which includes samples, duplicates, spikes, blanks, instrument control standards and blanks, interference checks, serial dilutions and narrative information within a batch. The designations for initial calibration verification and continuing calibration verification are ICV and CCV, respectively. These are undigested LMCS control standards. The acronyms, ICB and CCB, denote initial calibration blank and continuing calibration blank (undigested reagent blanks).

As was specified in the TPP, undigested blanks (ICB and CCB) were used to initially calibrate the ICP instruments and to check calibration on a continuing basis. A digested reagent blank included with each batch, however, was used to determine the extent of blank contamination introduced during sample preparation (and by inference, the estimated amount of sample contamination).

As was specified in the TPP, section 4.2, sample accuracy evaluation criteria for ICP LMCS standards was to be based on the undigested initial calibration verification (ICV) standards. Although the same control standard, ICP-SST-4, was used for initial and continuing LMCS calibration checks for both ICP instruments, the control limits were different. The older ICP instrument, an ARL (WB39939), had acquired a base of data sufficient to generate statistically derived limits. No such base of data was available for the new ICP instrument, a Thermo-Jarrell Ash (WC38935), consequently the control limits were administratively set at 85% and 115% recovery. LMCS control limits are shown in table 10 for analytes as determined by each instrument.

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Table 10. ICP LMCS Control Limits

Analyte	ARL [old instrument] (WB39939)			Thermo-Jarrell Ash (WC38935) [new instrument]	
	EDP Code	Control Limits, RPD	Historical Mean	EDP Code	Control Limits, RPD
Ag	S157	88.96-111.34	99.00	S058	85 - 115
Al	S101	82.33-108.70	96.71	S002	85 - 115
Ba	S107	90.41-105.59	99.32	S008	85 - 115
Ca	S117	86.34-108.81	97.36	S018	85 - 115
Cd	S115	88.48-109.42	96.67	S016	85 - 115
Cr	S121	92.66-110.71	98.90	S022	85 - 115
Fe	S129	89.00-106.47	98.68	S030	85 - 115
Mg	S137	88.71-106.88	99.97	S038	85 - 115
Mn	S139	86.96-102.65	96.73	S040	85 - 115
Na	S159	89.36-104.26	97.53	S060	85 - 115
Pb	S133	88.37-111.10	98.08	S034	85 - 115
Zn	S179	81.53-106.91	98.67	S080	85 - 115

In the Wards™ package, if the reported values were less than the detection limit, precision for duplicate analyses was reported as 200 percent RPD and as 100 percent for serial dilution RPDs.

The ARL ICP (old instrument) performed interelement data corrections for aluminum, cadmium, chromium, lead, manganese, silver and zinc. The Thermo-Jarrell Ash ICP (new instrument) performed interelement data corrections for aluminum, cadmium, chromium, iron, lead, manganese, silver and zinc.

Because each ICP determination generated analytical values for 12 metals simultaneously, generally there were quality control failures within each run. Those failures were discussed in the Wards™ package narratives. In the Wards™ package, form VII-IN misleadingly identifies the *digested* LMCS standard as a "Laboratory Control Sample". This occurs because this is a "CLP type" data package, and CLP protocol designates the digested standard as the "Laboratory Control Sample". Header information in this package is not able to be edited. Similarly, a footer incorrectly identifies the control limits for the laboratory control sample as 90 to 110 percent recovery.

It is important to note that the units reported for ICP are $\mu\text{g/L}$ (or parts per billion), which is 1000 fold lower than the units of $\mu\text{g/ml}$, which are used elsewhere in this data package.

In the tabular data summaries, a column is included which is entitled, "Detection Limit, $\mu\text{g/L}$ ". This column indicates the instrument detection

limit, which is the lowest detectable concentration by ICP without a sample dilution factor being applied. For several analytes, "less than" values are given for samples. These "less than" values represent the *sample's* detection limit which is equal to the instrument detection limit multiplied by the sample dilution factor. Sample dilutions will cause the sample detection limit to be greater than the instrument detection limit.

The linear concentration range was determined for ICP analytes. The maximum concentration within the linear range (defined as the highest concentration in which the percent recovery of a standard deviates less than five percent from 100 percent) is listed in table 11.

Table 11. ICP Linear Concentration Ranges				
Analyte	ARL (WB39939) [old instrument] 3/31/94		Thermo-Jarrell Ash (WC38935) [new instrument] 1/10/94	
	Integration Time (Sec.)	Concentration ($\mu\text{g/L}$)	Integration Time (Sec.)	Concentration ($\mu\text{g/L}$)
Ag	5	50000.0	5	100000.0
Al	5	250000.0	5	1000000.0
Ba	5	100000.0	5	100000.0
Ca	5	50000.0	5	1000000.0
Cd	5	50000.0	5	100000.0
Cr	5	300000.0	5	100000.0
Fe	5	200000.0	5	500000.0
Mg	5	20000.0	5	1000000.0
Mn	5	100000.0	5	100000.0
Na	5	1000000.0	5	500000.0
Pb	5	50000.0	5	100000.0
Zn	5	100000.0	5	100000.0

ALUMINUM (by ICP) ADDENDUM 1A,

Percent recoveries of all LMCS standards (undigested) were within control limits, ranging from 97.3 to 105.6.

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

All digested laboratory control samples had percent recoveries which were within the LMCS undigested standard control limits.

The aluminum concentration for slurry samples 1 through 3 (V81, V85 and V89) was greater than 10^6 $\mu\text{g/L}$, which is the limit of instrument linearity. Under this condition, an evaluation of accuracy based on the spike is not reasonable because this requires increasing the concentration even more (by spiking), extending the analysis further into the non-linear range. It was this situation for ICP analyses that was specifically addressed in the TPP, section 4.5, whereby sample dilution would be substituted for spiking as a measure of accuracy. Samples V81, V85 and V89 had dilution values ranging from 0.1 to 4.3 relative percent difference. Although no acceptance criteria are specified in the source documents for dilution RPD, those values which are less than 5 percent are generally considered to be acceptable. A more detailed description of the need for and use of serial dilution as an evaluation tool is provided in the Sodium section below.

Accuracy by spiking was determined on sample V93. Accuracy for this sample was shown to be acceptable as indicated by an 84.3 percent recovery.

Precision between sample V93 spike and spike duplicate was an acceptable 0.6 relative percent difference. Precision between samples and their corresponding duplicates was also good with relative percent differences ranging from 0.5 to 1.9.

The aluminum concentrations of the field blank and all preparation blanks were less than the detection limit, indicating the absence of contamination.

Average aluminum concentrations of the samples ranged from 80,600 to 1,710,000 $\mu\text{g/L}$, with a grand average of 1,063,000 $\mu\text{g/L}$.

BARIUM (by ICP)

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

Percent recoveries of all LMCS standards (undigested) were within control limits, ranging from 92.8 to 101.0 percent recovery.

All digested laboratory control samples were within the range of 89.7 to 103.6 percent recovery, and were within the LMCS undigested standard control limits.

Accuracy was acceptable as indicated by spike recoveries ranging from 89.1 to 102.2 percent recovery.

Precision between spikes and the corresponding spike duplicates were acceptable as evidenced by relative percent differences ranging from 0.6 to 3.4. Precision between samples and their duplicates was not able to be determined because the barium concentrations for all sample values was less than the detection limit.

Field blank and preparation blank concentrations were less than the detection limit, indicating the absence of contamination. The cognizant chemist noted that the presence of slight contamination of a continuing calibration blank for the field blank sample was trivial. This is evident because barium in the field blank samples was undetectable.

The barium concentrations of samples V81 and V89 were $<100 \mu\text{g/L}$. The barium concentration was $<200 \mu\text{g/L}$ for samples V85 and V93. For sample V97, the barium concentration was less than $5 \mu\text{g/L}$. Although no grand average was able to be calculated all sample values were $<200 \mu\text{g/L}$.

CADMIUM (by ICP)

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

The percent recoveries of all undigested LMCS standards (which ranged from 97.6 to 106.5) were within control limits.

All digested laboratory control sample percent recoveries were within the range of 85.2 to 99.2 percent, and were within the LMCS undigested standard control limits.

Accuracy was acceptable as indicated by spike recoveries ranging from 92.0 percent to 103.9 percent.

Precision between spikes and corresponding spike duplicates was acceptable, as evidenced by relative percent differences ranging from 0.5 to 4.9. Precision between samples and their duplicates was reasonable, with RPDs ranging from 0.5 to 16.6. Samples V85, and V93 had cadmium concentrations less than the detection limit, consequently, for these samples an RPD could not be calculated.

All preparation blank concentrations were less than the detection limit, suggesting the absence of contamination from analytical procedures. The field blank's cadmium concentration was $62.3 \mu\text{g/L}$, but its duplicate was $<40.0 \mu\text{g/L}$. Although $62.3 \mu\text{g/L}$ is very near the detection limit, it is greater than the cadmium concentration of sample V97, which averaged $36.5 \mu\text{g/L}$, indicating the possibility of low level field contamination of samples. The cognizant chemist, however, noted the presence of slight contamination of a continuing calibration blank for the field blank sample. This is suggestive, conversely, that contamination of the field blank sample during the analytical procedure was possible. If contamination did occur, its impact was generally trivial.

The range of average cadmium concentrations of the samples was 36.5 to 1070 $\mu\text{g/L}$, including two samples with concentrations of $<1000 \mu\text{g/L}$.

CALCIUM (by ICP) ADDENDUM 1A,

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte other than those noted below.

Percent recovery of all undigested LMCS standards (which ranged from 93.0 to 98.2) were within control limits.

Except for sample V93, all digested laboratory control samples were within the LMCS undigested standard control limits, with values ranging from 89.7 to 98.8 percent recovery. The recovery for V93 was 77.5%. Although calcium was the only element that was less than the undigested LMCS control limit, all analytes for V93 appeared to be biased slightly low, as noted by the cognitive chemist, suggesting a preparation error.

Accuracy appeared to be acceptable as indicated by spike recoveries ranging from 84.7 percent to 93.9 percent.

Precision between sample spikes and corresponding spike duplicates was acceptable, values ranging from 0.4 to 3.8 relative percent difference.

RPDs between the samples and their duplicates ranged from 2.5 to 100.7 percent. Although precision quality control requirements were not based on sample duplicates, this poor precision indicated some difficulties with analysis of this element. Possible causes may include sample contamination during the digestion and sample non-homogeneity.

Evidence of minor contamination occurring during digestion is seen in the preparation blanks, which ranged in calcium concentration from 15.9 to 76.0 $\mu\text{g/L}$. V97 was the only sample for which the calcium concentration in the preparation blank was greater than 20 percent of the sample. Evidence of slight calcium contamination was seen in undigested continuing calibration blanks for samples V81 and the field blank (V101).

Calcium concentration of the field blank was sufficiently high that it exceeded the 20% sample concentration limit for samples V89, V93 and V97, indicating the possible presence of field contamination. Additional support for this determination is seen in the fact that the field blank calcium concentration was significantly greater (282 fold) than the detection limit.

Average calcium concentrations of the samples ranged from 186 to 25,300 $\mu\text{g/L}$, with a grand average of 10,100 $\mu\text{g/L}$.

CHROMIUM (by ICP)

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

Percent recovery of all undigested LMCS standards were within control limits. Those recoveries ranged from 97.9 to 105.6 percent. Although no quality control criteria were set for the digested laboratory control samples, these had good recoveries ranging from 87.2 to 100.5 percent.

Accuracy was acceptable as indicated by spike recoveries, which ranged from 93.0 to 105.9.

Precision between the spikes and corresponding spike duplicates was acceptable with values ranging from 0.1 to 4.0 relative percent difference. RPDs between the samples and their duplicates were also good, ranging from 0.4 to 2.6%.

The field blank and all sample preparation blank concentrations were less than the detection limit, indicating the absence of contamination.

Sample chromium concentrations ranged from 1,980 to 45,600 $\mu\text{g/L}$, with a grand average of 25,380 $\mu\text{g/L}$.

IRON (by ICP)

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

Percent recovery of all undigested LMCS standards were within control limits, ranging from 97.3 to 105.1 percent. There were no QC criteria for digested laboratory control samples, yet these also met LMCS control limits ranging from 87.8 to 99.3 percent recovery.

Acceptable accuracy was indicated by spike recoveries ranging from 93.0 to 102.5 percent.

Precision between the spikes and corresponding spike duplicates was acceptable with RPDs ranging from 0.7 percent to 3.6 percent. RPDs between the samples and their duplicates ranged from 1.3 to 34.8 percent. Although precision quality control criteria are based on the spike duplicate, the RPDs for samples V89 and V93 are greater than 20%, indicating possible non-homogeneity within these two samples.

All digested preparation blank concentrations were greater than the detection limit, but were generally low relative to the samples (except for V97). The QAPjP specified that the evaluation of sample contamination was based on the field blank. It did not include preparation blanks in the quality control criterion. However, if the 20 percent criterion was used for preparation blanks, then the data suggest that low level contamination of the samples is possible. Preparation blank concentrations ranged from 9.93 $\mu\text{g/L}$ to 20.1 $\mu\text{g/L}$. Because the iron concentration for sample V97 was so low (35.3 $\mu\text{g/L}$), the preparation blank's iron concentration (18.7 $\mu\text{g/L}$) exceeded 20 percent of the sample concentration, and points to the possibility of low level contamination during analysis.

The average iron concentration in the field blank (208 $\mu\text{g/L}$) was greater than sample V97 (35.3 $\mu\text{g/L}$), indicative of sample contamination in the field.

Average iron concentrations of the samples ranged from 35.3 to 7280 $\mu\text{g/L}$, with a grand average of 3390 $\mu\text{g/L}$.

LEAD (by ICP) ADDENDUM 1A,

Except for contamination of the calibration blanks (discussed below), there did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

Percent recoveries of all undigested LMCS standards were within control limits, ranging from 99.6 to 108.5 percent recovery. The digested laboratory control samples had lead recoveries ranging from 83.0 to 100.4 percent, of which all samples were within the LMCS control limit range except for V93. The cognitive chemist noted that the digested standard recoveries for all analytes of sample V93 were biased low, which was suggestive of a sample preparation error. It should also be noted, however, that seven of the 12 analytes in this standard were within LMCS control limits.

Acceptable accuracy was obtained for the spikes, which ranged from 94.5 to 108.5 percent recovery.

Precision between the spikes and corresponding spike duplicates was acceptable with relative percent differences ranging from 0.4 to 14.7. RPDs between the samples and their duplicates were not able to be calculated (except for V81 with a 82.7 percent RPD) because one or both of the determinations from each sample was less than the sample detection limit.

Two of the preparation blanks had lead concentrations that were less than the detection limit. Although lead was detected in the preparation blanks of the other samples, their concentrations were much less than 20 % of the sample concentrations. Field blank values were less than its detection limit of 240 $\mu\text{g/L}$, suggesting the absence of sample contamination in the field. Chronic but low level contamination in the continuing calibration blanks was called falsely positive by the cognitive chemist, and was noted as being trivial.

Average sample lead concentrations ranged from <140 to 10,100 $\mu\text{g/L}$, with a grand average equal to or less than 5,260 $\mu\text{g/L}$ ("<" values were deleted for calculations).

MAGNESIUM (by ICP)

Except for contamination of the calibration blanks (discussed below), there did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

Percent recovery of all undigested LMCS standards were within control limits, ranging from 95.3 to 109.8 percent. The digested laboratory control samples had magnesium recoveries ranging from 82.2 to 96.5 percent, of which all samples were within the LMCS control limit range except for V93. The cognitive chemist noted that the digested standard recoveries for all analytes of sample V93 were biased low, which was suggestive of a sample preparation error. It should also be noted, however, that seven of the 12 analytes in this standard were within LMCS control limits.

Acceptable accuracy was obtained for the spikes, with percent recoveries ranging from 87.5 to 94.6.

Precision between the spikes and corresponding spike duplicates was acceptable with RPDs ranging from 0.8 to 4.2 percent. RPDs between the samples and their duplicates was rather poor with recoveries ranging from 3.7 to 47.4 percent.

All digested preparation blank concentrations were either slightly greater than or less than the detection limit, ranging from <3.0 to $19.3 \mu\text{g/L}$. Occasionally, the undigested (continuing calibration) reagent blanks were determined to have minor contamination, which the cognitive chemist noted as trivial. Consequently, contamination due to laboratory operations was not indicated.

The average field blank concentration of $120 \mu\text{g/L}$ was greater than the concentration for sample V97 ($<95 \mu\text{g/L}$), indicating that the field blank was contaminated.

Average sample magnesium concentrations ranged from ≤ 106 to $6,250 \mu\text{g/L}$, with a grand average of $3400 \mu\text{g/L}$. To enable calculation of averages, the "<" was removed from concentrations that were below the detection limit.

MANGANESE (by ICP)

Except for minor contamination of the calibration blanks (discussed below), there did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

Percent recoveries of all undigested LMCS standards were within control limits, ranging from 94.4 to 103.3. Digested laboratory control samples yielded recoveries ranging from 85.8 to 99.9 percent, which were also within the LMCS control limits.

Acceptable accuracy was obtained for spikes with values ranging from 87.2 to 98.9 percent recovery.

Precision between the spikes and corresponding spike duplicates was acceptable with relative percent differences ranging from 0.4 to 3.7. RPDs between the samples and their duplicates were not able to be calculated for V89 and V97 because one or both of the determinations from each sample was less than the sample detection limit. For the other samples, the sample/duplicate precision ranged from 1.8 to 10.3 RPD.

Manganese concentrations for all preparation blanks were less than the detection limit of $1.0 \mu\text{g/L}$. Undigested (continuing calibration) blanks occasionally showed minor contamination which was considered to be trivial by the cognitive chemist.

Manganese concentrations for the field blank and its duplicate were less than the detection limit of $30.0 \mu\text{g/L}$, and were determined to not be contaminated.

The average manganese concentration for samples ranged from <5.0 to $1160 \mu\text{g/L}$. The grand average for all samples was equal to or less than $486 \mu\text{g/L}$ ("<" values were deleted for calculations).

SILVER (by ICP)

ADDENDUM 1A,

Significant anomalies occurred during the analysis of this analyte as noted below. Because of the general failure of this analysis, it is believed that these quantitation data of silver are not reliable.

All LMCS standard (undigested) percent recoveries were within acceptable accuracy control limits, ranging from 99.5 to 107.5. A failure occurred for two continuing calibration verification (undigested LMCS) standards (54.2 and 53.5 percent recovery, respectively), which were analyzed with sample V101.

The generally poor and highly variable recoveries of digested laboratory control samples pointed to a problem with the digestion. Such a digestion problem was seen during analyses of the samples from Tanks 101-AP and 107-AP. These slurry samples were prepared by the same procedure. The digestion procedure (LA-505-158), through which all ICP samples were processed, includes a step where samples were exposed to hydrochloric acid. Because silver precipitates in a matrix with high chloride concentration, it was expected that silver recovery during analysis would be negatively impacted. Such was indeed the case for samples V81, V93 and V101, where the digested standards yielded low recoveries of 5.6, 80.8 and 57.0 percent, respectively. The cognitive chemist also noted that carry-over (presumably in the instrumentation) from digested standards was impacting the analyses of initial calibration blanks and continuing calibration blanks.

Acceptable spike accuracy was obtained for only samples V85 and V89. Accuracy failures occurred for spikes on samples V81, V93 and V101. Spike duplicate recoveries also failed on the same samples.

Precision between the spikes and corresponding spike duplicates was acceptable for all slurry samples, with relative percent differences ranging from 1.3 to 10.7. Precision was not acceptable for the field blank, sample V101, with a spike duplicate RPD of 74.8.

RPDs between the samples and their duplicates were reasonable with values ranging from 2.0 to 14.4 RPD.

Although the preparation blank concentrations were either less than the detection limit or very nearly that value, the average silver concentration of the field blank (3,610 $\mu\text{g/L}$) was greater than the highest sample, indicating serious contamination.

The average estimated silver concentration for samples ranged from 56.3 to 2,150 $\mu\text{g/L}$. The estimated grand average for all samples was 1260 $\mu\text{g/L}$.

SODIUM (by ICP)

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte. Although the chemist's narrative notes that continuing calibration blanks were occasionally contaminated by sodium, it was also indicated that this situation was trivial and had no impact on the quality of data.

The recoveries of all undigested LMCS standards were within control limits, ranging from 93.0 to 100.6 percent recovery. All of the non-required, digested laboratory control samples analyzed were within LMCS control limits, with values ranging from 89.9 to 103.5 percent recovery, indicating the absence of contamination or loss during sample preparation.

When sample analyte concentrations exceed 1000 $\mu\text{g/ml}$ (1,000,000 $\mu\text{g/L}$), the normal data control limits of 75 to 125 percent recovery are not applicable to ICP analyses, as stated in the TPP, section 4.5. The sodium concentration of each sample was determined to exceed 1000 $\mu\text{g/ml}$, consequently an alternative evaluation of accuracy was applied using serial dilution. Following serial dilution and reanalysis of each sample, a dilution RPD value was determined. The formula for this calculation follows:

$$\text{Dilution RPD} = \frac{[\text{initial conc.}] - ([\text{serial dil'n conc.}] \times \text{dilution factor})}{[\text{initial concentration}]} \times 100$$

Using a dilution rather than a spike has advantages and disadvantages as a data quality evaluation tool. Although an evaluation of the deviation between the actually derived concentration and the expected concentration following dilution does not definitively indicate the degree of matrix interference within a sample, it does establish whether or not the analysis was performed within the linear portion of the calibration curve. Generally, the concern regarding matrix interference is trivial because the analyte's concentration is so high that interference effects are insignificant. A somewhat overstated but applicable generalization is that the analyte in question "is the matrix".

Conversely, a spike is not particularly useful when the initial sample concentration is very high. To be distinguishable above the initial sample concentration, spiking must generate a final concentration at least 25 percent greater than the initial concentration, yet this places the analyte concentration within the region of calibration non-linearity. The result is that percent recovery is significantly underestimated. For example, accuracy was not acceptable if measured by slurry spike recoveries, which ranged from -41.2 to 1426 percent recovery. Consequently, the dilution method was applied to sodium. Dilution RPD values less than five percent indicate that measurements are within the linear portion of the calibration curve. Slurry dilution RPD values ranged from 0.2 to 6.5 percent. Only sample V81 had an RPD greater than the 5 percent acceptance limit. Dilution values for each sample were as follows:

<u>Sample</u>	<u>Dilution RPD</u>
V81	6.5
V85	2.9
V89	1.6
V93	4.1
V97	0.2

Accuracy as measured by spike recovery for the field blank was acceptable with a 99.7 percent recovery.

Precision between the field blank spike and spike duplicate was acceptable with a 1.4 relative percent difference. Precision between samples and their duplicates was quite good with values ranging from 0.4 to 2.8 RPD.

The preparation blank concentrations ranged for all samples from <11.0 to 44.2 $\mu\text{g/L}$. Because the blanks were less than 20 percent of sample concentrations, they were determined to not be contaminated.

The average sodium concentration in the field blank was 2,770 $\mu\text{g/L}$. Although this could be considered contamination, it is only 0.15 percent of the amount of sodium in the sample with the smallest concentration (1,880,000 $\mu\text{g/L}$). Such "contamination" is relatively trivial, consequently this blank was determined to not be contaminated.

Average sodium concentrations of the samples ranged from 1,880,000 $\mu\text{g/L}$ to 49,300,000 $\mu\text{g/L}$, with a grand average of 29,080,000 $\mu\text{g/L}$ (2.91% w/v).

ZINC (by ICP)

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte. Although the chemist's narrative notes that an initial and one continuing calibration blank was contaminated by zinc, it was also indicated that this situation was trivial and had no impact on the quality of data.

Percent recoveries of all undigested LMCS standards were within control limits, ranging from 100.4 to 107.4 percent. Five of the six digested laboratory control samples (not required) had percent recoveries which were within the LMCS control limits. The laboratory control sample representing for sample V93 had recovery of 84.1 percent. The cognitive chemist noted that the digested standard recoveries for all analytes of sample V93 were biased low, where the loss was suggestive of a sample preparation error. It should also be noted, however, that seven of the 12 analytes in this standard were within LMCS control limits.

Accuracy was acceptable as indicated by spike recoveries, which ranged from 91.1 to 102.0 percent.

Precision between the spikes and spike duplicates was acceptable, ranging from 0.0 to 1.1 relative percent difference. Although the RPD values between the samples and their duplicates were poor, ranging from 3.5 to 74.2, no acceptance criteria apply to the sample duplicate analyses. Sample and duplicate concentrations were significantly greater than the detection limit, consequently large percent deviations were not due to variability near the limit of instrument capability. Sample contamination was not indicated as the cause of such imprecision as seen from an evaluation of the preparation blanks.

The zinc concentration in the preparation blanks ranged from 6.01 to 36.2 $\mu\text{g/L}$, which was approximately 1.5 to 9 fold greater than the instrument detection limit. Except for sample V97, slurry sample zinc concentrations were more than 56 times greater than the preparation blanks, indicating that the amount of zinc found in these blanks was relatively insignificant. These blanks were determined to not be contaminated. Although the zinc

concentration of sample V97 was only seven fold greater than its preparation blank, that blank was only 2 $\mu\text{g/L}$ greater than the detection limit, hence its contribution to sample contamination was also trivial, and was also determined to not be contaminated.

The field blank was determined to be contaminated because its average zinc concentration (130 $\mu\text{g/L}$) was greater than that of sample V97 (43.5 $\mu\text{g/L}$).

Average zinc concentrations in the samples ranged from 43.5 $\mu\text{g/L}$ to 7,620 $\mu\text{g/L}$, with an grand average of 2,940 $\mu\text{g/L}$.

RADIOCHEMICAL ANALYSES

GAMMA ENERGY ANALYSES (GEA)

Samples were acid predigested and analyzed using procedure/revision number LA-548-121/D-0, and instrument number WC38931, with detectors 1, 2 and 3.

Sample holding times for slurry samples 1 through 5 were 47, 23, 41, 16 and 8 days, respectively. The sample holding time for the field blank was 18 days. Except for radium-226 with a maximum holding time of six months, there were no specified maximum holding times in SW-846 protocol. All GEA analytes were, therefore, within holding time criteria.

The GEA procedure does not use an LMCS quality control standard for every isotope. The LMCS standard, which contained Co^{60} and Cs^{137} , was determined with each batch. Quality control parameters for all of the GEA analytes were expressed relative to these two isotopes.

Statistically derived LMCS control limits for the Cs^{137} standard (EDP code number R901) were 94.39 to 111.05 percent recovery. The historical mean recovery was 101.09 percent. Actual Cs^{137} LMCS standard recoveries for all GEA analyses were acceptable, ranging from 98.2 to 104.7 percent.

Statistically derived LMCS control limits for the Co^{60} standard (EDP code number R905) were 93.02 to 110.78 percent recovery. The historical mean recovery was 101.67 percent. Actual Co^{60} LMCS standard recoveries for all GEA analyses were acceptable, ranging from 96.2 to 104.8 percent.

Because standards were not used for each analyte, it was not possible to spike the sample to determine percent recoveries of each analyte. Consequently, another quality control parameter, percent counting error was determined and was found to be acceptable for both Co^{60} and Cs^{137} . Percent counting errors ranged in value from 4.2 to 5.7.

Sample V34 was reanalyzed because upon evaluation of the data, the cognizant chemist determined that there was possible contamination of the blank and sample with cesium-137.

CESIUM-134 (by GEA)

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

As noted in the Special Analysis Request section above, Cs^{134} was not required by the WAP, but was analyzed by special request and provided here to combine the data into one report.

An evaluation of accuracy was discussed above in the general GEA discussion.

The preparation blank's activity was $<0.0244 \mu\text{Ci/ml}$, and was determined to not be contaminated. The detection limit was based on the preparation blank value.

Cs^{134} average activity for sample V97 was $0.284 \mu\text{Ci/ml}$. Sample duplicate precision was acceptable with 3.89 RPD.

CESIUM-137 (by GEA)

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

An evaluation of accuracy was discussed above in the general GEA discussion.

The detection limit shown in the data summary table was based on the reagent blank value.

Precision was acceptable between slurry samples and their duplicates ranging from 0.31 to 4.73 RPD.

Field blank Cs^{137} was less than the detection limit of $0.000545 \mu\text{Ci/ml}$, and was determined to not be contaminated.

Average cesium-137 activities for slurry samples ranged from 23.7 to $96.1 \mu\text{Ci/ml}$. The grand average Cs^{137} activity was $40.6 \mu\text{Ci/ml}$.

COBALT-60 (by GEA)

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

As noted in the Special Analysis Request section above, Co^{60} was not required by the WAP, but was analyzed by special request and provided here to combine the data into one report.

An evaluation of accuracy was discussed above in the general GEA discussion.

The detection limit shown in the data summary table was based on the reagent blank value.

ADDENDUM 1A,

Co⁶⁰ was less than the sample detection limit of 0.0248 $\mu\text{Ci/ml}$. The preparation blank, with an activity less than the detection limit of 0.0165 $\mu\text{Ci/ml}$, was shown not to be contaminated.

Because Co⁶⁰ was not detectable, it was not possible to calculate a RPD value to evaluate precision.

EUROPIUM-154 (by GEA)

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

As noted in the Special Analysis Request section above, Eu¹⁵⁴ was not required by the WAP, but was analyzed by special request and provided here to combine the data into one report.

An evaluation of accuracy was discussed above in the general GEA discussion.

The detection limit shown in the data summary table was based on the reagent blank value.

For sample V97, Eu¹⁵⁴ was less than the sample detection limit of 0.0742 $\mu\text{Ci/ml}$. The preparation blank activity was less than the detection limit of 0.0637 $\mu\text{Ci/ml}$ and was determined to not be contaminated.

Because Eu¹⁵⁴ was not detectable, it was not possible to calculate an RPD value as an estimation of precision.

EUROPIUM-155 (by GEA)

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

As noted in the Special Analysis Request section above, Eu¹⁵⁵ was not required by the WAP, but was analyzed by special request and provided here to combine the data into one report.

An evaluation of accuracy was discussed above in the general GEA discussion.

The detection limit shown in the data summary table was based on the preparation blank value. The preparation blank activity was <0.0641 $\mu\text{Ci/ml}$, and was determined to not be contaminated.

For sample V97 Eu¹⁵⁵ activity was less than the sample detection limit of 0.181 $\mu\text{Ci/ml}$.

Because Eu¹⁵⁵ was not detectable, it was not possible to calculate a sample RPD value as an estimation of precision.

ADDENDUM 1A,
RUTHENIUM-106 (by GEA) [includes RHODIUM-106]

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

Ruthenium-106 was requested in the WAP. Rh¹⁰⁶ was included with Ru¹⁰⁶ because Ru¹⁰⁶ is detected in the presence of its daughter, Rh¹⁰⁶. Radioactivity values were shown in the data summary table as the sum of Rh¹⁰⁶ and Ru¹⁰⁶ activities at secular equilibrium.

Ru/Rh¹⁰⁶ was less than the sample detection limit for all slurry samples and duplicate samples, with values ranging from <0.286 to <1.34 $\mu\text{Ci/ml}$. The activity for the field blank and its duplicate was <0.00780 $\mu\text{Ci/ml}$, indicating that the field blank was not contaminated.

Because Ru/Rh¹⁰³ was not detectable, it was not possible to calculate a RPD value as an estimation of precision.

TRITIUM (by LIQUID SCINTILLATION)

This procedure was performed on the direct sample using procedure/revision numbers LA-218-114/A-2 and A-3, and instrument numbers WC16085, and WB27818. Samples V79 through V81 were initially tested on 5/7/94, but were retested on 5/26/93 because the spike recovery was less than the required 75 percent recovery. Spike recovery for the rerun was worse, consequently the original data were reported. A required sample holding time was not specified in SW-846 protocol for this analyte. Sample holding times for slurry samples 1 through 4 were 3, 29, 23, and 16 days, respectively. Slurry sample 5 (V97) was analyzed twice by accident. That set of data appeared prior to release of the data package for validation, consequently both batches of data were reported. Sample holding times for the original and rerun of slurry 5 were 11 and 83 days, respectively. The sample holding time for the field blank was 2 days.

There did not appear to be any analytical anomalies or difficulties during the analyses, except for spike recoveries of V81 and the field blank (V101).

Statistically derived LMCS control limits for the H³ standard (EDP code number R907) were 75.55 to 118.04 percent recovery. The historical mean recovery was 91.80 percent. For all slurry samples and the field blank, the percent recoveries of the LMCS standard were within acceptance limits ranging from 89.2 percent to 101.5 percent.

Spike accuracy was acceptable for slurry samples 2, 3 and 4, with values ranging from 100.7 to 118.2 percent recovery. The spike recovery was not acceptable (64.4 percent recovery) for sample V81 (slurry 1), but its spike duplicate had an acceptable recovery of 77.6 percent. Sample V81 was analyzed twice, both with unacceptable spike recoveries, indicating the possibility of matrix interference. The field blank was analyzed only once despite an unacceptable spike recovery of 68.2 percent. The cognizant chemist noted in the batch narrative that a rerun was not requested because the sample tritium activity was less than the detection limit and because it appeared that low spike recovery was possibly caused by sample matrix effects. It is, however, difficult to understand how the field blank could have a matrix sufficient to

cause such an effect. Tritium data for samples V81 and V101 should be considered as estimated because of the low spike recoveries.

Precision for all analyses, as measured by the relative percent difference between the spikes and corresponding spike duplicates, was within acceptance limits ranging from 0.4 to 6.1 percent. Relative percent differences between the samples and corresponding duplicates were good, ranging from 0.0 to 16.3.

Sample H^3 activity was approximately three orders of magnitude greater than the reagent blanks and field blanks, which were all less than the detection limit. Consequently, the blanks were determined to not be contaminated.

Average slurry H^3 activities ranged from 0.00305 to 0.00496 $\mu\text{Ci/ml}$, with a average of 0.00430 $\mu\text{Ci/ml}$.

CARBON-14 (by LIQUID SCINTILLATION)

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

As noted in the Special Analysis Request section above, C^{14} was not required by the WAP, but was analyzed by special request and provided here to combine the data into one report.

C^{14} was performed on the direct sample V97 using procedure/revision number LA-348-104/B-1 and instrument number WB27818 on 7/9/94, a sample holding time of 30 days. A required maximum sample holding time is not specified in SW-846 protocol for C^{14} . Field blank analysis was not required in the source documents and was not performed.

Statistically derived LMCS control limits for the C^{14} standard (EDP code number R909) were 61.78 to 115.72 percent recovery. The historical mean recovery was 93.44 percent. Percent recovery of the LMCS standard for V97 was within acceptance limits at 70.1 percent, but was within the laboratory's warning limits, as noted in the chemist's batch narrative.

Accuracy, as determined by a sample spike, was not required nor measured. The counting error for all analyses ranged from 0.56 to 4.33 percent.

Precision, as measured by the relative percent difference between the sample and its duplicate, was good with a value of 9.11 percent.

Reagent blank activity was less than the detection limit (0.00000438 $\mu\text{Ci/ml}$), consequently, it was determined to not be contaminated.

Average C^{14} activity in sample V97 was 0.000164 $\mu\text{Ci/ml}$.

SELENIUM-79 (by ION EXCHANGE/DIST/LIQUID SCINTILLATION)

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

As noted in the Special Analysis Request section above, Se^{79} was not required by the WAP, but was analyzed by special request and provided here to combine the data into one report.

Se^{79} analysis was performed on sample V97 on an acid digestion, ensuring that the analyte was fully dissolved to facilitate detection. This procedure requires an acid matrix, whereas it should be noted that the initial sample pH was strongly basic.

The analysis was done on 8/4/94 (a sample holding time of 56 days) using procedure/revision number LA-365-132/B-2 and instrument number WB27818. A required maximum sample holding time was not specified in SW-846 protocol for this analyte, and no field blank was analyzed because it was not required in the source documents.

Se^{79} activity was based upon calibration with C^{14} because no Se^{79} standard exists. Thus, it was only possible to generate data for a reagent blank and for sample V97 in duplicate. The liquid scintillation counter was calibrated for efficiency using C^{14} , since both nuclides have approximately the same beta energy.

Isotopic recovery through the preparative procedure was determined gravimetrically by the use of a carrier for both the sample and the blank. Carrier recoveries for the sample and duplicate were excellent with values of 99.4 and 93.9 percent, respectively. Another quality control parameter, the percent counting error, was acceptable with a value of 1.2 percent for both the sample and the sample duplicate.

The preparation blank's activity was less than the detection limit of 0.00128 $\mu\text{Ci/ml}$.

Se^{79} activity for the sample was 0.122 $\mu\text{Ci/ml}$, and was 0.130 $\mu\text{Ci/ml}$ for the sample duplicate. The average Se^{79} activity was 0.126 $\mu\text{Ci/ml}$.

TECHNETIUM-99 (by EXTRACTION/LIQUID SCINTILLATION)

As noted in the Special Analysis Request section above, Tc^{99} was not required by the WAP, but was analyzed in sample V97 by special request and provided here to combine the data into one report.

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

Tc^{99} analyses were performed on the direct sample on 7/18/94 (a sample holding time of 39 days) using procedure/revision number LA-438-101/D-2 and instruments numbered WB-27818 and WC-16085.

A required maximum sample holding time was not specified in SW-846 protocol for this analyte, and no field blank was analyzed because it was not required in the source documents.

Statistically derived LMCS control limits for the Tc^{99} standard (EDP code number S363) were 71.90 to 135.03 percent recovery. The historical mean

recovery was 97.43 percent. LMCS standard recovery for V97 was acceptable with 100.4 percent recovery.

Spike accuracy was not required and was not evaluated. The percent counting error was good for all analyses, ranging from 0.3 to 5.6 percent.

Precision, as measured by the relative percent difference between the sample and its duplicate, was acceptable with 2.5 percent.

The reagent blank's activity was less than the detection limit of 0.00000880 $\mu\text{Ci/ml}$, and was determined to not be contaminated.

Tc^{99} activity for the sample and duplicate was 0.0281 and 0.0274 $\mu\text{Ci/ml}$, respectively, with an average activity of 0.0278 $\mu\text{Ci/ml}$.

STRONTIUM-90 (by SEPARATION/PROPORTIONAL COUNTING)

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

Sr^{90} analyses were prepared by performing an acid predigestion of samples instead of direct analysis or acid dilution as was specified in the TPP. This alternative method was recommended because acid digestion would insure that the analyte was fully dissolved to facilitate detection. Analyses were performed using procedure/revision number LA-220-101/D-0 and instruments numbered WB27811, WA45676 and WB26870.

Sample holding times for slurry samples 1 through 5 were 35, 25, 45, 35 and 20 days, respectively. The sample holding time for the field blank was 29 days. A required maximum sample holding time was not specified in SW-846 protocol for this analyte.

Statistically derived LMCS control limits for the Sr^{90} standard (EDP code number S376) were 79.76 to 113.11 percent recovery. The historical mean recovery was 100.11 percent. Recoveries for all LMCS standards were acceptable with values ranging from 94.8 to 103.2 percent recovery.

Accuracy, as measured by percent recovery of all spikes, was acceptable with values ranging from 92.6 to 105.0 percent.

Precision between all spikes and their corresponding spike duplicates was acceptable with values ranging from 0.0 to 10.3 relative percent difference. The relative percent differences between the samples and their duplicates were good, ranging from 4.6 to 8.6 percent.

Except for samples V85 and V93, all preparation blanks had Sr^{90} activities that were less than the detection limit. The preparation blank for sample V85 was only seven fold greater than the sample detection limit, and V93 was approximately half of the sample detection limit. Consequently, all preparation blanks were determined to not be contaminated.

The field blank was determined to have an activity of 0.00000646 $\mu\text{Ci/ml}$ and its duplicate had an activity of <0.0000117 $\mu\text{Ci/ml}$, which was three orders of

magnitude less than the activity of the slurry samples. The field blank was determined to not be contaminated.

Average Sr^{90} activities for slurry samples ranged from 0.0110 $\mu\text{Ci/ml}$ to 0.250 $\mu\text{Ci/ml}$, with a grand average of 0.130 $\mu\text{Ci/ml}$.

IODINE-129 (by DISTILLATION/ION EXCHANGE/GEA)

As noted in the Special Analysis Request section above, I^{129} was not required by the WAP, but was analyzed in sample V97 by special request and provided here to combine the data into one report.

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

I^{129} analysis was performed on the direct sample on 7/19/94 (a sample holding time of 40 days), using procedure/revision LA-378-103/B-3 and instruments numbered WB57257 and WB57265.

A required maximum sample holding time was not specified in SW-846 protocol for this analyte, and no field blank was analyzed because it was not requested.

Statistically derived LMCS control limits for the I^{129} standard (EDP code number S928) were very broad, ranging from 45.69 to 147.85 percent recovery. The historical mean recovery was 105.03 percent. Recovery of the LMCS standard was acceptable with 91.9 percent recovery.

Spike accuracy was not provided because a spike was not requested. Spike duplicate precision was not provided because the spike duplicate was not requested.

Precision as measured by relative percent difference between the sample and its duplicate was not able to be calculated because I^{129} activity was less than the detection limit.

The reagent blank activity was below the detection limit of 0.0000320 $\mu\text{Ci/ml}$.

I^{129} activity of sample V97 was less than the detection limit for both the sample and sample duplicate with values of <0.0000339 $\mu\text{Ci/ml}$ and <0.0000317 $\mu\text{Ci/ml}$, respectively.

PLUTONIUM-239/240 (By ALPHA ENERGY ANALYSIS)

$\text{Pu}^{239/240}$ analyses were performed on acid digested slurry samples using procedure/revision LA-503-156/D-1 and instrument number WB57237.

Sample holding times for slurry samples 1 through 5 were 68, 17, 102, 22 and 8 days, respectively. Sample 3 (V89) was reanalyzed on 8/29/94, yielding a rerun sample holding time of 105 days. The sample holding time for the field

blank was 30 days. A required maximum sample holding time was not specified in SW-846 protocol for this analyte.

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte. Low recovery of carrier was noted by the chemist for samples V99, V100 and V101. The rerun of sample V89 also had low tracer recoveries.

Statistically derived LMCS control limits for the $\text{Pu}^{239/240}$ standard (EDP code number R211) were 74.04 to 120.82 percent recovery. The historical mean recovery was 106.72 percent. Recoveries of the LMCS standard for all analyses were acceptable, ranging from 101.3 to 107.7 percent recovery.

Accuracy was acceptable for all spikes with percent recoveries ranging from 103.1 to 108.6 percent.

Precision between all spikes and their corresponding spike duplicates was acceptable with values ranging from 0.3 to 12.5 RPD.

Precision for $\text{Pu}^{239/240}$ between samples and their duplicates was good with RPD values ranging from 0.6 to 18.4.

The activities for the field blank and preparation blanks were less than the detection limit, indicating the absence on contamination in all blanks.

The average $\text{Pu}^{239/240}$ activity for sample V97 was less than the detection limit of less than 0.000652 $\mu\text{Ci/ml}$.

The cognizant chemist noted on the original batch narrative for sample V89 that a rerun was requested because the sample duplicate yielded an activity (0.000202 $\mu\text{Ci/ml}$) which was greater than the "<" value for the sample (<0.000156 $\mu\text{Ci/ml}$). The tracer recovery was good for the original batch, but was marginal for the rerun. The rerun of V89 yielded $\text{Pu}^{239/240}$ activities for the sample and duplicate which were less than the detection limit of 0.000344 $\mu\text{Ci/ml}$. Original and rerun data for V89 were reported in the data summary table, however the $\text{Pu}^{239/240}$ activity of <0.000344 $\mu\text{Ci/ml}$ most conservatively summarizes all V89 data.

Average $\text{Pu}^{239/240}$ activities for samples V81, V85 and V93 ranged from 0.000150 to 0.000423 $\mu\text{Ci/ml}$.

By converting "<" results to real numbers, an approximation of a grand average was calculated for all slurry samples to be $\leq 0.000304 \mu\text{Ci/ml}$.

PLUTONIUM-238 (by ALPHA ENERGY ANALYSIS) [not requested in WAP]

Although this analyte was not requested in the source documents, it was provided in this data package because it was generated as part of the $\text{Pu}^{239/240}$ procedure.

Pu^{238} analysis was performed on acid digested samples using procedure/revision LA-503-156/D-1 and instrument number WB57237. Sample holding times for slurry samples 1 through 5 were 68, 17, 102, 22 and 8 days, respectively. Sample 3 (V89) was reanalyzed on 8/29/94, yielding a rerun sample holding time of 105

days. The sample holding time for the field blank was 30 days. A required maximum sample holding time was not specified in SW-846 protocol for this analyte.

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte.

The assessment of accuracy for this method was based on the recovery of the $\text{Pu}^{239/240}$ LMCS standard was used because no Pu^{238} LMCS standard was available. The recoveries of this surrogate standard were acceptable with recoveries ranging from 101.3 to 107.7 percent. Control limits for $\text{Pu}^{239/240}$ are discussed in that section above. Tracer recovery was acceptable for the samples and duplicates (except for V101 and V89 rerun) with percent recoveries ranging from 48.0 to 70.6.

Because Pu^{238} activity was less than the detection limit for the sample and its duplicate, it was not possible to calculate a RPD value between them. Assessment of precision as a function of the relative percent difference between a spike and a spike duplicate was not possible because no spikes or spike duplicate was generated.

The activities of the preparation blanks were based on $\text{Pu}^{239/240}$ and were less than the detection limit of $0.000907 \mu\text{Ci/ml}$. The average activity of the field blank was based on $\text{Pu}^{239/240}$ and was less than the detection limit of $0.000614 \mu\text{Ci/ml}$.

Average slurry sample Pu^{238} activities were not able to be calculated because all values were less than the detection limit, which ranged from <0.000946 to $<0.000956 \mu\text{Ci/ml}$.

AMERICIUM-241 (by ALPHA ENERGY ANALYSIS)

Am^{241} analysis was performed on acid digested samples using procedure/revision LA-503-156/D-1 and instrument number WB57237. Sample holding times for slurry samples 1 through 5 were 43, 36, 42, 29 and 29 days, respectively. The sample holding time for the field blank was 29 days. A required maximum sample holding time was not specified in SW-846 protocol for this analyte.

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte during.

Statistically derived LMCS control limits for the Am^{241} standard (EDP code number R201) were 62.61 to 128.86 percent recovery. The historical mean recovery was 106.38 percent. Recoveries of all LMCS standards were acceptable with values ranging from 91.3 to 111.2 percent.

Acceptable accuracy was obtained for all spikes with values ranging from 99.0 to 121.8 percent recovery.

Acceptable precision was obtained between all spikes and spike duplicates with values ranging from 0.5 to 8.4 relative percent difference. Except for sample V81, which had an RPD of 2.9, it was not possible to calculate the precision between samples and sample duplicates because the Am^{241} activity was less than the detection limit for all samples and duplicates.

ADDENDUM 1A,

Am^{241} activities for the field blank and all preparation blanks were less than the detection limit, indicating that they were not contaminated.

Slurry sample Am^{241} activities ranged from $<0.000376 \mu\text{Ci/ml}$ to $0.00128 \mu\text{Ci/ml}$, with an estimated grand average of $<0.00119 \mu\text{Ci/ml}$. "Less than" values were determined using 5 percent of the Am^{243} tracer peak as the Am^{241} peak.

CURIUM-243/244 (by ALPHA ENERGY ANALYSIS)

$\text{Cm}^{243/244}$ analysis was performed on acid digested samples using procedure/revision LA-503-156/D-1 and instrument number WB57237. Sample holding times for slurry samples 1 through 5 were 43, 36, 42, 29 and 29 days, respectively. The sample holding time for the field blank was 29 days. A required maximum sample holding time was not specified in SW-846 protocol for this analyte.

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte during.

$\text{Cm}^{243/244}$ and Am^{241} were analyzed simultaneously in the same procedure. There is, however, no standard, spike or tracer available for $\text{Cm}^{243/244}$. When the counter was calibrated for efficiency, it was determined that this efficiency was uniform across the entire energy counting spectrum. An approximate value for other nuclides can also be determined with the use of a tracer, such as Am^{243} .

Accuracy was measured as a function of percent recoveries of the surrogate Am^{241} LMCS standard. Am^{241} recoveries were acceptable, ranging from 91.3 to 111.2 percent. Accuracy and precision of $\text{Cm}^{243/244}$ are based on Am^{241} spikes and spike duplicates, respectively. These quality control parameters are discussed in the Am^{241} section above.

$\text{Cm}^{243/244}$ activity for all slurry samples was determined to be less than the detection limit, consequently it was not possible to calculate the relative percent differences between the pairs of samples and their duplicates.

Activities of all preparation blanks were less than the detection limit, indicating the absence of contamination. Field blank activity was also less than the detection limit, and was determined to not be contaminated.

The $\text{Cm}^{243/244}$ activities of all slurry samples and their duplicates were less than the detection limit and ranged in values from <0.000376 to $<0.00181 \mu\text{Ci/ml}$. These "less than" values were determined using 5 percent of the Am^{243} tracer peak as the $\text{Cm}^{243/244}$ and Am^{241} peaks.

TOTAL ALPHA (by proportional counter)

Total alpha analyses were performed on acid predigested samples rather than directly or by acid dilution as was specified in the TPP. This alternative method was recommended because acid digestion would insure that the analyte was fully dissolved to facilitate quantitation.

Using instruments numbered WB27810, WB26872 and WA57277, all analyses were performed using procedure/revision number LA-508-101/D-0. Detection limits and "less than" values were determined using procedure LA-508-002.

Sample holding times for slurry samples 1 through 5 were 55, 9, 56, 17 and 30 days, respectively. The sample holding time for the field blank was 18 days. The required maximum sample holding time for total alpha activity as specified in SW-846 protocol is six months. All slurry samples and field blank were analyzed for total alpha within the required holding time.

There did not appear to be any analytical anomalies or difficulties during these analyses.

Statistically derived LMCS control limits for the total alpha standard (EDP code number S510) were 66.12 to 132.91 percent recovery. The historical mean recovery was 99.22 percent. LMCS standard recoveries were acceptable for all samples with values ranging from 78.4 to 119.3 percent recovery.

The accuracy of all spikes was acceptable, ranging from 87.5 to 114.9 percent recovery.

Precision between all spikes and duplicate spikes was acceptable with values ranging from 1.2 to 3.9 RPD. Except for sample V89, precision between all samples and their duplicates was unable to be calculated because their alpha activities were less than the detection limit. Sample V89 had an RPD of 6.5.

Field blank activity was less than the sample detection limit of 0.00925 $\mu\text{Ci/ml}$ (1960 pCi/L). The preparation blanks were uniformly less than the detection limit of approximately 0.0230 $\mu\text{Ci/ml}$, indicating that neither the blanks nor field blank were contaminated.

Total alpha activities for all slurry samples and duplicate samples (except for V89) were less than the sample detection limits, ranging from <0.00835 to <0.0230 $\mu\text{Ci/ml}$. The average alpha activity for sample V89 was 0.0138 $\mu\text{Ci/ml}$.

TOTAL BETA (by proportional counter)

Using instruments numbered WB27810, WB26872 and WA57277, all analyses were performed on acid digested samples using procedure/revision number LA-508-101/D-0. Detection limits and "less than" values were determined using procedure LA-508-002.

Sample holding times for slurry samples 1 through 5 were 55, 9, 56, 17 and 30 days, respectively. The sample holding time for the field blank was 18 days. The required maximum sample holding time for total beta activity as specified in SW-846 protocol is six months. All slurry samples and field blank were analyzed for total beta within the required holding time.

There did not appear to be any analytical anomalies or difficulties during these analyses.

Statistically derived LMCS control limits for the total beta standard (EDP code number S515) were 81.66 to 120.68 percent recovery. The historic mean

recovery was 92.21 percent. LMCS standard recovery was acceptable for all analyses with percent recoveries ranging from 84.6 to 95.2 percent.

Accuracy, as measured by the percent recoveries of all spikes, was acceptable with values ranging from 79.6 to 99.1 percent recovery.

Precision between all spikes and the corresponding spike duplicates was acceptable with relative percent differences ranging from 1.3 to 16.7. No relative percent difference acceptance criteria were required by the WAP or QAPJP between samples and sample duplicates, however the RPDs between samples and sample duplicates was good ranging from 1.1 to 5.9 percent.

Except for sample V85, the beta activities of all preparation blanks were all less than the detection limit of approximately 0.136 $\mu\text{Ci/ml}$. The field blank for sample V85 had a beta activity of 0.0569 $\mu\text{Ci/ml}$, which was 3 orders of magnitude less than the sample value. The average field blank activity was less than the detection limit of 0.0317 $\mu\text{Ci/ml}$. All preparation blanks and the field blank were determined to not be contaminated.

The average beta activities for slurry samples ranged from 33.9 to 133 $\mu\text{Ci/ml}$ with a grand average of 62.6 $\mu\text{Ci/ml}$.

ORGANIC ANALYSES

As stated above in the Change of Workscope section, the organic analyses were originally scheduled to be analyzed by the PNL, 325 Laboratory. With very little lead time, the 222-S Laboratory was given these analyses to perform. Despite slurry samples being collected from the same location (SLY-A) and at equivalent times, the samples for organic analyses were given sample numbers that differed from those comparable samples that were collected for inorganic and radiochemical analyses. Table 1 lists the sample numbers and indicates the sampling times, where it is also seen that all samples scheduled for organic analyses were originally given a sample number that began with "PNL".

A unique feature regarding the set of samples for organics was that for each slurry sample that was collected, there was a corresponding field blank. The only exceptions to this occurred for the first two slurry samples, where only one field blank bottle was provided, which was insufficient for all three analyses: TOC, VOA and Semi-VOA. Consequently, the first field blank was analyzed for VOA and TOC, and the second field blank was analyzed for Semi-VOA and TOC.

TOTAL ORGANIC CARBON (by COMBUSTION AND COULOMETRY)

Total organic carbon (TOC) analyses using instruments numbered WC16130 and AL-10723 were performed on direct samples by procedure/revision number LA-344-105/B-2.

Sample holding times for slurry samples and field blanks are shown in table 12.

Table 12. TOC Sample Holding Times

Sample ID Number	Laboratory Identification	Sample Collection Date	Sample Analysis Date	Sample Holding Time
V106	Slurry 1	5/4/94	5/13/94	9 days
V107	Field Blank 1	5/4/94	5/26/94	22 days
V121	Slurry 2	5/9/94	5/23/94	14 days
V122	Field Blank 2	5/9/94	5/23/94	14 days
V126	Slurry 3	5/16/94	5/26/94	10 days
V128	Field Blank 3	5/16/94	5/26/94	10 days
V116	Slurry 4	5/23/94	6/3/94	11 days
V129	Field Blank 4	5/23/94	6/24/94	32 days
V111	Slurry 5	6/9/94	6/16/94	7 days
V130	Field Blank 5	6/9/94	6/16/94	7 days

The maximum sample holding time specified for this analyte in SW-846 was 28 days. All samples were analyzed within the required holding time except for the field blank for slurry 4 (V129).

There did not appear to be any analytical anomalies or difficulties during the analyses of this analyte. Several reruns were performed (as noted in the chemist's narrative) to reanalyze samples after a more appropriate dilution was performed.

Statistically derived LMCS control limits for the total organic carbon standard (EDP code number S356) were 88.98 to 105.62 percent recovery. The historical mean was 97.20 percent recovery. Accuracy for all LMCS standard determinations was acceptable with recoveries ranging from 92.7 to 98.7 percent recovery.

Accuracy, as determined by spike recoveries of samples V106 and V121, was acceptable with percent recoveries of 97.5 and 91.1, respectively.

Precision between the spikes and corresponding spike duplicates was acceptable with values of 3.0 and 8.8 relative percent recovery. Precision between samples and their duplicates was also good with RPDs ranging from 4.6 to 13.5.

Except for slurry 1 (V106), all reagent blank TOC concentrations were less than the detection limits, of which the greatest was 55 $\mu\text{g C/ml}$ for slurry samples 2 and 3 (V121, V126). The reagent blank TOC concentration for V106 was 11 $\mu\text{g C/ml}$. These detection limits were generally two orders of magnitude less than the sample concentrations and were determined to not be contaminated.

Average TOC concentrations of the samples ranged from 564 to 2,600 $\mu\text{g C/ml}$, with a grand average of 1,240 $\mu\text{g C/ml}$.

VOLATILE ORGANIC ANALYSIS (by GC/MS)

ADDENDUM 1A,

The holding time for volatile organics is defined as 14 days prior to extraction (purge and trap). The QAPJP referenced SW-846 (1986) to specify holding times, however the 1992 revision supersedes the 1986 version, as was stated in the Sample Holding Time section, page 14. For organic analyses the holding times are found in chapter 4, table 4-1.

To enable interpretation of summary data for VOA and Semi-VOA compounds, the following table defines the qualifiers, called Q-flags, used in Form I.

Q-Flag	Definition
U	Indicates the compound was analyzed for but not detected; the U-flagged concentration number is the quantitation limit.
J	Indicates an estimated value for the target or tentatively identified compounds; spectra meet criteria but response is below the quantitation limit for the target compounds.
B	Compound was found in the blank.
D	Analysis was performed on a diluted sample.
E	Indicates that quantitation was above the calibration range.
N	Indicates the presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search.

Raw data can be found in the Raw Analytical Data section under Organic Analyses. The data has been organized following Contract Lab Program (CLP) guidelines for ease of locating information, with the VOA data preceding the Semi-VOA data.

The samples were analyzed by method LA-523-405 A-4, using an Hewlett-Packard 5970 GC/MS (WB92426). Data acquisition and reduction were performed on an H.P.-1000 computer, running RTE-A revision F, which includes Aquarius software from Environmental Testing and Certification Corp.

A 0.1 mL aliquot of the slurry sample was combined with 4.9 mL of lab blank water in the purge vessel. Hanford wastes have historically been difficult to analyze because of the carry-over of foam into the trap from the VOA sparging vessel. As a consequence, the sample aliquot was limited to the largest aliquot (0.1 mL) that did not produce foaming above the vessel during sparging. The method and field blanks all used the 5 mL sample size. All samples and field blanks were run in duplicate. Holding times were met, as defined above. For the specific holding time of each sample, see the data file listing at the end of this section.

The following exceptions, which were mentioned in the chemist's narrative, were made during analysis: the System Monitoring Compounds (SMC), Internal Standard Compounds (IS), and Matrix Spike Compounds (MS) were the same as those used in LA-523-401 A-1. Acceptance criteria for each is also contained in LA-523-401 A-1.

LMCS control limits for the VOA compounds were administratively set to the criteria listed in procedure LA-523-401 A-1 for System Monitoring Compounds (SMC). The LMCS standard for VOA is defined as the method blank analyzed at the start of each 12 hour analysis window. The LMCS codes for the SMC's are R250 for 1,2-Dichloroethane-d4, R252 for Toluene-d8, and R254 for Bromofluorobenzene. The acceptance criteria used are located on the appropriate Form 2A, in the Data Summary section of this narrative.

The following quality control forms are generated per the analytical method used. The acceptance criteria for each of the forms is included on the form itself, in addition to the sample results. Forms 2A and 3A are included in the Data Summary section. Forms 5A, 6A, 7A and 8A are included in the Raw Analytical Data section. Their results are as follows:

FORM	INFORMATION	COMMENTS
2A	SMC Recoveries	Meets all requirements - see note *
3A	MS/MSD Recoveries	Meets all requirements
4A	Method blank summary	Meets all requirements
5A	Tune/Mass Calibration	Meets all requirements
6A	Initial Calibration	Meets all requirements
7A	Daily Calibration	Meets all requirements
8A	Internal Standards	Meets all requirements

* All SMC recoveries were within the required limits, except for Toluene-d8 in the method blank VBLK01, which was 0.24 % above the limit of 110 %.

All raw data, including calibration information, is furnished in this data package. The following is a list of the pertinent GC/MS files, and the sample holding times:

Lab ID	Filename	Holding Time	Comment
VBLK01	>AE11D	0	Method blank
VBLK02	>AE12C	0	Method blank
VBLK05E	>AE24D	0	Method blank
VBLK06	>AF02C	0	Method blank
VBLK10	>AF14C	0	Method blank
VBLK11	>AF22C	0	Method blank
V103	>AE12D	8	Slurry 1
V103RE	>AE12E	8	Duplicate
V107	>AE11H	7	Field blank
V107RE	>AE11I	7	Duplicate
V108	>AF22F	13	Slurry 5
V108RE	>AF14H	5	Duplicate
V112	>AF14D	5	Field blank
V112RE	>AF14E	5	Duplicate
V113	>AF02F	10	Slurry 4
V113RE	>AF02G	10	Duplicate
V113MS	>AF02H	10	Matrix spike
V113MSD	>AF02J	10	Matrix spike Duplicate
V117	>AF02D	10	Field blank
V117RE	>AF02E	10	Duplicate
V118	>AE12F	3	Slurry 2
V118RE	>AE12G	3	Duplicate
V118MS	>AE12I	3	Matrix spike
V118MSD	>AE12J	3	Matrix spike duplicate
V123	>AE24G	8	Slurry 3
V123RE	>AE24H	8	Duplicate
V127	>AE24E	8	Field blank
V127RE	>AE24F	8	Duplicate

Standards preparation data is kept in a controlled notebook, WHC-N-337 1. The pertinent pages have been included in the logbook section of this narrative.

The results for specific analytes are located in the Data Summary section of this narrative. No target analytes were observed in any of the samples above the quantitation limit. No Tentatively Identified Compounds (TIC's) were observed in any of the samples or blanks.

SEMI-VOLATILE ORGANIC ANALYSIS (by GC/MS)

The holding time for semi-volatile organics is defined as 14 days prior to extraction. Extracts must be analyzed within 40 days following extraction. The QAPjP referenced SW-846 (1986) to specify holding times, however the 1992 revision supercedes the 1986 version, as was stated in the Sample Holding Time section, page 14. For organic analyses the holding times are found in chapter 4, table 4-1.

To enable interpretation of summary data for Semi-VOA compounds, the following table defines the qualifiers, called Q-flags, used in Form I.

Q-Flag	Definition
U	Indicates the compound was analyzed for but not detected; the U-flagged concentration number is the quantitation limit.
J	Indicates an estimated value for the target or tentatively identified compounds; spectra meet criteria but response is below the quantitation limit for the target compounds.
B	Compound was found in the blank.
D	Analysis was performed on a diluted sample.
E	Indicates that quantitation was above the calibration range.
N	Indicates the presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search.

Raw data can be found in the Raw Analytical Data section under Organic Analyses. The data has been organized following Contract Lab Program (CLP) guidelines for ease of locating information, with the VOA data preceding the Semi-VOA data.

The samples were extracted using procedure LA-523-105 A-0, with a Kuderna-Danish concentration (section B). The samples were analyzed by method LA-523-406 A-0, using an Hewlett-Packard 5971 GC/MS (WC36176). Data acquisition and reduction were performed on an H.P. 425t Unix computer, running Unix release B.08, H.P. Chemsystem version C.01.01, and Target version 3.1.

A 10.0 mL aliquot of each sample was combined with approximately 400 mL of lab blank water in the extraction vessel. Hanford wastes have historically been difficult to extract at the typical volume of 1 L for two reasons. First, the sampling methods currently in use can not take 1 L samples. However, even if 1 L of sample was available, radiation exposure limits the volume of sample that can be safely handled. The sample aliquot used was the largest possible allowing for the limited sample available. All samples and field blanks were run in duplicate. Holding times were met, as defined above. For the specific holding time of each sample, see the data file listing at the end of this section.

LMCS control limits for the Semi-VOA compounds were administratively set to the criteria listed in procedure LA-523-406 A-0 for surrogates. The LMCS standard for Semi-VOA is defined as the method blank. The LMCS codes for the SMC's are R278 for 2-Fluorophenol, R280 for Phenol-d5, R282 for 2-Chlorophenol-d4, R284 for 1,2-Dichlorobenzene-d4, R286 for Nitrobenzene-d5, R288 for 2-Fluorobiphenyl, R290 for 2,4,6-Tribromophenol, and R292 for Terphenyl-d14. The acceptance criteria used are located on the appropriate Form 2C, in the Data Summary section of this narrative.

The following quality control forms are generated per the analytical method used. The acceptance criteria for each of the forms is included on the form

itself, in addition to the sample results. For specific results, Forms 2C, and 3C are included in the Data Summary section. Forms 4B, 5B, 6B/C, 7B/C and 8B/C are included in the Raw Analytical Data section. Their results are summarized as follows:

FORM	INFORMATION	COMMENTS
2C	Surrogate Recoveries	Meets most requirements - see below
3C	MS/MSD Recoveries	Meets most requirements - see below
4B	Method blank summary	Meets all requirements
5B	Tune/Mass Calibration	Meets all requirements
6B/C	Initial Calibration	Meets all requirements - see below
7B/C	Daily Calibration	Meets all requirements - see below
8B/C	Internal Standards	Meets most requirements - see below

Form 2C: the Base/Neutral surrogate recoveries were all acceptable for all samples and blanks, with the exception of 2-Fluorobiphenyl in sample V121du. The internal standard area used to quantify that surrogate was very small, leading to a very large recovery for the affected surrogate. It is unknown why only the duplicate, and not the original sample, showed this problem. Re-analysis confirmed the problem was inherent in the sample. The acid surrogate recoveries, however, were consistently destroyed by the slurry matrix. The acid surrogates appear to be undergoing a nitration reaction. For example, 2-Fluorophenol can be seen to be nitrated to form 2-Fluoro-4-nitrophenol and 2-Fluoro-6-nitrophenol.

Acid surrogate recoveries for the method blanks and field blanks were acceptable, with the following exception: both the field blank V129 and the method blank extracted with it exhibited unusual spectra for the surrogate Phenol-d5. It appears that the Phenol-d5 and another compound are co-eluting, making it impossible to quantify Phenol-d5 in V129. Attempts to chromatographically resolve the co-elution failed. This problem has not been seen in any of the other samples.

An exception to this nitration of acid surrogates occurred in sample V116, where all 4 meet the acceptance criteria. However, its duplicate, matrix spike and matrix spike duplicate all showed evidence of nitration of the acid surrogates with the corresponding low recoveries. Re-analysis of the samples produced the same results. It is clear from the chromatogram and spectra of V116 that it is an evaporator sample, and not for instance a field blank.

Form 3C: Most of the Base/Neutral spike compounds meet the recovery and reproducibility criteria. The exceptions were: Acenaphthene and pyrene in V111MSD, which had much lower recoveries than the matrix spike for unknown reasons. The recovery of 2,4-Dinitrotoluene in V121MS was slightly high. The Percent Reproducibility (RPD) for 1,4-Dichlorobenzene and Acenaphthene were slightly above the acceptance criteria in V116MS and V116MSD.

The acid matrix spike compounds, like the acid surrogates, did poorly in the slurry matrix, with recoveries and RPD's mostly failing. The nitration effects can be seen, for instance, in the low Phenol recoveries and correspondingly high 4-nitrophenol recoveries. 2-Nitrophenol is also found. An exception to this effect are slurry samples V121MS and V121MSD, which had reasonable acid recoveries, with the exception of 4-Chloro-3-methylphenol

(low) and 4-Nitrophenol (very high). The 4-nitrophenol is high presumably due to a phenol nitration contribution.

Form 6B/C and Form 7B/C: The calibration working standards are made from 9 separate Restek mixes. One of the mixes (SV Mix 3) was doubled, increasing the affected compounds by a factor of two. The affected compounds are: bis-(2-Chloroethyl)ether, n-Nitroso-di-n-propylamine, 2,2'-oxybis(1-Chloropropane), bis(2-Chloroethoxy)methane, 2-Chloronaphthalene, Dimethyl phthalate, 4-Chlorophenyl phenylether, n-Nitrosodiphenylamine, 4-Bromophenyl phenylether, Di-n-butylphthalate, Butyl benzylphthalate, bis(2-Ethylhexyl)phthalate, and Di-n-octyl phthalate. None of the compounds of interest were affected, and the forms have been adjusted.

Form 8: All method blanks and field blanks meet the internal standard criteria. Matrix problems were encountered in the slurry samples, mainly with Perylene-d12. V111, V111DU, V121, V121DU, V116DU (but not V116 - see earlier note in the surrogates section), and V126 (but not V126DU) all had problems with low Perylene-d12 recoveries for unknown reasons. Re-analysis produced similar results. None of the compounds of interest, surrogates, or matrix spike compounds are affected by this internal standard. In addition, V126 had problems with Chrysene-d12, while its duplicate did not. Re-analysis produced similar results. V121DU had a low recovery for Acenaphthene-d10 as well. This low area very clearly affected the results for 2-Fluorobiphenyl and Tributylphosphate.

All raw data, including calibration information, is furnished in this data package. The following is a list of the pertinent GC/MS files, and the sample holding times:

Sample ID	Filename	Holding Times		Comment
		Extraction	Analysis	
seblk01	19940513.b/seblk01.d	0	4	Method blank
seblk01	19940610.b/seblk01.d	0	17	Method blank
seblk02	19940623.b/seblk02.d	0	3	Method blank
v106	19940513.b/v106.d	5	4	Slurry 1
v106du	19940513.b/v106du.d	5	4	Duplicate
v111	19940621.b/v111.d	4	8	Slurry 5
v111du	19940621.b/v111du.d	4	8	Duplicate
v111durr	19940621.b/v111durr.d	4	8	Rerun
v111MS	19940623.b/v111MS.d	11	3	Matrix spike
v111MSD	19940623.b/v111MSDrr.d	11	3	MS duplicate
V111rr	19940621.b/v111rr.d	4	8	Rerun
v116	19940610.b/v116.d	1	18	Slurry 4
v116du	19940610.b/v116du.d	1	18	Duplicate
v116durr	19940616.b/v116durr.d	1	22	Rerun
v116MS	19940615.b/v116MS.d	8	14	Matrix spike
v116MSD	19940615.b/v116MSD.d	8	14	MS duplicate
v121	19940520.b/v121.d	7	4	Slurry 2
v121du	19940520.b/v121du.d	7	4	Duplicate
v121MS	19940520.b/v121MS.d	7	4	Matrix spike
v121MSD	19940520.b/v121MSD.d	7	4	MS duplicate
v122	19940520.b/v122.d	7	4	Field blank
v122du	19940520.b/v122du.d	7	5	Duplicate
v126	19940610.b/v126.d	2	23	Slurry 3
v126du	19940610.b/v126du.d	2	23	Duplicate
v126rr	19940613.b/v126rr.d	2	26	Rerun
v128	19940615.b/v128.d	2	28	Field blank
v128du	19940615.b/v128du.d	2	28	Duplicate
v129	19940615.b/v129.d	1	22	Field blank
v129du	19940615.b/v129du.d	1	22	Duplicate
v129rr	19940615.b/v129rr.d	1	22	Rerun
v130	19940621.b/v130.d	4	8	Field blank
v130du	19940621.b/v130du.d	4	8	Duplicate

Standards preparation data is kept in a controlled notebook, WHC-N-336 1. The pertinent pages have been included in the logbook section of this narrative.

The results for specific analytes are located in the Data Summary section of this narrative. For a list of the compounds of interest, see the section Evaporator Boundary Conditions (limits). Of the compounds of interest, only Tributylphosphate (TBP) was found in each of the slurry samples (V106, V111, V116, V121, V126 and their duplicates). TBP was also found in trace quantities in the field blanks V122, V128, V128DU, and V130. 1-Butanol was found only in V106, V106DU, V111 and V111DU.

Many Tentatively Identified Compounds (TIC's) were observed in the slurry samples. No attempt was made to identify all of the surrogate nitration products or flag them on the forms. The library was unable on many peaks to even produce poor quality hits. On the others, the library match must be considered very tentative, as no attempt was made to verify the presence with an external standard. The compound cyclohexane was found in all of the samples

and blanks due to its' addition to the methylene chloride solvent as a stabilizer. The concentration of the TIC's was calculated using the nearest compound, instead of the nearest internal standard, due to a problem with the software package.

CONCLUSIONS

ADDENDUM 1A,

Although an attempt was made to provide a grand average concentration for each of the analytes, the value of such a parameter is of questionable value. The five slurry samples do not represent five independent estimations of values from the same population of numbers because the samples were collected over time. Sample collections were not collected with a presumption that variations in time were proportional to variations in sample concentration.

An interesting observation was the change in analyte concentrations with time. The evaporator operated such that during the period of time when slurry samples 1 through 4 were collected, fresh feed from the tanks 102-AW, 106-AW and 103-AP was being introduced to the evaporator. The final sample, slurry 5, was collected at the time of the final pass of waste through the evaporator, where the slurry had already been processed multiple times, resulting in waste which was the most concentrated of all five samplings. Some analytes, such as specific gravity and cesium-137, showed that the highest concentration did occur in the final slurry sample. What was unusual was that some analytes, particularly the metals such as aluminum, calcium and iron, were found in the final slurry sample at concentrations that were much less than the other samples. It was theorized that some analytes had reached the limit of solubility and had precipitated as a solid, which was not mixed into the aqueous phase when aliquots were removed for analyses. A visual inspection of the samples was performed shortly after the samples were received, at which time it was determined only two of the samples had trace amounts of precipitated solids. When the analytical data were summarized (early September), and the anomalous pattern in constituent concentrations was observed, another observation was made of the final slurry sample to determine whether additional material had precipitated. It appeared that approximately 3 to 5% solids had precipitated during the three months that had elapsed. In a phone call to the evaporator program staff, it was determined that no additional analyses would be performed on the solids in sample V97 (the final slurry sample) because the solids present were less than the 5% threshold, which if exceeded would have required such analyses.

Slurry samples were not homogeneous. In general, analyte concentrations in each of the samples varied independently of each other.

A summary of all inorganic and radiochemical data is shown in Table 13. The result shown is the range of concentration values for each of the slurry samples.

Table 13. Composite Summary of Analytical Data for Slurry Samples	
Parameter	Results
Visual appearance	Yellow; insignificant amount of solids
Specific gravity	1.046 - 1.192
Fluoride	4,800 - 12,400 $\mu\text{g/ml}$ (estimated)
Chloride	253 - 998 $\mu\text{g/ml}$
Nitrate	20,600 - 81,500 $\mu\text{g/ml}$
Nitrite	5,790 - 22,000 $\mu\text{g/ml}$
Phosphate	592 - 2,610 $\mu\text{g/ml}$
Sulfate	1,740 - 6,550 $\mu\text{g/ml}$
Ammonia	<1,600 - <8,000 $\mu\text{g/ml}$
Hydroxide	4,200 - 19,400 $\mu\text{g/ml}$
Cyanide	2.49 - 37.8 $\mu\text{g/ml}$
Carbonate	1,760 - 5,910 $\mu\text{g/ml}$
Uranium (one sample)	21.9 $\mu\text{g/ml}$
Arsenic	0.907 - 5.85 $\mu\text{g/ml}$
Selenium	0.035 - 0.168 $\mu\text{g/ml}$
Mercury (one sample)	<0.005 $\mu\text{g/ml}$
Aluminum	80,600 - 1,710,000 $\mu\text{g/L}$
Barium	<5 to <200 $\mu\text{g/L}$
Cadmium	36.5 - 1,070 $\mu\text{g/L}$
Calcium	186 - 25,300 $\mu\text{g/L}$
Chromium	1,980 - 45,600 $\mu\text{g/L}$
Iron	35.3 - 7,280 $\mu\text{g/L}$
Lead	<140 - 10,100 $\mu\text{g/L}$
Magnesium	<106 - 6,250 $\mu\text{g/L}$
Manganese	<5.0 - 1,160 $\mu\text{g/L}$
Silver	56.3 - 2,150 $\mu\text{g/L}$ (estimated)
Sodium	1,880,000 - 29,080,000 $\mu\text{g/L}$
Zinc	43.5 - 7,620 $\mu\text{g/L}$
Cs ¹³⁴ (one sample)	0.284 $\mu\text{Ci/ml}$
Cs ¹³⁷	23.7 - 96.1 $\mu\text{Ci/ml}$
Co ⁶⁰ (one sample)	<0.0248 $\mu\text{Ci/ml}$

Table 13. Composite Summary of Analytical Data for Slurry Samples	
Parameter	Results
Eu ¹⁵⁴ (one sample)	<0.0742 $\mu\text{Ci/ml}$
Eu ¹⁵⁵ (one sample)	<0.181 $\mu\text{Ci/ml}$
Ru/Rh ¹⁰⁶	<0.286 to <1.34 $\mu\text{Ci/ml}$
H ³	0.00305 - 0.00496 $\mu\text{Ci/ml}$
C ¹⁴ (one sample)	0.000164 $\mu\text{Ci/ml}$
Se ⁷⁹ (one sample)	0.126 $\mu\text{Ci/ml}$
Tc ⁹⁹ (one sample)	0.0278 $\mu\text{Ci/ml}$
Sr ⁹⁰	0.0110 - 0.250 $\mu\text{Ci/ml}$
I ¹²⁹ (one sample)	<0.0000339 $\mu\text{Ci/ml}$
Pu ^{239/240}	<0.0000947 - 0.000423 $\mu\text{Ci/ml}$
Pu ²³⁸	<0.0000946 to <0.000956 $\mu\text{Ci/ml}$
Am ²⁴¹	<0.000376 - 0.00128 $\mu\text{Ci/ml}$
Cm ^{243/244}	<0.000376 to <0.00181 $\mu\text{Ci/ml}$
Total alpha	<0.00835 to <0.0230 $\mu\text{Ci/ml}$
Total beta	33.9 - 133 $\mu\text{Ci/ml}$

MEMORANDUM

TO: 242-A Project QA Record

FR: Sandra Schildt, Golder Associates Inc. *[Signature]*

RE: GENERAL CHEMISTRY ANALYSIS DATA VALIDATION SUMMARY FOR DATA PACKAGE V81-222-094 (943-1610.009, 094C.242)

INTRODUCTION

This memorandum presents the results of data validation on data package V81-222-094 prepared by the 222-S laboratory. A list of the samples validated along with the analyses reported and the method of analysis is provided in the following table.

LABORATORY SAMPLE ID	CLIENT SAMPLE ID	SAMPLE DATE	SAMPLE TYPE	ANALYSIS
V81	V81	5/4/94	Field Blank	see Note 1
V85	V85	5/9/94		
V89	V89	5/16/94		
V93	V93	5/23/94		
V97	V97	6/9/94		
V101	V101	5/9/94		

Note 1. Samples were requested to be analyzed for IC anions, ammonia, total inorganic carbon, specific gravity, and hydroxide.

Data validation was conducted in accordance with 242-A Evaporator Sampling Quality Assurance Project Plan and Level B procedures as specified in Data Validation for RCRA Analyses, Section 2.0 (WHC 1990). Validation was performed on 100% of the samples reported.

This report contains four appendices. The appendices are as follows:

- Appendix 1. Annotated Laboratory Forms
- Appendix 2. Data Assessment Forms
- Appendix 3. Data Summary Forms
- Appendix 4. Chain of Custody Information

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met with the exception of the minor deficiencies identified below.

Detection Limits. Detection limit goals were met for all analyses with the exception of chloride in sample V101.

Completeness. The data package was complete for all requested analyses. Sixteen samples (16) were validated in this data set with a total of 70 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent which meets normal work plan objectives of 90%.

WHC-SD-WM-DP-067
ADDENDUM/A REV. 0

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

The following minor deficiencies were identified during data validation which required qualification of the data.

Laboratory Spikes

- Spike recovery of fluoride was >125% in samples V81 and V89, and recovery of nitrate was >125% in sample V81. Associated results have been qualified as estimated (J, UJ).

REFERENCES

WHC 1990, Data Validation for RCRA Analysis, WHC-CM-5-3, August 27, 1990. Westinghouse Hanford Company, Richland, Washington.

WHC 1994, 242-A Evaporator Sampling Quality Assurance Project Plan, WHC-SD-WM-QAPP-009, Rev. 1. Westinghouse Hanford Company, Richland, Washington.

JA-7:1

GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

- U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample detection limit corrected for sample aliquot size, dilution factors and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.
- UJ - Indicates the constituent was analyzed for and was not detected. Due to a minor quality control deficiency identified during data validation, the concentration reported may not accurately reflect the sample detection limit. The associated data have been qualified as estimated but should be considered usable for decision making purposes.
- J - Indicates the constituent was analyzed for and detected. Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.
- UR - Indicates the constituent was analyzed for and not detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.
- R - Indicates the constituent was analyzed for and detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

WHC-SD-WM-DP- 067
ADDENDUM 1A REV. 0

WHC-SD-WM-DP-067
ADDENDUM 1A REV. 0

APPENDIX 1

ANNOTATED LABORATORY REPORTS

1A81

004

SPG

SPECIFIC GRAVITY
DIRECT ANALYSIS
LA-510-112C-2

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result uCl/mL	Duplicate Result uCl/mL	Average Result uCl/mL	Sample RPD %	Detection Limit uCl/mL	Standard Result uCl/L	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Reagent Blank uCl/mL	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	1.110	1.097	1.104	1.18	NA	1.374	96.97	NA	NA	NA	0.982	V79	V80	NA
V85	5/9/94	SLY-A-2	1.047	1.046	1.046	0.10	NA	1.384	97.68	NA	NA	NA	0.982	V83	V84	NA
V89	5/16/94	SLY-A-3	1.070	1.070	1.070	0.00	NA	1.387	97.90	NA	NA	NA	0.958	V87	V88	NA
V93	5/23/94	SLY-A-4	1.051	1.050	1.051	0.10	NA	1.407	99.29	NA	NA	NA	0.996	V91	V92	NA
V97	6/9/94	SLY-A-5	1.190	1.194	1.192	0.34	NA	1.411	99.57	NA	NA	NA	0.977	V95	V96	NA
V101	5/9/94	Field Blank	0.991	0.992	0.992	0.10	NA	1.388	97.98	NA	NA	NA	0.994	V99	V100	NA

WHC-SD-WM-DP-067, REV.0
ADDENDUM 1A,

084

11/11/94
11/11/94

005

IC.WK1

FLUORIDE by Ion Chromatography
Water Digestion
LA-533-105/C-1

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	DATE COLLECTED	Lab I.D.	Sample Result ug/mL	Duplicate Result ug/mL	Average Result ug/mL	Sample RPD %	Detection Limit ug/mL	Standard Result ug/mL	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Reagent Blank ug/mL	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	1.19E+04	1.28E+04	1.24E+04	7.3	1E-01	5.62E+01	100.3	241.0	89.3	91.9	<1E-1	V79	V80	V81
V85	5/9/94	SLY-A-2	4.95E+03	5.09E+03	5.02E+03	2.8	1E-01	5.50E+01	98.2	100.0	118.3	17.2	<1E-1	V83	V84	V85
V89	5/16/94	SLY-A-3	7.50E+03	7.54E+03	7.52E+03	0.5	1E-01	5.62E+01	100.3	157.3	72.0	74.6	<1E-1	V87	V88	V89
V93	6/23/94	SLY-A-4	4.78E+03	4.82E+03	4.80E+03	0.8	1E-01	5.58E+01	99.6	103.3	90.3	13.4	<1E+0	V91	V92	V93
V97	6/9/94	SLY-A-5	5.20E+03	5.25E+03	5.23E+03	1.0	1E-01	5.79E+01	103.4	NA	NA	NA	<1E-1	V95	V96	NA
V101	5/9/94	FIELD BLANK	<1E+00	<1E+00	<1E+00	NA	1E-01	5.50E+01	98.2	93.0	89.5	3.8	<1E-1	V99	V100	V101

1/4-23

082

12/17/94
X

006

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

IC.WK1

CHLORIDE by Ion Chromatography
Water Digestion
LA-533-105/C-1

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	DATE COLLECTED	Lab I.D.	Sample Result ug/mL	Duplicate Result ug/mL	Average Result ug/mL	Sample RPD %	Detection Limit ug/mL	Standard Result ug/mL	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Reagent Blank ug/mL	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	4.94E+02	4.77E+02	4.86E+02	3.5	2E-01	7.60E+01	101.3	93.6	98.1	4.7	<2.E-01	V79	V80	V81
V85	5/9/94	SLY-A-2	1.00E+03	9.96E+02	9.98E+02	0.4	2E-01	7.97E+01	106.3	83.3	88.0	5.5	<6.5E-01	V83	V84	V85
V89	5/16/94	SLY-A-3	4.09E+02	4.22E+02	4.16E+02	3.1	2E-01	7.42E+01	98.9	95.2	85.3	11.0	<2.E-01	V87	V88	V89
V93	5/23/94	SLY-A-4	2.45E+02	2.60E+02	2.53E+02	5.9	2E-01	7.33E+01	97.7	100.0	98.7	1.3	<2.E-01	V91	V92	V93
V97	6/9/94	SLY-A-5	9.10E+02	1.01E+03	9.60E+02	10.4	2E-01	7.13E+01	95.1	NA	NA	NA	<2.E-01	V95	V96	NA
V101	5/9/94	FIELD BLANK	4.14E+00	3.56E+00	3.85E+00	15.1	2E-01	7.97E+01	106.3	90.8	80.0	12.6	<2.E-01	V99	V100	V101

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

/H-527

083

10/11/94

007

IC.WK1

NITRATE by Ion Chromatography
Water Digestion
LA-533-105/C-1

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	DATE COLLECTED	Lab I.D.	Sample Result ug/mL	Duplicate Result ug/mL	Average Result ug/mL	Sample RPD %	Detection Limit ug/mL	Standard Result ug/mL	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Reagent Blank ug/mL	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	3.75E+04	4.01E+04	3.88E+04	6.7	1E+00	5.90E+02	102.1	156.5	106.4	38.1	<1E+00	V79	V80	V81
V85	5/9/94	SLY-A-2	2.62E+04	2.66E+04	2.64E+04	1.5	1E+00	5.69E+02	98.4	89.4	97.2	8.4	<1E+00	V83	V84	V85
V89	5/16/94	SLY-A-3	2.96E+04	2.97E+04	2.97E+04	0.3	1E+00	5.88E+02	101.7	107.9	98.6	11.1	<1E+00	V87	V88	V89
V93	5/23/94	SLY-A-4	2.06E+04	2.06E+04	2.06E+04	0.0	1E+00	5.79E+02	100.2	93.4	85.9	8.4	<1E+01	V91	V92	V93
V97	6/9/94	SLY-A-5	8.00E+04	8.30E+04	8.15E+04	3.7	1E+00	5.80E+02	100.3	NA	NA	NA	<1E+00	V95	V96	NA
V101	5/9/94	FIELD BLANK	<1E+01	<1E+01	<1E+01	NA	1E+00	5.69E+02	98.4	100.8	99.4	1.4	<1E+00	V99	V100	V101

WHC-SD-WM-DP-067, REV.0
ADDENDUM 1A,

008

-084

JH
10/11/94

/A-55

IC.WK1

NITRITE by Ion Chromatography
Water Digestion
LA-533-105/C-1

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	DATE COLLECTED	Lab I.D.	Sample Result ug/mL	Duplicate Result ug/mL	Average Result ug/mL	Sample RPD %	Detection Limit ug/mL	Standard Result ug/mL	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Reagent Blank ug/mL	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	1.05E+04	1.12E+04	1.09E+04	8.5	1E+00	5.71E+02	105.5	121.0	107.1	12.2	<1E+00	V79	V80	V81
V85	5/9/94	SLY-A-2	6.53E+03	6.58E+03	6.56E+03	0.8	1E+00	5.28E+02	101.1	101.8	106.2	4.2	<1E+00	V83	V84	V85
V89	5/16/94	SLY-A-3	7.64E+03	7.70E+03	7.67E+03	0.8	1E+00	5.76E+02	107.3	107.4	100.7	6.4	<1E+00	V87	V88	V89
V93	5/23/94	SLY-A-4	5.87E+03	5.71E+03	5.79E+03	2.8	1E+00	5.54E+02	104.5	100.6	104.1	3.4	<1E+01	V91	V92	V93
V97	6/9/94	SLY-A-5	2.17E+04	2.23E+04	2.20E+04	2.7	1E+00	5.54E+02	103.2	NA	NA	NA	<1E+00	V95	V96	NA
V101	5/9/94	FIELD BLANK	<1E+01	<1E+01	<1E+01	NA	1E+00	5.28E+02	101.1	105.0	104.5	0.5	<1E+00	V99	V100	V101

WHC-SD-WM-DP-067, REV.0
ADDENDUM 1A,

1/1-56

085
10/17/94

009

IC.WK1

PHOSPHATE by Ion Chromatography
Water Digestion
LA-533-105/C-1

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	DATE COLLECTED	Lab I.D.	Sample Result ug/mL	Duplicate Result ug/mL	Average Result ug/mL	Sample RPD %	Detection Limit ug/mL	Standard Result ug/mL	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Reagent Blank ug/mL	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	1.21E+03	1.19E+03	1.20E+03	1.7	1E+00	5.44E+02	105.2	84.7	84.3	0.5	<1E+00	V79	V80	V81
V85	5/9/94	SLY-A-2	1.83E+03	1.85E+03	1.84E+03	0.1	1E+00	5.23E+02	101.2	80.8	82.7	2.3	<1E+00	V83	V84	V85
V89	5/16/94	SLY-A-3	5.85E+02	5.98E+02	5.92E+02	0.2	1E+00	5.45E+02	105.4	88.8	85.9	3.3	<1E+00	V87	V88	V89
V93	5/23/94	SLY-A-4	5.88E+02	6.14E+02	6.01E+02	4.3	1E+00	4.89E+02	94.6	85.3	82.8	3.0	<1E+00	V91	V92	V93
V97	6/9/94	SLY-A-5	2.56E+03	2.67E+03	2.61E+03	4.2	1E+00	5.48E+02	108.0	NA	NA	NA	<1E+00	V95	V96	NA
V101	5/9/94	FIELD BLANK	<1E+01	<1E+01	<1E+01	NA	1E+00	5.23E+02	101.2	101.7	104.3	2.5	<1E+00	V99	V100	V101

WHC-SD-WM-DP-067, REV.0
ADDENDUM 1A,

056
10/17/94

IC.WK1

SULFATE by Ion Chromatography
 Water Digestion
 LA-533-105/C-1

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	DATE COLLECTED	Lab I.D.	Sample Result ug/mL	Duplicate Result ug/mL	Average Result ug/mL	Sample RPD %	Detection Limit ug/mL	Standard Result ug/mL	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Reagent Blank ug/mL	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	3.29E+03	3.17E+03	3.23E+03	3.7	1E+00	6.23E+02	104.0	87.1	90.2	3.5	1.59E+00	V79	V80	V81
V85	5/9/94	SLY-A-2	5.27E+03	5.37E+03	5.32E+03	1.9	1E+00	5.89E+02	98.3	92.2	93.1	1.0	<1E+00	V83	V84	V85
V89	5/16/94	SLY-A-3	1.91E+03	1.96E+03	1.94E+03	2.6	1E+00	6.22E+02	103.8	106.8	98.5	8.1	<1E+00	V87	V88	V89
V93	5/23/94	SLY-A-4	1.68E+03	1.79E+03	1.74E+03	6.3	1E+00	5.73E+02	95.7	97.7	90.2	8.0	<1E+00	V91	V92	V93
V97	6/9/94	SLY-A-5	6.25E+03	6.85E+03	6.55E+03	9.2	1E+00	6.19E+02	103.3	NA	NA	NA	<1E+00	V95	V96	NA
V101	5/9/94	FIELD BLANK	<1E+01	<1E+01	<1E+01	NA	1E+00	5.88E+02	98.2	102.1	100.9	1.2	<1E+00	V99	V100	V101

1/4-5-8

087-1/17/94
 011

WHC-SD-WM-DP-067, REV. 0
 ADDENDUM 1A,

NH4 1WK1

AMMONIA
WATER DIGEST
LA-634-102/D2

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result ug/mL	Duplicate Result ug/mL	Average Result ug/mL	Sample RPD %	Detection Limit ug/mL	Standard Result M	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Reagent Blank ug/mL	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	<8000	<8000	<8000	NA	8000	4.93E-2	96.7	96.6	96.6	0.0	<8000	V79	V80	V81
V85	5/9/94	SLY-A-2	<1600	<1600	<1600	NA	1600	5.01E-2	98.2	97.1	97.3	0.2	<1600	V83	V84	V85
V89	5/16/94	SLY-A-3	<1600	<1600	<1600	NA	1600	4.96E-2	97.3	99.4	98.1	1.3	<1600	V87	V88	V89
V93	5/23/94	SLY-A-4	<1600	<1600	<1600	NA	1600	4.87E-2	95.5	93.6	94.5	1.0	<1600	V91	V92	V93
V97	6/9/94	SLY-A-5	<8000	<8000	<8000	NA	8000	5.03E-2	98.6	NA	NA	NA	<8000	V95	V96	NA
V101	5/9/94	Field Blank	<1600	<1600	<1600	NA	1600	4.97E-2	97.4	97.3	97.3	0.0	<1600	V99	V100	V101

Q

22222

1759

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

088
10/17/94

OH wk1

HYDROXIDE
Direct Analysis
LA-211-102/B1

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result ug/mL	Duplicate Result ug/mL	Average Result ug/mL	Sample RPD %	Detection Limit ug/mL	Standard Result M	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Reagent Blank ug/mL	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	7.46E+3	7.39E+3	7.32E+3	0.9	1.25E+3	9.08E-1	96.8	96.8	138.0	35.1	<1.25E+3	V79	V80	V81
V85	5/9/94	SLY-A-2	6.22E+3	6.19E+3	6.21E+3	0.5	1.25E+3	9.24E-1	98.5	98.0	102.0	4.0	<1.25E+3	V83	V84	V85
V89	5/16/94	SLY-A-3	7.10E+3	6.87E+3	6.99E+3	3.3	6.25E+2	9.20E-1	98.0	93.5	106.0	12.5	<6.25E+2	V87	V88	V89
V93	5/23/94	SLY-A-4	4.27E+3	4.12E+3	4.20E+3	3.6	6.25E+2	9.24E-1	98.4	92.2	103.0	11.1	<6.25E+2	V91	V92	V93
V97	6/9/94	SLY-A-5	1.93E+4	1.94E+4	1.94E+4	0.5	2.50E+3	9.35E-1	99.6	NA	NA	NA	<4.2E+1	V95	V96	V97
V101	5/9/94	Field Blank	<1.25E+2	<1.25E+2	<1.25E+2	NA	1.25E+2	9.04E-1	96.4	93.1	94.8	1.8	<4.2E+1	V99	V100	V101

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

TIC wkt

TOTAL INORGANIC CARBON
Water Digestion
LA-622-102/B2

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result ug/mL	Duplicate Result ug/mL	Average Result ug/mL	Sample RPD %	Detection Limit ugC/mL	Standard Result M	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Reagent Blank ugC/mL	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	3.10E+3	3.00E+3	3.05E+3	3.3	2.50E+2	4.75E-2	95.0	102.3	106.8	4.3	<2.50E+2	V79	V80	V81
V85	5/9/94	SLY-A-2	1.75E+3	1.76E+3	1.76E+3	0.6	5.00E+1	4.93E-2	98.6	107.3	112.3	4.6	<5.00E+1	V83	V84	V85
V89	5/16/94	SLY-A-3	2.05E+3	2.04E+3	2.05E+3	0.5	5.00E+1	4.89E-2	97.8	95.2	99.0	3.9	<5.00E+1	V87	V88	V89
V93	5/23/94	SLY-A-4	1.86E+3	1.85E+3	1.85E+3	0.5	5.00E+1	4.93E-2	98.6	103.3	106.7	3.2	<5.00E+1	V91	V92	V93
V97	6/9/94	SLY-A-5	5.78E+3	6.03E+3	5.91E+3	4.2	2.50E+2	4.95E-2	99.0	NA	NA	NA	<2.50E+2	V95	V96	V97
V101	5/9/94	Field Blank	<5.00E+1	<5.00E+1	<5.00E+1	NA	5.00E+1	5.02E-2	100.4	105.8	110.5	4.3	<5.00E+1	V99	V100	V101

1431

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

091

10/17/94

014

WHC-SD-WM-DP-067
ADDENDUM 1A REV. 0

APPENDIX 2
DATA ASSESSMENT FORMS

APPENDIX D

WHC-SD-WM-DP-067
ADDENDUM 111 REV. 0

LEVEL B DOCUMENTATION

Westinghouse
Hanford Company

OFFICE OF SAMPLE MANAGEMENT RCRA DATA VALIDATION - LEVEL B

Date 10/12/94Reviewed By A. Schult

DATA ASSESSMENT SUMMARY

Sample # <u>V81, V85, V89, V93, V97, V101</u>	Chain of Custody <u>0</u>
Matrix <u>water</u>	Analysis Completeness <u>0</u>
Sample Date <u>5/4/94 - 6/9/94</u>	Holding Times <u>NA</u>
Laboratory <u>222-S</u>	Analytical Blanks <u>0</u>
	MS or MS/MSD <u>X</u>
	Duplicate Analysis <u>0</u>
	Surrogate Recovery <u>NA</u>

0 -data had no problems; X -data qualified due to minor problems
M -data qualified due to major problems/some data may be unusable

Overall Assessment: _____

Comments: _____

1/1/93

APPENDIX D

LEVEL B DOCUMENTATION (cont)

WHC-SD-WM-DP-1107
ADDENDUM 111 REV. 0

RCRA Level B QC (cont)

Date 10/12/94 Reviewed by S. Schult

Sample # V81, V85, V89, V93, V97, V101

Analysis chemistry

ANALYTICAL BLANK ANALYSIS

Blank Sample # Associated Samples

Comments: Blanks reported for each sample.
all blanks < 20% of sample results.

Action: none

MATRIX SPIKE or MS/MSD (circle one)

Sample Spiked V81, V89 Associated Samples

Matrix water

Comments: Recovery > 125% for fluoride in V81 & V89.
Recovery > 125% for nitrate in V81.

Action: J

1A07

017

APPENDIX D

LEVEL B DOCUMENTATION (cont)

WHC-SD-WM-DP-007
ADDENDUM 1B REV. 0

RCRA Level B QC

Date 10/12/94 Reviewed by A. Schuldt

Sample # V81, V85, V89, V93, V97, V101

Analysis chemistry

DUPLICATE ANALYSIS

Duplicate Sample Associated Samples
Matrix water

Comments: Duplicate for each sample reported.
All RPDs < 20%.

Action: None

SURROGATE RECOVERY

Comments: NA

Action:

1495

WHC-SD-WM-DP-167
ADDENDUM 1A REV. 0

APPENDIX 3

DATA SUMMARY FORM

Validated Data Summary, Data Package: V81-222-094

	Sample Date Location Depth Type Comments	V101 5-9-94 242-A --- WATER FIELD BLANK	V81 5-4-94 242-A --- WATER	V85 5-9-94 242-A --- WATER	V89 5-16-94 242-A --- WATER	V93 5-23-94 242-A --- WATER	V97 6-9-94 242-A --- WATER
Parameter	Units	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q
CHLORIDE	UG/ML	4.140	494.000	1000.000	409.000	245.000	910.000
FLUORIDE	UG/ML	1.000 U	1190.000 J	4950.000	7500.000 J	4780.000	5200.000
NITRITE	UG/ML	10.000 U	10500.000	6530.000	7640.000	5870.000	21700.000
NITRATE	UG/ML	10.000 U	37500.000	26200.000	29600.000	20600.000	80000.000
AMMONIA	UG/ML	1600.000 U	8000.000 U	1600.000 J	1600.000 U	1600.000 U	8000.000 U
HYDROXIDE	UG/ML	125.000 U	7460.000	6220.000	7100.000	4270.000	19300.000
PHOSPHATE	UG/ML	10.000 U	1210.000	1830.000	585.000	588.000	2560.000
SULFATE	UG/ML	10.000 U	3250.000	5270.000	1910.000	1680.000	6250.000
SPECIFIC GRAVITY	UG/ml	0.991	1.110	1.047	1.070	1.051	1.190
TOTAL INORGANIC CARBON	UG/ML	50.000 U	3100.000	1750.000	2050.000	1860.000	5780.000
TOTAL ORGANIC CARBON		---	---	---	---	---	---

WHC-SD-WM-DP-01-1
ADDENDUM 1A REV. 0

*Validated
10/21/94*

020

1A-37

WHC-SD-WM-DP-017
ADDENDUM 1A REV. 0

APPENDIX 4

CHAIN OF CUSTODY INFORMATION

1A338

TANK FARM PLANT OPERATING PROCEDURE

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A,

CHAIN OF CUSTODY FORM

COPY

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5-4-94 TIME 1430
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2605
REMARKS	This COC is used for the first of two 60 mL slurry samples in a glass bottle labeled V81. This sample is for inorganic and radchem analysis.		
ICE CHEST OR SAMPLE PIG No.	B-24	SAMPLE CONTAINER No.	V81 - A
DESTINATION	222-S Laboratory		

(HP) HPT SHIPPING CONTAINER RELEASE: [Signature] DATE: 5-5-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(s)
V81

CHAIN OF POSSESSION

Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: 5/4/94 1625
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: 5/4/94 2349
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: 5-5-94 0835
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: 5-5-94 1240
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: 05-05-94 1330
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

[Signature]
10/17/94

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1439

022

TANK FARM PLANT OPERATING PROCEDURE

COPY

WHC-SD-WM-DP-067, REV. 0

CHAIN OF CUSTODY FORM ADDENDUM 1A,

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5/4/94 TIME 1430
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2406-B
REMARKS	This COC is used for the second of two 60 mL slurry samples in a glass bottle labeled V81. This sample is for inorganic and radchem analysis.		
ICE CHEST OR SAMPLE Pkg No.	G-1	SAMPLE CONTAINER No.	V81-B
DESTINATION	222-S Laboratory		

X

(HP)

HPT SHIPPING CONTAINER RELEASE:

DATE: 5-5-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(s)
V81

CHAIN OF POSSESSION

Relinquished by: J.W. McMullen	Received by: J. B. Clegg	Date/Time: 5/4/94 1625
Relinquished by: J. B. Clegg	Received by: Brian Butler	Date/Time: 5/4/94 2349
Relinquished by: Brian Butler	Received by: J.W. McMullen	Date/Time: 5-5-94 0835
Relinquished by: J.W. McMullen	Received by: J. B. Clegg	Date/Time: 5-5-94 1240
Relinquished by: J. B. Clegg	Received by: Sandra Cobb	Date/Time: 05-05-94 1330
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

KAL
10/7/94

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023

TANK FARM PLANT OPERATING PROCEDURE

③

WHC-SD-WM-DP-067, REV. 0

CHAIN OF CUSTODY FORM ADDENDUM 1A,			
COMPANY CONTACT	BH Von Bargen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5/9/94 5-9-94 TIME 1130
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2616
REMARKS	This COC is used for the first of two 60 mL slurry samples in a glass bottle labeled V85. This sample is for inorganic and radchem analysis.		
ICE CHEST OR SAMPLE PIG No.	B-25	SAMPLE CONTAINER No.	V85-A ✓
DESTINATION	222-S Laboratory		

(HP) HPT SHIPPING CONTAINER RELEASE: AK Hallinan DATE: 5-10-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)
V85

CHAIN OF POSSESSION

Relinquished by: <u>J.W. McMullen</u>	Received by: <u>Thomson</u>	Date/Time: <u>5/9/94 1520</u>
Relinquished by: <u>Thomson</u>	Received by: <u>John R. Bell</u>	Date/Time: <u>5/9/94 2345</u>
Relinquished by: <u>John R. Bell</u>	Received by: <u>S. Parrell</u>	Date/Time: <u>5/10/94 0745</u>
Relinquished by: <u>S. Parrell</u>	Received by: <u>John J. Thon</u>	Date/Time: <u>5/10/94 1037</u>
Relinquished by: <u>John J. Thon</u>	Received by: <u>H. Lopez</u>	Date/Time: <u>5-10-94 1110</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

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TANK FARM PLANT OPERATING PROCEDURE

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CHAIN OF CUSTODY FORM ADDENDUM 1A,

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. MCMULLEN	DATE	5/9/94 TIME 1130
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2430
REMARKS	This COC is used for the second of two 60 mL slurry samples in a glass bottle labeled V85. This sample is for inorganic and radchem analysis.		
ICE CHEST OR SAMPLE PIG No.	G-10	SAMPLE CONTAINER No.	V85 - B
DESTINATION	222-S Laboratory		

(HP) HPT SHIPPING CONTAINER RELEASE: AK. J. Miller DATE: 5-10-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)	
V85	

CHAIN OF POSSESSION

Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/5/94 1520</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/9/94 2345</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/10/94 0745</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/10/94 1037</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5-10-94 1110</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>1</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u> </u>

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TANK FARM PLANT OPERATING PROCEDURE

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CHAIN OF CUSTODY FORM ADDENDUM TA,

COMPANY CONTACT	B.H. VON BARGEN	TELEPHONE	373-1829
BILL OF LADING No.	N.A.	OFFSITE PROPERTY No.	N.A.
METHOD OF SHIPMENT	B-PLANT SAMPLE TRUCK		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J. W. McMullen	DATE	5/16/94
SAMPLE LOCATIONS	242-A	CUSTODY SEAL No.	2645
REMARKS			
ICE CHEST OR SAMPLE PIG No.	B-25	SAMPLE CONTAINER No.	V-89-A
DESTINATION	222-S LAB		

(HP) HPT SHIPPING CONTAINER RELEASE: [Signature]

DATE: 5-17-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)

V-89

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
<u>[Signature]</u>	<u>[Signature]</u>	5/16/94 1339
Relinquished by:	Received by:	Date/Time:
<u>[Signature]</u>	<u>[Signature]</u>	5/16/94 1610
Relinquished by:	Received by:	Date/Time:
<u>[Signature]</u>	<u>[Signature]</u>	5/16/94 2330
Relinquished by:	Received by:	Date/Time:
<u>[Signature]</u>	<u>[Signature]</u>	5-17-94 0715
Relinquished by:	Received by:	Date/Time:
<u>[Signature]</u>	<u>[Signature]</u>	5-17-94 0947
Relinquished by:	Received by:	Date/Time:
<u>[Signature]</u>	<u>[Signature]</u>	5-17-94 1000
Relinquished by:	Received by:	Date/Time:
<u>[Signature]</u>	<u>[Signature]</u>	5-17-94 1045

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TANK FARM PLANT OPERATING PROCEDURE

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ADDENDUM 1A,

④

CHAIN OF CUSTODY FORM

COMPANY CONTACT	B.H. VON BARGEN	TELEPHONE	373-1829
BILL OF LADING No.	N.A.	OFFSITE PROPERTY No.	N.A.
METHOD OF SHIPMENT	B-PLANT SAMPLE TRUCK		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. MCNULLEN	DATE	5-16-94 TIME 1130
SAMPLE LOCATIONS	242-A	CUSTODY SEAL No.	2646
REMARKS			
ICE CHEST OR SAMPLE PIG No.	G-10	SAMPLE CONTAINER No.	V-89-B
DESTINATION	222-S LAB		

(HP)

HPT SHIPPING CONTAINER RELEASE:

[Signature]

DATE: 5-12-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)
V-89

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	5/16/94 1339
Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	5/16/94 1610
Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	5/16/94 2330
Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	5-17-94 0715
Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	5-17-94 0947
Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	5-17-94 1000
Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	05-17-94 1045

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TANK FARM PLANT OPERATING PROCEDURE

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COPY 3

CHAIN OF CUSTODY FORM

ADDENDUM A

COMPANY CONTACT:	BH Von Bargen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY:	J.W. McMullen	DATE	5/23/94 TIME: 1215
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2638
REMARKS	This COC is used for the first of two 60 mL slurry samples in a glass bottle labeled V93.		
ICE CHEST OR SAMPLE PIG No.	B-25	SAMPLE CONTAINER No.	SN.15266-1 V93A
DESTINATION	222-S Laboratory		

(HP) HPT SHIPPING CONTAINER RELEASE: Cand R. Chupel DATE: 5-24-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)
V93

CHAIN OF POSSESSION

Relinquished by: <u>J.W. McMullen</u>	Received by: <u>David Bullock</u>	Date/Time: <u>5-23-94 1435</u>
Relinquished by: <u>David Bullock</u>	Received by: <u>W.A.</u>	Date/Time: <u>5/23/94 2355</u>
Relinquished by: <u>W.A.</u>	Received by: <u>B.J. Thornton</u>	Date/Time: <u>5/24/94 0810</u>
Relinquished by: <u>B.J. Thornton</u>	Received by: <u>Mike Gandy</u>	Date/Time: <u>5/24/94 0908</u>
Relinquished by: <u>Mike Gandy</u>	Received by: <u>T. Zippin</u>	Date/Time: <u>5/24/94 0957</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

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ADDENDUM-1A,

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CHAIN OF CUSTODY FORM

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5/23/94 TIME 1215
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2639
REMARKS	This COC is used for the second of two 60 mL slurry samples in a glass bottle labeled V93.		
ICE CHEST OR SAMPLE PIG No.	B-21	SAMPLE CONTAINER No.	V93B 201 * H-2-74448
DESTINATION	222-S Laboratory		

(HP)

HPT SHIPPING CONTAINER RELEASE: Cand R. Chrytel DATE: 5-24-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(s)
V93

CHAIN OF POSSESSION

Relinquished by: <u>J.W. McMullen</u>	Received by: <u>Dan Butts</u>	Date/Time: <u>5-23-94 1435</u>
Relinquished by: <u>D. Butts</u>	Received by: <u>W.H.</u>	Date/Time: <u>5/23/94 2355</u>
Relinquished by: <u>W.H.</u>	Received by: <u>B.J. Thornton</u>	Date/Time: <u>5/24/94 0810</u>
Relinquished by: <u>B.J. Thornton</u>	Received by: <u>M.H. Stutz</u>	Date/Time: <u>5/24/94 0908</u>
Relinquished by: <u>M.H. Stutz</u>	Received by: <u>T. Zapata</u>	Date/Time: <u>5/24/94 0957</u>
Relinquished by: <u> </u>	Received by: <u> </u>	Date/Time: <u> </u>
Relinquished by: <u> </u>	Received by: <u> </u>	Date/Time: <u> </u>

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ADDENDUM 1A.

CHAIN OF CUSTODY FORM

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY:	<i>T. P. ...</i>	DATE	6-9-94 TIME: 1130
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2291
REMARKS	This COC is used for the first of two 60 mL slurry samples in a glass bottle labeled V97. This sample is for inorganic and radiochemistry analysis.		
ICE CHEST OR SAMPLE PIG No.	G-10	SAMPLE CONTAINER No.	V97-A
DESTINATION	222-S Laboratory		

(HP) HPT SHIPPING CONTAINER RELEASE: _____ DATE: _____

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)
V97

CHAIN OF POSSESSION

Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date/Time: 6/9/94 1515
Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date/Time: 6/9/94 2330
Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date/Time: 6-10-94 0655
Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date/Time: 6-10-94 0830
Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date/Time: 6/10/94 1043
Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date/Time: 06-10-94 1130
Relinquished by:	Received by:	Date/Time:

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ADDENDUM 1A,

CHAIN OF CUSTODY FORM

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY:	<i>[Signature]</i>	DATE	6-9-94 TIME 1130
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2292
REMARKS	This COC is used for the second of two 60 mL slurry samples in a glass bottle labeled V97. This sample is for inorganic and radiochemistry analysis.		
ICE CHEST OR SAMPLE PIG No.	G-3	SAMPLE CONTAINER No.	V97-B
DESTINATION	222-S Laboratory		

(HP) HPT SHIPPING CONTAINER RELEASE: _____ DATE: _____

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)
V97

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	W.A.	6/9/94 1515
Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	GBell	6/9/94 2330
Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	6-10-94 0655
Relinquished by:	Received by:	Date/Time:
BQ Thornton	BQ Thornton	6-10-94 0830
Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	6/10/94 1043
Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	Sandra Cobb	06-10-94 1120
Relinquished by:	Received by:	Date/Time:

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ADDENDUM 1A

CHAIN OF CUSTODY FORM

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5-9-94 TIME 1130
SAMPLE LOCATIONS	242-A - Slurry (field blank)	CUSTODY SEAL No.	2435
REMARKS	This COC is used for the 60 mL slurry field blank sample in a glass bottle labeled V101.		
ICE CHEST OR SAMPLE PIG No.	N/A	SAMPLE CONTAINER No.	V101
DESTINATION	222-S Laboratory		

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(HP)

HPT SHIPPING CONTAINER RELEASE: OK. Halliburton DATE: 5-10-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)
V101

CHAIN OF POSSESSION

Relinquished by: <u>J.W. McMullen</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/5/94 1520</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/9/94 2345</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/10/94 0745</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/10/94 1037</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5-10-94 1125</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u> </u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u> </u>

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RSA No.

1874

BC-6700-181 (11/92)

REQUEST FOR SPECIAL ANALYSIS (RSA)					RSA No. 1875	
1. Sample Origin <u>urry, 242-A Evaporator</u>		2. Date Submitted <u>3/30/94</u>		4. Requester Name <u>George L. Miller</u>		6. Charge Code/Work Package <u>NIA 7F</u>
(Protocol Analyses)		3. Submitted By <u>George L. Miller</u>		5. Requester Phone/MSIN <u>373-4739 / T6-06</u>		7. Date Required
8. Customer ID <u>SLY-A</u>	Collected		9. Laboratory ID <u>V85</u>	12. Number of Samples <u>1</u>	13. Volume of Samples <u>60 ml</u>	14. Protocols Technology per ☐ None ☒ RCRA ☐ NQA-1 ☐ Other ☐ CERCLA (<u>Same as 108-A</u>)
	Date	Time				
WHC-SD-WM-DP-067, REV. 0 ADDENDUM 1A,				15. Sample Type ☐ Solid ☐ Soil ☒ Slurry ☐ Gas ☐ Water ☐ Waste ☐ Solution ☐ Sludge ☐ Oil ☐ Other (specify) _____		
				16. Storage Requirements ☒ None ☐ Specify _____		
				17. Process Knowledge/Known Listed Wastes ☐ Unknown ☒ Known (Please attach list) <u>Prior Evaporator Runs</u> ☐ Previously submitted for this Project		
				18. Survey Dose Rate _____ HPT Signature		
				19. Disposition of Waste ☐ Return to Client/Location _____ ☐ Dispose per 222-S Procedures ☒ Other <u>per TPP: WHC-SD-WM-TPP-048</u>		
20. Additional Information <u>V83 - Std</u> <u>V84 Blank</u> <u>V86 Std</u> <u>305</u> Do Spike & Spike Duplicate on: <u>OH⁻, H₂, H-3, ICP, As, Se, Sr-90, Pu-239/240,</u> <u>Am-241, AT, TB, IC, NH₄, CN, TIC</u>						
21. Chain of Custody ☐ No ☒ Yes Number: <u>Seal #:</u>				22. Assigned Custodial Group (select one) ☐ PCL ☒ PSDU ☐ ENV ☐ Process 10/7/94		
Sample Received By: <u>M. Lapins</u> Date: <u>5-10-94</u> Time: <u>1110</u>						
24. Laboratory Manager (if required) <u>IA111</u>				034		

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REQUEST FOR SPECIAL ANALYSIS (RSA)					RSA No. 1877	
1. Sample Origin <i>Mercury, 242-A Evaporator</i>		2. Date Submitted <i>3/30/94</i>		4. Requester Name <i>George L Miller</i>		6. Charge Code/Work Package <i>NIA7F</i>
3. Submitted By <i>George L Miller</i>		5. Requester Phone/MSIN <i>373-4739 / T6-06</i>		7. Date Required		
8. Customer ID <i>SLY-A</i>	Collected Date Time		9. Laboratory ID <i>V93</i>	12. Number of Samples <i>1</i>	13. Volume of Samples <i>60 ml</i>	14. Protocols Technology per ☐ None ☒ RCRA ☐ NQA-1 ☐ Other ☐ CERCLA (<i>same as 108-A</i>)
			15. Sample Type ☐ Solid ☐ Soil ☒ Slurry ☐ Gas ☐ Water ☐ Waste ☐ Solution ☐ Sludge ☐ Oil ☐ Other (specify) _____			
			16. Storage Requirements ☒ None <i>WHC-SD-WM-DP-067, REV. 0</i> ☐ Specify <i>ADDENDUM 1A,</i>			
			17. Process Knowledge/Known Listed Wastes ☐ Unknown ☒ Known (Please attach list) <i>Prior Evaporator Runs</i> ☐ Previously submitted for this Project			
10. Determination		11. Expected Range		18. Survey Dose Rate		
DIRECT : <i>• Appearance</i> <i>• Specific Gravity</i> <i>• Hydroxide</i> <i>• Mercury</i> <i>• Tritium</i>				_____ HPT Signature		
ACID DIGESTION : <i>• ICP</i> <i>• As</i> <i>• Se</i> <i>• GEA</i> <i>• Sr-90</i> <i>• Pu-239/240</i> <i>• Am-241</i> <i>• Total Alpha</i> <i>• Total Beta</i>				19. Disposition of Waste ☐ Return to Client/Location _____ ☐ Dispose per 222-S Procedures ☒ Other <i>Per TPP: WHC-SD-WM-TPP-048</i>		
WATER (DIGESTION) DILUTION : <i>• IC</i> <i>• Ammonia</i> <i>• Cyanide</i> <i>• TIC (Carbonate)</i>				20. Additional Information <i>V91 STD</i> <i>V92 Blank</i> <i>V94 STD</i> <i>6367</i>		
21. Chain of Custody ☐ No ☒ Yes Number: <i>See #:</i>				22. Assigned Custodial Group (select one) ☐ PCL ☒ PSDU ☐ ENV ☐ Process <i>10/17/94</i>		
23. Sample Received By: <i>[Signature]</i> Date: <i>5-24-94</i> Time: <i>0957</i>				24. Laboratory Manager (if required) <i>MA113</i> 036 Date: _____		

ADDENDUM 1A,

MEMORANDUM

TO: 242-A Project QA Record

FR: Sandra Schildt, Golder Associates Inc. *SS*

October 19, 1994

RE: METALS ANALYSIS DATA VALIDATION SUMMARY FOR DATA PACKAGE V81-222-094
(943-1610.009, 094m.242)

INTRODUCTION

This memorandum presents the results of data validation on data package V81-222-094 prepared by the 222-S laboratory. A list of the samples validated along with the analyses reported and the method of analysis is provided in the following table.

LABORATORY SAMPLE ID	CLIENT SAMPLE ID	SAMPLE DATE	SAMPLE TYPE	ANALYSIS
V81	V81	5/4/94	Field Blank	see Note 1
V85	V85	5/9/94		
V89	V89	5/16/94		
V93	V93	5/23/94		
V97	V97	6/9/94		
V101	V101	5/9/94		

Note 1. Samples were requested to be analyzed for inductively coupled plasma (ICP) metals, total uranium, cyanide, arsenic, selenium, and mercury.

Data validation was conducted in accordance with 242-A Evaporator Sampling Quality Assurance Project Plan and Level B procedures as specified in Data Validation for RCRA Analyses, Section 2.0 (WHC 1990). Validation was performed on 100% of the samples reported.

This report contains four appendices. The appendices are as follows:

- Appendix 1. Annotated Laboratory Forms
- Appendix 2. Data Assessment Forms
- Appendix 3. Data Summary Form
- Appendix 4. Chain of Custody Information

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met with the exception of the minor deficiencies identified below.

Accuracy. Goals for accuracy were met with the exception of the major deficiencies identified below.

Detection Limits. Detection limit goals were met for all analyses with the exception of calcium in sample V101, and lead in samples V85 and V93.

Completeness. The data package was complete for all requested analyses. Six samples (6) were validated in this data set with a total of 97 determinations reported, one of which were deemed unusable. This results in a completeness of 99 percent which meets normal work plan objectives of 90%.

MAJOR DEFICIENCIES

WHC-SD-WM-DP-067
ADDENDUM// REV. 0

Major deficiencies were identified during data validation which required qualification of data as unusable.

Matrix Spikes

- Matrix spike recoveries of silver were less than 30% for sample and V101, a field blank. Associated results have been qualified as unusable (R).

MINOR DEFICIENCIES

The following minor deficiencies were identified during data validation which required qualification of the data.

Blanks

- Calcium and iron were detected in the blank for sample V97. Calcium and iron results less than 5x the blank concentration in sample V97 are qualified as undetected (U).

Laboratory Duplicates

- The relative percent difference exceeded 20% for the following analytes and samples:

Selenium	V81
Calcium	V89, V93, V101
Iron	V89, V93
Lead	V81
Magnesium	V81, V101
Zinc	V85, V93, V101

Associated sample results have been qualified as estimated (J, UJ).

Sample Preparation

- As noted in the laboratory narrative, samples were exposed to HCl during sample preparation which affected spike recovery of silver due to precipitation of silver

as AgCl. Therefore, all sample results for silver are qualified as estimated (J, UJ) with the exception of sample V101, a field blank, which as noted above was deemed unusable.

WHC-SD-WM-DP-11/1
ADDENDUM 11 REV. 0

Reporting

- Sample results reported as less than the reporting limit have been qualified with a U for clarification.

REFERENCES

WHC 1990, Data Validation for RCRA Analysis, WHC-CM-5-3, August 27, 1990. Westinghouse Hanford Company, Richland, Washington.

WHC 1994, 242-A Evaporator Sampling Quality Assurance Project Plan, WHC-SD-WM-QAPP-009, Rev. 1. Westinghouse Hanford Company, Richland, Washington.

GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

- U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample detection limit corrected for sample aliquot size, dilution factors and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.
- UJ - Indicates the constituent was analyzed for and was not detected. Due to a minor quality control deficiency identified during data validation, the concentration reported may not accurately reflect the sample detection limit. The associated data have been qualified as estimated but should be considered usable for decision making purposes.
- J - Indicates the constituent was analyzed for and detected. Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.
- UR - Indicates the constituent was analyzed for and not detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.
- R - Indicates the constituent was analyzed for and detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

WHC-SD-WM-DP- 0617
ADDENDUM 1A REV. 0

APPENDIX 1
ANNOTATED LABORATORY REPORTS

CN wk1

CYANIDE
WATER DIGESTION
LA-695-102/B2

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result ug/mL	Duplicate Result ug/mL	Average Result ug/mL	Sample RPD %	Detection Limit ug/mL	Standard Result ug/mL	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Reagent Blank ug/mL	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	1.35E+1	1.37E+1	1.36E+1	1.5	1.50E+0	9.26E+2	101.3	102.5	102.8	0.3	<1.50E-0	V79	V80	V81
V85	5/9/94	SLY-A-2	8.94E+0	7.02E+0	6.98E+0	1.2	3.00E-1	9.28E+2	101.5	102.3	101.9	0.4	<3.00E-1	V83	V84	V85
V89	5/16/94	SLY-A-3	3.53E+0	3.39E+0	3.46E+0	4.1	2.50E-1	9.58E+2	100.1	99.5	100.1	0.8	<2.50E-1	V87	V88	V89
V93	5/23/94	SLY-A-4	2.45E+0	2.53E+0	2.49E+0	3.2	2.50E-1	9.65E+2	100.9	101.1	100.2	0.9	<2.50E-1	V91	V92	V93
V97	6/9/94	SLY-A-5	3.65E+1	3.90E+1	3.78E+1	6.6	1.25E+0	9.48E+2	99.1	NA	NA	NA	<1.25E+0	V95	V98	NA
V101	5/9/94	Field Blank	<3.00E-1	<3.00E-1	<3.00E-1	NA	3.00E-1	9.12E+2	99.8	100.0	99.8	0.2	<3.00E-1	V99	V100	V101

WHC-SD-WM-DP-067, REV.0
ADDENDUM 1A.

1/12/21

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10/13/94

U.WK1

TOTAL URANIUM
Direct
LA-695-102/B1

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result ug/mL	Duplicate Result ug/mL	Average Result ug/mL	Sample RPD %	Detection Limit ug/mL	Standard Result g/L	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Reagent Blank ug/mL	Standard I.D.	Blank I.D.	Spike I.D.
V97	6/9/94	SLY-A-5	2.39E+1	1.99E+1	2.19E+1	18.3	3.42E+0	3.58E-2	92.8	NA	NA	NA	<6.68E-4	V95	V96	NA

117-122

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

092-
007
10/13/94

AS.WK3

ARSENIC
ACID DIGEST
LA-355-131/B-1

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result $\mu\text{g/ml}$	Duplicate Result $\mu\text{g/ml}$	Average Result $\mu\text{g/ml}$	Sample RPD %	Detection Limit $\mu\text{g/ml}$	Standard Result $\mu\text{g/ml}$	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Preparation Blank $\mu\text{g/ml}$	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	1.52E+0	1.44E+0	1.48E+0	5.2	2.00E-1	1.11E-1	111.1	NA	NA	NA	<2.00E-1	V79	V80	NA
V85	5/9/94	SLY-A-2	1.17E+0	1.15E+0	1.16E+0	1.4	2.00E-1	9.8E-2	98.0	NA	NA	NA	<2.00E-1	V83	V84	NA
V89	5/16/94	SLY-A-3	1.55E+0	1.55E+0	1.55E+0	0.3	2.00E-1	8.3E-2	82.9	NA	NA	NA	<2.00E-1	V87	V88	NA
V93	5/23/94	SLY-A-4	9.36E-1	8.79E-1	9.07E-1	6.3	1.67E-1	9.5E-2	95.0	81.0	95.5	16.4	<1.67E-1	V91	V92	V93
V97	6/9/94	SLY-A-5	5.75E+0	5.95E+0	5.85E+0	3.4	5.00E-1	9.7E-2	97.2	NA	NA	NA	<5.00E-1	V95	V96	NA
V101	5/9/94	Field Blank	<2.5E-2	<2.5E-2	<2.5E-2	NA	2.5E-2	9.4E-2	94.0	96.3	95.9	0.4	<2.5E-2	V99	V100	V101

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10/13/94

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

9E_WK1

SELENIUM
ACID DIGEST
LA-365-131/B-2

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result $\mu\text{g/ml}$	Duplicate Result $\mu\text{g/ml}$	Average Result $\mu\text{g/ml}$	Sample RPD %	Detection Limit $\mu\text{g/ml}$	Standard Result $\mu\text{g/ml}$	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Preparation Blank $\mu\text{g/ml}$	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	3.3E-2	4.7E-2	4.0E-2	37.1	2.5E-2	1.00E-1	100.1	108.3	106.0	0.2	<2.5E-2	V79	V80	V81
V85	5/9/94	SLY-A-2	<5.0E-2	<5.0E-2	<5.0E-2	NA	5.0E-2	1.14E-1	114.0	97.4	100.7	3.4	<5.0E-2	V83	V84	V85
V89	5/16/94	SLY-A-3	3.7E-2	3.2E-2	3.5E-2	13.5	2.5E-2	1.03E-1	103.0	82.9	78.5	4.8	<2.5E-2	V87	V88	V89
V93	5/23/94	SLY-A-4	4.2E-2	4.7E-2	4.5E-2	10.7	2.5E-2	1.03E-1	102.7	79.2	91.8	12.2	<2.5E-2	V91	V92	V93
V97	6/9/94	SLY-A-5	1.65E-1	1.71E-1	1.68E-1	3.3	1.25E-1	1.07E-1	106.7	NA	NA	NA	<1.25E-1	V95	V96	NA
V101	5/9/94	Field Blank	<2.5E-2	<2.5E-2	<2.5E-2	NA	2.5E-2	1.04E-1	103.9	114.6	113.3	1.1	<2.5E-2	V99	V100	V101

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WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A,

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Hg_WK1

MERCURY ANALYSIS
Direct
LA-325-104/A-1

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result ug/mL	Duplicate Result ug/mL	Average Result ug/mL	Sample RPD %	Detection Limit ug/mL	Standard Result ug/mL	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Reagent Blank ug/mL	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	<5E-3	<5E-3	<5E-3	NA	5E-3	1.00E-1	99.9	75.6	75.3	0.4	<5E-3	V79	V80	V81
V85	5/9/94	SLY-A-2	<5E-3	<5E-3	<5E-3	NA	5E-3	1.05E-1	104.9	91.8	98.6	7.1	<5E-3	V83	V84	V85
V89	5/16/94	SLY-A-3	<5E-3	<5E-3	<5E-3	NA	5E-3	9.8E-2	98.0	81.6	88.5	8.1	<5E-3	V87	V88	V89
V93	5/23/94	SLY-A-4	<5E-3	<5E-3	<5E-3	NA	5E-3	1.07E-1	107.2	80.3	85.2	5.9	<5E-3	V91	V92	V93
V97	6/9/94	SLY-A-5	<5E-3	<5E-3	<5E-3	NA	5E-3	1.05E-1	105.3	NA	NA	NA	<5E-3	V95	V96	NA
V101	5/9/94	Field Blank	Insufficient Sample													

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WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

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10/13/94

AI-ICP.WK1

ALUMINUM by Inductively Coupled Plasma/Emission Spectroscopy
Acid Digestion
LA-505-151/D-1
LA-505-161/A-0

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS								QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result ug/L	Duplicate Result ug/L	Average Result ug/L	Sample RPD %	Detection Limit *	Standard Result ug/L	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Dilution RPD %	Preparation Blank ug/L	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	1.71E+6	1.71E+6	1.71E+6	0.5	1.60E+1	5.18E+3	103.6	NA	NA	NA	4.3	<1.60E+1	V79	V80	NA
V85	5/9/94	SLY-A-2	1.14E+6	1.16E+6	1.15E+6	1.5	1.60E+1	4.87E+3	97.3	NA	NA	NA	3.4	<1.60E+1	V83	V84	NA
V89	5/16/94	SLY-A-3	1.40E+6	1.42E+6	1.41E+6	1.5	1.60E+1	4.87E+3	97.3	NA	NA	NA	0.1	<1.60E+1	V87	V88	NA
V93	5/23/94	SLY-A-4	9.75E+5	9.56E+5	9.65E+5	1.9	1.60E+1	5.15E+3	102.9	84.3	90.7	0.6	NA	<2.00E+1	V91	V92	V93
V97	6/9/94	SLY-A-5	8.02E+4	8.11E+4	8.06E+4	1.1	1.60E+1	5.28E+3	105.6	NA	NA	NA	NA	<1.78E+1	V95	V96	NA
V101	5/9/94	Field Blank	<2.90E+2	<2.90E+2	<2.90E+2	NA	1.60E+1	4.92E+3	98.5	105.0	102.7	2.3	NA	<2.90E+1	V99	V100	V101

* Instrument Detection Limit

1A126

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011

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

Ba-ICP.WK1

BARIUM by Inductively Coupled Plasma/Emission Spectroscopy
 Acid Digestion
 LA-505-151/D-1
 LA-505-161/A-0

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result ug/L	Duplicate Result ug/L	Average Result ug/L	Sample RPD %	Detection Limit * ug/L	Standard Result ug/L	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Preparation Blank ug/L	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	<1.00E+2	<1.00E+2	<1.00E+2	NA	1.0E+0	4.89E+3	97.9	98.3	95.1	3.4	<1.00E+0	V79	V80	V81
V85	5/9/94	SLY-A-2	<2.00E+2	<2.00E+2	<2.00E+2	NA	1.0E+0	4.64E+3	92.8	89.1	90.4	1.5	<1.00E+0	V83	V84	V85
V89	5/16/94	SLY-A-3	<1.00E+2	<1.00E+2	<1.00E+2	NA	1.0E+0	4.64E+3	92.8	90.6	88.0	2.9	<1.00E+0	V87	V88	V89
V93	5/23/94	SLY-A-4	<2.00E+2	<2.00E+2	<2.00E+2	NA	1.0E+0	4.81E+3	96.3	93.7	94.2	0.6	<2.00E+0	V91	V92	V93
V97	6/9/94	SLY-A-5	<5.00E+0	<5.00E+0	<5.00E+0	NA	1.0E+0	5.05E+3	101.0	NA	NA	NA	<1.00E+0	V95	V96	NA
V101	5/9/94	Field Blank	<4.00E+1	<4.00E+1	<4.00E+1	NA	1.0E+0	4.91E+3	98.3	102.2	100.0	2.2	<4.00E+0	V99	V100	V101

* Instrument Detection Limit

WHC-SD-WM-DP-067, REV. 0
 ADDENDUM 1A,

1A-227
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 5/15/94

Cd-ICP.WK1

CADMIUM by Inductively Coupled Plasma/Emission Spectroscopy
Acid Digestion
LA-505-151/D-1
LA-505-161/A-0

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result ug/L	Duplicate Result ug/L	Average Result ug/L	Sample RPD %	Detection Limit ^a ug/L	Standard Result ug/L	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Preparation Blank ug/L	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	1.04E+3	1.09E+3	1.07E+3	0.5	5.0E+0	5.29E+3	105.8	103.9	100.7	3.1	<5.00E+0	V79	V80	V81
V85	5/9/94	SLY-A-2	<1.00E+3	<1.00E+3	<1.00E+3	NA	5.0E+0	4.88E+3	97.6	92.0	92.9	0.9	<5.00E+0	V83	V84	V85
V89	5/16/94	SLY-A-3	7.57E+2	6.41E+2	6.99E+2	16.6	5.0E+0	4.88E+3	97.6	93.7	91.7	2.1	<5.00E+0	V87	V88	V89
V93	5/23/94	SLY-A-4	<1.00E+3	<1.00E+3	<1.00E+3	NA	5.0E+0	5.16E+3	103.2	97.6	98.1	0.5	<1.00E+1	V91	V92	V93
V97	6/9/94	SLY-A-5	3.38E+1	3.92E+1	3.65E+1	14.7	5.0E+0	5.32E+3	106.5	NA	NA	NA	<5.00E+0	V95	V96	NA
V101	5/9/94	Field Blank	6.23E+1	<4.00E+1	NA	NA	5.0E+0	4.99E+3	99.8	96.1	91.5	4.9	<4.00E+0	V99	V100	V101

^a Instrument Detection Limit

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

098
013/13/11

Ca-ICP.WK1

CALCIUM by Inductively Coupled Plasma/Emission Spectroscopy
Acid Digestion
LA-505-151/D-1
LA-505-161/A-0

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result ug/L	Duplicate Result ug/L	Average Result ug/L	Sample RPD %	Detection Limit * ug/L	Standard Result ug/L	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Preparation Blank ug/L	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	1.16E+04	1.13E+04	1.14E+04	2.5	1.30E+01	4.84E+03	96.9	93.9	90.0	3.8	1.59E+01	V79	V80	V81
V85	5/9/94	SLY-A-2	2.40E+04	2.67E+04	2.53E+04	11.0	1.30E+01	4.91E+03	98.2	93.1	94.2	1.0	5.65E+01	V83	V84	V85
V89	5/16/94	SLY-A-3	8.38E+03	5.47E+03	6.93E+03	42.1	1.30E+01	4.91E+03	98.2	84.7	86.1	1.3	6.15E+01	V87	V88	V89
V93	5/23/94	SLY-A-4	7.49E+03	5.61E+03	6.55E+03	28.7	1.30E+01	4.65E+03	93.0	88.6	85.6	3.1	6.90E+01	V91	V92	V93
V97	6/9/94	SLY-A-5	1.76E+02	1.96E+02	1.86E+02	10.7	1.30E+01	4.81E+03	96.2	NA	NA	NA	7.60E+01	V95	V96	NA
V101	5/9/94	Field Blank	5.51E+03	1.82E+03	3.67E+03	100.7	1.30E+01	4.82E+03	96.4	93.2	92.8	0.4	4.68E+01	V99	V100	V101

• Instrument Detection Limit

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

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Cr-ICP.WK1

CHROMIUM by Inductively Coupled Plasma/Emission Spectroscopy
Acid Digestion
LA-505-151/D-1
LA-505-161/A-0

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result ug/L	Duplicate Result ug/L	Average Result ug/L	Sample RPD %	Detection Limit * ug/L	Standard Result ug/L	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Preparation Blank ug/L	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	4.59E+4	4.54E+4	4.56E+4	1.1	2.0E+0	5.22E+3	104.3	105.9	101.9	2.7	<2.00E+0	V79	V80	V81
V85	5/9/94	SLY-A-2	2.39E+4	2.40E+4	2.40E+4	0.4	2.0E+0	4.89E+3	97.9	93.0	94.7	1.4	<2.00E+0	V83	V84	V85
V89	5/16/94	SLY-A-3	3.13E+4	3.16E+4	3.15E+4	0.9	2.0E+0	4.89E+3	97.9	95.5	92.0	2.2	<2.00E+0	V87	V88	V89
V93	5/23/94	SLY-A-4	2.41E+4	2.34E+4	2.38E+4	2.6	2.0E+0	5.11E+3	102.1	97.7	97.8	0.1	<3.00E+0	V91	V92	V93
V97	6/9/94	SLY-A-5	1.96E+3	2.00E+3	1.98E+3	1.9	2.0E+0	5.28E+3	105.6	NA	NA	NA	<2.00E+0	V95	V96	NA
V101	5/9/94	Field Blank	6.63E+1	<5.00E+1	NA	NA	2.0E+0	4.98E+3	99.5	99.6	95.7	4.0	<5.00E+0	V99	V100	V101

• Instrument Detection Limit

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

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Fe-ICP.WK1

IRON by Inductively Coupled Plasma/Emission Spectroscopy
Acid Digestion
LA-505-151/D-1
LA-505-161/A-0

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result ug/L	Duplicate Result ug/L	Average Result ug/L	Sample RPD %	Detection Limit * ug/L	Standard Result ug/L	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Preparation Blank ug/L	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	6.37E+3	5.39E+3	5.88E+3	16.8	6.0E+0	5.18E+3	103.6	102.5	98.9	3.4	1.82E+1	V79	V80	V81
V85	5/9/94	SLY-A-2	7.18E+3	7.37E+3	7.28E+3	2.6	6.0E+0	4.87E+3	97.3	93.0	92.3	0.7	1.44E+1	V83	V84	V85
V89	5/16/94	SLY-A-3	1.23E+3	8.68E+2	1.05E+3	34.8	6.0E+0	4.87E+3	97.3	93.8	91.6	2.4	1.30E+1	V87	V88	V89
V93	5/23/94	SLY-A-4	2.10E+3	3.27E+3	2.69E+3	43.4	6.0E+0	5.09E+3	101.8	98.9	98.2	0.7	2.01E+1	V91	V92	V93
V97	6/9/94	SLY-A-5	3.56E+1	3.51E+1	3.53E+1	1.3	6.0E+0	5.25E+3	105.1	NA	NA	NA	1.87E+1	V95	V96	NA
V101	5/9/94	Field Blank	2.12E+2	2.05E+2	2.08E+2	3.4	6.0E+0	4.88E+3	97.7	97.8	94.3	3.6	9.93E+0	V99	V100	V101

* Instrument Detection Limit

1A-131

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

101
016

10/13/94

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J
J
U

Pb-ICP.WK1

LEAD by Inductively Coupled Plasma/Emission Spectroscopy
Acid Digestion
LA-505-151/D-1
LA-505-161/A-0

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result ug/L	Duplicate Result ug/L	Average Result ug/L	Sample RPD %	Detection Limit * ug/L	Standard Result ug/L	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Preparation Blank ug/L	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	5.95E+3	1.43E+4	1.01E+4	82.7	2.80E+1	5.42E+3	108.5	119.7	102.6	14.7	5.10E+1	V79	V80	V81
V85	5/9/94	SLY-A-2	<5.60E+3	7.10E+3	NA	NA	2.80E+1	4.98E+3	99.6	94.5	93.1	1.4	3.00E+1	V83	V84	V85
V89	5/16/94	SLY-A-3	<2.80E+3	<2.80E+3	<2.80E+3	NA	2.80E+1	4.98E+3	99.6	99.0	98.8	2.3	2.85E+1	V87	V88	V89
V93	5/23/94	SLY-A-4	<6.90E+3	<6.90E+3	<6.90E+3	NA	2.80E+1	5.29E+3	105.7	95.6	96.1	0.4	<6.90E+1	V91	V92	V93
V97	6/9/94	SLY-A-5	<1.40E+2	<1.40E+2	<1.40E+2	NA	2.80E+1	5.41E+3	108.2	NA	NA	NA	-4.09E+1	V95	V96	NA
V101	5/9/94	Field Blank	<2.40E+2	<2.40E+2	<2.40E+2	NA	2.80E+1	5.05E+3	100.9	97.2	93.5	3.9	<2.40E+1	V99	V100	V101

* Instrument Detection Limit

1/14/132

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

017

102

10/13/94

Mg-ICP.WKI

MAGNESIUM by Inductively Coupled Plasma/Emission Spectroscopy
 Acid Digestion
 LA-505-151/D-1
 LA-505-161/A-0

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result ug/L	Duplicate Result ug/L	Average Result ug/L	Sample RPD %	Detection Limit * ug/L	Standard Result ug/L	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Preparation Blank ug/L	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	5.53E+3	5.11E+3	5.32E+3	7.9	1.90E+1	5.37E+3	107.4	94.6	92.4	2.3	1.93E+1	V79	V80	V81
V85	5/9/94	SLY-A-2	7.03E+3	5.47E+3	6.25E+3	24.9	1.90E+1	5.00E+3	99.9	87.5	89.4	2.0	<1.90E+1	V83	V84	V85
V89	5/16/94	SLY-A-3	2.68E+3	2.59E+3	2.64E+3	3.7	1.90E+1	5.00E+3	99.9	88.5	86.6	2.1	<1.90E+1	V87	V88	V89
V93	5/23/94	SLY-A-4	2.95E+3	<2.40E+3	NA	NA	1.90E+1	5.33E+3	106.6	90.5	89.7	0.8	<2.40E+1	V91	V92	V93
V97	6/9/94	SLY-A-5	<9.5E+1	1.18E+2	NA	NA	1.90E+1	5.49E+3	109.8	NA	NA	NA	<1.90E+1	V95	V96	NA
V101	5/9/94	Field Blank	1.48E+2	9.13E+1	1.20E+2	47.4	1.90E+1	4.76E+3	95.3	94.1	90.2	4.2	<3.00E+0	V99	V100	V101

• Instrument Detection Limit

WHC-SD-WM-DP-067, REV. 0
 ADDENDUM 1A,

14-133

103

018

10/13/94

Mn-ICP.WK1

MANGANESE by Inductively Coupled Plasma/Emission Spectroscopy
 Acid Digestion
 LA-505-151/D-1
 LA-505-161/A-0

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result ug/L	Duplicate Result ug/L	Average Result ug/L	Sample RPD %	Detection Limit * ug/L	Standard Result ug/L	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Preparation Blank ug/L	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	9.08E+2	8.92E+2	9.00E+2	1.8	1.0E+0	5.12E+3	102.5	98.9	96.2	2.7	<1.00E+0	V79	V80	V81
V85	5/9/94	SLY-A-2	1.17E+3	1.15E+3	1.16E+3	2.2	1.0E+0	4.72E+3	94.4	87.2	88.3	1.2	<1.00E+0	V83	V84	V85
V89	5/16/94	SLY-A-3	1.19E+2	<1.00E+2	NA	NA	1.0E+0	4.72E+3	94.4	89.3	87.4	2.1	<1.00E+0	V87	V88	V89
V93	5/23/94	SLY-A-4	2.40E+2	2.66E+2	2.53E+2	10.3	1.0E+0	4.98E+3	99.6	92.5	92.9	0.4	<1.00E+0	V91	V92	V93
V97	6/9/94	SLY-A-5	<5.00E+0	<5.00E+0	<5.00E+0	NA	1.0E+0	5.16E+3	103.3	NA	NA	NA	<1.00E+0	V95	V96	NA
V101	5/9/94	Field Blank	<3.00E+1	<3.00E+1	<3.00E+1	NA	1.0E+0	4.93E+3	98.7	98.6	95.0	3.7	-6.53E+0	V99	V100	V101

* Instrument Detection Limit

WHC-SD-WM-DP-067, REV. 0
 ADDENDUM 1A,

1A134

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019

10/13/94

Ag-ICP.WK1

SILVER by Inductively Coupled Plasma/Emission Spectroscopy
Acid Digestion
LA-505-151/D-1
LA-505-161/A-0

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result ug/L	Duplicate Result ug/L	Average Result ug/L	Sample RPD %	Detection Limit * ug/L	Standard Result ug/L	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Preparation Blank ug/L	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	2.17E+3	2.13E+3	2.15E+3	2.0	4.0E+0	5.38E+3	107.5	5.1	5.9	10.7	<4.00E+0	V79	V80	V81
V85	5/9/94	SLY-A-2	1.82E+3	1.59E+3	1.70E+3	13.9	4.0E+0	5.04E+3	100.9	88.4	90.0	1.8	8.31E+0	V83	V84	V85
V89	5/16/94	SLY-A-3	1.75E+3	1.85E+3	1.80E+3	5.8	4.0E+0	5.04E+3	100.9	92.2	91.0	1.3	<4.00E+0	V87	V88	V89
V93	5/23/94	SLY-A-4	<6.00E+2	<6.00E+2	<6.00E+2	NA	4.0E+0	5.22E+3	104.3	31.1	30.1	3.3	<6.00E+0	V91	V92	V93
V97	6/9/94	SLY-A-5	5.54E+1	5.73E+1	5.63E+1	3.5	4.0E+0	5.25E+3	105.0	NA	NA	NA	<4.00E+0	V95	V96	NA
V101	5/9/94	Field Blank	3.87E+3	3.35E+3	3.61E+3	14.4	4.0E+0	4.99E+3	99.9	6.7	19.2	74.8	<4.00E+0	V99	V100	V101

* Instrument Detection Limit

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10/19/94
RJ
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WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

11-135

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10/15/94

Na-ICP.WK1

SODIUM by Inductively Coupled Plasma/Emission Spectroscopy

Acid Digestion
LA-505-151/D-1
LA-505-161/A-0

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS								QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result ug/L	Duplicate Result ug/L	Average Result ug/L	Sample RPD %	Detection Limit * ug/L	Standard Result ug/L	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Dilution RPD %	Preparation Blank ug/L	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	4.94E+7	4.92E+7	4.93E+7	0.4	1.10E+1	4.81E+3	96.2	NA	NA	NA	6.5	2.84E+1	V79	V80	NA
V85	5/9/94	SLY-A-2	2.95E+7	3.01E+7	2.98E+7	1.8	1.10E+1	4.65E+3	93.0	NA	NA	NA	2.9	<1.10E+1	V83	V84	NA
V89	5/16/94	SLY-A-3	3.68E+7	3.77E+7	3.73E+7	2.4	1.10E+1	4.65E+3	93.0	NA	NA	NA	1.6	<1.10E+1	V87	V88	NA
V93	5/23/94	SLY-A-4	2.73E+7	2.68E+7	2.71E+7	1.8	1.10E+1	4.84E+3	96.9	NA	NA	NA	4.1	<4.1E+1	V91	V92	V93
V97	6/9/94	SLY-A-5	1.87E+6	1.89E+6	1.88E+6	1.0	1.10E+1	5.03E+3	100.6	NA	NA	NA	0.2	4.42E+1	V95	V96	NA
V101	5/9/94	Field Blank	2.73E+3	2.81E+3	2.77E+3	2.8	1.10E+1	4.99E+3	99.7	99.8	98.4	1.4	NA	<2.90E+1	V99	V100	V101

* Instrument Detection Limit

11A-136

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10/13/94

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

Zn-ICP.WK1

ZINC by Inductively Coupled Plasma/Emission Spectroscopy
 Acid Digestion
 LA-505-151/D-1
 LA-505-161/A-0

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result ug/L	Duplicate Result ug/L	Average Result ug/L	Sample RPD %	Detection Limit * ug/L	Standard Result ug/L	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Preparation Blank ug/L	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	2.08E+3	2.01E+3	2.05E+3	3.5	4.0E+0	5.37E+3	107.4	102.0	102.0	0.4	3.62E+1	V79	V80	V81
V85	5/9/94	SLY-A-2	4.79E+3	1.04E+4	7.62E+3	74.2	4.0E+0	5.02E+3	100.4	91.1	90.8	0.3	1.18E+1	V83	V84	V85
V89	5/16/94	SLY-A-3	2.59E+3	2.47E+3	2.53E+3	4.7	4.0E+0	5.02E+3	100.4	93.0	92.8	0.2	9.61E+0	V87	V88	V89
V93	5/23/94	SLY-A-4	3.01E+3	1.90E+3	2.45E+3	45.2	4.0E+0	5.18E+3	103.7	96.2	95.1	1.1	1.18E+1	V91	V92	V93
V97	6/9/94	SLY-A-5	4.66E+1	4.04E+1	4.35E+1	14.4	4.0E+0	5.23E+3	104.6	NA	NA	NA	6.01E+0	V95	V96	NA
V101	5/9/94	Field Blank	1.78E+2	8.17E+1	1.30E+2	74.0	4.0E+0	5.11E+3	102.2	96.7	96.7	0.0	1.16E+1	V99	V100	V101

• Instrument Detection Limit

LA-137

WHC-SD-WM-DP-067, REV. 0
 ADDENDUM 1A,

407
 022
 10/13/94

WHC-SD-WM-DP-11/7
ADDENDUM 11 REV. 0

APPENDIX 2

DATA ASSESSMENT FORMS

APPENDIX D

LEVEL B DOCUMENTATION

WHC-SD-WM-DP-067

ADDENDUM 1A REV 0

Westinghouse
Hanford Company

OFFICE OF SAMPLE MANAGEMENT RCRA DATA VALIDATION - LEVEL B

Date 10/13/94Reviewed By A. Schult

----- DATA ASSESSMENT SUMMARY -----

Sample #	<u>V81, V85, V89, V93, V97, V101</u>	Chain of Custody	<u>O</u>
Matrix	<u>water</u>	Analysis Completeness	<u>O</u>
Sample Date	<u>5/4/94 - 6/9/94</u>	Holding Times	<u>NA</u>
Laboratory	<u>222-S</u>	Analytical Blanks	<u>O</u>
		MS or MS/MSD	<u>M</u>
		Duplicate Analysis	<u>X</u>
		Surrogate Recovery	<u>NA</u>

O -data had no problems; X -data qualified due to minor problems
M -data qualified due to major problems/some data may be unusable

Overall Assessment: SatisfactoryComments: None

1A-139

RCRA B - Cover

024

APPENDIX D

LEVEL B DOCUMENTATION (cont)

WHC-SD-WM-DP-667ADDENDUM 1A REV. 0

RCRA Level B QC (cont)

Date 10/12/94 Reviewed by A. SchultsSample # Analysis inorganic

ANALYTICAL BLANK ANALYSIS

Blank Sample # Associated Samples Comments: Calcium > 20% of V97 result
Iron > 20% of V97 resultAction: U

MATRIX SPIKE or MS/MSD (circle one)

Sample Spiked Associated Samples Matrix water Comments: Silver recovery 130% in V101, 48.1%
10/19/94Action: SR

11/140

APPENDIX D

LEVEL B DOCUMENTATION (cont)

WHC-SD-WM-DP-11/1
ADDENDUM 11/1 REV. 0

RCRA Level B QC

Date 10/12/94 Reviewed by L. SchuldtSample # Analysis chemistry inorganic

DUPLICATE ANALYSIS

Duplicate Sample Associated Samples V81Matrix water

Comments: Selenium RPD in V81 >20%
Calcium RPD >20% in V89, V93, V101
Iron RPD >20% in V89, V93
Lead RPD >20% in V81
Magnesium RPD >20% in V81, V101
Zinc RPD >20% in V85, V93, V101

Action: J

SURROGATE RECOVERY

Comments: NA

Action:

1A-141

026

WHC-SD-WM-DP- 067
ADDENDUM 1A REV. 0

APPENDIX 3
DATA SUMMARY FORM

Validated Data Summary, Data Package: V81-222-094

	Samp# Date Location Depth Type Comments	V101 5-9-94 242-A --- WATER FIELD BLANK	V81 5-4-94 242-A --- WATER	V85 5-9-94 242-A --- WATER	V89 5-16-94 242-A --- WATER	V93 5-23-94 242-A --- WATER	V97 6-9-94 242-A --- WATER
Parameter	Units	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q
ALUMINUM	UG/L	290.000 U	1710000.000	1140000.000	1400000.000	975000.000	80200.000
ARSENIC	UG/ML	0.025 U	1.520	1.170	1.550	0.936	5.750
BARIUM	UG/L	40.000 U	100.000 U	200.000 U	100.000 U	200.000 U	5.000 U
CADMIUM	UG/L	62.300	1040.000	1000.000 U	757.000	1000.000 U	33.800
CALCIUM	UG/L	5510.000 J	11600.000	24000.000	8380.000 J	7490.000 J	176.000 U
CHROMIUM	UG/L	66.300	45900.000	23900.000	31300.000	24100.000	1960.000
IRON	UG/L	212.000	6370.000	7180.000	1230.000 J	2100.000 J	35.600 U
LEAD	UG/L	240.000 U	5950.000 J	560.000 U	2800.000 U	6900.000 U	140.000 U
MAGNESIUM	UG/L	148.000 J	5530.000	7030.000 J	2680.000	2950.000	95.000 U
MANGANESE	UG/L	30.000 U	908.000	1170.000	119.000	240.000	5.000 U
MERCURY	UG/ML	---	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SELENIUM	UG/ML	0.025 U	0.033 J	0.050 U	0.037	0.042	0.165
SILVER	UG/L	3870.000 R	2170.000 J	1820.000 J	1750.000 J	600.000 UJ	55.400
SODIUM	UG/L	2730.000	49400000.000	29500000.000	36800000.000	27300000.000	1870000.000
TOTAL URANIUM	UG/ML	---	---	---	---	---	23.900
ZINC	UG/L	178.000 J	2080.000	4790.000 J	2590.000	3010.000 J	46.600
CYANIDE	UG/ML	0.300 U	13.500	6.940	3.530	2.450	36.500

WHC-SD-WM-DP-267
ADDENDUM 4 REV.0

1/11/94
12/19/94
028

1/11/94

WHC-SD-WM-OP- 067
ADDENDUM 1A REV. 0

APPENDIX 4
CHAIN OF CUSTODY INFORMATION

TANK FARM PLANT OPERATING PROCEDURE

WHC-SD-WM-DP-067, REV. 0 ADDENDUM 1A,

COPY

CHAIN OF CUSTODY FORM

COMPANY CONTACT	BH Von Bargen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5-4-94 TIME 1430
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2605
REMARKS	This COC is used for the first of two 60 mL slurry samples in a glass bottle labeled V81. This sample is for inorganic and radchem analysis.		
ICE CHEST OR SAMPLE PIG No.	B-24	SAMPLE CONTAINER No.	V81 - A
DESTINATION	222-S Laboratory		

(HP)

HPT SHIPPING CONTAINER RELEASE: *[Signature]*

DATE: 5-5-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(s)	BEST AVAILABLE COPY
V81	

CHAIN OF POSSESSION

Relinquished by: <u><i>[Signature]</i></u>	Received by: <u><i>[Signature]</i></u>	Date/Time: <u>5/4/94 1625</u>
Relinquished by: <u><i>[Signature]</i></u>	Received by: <u><i>[Signature]</i></u>	Date/Time: <u>5/4/94 2349</u>
Relinquished by: <u><i>[Signature]</i></u>	Received by: <u><i>[Signature]</i></u>	Date/Time: <u>5-5-94 0835</u>
Relinquished by: <u><i>[Signature]</i></u>	Received by: <u><i>[Signature]</i></u>	Date/Time: <u>5-5-94 1240</u>
Relinquished by: <u><i>[Signature]</i></u>	Received by: <u><i>[Signature]</i></u>	Date/Time: <u>05-05-94 1330</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

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10/17/9

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TANK FARM PLANT OPERATING PROCEDURE

COPY

WHC-SD-WM-DP-067, REV. 0

CHAIN OF CUSTODY FORM ADDENDUM 1A,

COMPANY CONTACT	BH Von Bargen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. MCNULLEN	DATE	5/4/94 TIME: 1430
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2406-B
REMARKS	This COC is used for the second of two 60 mL slurry samples in a glass bottle labeled V81. This sample is for inorganic and radchem analysis.		
ICE CHEST OR SAMPLE Pkg No.	G-1	SAMPLE CONTAINER No.	V81-B
DESTINATION	222-S Laboratory		

X

(HP)

HPT SHIPPING CONTAINER RELEASE: [Signature]

DATE: 5-5-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)
V81

CHAIN OF POSSESSION

Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/4/94 1625</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/4/94 2349</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5-5-94 0835</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5-5-94 1240</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>05-05-94 1330</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

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TANK FARM PLANT OPERATING PROCEDURE

(3)

WHC-SD-WM-DP-067, REV. 0

CHAIN OF CUSTODY FORM ADDENDUM 1A,			
COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5-9-94 1130
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2416
REMARKS	This COC is used for the first of two 60 mL slurry samples in a glass bottle labeled V85. This sample is for inorganic and radchem analysis.		
ICE CHEST OR SAMPLE PIG No.	B-25	SAMPLE CONTAINER No.	V85 - A
DESTINATION	222-S Laboratory		

(HP) HPT SHIPPING CONTAINER RELEASE: AK Hallen DATE: 5-10-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)
V85

CHAIN OF POSSESSION

Relinquished by: <u>J.W. McMullen</u>	Received by: <u>Thomson</u>	Date/Time: <u>5/9/94 1520</u>
Relinquished by: <u>Thomson</u>	Received by: <u>John Bell</u>	Date/Time: <u>5/9/94 2345</u>
Relinquished by: <u>John Bell</u>	Received by: <u>Samuel</u>	Date/Time: <u>5/10/94 0745</u>
Relinquished by: <u>Samuel</u>	Received by: <u>John Thomson</u>	Date/Time: <u>5/10/94 1037</u>
Relinquished by: <u>John Thomson</u>	Received by: <u>T. Lavin</u>	Date/Time: <u>5-10-94 1110</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

10/1/94

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TANK FARM PLANT OPERATING PROCEDURE

WHC-SD-WM-DP-067, REV. 0

AGUJ

CHAIN OF CUSTODY FORM

ADDENDUM 1A,

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. MCMULLEN	DATE	5/9/94 TIME 1130
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2430
REMARKS	This COC is used for the second of two 60 mL slurry samples in a glass bottle labeled V85. This sample is for inorganic and radchem analysis.		
ICE CHEST OR SAMPLE PIG No.	6-10	SAMPLE CONTAINER No.	V85 - B
DESTINATION	222-S Laboratory		

(HP) HPT SHIPPING CONTAINER RELEASE: AK. Sullivan DATE: 5-10-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)
V85

CHAIN OF POSSESSION

Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/9/94 1520</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/9/94 2345</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/10/94 0745</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/10/94 1037</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5-10-94 1110</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

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TANK FARM PLANT OPERATING PROCEDURE

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COPY (3)

CHAIN OF CUSTODY FORM ADDENDUM 1A

COMPANY CONTACT	B.H. VON BARGEN	TELEPHONE	373-1829
BILL OF LADING No.	N.A.	OFFSITE PROPERTY No.	N.A.
METHOD OF SHIPMENT	B-PLANT SAMPLE TRUCK		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. MCMULLEN	DATE	5/16/94
SAMPLE LOCATIONS	242-A	CUSTODY SEAL No.	2645
REMARKS			
ICE CHEST OR SAMPLE PIG No.	B-25	SAMPLE CONTAINER No.	V-89-A
DESTINATION	222-S LAB		

(HP) HPT SHIPPING CONTAINER RELEASE: [Signature] DATE: 5-17-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)	
V-89	

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
<u>[Signature]</u>	<u>[Signature]</u>	5/16/94 1339
Relinquished by:	Received by:	Date/Time:
<u>[Signature]</u>	<u>[Signature]</u>	5/16/94 1610
Relinquished by:	Received by:	Date/Time:
<u>[Signature]</u>	<u>[Signature]</u>	5/16/94 2330
Relinquished by:	Received by:	Date/Time:
<u>[Signature]</u>	<u>[Signature]</u>	5-17-94 0715
Relinquished by:	Received by:	Date/Time:
<u>[Signature]</u>	<u>[Signature]</u>	5-17-94 0947
Relinquished by:	Received by:	Date/Time:
<u>[Signature]</u>	<u>[Signature]</u>	5-17-94 1000
Relinquished by:	Received by:	Date/Time:
<u>[Signature]</u>	<u>[Signature]</u>	5-17-94 1045

see 10/1/94

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CHAIN OF CUSTODY FORM ADDENDUM 1A,

COMPANY CONTACT	B.H. VON BARGEN	TELEPHONE	373-1829
BILL OF LADING No.	N.A.	OFFSITE PROPERTY No.	N.A.
METHOD OF SHIPMENT	B-PLANT SAMPLE TRUCK		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5-16-94 TIME 1130
SAMPLE LOCATIONS	242-A	CUSTODY SEAL No.	2646
REMARKS			
ICE CHEST OR SAMPLE PIG No.	G-10	SAMPLE CONTAINER No.	V-89-B
DESTINATION	222-S LAB		

(HP)

HPT SHIPPING CONTAINER RELEASE:

[Signature]

DATE: 5-17-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)
V-89

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	5/16/94 1339
Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	5/16/94 1610
Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	5/16/94 2330
Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	5-17-94 0715
Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	5-17-94 0947
Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	5-17-94 1000
Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	05-17-94 1045

[Signature]
10/17/94

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CHAIN OF CUSTODY FORM

ADDENDUM 1A,

COMPANY CONTACT:	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No:	N/A	OFFSITE PROPERTY No:	N/A
METHOD OF SHIPMENT:	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY:	J.W. McMullen	DATE	5/23/94 TIME 1215
SAMPLE LOCATIONS:	242-A - Slurry	CUSTODY SEAL No:	2638
REMARKS:	This COC is used for the first of two 60 mL slurry samples in a glass bottle labeled V93.		
ICE CHEST OR SAMPLE PIG No:	B-25	SAMPLE CONTAINER No:	S.N. 15266-1 V93A
DESTINATION:	222-S Laboratory		

(HP) HPT SHIPPING CONTAINER RELEASE: Cand R. Chup DATE: 5-24-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)
V93

CHAIN OF POSSESSION

Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5-23-94 1435</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/23/94 2355</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/24/94 0810</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/24/94 0908</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/24/94 0957</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

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ADDENDUM 1A,

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CHAIN OF CUSTODY FORM

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5/23/94 TIME 1215
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2639
REMARKS	This COC is used for the second of two 60 mL slurry samples in a glass bottle labeled V93.		
ICE CHEST OR SAMPLE PIG No.	B-21	SAMPLE CONTAINER No.	V93B 201* H-2-74448
DESTINATION	222-S Laboratory		

(HP) HPT SHIPPING CONTAINER RELEASE: C and R. Chrytel DATE: 5-24-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)
V93

CHAIN OF POSSESSION

Relinquished by: <u>J.W. McMullen</u>	Received by: <u>Brian Butts</u>	Date/Time: <u>5-23-94 1435</u>
Relinquished by: <u>B. Butts</u>	Received by: <u>W.A.</u>	Date/Time: <u>5/23/94 2355</u>
Relinquished by: <u>W.A.</u>	Received by: <u>B.J. Thornton</u>	Date/Time: <u>5/24/94 0810</u>
Relinquished by: <u>B.J. Thornton</u>	Received by: <u>M.H. Stutz</u>	Date/Time: <u>5/24/94 0908</u>
Relinquished by: <u>M.H. Stutz</u>	Received by: <u>T. L. L. L.</u>	Date/Time: <u>5/24/94 0957</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

sent 10/17/94

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CHAIN OF CUSTODY FORM ADDENDUM 1A,

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY:	<i>Tom Parrell</i>	DATE	6-9-94 TIME: 1130
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2291
REMARKS	This COC is used for the first of two 60 mL slurry samples in a glass bottle labeled V97. This sample is for inorganic and radiochemistry analysis.		
ICE CHEST OR SAMPLE PIG No.	G-10	SAMPLE CONTAINER No.	V97-A
DESTINATION	222-S Laboratory		

(HP) HPT SHIPPING CONTAINER RELEASE: _____ DATE: _____

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)
V97

CHAIN OF POSSESSION

Relinquished by: <i>Tom Parrell</i>	Received by: <i>W.H.</i>	Date/Time: 6/9/94 1515
Relinquished by: <i>W.H.</i>	Received by: <i>GBach</i>	Date/Time: 6/9/94 2350
Relinquished by: <i>GBach</i>	Received by: <i>St. 7-1</i>	Date/Time: 6-10-94 0655
Relinquished by: <i>St. 7-1</i>	Received by: <i>St. Thornton</i>	Date/Time: 6-10-94 0830
Relinquished by: <i>St. Thornton</i>	Received by: <i>St. Thornton</i>	Date/Time: 6/10/94 1043
Relinquished by: <i>St. Thornton</i>	Received by: <i>St. Thornton</i>	Date/Time: 06-10-94 1100
Relinquished by:	Received by:	Date/Time:

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ADDENDUM 1A,

CHAIN OF CUSTODY FORM

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY:	<i>[Signature]</i>	DATE	6-9-94 TIME: 1130
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2292
REMARKS	This COC is used for the second of two 60 mL slurry samples in a glass bottle labeled V97. This sample is for inorganic and radiochemistry analysis.		
ICE CHEST OR SAMPLE PIG No.	G-3	SAMPLE CONTAINER No.	V 97-B
DESTINATION	222-S Laboratory		

(HP) HPT SHIPPING CONTAINER RELEASE: _____ DATE: _____

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)
V97

CHAIN OF POSSESSION

Relinquished by: <i>[Signature]</i>	Received by: <i>W A</i>	Date/Time: 6/9/94 1515
Relinquished by: <i>[Signature]</i>	Received by: <i>GBell</i>	Date/Time: 6/9/94 2330
Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date/Time: 6-10-94 0655
Relinquished by: <i>[Signature]</i>	Received by: <i>BQ Thornton</i>	Date/Time: 6-10-94 0830
Relinquished by: <i>BQ Thornton</i>	Received by: <i>[Signature]</i>	Date/Time: 6/10/94 1043
Relinquished by: <i>[Signature]</i>	Received by: <i>Sandra Cobb</i>	Date/Time: 6-10-94 1120
Relinquished by:	Received by:	Date/Time:

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ADDENDUM 1A,

CHAIN OF CUSTODY FORM

COMPANY CONTACT	BH Von Bargen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5-9-94 TIME 1130
SAMPLE LOCATIONS	242-A - Slurry (field blank)	CUSTODY SEAL No.	2435
REMARKS	This COC is used for the 60 mL slurry field blank sample in a glass bottle labeled V101.		
ICE CHEST OR SAMPLE PIG No.	N/A	SAMPLE CONTAINER No.	V101
DESTINATION	222-S Laboratory		

(HP) HPT SHIPPING CONTAINER RELEASE: OK. Hallahan DATE: 5-10-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)
V101

CHAIN OF POSSESSION

Relinquished by: <u>J.W. McMullen</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/5/94 1520</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/9/94 2345</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/10/94 0745</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/10/94 1037</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5-10-94 1125</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u> </u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u> </u>

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REQUEST FOR SPECIAL ANALYSIS (RSA)

RSA No.

1874

Sample Origin Slurry, 242-A Evaporator (Protocol Analyses)		2. Date Submitted 3/30/94		4. Requester Name George L. Miller		6. Charge Code/Work Package NIA 7F	
		3. Submitted By George L. Miller		5. Requester Phone/MSIN 373-4739 / T6-06		7. Date Required	
8. Customer ID SLY-A		Collected Date Time		9. Laboratory ID V81 A+B		12. Number of Samples 1	
						13. Volume of Samples 60 ml	
						14. Protocols Technology per ☐ None ☒ RCRA ☐ NQA-1 ☐ Other ☐ CERCLA (Same as 108-A)	
						15. Sample Type ☐ Solid ☐ Soil ☒ Slurry ☐ Gas ☐ Water ☐ Waste ☐ Solution ☐ Sludge ☐ Oil ☐ Other (specify)	
						16. Storage Requirements ☒ None ☐ Specify	
						17. Process Knowledge/Known Listed Wastes ☐ Unknown ☒ Known (Please attach list) Prior Evaporator Runs ☐ Previously submitted for this Project	
10. Determination DIRECT: • APPEARANCE • SPECIFIC GRAVITY • HYDROXIDE • MERCURY • TRITIUM ACID DIGESTION: • ICP • ARSENIC • SELENIUM • GEA • STRONTIUM-90 • PLUTONIUM-239/240 • AMERICIUM-241 • TOTAL ALPHA • TOTAL BETA WATER (DIGESTION) DILUTION: • IC • AMMONIA • CYANIDE • TIC (CARBONATE)		11. Expected Range		18. Survey L. J. Janard HPT Signature Dose Rate 450A Corrected			
				19. Disposition of Waste ☐ Return to Client/Location ☐ Dispose per 222-S Procedures ☒ Other Per TPP: WHC-SD-WM-TPP-048			
				20. Additional Information V79 STD V80 Blank V82 STD 301			
21. Chain of Custody ☐ No ☒ Yes Number: Seal #: 2605 (A) 2606 (B)				22. Assigned Custodial Group (select one) ☐ PCL ☒ POSU ☐ ENV ☐ Process 10/1/94			
23. Sample Received By: Sandra Cobb Date: 05-05-94 Time: 1330				24. Laboratory Manager (if required) 1A-156 041 Date:			

REQUEST FOR SPECIAL ANALYSIS (RSA)

RSA No.

1875

1. Sample Origin Jury, 242-A Evaporator (Protocol Analyses)			2. Date Submitted 3/30/94		4. Requester Name George L. Miller		6. Charge Code/Work Package NIA7F		
			3. Submitted By George L. Miller		5. Requester Phone/MSIN 373-4739 / T6-06		7. Date Required		
8. Customer ID SLY-A		Collected Date Time		9. Laboratory ID V85		12. Number of Samples 1		13. Volume of Samples 60 ml	
						14. Protocols Technology per ☐ None ☒ RCRA ☐ NQA-1 ☐ Other ☐ CERCLA (Same as 108-A)			
						15. Sample Type ☐ Solid ☐ Soil ☒ Slurry ☐ Gas ☐ Water ☐ Waste ☐ Solution ☐ Sludge ☐ Oil ☐ Other (specify) _____			
						16. Storage Requirements ☒ None ☐ Specify _____			
						17. Process Knowledge/Known Listed Wastes ☐ Unknown ☒ Known (Please attach list) Prior Evaporator Runs ☐ Previously submitted for this Project			
10. Determination DIRECT: • Appearance • Specific Gravity • Hydroxide • Mercury • Tritium ACID DIGESTION: • ICP • As • Se • GEA • Sr-90 • Pu-239/240 • Am-241 • Total Alpha • Total Beta WATER (DIGESTION) DILUTION: • IC • Ammonia • Cyanide • TIC (Carbonate)		11. Expected Range		18. Survey Dose Rate _____ HPT Signature		19. Disposition of Waste ☐ Return to Client/Location _____ ☐ Dispose per 222-S Procedures ☒ Other per TPP: WHC-SD-WM-TPP-048			
21. Chain of Custody ☐ No ☒ Yes Number: Seal #:				22. Assigned Custodial Group (select one) ☐ PCL ☒ PSDU ☐ ENV ☐ Process		23. Sample Received By: M. Lupins Date: 5-10-94 Time: 1110		24. Laboratory Manager (if required) 1A157 Date: 042	

REQUEST FOR SPECIAL ANALYSIS (RSA)

RSA No.

1876

1. Sample Origin Slurry, 242-A Evaporator (Protocol Analyses)		2. Date Submitted 3/30/94		4. Requester Name George L. Miller		6. Charge Code/Work Package NIA7F	
3. Submitted By George L. Miller		5. Requester Phone/MSIN 373-4739 / T6-06		7. Date Required			
8. Customer ID		Collected		9. Laboratory ID		12. Number of Samples	
		Date				13. Volume of Samples	
		Time				14. Protocols Technology per	
SLY-A-A		Seal # 2645		V89-A		☐ None ☒ RCRA	
SLY-A-B		Seal # 2646		V89-B		☐ NQA-1 ☐ Other	
						☐ CERCLA (same as 108-A-P)	
						15. Sample Type	
						☐ Solid ☐ Soil ☒ Slurry	
						☐ Gas ☐ Water ☐ Waste	
						☐ Solution ☐ Sludge ☐ Oil	
						☐ Other (specify)	
						16. Storage Requirements	
						☒ None WHC-SD-WM-DP-067, REV. 0	
						☐ Specify ADDENDUM 1A,	
						17. Process Knowledge/Known Listed Wastes	
						☐ Unknown	
						☒ Known (Please attach list) Prior Evaporator Runs	
						☐ Previously submitted for this Project	
10. Determination		11. Expected Range		18. Survey		Dose Rate	
DIRECT:				HPT Signature			
• Appearance							
• Specific Gravity							
• Hydroxide							
• Mercury							
• Tritium							
ACID DIGESTION:				19. Disposition of Waste			
• ICP				☐ Return to Client/Location			
• As				☐ Dispose per 222-S Procedures			
• Se				☒ Other Per TPP: WHC-SD-WM-TPP-048			
• GEA							
• Sr-90							
• Pu-239/240							
• Am-241							
• Total Alpha							
• Total Beta							
WATER (DIGESTION) DILUTION:				20. Additional Information			
• IC				V87 STD			
• Ammonia				V88 Blank			
• Cyanide				V90 STD			
• TIC (Carbonate)				326			
21. Chain of Custody				22. Assigned Custodial Group (select one)			
☐ No				☐ PCL ☒ PSDU ☐ ENV ☐ Process			
☒ Yes Number: Seal #:							
23. Sample Received By: [Signature]				24. Laboratory Manager (if required)			
Date: 05-17-94 Time: 1045				1A-158		043	
						Date:	

REQUEST FOR SPECIAL ANALYSIS (RSA)					RSA No. 1877	
1. Sample Origin <i>Slurry, 242-A Evaporator</i>		2. Date Submitted <i>3/30/94</i>		4. Requester Name <i>George L Miller</i>		6. Charge Code/Work Package <i>NIA7F</i>
3. Submitted By <i>George L Miller</i>		5. Requester Phone/MSIN <i>373-4739 / T6-06</i>		7. Date Required		
8. Customer ID <i>SLY-A</i>	Collected Date _____ Time _____		9. Laboratory ID <i>V93</i>	12. Number of Samples <i>1</i>	13. Volume of Samples <i>60 ml</i>	14. Protocols Technology per ☐ None ☒ RCRA ☐ NQA-1 ☐ Other ☐ CERCLA (<i>same as 108-A</i>)
				15. Sample Type ☐ Solid ☐ Soil ☒ Slurry ☐ Gas ☐ Water ☐ Waste ☐ Solution ☐ Sludge ☐ Oil ☐ Other (specify) _____		
				16. Storage Requirements ☒ None <i>WHC-SD-WM-DP-067, REV. 0</i> ☐ Specify <i>ADDENDUM 1A,</i>		
				17. Process Knowledge/Known Listed Wastes ☐ Unknown ☒ Known (Please attach list) <i>Prior Evaporator Runs</i> ☐ Previously submitted for this Project		
				18. Survey _____ Dose Rate _____ HPT Signature _____		
				19. Disposition of Waste ☐ Return to Client/Location _____ ☐ Dispose per 222-S Procedures ☒ Other <i>Per TPP: WHC-SD-WM-TPP-048</i>		
				20. Additional Information <i>V91 STD</i> <i>V92 Blank</i> <i>V94 STD</i> <i>357</i>		
				21. Chain of Custody ☐ No ☒ Yes Number: <i>See #:</i>		
				22. Assigned Custodial Group (select one) ☐ PCL ☒ PDSU ☐ ENV ☐ Process <i>10/17/94</i>		
				23. Sample Received By: <i>[Signature]</i> Date: <i>5-24-94</i> Time: <i>0957</i>		
				24. Laboratory Manager (if required) <i>1A-153</i> 044		

REQUEST FOR SPECIAL ANALYSIS (RSA)					RSA No. 1878		
1. Sample Origin Slurry, 242-A Evaporator (protocol Analyses)		2. Date Submitted 3/30/94		4. Requester Name George L Miller		6. Charge Code/Work Package N1A7F	
		3. Submitted By George L Miller		5. Requester Phone/MSIN 373-4739 / T6-06		7. Date Required.	
8. Customer ID		Collected		9. Laboratory ID		12. Number of Samples	
		Date				13. Volume of Samples	
		Time				14. Protocols Technology per	
SLY-A/A		Seal # 2251		V 97A		☐ None ☒ RCRA	
SLY-A/B		Seal # 2252		V 97B		☐ NQA-1 ☐ Other	
						☐ CERCLA (Same as 108-AP)	
						15. Sample Type	
						☐ Solid ☐ Soil ☒ Slurry	
						☐ Gas ☐ Water ☐ Waste	
						☐ Solution ☐ Sludge ☐ Oil	
						☐ Other (specify)	
						16. Storage Requirements	
						☒ None	
						☐ Specify WHC-SD-WM-DP-067, REV. 0	
						ADDENDUM 1A,	
						17. Process Knowledge/Known Listed Wastes	
						☐ Unknown	
						☒ Known (Please attach list) (Prior Evaporator Runs)	
						☐ Previously submitted for this Project	
10. Determination		11. Expected Range		18. Survey		Dose Rate	
DIRECT:		Additional Analysis 7-8-94		HPT Signature		2022	
• Appearance		C-14					
• Specific Gravity		Se-79					
• Hydroxide		Tc-99					
• Mercury							
• Tritium							
ACID DIGESTION:		I-129					
• ICP		U-Gross					
• AS							
• Se							
• GEA							
• Sr-90							
• Pu-239/240							
• Am-241							
• Total Alpha							
• Total Beta							
WATER (DIGESTION) DILUTION:							
• IC							
• Ammonia							
• Cyanide							
• TIC (Carbonate)							
21. Chain of Custody				22. Assigned Custodial Group (select one)			
☐ No				☐ PCL		☒ PDSU	
☒ Yes		Number: Seal #:		☐ ENV		☐ Process	
23. Sample Received By: Sandra Cobb				24. Laboratory Manager (if required)			
Date: 06-10-94		Time: 1120		1/1/100		045	
						Date:	

REQUEST FOR SPECIAL ANALYSIS (RSA)					RSA No.	
1. Sample Origin Field Blank, 242-A Evaporator		2. Date Submitted 3/30/94		4. Requester Name George L. Miller		
		3. Submitted By George L. Miller		5. Requester Phone/MSIN 373-4739 / T6-06		
6. Charge Code/Work Package NIA 7F		7. Date Required				
8. Customer ID		9. Laboratory ID		12. Number of Samples		
Field Blank		V101		1		
				13. Volume of Samples 60 ml		
				14. Protocols Technology per ☐ None ☒ RCRA ☐ NQA-1 ☐ Other ☐ CERCLA (Same as LOG-AP)		
				15. Sample Type ☐ Solid ☐ Soil ☒ Slurry ☐ Gas ☐ Water ☐ Waste ☐ Solution ☐ Sludge ☐ Oil ☐ Other (specify) _____		
				16. Storage Requirements ☒ None ☐ Specify WHC-SD-WM-DP-067, REV. 0 ADDENDUM 1A,		
				17. Process Knowledge/Known Listed Wastes ☐ Unknown ☒ Known (Please attach list) Prior Evaporator Runs ☐ Previously submitted for this Project		
10. Determination		11. Expected Range		18. Survey		
DIRECT:				Dose Rate		
• Appearance				HPT Signature		
• Specific Gravity						
• Hydroxide				19. Disposition of Waste		
• Mercury				☐ Return to Client/Location _____		
• Tritium				☐ Dispose per 222-S Procedures		
ACID DIGESTION:				☒ Other per TPP: WHC-SD-WM-TPP-048		
• ICP				20. Additional Information		
• As				V99 STD		
• Se				V100 Blank		
• GEA				V102 STD		
• Sr-90						
• Pu-239/240						
• Am-241						
• Total Alpha						
• Total Beta						
WATER (DIGESTION) DILUTION:						
• IC						
• Ammonia						
• Cyanide						
• TIC (Carbonate)						
21. Chain of Custody		22. Assigned Custodial Group (select one)		24. Laboratory Manager (if required)		
☐ No		☐ PCL ☒ POSU ☐ ENV ☐ Process		161		
☒ Yes Number: Seal #:				046		
23. Sample Received By: 7. Lopez				Date: 5-10-94 Time: 1110		

MEMORANDUM

TO: 242-A Project QA Record

FR: Sandra Schildt, Golder Associates Inc. *SS*

RE: RADIOCHEMISTRY ANALYSIS DATA VALIDATION SUMMARY FOR DATA PACKAGE
V81-222-094 (943-1610.009)

INTRODUCTION

This memorandum presents the results of data validation on data package V81-222-094 prepared by the 222-S laboratory. A list of the samples validated along with the analyses reported and the method of analysis is provided in the following table.

LABORATORY SAMPLE ID	CLIENT SAMPLE ID	SAMPLE DATE	SAMPLE TYPE	ANALYSIS
V81	V81	5/4/94	Field Blank	see Note 1
V85	V85	5/9/94		
V89	V89	5/16/94		
V93	V93	5/23/94		
V97	V97	6/9/94		
V101	V101	5/9/94		

Note 1. Samples were requested to be analyzed for tritium, strontium-90, plutonium-239/240, americium-241, total alpha/beta, and gamma energy analysis. Additionally, sample V97 was requested to be analyzed for carbon-14, selenium-79, technetium-99, and iodine-129.

Data validation was conducted in accordance with 242-A Evaporator Sampling Quality Assurance Project Plan and Level B procedures as specified in Data Validation for RCRA Analyses, Section 2.0 (WHC 1990). Validation was performed on 100% of the samples reported.

This report contains four appendices. The appendices are as follows:

- Appendix 1. Annotated Laboratory Forms
- Appendix 2. Data Assessment Forms
- Appendix 3. Laboratory Case Narrative
- Appendix 4. Chain of Custody Information

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

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Jm

Detection Limits. Detection limit goals were met for all analyses with the exception of cesium-137, ruthenium-106, tritium, and plutonium-239/240.

Completeness. The data package was complete for all requested analyses. Six samples (6) were validated in this data set with a total of 68 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent which meets normal work plan objectives of 90%.

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

Minor deficiencies were identified during data validation which required qualification of the data.

Matrix Spike

- The recovery of tritium was less than 75% in samples V81 and V101. Associated results have been qualified as estimated (J, UJ).
- Matrix spikes of tritium, plutonium-239/240, americium-241, and strontium-90 were not performed for sample V97. No qualification required.

Laboratory Control Sample

- The recovery of carbon-14 in the laboratory control standard was less than 75% in sample V97. Associated results have been qualified as estimated (J).

REFERENCES

WHC 1990, Data Validation for RCRA Analysis, WHC-CM-5-3, August 27, 1990. Westinghouse Hanford Company, Richland, Washington.

WHC 1994, 242-A Evaporator Sampling Quality Assurance Project Plan, WHC-SD-WM-QAPP-009, Rev. 1. Westinghouse Hanford Company, Richland, Washington.

GLOSSARY OF RADIOCHEMISTRY DATA REPORTING QUALIFIERS

- U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample detection limit corrected for sample aliquot size, dilution factors and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.
- UJ - Indicates the constituent was analyzed for and was not detected. Due to a minor quality control deficiency identified during data validation, the concentration reported may not accurately reflect the sample detection limit. The associated data have been qualified as estimated but should be considered usable for decision making purposes.
- J - Indicates the constituent was analyzed for and detected. Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.
- UR - Indicates the constituent was analyzed for and not detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.
- R - Indicates the constituent was analyzed for and detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

WHC-SD-WM-DP- 067
ADDENDUM 1A REV. 0

APPENDIX 1
ANNOTATED LABORATORY REPORTS

1A 165

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GEAT.WK3

CESIUM 134 BY GAMMA ENERGY ANALYSIS
ACID DIGEST
LA-548-121/D-0

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result uCi/mL	Duplicate Result uCi/mL	Average Result uCi/mL	Sample RPD %	Detection Limit uCi/mL	CS-137 Standard uCi/L	CS-137 Standard % Rec.	CS-137 %Counting Error	CO-60 STD uCi/L	CO-60 STD % Rec	CO-60 %Counting Error	Preparation Blank uCi/mL	Standard I.D.	Blank I.D.
V97	6/9/94	SLY-A-5	2.90E-01	2.79E-01	2.84E-01	3.89	2.44E-02	2.63E+01	104.7	5.7	2.01E+01	96.9	4.83	<2.44E-02	V95	V96

1A 166

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WHC-SD-WM-DP-067, REV.0
ADDENDUM 1A,

GEAT.WK3

CESIUM 137 BY GAMMA ENERGY ANALYSIS
ACID DIGEST
LA-548-121/D-0

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS								QC IDENTIFICATION	
Sample I.D.	Date Collected	Lab I.D.	Sample Result uCi/mL	Duplicate Result uCi/mL	Average Result uCi/mL	Sample RPD %	Detection Limit uCi/mL	CS-137 Standard uCi/L	CS-137 Standard % Rec.	CS-137 %Counting Error	CO-60 STD uCi/L	CO-60 STD % Rec	CO-60 %Counting Error	Preparation Blank uCi/mL	Standard I.D.	Blank I.D.
V81	5/4/94	SLY-A-1	2.36E+01	2.38E+01	2.37E+01	0.51	7.87E-03	2.65E+01	104.7	5.3	2.16E+01	104.6	4.8	<7.87E-03	V79	V80
V85	5/9/94	SLY-A-2	2.43E+01	2.41E+01	2.42E+01	0.91	1.25E-03	2.55E+01	101.5	5.0	2.14E+01	103.2	4.2	<1.25E-03	V83	V84
V89	5/16/94	SLY-A-3	3.21E+01	3.20E+01	3.21E+01	0.31	7.76E-03	2.46E+01	98.2	5.4	2.17E+01	104.8	4.7	<7.76E-03	V87	V88
V93	5/23/94	SLY-A-4	2.74E+01	2.68E+01	2.71E+01	1.92	6.50E-03	2.53E+01	100.9	4.9	2.14E+01	103.1	4.4	<6.50E-03	V91	V92
V97	6/9/94	SLY-A-5	9.84E+01	9.39E+01	9.61E+01	4.73	2.80E-02	2.63E+01	104.7	5.7	2.01E+01	96.9	4.8	<2.80E-02	V95	V96
V101	5/9/94	FIELD BLANK	<5.45E-04	<5.16E-04	NA	NA	5.22E-04	2.49E+01	99.2	5.5	2.01E+01	96.2	4.9	<5.22E-04	V99	V100

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

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10/13/94

GEAT.WK3

COBALT 60 BY GAMMA ENERGY ANALYSIS
ACID DIGEST
LA-548-121 / D-0

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS								QC IDENTIFICATION	
Sample I.D.	Date Collected	Lab I.D.	Sample Result uCi/mL	Duplicate Result uCi/mL	Average Result uCi/mL	Sample RPD %	Detection Limit uCi/mL	CS-137 Standard uCi/L	CS-137 Standard % Rec.	CS-137 %Counting Error	CO-60 STD uCi/L	CO-60 STD % Rec	CO-60 %Counting Error	Preparation Blank uCi/mL	Standard I.D.	Blank I.D.
V97	6/9/94	SLY-A-5	<2.48E-02	<2.25E-02	NA	NA	1.65E-02	2.63E+01	104.7	5.7	2.01E+01	96.9	4.83	<1.65E-02	V95	V96

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WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

GEAT.WK3

EUROPIUM 154 BY GAMMA ENERGY ANALYSIS
ACID DIGEST
LA-548-121 /D-0

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS								QC IDENTIFICATION	
Sample I.D.	Date Collected	Lab I.D.	Sample Result uCi/mL	Duplicate Result uCi/mL	Average Result uCi/mL	Sample RPD %	Detection Limit uCi/mL	CS-137 Standard uCi/L	CS-137 Standard % Rec.	CS-137 %Counting Error	CO-60 STD uCi/L	CO-60 STD % Rec	CO-60 %Counting Error	Preparation Blank uCi/mL	Standard I.D.	Blank I.D.
V97	6/9/94	SLY-A-5	<6.20E-02	<7.42E-02	NA	NA	6.37E-02	2.63E+01	104.7	5.7	2.01E+01	96.9	4.83	<6.37E-02	V95	V96

14-169

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WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

EUROPIUM 155 BY GAMMA ENERGY ANALYSIS
ACID DIGEST
LA-548-121/D-0

SAMPLE INFORMATION			SAMPLE RESULTS					QC RESULTS						QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result uCi/mL	Duplicate Result uCi/mL	Average Result uCi/mL	Sample RPD %	Detection Limit uCi/mL	CS-137 Standard uCi/L	CS-137 Standard % Rec.	CS-137 %Counting Error	CO-60 STD uCi/L	CO-60 STD % Rec	CO-60 %Counting Error	Preparation Blank uCi/mL	Standard I.D.	Blank I.D.
V97	6/9/94	SLY-A-5	<1.81E-1	<1.78E-1	NA	NA	6.41E-02	2.63E+01	104.70	5.67	2.01E+01	96.90	4.83	<6.41E-02	V95	V96

WHC-SD-WM-DP-067, REV.0
ADDENDUM 1A,

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112

10/13/94

GEAT.WK3

RUTHENIUM / RHODIUM -106 BY GAMMA ENERGY ANALYSIS
ACID DIGEST
LA-548-121/D-0

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS								QC IDENTIFICATION	
Sample I.D.	Date Collected	Lab I.D.	Sample Result uCi/mL	Duplicate Result uCi/mL	Average Result uCi/mL	Sample RPD %	Detection Limit uCi/mL	CS-137 Standard uCi/L	CS-137 Standard % Rec.	CS-137 %Counting Error	CO-60 STD uCi/L	CO-60 STD % Rec.	CO-60 %Counting Error	Preparation Blank uCi/mL	Standard I.D.	Blank I.D.
V81	5/4/94	SLY-A-1	<3.59E-01	<3.66E-01	NA	NA	5.15E-02	2.65E+01	104.7	5.3	2.16E+01	104.6	4.8	<5.15E-02	V79	V80
V85	5/9/94	SLY-A-2	<2.86E-01	<2.93E-01	NA	NA	4.32E-02	2.55E+01	101.5	5.0	2.14E+01	103.2	4.2	<4.32E-02	V83	V84
V89	5/16/94	SLY-A-3	<4.22E-01	<4.17E-01	NA	NA	4.24E-02	2.46E+01	98.2	5.4	2.17E+01	104.8	4.7	<4.24E-02	V87	V88
V93	5/23/94	SLY-A-4	<3.02E-01	<3.00E-01	NA	NA	4.07E-02	2.53E+01	100.9	4.9	2.14E+01	103.1	4.4	<4.07E-02	V91	V92
V97	6/9/94	SLY-A-5	<1.34E+00	<1.31E+00	NA	NA	3.60E-01	2.63E+01	104.7	5.67	2.01E+01	96.9	4.83	<3.60E-01	V95	V96
V101	5/9/94	FIELD BLANK	<7.60E-03	<7.80E-03	NA	NA	7.96E-03	2.49E+01	99.2	5.5	2.01E+01	96.2	4.9	<7.96E-03	V99	V100

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

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113

10/13/94
10/13/94

14-171

H3_1.wk1

TRITIUM
Direct Analysis
LA-218-114/A-2 and A-3

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result uCi/mL	Duplicate Result uCi/mL	Average Result uCi/mL	Sample RPD %	Detection Limit uCi/mL	Standard Result uCi/L	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Preparation Blank uCi/mL	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	5.09E-3	4.83E-3	4.96E-3	5.24	1.28E-5	7.91E-1	101.5	64.4	77.6	0.9	<1.28E-5	V79	V80	V81
V85	5/9/94	SLY-A-2	3.76E-3	3.70E-3	3.73E-3	1.6	3.17E-6	7.39E-1	94.9	100.7	101.1	0.4	<3.17E-6	V83	V84	V85
V89	5/16/94	SLY-A-3	2.94E-3	3.16E-3	3.05E-3	7.2	3.58E-6	7.82E-1	100.4	100.7	105.7	4.8	<3.58E-6	V87	V88	V89
V93	5/23/94	SLY-A-4	4.17E-3	4.18E-3	4.18E-3	0.2	3.41E-6	6.95E-1	89.2	118.2	116.1	1.8	<3.41E-6	V91	V92	V93
V97	5/23/94	SLY-A-5	4.89E-3	4.89E-3	4.89E-3	0.0	3.30E-6	7.27E-1	93.3	NA	NA	NA	<3.33E-6	V95	V96	NA
V97	5/23/94	SLY-A-5	5.37E-3	4.56E-3	4.96E-3	16.3	3.41E-6	6.38E-1	96.2	NA	NA	NA	<3.41E-6	V95	V96	NA
V101	5/9/94	Field Blank	<3.28E-6	<3.28E-6	NA	NA	3.28E-6	7.33E-1	94.1	68.2	67	6.1	<3.28E-6	V99	V100	V101

WMC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

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114

4-11/13/94

114172

C-14.WK1

CARBON 14
Direct
LA-348-104/B-1

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result $\mu\text{Ci/ml}$	Duplicate Result $\mu\text{Ci/ml}$	Average Result $\mu\text{Ci/ml}$	Sample RPD %	Detection Limit $\mu\text{Ci/ml}$	Standard Result $\mu\text{Ci/L}$	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Reagent Blank $\mu\text{Ci/ml}$	Standard I.D.	Blank I.D.	Spike I.D.
V97	6/9/94	SLY-A-5	1.57E-4	1.72E-4	1.64E-4	9.11	4.38E-6	1.24	70.1	NA	NA	NA	<4.38E-6	V95	V96	NA

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

1/1-173

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415

444-104
10/13/94

Se79.wk3

SELENIUM-79
Direct
LA-365-132/B-2

SAMPLE INFORMATION			SAMPLE RESULTS					QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result uCi/mL	Duplicate Result uCi/mL	Average Result uCi/mL	Sample RPD %	Detection Limit uCi/mL	Standard Result uCi/L	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Reagent Blank uCi/mL	COUNTING ERROR %	Standard I.D.	Blank I.D.	Spike I.D.
V97	6/9/94	SLY-A-5	1.22E-1	1.30E-1	1.26E-1	6.3	1.28E-1	NA	NA	NA	NA	NA	<1.28E-3	1.2	NA	V96	NA

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

1A-174

0000010

216

10/13/94

TC99.wk3

TECHNETIUM-99
Direct
LA-438-101/D-2

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result uCi/mL	Duplicate Result uCi/mL	Average Result uCi/mL	Sample RPD %	Detection Limit uCi/mL	Standard Result uCi/L	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Reagent Blank uCi/mL	Standard I.D.	Blank I.D.	Spike I.D.
V97	6/9/94	SLY-A-5	2.81E-2	2.74E-2	2.78E-2	2.5	8.56E-6	2.36E+0	100.4	NA	NA	NA	<8.80E-6	v95	V96	NA

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

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117

10/13/94

Sr90.WK1

STRONTIUM-90
Acid Digest
LA-220-101 /D-0

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result uCi/mL	Duplicate Result uCi/mL	Average Result uCi/mL	Sample RPD %	Detection Limit uCi/mL	Standard Result uCi/L	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Reagent Blank uCi/mL	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	2.58E-01	2.42E-01	2.50E-01	6.4	7.68E-03	1.29E+00	95.6	92.6	94.9	2.5	<3.55E-03	V79	V80	V81
V85	5/9/94	SLY-A-2	1.87E-01	1.77E-01	1.82E-01	5.62	1.52E-03	1.28E+00	94.8	99.5	99.5	0.0	1.08E-02	V83	V84	V85
V89	5/16/94	SLY-A-3	1.12E-02	1.07E-02	1.10E-02	4.6	2.57E-02	1.35E+00	100.2	100.2	100.0	0.2	<2.47E-04	V87	V88	V89
V93	5/23/94	SLY-A-4	1.59E-01	1.69E-01	1.64E-01	6.1	6.41E-04	1.32E+00	97.6	105.0	94.8	10.3	4.22E-04	V91	V92	V93
V97	6/9/94	SLY-A-5	4.02E-02	4.38E-02	4.20E-02	8.6	3.66E-04	1.39E+00	103.2	NA	NA	NA	<2.49E-04	V95	V96	NA
V101	5/9/94	FIELD BLANK	6.46E-06	<1.17E-05	NA	NA	1.24E-05	1.39E+00	103.0	101.7	101.1	0.6	<8.69E-06	V99	V100	V101

WHC-SD-WM-DP-067, REV.0
ADDENDUM 1A,

11176

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228
16/13/94

I-129.WK1

IODINE-129
Direct
LA-378-103/B-3

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result uCi/mL	Duplicate Result uCi/mL	Average Result uCi/mL	Sample RPD %	Detection Limit uCi/mL	Standard Result uCi/L	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Reagent Blank uCi/mL	Standard I.D.	Blank I.D.	Spike I.D.
V97	6/9/94	SLY-A-5	<3.39E-5	<3.17E-5	NA	NA	3.2E-6	5.91E-1	91.9	NA	NA	NA	<3.20E-5	V95	V96	NA

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

16-177

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149

1/31/94

Pu-239.wk3

PLUTONIUM-239/240
Acid Digest
LA-503-156/D1

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS								QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result uCi/mL	Duplicate Result uCi/mL	Average Result uCi/mL	Sample RPD %	Detection Limit uCi/mL	Standard Result uCi/L	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Preparation Blank uCi/mL	Standard I.D.	Blank I.D.	Spike I.D.	
V81	5/4/94	SLY-A-1	4.62E-4	3.84E-4	4.23E-4	18.4	9.76E-5	1.51E+2	106.3	107.1	108.4	1.2	<5.55E-5	V79	V80	V81	
V85	5/9/94	SLY-A-2	2.25E-4	2.22E-4	2.23E-4	1.2	1.09E-4	1.53E+2	107.7	104.4	104.7	0.3	<1.05E-4	V83	V84	V85	
V89	5/16/94	SLY-A-3	<9.47E-5	2.02E-4	NA	NA	1.41E-4	1.48E+2	104.2	108.6	101.8	6.5	<1.83E-4	V87	V88	V89	
V89	5/16/94	SLY-A-3	<2.02E-4	<3.44E-4	NA	NA	3.44E-4	1.44E+2	101.3	103.7	117.5	12.5	<3.30E-4	V87	V88	V89	
V93	5/23/94	SLY-A-4	1.49E-4	1.50E-4	1.50E-4	0.6	1.45E-4	1.53E+2	107.5	103.1	104.9	1.7	<1.38E-4	V91	V92	V93	
V97	6/9/94	SLY-A-5	<6.52E-4	<5.57E-4	NA	NA	6.52E-4	1.46E+2	102.8	NA	NA	NA	<6.02E-4	V95	V96	NA	
V101	5/9/94	Field Blank	<3.48E-4	<5.53E-4	NA	NA	5.53E-4	1.50E+2	105.6	104.5	99.6	4.8	<6.54E-4	V99	V100	V101	

1/1478

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120

12/13/94

WHC-SD-WM-DP-067 REV. 0
ADDENDUM 1A,

Pu-238.wk3

PLUTONIUM-238
Acid Digest
LA-503-156/D1

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result uCi/mL	Duplicate Result uCi/mL	Average Result uCi/mL	Sample RPD %	Detection Limit uCi/mL	Standard Result * uCi/L	Standard Result * % Rec.	Sample Tracer % Rec.	Duplicate Tracer % Rec.	Counting Error %	Preparation Blank uCi/mL	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	<1.28E-4	<9.46E-5	NA	NA	1.28E-4	1.51E+2	106.3	48.0	69.6	7.9, 9.5	<8.59E-5	V79	V80	NA
V85	5/9/94	SLY-A-2	<1.70E-4	<1.67E-4	NA	NA	1.70E-4	1.53E+2	107.7	67.1	68.8	11.2, 100.0	<1.66E-4	V83	V84	NA
V89	5/16/94	SLY-A-3	<1.56E-4	<2.02E-4	NA	NA	2.02E-4	1.48E+2	104.2	70.6	52.2	9.3, 100.0	<2.44E-4	V87	V88	NA
V93	5/23/94	SLY-A-4	<2.06E-4	<1.82E-4	NA	NA	2.06E-4	1.53E+2	107.5	48.4	57.7	16.7, 13.2	<1.99E-4	V91	V92	NA
V97	6/9/94	SLY-A-5	<9.56E-4	<8.61E-4	NA	NA	9.56E-4	1.46E+2	102.8	51.0	61.4	10.6, 9.5	<9.07E-4	V95	V96	NA
V101	5/9/94	Field Blank	<4.09E-4	<6.14E-4	NA	NA	6.14E-4	1.50E+2	105.6	20.3	18.5	100.0, 100.0	<7.15E-4	V99	V100	NA

* Based on Pu-239/240

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

0000010

121

1/11/94

12/13/94

AM_241.WK3

AMERICIUM 241
Acid Digest
LA-503-156/D1

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result uCi/mL	Duplicate Result uCi/mL	Average Result uCi/mL	Sample RPD %	Detection Limit uCi/mL	Standard Result uCi/L	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Reagent Blank uCi/mL	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	1.28E-3	1.24E-3	1.26E-3	2.9	1.21E-3	2.54E+1	105.4	99.0	98.5	0.5	<1.05E-3	V79	V80	V81
V85	5/9/94	SLY-A-2	<6.41E-4	<1.69E-3	NA	NA	1.69E-3	2.20E+1	91.3	121.8	118.7	2.6	<2.46E-3	V83	V84	V85
V89	5/16/94	SLY-A-3	<3.76E-4	<4.32E-4	NA	NA	4.32E-2	2.48E+1	102.9	107.4	105.5	1.8	<3.81E-4	V87	V88	V89
V93	5/23/94	SLY-A-4	<1.21E-3	<1.70E-3	NA	NA	1.70E-3	2.40E+1	99.6	99.3	108.0	8.4	<1.67E-3	V91	V92	V93
V97	6/9/94	SLY-A-5	<1.48E-3	<1.81E-3	NA	NA	1.81E-3	2.42E+1	100.4	NA	NA	NA	<1.84E-3	V95	V96	NA
V101	5/9/94	Field Blank	<5.74E-4	<6.45E-4	NA	NA	6.45E-4	2.68E+1	111.2	102.8	98.4	4.4	<3.72E-4	V99	V100	V101

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

11-150

0000010

122

10/13/94

Cm-243.WK1

CURIUM - 243/244
Acid Digest
LA-503-156/D1

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result uCi/mL	Duplicate Result uCi/mL	Average Result uCi/mL	Sample RPD %	Detection Limit uCi/mL	Standard* Result uCi/L	Standard* % Rec.	Spike* % Rec.	Spike* Duplicate % Rec.	Spike* RPD %	Preparation Blank* uCi/mL	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/9/94	SLY-A-1	<1.21E-3	<1.01E-3	NA	NA	1.21E-3	2.54E+1	105.4	99.0	98.5	0.5	<1.05E-3	V79	V80	V81
V85	5/9/94	SLY-A-2	<6.41E-4	<1.69E-3	NA	NA	1.69E-3	2.20E+1	91.3	121.8	118.7	2.8	<2.46E-3	V83	V84	V85
V89	5/16/94	SLY-A-3	<3.76E-4	<4.32E-4	NA	NA	4.32E-4	2.48E+1	102.9	107.4	105.5	1.8	<3.81E-4	V87	V88	V89
V93	5/23/94	SLY-A-4	<1.21E-3	<1.70E-3	NA	NA	1.70E-3	2.40E+1	99.6	99.3	108.0	8.4	<1.67E-3	V91	V92	V93
V97	6/9/94	SLY-A-5	<1.48E-3	<1.81E-3	NA	NA	1.81E-3	2.42E+1	100.4	NA	NA	NA	<1.84E-3	V95	V96	NA
V101	5/9/94	Field Blank	<5.74E-4	<6.45E-4	NA	NA	6.45E-4	NA	111.2	102.8	98.4	4.4	<3.72E-4	V99	V100	V101

*Blank, Standard and Spike Values are based on AM-241.

1A-151

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123

10/13/94

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

AT-TB.WK3

TOTAL ALPHA by Proportional Counter
Acid Digest
LA-508-101/D-O

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result uCi/mL	Duplicate Result uCi/mL	Average Result uCi/mL	Sample RPD %	Detection Limit uCi/mL	Standard Result uCi/L	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Preparation Blank uCi/mL	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	<1.15E-02	<1.15E-02	<1.15E-02	NA	2.82E-02	7.64E-03	78.4	87.5	89.3	2.0	<1.15E-02	V79	V80	V81
V85	5/9/94	SLY-A-2	<1.05E-02	<1.20E-02	NA	NA	2.20E-02	9.35E-03	89.9	98.7	95.3	3.9	<1.04E-02	V83	V84	V85
V89	5/16/94	SLY-A-3	1.33E-02	1.42E-02	1.38E-02	6.5	8.98E-03	9.99E-03	102.5	91.0	94.5	3.8	<3.31E-03	V87	V88	V89
V93	5/23/94	SLY-A-4	<8.35E-03	<8.35E-03	<8.35E-03	NA	2.20E-02	7.59E-03	97.3	92.9	91.8	1.2	<8.35E-03	V91	V92	V93
V97	6/9/94	SLY-A-5	<2.30E-02	<2.30E-02	<2.30E-02	NA	5.65E-02	9.40E-03	96.4	NA	NA	NA	<2.30E-02	V95	V96	NA
V101	5/9/94	Field Blank	<9.25E-03	<9.25E-03	<9.25E-03	NA	2.44E-02	9.30E-03	119.3	114.9	112.9	1.8	<9.25E-03	V99	V100	V101

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

1/4 152

0000021

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10/13/94

AT-TB.WK3

TOTAL BETA by Proportional Counter
Acid Digest
LA-508-101/D-O

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result uCi/mL	Duplicate Result uCi/mL	Average Result uCi/mL	Sample RPD %	Detection Limit uCi/mL	Standard Result uCi/L	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Preparation Blank uCi/mL	Standard I.D.	Blank I.D.	Spike I.D.
V81	5/4/94	SLY-A-1	6.56E+01	6.49E+01	6.53E+01	1.1	7.65E-02	2.09E-01	84.6	82.3	89.1	7.9	<5.46E-02	V79	V80	V81
V85	5/9/94	SLY-A-2	3.36E+01	3.41E+01	3.39E+01	1.5	6.48E-02	2.41E-01	90.2	99.1	97.1	1.9	5.69E-02	V83	V84	V85
V89	5/16/94	SLY-A-3	4.15E+01	4.22E+01	4.19E+01	1.7	2.57E-02	2.21E-01	89.8	79.6	94.1	16.7	<1.99E-03	V87	V88	V89
V93	5/23/94	SLY-A-4	4.02E+01	3.79E+01	3.91E+01	5.9	7.15E-02	1.85E-01	93.2	95.8	104.6	8.8	<3.38E-02	V91	V92	V93
V97	6/9/94	SLY-A-5	1.34E+02	1.32E+02	1.33E+02	1.5	1.57E-01	2.28E-01	92.6	NA	NA	NA	<1.36E-01	V95	V96	NA
V101	5/9/94	Field Blank	<3.17E-02	<3.17E-02	<3.17E-02	NA	6.71E-02	1.90E-01	95.2	96.4	95.2	1.3	<3.83E-02	V99	V100	V101

WHC-SD-WM-DP-067, REV.1

ADDENDUM 1A,

0000022

125

10/13/94

11-153

WHC-SD-WM-DP-067
ADDENDUM 1A REV. 0

APPENDIX 2

DATA ASSESSMENT FORMS

1A-184

0000020

SAMPLE MANAGEMENT AND ADMINISTRATION
DATA VALIDATION FOR HIGH LEVEL
RCRA/CERCLA RADIOCHEMICAL ANALYSIS

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WHC-SD-WM-DP- 017

IX B ADDENDUM 14 REV. 0

OSH HIGH LEVEL RADIOCHEMICAL DATA ASSESSMENT

DATE 10-20-94 SAMPLE V81 V85 V89
REVIEWED BY T. Stapp V93 V97 V101
LABORATORY 222-S _____
CASE # _____
SDG # V81-222-094 _____

DATA SUMMARY

QUALITY CONTROL CHECK ANALYSIS T. Beta Sr-90 Alpha Spec

	<u>A</u>			
1. Chain of Custody	<u>A</u>			<u>→</u>
2. Initial Calibrations	<u>2</u>	<u>0</u>	<u>0</u>	<u>0</u>
3. Efficiency Checks	<u>2</u>	<u>0</u>	<u>0</u>	<u>0</u>
4. Background Checks	<u>2</u>	<u>0</u>	<u>0</u>	<u>0</u>
5. Preparation Blanks	<u>2</u>	<u>0</u>	<u>0</u>	<u>0</u>
6. MS/Tracers/Carriers	<u>2</u>	<u>0</u>	<u>0</u>	<u>0</u>
7. Duplicate Analyses	<u>2</u>	<u>0</u>	<u>0</u>	<u>0</u>
8. LCS	<u>2</u>	<u>0</u>	<u>0</u>	<u>0</u>
9. Other	<u>*0 N/A</u>	<u>N/A</u>		<u>10-20</u>

0 = data had no problem
X = data qualified due to problems
H = data qualified due to problems/some data may be unusable

OVERALL ASSESSMENT: _____

NOTES: *-Field Blanks - N/A

* Refer to the corresponding for explanation of any problems.

SAMPLE MANAGEMENT AND ADMINISTRATION

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2.4, REV 0

DATA VALIDATION FOR HIGH LEVEL
RCRA/CERCLA RADIOCHEMICAL ANALYSES

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WHC-SD-WM-DP-0117
ADDENDUM 1A REV. 0

APPENDIX B

OSH HIGH LEVEL RADIOCHEMICAL DATA ASSESSMENT

DATE 10-20-94 SAMPLES/MATRIX V81 V85 V89
 REVIEWED BY T. Stapp V93 V97 V101
 LABORATORY 222-S _____
 CASE # _____
 SDG # V81-222-094 _____

DATA ASSESSMENT SUMMARY

QUALITY CONTROL CHECK	ANALYSIS	H3	C-14	I-129
1. Chain of Custody		N/A		
2. Initial Calibrations		☒	☒	☒
3. Efficiency Checks		☒	☒	☒
4. Background Checks		☒	☒	☒
5. Preparation Blanks		☐	☐	☐
6. MS/Tracers/Carriers		X	N/A	☐
7. Duplicate Analyses		☐	☐	☐
8. LCS		☐	X	☐
9. Other		☒	N/A	N/A

FC 10-20

FC K-20

O = data had no problems

X = data qualified due to minor problems

H = data qualified due to major problems/some data may be unusable

OVERALL ASSESSMENT: XNOTES: * Field Blank. N/A - Not applicable. ¹ See Appendix D and E.

* Refer to the corresponding attachments for explanation of any problems.

1A-156

0000020

APPENDIX B

OSH HIGH LEVEL RADIOCHEMICAL DATA ASSESSMENT

DATE 10-19-94 SAMPLES/MATRIX V81 V85 V89
 REVIEWED BY T. Stapp V93 V97 V101
 LABORATORY 222-S _____
 CASE # — _____
 SDG # V81-222-094 _____

DATA ASSESSMENT SUMMARY

QUALITY CONTROL CHECK ANALYSIS GAMMA TC-99 Se-79

1. Chain of Custody	<u>N/A</u>	<u>—</u>	<u>—</u>
2. Initial Calibrations	<u>○</u>	<u>○¹</u>	<u>○¹</u>
3. Efficiency Checks	<u>○</u>	<u>○¹</u>	<u>○¹</u>
4. Background Checks	<u>○</u>	<u>○¹</u>	<u>○¹</u>
5. Preparation Blanks	<u>○</u>	<u>○</u>	<u>○</u>
6. MS/Tracers/Carriers	<u>N/A</u>	<u>○</u>	<u>○</u>
7. Duplicate Analyses	<u>○</u>	<u>○</u>	<u>○</u>
8. LCS	<u>N/A</u>	<u>○</u>	<u>N/A</u>
9. Other	<u>○*</u>	<u>N/A</u>	<u>N/A</u>

○ = data had no problems

X = data qualified due to minor problems

H = data qualified due to major problems/some data may be unusable

OVERALL ASSESSMENT: _____

NOTES: N/A - Not applicable. * Field blank. ¹ See Appendix D and E.

* Refer to the corresponding attachments for explanation of any problems.

1A-157

0000020

SAMPLE MANAGEMENT AND ADMINISTRATION

DATA VALIDATION FOR HIGH LEVEL
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ADDENDUM 1A REV. 0

APPENDIX D

HIGH LEVEL RADIOCHEMICAL QC - INITIAL CALIBRATION

Name Schultz Date 10/20/94

I-129 COMMENTS: Sample ID's could not be traced to detector ID's
for H-3, C-14, Se-79 and Tc-99 however, ICAL and CCAL criteria
are acceptable for detector information provided by Lab.

ACTION: Tritium results are qualified due to low MS recovery
C-14 result qualified due to LMS low recovery.

Sample # Constituent Value/Qual

(SLYA-1) V-81 Tritium

5.09 E-03 $\mu\text{Ci/ml}$ J~~SLYA~~

(Field Blank) V-101 Tritium

< 3.28 E-06 $\mu\text{Ci/ml}$ UT

Sample # Constituent Value/Qual

(SLYA-5) V-97 Carbon-14

1.57 E-04 $\mu\text{Ci/ml}$ J

1A-188

0000027

WHC-SD-WM-DP-1167
ADDENDUM 1A REV. 0APPENDIX D
HIGH LEVEL RADIOCHEMICAL QC - EFFICIENCY CHECKSName SchultzDate 10/20/94COMMENTS: Sample ID's not traceable to detector ID's for
I-129, H-3, C-14, Tc-99, and Se-79 however, no qualif. will be applied.

ACTION: _____

Sample #	Constituent	Value/Qual	Sample #	Constituent	Value/Qual
----------	-------------	------------	----------	-------------	------------

1A-189

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SAMPLE MANAGEMENT AND ADMINISTRATION

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DATA VALIDATION FOR HIGH LEVEL
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WHC-SD-WM-DP-067
ADDENDUM 1A REV. 0

APPENDIX E

HIGH LEVEL RADIOCHEMICAL QC - BACKGROUND

Name

Schultz

Date

10/20/94

COMMENTS:

Sample ID's not traceable to detector ID's for
I-129, H-3, C-14, Tc-99, and Se-79 however, no qualif. will be applied.

ACTION:

Sample #	Constituent	Value/Qual	Sample #	Constituent	Value/Qual
----------	-------------	------------	----------	-------------	------------

17.190

0000020

WHC-SD-WM-DP-067
ADDENDUM 1A REV. 0

APPENDIX 3

DATA SUMMARY FORMS

Validated Data Summary, Data Package: V81-222-094

Parameter	Samp# Date Location Depth Type Comments	V101 5-9-94 242-A --- WATER FIELD BLANK	V81 5-4-94 242-A --- WATER	V85 5-9-94 242-A --- WATER	V89 5-16-94 242-A --- WATER	V93 5-23-94 242-A --- WATER	V97 6-9-94 242-A --- WATER
	Units	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q
CESIUM-134	uCi/ml	NR	NR	NR	NR	NR	0.290
CESIUM-137	uCi/ml	0.001 U	23.600	24.300	32.100	27.400	98.400
COBALT-60	uCi/ml	NR	NR	NR	NR	NR	0.025 U
EUROPIUM-154	uCi/ml	NR	NR	NR	NR	NR	0.062 U
EUROPIUM-155	uCi/ml	NR	NR	NR	NR	NR	0.181 U
RUTHENIUM-106	uCi/ml	0.008 U	0.359 U	0.286 U	0.422 U	0.302 U	1.340 U
TRITIUM	uCi/ml	0.000 UJ	0.005 J	0.004 U	0.003 U	0.004 U	0.005
CARBON-14	uCi/ml	NR	NR	NR	NR	NR	0.000 J
SELENIUM-79	uCi/ml	NR	NR	NR	NR	NR	0.122
TECHNETIUM-99	uCi/ml	NR	NR	NR	NR	NR	0.028
STRONTIUM-90	uCi/ml	0.000	0.258	0.187	0.011	0.159	0.040
IODINE-129	uCi/ml	NR	NR	NR	NR	NR	0.000 U
PLUTONIUM-239/240	uCi/ml	0.000 U	0.000	0.000	0.000 U	0.000	0.001 U
PLUTONIUM-238	uCi/ml	0.000 U	0.000 U	0.000 U	0.000 U	0.000 U	0.001 U
AMERICIUM-241	uCi/ml	0.001 U	0.001	0.001 U	0.000 U	0.001 U	0.001 U
CURIUM-243/244	uCi/ml	0.001 U	0.001 U	0.001 U	0.000 U	0.001 U	0.001 U
GROSS ALPHA	uCi/ml	0.009 U	0.012 U	0.010 U	0.013	0.008 U	0.023 U
GROSS BETA	uCi/ml	0.032 U	65.600	33.600	41.500	40.200	134.000

WHC-SD-WM-DP-*Cl 7*
ADDENDUM *1A* REV. 0

0000051

*Verified
10/19/94*

1A 192

WHC-SD-WM-DP- 067
ADDENDUM 1A REV. 0

APPENDIX 4

CHAIN OF CUSTODY INFORMATION

1A193

0000030

TANK FARM PLANT OPERATING PROCEDURE

WHC-SD-WM-DP-067, REV. 0 ADDENDUM 1A

CHAIN OF CUSTODY FORM

COPY

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5-4-94 TIME 1430
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2605
REMARKS	This COC is used for the first of two 60 mL slurry samples in a glass bottle labeled V81. This sample is for inorganic and radchem analysis.		
ICE CHEST OR SAMPLE PIG No.	B-24	SAMPLE CONTAINER No.	V81 - A
DESTINATION	222-S Laboratory		

(HP)

HPT SHIPPING CONTAINER RELEASE: [Signature]

DATE: 5-5-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(s)
V81

CHAIN OF POSSESSION

Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/4/94 1625</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/4/94 2349</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5-5-94 0835</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5-5-94 1240</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>05-05-94 1330</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u> </u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u> </u>

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TANK FARM PLANT OPERATING PROCEDURE

COPY

WHC-SD-WM-DP-067, REV. 0

CHAIN OF CUSTODY FORM				ADDENDUM 1A.	
COMPANY CONTACT	BH Von Bargen	TELEPHONE	373-1829		
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A		
METHOD OF SHIPMENT	B-Plant Truck				
SAMPLING INFORMATION					
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5/4/94	TIME	1430
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2406-B		
REMARKS	This COC is used for the second of two 60 mL slurry samples in a glass bottle labeled V81. This sample is for inorganic and radchem analysis.				
ICE CHEST OR SAMPLE PIG No.	G-1	SAMPLE CONTAINER No.	V81-B		
DESTINATION	222-S Laboratory				

(HP)

HPT SHIPPING CONTAINER RELEASE: [Signature]DATE: 5-5-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(s)
V81

CHAIN OF POSSESSION

Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/4/94 1625</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/4/94 2345</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5-5-94 0835</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5-5-94 1240</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>05-05-94 1330</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u> </u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u> </u>

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TANK FARM PLANT OPERATING PROCEDURE

WHC-SD-WM-DP-067, REV. 0

CHAIN OF CUSTODY FORM

ADDENDUM 1A,

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5-9-94 1130
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2416
REMARKS	This COC is used for the first of two 60 mL slurry samples in a glass bottle labeled V85. This sample is for inorganic and radchem analysis.		
ICE CHEST OR SAMPLE PIG No.	B-25	SAMPLE CONTAINER No.	V85 - A
DESTINATION	222-S Laboratory		

(HP) HPT SHIPPING CONTAINER RELEASE: AK Hallinan DATE: 5-10-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)
V85

CHAIN OF POSSESSION

Relinquished by: <u>J.W. McMullen</u>	Received by: <u>John Bell</u>	Date/Time: <u>5/9/94 1520</u>
Relinquished by: <u>John Bell</u>	Received by: <u>John Bell</u>	Date/Time: <u>5/9/94 2345</u>
Relinquished by: <u>John Bell</u>	Received by: <u>John Bell</u>	Date/Time: <u>5/10/94 0745</u>
Relinquished by: <u>John Bell</u>	Received by: <u>John Bell</u>	Date/Time: <u>5/10/94 1037</u>
Relinquished by: <u>John Bell</u>	Received by: <u>John Bell</u>	Date/Time: <u>5-10-94 1110</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

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TANK FARM PLANT OPERATING PROCEDURE

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CHAIN OF CUSTODY FORM ADDENDUM 1A,			
COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. MCMULLEN	DATE	5/9/94 TIME 1130
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2430
REMARKS	This COC is used for the second of two 60 mL slurry samples in a glass bottle labeled V85. This sample is for inorganic and radchem analysis.		
ICE CHEST OR SAMPLE PIG No.	G-10	SAMPLE CONTAINER No.	V85 - B
DESTINATION	222-S Laboratory		

(HP) HPT SHIPPING CONTAINER RELEASE: AK. Sullivan DATE: 5-10-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)	
V85	

CHAIN OF POSSESSION

Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/5/94 1520</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/9/94 2345</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/10/94 0745</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/10/94 1037</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5-10-94 1110</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u> </u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u> </u>

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TANK FARM PLANT OPERATING PROCEDURE

WHC-SD-WM-DP-067, REV. 0

COPY 3

CHAIN OF CUSTODY FORM ADDENDUM 1A.

COMPANY CONTACT	B.H. VON BARGEN	TELEPHONE	373-1829
BILL OF LADING No.	N.A.	OFFSITE PROPERTY No.	N.A.
METHOD OF SHIPMENT	B-PLANT SAMPLE TRUCK		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J. W. MCMULLEN	DATE	5/16/94
		TIME	1130
SAMPLE LOCATIONS	242-A	CUSTODY SEAL No.	2645
REMARKS			
ICE CHEST OR SAMPLE PIG No.	B-25	SAMPLE CONTAINER No.	V-89-A
DESTINATION	222-S LAB		

(HP)

HPT SHIPPING CONTAINER RELEASE: *[Signature]*

DATE: 5-17-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)	
V-89	

CHAIN OF POSSESSION

Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date/Time: 5/16/94 1339
Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date/Time: 5/16/94 1610
Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date/Time: 5/16/94 2330
Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date/Time: 5-17-94 0715
Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date/Time: 5-17-94 0947
Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date/Time: 5-17-94 1000
Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date/Time: 5-17-94 1045

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TANK FARM PLANT OPERATING PROCEDURE

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A, ④

CHAIN OF CUSTODY FORM

COMPANY CONTACT	B.H. VON BARGEN	TELEPHONE	373-1829
BILL OF LADING No.	N.A.	OFFSITE PROPERTY No.	N.A.
METHOD OF SHIPMENT	B-PLANT SAMPLE TRUCK		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5-16-94 TIME 1130
SAMPLE LOCATIONS	242-A	CUSTODY SEAL No.	2646
REMARKS			
ICE CHEST OR SAMPLE Pkg. No.	G-10	SAMPLE CONTAINER No.	V-89-B
DESTINATION	222-S LAB		

(HP) HPT SHIPPING CONTAINER RELEASE: [Signature] DATE: 5-17-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(s)
<u>V-89</u>

CHAIN OF POSSESSION

Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/16/94 1339</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/16/94 1610</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/16/94 2320</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5-17-94 0715</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5-17-94 0947</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5-17-94 1000</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>05-17-94 1045</u>

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TANK FARM PLANT OPERATING PROCEDURE

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COPY

CHAIN OF CUSTODY FORM ADDENDUM 1A,

COMPANY CONTACT	BH Von Bargen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY:	J.W. McMullen	DATE	5/23/94 TIME 1215
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2638
REMARKS	This COC is used for the first of two 60 mL slurry samples in a glass bottle labeled V93.		
ICE CHEST OR SAMPLE PIG No.	B-25	SAMPLE CONTAINER No.	S.N. 15266-1 V93A
DESTINATION	222-S Laboratory		

(HP) HPT SHIPPING CONTAINER RELEASE: Cand R. Chup DATE: 5-24-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(s)
V93

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	5-23-94 1435
Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	5/23/94 2355
Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	5/24/94 0810
Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	5/24/94 0908
Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	5/24/94 0957
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

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TANK FARM PLANT OPERATING PROCEDURE

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ADDENDUM 1A,

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CHAIN OF CUSTODY FORM

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5/23/94
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2639
REMARKS	This COC is used for the second of two 60 mL slurry samples in a glass bottle labeled V93.		
ICE CHEST OR SAMPLE PIG No.	B-21	SAMPLE CONTAINER No.	V93B 201 x H-2-74448
DESTINATION	222-S Laboratory		

(HP) HPT SHIPPING CONTAINER RELEASE: Cand R. Chaptel DATE: 5-24-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)
V93

CHAIN OF POSSESSION

Relinquished by: <u>J.W. McMullen</u>	Received by: <u>Brian Butts</u>	Date/Time: <u>5-23-94 1435</u>
Relinquished by: <u>B. Butts</u>	Received by: <u>W.A.</u>	Date/Time: <u>5/23/94 2355</u>
Relinquished by: <u>W.A.</u>	Received by: <u>B.J. Thornton</u>	Date/Time: <u>5/24/94 0810</u>
Relinquished by: <u>B.J. Thornton</u>	Received by: <u>M.H. Smith</u>	Date/Time: <u>5/24/94 0908</u>
Relinquished by: <u>M.H. Smith</u>	Received by: <u>T. Lapins</u>	Date/Time: <u>5/24/94 0957</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

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CHAIN OF CUSTODY FORM

ADDENDUM 1A,

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY:	<i>Tom Russell</i>	DATE	6-9-94 TIME 1130
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2291
REMARKS	This COC is used for the first of two 60 mL slurry samples in a glass bottle labeled V97. This sample is for inorganic and radiochemistry analysis.		
ICE CHEST OR SAMPLE PIG No.	G-10	SAMPLE CONTAINER No.	V97-A
DESTINATION	222-S Laboratory		

(HP) HPT SHIPPING CONTAINER RELEASE: _____ DATE: _____

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)	
V97	

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
<i>Tom Russell</i>	<i>W.A.</i>	6/9/94 1515
Relinquished by:	Received by:	Date/Time:
<i>W.A.</i>	<i>G. Bachel</i>	6/9/94 2350
Relinquished by:	Received by:	Date/Time:
<i>G. Bachel</i>	<i>S. G. 757</i>	6-10-94 0655
Relinquished by:	Received by:	Date/Time:
<i>G. Bachel</i>	<i>G. Thornton</i>	6-10-94 0830
Relinquished by:	Received by:	Date/Time:
<i>G. Thornton</i>	<i>S. G. 757</i>	6/10/94 1043
Relinquished by:	Received by:	Date/Time:
<i>S. G. 757</i>	<i>S. G. 757</i>	06-10-94 1120
Relinquished by:	Received by:	Date/Time:

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10/17/94

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WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A,

CHAIN OF CUSTODY FORM

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY:	<i>[Signature]</i>	DATE	6-9-94 TIME: 1130
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2292
REMARKS	This COC is used for the second of two 60 mL slurry samples in a glass bottle labeled V97. This sample is for inorganic and radiochemistry analysis.		
ICE CHEST OR SAMPLE PIG No.	G-3	SAMPLE CONTAINER No.	V 97-B
DESTINATION	222-S Laboratory		

(HP) HPT SHIPPING CONTAINER RELEASE: _____ DATE: _____

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(s)
V97 _____

CHAIN OF POSSESSION

Relinquished by: <i>[Signature]</i>	Received by: <i>W A</i>	Date/Time: 6/9/94 1515
Relinquished by: <i>W A</i>	Received by: <i>GBell</i>	Date/Time: 6/9/94 2330
Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date/Time: 6-10-94 0655
Relinquished by: <i>[Signature]</i>	Received by: <i>BQ Sherton</i>	Date/Time: 6-10-94 0830
Relinquished by: <i>BQ Sherton</i>	Received by: <i>Murphy</i>	Date/Time: 6/10/94 1042
Relinquished by: <i>[Signature]</i>	Received by: <i>Sandra Cobb</i>	Date/Time: 06-10-94 1120
Relinquished by: _____	Received by: _____	Date/Time: _____

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TANK FARM PLANT OPERATING PROCEDURE COPY

WHC-SD-WM-DP-067, REV. 0

CHAIN OF CUSTODY FORM ADDENDUM 1A,

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5-9-94 TIME 1130
SAMPLE LOCATIONS	242-A - Slurry (field blank)	CUSTODY SEAL No.	2435
REMARKS	This COC is used for the 60 mL slurry field blank sample in a glass bottle labeled V101.		
ICE CHEST OR SAMPLE PIG No.	N/A	SAMPLE CONTAINER No.	V101
DESTINATION	222-S Laboratory		

(HP) HPT SHIPPING CONTAINER RELEASE: OK. Mulliken DATE: 5-10-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(s)	
<u>V101</u>	

CHAIN OF POSSESSION

Relinquished by: <u>J.W. McMullen</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/5/94 1520</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/9/94 2345</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/10/94 0245</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/10/94 1037</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5-10-94 1125</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u> </u>
Relinquished by: <u> </u>	Received by: <u> </u>	Date/Time: <u> </u>

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REQUEST FOR SPECIAL ANALYSIS (RSA)				RSA No. <u>1874</u>	
1. Sample Origin <u>Slurry, 242-A Evaporator</u> (Protocol Analyses)		2. Date Submitted <u>3/30/94</u>		4. Requester Name <u>George L. Miller</u>	
		3. Submitted By <u>George L. Miller</u>		5. Requester Phone/MSIN <u>373-4739 / TG-06</u>	
6. Charge Code/Work Package <u>NIA7F</u>		7. Date Required			
8. Customer ID <u>SLY-A</u>		9. Laboratory ID <u>V81 A+B</u>		12. Number of Samples <u>1</u>	
				13. Volume of Samples <u>60 ml</u>	
10. Determination <u>DIRECT:</u> • APPEARANCE • SPECIFIC GRAVITY • HYDROXIDE • MERCURY • TRITIUM <u>ACID DIGESTION:</u> • ICP • ARSENIC • SELENIUM • GEA • STRONTIUM-90 • PLUTONIUM-239/240 • AMERICIUM-241 • TOTAL ALPHA • TOTAL BETA <u>WATER (DIGESTION) DILUTION:</u> • IC • AMMONIA • CYANIDE • TIC (CARBONATE)		11. Expected Range		14. Protocols Technology per ☐ None ☒ RCRA ☐ NQA-1 ☐ Other ☐ CERCLA (<u>Same as 108-A</u>)	
				15. Sample Type ☐ Solid ☐ Soil ☒ Slurry ☐ Gas ☐ Water ☐ Waste ☐ Solution ☐ Sludge ☐ Oil ☐ Other (specify) _____	
				16. Storage Requirements ☒ None ☐ Specify _____	
				17. Process Knowledge/Known Listed Wastes ☐ Unknown ☒ Known (Please attach list) <u>Prior Evaporator Runs</u> ☐ Previously submitted for this Project	
				18. Survey <u>L. J. Jan</u> HPT Signature <u>4/5/94</u> <u>Corrected</u>	
				19. Disposition of Waste ☐ Return to Client/Location _____ ☐ Dispose per 222-S Procedures ☒ Other <u>Per TPP: WHC-SD-WM-TPP-048</u>	
				20. Additional Information <u>V19 STD</u> <u>V80 Blank</u> <u>V82 STD</u> <u>304</u>	
21. Chain of Custody ☐ No ☒ Yes Number: <u>Seal #: 2605 (A) 2606 (B)</u>		22. Assigned Custodial Group (select one) ☐ PCL ☒ PSDU ☐ ENV ☐ Process <u>10/17/94</u>		23. Laboratory Manager (if required) <u>1A-205</u> Date: _____	
2. Sample Received By: <u>Shandra Cobb</u> Date: <u>05-05-94</u> Time: <u>1330</u>					

0000044

BC-6700-181 (11/92)

REQUEST FOR SPECIAL ANALYSIS (RSA)

RSA No.

1875

1. Sample Origin Slurry, 242-A Evaporator (Protocol Analyses)			2. Date Submitted 3/30/94		4. Requester Name George L. Miller		6. Charge Code/Work Package NIA7F		
3. Submitted By George L. Miller			5. Requester Phone/MSIN 373-4739/T6-06			7. Date Required			
8. Customer ID SLY-A		Collected Date Time		9. Laboratory ID V85		12. Number of Samples 1		13. Volume of Samples 60 ml	
WHC-SD-WM-DP-007, REV. 0 ADDENDUM 1A,						14. Protocols Technology per ☐ None ☒ RCRA ☐ NQA-1 ☐ Other ☐ CERCLA (Same as 108-A)			
						15. Sample Type ☐ Solid ☐ Soil ☒ Slurry ☐ Gas ☐ Water ☐ Waste ☐ Solution ☐ Sludge ☐ Oil ☐ Other (specify) _____			
						16. Storage Requirements ☒ None ☐ Specify _____			
						17. Process Knowledge/Known Listed Wastes ☐ Unknown ☒ Known (Please attach list) Prior Evaporator Runs ☐ Previously submitted for this Project			
						18. Survey Dose Rate HPT Signature			
10. Determination DIRECT: • Appearance • Specific Gravity • Hydroxide • Mercury • Tritium ACID DIGESTION: • ICP • As • Se • GEA • Sr-90 • Pu-239/240 • Am-241 • Total Alpha • Total Beta WATER (DIGESTION) DILUTION: • IC • Ammonia • Cyanide • TIC (Carbonate)		11. Expected Range		19. Disposition of Waste ☐ Return to Client/Location _____ ☐ Dispose per 222-S Procedures ☒ Other per TPP: WHC-SD-WM-TPP-048					
21. Chain of Custody ☐ No ☒ Yes Number: Seal #: _____				20. Additional Information V83 - Std V84 Blank V86 Std Do Spike & Spike Duplicate on: OH ⁻ , Hg, H-3, ICP, As, Se, Sr-90, Pu-239/240, Am-241, AT, TB, IC, NH ₄ , CN, TIC					
23. Sample Received By: <u>H. Lupins</u> Date: 5-10-94 Time: 1110				22. Assigned Custodial Group (select one) ☐ PCL ☒ PSDU ☐ ENV ☐ Process 15/1/94					
				24. Laboratory Manager (if required) 1A-206 Date: _____					

0000045

BC-6700-181 (11/92)

REQUEST FOR SPECIAL ANALYSIS (RSA)

RSA No.

1876

Sample Origin

Hurry, 242-A Evaporator
(Protocol Analyses)

2. Date Submitted

3/30/94

4. Requester Name

George L. Miller

6. Charge Code/Work Package

NIA 7F

3. Submitted By

George L. Miller

5. Requester Phone/MSIN

373-4739 / TG-06

7. Date Required

8. Customer ID

Collected

Date

Time

9. Laboratory ID

12. Number of
Samples13. Volume of
Samples

14. Protocols Technology per

☐ None☒ RCRA☐ NQA-1☐ Other☐ CERCLA

Same as 105-A

SLY-A-A

Deal # 2645

V89-A

SLY-A-B

Deal # 2646

V89-B

15. Sample Type

☐ Solid☐ Soil☒ Slurry☐ Gas☐ Water☐ Waste☐ Solution☐ Sludge☐ Oil☐ Other (specify)

16. Storage Requirements

☒ None☐ Specify

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A,

17. Process Knowledge/Known Listed Wastes

☐ Unknown☒ Known (Please attach list)☐ Previously submitted for this Project

Prior Evaporator Runs

10. Determination

11. Expected Range

DIRECT:

- Appearance
- Specific Gravity
- Hydroxide
- Mercury
- Tritium

ACID DIGESTION:

- ICP
- As
- Se
- GEA
- Sr-90
- Pu-239/240
- Am-241
- Total Alpha
- Total Beta

WATER (DIGESTION) DILUTION:

- IC
- Ammonia
- Cyanide
- TIC (Carbonate)

18. Survey

Dose Rate

HPT Signature

19. Disposition of Waste

☐ Return to Client/Location☐ Dispose per 222-S Procedures☒ Other

Per TPP: WHC-SD-WM-TPP-048

20. Additional Information

V87 STD
V88 BLANK
V90 STD

336

21. Chain of Custody

☐ No☒ Yes

Number:

Seal #:

22. Assigned Custodial Group (select one)

☐ PCL☒ POSU☐ ENV☐ Process

23. Sample Received By:

Date:

05-17-94

Time:

1045

24. Laboratory Manager (if required)

1H-207

0000046

REQUEST FOR SPECIAL ANALYSIS (RSA)

RSA No.

1877

1. Sample Origin Slurry, 242-A Evaporator (Protocol Analyses)			2. Date Submitted 3/30/94		4. Requester Name George L Miller		6. Charge Code/Work Package NIA7F		
			3. Submitted By George L Miller		5. Requester Phone/MSIN 373-4739 / T6-06		7. Date Required		
8. Customer ID SLY-A		Collected Date Time		9. Laboratory ID V93		12. Number of Samples 1		13. Volume of Samples 60ml	
						14. Protocols Technology per ☐ None ☒ ACRA ☐ NQA-1 ☐ Other ☐ CERCLA (same as 108-A)			
						15. Sample Type ☐ Solid ☐ Soil ☒ Slurry ☐ Gas ☐ Water ☐ Waste ☐ Solution ☐ Sludge ☐ Oil ☐ Other (specify)			
						16. Storage Requirements ☒ None WHC-SD-WM-DP-067, REV. 0 ☐ Specify ADDENDUM 1A,			
						17. Process Knowledge/Known Listed Wastes ☐ Unknown ☒ Known (Please attach list) Prior Evaporator Runs ☐ Previously submitted for this Project			
10. Determination		11. Expected Range		18. Survey Dose Rate HPT Signature					
DIRECT: • Appearance • Specific Gravity • Hydroxide • Mercury • Tritium				19. Disposition of Waste ☐ Return to Client/Location ☐ Dispose per 222-S Procedures ☒ Other Per TPP: WHC-SD-WM-TPP-048					
ACID DIGESTION: • ICP • As • Se • GEA • Sr-90 • Pu-239/240 • Am-241 • Total Alpha • Total Beta				20. Additional Information V91 STD V92 Blank V94 STD 307					
WATER (DIGESTION) DILUTION: • IC • Ammonia • Cyanide • TIC (Carbonate)									
21. Chain of Custody ☐ No ☒ Yes Number: Seal #:				22. Assigned Custodial Group (select one) ☐ PCL ☒ PSDU ☐ ENV ☐ Process					
23. Sample Received By: [Signature] Date: 5-24-94 Time: 0957				24. Laboratory Manager (if required) 1A-208 0000047 Date:					

REQUEST FOR SPECIAL ANALYSIS (RSA)

RSA No.

1879

Sample Origin

2. Date Submitted

4. Requester Name

6. Charge Code/Work Package

Field Blank, 242-A
Evaporator

3/30/94

George L. Miller

NIA 7F

3. Submitted By

5. Requester Phone/MSIN

7. Date Required

George L. Miller

373-4739 / T6-06

8. Customer ID

Collected

9. Laboratory ID

12. Number of
Samples13. Volume of
Samples

14. Protocols Technology per

Date

Time

Field Blank

V101

1

60 ml

☐ None☒ RCRA☐ NQA-1☐ Other☐ CERCLA

(Same as 108-AP)

15. Sample Type

☐ Solid☐ Soil☒ Slurry☐ Gas☐ Water☐ Waste☐ Solution☐ Sludge☐ Oil☐ Other (specify) _____

16. Storage Requirements

☒ None

WHC-SD-WM-DP-067, REV. 0

☐ Specify _____

ADDENDUM 1A,

17. Process Knowledge/Known Listed Wastes

☐ Unknown☒ Known (Please attach list) Prior Evaporator Runs☐ Previously submitted for this Project

10. Determination

11. Expected Range

18. Survey

Dose Rate

DIRECT:

- Appearance
- Specific Gravity
- Hydroxide
- Mercury
- Tritium

HPT Signature

19. Disposition of Waste

☐ Return to Client/Location _____☐ Dispose per 222-S Procedures☒ Other per TPP: WHC-SD-WM-TPP-048

ACID DIGESTION:

- ICP
- As
- Se
- GEA
- Sr-90
- Pu-239/240
- Am-241
- Total Alpha
- Total Beta

20. Additional Information

V99 STD
V100 Blank
V102 STD

303

WATER (DIGESTION) DILUTION:

- IC
- Ammonia
- Cyanide
- TIC (Carbonate)

21. Chain of Custody

☐ No☒ Yes

Number:

Seal #:

22. Assigned Custodial Group (select one)

☐ PCL☒ POSU☐ ENV☐ Process

23. Sample Received By:

T. Lopez

24. Laboratory Manager (if required)

1A-210

Date:

5-10-94

Time:

11:00

Date:

0000047

MEMORANDUM

TO: 242-A Project QA Record

FR: Sandra Schildt, Golder Associates Inc.

RE: VOLATILE ORGANIC ANALYSIS DATA VALIDATION SUMMARY FOR DATA PACKAGE V81-222-094 (943-1610.009, 094v.242)

INTRODUCTION

This memorandum presents the results of data validation on data package V81-222-094 prepared by the 222-S laboratory. A list of the samples validated along with the analyses reported and the method of analysis is provided in the following table.

LABORATORY SAMPLE ID	CLIENT SAMPLE ID	SAMPLE DATE	SAMPLE TYPE	ANALYSIS
V103	SLY-A	5/4/94		see Note 1
V107	FIELD BLANK B1	5/4/94	Field Blank	
V108	SLY-A	6/9/94		
V112	FIELD BLANK 1	6/9/94	Field Blank	
V113	SLY-A	5/23/94		
V117	FIELD BLANK 1	5/23/94	Field Blank	
V118	SLY-A	5/9/94		
V123	SLY-A	5/16/94		
V127	FIELD BLANK 1	5/16/94	Field Blank	

Note 1. Samples were requested to be analyzed for volatile organic compounds in duplicate.

Data validation was conducted in accordance with 242-A Evaporator Sampling Quality Assurance Project Plan and Level B procedures as specified in Data Validation for RCRA Analyses, Section 2.0 (WHC 1990). Validation was performed on 100% of the samples reported.

This report contains four appendices. The appendices are as follows:

- Appendix 1. Annotated Laboratory Forms
- Appendix 2. Data Assessment Forms
- Appendix 3. Data Summary Form
- Appendix 4. Chain of Custody Information

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Detection Limits. Detection limit goals were exceeded for the slurry samples due to dilution factors. As noted in the laboratory narrative, a reduced volume of sample was analyzed to avoid foaming during analysis.

Completeness. The data package was complete for all requested analyses. Nine samples (9) were submitted for duplicate analysis and validated in this data set with a total of 630 determinations reported, all of which were deemed valid. This results in a completeness of 100% which meets normal work plan objectives of 90%.

WHC-SD-WM-DP-067
ADDENDUM 1A REV. 0

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

Minor deficiencies were identified during data validation which required qualification of the data.

Duplicates

- The relative percent difference (RPD) exceeded 20% for acetone between sample V108 and V108RE, and for chloroform and ethylbenzene between V117 and V117RE.

Reporting

- The laboratory did not report low levels of chloroform in samples V107, V117, V117RE, and V127, acetone in samples V108, V118RE, V123RE, and toluene in sample V127. While these compounds were detected at levels less than the sample quantitation limit, they were detected at levels comparable to other compounds reported as detected. Therefore, in an effort to be consistent and conservative the detects were added to the laboratory report forms and qualified as estimated.

The D qualifier indicates that the laboratory performed the analysis on a diluted sample.

REFERENCES

WHC 1990, Data Validation for RCRA Analysis, WHC-CM-5-3, August 27, 1990. Westinghouse Hanford Company, Richland, Washington.

WHC 1994, 242-A Evaporator Sampling Quality Assurance Project Plan, WHC-SD-WM-QAPP-009, Rev. 1. Westinghouse Hanford Company, Richland, Washington.

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

- U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample detection limit corrected for sample aliquot size, dilution factors and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.
- UJ - Indicates the constituent was analyzed for and was not detected. Due to a minor quality control deficiency identified during data validation, the concentration reported may not accurately reflect the sample detection limit. The associated data have been qualified as estimated but should be considered usable for decision making purposes.
- J - Indicates the constituent was analyzed for and detected. Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.
- R - Indicates the constituent was analyzed for and detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

WHC-SD-WM-DP-067
ADDENDUM 1A REV. 0

WHC-SD-WM-DP-067
ADDENDUM 1H REV. 0

APPENDIX 1
ANNOTATED LABORATORY REPORTS

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ADDENDUM 1A,
Contract:

V103

Slurry

Name: WHC PAL

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A #1

Matrix: (soil/water) WATER

Lab Sample ID: V103

Sample wt/vol: 0.1 (g/mL) ML

Lab File ID: >AE12D

Level: (low/med) LOW

Date Received: 05/05/94

% Moisture: not dec.

Date Analyzed: 5/12/94

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 50

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg) ug/L

Q

74-87-3-----	Chloromethane	500.	U D
74-83-9-----	Bromomethane	500.	U D
75-01-4-----	Vinyl Chloride	500.	U D
75-00-3-----	Chloroethane	500.	U D
75-09-2-----	Methylene Chloride	500.	U D
67-64-1-----	Acetone	270.	J D
75-15-0-----	Carbon Disulfide	500.	U D
75-35-4-----	1,1-Dichloroethene	500.	U D
75-34-3-----	1,1-Dichloroethane	500.	U D
540-59-0-----	1,2-Dichloroethene (total)	500.	U D
67-66-3-----	Chloroform	500.	U D
107-02-2-----	1,2-Dichloroethane	500.	U D
78-93-3-----	2-Butanone	500.	U D
71-55-6-----	1,1,1-Trichloroethane	500.	U D
56-23-5-----	Carbon Tetrachloride	500.	U D
75-27-4-----	Bromodichloromethane	500.	U D
78-87-5-----	1,2-Dichloropropane	500.	U D
10061-01-5-----	cis-1,3-Dichloropropene	500.	U D
79-01-6-----	Trichloroethene	500.	U D
124-48-1-----	Dibromochloromethane	500.	U D
79-00-5-----	1,1,2-Trichloroethane	500.	U D
71-43-2-----	Benzene	500.	U D
10061-02-6-----	trans-1,3-Dichloropropene	500.	U D
75-25-2-----	Bromoform	500.	U D
108-10-1-----	4-Methyl-2-pentanone	500.	U D
591-78-6-----	2-Hexanone	500.	U D
127-18-4-----	Tetrachloroethene	500.	U D
79-34-5-----	1,1,2,2-Tetrachloroethane	500.	U D
108-88-3-----	Toluene	500.	U D
108-90-7-----	Chlorobenzene	500.	U D
100-41-4-----	Ethylbenzene	500.	U D
100-42-5-----	Styrene	500.	U D
133-02-7-----	Xylene (total)	500.	U D
71-36-3-----	1-Butanol	25600.	U D
110-86-1-----	Pyridine	25200.	U D

M-DP-067, REV. 0

TA SHEET

EPA SAMPLE NO.

JM 1A,
ct:

V103RE

o.:

SDG No.: 242A #1

Lab Sample ID: V103RE

Lab File ID: >AE12E

Date Received: 05/05/94

Date Analyzed: 5/12/94

Dilution Factor: 50

Soil Aliquot Volume: (uL)

CENTRATION UNITS:

/L or ug/Kg) ug/L

Q

	500.	U D
	500.	U D
	500.	U D
	500.	U D
	500.	U D
	500.	U D
	500.	U D
	500.	U D
	500.	U D
	500.	U D
total)	500.	U D
	500.	U D
	500.	U D
	500.	U D
ie	500.	U D
	500.	U D
	500.	U D
	500.	U D
ene	500.	U D
	500.	U D
	500.	U D
ie	500.	U D
	500.	U D
opene	500.	U D
	500.	U D
	500.	U D
	500.	U D
thane	500.	U D
	500.	U D
	500.	U D
	500.	U D
	500.	U D
	500.	U D
	500.	U D
	25600.	U D
	25200.	U D

see
10/17/94

1A216

128

3/90

006

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ADDENDUM 1A,
Contract:

V107

Field Blank V103

Name: WHC PAL

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A #1

Matrix: (soil/water) WATER

Lab Sample ID: V107

Sample wt/vol: 5 (g/mL) ML

Lab File ID: >AE11H

Level: (low/med) LOW

Date Received: 05/04/94

% Moisture: not dec.

Date Analyzed: 5/11/94

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.

COMPOUND

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

Q

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	10.	U
67-64-1-----	Acetone	10.	U
75-15-0-----	Carbon Disulfide	10.	U
75-35-4-----	1,1-Dichloroethene	10.	U
75-34-3-----	1,1-Dichloroethane	10.	U
540-59-0-----	1,2-Dichloroethene (total)	10.	U
67-66-3-----	Chloroform	10.	U
107-02-2-----	1,2-Dichloroethane	10.	U
78-93-3-----	2-Butanone	10.	U
71-55-6-----	1,1,1-Trichloroethane	10.	U
56-23-5-----	Carbon Tetrachloride	10.	U
75-27-4-----	Bromodichloromethane	10.	U
78-87-5-----	1,2-Dichloropropane	10.	U
10061-01-5-----	cis-1,3-Dichloropropene	10.	U
79-01-6-----	Trichloroethene	10.	U
124-48-1-----	Dibromochloromethane	10.	U
79-00-5-----	1,1,2-Trichloroethane	10.	U
71-43-2-----	Benzene	10.	U
10061-02-6-----	trans-1,3-Dichloropropene	10.	U
75-25-2-----	Bromoform	10.	U
108-10-1-----	4-Methyl-2-pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	10.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	10.	U
108-88-3-----	Toluene	10.	U
108-90-7-----	Chlorobenzene	10.	U
100-41-4-----	Ethylbenzene	10.	U
100-42-5-----	Styrene	10.	U
133-02-7-----	Xylene (total)	10.	U
71-36-3-----	1-Butanol	512.	U
110-86-1-----	Pyridine	504.	U

10/17/94

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET
ADDENDUM 1A,

EPA SAMPLE NO.

V107RE

Lab Name: WHC PAL

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A #1

Matrix: (soil/water) WATER

Lab Sample ID: V107RE

Sample wt/vol: 5 (g/mL) ML

Lab File ID: >AE11I

Level: (low/med) LOW

Date Received: 05/04/94

% Moisture: not dec.

Date Analyzed: 5/11/94

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L Q

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	10.	U
67-64-1-----	Acetone	10.	U
75-15-0-----	Carbon Disulfide	10.	U
75-35-4-----	1,1-Dichloroethene	10.	U
75-34-3-----	1,1-Dichloroethane	10.	U
540-59-0-----	1,2-Dichloroethene (total)	10.	U
67-66-3-----	Chloroform	10.	U
107-02-2-----	1,2-Dichloroethane	10.	U
78-93-3-----	2-Butanone	10.	U
71-55-6-----	1,1,1-Trichloroethane	10.	U
56-23-5-----	Carbon Tetrachloride	10.	U
75-27-4-----	Bromodichloromethane	10.	U
78-87-5-----	1,2-Dichloropropane	10.	U
10061-01-5-----	cis-1,3-Dichloropropene	10.	U
79-01-6-----	Trichloroethene	10.	U
124-48-1-----	Dibromochloromethane	10.	U
79-00-5-----	1,1,2-Trichloroethane	10.	U
71-43-2-----	Benzene	10.	U
10061-02-6-----	trans-1,3-Dichloropropene	10.	U
75-25-2-----	Bromoform	10.	U
108-10-1-----	4-Methyl-2-pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	10.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	10.	U
108-88-3-----	Toluene	10.	U
108-90-7-----	Chlorobenzene	10.	U
100-41-4-----	Ethylbenzene	10.	U
100-42-5-----	Styrene	10.	U
133-02-7-----	Xylene (total)	.3	J
71-36-3-----	1-Butanol	512.	U
110-86-1-----	Pyridine	504.	U

Handwritten:
10/17/94

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Sample Name: WHC PAL

Contract:

V108

Slurry

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A #2

Matrix: (soil/water) WATER

Lab Sample ID: V108

Sample wt/vol: 0.1 (g/mL) ML

Lab File ID: >AF22F

Level: (low/med) LOW

Date Received: 06/10/94

% Moisture: not dec.

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

Date Analyzed: 6/22/94

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

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

CAS NO.

COMPOUND

Q

74-87-3-----	Chloromethane	500.	U
74-83-9-----	Bromomethane	500.	U
75-01-4-----	Vinyl Chloride	500.	U
75-00-3-----	Chloroethane	500.	U
75-09-2-----	Methylene Chloride	8.	J
67-64-1-----	Acetone	50.500.	U J
75-15-0-----	Carbon Disulfide	500.	U
75-35-4-----	1,1-Dichloroethene	500.	U
75-34-3-----	1,1-Dichloroethane	500.	U
540-59-0-----	1,2-Dichloroethene (total)	500.	U
67-66-3-----	Chloroform	500.	U
107-02-2-----	1,2-Dichloroethane	500.	U
78-93-3-----	2-Butanone	500.	U
71-55-6-----	1,1,1-Trichloroethane	500.	U
56-23-5-----	Carbon Tetrachloride	500.	U
75-27-4-----	Bromodichloromethane	500.	U
78-87-5-----	1,2-Dichloropropane	500.	U
10061-01-5-----	cis-1,3-Dichloropropene	500.	U
79-01-6-----	Trichloroethene	500.	U
124-48-1-----	Dibromochloromethane	500.	U
79-00-5-----	1,1,2-Trichloroethane	500.	U
71-43-2-----	Benzene	500.	U
10061-02-6-----	trans-1,3-Dichloropropene	500.	U
75-25-2-----	Bromoform	500.	U
108-10-1-----	4-Methyl-2-pentanone	500.	U
591-78-6-----	2-Hexanone	500.	U
127-18-4-----	Tetrachloroethene	500.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	500.	U
108-88-3-----	Toluene	500.	U
108-90-7-----	Chlorobenzene	500.	U
100-41-4-----	Ethylbenzene	500.	U
100-42-5-----	Styrene	500.	U
133-02-7-----	Xylene (total)	500.	U
71-36-3-----	1-Butanol	25600.	U
110-86-1-----	Pyridine	25200.	U

10/17/94

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ADDENDUM 1A,

V108RE

Lab Name: WHC PAL

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A #2

Matrix: (soil/water) WATER

Lab Sample ID: V108RE

Sample wt/vol: 0.1 (g/mL) ML

Lab File ID: >AF14H

Level: (low/med) LOW

Date Received: 06/10/94

% Moisture: not dec.

Date Analyzed: 6/14/94

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L Q

74-87-3-----	Chloromethane	500.	U
74-83-9-----	Bromomethane	500.	U
75-01-4-----	Vinyl Chloride	500.	U
75-00-3-----	Chloroethane	500.	U
75-09-2-----	Methylene Chloride	500.	U
67-64-1-----	Acetone	94.	J
75-15-0-----	Carbon Disulfide	500.	U
75-35-4-----	1,1-Dichloroethene	500.	U
75-34-3-----	1,1-Dichloroethane	500.	U
540-59-0-----	1,2-Dichloroethene (total)	500.	U
67-66-3-----	Chloroform	500.	U
107-02-2-----	1,2-Dichloroethane	500.	U
78-93-3-----	2-Butanone	500.	U
71-55-6-----	1,1,1-Trichloroethane	500.	U
56-23-5-----	Carbon Tetrachloride	500.	U
75-27-4-----	Bromodichloromethane	500.	U
78-87-5-----	1,2-Dichloropropane	500.	U
10061-01-5-----	cis-1,3-Dichloropropene	500.	U
79-01-6-----	Trichloroethene	500.	U
124-48-1-----	Dibromochloromethane	500.	U
79-00-5-----	1,1,2-Trichloroethane	500.	U
71-43-2-----	Benzene	500.	U
10061-02-6-----	trans-1,3-Dichloropropene	500.	U
75-25-2-----	Bromoform	500.	U
108-10-1-----	4-Methyl-2-pentanone	500.	U
591-78-6-----	2-Hexanone	500.	U
127-18-4-----	Tetrachloroethene	500.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	500.	U
108-88-3-----	Toluene	500.	U
108-90-7-----	Chlorobenzene	500.	U
100-41-4-----	Ethylbenzene	500.	U
100-42-5-----	Styrene	500.	U
133-02-7-----	Xylene (total)	500.	U
71-36-3-----	1-Butanol	25600.	U
110-86-1-----	Pyridine	25200.	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ADDENDUM 1A,
Contract:V112
Field Blank V108

Lab Name: WHC PAL

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A #2

Matrix: (soil/water) WATER

Lab Sample ID: V112

Sample wt/vol: 5 (g/mL) ML

Lab File ID: >AF14D

Level: (low/med) LOW

Date Received: 06/10/94

% Moisture: not dec.

Date Analyzed: 6/14/94

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
---------	----------	--	---

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	10.	U
67-64-1-----	Acetone	10.	U
75-15-0-----	Carbon Disulfide	10.	U
75-35-4-----	1,1-Dichloroethene	10.	U
75-34-3-----	1,1-Dichloroethane	10.	U
540-59-0-----	1,2-Dichloroethene (total)	10.	U
67-66-3-----	Chloroform	10.	U
107-02-2-----	1,2-Dichloroethane	10.	U
78-93-3-----	2-Butanone	10.	U
71-55-6-----	1,1,1-Trichloroethane	10.	U
56-23-5-----	Carbon Tetrachloride	10.	U
75-27-4-----	Bromodichloromethane	10.	U
78-87-5-----	1,2-Dichloropropane	10.	U
10061-01-5-----	cis-1,3-Dichloropropene	10.	U
79-01-6-----	Trichloroethene	10.	U
124-48-1-----	Dibromochloromethane	10.	U
79-00-5-----	1,1,2-Trichloroethane	10.	U
71-43-2-----	Benzene	10.	U
10061-02-6-----	trans-1,3-Dichloropropene	10.	U
75-25-2-----	Bromoform	10.	U
108-10-1-----	4-Methyl-2-pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	10.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	10.	U
108-88-3-----	Toluene	10.	U
108-90-7-----	Chlorobenzene	10.	U
100-41-4-----	Ethylbenzene	10.	U
100-42-5-----	Styrene	10.	U
133-02-7-----	Xylene (total)	10.	U
71-36-3-----	1-Butanol	512.	U
110-86-1-----	Pyridine	504.	U

1A-221

133

011

1A WHC-SD-WM-DP-067, REV. 0
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ADDENDUM 1A,
Contract:

V112RE
Field Blank v108

Lab Name: WHC PAL

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A #2

Matrix: (soil/water) WATER

Lab Sample ID: V112RE

Sample wt/vol: 5 (g/mL) ML

Lab File ID: >AF14E

Level: (low/med) LOW

Date Received: 06/10/94

% Moisture: not dec.

Date Analyzed: 6/14/94

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L Q

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	1.	J
67-64-1-----	Acetone	10.	U
75-15-0-----	Carbon Disulfide	10.	U
75-35-4-----	1,1-Dichloroethene	10.	U
75-34-3-----	1,1-Dichloroethane	10.	U
540-59-0-----	1,2-Dichloroethene (total)	10.	U
67-66-3-----	Chloroform	10.	U
107-02-2-----	1,2-Dichloroethane	10.	U
78-93-3-----	2-Butanone	10.	U
71-55-6-----	1,1,1-Trichloroethane	10.	U
56-23-5-----	Carbon Tetrachloride	10.	U
75-27-4-----	Bromodichloromethane	10.	U
78-87-5-----	1,2-Dichloropropane	10.	U
10061-01-5-----	cis-1,3-Dichloropropene	10.	U
79-01-6-----	Trichloroethene	10.	U
124-48-1-----	Dibromochloromethane	10.	U
79-00-5-----	1,1,2-Trichloroethane	10.	U
71-43-2-----	Benzene	10.	U
10061-02-6-----	trans-1,3-Dichloropropene	10.	U
75-25-2-----	Bromoform	10.	U
108-10-1-----	4-Methyl-2-pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	10.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	10.	U
108-88-3-----	Toluene	10.	U
108-90-7-----	Chlorobenzene	10.	U
100-41-4-----	Ethylbenzene	10.	U
100-42-5-----	Styrene	10.	U
133-02-7-----	Xylene (total)	10.	U
71-36-3-----	1-Butanol	512.	U
110-86-1-----	Pyridine	504.	U

Handwritten: 10/11/94

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

ADDENDUM 1A,

Contract:

V113

Slurry

Lab Name: WHC PAL

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A #2

Matrix: (soil/water) WATER

Lab Sample ID: V113

Sample wt/vol: 0.1 (g/mL) ML

Lab File ID: >AF02F

Level: (low/med) LOW

Date Received: 05/24/94

% Moisture: not dec.

Date Analyzed: 6/02/94

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

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

CAS NO.

COMPOUND

Q

74-87-3-----	Chloromethane	500.	U
74-83-9-----	Bromomethane	500.	U
75-01-4-----	Vinyl Chloride	500.	U
75-00-3-----	Chloroethane	500.	U
75-09-2-----	Methylene Chloride	500.	U
67-64-1-----	Acetone	500.	U
75-15-0-----	Carbon Disulfide	500.	U
75-35-4-----	1,1-Dichloroethene	500.	U
75-34-3-----	1,1-Dichloroethane	500.	U
540-59-0-----	1,2-Dichloroethene (total)	500.	U
67-66-3-----	Chloroform	500.	U
107-02-2-----	1,2-Dichloroethane	500.	U
78-93-3-----	2-Butanone	500.	U
71-55-6-----	1,1,1-Trichloroethane	500.	U
56-23-5-----	Carbon Tetrachloride	500.	U
75-27-4-----	Bromodichloromethane	500.	U
78-87-5-----	1,2-Dichloropropane	500.	U
10061-01-5-----	cis-1,3-Dichloropropene	500.	U
79-01-6-----	Trichloroethene	500.	U
124-48-1-----	Dibromochloromethane	500.	U
79-00-5-----	1,1,2-Trichloroethane	500.	U
71-43-2-----	Benzene	500.	U
10061-02-6-----	trans-1,3-Dichloropropene	500.	U
75-25-2-----	Bromoform	500.	U
108-10-1-----	4-Methyl-2-pentanone	500.	U
591-78-6-----	2-Hexanone	500.	U
127-18-4-----	Tetrachloroethene	500.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	500.	U
108-88-3-----	Toluene	500.	U
108-90-7-----	Chlorobenzene	500.	U
100-41-4-----	Ethylbenzene	500.	U
100-42-5-----	Styrene	500.	U
133-02-7-----	Xylene (total)	500.	U
71-36-3-----	1-Butanol	25600.	U
110-86-1-----	Pyridine	25200.	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ADDENDUM 1A,
Contract:

V113RE

Lab Name: WHC PAL

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A #2

Matrix: (soil/water) WATER

Lab Sample ID: V113RE

Sample wt/vol: 0.1 (g/mL) ML

Lab File ID: >AF02G

Level: (low/med) LOW

Date Received: 05/24/94

% Moisture: not dec.

Date Analyzed: 6/02/94

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
---------	----------	--	---

74-87-3	Chloromethane	500.	U
74-83-9	Bromomethane	500.	U
75-01-4	Vinyl Chloride	500.	U
75-00-3	Chloroethane	500.	U
75-09-2	Methylene Chloride	500.	U
67-64-1	Acetone	500.	U
75-15-0	Carbon Disulfide	500.	U
75-35-4	1,1-Dichloroethene	500.	U
75-34-3	1,1-Dichloroethane	500.	U
540-59-0	1,2-Dichloroethene (total)	500.	U
67-66-3	Chloroform	500.	U
107-02-2	1,2-Dichloroethane	500.	U
78-93-3	2-Butanone	500.	U
71-55-6	1,1,1-Trichloroethane	500.	U
56-23-5	Carbon Tetrachloride	500.	U
75-27-4	Bromodichloromethane	500.	U
78-87-5	1,2-Dichloropropane	500.	U
10061-01-5	cis-1,3-Dichloropropene	500.	U
79-01-6	Trichloroethene	500.	U
124-48-1	Dibromochloromethane	500.	U
79-00-5	1,1,2-Trichloroethane	500.	U
71-43-2	Benzene	500.	U
10061-02-6	trans-1,3-Dichloropropene	500.	U
75-25-2	Bromoform	500.	U
108-10-1	4-Methyl-2-pentanone	500.	U
591-78-6	2-Hexanone	500.	U
127-18-4	Tetrachloroethene	500.	U
79-34-5	1,1,2,2-Tetrachloroethane	500.	U
108-88-3	Toluene	500.	U
108-90-7	Chlorobenzene	500.	U
100-41-4	Ethylbenzene	500.	U
100-42-5	Styrene	500.	U
133-02-7	Xylene (total)	500.	U
71-36-3	1-Butanol	25600.	U
110-86-1	Pyridine	25200.	U

10/17/94

VOLATILE ORGANICS ANALYSIS DATA SHEET

ADDENDUM 1A,

Contract:

V117

Field Blank V113

1 Name: WHC PAL

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A #2

Matrix: (soil/water) WATER

Lab Sample ID: V117

Sample wt/vol: 5 (g/mL) ML

Lab File ID: >AF02D

Level: (low/med) LOW

Date Received: 05/24/94

% Moisture: not dec.

Date Analyzed: 6/02/94

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
---------	----------	--	---

74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene Chloride	.5	J
67-64-1	Acetone	.7	J
75-15-0	Carbon Disulfide	10.	U
75-35-4	1,1-Dichloroethene	10.	U
75-34-3	1,1-Dichloroethane	10.	U
540-59-0	1,2-Dichloroethene (total)	10.	U
67-66-3	Chloroform	2-10.	U J
107-02-2	1,2-Dichloroethane	10.	U
78-93-3	2-Butanone	10.	U
71-55-6	1,1,1-Trichloroethane	10.	U
56-23-5	Carbon Tetrachloride	10.	U
75-27-4	Bromodichloromethane	10.	U
78-87-5	1,2-Dichloropropane	10.	U
10061-01-5	cis-1,3-Dichloropropene	10.	U
79-01-6	Trichloroethene	10.	U
124-48-1	Dibromochloromethane	10.	U
79-00-5	1,1,2-Trichloroethane	10.	U
71-43-2	Benzene	10.	U
10061-02-6	trans-1,3-Dichloropropene	10.	U
75-25-2	Bromoform	10.	U
108-10-1	4-Methyl-2-pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	10.	U
79-34-5	1,1,2,2-Tetrachloroethane	10.	U
108-88-3	Toluene	10.	U
108-90-7	Chlorobenzene	10.	U
100-41-4	Ethylbenzene	.2	J
100-42-5	Styrene	10.	U
133-02-7	Xylene (total)	1.	J
71-36-3	1-Butanol	512.	U
110-86-3	Pyridine	504.	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET
ADDENDUM 1A,

EPA SAMPLE NO.

V117RE

Lab Name: WHC PAL

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A #2

Matrix: (soil/water) WATER

Lab Sample ID: V117RE

Sample wt/vol: 5 (g/mL) ML

Lab File ID: >AF02E

Level: (low/med) LOW

Date Received: 05/24/94

Moisture: not dec.

Date Analyzed: 6/02/94

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L Q

74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene Chloride	10.	U
67-64-1	Acetone	.7	J
75-15-0	Carbon Disulfide	10.	U
75-35-4	1,1-Dichloroethene	10.	U
75-34-3	1,1-Dichloroethane	10.	U
540-59-0	1,2-Dichloroethene (total)	10.	U
67-66-3	Chloroform	.1	J
107-02-2	1,2-Dichloroethane	10.	U
78-93-3	2-Butanone	10.	U
71-55-6	1,1,1-Trichloroethane	10.	U
56-23-5	Carbon Tetrachloride	10.	U
75-27-4	Bromodichloromethane	10.	U
78-87-5	1,2-Dichloropropane	10.	U
10061-01-5	cis-1,3-Dichloropropene	10.	U
79-01-6	Trichloroethene	10.	U
124-48-1	Dibromochloromethane	10.	U
79-00-5	1,1,2-Trichloroethane	10.	U
71-43-2	Benzene	10.	U
10061-02-6	trans-1,3-Dichloropropene	10.	U
75-25-2	Bromoform	10.	U
108-10-1	4-Methyl-2-pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	10.	U
79-34-5	1,1,2,2-Tetrachloroethane	10.	U
108-88-3	Toluene	10.	U
108-90-7	Chlorobenzene	10.	U
100-41-4	Ethylbenzene	.1	J
100-42-5	Styrene	10.	U
133-02-7	Xylene (total)	1.	J
71-36-3	1-Butanol	512.	U
110-86-1	Pyridine	504.	U

016

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ADDENDUM 1A,

Contract:

V118

Slurry

Name: WHC PAL

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A #1

Matrix: (soil/water) WATER

Lab Sample ID: V118

Sample wt/vol: 0.1 (g/mL) ML

Lab File ID: >AE12F

Level: (low/med) LOW

Date Received: 05/09/94

% Moisture: not dec.

Date Analyzed: 5/12/94

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 50

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

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

CAS NO.

COMPOUND

Q

74-87-3-----	Chloromethane	500.	U D
74-83-9-----	Bromomethane	500.	U D
75-01-4-----	Vinyl Chloride	500.	U D
75-00-3-----	Chloroethane	500.	U D
75-09-2-----	Methylene Chloride	500.	U D
67-64-1-----	Acetone	500.	U D
75-15-0-----	Carbon Disulfide	500.	U D
75-35-4-----	1,1-Dichloroethene	500.	U D
75-34-3-----	1,1-Dichloroethane	500.	U D
540-59-0-----	1,2-Dichloroethene (total)	500.	U D
67-66-3-----	Chloroform	500.	U D
107-02-2-----	1,2-Dichloroethane	500.	U D
78-93-3-----	2-Butanone	500.	U D
71-55-6-----	1,1,1-Trichloroethane	500.	U D
56-23-5-----	Carbon Tetrachloride	500.	U D
75-27-4-----	Bromodichloromethane	500.	U D
78-87-5-----	1,2-Dichloropropane	500.	U D
10061-01-5-----	cis-1,3-Dichloropropene	500.	U D
79-01-6-----	Trichloroethene	500.	U D
124-48-1-----	Dibromochloromethane	500.	U D
79-00-5-----	1,1,2-Trichloroethane	500.	U D
71-43-2-----	Benzene	500.	U D
10061-02-6-----	trans-1,3-Dichloropropene	500.	U D
75-25-2-----	Bromoform	500.	U D
108-10-1-----	4-Methyl-2-pentanone	500.	U D
591-78-6-----	2-Hexanone	500.	U D
127-18-4-----	Tetrachloroethene	500.	U D
79-34-5-----	1,1,2,2-Tetrachloroethane	500.	U D
108-88-3-----	Toluene	500.	U D
108-90-7-----	Chlorobenzene	500.	U D
100-41-4-----	Ethylbenzene	500.	U D
100-42-5-----	Styrene	500.	U D
133-02-7-----	Xylene (total)	500.	U D
71-36-3-----	1-Butanol	25600.	U D
110-86-1-----	Pyridine	25200.	U D

10/17/94

WHC-SD-WM-DP-067, REV. 0

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ADDENDUM 1A,
Contract:

V118RE

Lab Name: WHC PAL

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A #1

Matrix: (soil/water) WATER

Lab Sample ID: V118RE

Sample wt/vol: 0.1 (g/mL) ML

Lab File ID: >AE12G

Level: (low/med) LOW

Date Received: 05/09/94

% Moisture: not dec.

Date Analyzed: 5/12/94

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 50

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

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

CAS NO.

COMPOUND

Q

74-87-3-----	Chloromethane	500.	U D
74-83-9-----	Bromomethane	500.	U D
75-01-4-----	Vinyl Chloride	500.	U D
75-00-3-----	Chloroethane	500.	U D
75-09-2-----	Methylene Chloride	500.	U D
67-64-1-----	Acetone	180-500.	U D J
75-15-0-----	Carbon Disulfide	500.	U D
75-35-4-----	1,1-Dichloroethene	500.	U D
75-34-3-----	1,1-Dichloroethane	500.	U D
540-59-0-----	1,2-Dichloroethene (total)	500.	U D
67-66-3-----	Chloroform	500.	U D
107-02-2-----	1,2-Dichloroethane	500.	U D
78-93-3-----	2-Butanone	500.	U D
71-55-6-----	1,1,1-Trichloroethane	500.	U D
56-23-5-----	Carbon Tetrachloride	500.	U D
75-27-4-----	Bromodichloromethane	500.	U D
78-87-5-----	1,2-Dichloropropane	500.	U D
10061-01-5-----	cis-1,3-Dichloropropene	500.	U D
79-01-6-----	Trichloroethene	500.	U D
124-48-1-----	Dibromochloromethane	500.	U D
79-00-5-----	1,1,2-Trichloroethane	500.	U D
71-43-2-----	Benzene	500.	U D
10061-02-6-----	trans-1,3-Dichloropropene	500.	U D
75-25-2-----	Bromoform	500.	U D
108-10-1-----	4-Methyl-2-pentanone	500.	U D
591-78-6-----	2-Hexanone	500.	U D
127-18-4-----	Tetrachloroethene	500.	U D
79-34-5-----	1,1,2,2-Tetrachloroethane	500.	U D
108-88-3-----	Toluene	500.	U D
108-90-7-----	Chlorobenzene	500.	U D
100-41-4-----	Ethylbenzene	500.	U D
100-42-5-----	Styrene	500.	U D
133-02-7-----	Xylene (total)	500.	U D
71-36-3-----	1-Butanol	25600.	U D
110-86-1-----	Pyridine	25200.	U D

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ADDENDUM 1A,

V123

Slurry

Name: WHC PAL

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A #1

Matrix: (soil/water) WATER

Lab Sample ID: V123

Sample wt/vol: 0.1 (g/mL) ML

Lab File ID: >AE24G

Level: (low/med) LOW

Date Received: 5/16/94

% Moisture: not dec.

Date Analyzed: 5/24/94

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 50

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg) ug/L

Q

74-87-3-----	Chloromethane	500.	U D
74-83-9-----	Bromomethane	500.	U D
75-01-4-----	Vinyl Chloride	500.	U D
75-00-3-----	Chloroethane	500.	U D
75-09-2-----	Methylene Chloride	500.	U D
67-64-1-----	Acetone	500.	U D
75-15-0-----	Carbon Disulfide	500.	U D
75-35-4-----	1,1-Dichloroethene	500.	U D
75-34-3-----	1,1-Dichloroethane	500.	U D
540-59-0-----	1,2-Dichloroethene (total)	500.	U D
67-66-3-----	Chloroform	500.	U D
107-02-2-----	1,2-Dichloroethane	500.	U D
78-93-3-----	2-Butanone	500.	U D
71-55-6-----	1,1,1-Trichloroethane	500.	U D
56-23-5-----	Carbon Tetrachloride	500.	U D
75-27-4-----	Bromodichloromethane	500.	U D
78-87-5-----	1,2-Dichloropropane	500.	U D
10061-01-5-----	cis-1,3-Dichloropropene	500.	U D
79-01-6-----	Trichloroethene	500.	U D
124-48-1-----	Dibromochloromethane	500.	U D
79-00-5-----	1,1,2-Trichloroethane	500.	U D
71-43-2-----	Benzene	500.	U D
10061-02-6-----	trans-1,3-Dichloropropene	500.	U D
75-25-2-----	Bromoform	500.	U D
108-10-1-----	4-Methyl-2-pentanone	500.	U D
591-78-6-----	2-Hexanone	500.	U D
127-18-4-----	Tetrachloroethene	500.	U D
79-34-5-----	1,1,2,2-Tetrachloroethane	500.	U D
108-88-3-----	Toluene	500.	U D
108-90-7-----	Chlorobenzene	500.	U D
100-41-4-----	Ethylbenzene	500.	U D
100-42-5-----	Styrene	500.	U D
133-02-7-----	Xylene (total)	500.	U D
71-36-3-----	1-Butanol	25600.	U D
110-86-1-----	Pyridine	25200.	U D

10/17/94

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ADDENDUM 1A,
Contract:

V123RE

Lab Name: WHC PAL

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A #1

Matrix: (soil/water) WATER

Lab Sample ID: V123RE

Sample wt/vol: 0.1 (g/mL) ML

Lab File ID: >AE24H

Level: (low/med) LOW

Date Received: 5/16/94

% Moisture: not dec.

Date Analyzed: 5/24/94

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 50

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

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

CAS NO.

COMPOUND

Q

74-87-3-----	Chloromethane	500.	U D
74-83-9-----	Bromomethane	500.	U D
75-01-4-----	Vinyl Chloride	500.	U D
75-00-3-----	Chloroethane	500.	U D
75-09-2-----	Methylene Chloride	500.	U D
67-64-1-----	Acetone	100-500.	U D 5
75-15-0-----	Carbon Disulfide	500.	U D
75-35-4-----	1,1-Dichloroethene	500.	U D
75-34-3-----	1,1-Dichloroethane	500.	U D
540-59-0-----	1,2-Dichloroethene (total)	500.	U D
67-66-3-----	Chloroform	500.	U D
107-02-2-----	1,2-Dichloroethane	500.	U D
78-93-3-----	2-Butanone	500.	U D
71-55-6-----	1,1,1-Trichloroethane	500.	U D
56-23-5-----	Carbon Tetrachloride	500.	U D
75-27-4-----	Bromodichloromethane	500.	U D
78-87-5-----	1,2-Dichloropropane	500.	U D
10061-01-5-----	cis-1,3-Dichloropropene	500.	U D
79-01-6-----	Trichloroethene	500.	U D
124-48-1-----	Dibromochloromethane	500.	U D
79-00-5-----	1,1,2-Trichloroethane	500.	U D
71-43-2-----	Benzene	500.	U D
10061-02-6-----	trans-1,3-Dichloropropene	500.	U D
75-25-2-----	Bromoform	500.	U D
108-10-1-----	4-Methyl-2-pentanone	500.	U D
591-78-6-----	2-Hexanone	500.	U D
127-18-4-----	Tetrachloroethene	500.	U D
79-34-5-----	1,1,2,2-Tetrachloroethane	500.	U D
108-88-3-----	Toluene	500.	U D
108-90-7-----	Chlorobenzene	500.	U D
100-41-4-----	Ethylbenzene	500.	U D
100-42-5-----	Styrene	500.	U D
133-02-7-----	Xylene (total)	500.	U D
71-36-3-----	1-Butanol	25600.	U D
110-86-1-----	Pyridine	25200.	U D

BEST AVAILABLE COPY

11/17/94

1A ADDENDUM 1A,
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V127

Field Blank V123

Lab Name: WHC PAL

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A #1

Matrix: (soil/water) WATER

Lab Sample ID: V127

Sample wt/vol: 5 (g/mL) ML

Lab File ID: >AE24E

Level: (low/med) LOW

Date Received: 5/16/94

% Moisture: not dec.

Date Analyzed: 5/24/94

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg) ug/L

Q

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	.5	JP 4-30-94
67-64-1-----	Acetone	10.	U
75-15-0-----	Carbon Disulfide	10.	U
75-35-4-----	1,1-Dichloroethene	10.	U
75-34-3-----	1,1-Dichloroethane	10.	U
540-59-0-----	1,2-Dichloroethene (total)	10.	U
67-66-3-----	Chloroform	.2 10.	U J
107-02-2-----	1,2-Dichloroethane	10.	U
78-93-3-----	2-Butanone	10.	U
71-55-6-----	1,1,1-Trichloroethane	10.	U
56-23-5-----	Carbon Tetrachloride	10.	U
75-27-4-----	Bromodichloromethane	10.	U
78-87-5-----	1,2-Dichloropropane	10.	U
10061-01-5-----	cis-1,3-Dichloropropene	10.	U
79-01-6-----	Trichloroethene	10.	U
124-48-1-----	Dibromochloromethane	10.	U
79-00-5-----	1,1,2-Trichloroethane	10.	U
71-43-2-----	Benzene	10.	U
10061-02-6-----	trans-1,3-Dichloropropene	10.	U
75-25-2-----	Bromoform	10.	U
108-10-1-----	4-Methyl-2-pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	10.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	10.	U
108-88-3-----	Toluene	.2 10.	U J
108-90-7-----	Chlorobenzene	10.	U
100-41-4-----	Ethylbenzene	10.	U
100-42-5-----	Styrene	10.	U
133-02-7-----	Xylene (total)	.8	JP 4-30-94
71-36-3-----	1-Butanol	512.	U 10/17/94
110-86-1-----	Pyridine	504.	U

EPA SAMPLE NO.

WHC-SD-WM-DP-067, REV. 0

EPA SAMPLE NO.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEETADDENDUM 1A,
Contract:

V127RE

Lab Name: WHC PAL

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A #1

Matrix: (soil/water) WATER

Lab Sample ID: V127RE

Sample wt/vol: 5 (g/mL) ML

Lab File ID: >AE24F

Level: (low/med) LOW

Date Received: 5/16/94

% Moisture: not dec.

Date Analyzed: 5/24/94

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

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

CAS NO.

COMPOUND

Q

74-87-3-----	Chloromethane	10.	U
74-83-9-----	Bromomethane	10.	U
75-01-4-----	Vinyl Chloride	10.	U
75-00-3-----	Chloroethane	10.	U
75-09-2-----	Methylene Chloride	10.	U
67-64-1-----	Acetone	10.	U
75-15-0-----	Carbon Disulfide	10.	U
75-35-4-----	1,1-Dichloroethene	10.	U
75-34-3-----	1,1-Dichloroethane	10.	U
540-59-0-----	1,2-Dichloroethene (total)	10.	U
67-66-3-----	Chloroform	10.	U
107-02-2-----	1,2-Dichloroethane	10.	U
78-93-3-----	2-Butanone	10.	U
71-55-6-----	1,1,1-Trichloroethane	10.	U
56-23-5-----	Carbon Tetrachloride	10.	U
75-27-4-----	Bromodichloromethane	10.	U
78-87-5-----	1,2-Dichloropropane	10.	U
10061-01-5-----	cis-1,3-Dichloropropene	10.	U
79-01-6-----	Trichloroethene	10.	U
124-48-1-----	Dibromochloromethane	10.	U
79-00-5-----	1,1,2-Trichloroethane	10.	U
71-43-2-----	Benzene	10.	U
10061-02-6-----	trans-1,3-Dichloropropene	10.	U
75-25-2-----	Bromoform	10.	U
108-10-1-----	4-Methyl-2-pentanone	10.	U
591-78-6-----	2-Hexanone	10.	U
127-18-4-----	Tetrachloroethene	10.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	10.	U
108-88-3-----	Toluene	10.	U
108-90-7-----	Chlorobenzene	10.	U
100-41-4-----	Ethylbenzene	10.	U
100-42-5-----	Styrene	10.	U
133-02-7-----	Xylene (total)	10.	U
71-36-3-----	1-Butanol	512.	U
110-86-1-----	Pyridine	504.	U

FORM I VOA

11232

144

3/90 022

WHC-SD-WM-DP- 067
ADDENDUM 1A REV. 0

APPENDIX 2
DATA ASSESSMENT FORMS

APPENDIX D

LEVEL B DOCUMENTATION

WHC-SD-WM-DP-067
ADDENDUM 1A REV. 0 Westinghouse
Hanford Company

OFFICE OF SAMPLE MANAGEMENT RCRA DATA VALIDATION - LEVEL B

Date 10/11/94Reviewed By A. Schult

DATA ASSESSMENT SUMMARY

Sample # <u>VII7, VII8, VI23, VI27, VI03, VI07, VI08, VII2, VII3</u>	Chain of Custody	<u>0</u>
Matrix <u>water</u>	Analysis Completeness	<u>0</u>
Sample Date <u>5/4/94 - 6/9/94</u>	Holding Times	<u>N/A</u>
Laboratory <u>222-S</u>	Analytical Blanks	<u>0</u>
	MS or MS/MSD	<u>0</u>
	Duplicate Analysis	<u>X</u>
	Surrogate Recovery	<u>0</u>

0 -data had no problems; X -data qualified due to minor problems
M -data qualified due to major problems/some data may be unusable

Overall Assessment: _____

Comments: _____

1A 234

RCRA B - Cover

024

APPENDIX D

LEVEL B DOCUMENTATION (cont)

WHC-SD-WM-DP-667
ADDENDUM 1A REV. 0

RCRA Level B QC (cont)

Date 10/11/94Reviewed by S. SchmittV117, V118, V123, V127Sample # V103, V107, V108, V112, V113Analysis volatile

ANALYTICAL BLANK ANALYSIS

Blank Sample # VBIK01VBIK02VBIK03VBIK06VBIK10VBIK11Associated Samples V107/REV103/RE V118/REV123/RE V127/REV113/RE V117/REV112/RE V108/REV108

Comments:

No compounds detected in blankAction: none

MATRIX SPIKE or MS/MSD (circle one)

Sample Spiked V118, V113Associated Samples V117 V118Matrix waterV123 V127 V103 V107V108 V112 V113Comments: Recoveries within control limitsAction: none

1A-235

APPENDIX D

LEVEL B DOCUMENTATION (cont)

WHC-SD-WM-DP-667
ADDENDUM 1A REV. 0

RCRA Level B QC

Date 10/11/94 Reviewed by S. Schildt

V107, V108, V112, V113

Sample # V117, V118, V123, V127, V103Analysis volatile

DUPLICATE ANALYSIS

Duplicate Sample V108 RE Associated Samples V108Matrix water

Comments: RPD > 20% for acetone

Action: J

SURROGATE RECOVERY

Comments: all surrogate recoveries within
control limits

Action: none

1A-236

APPENDIX D

WHC-SD-WM-DP-1117
ADDENDUM 11 REV. 0

LEVEL B DOCUMENTATION (cont)

RCRA Level B QC

Date 10/11/94 Reviewed by S. SchmittSample # —Analysis volatile

DUPLICATE ANALYSIS

Duplicate Sample V117RE Associated Samples V117Matrix water

Comments: RPD >20% chloroform and ethylbenzene

Action: J

SURROGATE RECOVERY

Comments: —

Action:

1A-237

027

SAMPLE MANAGEMENT AND ADMINISTRATION
DATA VALIDATION FOR RCRA ANALYSES

Manual
Section
Page
Effective Date

WHC-CM-5-3
2.0, REV 0
20 of 24
08/27/90

APPENDIX D

WHC-SD-WM-DP-067
ADDENDUM 11 REV. 0

LEVEL B DOCUMENTATION (cont)

RCRA Level B QC

Date 10/13/94 Reviewed by A. Schults

Sample # V113, V118

Analysis volatile

DUPLICATE ANALYSIS

Duplicate Sample V113, V118

Associated Samples V103 V107

Matrix water

V108 V112 V113 V117

V118 V123 V127

Comments: all MS/MSD RPD < 20%

Action: none

SURROGATE RECOVERY

Comments:

Action:

1A238

028

WHC-SD-WM-DP-067
ADDENDUM 1A . REV. 0

APPENDIX 3
DATA SUMMARY FORM

1A-239

029

Parameter	Samp#	V103		V103RE		V107		V107RE		V108		V108RE	
	Date	5-4-94		5-4-94		5-4-94		5-4-94		6-9-94		6-9-94	
	Location	242-A		242-A		242-A		242-A		242-A		242-A	
	Depth	---		---		---		---		---		---	
	Type	WATER		WATER		WATER		WATER		WATER		WATER	
	Comments					FIELD BLANK		FIELD BLANK					
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
CHLOROMETHANE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
BROMOMETHANE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
VINYL CHLORIDE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
CHLOROETHANE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
METHYLENE CHLORIDE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	8.000	J	500.000	U
ACETONE	UG/L	270.000	JD	500.000	UD	10.000	U	10.000	U	50.000	J	94.000	J
CARBON DISULFIDE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
1,1-DICHLOROETHENE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
1,1-DICHLOROETHANE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
1,2-DICHLOROETHENE (TOTAL)	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
CHLOROFORM	UG/L	500.000	UD	500.000	UD	0.200	J	10.000	U	500.000	U	500.000	U
1,2-DICHLOROETHANE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
2-BUTANONE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
1,1,1-TRICHLOROETHANE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
CARBON TETRACHLORIDE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
BROMODICHLOROMETHANE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
1,2-DICHLOROPROPANE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
CIS-1,3-DICHLOROPROPENE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
TRICHLOROETHENE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
DIBROMOCHLOROMETHANE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
1,1,2-TRICHLOROETHANE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
BENZENE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
TRANS-1,3-DICHLOROPROPENE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
BROMOFORM	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
4-METHYL-2-PENTANONE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
2-HEXANONE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
TETRACHLOROETHENE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
1,1,2,2-TETRACHLOROETHANE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
TOLUENE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
CHLOROBENZENE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
ETHYLBENZENE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
STYRENE	UG/L	500.000	UD	500.000	UD	10.000	U	10.000	U	500.000	U	500.000	U
XYLENES (TOTAL)	UG/L	500.000	UD	500.000	UD	10.000	U	0.300	J	500.000	U	500.000	U
1-BUTANOL	UG/L	25600.000	UD	25600.000	UD	512.000	U	512.000	U	25600.000	U	25600.000	U
PYRIDINE	UG/L	25200.000	UD	25200.000	UD	504.000	U	504.000	U	25200.000	U	25200.000	U

WHC-SD-WM-DP-067
ADDENDUM 1A REV. 0

300

Sample#	Date	Location	Depth	Type	Comments	Parameter	
						Units	Result
V112	6-9-94	242-A	---	WATER	FIELD BLANK	10.000	10.000
V112RE	6-9-94	242-A	---	WATER	FIELD BLANK	10.000	10.000
V113	5-23-94	242-A	---	WATER	FIELD BLANK	500.000	500.000
V113RE	5-23-94	242-A	---	WATER	FIELD BLANK	500.000	500.000
V117	5-23-94	242-A	---	WATER	FIELD BLANK	10.000	10.000
V117RE	5-23-94	242-A	---	WATER	FIELD BLANK	10.000	10.000
CHLOROMETHANE							10.000
BROMOMETHANE							10.000
VINYL CHLORIDE							10.000
CHLOROETHANE							10.000
METHYLENE CHLORIDE							10.000
ACETONE							10.000
CARBON DISULFIDE							10.000
1,1-DICHLOROETHENE							10.000
1,1-DICHLOROETHANE							10.000
1,2-DICHLOROETHANE							10.000
CHLOROFORM							10.000
1,2-DICHLOROETHANE							10.000
2-BUTANONE							10.000
1,1,1-TRICHLOROETHANE							10.000
CARBON TETRACHLORIDE							10.000
BROMODICHLOROMETHANE							10.000
1,2-DICHLOROPROPANE							10.000
CIS-1,3-DICHLOROPROPENE							10.000
TRICHLOROETHENE							10.000
DIBROMOCHLOROMETHANE							10.000
1,1,2-TRICHLOROETHANE							10.000
BENZENE							10.000
TRANS-1,3-DICHLOROPROPENE							10.000
BROMOFORM							10.000
4-METHYL-2-PENTANONE							10.000
2-HEXANONE							10.000
TETRACHLOROETHENE							10.000
1,1,2,2-TETRACHLOROETHANE							10.000
TOLUENE							10.000
CHLOROBENZENE							10.000
ETHYLBENZENE							10.000
STYRENE							10.000
XYLENES (TOTAL)							10.000
1-BUTANOL							10.000
PYRIDINE							10.000

WHC-SD-WM-DP-117
 ADDENDUM 117 REV. 0

Validated Data Summary, Data Package: V81-222-094

Parameter	Samp# Date Location Depth Type Comments	V118 5-9-94 242-A --- WATER		V118RE 5-9-94 242-A --- WATER		V123 5-16-94 242-A --- WATER		V123RE 5-16-94 242-A --- WATER		V127 5-16-94 242-A --- WATER FIELD BLANK		V127RE 5-16-94 242-A --- WATER FIELD BLANK	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
CHLOROMETHANE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
BROMOMETHANE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
VINYL CHLORIDE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
CHLOROETHANE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
METHYLENE CHLORIDE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	0.500	J	10.000	U
ACETONE	UG/L	500.000	UD	180.000	JD	500.000	UD	100.000	JD	10.000	U	10.000	U
CARBON DISULFIDE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
1,1-DICHLOROETHENE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
1,1-DICHLOROETHANE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
1,2-DICHLOROETHENE (TOTAL)	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
CHLOROFORM	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	0.200	J	10.000	U
1,2-DICHLOROETHANE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
2-BUTANONE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
1,1,1-TRICHLOROETHANE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
CARBON TETRACHLORIDE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
BROMODICHLOROMETHANE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
1,2-DICHLOROPROPANE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
CIS-1,3-DICHLOROPROPENE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
TRICHLOROETHENE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
DIBROMOCHLOROMETHANE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
1,1,2-TRICHLOROETHANE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
BENZENE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
TRANS-1,3-DICHLOROPROPENE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
BROMOFORM	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
4-METHYL-2-PENTANONE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
2-HEXANONE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
TETRACHLOROETHENE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
1,1,2,2-TETRACHLOROETHANE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
TOLUENE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	0.200	J	10.000	U
CHLOROBENZENE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
ETHYLBENZENE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
STYRENE	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	10.000	U	10.000	U
XYLENES (TOTAL)	UG/L	500.000	UD	500.000	UD	500.000	UD	500.000	UD	0.800	J	0.700	J
1-BUTANOL	UG/L	25600.000	UD	25600.000	UD	25600.000	UD	25600.000	UD	512.000	U	512.000	U
PYRIDINE	UG/L	25200.000	UD	25200.000	UD	25200.000	UD	25200.000	UD	504.000	U	504.000	U

WHC-SD-WM-DP-067
ADDENDUM/H REV. 0

032

WHC-SD-WM-DP-067
ADDENDUM 18 REV. 0

APPENDIX 4

CHAIN OF CUSTODY INFORMATION

1A243

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TANK FARM PLANT OPERATING PROCEDURE

WHC-SD-WM-DP-067, REV. 0

COPY

CHAIN OF CUSTODY FORM ADDENDUM 1A,

COMPANY CONTACT	BH Von Bargen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5-4-94 TIME 1430
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2604
REMARKS	This COC is used for the second of two 60 mL slurry samples in a glass bottle labeled PNLS1. This sample is for organic analysis.		
ICE CHEST OR SAMPLE PIG No.	G-10	SAMPLE CONTAINER No.	PNLS1 <u>✓103</u>
DESTINATION	222-S Laboratory		

VGA

(HP)

HPT SHIPPING CONTAINER RELEASE: Tue R

DATE: 5-5-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(s)
PNLS1

CHAIN OF POSSESSION

Relinquished by: <u>J.W. McMullen</u>	Received by: <u>J. Blum</u>	Date/Time: <u>5/4/94 1625</u>
Relinquished by: <u>J. Blum</u>	Received by: <u>Brian Butler</u>	Date/Time: <u>5/4/94 2350</u>
Relinquished by: <u>Brian Butler</u>	Received by: <u>J.W. McMullen</u>	Date/Time: <u>5-5-94 0835</u>
Relinquished by: <u>J.W. McMullen</u>	Received by: <u>J. Fran</u>	Date/Time: <u>5-5-94 0920</u>
Relinquished by: <u>J. Fran</u>	Received by: <u>Samuel Cobb</u>	Date/Time: <u>05-05-94 1015</u>
Relinquished by: <u> </u>	Received by: <u> </u>	Date/Time: <u> </u>
Relinquished by: <u> </u>	Received by: <u> </u>	Date/Time: <u> </u>

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TANK FARM PLANT OPERATING PROCEDURE

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A,

CHAIN OF CUSTODY FORM

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5-4-94 5/4/94 TIME 1450
SAMPLE LOCATIONS	242-A - Slurry (field blank)	CUSTODY SEAL No.	2602
REMARKS	This COC is used for the 60 mL slurry field blank sample in a glass bottle labeled PNLB1.		
ICE CHEST OR SAMPLE Pkg No.	N/A	SAMPLE CONTAINER No.	PNLB1 V107
DESTINATION	222-S Laboratory		

TOC
VOA

(HP)

HPT SHIPPING CONTAINER RELEASE:

DATE: 5-5-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(s)
PNLB1

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
J.W. McMullen	EPB	5/4/94 1625
Relinquished by:	Received by:	Date/Time:
EPB	Brian Butcher	5/4/94 2347
Relinquished by:	Received by:	Date/Time:
Brian Butcher	J.W. McMullen	5-5-94 0835
Relinquished by:	Received by:	Date/Time:
J.W. McMullen	John J. Wren	5-5-94 0920
Relinquished by:	Received by:	Date/Time:
John J. Wren	Donald Cobb	05-05-94 1015
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

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TANK FARM PLANT OPERATING PROCEDURE

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ADDENDUM 1A,

CHAIN OF CUSTODY FORM

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5/9/94 TIME: 1130
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2414
REMARKS	This COC is used for the first of two 60 mL slurry samples in a glass bottle labeled PNLS2. This sample is for organic analysis.		
ICE CHEST OR SAMPLE PIG No.	6-1	SAMPLE CONTAINER No.	PNLS2 V118
DESTINATION	222-S Laboratory		

00A

(HP) HPT SHIPPING CONTAINER RELEASE: Tim Remy DATE: 5-9-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(s)	
PNLS2	

CHAIN OF POSSESSION

Relinquished by: <u>J.W. McMullen</u>	Received by: <u>M. Sine</u>	Date/Time: <u>5/9/94 1415</u>
Relinquished by: <u>M. Sine</u>	Received by: <u>Sandra Cobb</u>	Date/Time: <u>05-09-94 1510</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

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TANK FARM PLANT OPERATING PROCEDURE

WHC-SD-WM-DP-067, REV. 0

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CHAIN OF CUSTODY FORM ADDENDUM 1A,

COMPANY CONTACT	B.H. VON BARGEN	TELEPHONE	373-1829
BILL OF LADING No.	N.A.	OFFSITE PROPERTY No.	N.A.
METHOD OF SHIPMENT	B-PLANT SAMPLE TRUCK		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5-16-94 TIME 1130
SAMPLE LOCATIONS	242-A	CUSTODY SEAL No.	2643
REMARKS			
ICE CHEST OR SAMPLE PIG No.	G-9	SAMPLE CONTAINER No.	PNL 53 - A 123
DESTINATION	222-S LAB		

(HP)

HPT SHIPPING CONTAINER RELEASE:

[Signature]

DATE: 5-16-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)
PNL 53

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	5-16-94 1320
Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	5-16-94 1355
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

[Signature]
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TANK FARM PLANT OPERATING PROCEDURE

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CHAIN OF CUSTODY FORM

COMPANY CONTACT	B.H. VON BARGEN	TELEPHONE	373-1829
BILL OF LADING No.	N.A.	OFFSITE PROPERTY No.	N.A.
METHOD OF SHIPMENT	B-PLANT SAMPLE TRUCK		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5-16-94 TIME 1130
SAMPLE LOCATIONS	242-A	CUSTODY SEAL No.	2650
REMARKS	Field Blank		
ICE CHEST OR SAMPLE PIG No.	N/A	SAMPLE CONTAINER No.	PNL B3-A ✓ 121
DESTINATION	222-S LAB		

(HP) HPT SHIPPING CONTAINER RELEASE: W. H. H. H. DATE: 5-16-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)
PNL B3

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
<u>[Signature]</u>	<u>[Signature]</u>	5-16-94 1320
Relinquished by:	Received by:	Date/Time:
<u>[Signature]</u>	<u>[Signature]</u>	05-16-94 1355
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

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TANK FARM PLANT OPERATING PROCEDURE

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CHAIN OF CUSTODY FORM

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. MCMULLEN	DATE	5/23/94 TIME 1215
SAMPLE LOCATIONS	242-A - Slurry — (field blank)	CUSTODY SEAL No.	2642
REMARKS	This COC is used for the first of two 60 mL field blanks in a glass bottle labeled PNLB4.		
ICE CHEST OR SAMPLE PIG No.	N/A	SAMPLE CONTAINER No.	N/A 0117
DESTINATION	222-S Laboratory		

(HP) HPT SHIPPING CONTAINER RELEASE: *[Signature]* DATE: 5-23-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)	
PNLB4	

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	5-23-94 1910
Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	5-23-94 1500
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

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TANK FARM PLANT OPERATING PROCEDURE

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CHAIN OF CUSTODY FORM

COPY

1

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5/23/94 TIME 1215
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2601
REMARKS	This COC is used for the first of two 60 mL slurry samples in a glass bottle labeled PNLS4.		
ICE CHEST OR SAMPLE PIG No.	TF-7	SAMPLE CONTAINER No.	
DESTINATION	222-S Laboratory		

(HP)

HPT SHIPPING CONTAINER RELEASE: *[Signature]*

DATE: 5-23-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(s)	
PNLS4	

CHAIN OF POSSESSION

Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date/Time: 5-23-94 1315 190
Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date/Time: 5-23-94 1500
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

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TANK FARM PLANT OPERATING PROCEDURE

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CHAIN OF CUSTODY FORM

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	<i>Tim Parrell</i>	DATE	6-9-94 TIME 1130
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2289
REMARKS	This COC is used for the first of two 60 mL slurry samples in a glass bottle labeled PNLS5. This sample is for organic analysis.		
ICE CHEST OR SAMPLE PIG No.	TF-7	SAMPLE CONTAINER No.	V108
DESTINATION	222-S Laboratory		

(HP) HPT SHIPPING CONTAINER RELEASE: _____ DATE: _____

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)		
PNLS5	_____	_____
_____	_____	_____

CHAIN OF POSSESSION

Relinquished by: <i>Tim Parrell</i>	Received by: <i>Mike Hand</i>	Date/Time: 6-9-94 1456
Relinquished by: <i>Mike Hand</i>	Received by: <i>T. Higgins</i>	Date/Time: 6-9-94 1600
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

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TANK FARM PLANT OPERATING PROCEDURE

WHC-SD-WM-DP-067; REV. 0 ADDENDUM 1A

CHAIN OF CUSTODY FORM

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	<i>[Signature]</i>	DATE	6-9-94 TIME 1130
SAMPLE LOCATIONS	242-A - Slurry (field blank)	CUSTODY SEAL No.	2286
REMARKS	This COC is used for the first of two 60 mL field blanks in a glass bottle labeled PNLB5.		
ICE CHEST OR SAMPLE PIG No.	N/A	SAMPLE CONTAINER No.	V112
DESTINATION	222-S Laboratory		

(HP) HPT SHIPPING CONTAINER RELEASE: _____ DATE: _____

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(s)	
PNLB5	_____
_____	_____

CHAIN OF POSSESSION

Relinquished by:	Received by: <i>[Signature]</i>	Date/Time: 6-9-94 1457
Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date/Time: 6-9-94 1600
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

[Signature]
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REQUEST FOR SPECIAL ANALYSIS (RSA)

RSA No.

1907

1. Sample Origin ry, 242-A Evaporator (protocol analyses)		2. Date Submitted 5/4/94		4. Requester Name George L Miller		6. Charge Code/Work Package NIA7F	
		3. Submitted By George L Miller		5. Requester Phone/MSIN 373-4739/T606		7. Date Required 30 days from sample receipt date	
8. Customer ID	Collected		9. Laboratory ID	12. Number of Samples 2 bottles from SLY-A, 1 bottle from Field Blank	13. Volume of Samples 60 ml	14. Protocols Technology per	
	Date	Time				☐ None ☒ RCRA ☐ NQA-1 ☐ Other ☐ CERCLA	
SLY-A (for VOA)	10/15		V103				
SLY-A (for Semi-VOA and TOC)			V106				
Field Blank (BI)	10/15		V107				
WHC-SD-WM-DP-067, REV. 0 ADDENDUM 1A,				15. Sample Type ☐ Solid ☐ Soil ☒ Slurry ☐ Gas ☐ Water ☐ Waste ☐ Solution ☐ Sludge ☐ Oil ☐ Other (specify) _____			
				16. Storage Requirements ☐ None ☒ Specify Place all 3 bottles in the VOA refrigerator (4°C)			
				17. Process Knowledge/Known Listed Wastes ☐ Unknown ☒ Known (Please attach list) Prior Evaporator runs ☐ Previously submitted for this Project			
10. Determination		11. Expected Range		18. Survey Dose Rate			
VOA-RCRA (Direct)				HPT Signature _____			
Semi-VOA-RCRA (Direct)							
TOC (Direct)		Use LA-344-105					
Field Blank VOA only				19. Disposition of Waste ☐ Return to Client/Location _____ ☐ Dispose per 222-S Procedures ☒ Other per TPP: WHC-SD-WM-TPP-048			
				20. Additional Information Sample shipping # PNL-S1 is customer ID SLY-A Sample shipping # PNL-B1 is customer ID Field Blank VOA: Analyses in duplicate from one bottle. Semi-VOA and TOC: Analyses in duplicate on contents of the other (2nd) bottle. TOC: Perform spike and spike duplicate analyses. STD V104 Blank V105			
21. Chain of Custody		2604-V103 2603-V106 Seal #: 2602-Blank		22. Assigned Custodial Group (select one) ☐ PCL ☒ POSU ☐ ENV ☐ Process			
23. Sample Received By: <u>Pandora Cobb</u>		Date: <u>05-05-94</u> Time: <u>1015</u>		24. Laboratory Manager (if required) <u>IA-253</u> 043			

WHC-SD-WM-DP-067, REV. 0 ADDENDUM 1A.

REQUEST FOR SPECIAL ANALYSIS (RSA)						RSA No.
1. Origin Urry, 242-A Evaporator (protocol analyses)		2. Date Submitted 5/14/94		4. Requester Name George L Miller		6. Charge Code/Work Package NIA7F
		3. Submitted By George L Miller		5. Requester Phone/MSIN 373-4739 / T6-06		7. Date Required 30 days from date samples were received
8. Customer ID	Collected		9. Laboratory ID	12. Number of Samples 2 bottles from SLY-A, 1 bottle from Field Blank	13. Volume of Samples 60ml	14. Protocols Technology per ☐ None ☒ RCRA ☐ NOA-1 ☐ Other ☐ CERCLA
	Date	Time				
4-A (For VOA)			V108 -	15. Sample Type ☐ Solid ☐ Soil ☒ Slurry ☐ Gas ☐ Water ☐ Waste ☐ Solution ☐ Sludge ☐ Oil ☐ Other (specify) _____	16. Storage Requirements ☐ None ☒ Specify Place all 3 Bottles into the VOA refrigerator (4°C)	17. Process Knowledge/Known Listed Wastes ☐ Unknown ☒ Known (Please attach list) Prior Evaporator Runs ☐ Previously submitted for this Project
1-A (for Semi-			V111 ✓			
VOA & TOC)						
Field Blank 1			V112 -			
Field Blank 2			V130 -			
				18. Survey _____ HPT Signature _____ Dose Rate _____	19. Disposition of Waste ☐ Return to Client/Location _____ ☐ Dispose per 222-S Procedures ☒ Other per TPP: WHC-SD-WM-TPP-048	20. Additional Information Sample Shipping # PNL-SS is Customer ID SLY-A, Sample Shipping # PNL-B5 is Customer ID Field Blank. VOA: Analyze in duplicate from the first Bottle. Semi-VOA and TOC: Analyze in duplicate from the other (2nd) Bottle. TOC: Perform spike and spike duplicate Analyze Field Blank in duplicate STD V107 Blank V110
10. Determination Direct: VOA (RCRA) Semi-VOA (RCRA) TOC			11. Expected Range Use LA-344-105		22. Assigned Custodial Group (select one) ☐ PCL ☒ FDSU ☐ ENV ☐ Process	
1. Chain of Custody ☐ No ☒ Yes Number: Seal #: 1A-254			24. Laboratory Manager (if required) FIELD Blank 1 - VOA FIELD Blank 2 - Semi-VOA, TOC Date: 06-10-94 Time: 1600			

REQUEST FOR SPECIAL ANALYSIS (RSA)

1910

1. Sample Origin Curry, 242-A Evaporator (Protocol Samples)		2. Date Submitted 5/4/94		4. Requester Name George L Miller		6. Charge Code/Work Package NIA-7F	
		3. Submitted By George L Miller		5. Requester Phone/MSIN 873-4739 / TG-06		7. Date Required 30 days from date samples were received	
8. Customer ID	Collected		9. Laboratory ID	12. Number of Samples 2 Bottles from SLY-A, 1 Bottle from Field Blank	13. Volume of Samples 60 ml	14. Protocols Technology per ☐ None ☒ RCRA ☐ NQA-1 ☐ Other ☐ CERCLA	
	Date	Time					
SLY-A (for VOA)	Real	2601	V113				
SLY-A (for Semi-VOA & TOC)	Real	2637	V116				
Field Blank 1	Real	2642	V117				
Field Blank 2	Real	2688	V129				
				15. Sample Type ☐ Solid ☐ Soil ☒ Slurry ☐ Gas ☐ Water ☐ Waste ☐ Solution ☐ Sludge ☐ Oil ☐ Other (specify) _____			
				16. Storage Requirements ☐ None ☒ Specify Place all 3 Bottles into the VOA refrigerator (4°C)			
				17. Process Knowledge/Known Listed Wastes ☐ Unknown ☒ Known (Please attach list) Prior Evaporator Runs ☐ Previously submitted for this Project			
10. Determination		11. Expected Range		18. Survey			
Direct:				Dose Rate			
VOA (RCRA)				HPT Signature			
Semi-VOA (RCRA)				19. Disposition of Waste ☐ Return to Client/Location ☐ Dispose per 222-S Procedures ☒ Other per TPP: WHC-SD-WM-TPP-048			
TOC		Use LA-344-105		20. Additional Information Sample Shipping # PNL-54 is Customer ID SLY-A, Sample Shipping # PNL-84 is Customer ID Field Blank. VOA: Analyze in Duplicate from bnc (1st) bottle. Semi-VOA and TOC: Analyze in duplicate from the other (2nd bottle). TOC: Perform split and spike duplicate analysis Analyze Field Blank in duplicate			
21. Chain of Custody ☐ No ☒ Yes Number: Seal #: 1A-255				22. Assigned Custodial Group (select one) STD V114 Blank V115 ☐ PCL ☒ POSU ☐ ENV ☐ Process			
23. Sample Received By: [Signature] Date: 05-23-94 Time: 1500				24. Laboratory Manager (if required) FIELD BLANK 1 - VOA FIELD Blank 2 - Semi VOA, TOC 045			

REQUEST FOR SPECIAL ANALYSIS (RSA)

RSA No.

1911

1. Sample Origin <u>5/4/94</u> <u>ery, 242-A Evaporator</u> (protocol analyses)		2. Date Submitted <u>5/4/94</u>		4. Requester Name <u>George L Miller</u>		6. Charge Code/Work Package <u>N1A7F</u>	
		3. Submitted By <u>George L Miller</u>		5. Requester Phone/MSIN		7. Date Required 30 days from date samples are received	
8. Customer ID	Collected		9. Laboratory ID	12. Number of Samples <u>2 bottles</u> <u>from SLY-A,</u> <u>1 bottle from</u> <u>Field Blank</u>	13. Volume of Samples <u>60 ml</u>	14. Protocols Technology per ☐ None ☒ RCRA ☐ NQA-1 ☐ Other ☐ CERCLA	
	Date	Time					
SLY-A (for VOA)	<u>Seal #</u>		<u>V118</u>				
SLY-A (for Semi-VOA and TOC)	<u>Seal #</u>		<u>V121</u>				
Field Blank	<u>Seal # 2631</u>		<u>V122</u>				
WHC-SD-WM-DP-067, REV. 0 ADDENDUM 1A,				15. Sample Type ☐ Solid ☐ Soil ☒ Slurry ☐ Gas ☐ Water ☐ Waste ☐ Solution ☐ Sludge ☐ Oil ☐ Other (specify) _____			
				16. Storage Requirements ☐ None ☒ Specify <u>place all 3 bottles into the</u> <u>VOA refrigerator (4°C)</u>			
				17. Process Knowledge/Known Listed Wastes ☐ Unknown ☒ Known (Please attach list) <u>Prior Evaporator runs</u> ☐ Previously submitted for this Project			
				18. Survey <u>C. Belew</u> Dose Rate HPT Signature <u>400mead</u> (Corrected)			
				19. Disposition of Waste ☐ Return to Client/Location ☐ Dispose per 222-S Procedures ☒ Other per TPP: <u>WHC-SD-WM-TPP-048</u>			
10. Determination		11. Expected Range		20. Additional Information <u>Sample Shipping # PNL-S2 is Customer ID SLY-A</u> <u>Sample Shipping # PNL-B2 is Customer ID Field Blank.</u> <u>VOA: Analyze in duplicate from one (1st) bottle.</u> <u>Semi-VOA & TOC: Analyze in duplicate from the</u> <u>contents of the other (2nd) bottle</u> <u>VOA, Semi-VOA and TOC: Perform Spike and</u> <u>Spike duplicate analyses.</u> <u>Analyze Field Blank in duplicate (VOA & TOC only)</u> <u>STD: V119 Blank V120</u> ☐ PCL ☒ POSU ☐ ENV ☐ Process			
21. Chain of Custody ☐ No ☒ Yes Number: <u>Seal #:</u>				22. Assigned Custodial Group (select one) <u>STD: V119 Blank V120</u> ☐ PCL ☒ POSU ☐ ENV ☐ Process			
23. Sample Received By: <u>Shirley Cobb</u> Date: <u>05-09-04</u> Time: <u>1455</u>				24. Laboratory Manager (if required) <u>11:256</u> <u>046</u> Date: _____			

REQUEST FOR SPECIAL ANALYSIS (RSA)						RSA No.
Sample Origin		2. Date Submitted		4. Requester Name		8. Charge Code/Work Package
Slurry, 242-A Evaporator (protocol Samples)		5/4/94		George L Miller		NIA7F
		3. Submitted By		5. Requester Phone/MSIN		7. Date Required
		George L Miller		373-4739 /T6-06		30 days from date samples were received
B. Customer ID	Collected		9. Laboratory ID		12. Number of Samples	13. Volume of Samples
	Date	Time				
SLY-A (for VOA)	Seal #	2643	V123		2 Bottles from SLY-A, 1 Bottle from Field Blank	60 ml
SLY-A (for Semi-	Seal #	2644	V126			
VOA and TOC)						
Field Blank 1	Seal #	2650	V127			
Field Blank 2	Seal #	3366	V128			
WHC-SD-WM-DP-067, REV. 0 ADDENDUM 1A,						14. Protocols Technology per
						☐ None ☒ RCRA
						☐ NQA-1 ☐ Other
						☐ CERCLA
15. Sample Type						
☐ Solid ☐ Soil ☒ Slurry						
☐ Gas ☐ Water ☐ Waste						
☐ Solution ☐ Sludge ☐ Oil						
☐ Other (specify) _____						
16. Storage Requirements						
☐ None						
☒ Specify place all 3 bottles in the VOA refrigerator (4°C)						
17. Process Knowledge/Known Listed Wastes						
☐ Unknown						
☒ Known (Please attach list) Prior Evaporator Runs						
☐ Previously submitted for this Project						
10. Determination		11. Expected Range		18. Survey		Dose Rate
Direct:				HPT Signature		
VOA (Direct) RCRA						
Semi-VOA (Direct) RCRA						
TOC (Direct)		Use LA-344-105				
19. Disposition of Waste						
☐ Return to Client/Location						
☐ Dispose per 222-S Procedures						
☒ Other per TPP: WHC-SD-WM-TPP-048						
20. Additional Information						
Sample Shipping # PNL-S3 is Customer ID SLY-A. Sample Shipping # PNL-B3 is Customer ID Field Blank. VOA: Analyze in duplicate from one (1st) bottle. Semi-VOA and TOC: Analyze in duplicate from the other (2nd) bottle. FOC: Perform spike and spike duplicate analyses. Analyze Field Blank in duplicate - VOA						
21. Chain of Custody						
☐ No						
☒ Yes Number: Seal #: s.c. please						
22. Assigned Custodial Group (select one)						
STD V124 Blank V125						
☐ PCL ☒ POSU ☐ ENV ☐ Process						
23. Sample Received By: Sherron Cobb						
Date: 05-16-94 Time: 1355						
24. Laboratory Manager (if required) Field Blank 2 in duplicate - Semi VOA + TOC 1/257 047						

WHC-SD-WM-DP- 067
ADDENDUM 1A REV. 0
MEMORANDUM

TO: 242-A Project QA Record

FR: Sandra Schildt, Golder Associates Inc. *AS*

RE: SEMIVOLATILE ORGANIC ANALYSIS DATA VALIDATION SUMMARY FOR DATA PACKAGE V81-222-094 (943-1610.009, 094SV.242)

INTRODUCTION

This memorandum presents the results of data validation on data package V81-222-094 prepared by the 222-S laboratory. A list of the samples validated along with the analyses reported and the method of analysis is provided in the following table.

LABORATORY SAMPLE ID	CLIENT SAMPLE ID	SAMPLE DATE	SAMPLE TYPE	ANALYSIS
V106	SLY-A	5/4/94		see Note 1
V111	SLY-A	6/9/94		
V116	SLY-A	5/23/94		
V121	SLY-A	5/9/94		
V122	FIELD BLANK	5/9/94	Field Blank	
V126	SLY-A	5/16/94		
V128	FIELD BLANK 2	5/16/94	Field Blank	
V129	FIELD BLANK 2	5/23/94	Field Blank	
V130	FIELD BLANK 2	6/9/94	Field Blank	

Note 1. Samples were requested to be analyzed for semivolatile organic compounds in duplicate and total organic carbon.

Data validation was conducted in accordance with 242-A Evaporator Sampling Quality Assurance Project Plan and Level B procedures as specified in Data Validation for RCRA Analyses, Section 2.0 (WHC 1990). Validation was performed on 100% of the samples reported.

This report contains four appendices. The appendices are as follows:

- Appendix 1. Annotated Laboratory Forms
- Appendix 2. Data Assessment Forms
- Appendix 3. Data Summary Form
- Appendix 4. Chain of Custody Information

OCT 20 1994

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met, with the exception of the minor deficiencies noted below.

Accuracy. Goals for accuracy were met, with the exception of the major and minor deficiencies noted below.

Detection Limits. Detection limit goals were exceeded for the slurry samples due to dilution factors.

Completeness. The data package was complete for all requested analyses. Nine samples (9) were submitted for duplicate analysis and validated in this data set with a total of 1242 determinations reported, 14 of which were deemed unusable. This results in a completeness of 99% which meets normal work plan objectives of 90%.

As requested, all samples were analyzed in duplicate. The original sample results and sample duplicate were evaluated for precision as well as MS/MSD results.

MAJOR DEFICIENCIES

Major deficiencies were identified during data validation which required qualification of data as unusable.

Surrogates

- Recovery of phenol-d5 was less than 10% in sample V129, a field blank. Associated compound results have been rejected (UR).

MINOR DEFICIENCIES

Minor deficiencies were identified during data validation which required qualification of the data.

Surrogates

- Surrogate recoveries were less than 10% as noted in appendix 2. As noted in the case narrative, matrix interference resulted in nitration of the phenolic surrogates and being recovered as tentatively identified compounds (TICs). Associated compounds with evidence of surrogates in the TICs have been qualified as estimated (J, UJ).

Matrix Spikes

- Recoveries of matrix spike compounds were outside control limits in samples V111 and V121. Associated compounds in samples V111, V121, and in samples not analyzed with matrix spikes have been qualified as estimated (J, UJ).

Recoveries in sample V116 were also outside control limits but surrogate recoveries in V116 indicate a dissimilarity of matrix, therefore only associated compounds in sample V116 were qualified as estimated (J, UJ) based on its spike recoveries and the recoveries were not used to qualify other samples.

WHC-SD-WM-DP-067
ADDENDUM 1A REV. 0

Matrix Spike Duplicate

- Relative percent difference (RPD) values were >20% for 1,4-dichlorobenzene, acenaphthene, 4-nitrophenol, and pentachlorophenol in V116MS/MSD. Associated compounds results in sample V116 have been qualified as estimated (J, UJ). Qualification of other sample results was not necessary as they have been qualified due to previously mentioned deficiencies.

Sample Duplicate

- The RPD for 1-butanol between V106 and V106DU exceeded 20%. The results for 1-butanol have been qualified as estimated (J, UJ) for V106 and V106DU. The RPD for tributylester phosphoric acid between V116 and V116DU, and between V121 and V121DU exceeded 20%. The results for tributylester phosphoric acid have been qualified as estimated (J, UJ) for V116, V116DU, V121, and V121DU.

TENTATIVELY IDENTIFIED COMPOUNDS

- Tentatively identified compounds (TICs) indicative of common laboratory contaminants are rejected (R).

REFERENCES

WHC 1990, Data Validation for RCRA Analysis, WHC-CM-5-3, August 27, 1990. Westinghouse Hanford Company, Richland, Washington.

WHC 1994, 242-A Evaporator Sampling Quality Assurance Project Plan, WHC-SD-WM-QAPP-009, Rev. 1. Westinghouse Hanford Company, Richland, Washington.

Ats
10/21/94

1A260

003

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

- U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample detection limit corrected for sample aliquot size, dilution factors and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.
- UJ - Indicates the constituent was analyzed for and was not detected. Due to a minor quality control deficiency identified during data validation, the concentration reported may not accurately reflect the sample detection limit. The associated data have been qualified as estimated but should be considered usable for decision making purposes.
- J - Indicates the constituent was analyzed for and detected. Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.
- R - Indicates the constituent was analyzed for and detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

WHC-SD-WM-DP- 06/17
ADDENDUM 1A REV. 0

WHC-SD-WM-DP- 067
ADDENDUM 1A REV. 0

APPENDIX 1

ANNOTATED LABORATORY REPORTS

TOC.WK3

TOTAL ORGANIC CARBON by Combustion and Coulometry
Direct
LA-344-105/B2

SAMPLE INFORMATION			SAMPLE RESULTS				QC RESULTS							QC IDENTIFICATION		
Sample I.D.	Date Collected	Lab I.D.	Sample Result $\mu\text{g C/ml}$	Duplicate Result $\mu\text{g C/ml}$	Average Result $\mu\text{g C/ml}$	Sample RPD %	Detection Limit $\mu\text{g C/ml}$	Standard Result $\mu\text{g C/L}$	Standard % Rec.	Spike % Rec.	Spike Duplicate % Rec.	Spike RPD %	Reagent Blank $\mu\text{g C/ml}$	Standard I.D.	Blank I.D.	Spike I.D.
V106	5/4/94	SLY-A-1	1.34E+3	1.17E+3	1.26E+3	13.5	5.50E+1	2.92E+0	97.3	97.5	100.8	3.0	1.10E+1	V104	V105	V106
V107	5/4/94	Field Blank	<5.50E+0	<5.50E+0	<5.50E+0	NA	5.50E+0	2.82E+0	94.0	NA	NA	NA	<5.50E+0	V104	V105	NA
V121	5/9/94	SLY-A-2	5.44E+2	5.83E+2	5.64E+2	6.9	5.50E+1	2.81E+0	93.7	91.1	99.5	8.8	<5.50E+1	V119	V120	V121
V122	5/9/94	Field Blank	1.04E+1	<5.50E+0	NA	NA	5.50E+0	2.81E+0	93.7	NA	NA	NA	<5.50E+1	V119	V120	NA
V126	5/16/94	SLY-A-3	8.25E+2	7.76E+2	8.00E+2	6.1	5.50E+1	2.78E+0	92.7	NA	NA	NA	<5.50E+1	V124	V125	NA
V128	5/16/94	Field Blank	1.71E+1	<5.50E+0	NA	NA	5.50E+0	2.79E+0	93.0	NA	NA	NA	<5.00E+0	V124	V125	NA
V116	5/23/94	SLY-A-4	9.73E+2	9.29E+2	9.51E+2	4.6	5.50E+1	2.87E+0	95.7	NA	NA	NA	<5.50E+0	V114	V115	NA
V129	5/23/94	Field Blank	<5.50E+0	<5.50E+0	<5.50E+0	NA	5.50E+0	2.94E+0	98.0	NA	NA	NA	<5.00E+0	V114	V115	NA
V111	6/9/94	SLY-A-5	2.44E+3	2.76E+3	2.60E+3	12.3	5.50E+1	2.96E+0	98.7	NA	NA	NA	<5.00E+0	V109	V110	NA
V130	6/9/94	Field Blank	<5.50E+0	<5.50E+0	<5.50E+0	NA	5.50E+0	2.96E+0	98.7	NA	NA	NA	<5.00E+0	V109	V110	NA

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A,

1A263

126

5/19/94

06

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: WHC PAL

Contract:

V106

Slurry

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS

Matrix: (soil/water) WATER

Lab Sample ID: V106

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V106.D

Level: (low/med) LOW

Date Received: 05/04/94

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

Date Extracted: 05/09/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 05/13/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A,

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q Q

108-95-2-----	Phenol	2000	#	US
111-44-4-----	bis(-2-Chloroethyl) Ether	2000	#	US
95-57-8-----	2-Chlorophenol	2000	#	US
541-73-1-----	1,3-Dichlorobenzene	2000	U	
106-46-7-----	1,4-Dichlorobenzene	2000	U	
95-50-1-----	1,2-Dichlorobenzene	2000	U	
95-48-7-----	2-Methylphenol	2000	#	US
108-60-1-----	2,2'-oxybis(1-Chloropropane)	2000	#	US
106-44-5-----	4-Methylphenol	2000	#	US
621-64-7-----	N-Nitroso-di-n-propylamine	2000	#	US
67-72-1-----	Hexachloroethane	2000	U	
98-95-3-----	Nitrobenzene	2000	#	US
78-59-1-----	Isophorone	2000	#	US
88-75-5-----	2-Nitrophenol	2000	#	US
105-67-9-----	2,4-Dimethylphenol	2000	#	US
111-91-1-----	bis(-2-Chloroethoxy) methane	2000	#	US
120-83-2-----	2,4-Dichlorophenol	2000	#	US
120-82-1-----	1,2,4-Trichlorobenzene	2000	U	
91-20-3-----	Naphthalene	2000	#	US
106-47-8-----	4-Chloroaniline	2000	U	
87-68-3-----	Hexachlorobutadiene	2000	U	
59-50-7-----	4-Chloro-3-Methylphenol	2000	#	US
91-57-6-----	2-Methylnaphthalene	2000	U	
77-47-4-----	Hexachlorocyclopentadiene	2000	U	
88-06-2-----	2,4,6-Trichlorophenol	2000	#	US
95-95-4-----	2,4,5-Trichlorophenol	2000	#	US
91-58-7-----	2-Chloronaphthalene	2000	#	US
88-74-4-----	2-Nitroaniline	2000	#	US
131-11-3-----	Dimethylphthalate	2000	#	US
208-96-8-----	Acenaphthylene	2000	#	US
606-20-2-----	2,6-Dinitrotoluene	2000	#	US
99-09-2-----	3-Nitroaniline	2000	#	US
83-32-9-----	Acenaphthene	2000	#	US

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V106

Lab Name: WHC PAL

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS

Matrix: (soil/water) WATER

Lab Sample ID: V106

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V106.D

Level: (low/med) LOW

Date Received: 05/04/94

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

Date Extracted: 05/09/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 05/13/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

WHC-SD-WM-DP-067, REV. 0

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

ADDENDUM 1A,

CAS NO.

COMPOUND

Q

Q

51-28-5-----	2,4-Dinitrophenol	2000	U	UJ
100-02-7-----	4-Nitrophenol	2000	U	UJ
132-64-9-----	Dibenzofuran	2000	U	UJ
121-14-2-----	2,4-Dinitrotoluene	2000	U	UJ
84-66-2-----	Diethylphthalate	2000	U	UJ
7005-72-3-----	4-Chlorophenyl-phenylether	2000	U	UJ
86-73-7-----	Fluorene	2000	U	UJ
100-01-6-----	4-Nitroaniline	2000	U	UJ
534-52-1-----	4,6-Dinitro-2-methylphenol	2000	U	
86-30-6-----	N-nitrosodiphenylamine (1)	2000	U	UJ
101-55-3-----	4-Bromophenyl-phenylether	2000	U	UJ
118-74-1-----	Hexachlorobenzene	2000	U	
87-86-5-----	Pentachlorophenol	2000	U	UJ
85-01-8-----	Phenanthrene	2000	U	UJ
120-12-7-----	Anthracene	2000	U	UJ
86-74-8-----	Carbazole	2000	U	
84-74-2-----	Di-n-butylphthalate	2000	U	UJ
206-44-0-----	Fluoranthene	2000	U	UJ
129-00-0-----	Pyrene	2000	U	UJ
85-68-7-----	Butylbenzylphthalate	2000	U	UJ
91-94-1-----	3,3'-Dichlorobenzidine	2000	U	
56-55-3-----	Benzo(a)anthracene	2000	U	UJ
218-01-9-----	Chrysene	2000	U	UJ
117-81-7-----	bis(2-Ethylhexyl)phthalate	590	U	J
117-84-0-----	Di-n-octylphthalate	2000	U	UJ
205-99-2-----	Benzo(b)fluoranthene	2000	U	UJ
207-08-9-----	Benzo(k)fluoranthene	2000	U	UJ
50-32-8-----	Benzo(a)pyrene	2000	U	UJ
193-39-5-----	Indeno(1,2,3-cd)pyrene	2000	U	UJ
53-70-3-----	Dibenzo(a,h)anthracene	2000	U	
191-24-2-----	Benzo(g,h,i)perylene	2000	U	UJ
110-86-1-----	Pyridine	2000	U	
71-36-3-----	1-Butanol	2000	-	J

FORM I SV-2

11/265

154

3/90

08

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V106

Lab Name: WHC PAL

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS

Matrix: (soil/water) WATER

Lab Sample ID: V106

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V106.D

Level: (low/med) LOW

Date Received: 05/04/94

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

Date Extracted: 05/09/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 05/13/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q	Q
		(ug/L or ug/Kg)	UG/L		
111-76-2-----	2-Butoxyethanol	2000		U	
126-73-8-----	Phosphoric acid, tributyleste	5100			
108-39-4-----	3-Methylphenol	2000		U	u5

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V106

Lab Name: WHC PAL

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS

Matrix: (soil/water) WATER

Lab Sample ID: v106

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V106.D

Level: (low/med) LOW

Date Received: 05/04/94

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

Date Extracted: 05/09/94

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 05/13/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0

Number TICs found: 18

CONCENTRATION UNITS: ADDENDUM 1A,
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 354-21-2	Ethane, 1,2,2-trichloro-1,1-	2.924	3400	NJ <i>R</i>
2.	Unknown	5.051	44000	J
3.	Unknown	5.248	4100	NJ
4. 142-62-1	Hexanoic acid	5.979	3300	NJ
5. 111-14-8	Heptanoic acid	6.661	3800	NJ
6.	Unknown	7.136	4800	NJ
7. 1526-17-6	2-Fluoro-6-nitrophenol	7.274	(2100)	NJ
8. 124-07-2	Octanoic Acid	7.364	3400	NJ
9. 112-05-0	Nonanoic acid	8.146	3300	NJ
10.	Unknown	8.858	2600	NJ
11. 334-48-5	Decanoic acid	8.987	3000	NJ
12. 112-37-8	Undecanoic acid	9.898	1300	NJ
13.	Unknown	9.988	1800	NJ
14.	Unknown	10.087	1400	NJ
15.	Unknown	10.505	900	NJ
16.	Unknown	11.773	4300	NJ
17.	Unknown	18.039	13000	NJ
18.				
19.				
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FORM I SV-TIC

1A267

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V106DU

Lab Name: WHC PAL

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS

Matrix: (soil/water) WATER

Lab Sample ID: V106DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V106DU.D

Level: (low/med) LOW

Date Received: 05/04/94

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

Date Extracted: 05/09/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 05/13/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

WHC-SD-WM-DP-067, REV. 0

CONCENTRATION UNITS: ADDENDUM 1A,
(ug/L or ug/Kg) UG/L Q Q

CAS NO.	COMPOUND	CONCENTRATION UNITS:		
		(ug/L or ug/Kg) UG/L	Q	Q
108-95-2	Phenol	2000	U	UJ
111-44-4	bis(-2-Chloroethyl) Ether	2000	U	UJ
95-57-8	2-Chlorophenol	2000	U	UJ
541-73-1	1,3-Dichlorobenzene	2000	U	
106-46-7	1,4-Dichlorobenzene	2000	U	
95-50-1	1,2-Dichlorobenzene	2000	U	
95-48-7	2-Methylphenol	2000	U	UJ
108-60-1	2,2'-oxybis(1-Chloropropane)	2000	U	UJ
106-44-5	4-Methylphenol	2000	U	UJ
621-64-7	N-Nitroso-di-n-propylamine	2000	U	UJ
67-72-1	Hexachloroethane	2000	U	
98-95-3	Nitrobenzene	2000	U	UJ
78-59-1	Isophorone	2000	U	UJ
88-75-5	2-Nitrophenol	2000	U	UJ
105-67-9	2,4-Dimethylphenol	2000	U	UJ
111-91-1	bis(-2-Chloroethoxy)methane	2000	U	UJ
120-83-2	2,4-Dichlorophenol	2000	U	UJ
120-82-1	1,2,4-Trichlorobenzene	2000	U	
91-20-3	Naphthalene	2000	U	UJ
106-47-8	4-Chloroaniline	2000	U	
87-68-3	Hexachlorobutadiene	2000	U	
59-50-7	4-Chloro-3-Methylphenol	2000	U	UJ
91-57-6	2-Methylnaphthalene	2000	U	
77-47-4	Hexachlorocyclopentadiene	2000	U	
88-06-2	2,4,6-Trichlorophenol	2000	U	UJ
95-95-4	2,4,5-Trichlorophenol	2000	U	UJ
91-58-7	2-Chloronaphthalene	2000	U	UJ
88-74-4	2-Nitroaniline	2000	U	UJ
131-11-3	Dimethylphthalate	2000	U	UJ
208-96-8	Acenaphthylene	2000	U	UJ
606-20-2	2,6-Dinitrotoluene	2000	U	UJ
99-09-2	3-Nitroaniline	2000	U	UJ
83-32-9	Acenaphthene	2000	U	UJ

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V106DU

Lab Name: WHC PAL

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS

Matrix: (soil/water) WATER

Lab Sample ID: V106DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V106DU.D

Level: (low/med). LOW

Date Received: 05/04/94

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

Date Extracted: 05/09/94

Concentrated Extract Volume: 1000 (UL)

Date Analyzed: 05/13/94

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A,

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Q
51-28-5	2,4-Dinitrophenol	2000	U	UJ
100-02-7	4-Nitrophenol	2000	U	UJ
132-64-9	Dibenzofuran	2000	U	UJ
121-14-2	2,4-Dinitrotoluene	2000	U	UJ
84-66-2	Diethylphthalate	2000	U	UJ
7005-72-3	4-Chlorophenyl-phenylether	2000	U	UJ
86-73-7	Fluorene	2000	U	UJ
100-01-6	4-Nitroaniline	2000	U	UJ
534-52-1	4,6-Dinitro-2-methylphenol	2000	U	UJ
86-30-6	N-nitrosodiphenylamine (1)	2000	U	UJ
101-55-3	4-Bromophenyl-phenylether	2000	U	UJ
118-74-1	Hexachlorobenzene	2000	U	UJ
87-86-5	Pentachlorophenol	2000	U	UJ
85-01-8	Phenanthrene	2000	U	UJ
120-12-7	Anthracene	2000	U	UJ
86-74-8	Carbazole	2000	U	UJ
84-74-2	Di-n-butylphthalate	2000	U	UJ
206-44-0	Fluoranthene	2000	U	UJ
129-00-0	Pyrene	2000	U	UJ
85-68-7	Butylbenzylphthalate	2000	U	UJ
91-94-1	3,3'-Dichlorobenzidine	2000	U	UJ
56-55-3	Benzo(a) anthracene	2000	U	UJ
218-01-9	Chrysene	2000	U	UJ
117-81-7	bis(2-Ethylhexyl)phthalate	2000	U	UJ
117-84-0	Di-n-octylphthalate	2000	U	UJ
205-99-2	Benzo(b) fluoranthene	2000	U	UJ
207-08-9	Benzo(k) fluoranthene	2000	U	UJ
50-32-8	Benzo(a) pyrene	2000	U	UJ
193-39-5	Indeno(1,2,3-cd)pyrene	2000	U	UJ
53-70-3	Dibenzo(a,h) anthracene	2000	U	UJ
191-24-2	Benzo(g,h,i) perylene	2000	U	UJ
110-86-1	Pyridine	2000	U	UJ
71-36-3	1-Butanol	1600	U	J

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14263

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V106DU

Lab Name: WHC PAL

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS

Matrix: (soil/water) WATER

Lab Sample ID: V106DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V106DU.D

Level: (low/med) LOW

Date Received: 05/04/94

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

Date Extracted: 05/09/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 05/13/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q	Q
		(ug/L or ug/Kg)	UG/L		
111-76-2-----	2-Butoxyethanol		2000.	U	
126-73-8-----	Phosphoric acid, tributyleste		4900		
108-39-4-----	3-Methylphenol		2000	U	uJ

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

v106du

Lab Name: WHC PAL

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS

Matrix: (soil/water) WATER

Lab Sample ID: v106du

Sample wt/vol: 10

(g/mL) ML

Lab File ID: V106DU.D

Level: (low/med) LOW

Date Received: 05/04/94

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

Date Extracted: 05/09/94

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 05/13/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067 REV. 0

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

ADDENDUM 1A,

Number TICs found: 22

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 110-82-7	Cyclohexane	1.391	560	NJB
2. 354-21-2	Ethane, 1,2,2-trichloro-1,1-	2.924	2600	NJ
3. 541-05-9	Cyclotrisiloxane, hexamethyl	4.134	1200	NJ
4. 107-92-6	Butanoic acid	4.371	5300	NJ
5.	Unknown	5.140	48000	J
6. 142-62-1	Hexanoic acid	6.029	3600	NJ
7. 111-14-8	Heptanoic acid	6.692	3100	NJ
8.	Unknown	7.117	4800	J
9. 1526-17-6	2-Fluoro-6-nitrophenol	7.256	2300	NJ
10. 124-07-2	Octanoic Acid	7.384	2400	NJ
11. 112-34-5	Ethanol, 2-(2-butoxyethoxy)-	7.493	650	NJ
12.	Unknown	7.939	800	J
13. 112-05-0	Nonanoic acid	8.157	2300	NJ
14.	Unknown	8.840	2200	J
15. 334-48-5	Decanoic acid	8.999	1700	NJ
16. 0-00-0	Phenol, 2-fluoro-4-nitro-	9.068	3200	NJ
17. 112-37-8	Undecanoic acid	9.911	1200	NJ
18.	Unknown	10.080	3000	J
19.	Unknown	10.498	900	J
20.	Unknown	11.076	700	J
21.	Unknown	16.542	420	J
22.	Unknown	16.632	1200	J
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FORM I SV-TIC

1A-271

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: WHCWA

Contract:

V111
Slurry

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A5

Matrix: (soil/water) WATER

Lab Sample ID: V111

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V111.D

Level: (low/med) LOW

Date Received: 06/10/94

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

Date Extracted: 06/13/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 06/21/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

WHC-SD-WM-DP-067, REV.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Q
108-95-2	Phenol	2000	U	UJ
111-44-4	bis(-2-Chloroethyl) Ether	4000	U	UJ
95-57-8	2-Chlorophenol	2000	U	UJ
541-73-1	1,3-Dichlorobenzene	2000	U	
106-46-7	1,4-Dichlorobenzene	2000	U	
95-50-1	1,2-Dichlorobenzene	2000	U	
95-48-7	2-Methylphenol	2000	U	UJ
108-60-1	2,2'-oxybis(1-Chloropropane)	4000	U	UJ
106-44-5	4-Methylphenol	2000	U	UJ
621-64-7	N-Nitroso-di-n-propylamine	4000	U	
67-72-1	Hexachloroethane	2000	U	
98-95-3	Nitrobenzene	2000	U	
78-59-1	Isophorone	2000	U	UJ
88-75-5	2-Nitrophenol	2000	U	UJ
105-67-9	2,4-Dimethyphenol	2000	U	UJ
111-91-1	bis(-2-Chloroethoxy) methane	4000	U	UJ
120-83-2	2,4-Dichlorophenol	2000	U	UJ
120-82-1	1,2,4-Trichlorobenzene	2000	U	
91-20-3	Naphthalene	2000	U	UJ
106-47-8	4-Chloroaniline	2000	U	
87-68-3	Hexachlorobutadiene	2000	U	
59-50-7	4-Chloro-3-Methylphenol	2000	U	UJ
91-57-6	2-Methylnaphthalene	2000	U	
77-47-4	Hexachlorocyclopentadiene	2000	U	
88-06-2	2,4,6-Trichlorophenol	2000	U	UJ
95-95-4	2,4,5-Trichlorophenol	2000	U	UJ
91-58-7	2-Chloronaphthalene	4000	U	UJ
88-74-4	2-Nitroaniline	2000	U	
131-11-3	Dimethylphthalate	4000	U	UJ
208-96-8	Acenaphthylene	2000	U	UJ
606-20-2	2,6-Dinitrotoluene	2000	U	
99-09-2	3-Nitroaniline	2000	U	
83-32-9	Acenaphthene	2000	U	UJ

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V111

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A5

Matrix: (soil/water) WATER

Lab Sample ID: V111

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V111.D

Level: (low/med) LOW

Date Received: 06/10/94

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

Date Extracted: 06/13/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 06/21/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-PP-067, REV. 0
ADDENDUM 1A,

CAS NO.

COMPOUND

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

Q

Q

51-28-5-----	2,4-Dinitrophenol	2000	U	UJ
100-02-7-----	4-Nitrophenol	2000	U	UJ
132-64-9-----	Dibenzofuran	2000	U	UJ
121-14-2-----	2,4-Dinitrotoluene	2000	U	
84-66-2-----	Diethylphthalate	2000	U	UJ
7005-72-3-----	4-Chlorophenyl-phenylether	4000	U	UJ
86-73-7-----	Fluorene	2000	U	UJ
100-01-6-----	4-Nitroaniline	2000	U	
534-52-1-----	4,6-Dinitro-2-methylphenol	2000	U	
86-30-6-----	N-nitrosodiphenylamine (1)	4000	U	
101-55-3-----	4-Bromophenyl-phenylether	4000	U	UJ
118-74-1-----	Hexachlorobenzene	2000	U	
87-86-5-----	Pentachlorophenol	2000	U	UJ
85-01-8-----	Phenanthrene	2000	U	UJ
120-12-7-----	Anthracene	2000	U	UJ
86-74-8-----	Carbazole	2000	U	
84-74-2-----	Di-n-butylphthalate	4000	U	UJ
206-44-0-----	Fluoranthene	2000	U	UJ
129-00-0-----	Pyrene	2000	U	UJ
85-68-7-----	Butylbenzylphthalate	4000	U	UJ
91-94-1-----	3,3'-Dichlorobenzidine	2000	U	
56-55-3-----	Benzo(a)anthracene	2000	U	UJ
218-01-9-----	Chrysene	2000	U	UJ
117-81-7-----	bis(2-Ethylhexyl)phthalate	4000	U	UJ
117-84-0-----	Di-n-octylphthalate	4000	U	UJ
205-99-2-----	Benzo(b)fluoranthene	2000	U	UJ
207-08-9-----	Benzo(k)fluoranthene	2000	U	UJ
50-32-8-----	Benzo(a)pyrene	2000	U	UJ
193-39-5-----	Indeno(1,2,3-cd)pyrene	2000	U	UJ
53-70-3-----	Dibenzo(a,h)anthracene	2000	U	
191-24-2-----	Benzo(g,h,i)perylene	2000	U	UJ
110-86-1-----	Pyridine	2000	U	
71-36-3-----	1-Butanol	1700	J	

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FORM I SV-2

1A273

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V111

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A5

Matrix: (soil/water) WATER

Lab Sample ID: V111

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V111.D

Level: (low/med) LOW

Date Received: 06/10/94

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

Date Extracted: 06/13/94

Concentrated Extract Volume: 1000 (UL)

Date Analyzed: 06/21/94

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Q
111-76-2-----	2-Butoxyethanol	2000	U	
126-73-8-----	Phosphoric acid, tributyleste	7900		
108-39-4-----	3-Methylphenol	2000	U	uJ

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

1A274

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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

v111

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A5

Matrix: (soil/water) WATER

Lab Sample ID: v111

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V111.D

Level: (low/med) LOW

Date Received: 06/10/94

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

Date Extracted: 06/13/94

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 06/21/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0

Number TICs found: 17

CONCENTRATION UNITS: ADDENDUM 1A,
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 110-82-7	Cyclohexane	2.584	3700	NJ R
2. 79-09-4	Propanoic acid	4.010	4600	NJ
3. 354-21-2	Ethane, 1,2,2-trichloro-1,1-	4.424	4200	NJ R
4. 107-92-6	Butanoic acid	5.300	12000	NJ
5.	Unknown	6.010	67000	J
6. 108-29-2	2(3H)-Furanone, dihydro-5-me	6.672	1200	NJ R
7. 142-62-1	Hexanoic acid	6.909	3700	NJ
8. 111-14-8	Heptanoic acid	7.739	4000	NJ
9.	Unknown	8.569	5500	J
10.	Unknown	8.659	3600	J
11. 1526-17-6	2-Fluoro-6-nitrophenol	8.718	5100	NJ
12.	Unknown	9.668	2800	J
13.	Unknown	10.707	6500	J
14. 0-00-0	Phenol, 2-fluoro-4-nitro-	10.807	2500	NJ
15.	Unknown	12.095	3800	J
16.	2,6-dibromo-4-nitrophenol	15.746	2400	NJ
17.	Unknown	18.838	3300	J
18.				
19.				
20.				
21.				
22.				
23.				
24.				
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET.

EPA SAMPLE NO.

V111DU

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A5

Matrix: (soil/water) WATER

Lab Sample ID: V111DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V111DU.D

Level: (low/med) LOW

Date Received: 06/10/94

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

Date Extracted: 06/13/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 06/21/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A,
CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	Q	Q
108-95-2	Phenol	2000	U UJ
111-44-4	bis(-2-Chloroethyl) Ether	4000	U UJ
95-57-8	2-Chlorophenol	2000	U UJ
541-73-1	1,3-Dichlorobenzene	2000	U
106-46-7	1,4-Dichlorobenzene	2000	U
95-50-1	1,2-Dichlorobenzene	2000	U
95-48-7	2-Methylphenol	2000	U UJ
108-60-1	2,2'-oxybis(1-Chloropropane)	4000	U UJ
106-44-5	4-Methylphenol	2000	U UJ
621-64-7	N-Nitroso-di-n-propylamine	4000	U
67-72-1	Hexachloroethane	2000	U
98-95-3	Nitrobenzene	2000	U
78-59-1	Isophorone	2000	U UJ
88-75-5	2-Nitrophenol	2000	U UJ
105-67-9	2,4-Dimethylphenol	2000	U UJ
111-91-1	bis(-2-Chloroethoxy) methane	4000	U UJ
120-83-2	2,4-Dichlorophenol	2000	U UJ
120-82-1	1,2,4-Trichlorobenzene	2000	U
91-20-3	Naphthalene	2000	U UJ
106-47-8	4-Chloroaniline	2000	U
87-68-3	Hexachlorobutadiene	2000	U
59-50-7	4-Chloro-3-Methylphenol	2000	U UJ
91-57-6	2-Methylnaphthalene	2000	U
77-47-4	Hexachlorocyclopentadiene	2000	U
88-06-2	2,4,6-Trichlorophenol	2000	U UJ
95-95-4	2,4,5-Trichlorophenol	2000	U UJ
91-58-7	2-Chloronaphthalene	4000	U UJ
88-74-4	2-Nitroaniline	2000	U
131-11-3	Dimethylphthalate	4000	U UJ
208-96-8	Acenaphthylene	2000	U UJ
606-20-2	2,6-Dinitrotoluene	2000	U
99-09-2	3-Nitroaniline	2000	U
83-32-9	Acenaphthene	2000	U UJ

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V111DU

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A5

Matrix: (soil/water) WATER

Lab Sample ID: V111DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V111DU.D

Level: (low/med) LOW

Date Received: 06/10/94

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

Date Extracted: 06/13/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 06/21/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A,

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

CAS NO.

COMPOUND

Q

Q

51-28-5-----	2,4-Dinitrophenol	2000	U	UJ
100-02-7-----	4-Nitrophenol	2000	U	UJ
132-64-9-----	Dibenzofuran	2000	U	UJ
121-14-2-----	2,4-Dinitrotoluene	2000	U	
84-66-2-----	Diethylphthalate	2000	U	UJ
7005-72-3-----	4-Chlorophenyl-phenylether	4000	U	UJ
86-73-7-----	Fluorene	2000	U	UJ
100-01-6-----	4-Nitroaniline	2000	U	
534-52-1-----	4,6-Dinitro-2-methylphenol	2000	U	
86-30-6-----	N-nitrosodiphenylamine (1)	4000	U	
101-55-3-----	4-Bromophenyl-phenylether	4000	U	UJ
118-74-1-----	Hexachlorobenzene	2000	U	
87-86-5-----	Pentachlorophenol	2000	U	UJ
85-01-8-----	Phenanthrene	2000	U	UJ
120-12-7-----	Anthracene	2000	U	UJ
86-74-8-----	Carbazole	2000	U	
84-74-2-----	Di-n-butylphthalate	4000	U	UJ
206-44-0-----	Fluoranthene	2000	U	UJ
129-00-0-----	Pyrene	2000	U	UJ
85-68-7-----	Butylbenzylphthalate	4000	U	UJ
91-94-1-----	3,3'-Dichlorobenzidine	2000	U	
56-55-3-----	Benzo(a)anthracene	2000	U	UJ
218-01-9-----	Chrysene	2000	U	UJ
117-81-7-----	bis(2-Ethylhexyl)phthalate	4000	U	UJ
117-84-0-----	Di-n-octylphthalate	4000	U	UJ
205-99-2-----	Benzo(b)fluoranthene	2000	U	UJ
207-08-9-----	Benzo(k)fluoranthene	2000	U	UJ
50-32-8-----	Benzo(a)pyrene	2000	U	UJ
193-39-5-----	Indeno(1,2,3-cd)pyrene	2000	U	UJ
53-70-3-----	Dibenzo(a,h)anthracene	2000	U	
191-24-2-----	Benzo(g,h,i)perylene	2000	U	UJ
110-86-1-----	Pyridine	2000	U	
71-36-3-----	1-Butanol	1600	J	

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V111DU

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A5

Matrix: (soil/water) WATER

Lab Sample ID: V111DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V111DU.D

Level: (low/med) LOW

Date Received: 06/10/94

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

Date Extracted: 06/13/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 06/21/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Q
111-76-2-----	2-Butoxyethanol	2000	U	
126-73-8-----	Phosphoric acid, tributyleste	8800		
108-39-4-----	3-Methylphenol	2000	U	45

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

v111du

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A5

Matrix: (soil/water) WATER

Lab Sample ID: v111du

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V111DU.D

Level: (low/med) LOW

Date Received: 06/10/94

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

Date Extracted: 06/13/94

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 06/21/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV 0
ADDENDUM 1A,

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

Number TICs found: 23

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown	1.592	1300	JM
2. 110-82-7	Cyclohexane	2.585	4100	NJ R
3. 79-09-4	Propanoic acid	4.199	6400	NJ
4. 354-21-2	Ethane, 1,2,2-trichloro-1,1-	4.446	7000	NJ R
5. 107-92-6	Butanoic acid	5.413	11000	NJ
6. 109-52-4	Pentanoic acid	6.173	4600	NJ
7.	Unknown	6.262	1900	J
8.	Unknown	6.351	37000	J
9. 108-29-2	2(3H)-Furanone, dihydro-5-me	6.668	1400	NJ R
10.	Unknown	6.974	3400	J
11. 111-14-8	Heptanoic acid	7.796	2500	NJ
12.	Unknown	8.579	4300	J
13. 1526-17-6	2-Fluoro-6-nitrophenol	8.728	4300	NJ
14. 65-85-0	Benzoic Acid	8.837	2000	NJ
15. 112-05-0	Nonanoic acid	9.719	1200	NJ
16.	Unknown	10.711	3800	J
17. 105-21-5	2(3H)-Furanone, dihydro-5-pr	10.919	1100	NJ R
18.	Unknown	12.152	3100	J
19.	Unknown	12.262	1200	J
20.	Unknown	12.621	4200	J
21.	Unknown	14.181	2600	J
22.	Unknown	15.282	980	J
23.	Unknown	18.841	2600	J
24.				
25.				
26.				
27.				
28.				
29.				
30.				

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1B.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V116

Slurry

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS4

Matrix: (soil/water) WATER

Lab Sample ID: V116

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V116.D

Level: (low/med) LOW

Date Received: 05/23/94

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

Date Extracted: 05/24/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 06/11/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A,

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

108-95-2	Phenol	2000	U	uJ
111-44-4	bis(-2-Chloroethyl) Ether	4000	U	uJ
95-57-8	2-Chlorophenol	2000	U	uJ
541-73-1	1,3-Dichlorobenzene	2000	U	uJ
106-46-7	1,4-Dichlorobenzene	2000	U	uJ
95-50-1	1,2-Dichlorobenzene	2000	U	uJ
95-48-7	2-Methylphenol	2000	U	uJ
108-60-1	2,2'-oxybis(1-Chloropropane)	4000	U	uJ
106-44-5	4-Methylphenol	2000	U	uJ
621-64-7	N-Nitroso-di-n-propylamine	4000	U	
67-72-1	Hexachloroethane	2000	U	uJ
98-95-3	Nitrobenzene	2000	U	
78-59-1	Isophorone	2000	U	uJ
88-75-5	2-Nitrophenol	2000	U	uJ
105-67-9	2,4-Dimethylphenol	2000	U	uJ
111-91-1	bis(-2-Chloroethoxy) methane	4000	U	uJ
120-83-2	2,4-Dichlorophenol	2000	U	uJ
120-82-1	1,2,4-Trichlorobenzene	2000	U	
91-20-3	Naphthalene	2000	U	uJ
106-47-8	4-Chloroaniline	2000	U	
87-68-3	Hexachlorobutadiene	2000	U	uJ
59-50-7	4-Chloro-3-Methylphenol	2000	U	uJ
91-57-6	2-Methylnaphthalene	2000	U	
77-47-4	Hexachlorocyclopentadiene	2000	U	uJ
88-06-2	2,4,6-Trichlorophenol	2000	U	uJ
95-95-4	2,4,5-Trichlorophenol	2000	U	uJ
91-58-7	2-Chloronaphthalene	4000	U	uJ
88-74-4	2-Nitroaniline	2000	U	
131-11-3	Dimethylphthalate	4000	U	uJ
208-96-8	Acenaphthylene	2000	U	uJ
606-20-2	2,6-Dinitrotoluene	2000	U	
99-09-2	3-Nitroaniline	2000	U	
83-32-9	Acenaphthene	2000	U	uJ

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V116

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS4

Matrix: (soil/water) WATER

Lab Sample ID: V116

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V116.D

Level: (low/med) LOW

Date Received: 05/23/94

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

Date Extracted: 05/24/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 06/11/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067 REV 8

ADDENDUM 1A.

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L

Q

CAS NO.

COMPOUND

51-28-5-----	2,4-Dinitrophenol	2000	U	45
100-02-7-----	4-Nitrophenol	2000	U	
132-64-9-----	Dibenzofuran	2000	U	45
121-14-2-----	2,4-Dinitrotoluene	2000	U	
84-66-2-----	Diethylphthalate	2000	U	45
7005-72-3-----	4-Chlorophenyl-phenylether	4000	U	45
86-73-7-----	Fluorene	2000	U	45
100-01-6-----	4-Nitroaniline	2000	U	
534-52-1-----	4,6-Dinitro-2-methylphenol	2000	U	
86-30-6-----	N-nitrosodiphenylamine (1)	4000	U	
101-55-3-----	4-Bromophenyl-phenylether	4000	U	45
118-74-1-----	Hexachlorobenzene	2000	U	
87-86-5-----	Pentachlorophenol	2000	U	45
85-01-8-----	Phenanthrene	2000	U	45
120-12-7-----	Anthracene	2000	U	45
86-74-8-----	Carbazole	2000	U	
84-74-2-----	Di-n-butylphthalate	4000	U	45
206-44-0-----	Fluoranthene	2000	U	45
129-00-0-----	Pyrene	2000	U	
85-68-7-----	Butylbenzylphthalate	4000	U	45
91-94-1-----	3,3'-Dichlorobenzidine	2000	U	
56-55-3-----	Benzo(a)anthracene	2000	U	
218-01-9-----	Chrysene	2000	U	
117-81-7-----	bis(2-Ethylhexyl)phthalate	790	U	45
117-84-0-----	Di-n-octylphthalate	4000	U	
205-99-2-----	Benzo(b)fluoranthene	2000	U	
207-08-9-----	Benzo(k)fluoranthene	2000	U	
50-32-8-----	Benzo(a)pyrene	2000	U	
193-39-5-----	Indeno(1,2,3-cd)pyrene	2000	U	
53-70-3-----	Dibenzo(a,h)anthracene	2000	U	
191-24-2-----	Benzo(g,h,i)perylene	2000	U	
110-86-1-----	Pyridine	2000	U	
71-36-3-----	1-Butanol	2000	U	

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V116

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS4

Matrix: (soil/water) WATER

Lab Sample ID: V116

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V116.D

Level: (low/med) LOW

Date Received: 05/23/94

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

Date Extracted: 05/24/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 06/11/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

111-76-2-----	2-Butoxyethanol	2000	U
126-73-8-----	Phosphoric acid, tributyleste	1600	J
108-39-4-----	3-Methylphenol	2000	U

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

v116

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS4

Matrix: (soil/water) WATER

Lab Sample ID: v116

Sample wt/vol: 10

(g/mL) ML

Lab File ID: V116.D

Level: (low/med) LOW

Date Received: 05/23/94

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

Date Extracted: 05/24/94

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 06/11/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0

Number TICs found: 17

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

ADDENDUM 1A,

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 110-82-7	Cyclohexane	2.570	3900	NJB
2. 306-83-2	Ethane, 2,2-dichloro-1,1,1-t	4.399	620	NJ
3. 108-88-3	Toluene	4.577	400	NJ
4. 107-92-6	Butanoic acid	4.941	2000	NJ
5.	Unknown	5.994	11000	J
6. 67-71-0	Dimethyl sulfone	6.221	650	NJ
7. 142-62-1	Hexanoic acid	6.793	870	NJ
8. 111-14-8	Heptanoic acid	7.651	1000	NJ
9.	Unknown	8.578	2800	J
10. 1526-17-6	2-Fluoro-6-nitrophenol	8.717	1000	NJ
11. 112-05-0	Nonanoic acid	9.604	550	NJ
12. 0-00-0	Phenol, 2-fluoro-4-nitro-	10.659	1600	NJ
13.	Unknown	10.708	960	J
14.	Unknown	11.379	540	J
15.	Unknown	11.981	700	J
16.	Unknown	12.853	1500	J
17.	Unknown	18.838	890	J
18.				
19.				
20.				
21.				
22.				
23.				
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27.				
28.				
29.				
30.				

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V116DU

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS4

Matrix: (soil/water) WATER

Lab Sample ID: V116DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V116DU.D

Level: (low/med) LOW

Date Received: 05/23/94

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

Date Extracted: 05/24/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 06/11/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Q
108-95-2	Phenol	2000	U	UJ
111-44-4	bis(-2-Chloroethyl) Ether	4000	U	UJ
95-57-8	2-Chlorophenol	2000	U	UJ
541-73-1	1,3-Dichlorobenzene	2000	U	
106-46-7	1,4-Dichlorobenzene	2000	U	
95-50-1	1,2-Dichlorobenzene	2000	U	
95-48-7	2-Methylphenol	2000	U	UJ
108-60-1	2,2'-oxybis(1-Chloropropane)	4000	U	UJ
106-44-5	4-Methylphenol	2000	U	UJ
621-64-7	N-Nitroso-di-n-propylamine	4000	U	
67-72-1	Hexachloroethane	2000	U	
98-95-3	Nitrobenzene	2000	U	
78-59-1	Isophorone	2000	U	UJ
88-75-5	2-Nitrophenol	2000	U	UJ
105-67-9	2,4-Dimethylphenol	2000	U	UJ
111-91-1	bis(-2-Chloroethoxy) methane	4000	U	UJ
120-83-2	2,4-Dichlorophenol	2000	U	UJ
120-82-1	1,2,4-Trichlorobenzene	2000	U	
91-20-3	Naphthalene	2000	U	
106-47-8	4-Chloroaniline	2000	U	
87-68-3	Hexachlorobutadiene	2000	U	
59-50-7	4-Chloro-3-Methylphenol	2000	U	UJ
91-57-6	2-Methylnaphthalene	2000	U	
77-47-4	Hexachlorocyclopentadiene	2000	U	
88-06-2	2,4,6-Trichlorophenol	2000	U	UJ
95-95-4	2,4,5-Trichlorophenol	2000	U	UJ
91-58-7	2-Chloronaphthalene	4000	U	
88-74-4	2-Nitroaniline	2000	U	
131-11-3	Dimethylphthalate	4000	U	UJ
208-96-8	Acenaphthylene	2000	U	
606-20-2	2,6-Dinitrotoluene	2000	U	
99-09-2	3-Nitroaniline	2000	U	
83-32-9	Acenaphthene	2000	U	

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V116DU

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS4

Matrix: (soil/water) WATER

Lab Sample ID: V116DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V116DU.D

Level: (low/med) LOW

Date Received: 05/23/94

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

Date Extracted: 05/24/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 06/11/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

WHC-SD-WM-DP-067, REV.0

ADDENDUM 1A,

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q Q

51-28-5-----	2,4-Dinitrophenol	2000	U	UJ
100-02-7-----	4-Nitrophenol	2000	U	UJ
132-64-9-----	Dibenzofuran	2000	U	UJ
121-14-2-----	2,4-Dinitrotoluene	2000	U	
84-66-2-----	Diethylphthalate	2000	U	UJ
7005-72-3-----	4-Chlorophenyl-phenylether	4000	U	UJ
86-73-7-----	Fluorene	2000	U	
100-01-6-----	4-Nitroaniline	2000	U	
534-52-1-----	4,6-Dinitro-2-methylphenol	2000	U	
86-30-6-----	N-nitrosodiphenylamine (1)	4000	U	
101-55-3-----	4-Bromophenyl-phenylether	4000	U	UJ
118-74-1-----	Hexachlorobenzene	2000	U	
87-86-5-----	Pentachlorophenol	2000	U	UJ
85-01-8-----	Phenanthrene	2000	U	
120-12-7-----	Anthracene	2000	U	
86-74-8-----	Carbazole	2000	U	
84-74-2-----	Di-n-butylphthalate	4000	U	UJ
206-44-0-----	Fluoranthene	2000	U	
129-00-0-----	Pyrene	2000	U	
85-68-7-----	Butylbenzylphthalate	4000	U	UJ
91-94-1-----	3,3'-Dichlorobenzidine	2000	U	
56-55-3-----	Benzo(a)anthracene	2000	U	
218-01-9-----	Chrysene	2000	U	
117-81-7-----	bis(2-Ethylhexyl)phthalate	4000	U	UJ
117-84-0-----	Di-n-octylphthalate	4000	U	UJ
205-99-2-----	Benzo(b)fluoranthene	2000	U	
207-08-9-----	Benzo(k)fluoranthene	2000	U	
50-32-8-----	Benzo(a)pyrene	2000	U	
193-39-5-----	Indeno(1,2,3-cd)pyrene	2000	U	
53-70-3-----	Dibenzo(a,h)anthracene	2000	U	
191-24-2-----	Benzo(g,h,i)perylene	2000	U	
110-86-1-----	Pyridine	2000	U	
71-36-3-----	1-Butanol	2000	U	

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V116DU

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS4

Matrix: (soil/water) WATER

Lab Sample ID: V116DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V116DU.D

Level: (low/med) LOW

Date Received: 05/23/94

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

Date Extracted: 05/24/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 06/11/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q	Q
		(ug/L or ug/Kg)	UG/L		
111-76-2-----	2-Butoxyethanol	2000	U		
126-73-8-----	Phosphoric acid, tributyleste	2600	—		J
108-39-4-----	3-Methylphenol	2000	—		uJ

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

v116du

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS4

Matrix: (soil/water) WATER

Lab Sample ID: v116du

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V116DU.D

Level: (low/med) LOW

Date Received: 05/23/94

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

Date Extracted: 05/24/94

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 06/11/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067 REV 0

ADDENDUM 1A,

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

Number TICs found: 30

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 554-12-1	Propanoic acid, methyl ester	1.794	660	NJ
2. 110-82-7	Cyclohexane	2.600	4000	NJB R
3. 75-27-4	Methane, bromodichloro-	3.682	450	NJ
4. 623-42-7	Butanoic acid, methyl ester	3.839	1500	NJ
5. 354-21-2	Ethane, 1,2,2-trichloro-1,1-	4.410	3700	NJB R
6. 107-92-6	Butanoic acid	4.893	2500	NJ
7. 624-24-8	Pentanoic acid, methyl ester	5.267	650	NJ
8. 553-90-2	Ethanedioic acid, dimethyl e	5.307	1100	NJ
9. 109-52-4	Pentanoic acid	5.917	850	NJ
10.	Unknown	5.986	11000	J
11. 67-71-0	Dimethyl sulfone	6.223	820	NJ
12. 106-70-7	Hexanoic acid, methyl ester	6.322	800	NJ
13. 556-67-2	Cyclotetrasiloxane, octameth	6.717	3200	NJB R
14. 142-62-1	Hexanoic acid	6.786	820	NJ
15. 106-73-0	Heptanoic acid, methyl ester	7.249	820	NJ
16.	Unknown	7.654	1100	J
17.	Unknown	8.019	700	J
18. 111-11-5	Octanoic acid, methyl ester	8.217	700	NJ
19.	Unknown	8.572	5200	J
20. 65-85-0	Benzoic Acid	8.641	700	NJ
21. 1526-17-6	2-Fluoro-6-nitrophenol	8.720	3600	NJ
22.	Unknown	8.878	540	J
23. 0-00-0	Phenol, 2-fluoro-4-nitro-	10.625	4500	NJ
24.	Unknown	10.715	4300	J
25.	Unknown	11.397	670	J
26.	Unknown	11.961	3900	J
27.	Unknown	12.090	1200	J
28.	Unknown	12.845	3400	J
29.	Unknown	14.137	530	J
30. 112-39-0	Hexadecanoic acid, methyl es	16.495	620	NJ

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V121

Slurry

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS

Matrix: (soil/water) WATER

Lab Sample ID: V121

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V121.D

Level: (low/med) LOW

Date Received: 05/09/94

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

Date Extracted: 05/16/94

Concentrated Extract Volume: 1000 (UL)

Date Analyzed: 05/20/94

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Q
108-95-2	Phenol	2000	U	UJ
111-44-4	bis(-2-Chloroethyl) Ether	4000	U	UJ
95-57-8	2-Chlorophenol	2000	U	UJ
541-73-1	1,3-Dichlorobenzene	2000	U	
106-46-7	1,4-Dichlorobenzene	2000	U	
95-50-1	1,2-Dichlorobenzene	2000	U	
95-48-7	2-Methylphenol	2000	U	UJ
108-60-1	2,2'-oxybis(1-Chloropropane)	4000	U	UJ
106-44-5	4-Methylphenol	2000	U	UJ
621-64-7	N-Nitroso-di-n-propylamine	4000	U	UJ
67-72-1	Hexachloroethane	2000	U	UJ
98-95-3	Nitrobenzene	2000	U	UJ
78-59-1	Isophorone	2000	U	UJ
88-75-5	2-Nitrophenol	2000	U	UJ
105-67-9	2,4-Dimethylphenol	2000	U	UJ
111-91-1	bis(-2-Chloroethoxy) methane	4000	U	UJ
120-83-2	2,4-Dichlorophenol	2000	U	UJ
120-82-1	1,2,4-Trichlorobenzene	2000	U	
91-20-3	Naphthalene	2000	U	
106-47-8	4-Chloroaniline	2000	U	
87-68-3	Hexachlorobutadiene	2000	U	
59-50-7	4-Chloro-3-Methylphenol	2000	U	UJ
91-57-6	2-Methylnaphthalene	2000	U	
77-47-4	Hexachlorocyclopentadiene	2000	U	
88-06-2	2,4,6-Trichlorophenol	2000	U	UJ
95-95-4	2,4,5-Trichlorophenol	2000	U	UJ
91-58-7	2-Chloronaphthalene	4000	U	
88-74-4	2-Nitroaniline	2000	U	UJ
131-11-3	Dimethylphthalate	4000	U	UJ
208-96-8	Acenaphthylene	2000	U	
606-20-2	2,6-Dinitrotoluene	2000	U	UJ
99-09-2	3-Nitroaniline	2000	U	UJ
83-32-9	Acenaphthene	2000	U	

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V121

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS

Matrix: (soil/water) WATER

Lab Sample ID: V121

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V121.D

Level: (low/med) LOW

Date Received: 05/09/94

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

Date Extracted: 05/16/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 05/20/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

51-28-5-----	2,4-Dinitrophenol	2000	U	UJ
100-02-7-----	4-Nitrophenol	2000	U	
132-64-9-----	Dibenzofuran	2000	U	UJ
121-14-2-----	2,4-Dinitrotoluene	2000	U	UJ
84-66-2-----	Diethylphthalate	2000	U	UJ
7005-72-3-----	4-Chlorophenyl-phenylether	4000	U	UJ
86-73-7-----	Fluorene	2000	U	
100-01-6-----	4-Nitroaniline	2000	U	UJ
534-52-1-----	4,6-Dinitro-2-methylphenol	2000	U	
86-30-6-----	N-nitrosodiphenylamine (1)	4000	U	UJ
101-55-3-----	4-Bromophenyl-phenylether	4000	U	UJ
118-74-1-----	Hexachlorobenzene	2000	U	
87-86-5-----	Pentachlorophenol	2000	U	UJ
85-01-8-----	Phenanthrene	2000	U	
120-12-7-----	Anthracene	2000	U	
86-74-8-----	Carbazole	2000	U	
84-74-2-----	Di-n-butylphthalate	4000	U	UJ
206-44-0-----	Fluoranthene	2000	U	
129-00-0-----	Pyrene	2000	U	
85-68-7-----	Butylbenzylphthalate	4000	U	UJ
91-94-1-----	3,3'-Dichlorobenzidine	2000	U	
56-55-3-----	Benzo(a)anthracene	2000	U	
218-01-9-----	Chrysene	2000	U	
117-81-7-----	bis(2-Ethylhexyl)phthalate	4000	U	UJ
117-84-0-----	Di-n-octylphthalate	4000	U	UJ
205-99-2-----	Benzo(b)fluoranthene	2000	U	
207-08-9-----	Benzo(k)fluoranthene	2000	U	
50-32-8-----	Benzo(a)pyrene	2000	U	
193-39-5-----	Indeno(1,2,3-cd)pyrene	2000	U	
53-70-3-----	Dibenzo(a,h)anthracene	2000	U	
191-24-2-----	Benzo(g,h,i)perylene	2000	U	
110-86-1-----	Pyridine	2000	U	
71-36-3-----	1-Butanol	2000	U	

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V121

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS

Matrix: (soil/water) WATER

Lab Sample ID: V121

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V121.D

Level: (low/med) LOW

Date Received: 05/09/94

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

Date Extracted: 05/16/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 05/20/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Q
111-76-2-----	2-Butoxyethanol	2000	U	
126-73-8-----	Phosphoric acid, tributyleste	2700		J
108-39-4-----	3-Methylphenol	2000	U	UJ

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

*add,
10/17*

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

v121

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS

Matrix: (soil/water) WATER

Lab Sample ID: v121

Sample wt/vol: 10

(g/mL) ML

Lab File ID: V121.D

Level: (low/med) LOW

Date Received: 05/09/94

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

Date Extracted: 05/16/94

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 05/20/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A,

Number TICs found: 19

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

Q

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 110-82-7	Cyclohexane	1.170	1400	NJ R
2. 354-21-2	Ethane, 1,2,2-trichloro-1,1-	2.729	4300	NJ R
3. 107-92-6	Butanoic acid	3.781	2400	NJ
4.	Unknown	4.775	26000	J
5. 67-71-0	Dimethyl sulfone	5.030	1800	NJ
6.	Unknown	5.120	970	J
7. 111-14-8	Heptanoic acid	6.450	1100	NJ
8.	Unknown	6.990	6400	J
9. 1526-17-6	2-Fluoro-6-nitrophenol	7.130	4000	NJ
10.	Unknown	7.190	1200	J
11.	Unknown	7.630	380	J
12. 112-05-0	Nonanoic acid	7.980	860	NJ
13.	Unknown	8.730	4300	J
14. 0-00-0	Phenol, 2-fluoro-4-nitro-	8.780	4000	NJ
15.	Unknown	8.950	1100	J
16.	Unknown	9.880	5000	J
17.	Unknown	9.990	560	J
18.	Unknown	10.400	530	J
19.	Unknown	10.770	3200	JM
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V121DU

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS

Matrix: (soil/water) WATER

Lab Sample ID: V121DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V121DU.D

Level: (low/med) LOW

Date Received: 05/09/94

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

Date Extracted: 05/16/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 05/20/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A,

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Q
108-95-2	Phenol	2000	U	UJ
111-44-4	bis(-2-Chloroethyl) Ether	4000	U	
95-57-8	2-Chlorophenol	2000	U	UJ
541-73-1	1,3-Dichlorobenzene	2000	U	UJ
106-46-7	1,4-Dichlorobenzene	2000	U	UJ
95-50-1	1,2-Dichlorobenzene	2000	U	UJ
95-48-7	2-Methylphenol	2000	U	UJ
108-60-1	2,2'-oxybis(1-Chloropropane)	4000	U	
106-44-5	4-Methylphenol	2000	U	UJ
621-64-7	N-Nitroso-di-n-propylamine	4000	U	UJ
67-72-1	Hexachloroethane	2000	U	
98-95-3	Nitrobenzene	2000	U	UJ
78-59-1	Isophorone	2000	U	UJ
88-75-5	2-Nitrophenol	2000	U	UJ
105-67-9	2,4-Dimethyphenol	2000	U	UJ
111-91-1	bis(-2-Chloroethoxy)methane	4000	U	
120-83-2	2,4-Dichlorophenol	2000	U	UJ
120-82-1	1,2,4-Trichlorobenzene	2000	U	UJ
91-20-3	Naphthalene	2000	U	
106-47-8	4-Chloroaniline	2000	U	UJ
87-68-3	Hexachlorobutadiene	2000	U	UJ
59-50-7	4-Chloro-3-Methylphenol	2000	U	UJ
91-57-6	2-Methylnaphthalene	2000	U	
77-47-4	Hexachlorocyclopentadiene	2000	U	UJ
88-06-2	2,4,6-Trichlorophenol	2000	U	UJ
95-95-4	2,4,5-Trichlorophenol	2000	U	UJ
91-58-7	2-Chloronaphthalene	4000	U	UJ
88-74-4	2-Nitroaniline	2000	U	UJ
131-11-3	Dimethylphthalate	4000	U	UJ
208-96-8	Acenaphthylene	2000	U	
606-20-2	2,6-Dinitrotoluene	2000	U	UJ
99-09-2	3-Nitroaniline	2000	U	UJ
83-32-9	Acenaphthene	2000	U	

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V121DU

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS

Matrix: (soil/water) WATER

Lab Sample ID: V121DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V121DU.D

Level: (low/med). LOW

Date Received: 05/09/94

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

Date Extracted: 05/16/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 05/20/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0
WHC-SD-WM-DP-067, REV. 0

GPC Cleanup: (Y/N) N pH: 7.0

ADDENDUM 1A,

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Q
51-28-5-----	2,4-Dinitrophenol	2000	U	UJ
100-02-7-----	4-Nitrophenol	2000	U	UJ
132-64-9-----	Dibenzofuran	2000	U	UJ
121-14-2-----	2,4-Dinitrotoluene	2000	U	UJ
84-66-2-----	Diethylphthalate	2000	U	UJ
7005-72-3-----	4-Chlorophenyl-phenylether	4000	U	
86-73-7-----	Fluorene	2000	U	
100-01-6-----	4-Nitroaniline	2000	U	UJ
534-52-1-----	4,6-Dinitro-2-methylphenol	2000	U	
86-30-6-----	N-nitrosodiphenylamine (1)	4000	U	UJ
101-55-3-----	4-Bromophenyl-phenylether	4000	U	
118-74-1-----	Hexachlorobenzene	2000	U	UJ
87-86-5-----	Pentachlorophenol	2000	U	UJ
85-01-8-----	Phenanthrene	2000	U	
120-12-7-----	Anthracene	2000	U	
86-74-8-----	Carbazole	2000	U	
84-74-2-----	Di-n-butylphthalate	4000	U	UJ
206-44-0-----	Fluoranthene	2000	U	
129-00-0-----	Pyrene	2000	U	
85-68-7-----	Butylbenzylphthalate	4000	U	UJ
91-94-1-----	3,3'-Dichlorobenzidine	2000	U	UJ
56-55-3-----	Benzo(a)anthracene	2000	U	
218-01-9-----	Chrysene	2000	U	
117-81-7-----	bis(2-Ethylhexyl)phthalate	4000	U	UJ
117-84-0-----	Di-n-octylphthalate	4000	U	UJ
205-99-2-----	Benzo(b)fluoranthene	2000	U	
207-08-9-----	Benzo(k)fluoranthene	2000	U	
50-32-8-----	Benzo(a)pyrene	2000	U	
193-39-5-----	Indeno(1,2,3-cd)pyrene	2000	U	
53-70-3-----	Dibenzo(a,h)anthracene	2000	U	
191-24-2-----	Benzo(g,h,i)perylene	2000	U	
110-86-1-----	Pyridine	2000	U	
71-36-3-----	1-Butanol	2000	U	

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V121DU

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS

Matrix: (soil/water) WATER

Lab Sample ID: V121DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V121DU.D

Level: (low/med) LOW

Date Received: 05/09/94

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

Date Extracted: 05/16/94

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 05/20/94

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
111-76-2-----	2-Butoxyethanol	2000	U
126-73-8-----	Phosphoric acid, tributyleste	2100	-
108-39-4-----	3-Methylphenol	2000	U

111-76-2-----2-Butoxyethanol
126-73-8-----Phosphoric acid, tributyleste
108-39-4-----3-Methylphenol

2000 U
2100 -
2000 U

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

v121du

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS

Matrix: (soil/water) WATER

Lab Sample ID: v121du

Sample wt/vol: 10

(g/mL) ML

Lab File ID: V121DU.D

Level: (low/med) LOW

Date Received: 05/09/94

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

Date Extracted: 05/16/94

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 05/20/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A,

Number TICs found: 20

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 110-82-7	Cyclohexane	1.180	1300	NJ R
2. 354-21-2	Ethane, 1,2,2-trichloro-1,1-	2.769	3100	NJ R
3. 107-92-6	Butanoic acid	3.910	3000	NJ
4.	Unknown	4.874	20000	J
5.	Unknown	5.130	3800	J
6. 142-62-1	Hexanoic acid	5.781	950	NJ
7. 111-14-8	Heptanoic acid	6.480	1100	NJ
8.	Unknown	6.990	5100	J
9. 1526-17-6	2-Fluoro-6-nitrophenol	7.132	4100	NJ
10. 124-07-2	Octanoic Acid	7.201	1200	NJ
11.	Unknown	8.000	720	J
12.	Unknown	8.730	9000	J
13. 0-00-0	Phenol, 2-fluoro-4-nitro-	8.850	9300	NJ
14.	Unknown	8.950	1300	J
15.	Unknown	9.930	8900	J
16.	Unknown	9.990	2300	J
17.	Unknown	10.400	900	J
18.	Unknown	10.840	6100	J
19.	Unknown	12.030	510	JM
20.	Unknown	12.500	1500	J
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

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1A-295

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

WHC-SD-WM-DP-067 REV.0

Lab Name: WHCWA ADDENDUM 1A, Contract:

V122
Field Blank V121

Lab Code: Case No.: SAS No.: SDG No.: 242AS

Matrix: (soil/water) WATER

Lab Sample ID: V122

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V122.D

Level: (low/med) LOW

Date Received: 05/09/94

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

Date Extracted: 05/16/94

Concentrated Extract Volume: 1000 (UL)

Date Analyzed: 05/20/94

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

108-95-2-----	Phenol	2000	U
111-44-4-----	bis(-2-Chloroethyl) Ether	4000	U
95-57-8-----	2-Chlorophenol	2000	U
541-73-1-----	1,3-Dichlorobenzene	2000	U
106-46-7-----	1,4-Dichlorobenzene	2000	U
95-50-1-----	1,2-Dichlorobenzene	2000	U
95-48-7-----	2-Methylphenol	2000	U
108-60-1-----	2,2'-oxybis(1-Chloropropane)	4000	U
106-44-5-----	4-Methylphenol	2000	U
621-64-7-----	N-Nitroso-di-n-propylamine	4000	U
67-72-1-----	Hexachloroethane	2000	U
98-95-3-----	Nitrobenzene	2000	U
78-59-1-----	Isophorone	2000	U
88-75-5-----	2-Nitrophenol	2000	U
105-67-9-----	2,4-Dimethyphenol	2000	U
111-91-1-----	bis(-2-Chloroethoxy) methane	4000	U
120-83-2-----	2,4-Dichlorophenol	2000	U
120-82-1-----	1,2,4-Trichlorobenzene	2000	U
91-20-3-----	Naphthalene	2000	U
106-47-8-----	4-Chloroaniline	2000	U
87-68-3-----	Hexachlorobutadiene	2000	U
59-50-7-----	4-Chloro-3-Methylphenol	2000	U
91-57-6-----	2-Methylnaphthalene	2000	U
77-47-4-----	Hexachlorocyclopentadiene	2000	U
88-06-2-----	2,4,6-Trichlorophenol	2000	U
95-95-4-----	2,4,5-Trichlorophenol	2000	U
91-58-7-----	2-Chloronaphthalene	4000	U
88-74-4-----	2-Nitroaniline	2000	U
131-11-3-----	Dimethylphthalate	4000	U
208-96-8-----	Acenaphthylene	2000	U
606-20-2-----	2,6-Dinitrotoluene	2000	U
99-09-2-----	3-Nitroaniline	2000	U
83-32-9-----	Acenaphthene	2000	U

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V122

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS

Matrix: (soil/water) WATER

Lab Sample ID: V122

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V122.D

Level: (low/med) LOW

Date Received: 05/09/94

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

Date Extracted: 05/16/94

Concentrated Extract Volume: 1000 (UL)

Date Analyzed: 05/20/94

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

WHC-SD-WM-DP-067, REV. 0

CONCENTRATION UNITS: ADDENDUM 1A,
(ug/L or ug/Kg) UG/L Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	2000	U
100-02-7	4-Nitrophenol	2000	U
132-64-9	Dibenzofuran	2000	U
121-14-2	2,4-Dinitrotoluene	2000	U
84-66-2	Diethylphthalate	2000	U
7005-72-3	4-Chlorophenyl-phenylether	4000	U
86-73-7	Fluorene	2000	U
100-01-6	4-Nitroaniline	2000	U
534-52-1	4,6-Dinitro-2-methylphenol	2000	U
86-30-6	N-nitrosodiphenylamine (1)	4000	U
101-55-3	4-Bromophenyl-phenylether	4000	U
118-74-1	Hexachlorobenzene	2000	U
87-86-5	Pentachlorophenol	2000	U
85-01-8	Phenanthrene	2000	U
120-12-7	Anthracene	2000	U
86-74-8	Carbazole	2000	U
84-74-2	Di-n-butylphthalate	4000	U
206-44-0	Fluoranthene	2000	U
129-00-0	Pyrene	2000	U
85-68-7	Butylbenzylphthalate	4000	U
91-94-1	3,3'-Dichlorobenzidine	2000	U
56-55-3	Benzo(a)anthracene	2000	U
218-01-9	Chrysene	2000	U
117-81-7	bis(2-Ethylhexyl)phthalate	4000	U
117-84-0	Di-n-octylphthalate	4000	U
205-99-2	Benzo(b)fluoranthene	2000	U
207-08-9	Benzo(k)fluoranthene	2000	U
50-32-8	Benzo(a)pyrene	2000	U
193-39-5	Indeno(1,2,3-cd)pyrene	2000	U
53-70-3	Dibenzo(a,h)anthracene	2000	U
191-24-2	Benzo(g,h,i)perylene	2000	U
110-86-1	Pyridine	2000	U
71-36-3	1-Butanol	2000	U

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10/17/94

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V122

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS

Matrix: (soil/water) WATER

Lab Sample ID: V122

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V122.D

Level: (low/med) LOW

Date Received: 05/09/94

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

Date Extracted: 05/16/94

Concentrated Extract Volume: 1000 (UL)

Date Analyzed: 05/20/94

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg) UG/L	Q
111-76-2-----	2-Butoxyethanol	2000	U
126-73-8-----	Phosphoric acid, tributyleste	340	J
108-39-4-----	3-Methylphenol	2000	U

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

v122

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS

Matrix: (soil/water) WATER

Lab Sample ID: v122

Sample wt/vol: 10

(g/mL) ML

Lab File ID: V122.D

Level: (low/med) LOW

Date Received: 05/09/94

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

Date Extracted: 05/16/94

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 05/20/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0

Number TICs found: 1

CONCENTRATION UNITS: **ADDENDUM 1A,**
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 110-82-7	Cyclohexane	1.184	1100	NJ R
2.				
3.				
4.				
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FORM I SV-TIC

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18-299

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V122DU

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS

Matrix: (soil/water) WATER

Lab Sample ID: V122DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V122DU.D

Level: (low/med) LOW

Date Received: 05/09/94

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

Date Extracted: 05/16/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 05/21/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A,

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

108-95-2-----	Phenol	2000	U
111-44-4-----	bis(-2-Chloroethyl) Ether	4000	U
95-57-8-----	2-Chlorophenol	2000	U
541-73-1-----	1,3-Dichlorobenzene	2000	U
106-46-7-----	1,4-Dichlorobenzene	2000	U
95-50-1-----	1,2-Dichlorobenzene	2000	U
95-48-7-----	2-Methylphenol	2000	U
108-60-1-----	2,2'-oxybis(1-Chloropropane)	4000	U
106-44-5-----	4-Methylphenol	2000	U
621-64-7-----	N-Nitroso-di-n-propylamine	4000	U
67-72-1-----	Hexachloroethane	2000	U
98-95-3-----	Nitrobenzene	2000	U
78-59-1-----	Isophorone	2000	U
88-75-5-----	2-Nitrophenol	2000	U
105-67-9-----	2,4-Dimethylphenol	2000	U
111-91-1-----	bis(-2-Chloroethoxy)methane	4000	U
120-83-2-----	2,4-Dichlorophenol	2000	U
120-82-1-----	1,2,4-Trichlorobenzene	2000	U
91-20-3-----	Naphthalene	2000	U
106-47-8-----	4-Chloroaniline	2000	U
87-68-3-----	Hexachlorobutadiene	2000	U
59-50-7-----	4-Chloro-3-Methylphenol	2000	U
91-57-6-----	2-Methylnaphthalene	2000	U
77-47-4-----	Hexachlorocyclopentadiene	2000	U
88-06-2-----	2,4,6-Trichlorophenol	2000	U
95-95-4-----	2,4,5-Trichlorophenol	2000	U
91-58-7-----	2-Chloronaphthalene	4000	U
88-74-4-----	2-Nitroaniline	2000	U
131-11-3-----	Dimethylphthalate	4000	U
208-96-8-----	Acenaphthylene	2000	U
606-20-2-----	2,6-Dinitrotoluene	2000	U
99-09-2-----	3-Nitroaniline	2000	U
83-32-9-----	Acenaphthene	2000	U

FORM I SV-1

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1A-300

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V122DU

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS

Matrix: (soil/water) WATER

Lab Sample ID: V122DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V122DU.D

Level: (low/med) LOW

Date Received: 05/09/94

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

Date Extracted: 05/16/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 05/21/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

WHC-SD-WM-DP-067, REV. 0

CONCENTRATION UNITS: ADDENDUM 1A,
(ug/L or ug/Kg) UG/L Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5-----	2,4-Dinitrophenol	2000	U
100-02-7-----	4-Nitrophenol	2000	U
132-64-9-----	Dibenzofuran	2000	U
121-14-2-----	2,4-Dinitrotoluene	2000	U
84-66-2-----	Diethylphthalate	2000	U
7005-72-3-----	4-Chlorophenyl-phenylether	4000	U
86-73-7-----	Fluorene	2000	U
100-01-6-----	4-Nitroaniline	2000	U
534-52-1-----	4,6-Dinitro-2-methylphenol	2000	U
86-30-6-----	N-nitrosodiphenylamine (1)	4000	U
101-55-3-----	4-Bromophenyl-phenylether	4000	U
118-74-1-----	Hexachlorobenzene	2000	U
87-86-5-----	Pentachlorophenol	2000	U
85-01-8-----	Phenanthrene	2000	U
120-12-7-----	Anthracene	2000	U
86-74-8-----	Carbazole	2000	U
84-74-2-----	Di-n-butylphthalate	4000	U
206-44-0-----	Fluoranthene	2000	U
129-00-0-----	Pyrene	2000	U
85-68-7-----	Butylbenzylphthalate	4000	U
91-94-1-----	3,3'-Dichlorobenzidine	2000	U
56-55-3-----	Benzo(a)anthracene	2000	U
218-01-9-----	Chrysene	2000	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	4000	U
117-84-0-----	Di-n-octylphthalate	4000	U
205-99-2-----	Benzo(b)fluoranthene	2000	U
207-08-9-----	Benzo(k)fluoranthene	2000	U
50-32-8-----	Benzo(a)pyrene	2000	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	2000	U
53-70-3-----	Dibenzo(a,h)anthracene	2000	U
191-24-2-----	Benzo(g,h,i)perylene	2000	U
110-86-1-----	Pyridine	2000	U
71-36-3-----	1-Butanol	2000	U

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V122DU

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS

Matrix: (soil/water) WATER

Lab Sample ID: V122DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V122DU.D

Level: (low/med). LOW

Date Received: 05/09/94

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

Date Extracted: 05/16/94

Concentrated Extract Volume: 1000 (UL)

Date Analyzed: 05/21/94

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
111-76-2-----	2-Butoxyethanol	2000	U
126-73-8-----	Phosphoric acid, tributyleste	2000	U
108-39-4-----	3-Methylphenol	2000	U

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A,

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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

v122du

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS

Matrix: (soil/water) WATER

Lab Sample ID: v122du

Sample wt/vol: 10

(g/mL) ML

Lab File ID: V122DU.D

Level: (low/med) LOW

Date Received: 05/09/94

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

Date Extracted: 05/16/94

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 05/21/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0

CONCENTRATION UNITS:

ADDENDUM 1A,

(ug/L or ug/Kg) UG/L

Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 110-82-7	Cyclohexane	1.184	990	NR R
2.				
3.				
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FORM I SV-TIC

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: WHCWA

Contract:

V126

Slurry

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS3

Matrix: (soil/water) WATER

Lab Sample ID: V126

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V126.D

Level: (low/med) LOW

Date Received: 05/16/94

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

Date Extracted: 05/18/94

Concentrated Extract Volume: 1000 (UL)

Date Analyzed: 06/10/94

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A,

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Q
108-95-2	Phenol	2000	U	UJ
111-44-4	bis(-2-Chloroethyl) Ether	4000	U	UJ
95-57-8	2-Chlorophenol	2000	U	UJ
541-73-1	1,3-Dichlorobenzene	2000	U	
106-46-7	1,4-Dichlorobenzene	2000	U	
95-50-1	1,2-Dichlorobenzene	2000	U	
95-48-7	2-Methylphenol	2000	U	UJ
108-60-1	2,2'-oxybis(1-Chloropropane)	4000	U	UJ
106-44-5	4-Methylphenol	2000	U	UJ
621-64-7	N-Nitroso-di-n-propylamine	4000	U	UJ
67-72-1	Hexachloroethane	2000	U	
98-95-3	Nitrobenzene	2000	U	UJ
78-59-1	Isophorone	2000	U	UJ
88-75-5	2-Nitrophenol	2000	U	UJ
105-67-9	2,4-Dimethylphenol	2000	U	UJ
111-91-1	bis(-2-Chloroethoxy) methane	4000	U	UJ
120-83-2	2,4-Dichlorophenol	2000	U	UJ
120-82-1	1,2,4-Trichlorobenzene	2000	U	
91-20-3	Naphthalene	2000	U	UJ
106-47-8	4-Chloroaniline	2000	U	
87-68-3	Hexachlorobutadiene	2000	U	
59-50-7	4-Chloro-3-Methylphenol	2000	U	UJ
91-57-6	2-Methylnaphthalene	2000	U	
77-47-4	Hexachlorocyclopentadiene	2000	U	
88-06-2	2,4,6-Trichlorophenol	2000	U	UJ
95-95-4	2,4,5-Trichlorophenol	2000	U	UJ
91-58-7	2-Chloronaphthalene	4000	U	UJ
88-74-4	2-Nitroaniline	2000	U	UJ
131-11-3	Dimethylphthalate	4000	U	UJ
208-96-8	Acenaphthylene	2000	U	UJ
606-20-2	2,6-Dinitrotoluene	2000	U	UJ
99-09-2	3-Nitroaniline	2000	U	UJ
83-32-9	Acenaphthene	2000	U	UJ

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V126

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS3

Matrix: (soil/water) WATER

Lab Sample ID: V126

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V126.D

Level: (low/med) LOW

Date Received: 05/16/94

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

Date Extracted: 05/18/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 06/10/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

WHC-SD-WM-DP-067, REV. 0

CAS NO. COMPOUND CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L ADDENDUM 1A

51-28-5-----	2,4-Dinitrophenol	2000	U	UJ
100-02-7-----	4-Nitrophenol	2000	U	UJ
132-64-9-----	Dibenzofuran	2000	U	UJ
121-14-2-----	2,4-Dinitrotoluene	2000	U	UJ
84-66-2-----	Diethylphthalate	2000	U	UJ
7005-72-3-----	4-Chlorophenyl-phenylether	4000	U	UJ
86-73-7-----	Fluorene	2000	U	UJ
100-01-6-----	4-Nitroaniline	2000	U	UJ
534-52-1-----	4,6-Dinitro-2-methylphenol	2000	U	UJ
86-30-6-----	N-nitrosodiphenylamine (1)	4000	U	UJ
101-55-3-----	4-Bromophenyl-phenylether	4000	U	UJ
118-74-1-----	Hexachlorobenzene	2000	U	UJ
87-86-5-----	Pentachlorophenol	2000	U	UJ
85-01-8-----	Phenanthrene	2000	U	UJ
120-12-7-----	Anthracene	2000	U	UJ
86-74-8-----	Carbazole	2000	U	UJ
84-74-2-----	Di-n-butylphthalate	4000	U	UJ
206-44-0-----	Fluoranthene	2000	U	UJ
129-00-0-----	Pyrene	2000	U	UJ
85-68-7-----	Butylbenzylphthalate	4000	U	UJ
91-94-1-----	3,3'-Dichlorobenzidine	2000	U	UJ
56-55-3-----	Benzo(a)anthracene	2000	U	UJ
218-01-9-----	Chrysene	2000	U	UJ
117-81-7-----	bis(2-Ethylhexyl)phthalate	4000	U	UJ
117-84-0-----	Di-n-octylphthalate	4000	U	UJ
205-99-2-----	Benzo(b)fluoranthene	2000	U	UJ
207-08-9-----	Benzo(k)fluoranthene	2000	U	UJ
50-32-8-----	Benzo(a)pyrene	2000	U	UJ
193-39-5-----	Indeno(1,2,3-cd)pyrene	2000	U	UJ
53-70-3-----	Dibenzo(a,h)anthracene	2000	U	UJ
191-24-2-----	Benzo(g,h,i)perylene	2000	U	UJ
110-86-1-----	Pyridine	2000	U	UJ
71-36-3-----	1-Butanol	2000	U	UJ

FORM I SV-2

10305

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V126

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS3

Matrix: (soil/water) WATER

Lab Sample ID: V126

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V126.D

Level: (low/med) LOW

Date Received: 05/16/94

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

Date Extracted: 05/18/94

Concentrated Extract Volume: 1000 (UL)

Date Analyzed: 06/10/94

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Q
111-76-2	2-Butoxyethanol	2000	U	
126-73-8	Phosphoric acid, tributyleste	2300		
108-39-4	3-Methylphenol	2000	U	W

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A,

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1A-306

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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

v126

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS3

Matrix: (soil/water) WATER

Lab Sample ID: v126

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V126.D

Level: (low/med) LOW

Date Received: 05/16/94

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

Date Extracted: 05/18/94

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 06/10/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0

Number TICs found: 18

CONCENTRATION UNITS: ADDENDUM 1A,
(ug/L or ug/Kg) UG/L

Q

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 110-82-7	Cyclohexane	2.600	2900	JN R
2. 354-21-2	Ethane, 1,2,2-trichloro-1,1-	4.400	2700	NJ R
3. 107-92-6	Butanoic acid	4.970	2600	NJ
4.	Unknown	5.860	32000	J
5. 142-62-1	Hexanoic acid	6.760	1400	NJ
6. 111-14-8	Heptanoic acid	7.630	1600	NJ
7.	Unknown	8.020	500	J
8.	Unknown	8.570	5300	J
9. 1526-17-6	2-Fluoro-6-nitrophenol	8.720	2700	NJ
10. 112-05-0	Nonanoic acid	9.600	880	NJ
11. 0-00-0	Phenol, 2-fluoro-4-nitro-	10.550	1800	NJ
12.	Unknown	10.710	3100	J
13.	Unknown	11.910	1800	J
14.	Unknown	12.080	1600	J
15.	Unknown	12.120	6100	J
16.	Unknown	12.780	1200	J
17.	Unknown	14.130	750	J
18.	Unknown	18.840	860	J
19.				
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FORM I SV-TIC

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V126DU

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS3

Matrix: (soil/water) WATER

Lab Sample ID: V126DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V126DU.D

Level: (low/med) LOW

Date Received: 05/16/94

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

Date Extracted: 05/18/94

Concentrated Extract Volume: 1000 (UL)

Date Analyzed: 06/10/94

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

108-95-2	Phenol	2000	U	UJ
111-44-4	bis(-2-Chloroethyl) Ether	4000	U	UJ
95-57-8	2-Chlorophenol	2000	U	UJ
541-73-1	1,3-Dichlorobenzene	2000	U	
106-46-7	1,4-Dichlorobenzene	2000	U	
95-50-1	1,2-Dichlorobenzene	2000	U	
95-48-7	2-Methylphenol	2000	U	UJ
108-60-1	2,2'-oxybis(1-Chloropropane)	4000	U	UJ
106-44-5	4-Methylphenol	2000	U	UJ
621-64-7	N-Nitroso-di-n-propylamine	4000	U	UJ
67-72-1	Hexachloroethane	2000	U	
98-95-3	Nitrobenzene	2000	U	UJ
78-59-1	Isophorone	2000	U	UJ
88-75-5	2-Nitrophenol	2000	U	UJ
105-67-9	2,4-Dimethylphenol	2000	U	UJ
111-91-1	bis(-2-Chloroethoxy) methane	4000	U	UJ
120-83-2	2,4-Dichlorophenol	2000	U	UJ
120-82-1	1,2,4-Trichlorobenzene	2000	U	
91-20-3	Naphthalene	2000	U	UJ
106-47-8	4-Chloroaniline	2000	U	
87-68-3	Hexachlorobutadiene	2000	U	
59-50-7	4-Chloro-3-Methylphenol	2000	U	UJ
91-57-6	2-Methylnaphthalene	2000	U	
77-47-4	Hexachlorocyclopentadiene	2000	U	
88-06-2	2,4,6-Trichlorophenol	2000	U	UJ
95-95-4	2,4,5-Trichlorophenol	2000	U	UJ
91-58-7	2-Chloronaphthalene	4000	U	UJ
88-74-4	2-Nitroaniline	2000	U	UJ
131-11-3	Dimethylphthalate	4000	U	UJ
208-96-8	Acenaphthylene	2000	U	UJ
606-20-2	2,6-Dinitrotoluene	2000	U	UJ
99-09-2	3-Nitroaniline	2000	U	UJ
83-32-9	Acenaphthene	2000	U	UJ

WHC-SD-WM-DP-067
ADDENDUM 1A, REV. 0

FORM I SV-1

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1A 308

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V126DU

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS3

Matrix: (soil/water) WATER

Lab Sample ID: V126DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V126DU.D

Level: (low/med) LOW

Date Received: 05/16/94

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

Date Extracted: 05/18/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 06/10/94

Injection Volume: 1.0(UL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067
ADDENDUM 1A REV. 0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Q
51-28-5	2,4-Dinitrophenol	2000	U	UJ
100-02-7	4-Nitrophenol	2000	U	UJ
132-64-9	Dibenzofuran	2000	U	UJ
121-14-2	2,4-Dinitrotoluene	2000	U	UJ
84-66-2	Diethylphthalate	2000	U	UJ
7005-72-3	4-Chlorophenyl-phenylether	4000	U	UJ
86-73-7	Fluorene	2000	U	UJ
100-01-6	4-Nitroaniline	2000	U	UJ
534-52-1	4,6-Dinitro-2-methylphenol	2000	U	
86-30-6	N-nitrosodiphenylamine (1)	4000	U	UJ
101-55-3	4-Bromophenyl-phenylether	4000	U	UJ
118-74-1	Hexachlorobenzene	2000	U	
87-86-5	Pentachlorophenol	2000	U	UJ
85-01-8	Phenanthrene	2000	U	UJ
120-12-7	Anthracene	2000	U	UJ
86-74-8	Carbazole	2000	U	
84-74-2	Di-n-butylphthalate	4000	U	UJ
206-44-0	Fluoranthene	2000	U	UJ
129-00-0	Pyrene	2000	U	UJ
85-68-7	Butylbenzylphthalate	4000	U	UJ
91-94-1	3,3'-Dichlorobenzidine	2000	U	
56-55-3	Benzo(a)anthracene	2000	U	UJ
218-01-9	Chrysene	2000	U	UJ
117-81-7	bis(2-Ethylhexyl)phthalate	4000	U	UJ
117-84-0	Di-n-octylphthalate	4000	U	UJ
205-99-2	Benzo(b)fluoranthene	2000	U	UJ
207-08-9	Benzo(k)fluoranthene	2000	U	UJ
50-32-8	Benzo(a)pyrene	2000	U	UJ
193-39-5	Indeno(1,2,3-cd)pyrene	2000	U	UJ
53-70-3	Dibenzo(a,h)anthracene	2000	U	
191-24-2	Benzo(g,h,i)perylene	2000	U	UJ
110-86-1	Pyridine	2000	U	
71-36-3	1-Butanol	2000	U	

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1A309

205

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V126DU

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS3

Matrix: (soil/water) WATER

Lab Sample ID: V126DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V126DU.D

Level: (low/med) LOW

Date Received: 05/16/94

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

Date Extracted: 05/18/94

Concentrated Extract Volume: 1000 (UL)

Date Analyzed: 06/10/94

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Q
111-76-2	2-Butoxyethanol	2000	U	
126-73-8	Phosphoric acid, tributyleste	2000		
108-39-4	3-Methylphenol	2000	U	UJ

WHC-SD-WM-DP-067
ADDENDUM 1A REV. 0

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

v126du

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS3

Matrix: (soil/water) WATER

Lab Sample ID: v126du

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V126DU.D

Level: (low/med) LOW

Date Received: 05/16/94

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

Date Extracted: 05/18/94

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 06/10/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

WHC-SD-WM-DP-067, REV. 0

Number TICs found: 12

CONCENTRATION UNITS: ADDENDUM 1A,
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 354-21-2	Ethane, 1,2,2-trichloro-1,1-	4.410	6400	NJ
2. 107-92-6	Butanoic acid	5.001	8400	NJ
3.	Unknown	5.897	61000	J
4. 142-62-1	Hexanoic acid	6.784	3100	NJ
5. 111-14-8	Heptanoic acid	7.653	3700	NJ
6.	Unknown	8.570	2300	J
7. 1526-17-6	2-Fluoro-6-nitrophenol	8.718	3400	NJ
8. 0-00-0	Phenol, 2-fluoro-4-nitro-	10.593	3500	NJ
9.	Unknown	10.712	5500	J
10.	Unknown	11.947	2900	J
11.	Unknown	12.086	1900	J
12.	Unknown	12.822	3000	J
13.				
14.				
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FORM I SV-TIC

1A-311

3936

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V128
Field Blank V126

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS3

Matrix: (soil/water) WATER

Lab Sample ID: V128

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V128.D

Level: (low/med) LOW

Date Received: 05/16/94

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

Date Extracted: 05/18/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 06/15/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

WHC-SD-WM-DP-067, REV. 0

CAS NO. COMPOUND CONCENTRATION UNITS: ADDENDUM 1A,
(ug/L or ug/Kg) UG/L

108-95-2	Phenol	2000	U
111-44-4	bis(-2-Chloroethyl) Ether	4000	U
95-57-8	2-Chlorophenol	2000	U
541-73-1	1,3-Dichlorobenzene	2000	U
106-46-7	1,4-Dichlorobenzene	2000	U
95-50-1	1,2-Dichlorobenzene	2000	U
95-48-7	2-Methylphenol	2000	U
108-60-1	2,2'-oxybis(1-Chloropropane)	4000	U
106-44-5	4-Methylphenol	2000	U
621-64-7	N-Nitroso-di-n-propylamine	4000	U
67-72-1	Hexachloroethane	2000	U
98-95-3	Nitrobenzene	2000	U
78-59-1	Isophorone	2000	U
88-75-5	2-Nitrophenol	2000	U
105-67-9	2,4-Dimethyphenol	2000	U
111-91-1	bis(-2-Chloroethoxy)methane	4000	U
120-83-2	2,4-Dichlorophenol	2000	U
120-82-1	1,2,4-Trichlorobenzene	2000	U
91-20-3	Naphthalene	2000	U
106-47-8	4-Chloroaniline	2000	U
87-68-3	Hexachlorobutadiene	2000	U
59-50-7	4-Chloro-3-Methylphenol	2000	U
91-57-6	2-Methylnaphthalene	2000	U
77-47-4	Hexachlorocyclopentadiene	2000	U
88-06-2	2,4,6-Trichlorophenol	2000	U
95-95-4	2,4,5-Trichlorophenol	2000	U
91-58-7	2-Chloronaphthalene	4000	U
88-74-4	2-Nitroaniline	2000	U
131-11-3	Dimethylphthalate	4000	U
208-96-8	Acenaphthylene	2000	U
606-20-2	2,6-Dinitrotoluene	2000	U
99-09-2	3-Nitroaniline	2000	U
83-32-9	Acenaphthene	2000	U

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1A-312

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V128

Field Blank

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS3

Matrix: (soil/water) WATER

Lab Sample ID: V128

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V128.D

Level: (low/med) LOW

Date Received: 05/16/94

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

Date Extracted: 05/18/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 06/15/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0

CONCENTRATION UNITS: ADDENDUM 1A,
(ug/L or ug/Kg) UG/L Q

CAS NO.	COMPOUND		
51-28-5-----	2,4-Dinitrophenol	2000	U
100-02-7-----	4-Nitrophenol	2000	U
132-64-9-----	Dibenzofuran	2000	U
121-14-2-----	2,4-Dinitrotoluene	2000	U
84-66-2-----	Diethylphthalate	2000	U
7005-72-3-----	4-Chlorophenyl-phenylether	4000	U
86-73-7-----	Fluorene	2000	U
100-01-6-----	4-Nitroaniline	2000	U
534-52-1-----	4,6-Dinitro-2-methylphenol	2000	U
86-30-6-----	N-nitrosodiphenylamine (1)	4000	U
101-55-3-----	4-Bromophenyl-phenylether	4000	U
118-74-1-----	Hexachlorobenzene	2000	U
87-86-5-----	Pentachlorophenol	2000	U
85-01-8-----	Phenanthrene	2000	U
120-12-7-----	Anthracene	2000	U
86-74-8-----	Carbazole	2000	U
84-74-2-----	Di-n-butylphthalate	4000	U
206-44-0-----	Fluoranthene	2000	U
129-00-0-----	Pyrene	2000	U
85-68-7-----	Butylbenzylphthalate	4000	U
91-94-1-----	3,3'-Dichlorobenzidine	2000	U
56-55-3-----	Benzo(a)anthracene	2000	U
218-01-9-----	Chrysene	2000	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	4000	U
117-84-0-----	Di-n-octylphthalate	4000	U
205-99-2-----	Benzo(b)fluoranthene	2000	U
207-08-9-----	Benzo(k)fluoranthene	2000	U
50-32-8-----	Benzo(a)pyrene	2000	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	2000	U
53-70-3-----	Dibenzo(a,h)anthracene	2000	U
191-24-2-----	Benzo(g,h,i)perylene	2000	U
110-86-1-----	Pyridine	2000	U
71-36-3-----	1-Butanol	2000	U

FORM I SV-2

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1A-313

~~208~~

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V128

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS3

Matrix: (soil/water) WATER

Lab Sample ID: V128

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V128.D

Level: (low/med) LOW

Date Received: 05/16/94

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

Date Extracted: 05/18/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 06/15/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
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111-76-2-----	2-Butoxyethanol	2000	U
126-73-8-----	Phosphoric acid, tributyleste	260	J
108-39-4-----	3-Methylphenol	2000	U

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

v128

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS3

Matrix: (soil/water) WATER

Lab Sample ID: v128

Sample wt/vol: 10

(g/mL) ML

Lab File ID: V128.D

Level: (low/med) LOW

Date Received: 05/16/94

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

Date Extracted: 05/18/94

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 06/15/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0

Number TICs found: 1

CONCENTRATION UNITS: ADDENDUM 1A,
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 110-82-7	Cyclohexane	2.640	2600	NJ R
2.				
3.				
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FORM I SV-TIC

1A315

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V128DU

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS3

Matrix: (soil/water) WATER

Lab Sample ID: V128DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V128DU.D

Level: (low/med) LOW

Date Received: 05/16/94

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

Date Extracted: 05/18/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 06/15/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0

CAS NO. COMPOUND CONCENTRATION UNITS: ADDENDUM 1A,
(ug/L or ug/Kg) UG/L Q

108-95-2-----	Phenol	2000	U
111-44-4-----	bis(-2-Chloroethyl) Ether	4000	U
95-57-8-----	2-Chlorophenol	2000	U
541-73-1-----	1,3-Dichlorobenzene	2000	U
106-46-7-----	1,4-Dichlorobenzene	2000	U
95-50-1-----	1,2-Dichlorobenzene	2000	U
95-48-7-----	2-Methylphenol	2000	U
108-60-1-----	2,2'-oxybis(1-Chloropropane)	4000	U
106-44-5-----	4-Methylphenol	2000	U
621-64-7-----	N-Nitroso-di-n-propylamine	4000	U
67-72-1-----	Hexachloroethane	2000	U
98-95-3-----	Nitrobenzene	2000	U
78-59-1-----	Isophorone	2000	U
88-75-5-----	2-Nitrophenol	2000	U
105-67-9-----	2,4-Dimethyphenol	2000	U
111-91-1-----	bis(-2-Chloroethoxy) methane	4000	U
120-83-2-----	2,4-Dichlorophenol	2000	U
120-82-1-----	1,2,4-Trichlorobenzene	2000	U
91-20-3-----	Naphthalene	2000	U
106-47-8-----	4-Chloroaniline	2000	U
87-68-3-----	Hexachlorobutadiene	2000	U
59-50-7-----	4-Chloro-3-Methylphenol	2000	U
91-57-6-----	2-Methylnaphthalene	2000	U
77-47-4-----	Hexachlorocyclopentadiene	2000	U
88-06-2-----	2,4,6-Trichlorophenol	2000	U
95-95-4-----	2,4,5-Trichlorophenol	2000	U
91-58-7-----	2-Chloronaphthalene	4000	U
88-74-4-----	2-Nitroaniline	2000	U
131-11-3-----	Dimethylphthalate	4000	U
208-96-8-----	Acenaphthylene	2000	U
606-20-2-----	2,6-Dinitrotoluene	2000	U
99-09-2-----	3-Nitroaniline	2000	U
83-32-9-----	Acenaphthene	2000	U

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FORM I SV-1

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V128DU

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS3

Matrix: (soil/water) WATER

Lab Sample ID: V128DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V128DU.D

Level: (low/med) LOW

Date Received: 05/16/94

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

Date Extracted: 05/18/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 06/15/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0

CONCENTRATION UNITS ADDENDUM 1A,
(ug/L or ug/Kg) UG/L Q

CAS. NO.	COMPOUND		
51-28-5	2,4-Dinitrophenol	2000	U
100-02-7	4-Nitrophenol	2000	U
132-64-9	Dibenzofuran	2000	U
121-14-2	2,4-Dinitrotoluene	2000	U
84-66-2	Diethylphthalate	2000	U
7005-72-3	4-Chlorophenyl-phenylether	4000	U
86-73-7	Fluorene	2000	U
100-01-6	4-Nitroaniline	2000	U
534-52-1	4,6-Dinitro-2-methylphenol	2000	U
86-30-6	N-nitrosodiphenylamine (1)	4000	U
101-55-3	4-Bromophenyl-phenylether	4000	U
118-74-1	Hexachlorobenzene	2000	U
87-86-5	Pentachlorophenol	2000	U
85-01-8	Phenanthrene	2000	U
120-12-7	Anthracene	2000	U
86-74-8	Carbazole	2000	U
84-74-2	Di-n-butylphthalate	4000	U
206-44-0	Fluoranthene	2000	U
129-00-0	Pyrene	2000	U
85-68-7	Butylbenzylphthalate	4000	U
91-94-1	3,3'-Dichlorobenzidine	2000	U
56-55-3	Benzo(a)anthracene	2000	U
218-01-9	Chrysene	2000	U
117-81-7	bis(2-Ethylhexyl)phthalate	4000	U
117-84-0	Di-n-octylphthalate	4000	U
205-99-2	Benzo(b)fluoranthene	2000	U
207-08-9	Benzo(k)fluoranthene	2000	U
50-32-8	Benzo(a)pyrene	2000	U
193-39-5	Indeno(1,2,3-cd)pyrene	2000	U
53-70-3	Dibenzo(a,h)anthracene	2000	U
191-24-2	Benzo(g,h,i)perylene	2000	U
110-86-1	Pyridine	2000	U
71-36-3	1-Butanol	2000	U

FORM I SV-2

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1A317

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V128DU

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS3

Matrix: (soil/water) WATER

Lab Sample ID: V128DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V128DU.D

Level: (low/med) LOW

Date Received: 05/16/94

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

Date Extracted: 05/18/94

Concentrated Extract Volume: 1000 (UL)

Date Analyzed: 06/15/94

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N · pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

111-76-2-----	2-Butoxyethanol	2000	U
126-73-8-----	Phosphoric acid, tributyleste	300	J
108-39-4-----	3-Methylphenol	2000	U

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

v128du

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS3

Matrix: (soil/water) WATER

Lab Sample ID: v128du

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V128DU.D

Level: (low/med) LOW

Date Received: 05/16/94

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

Date Extracted: 05/18/94

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 06/15/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

WHC-SD-WM-DP-067, REV 0

CONCENTRATION UNITS: ADDENDUM 1A,
(ug/L or ug/Kg) UG/L

Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 110-82-7	Cyclohexane	2.724	3000	NT R
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
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16.				
17.				
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24.				
25.				
26.				
27.				
28.				
29.				
30.				

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V129
Field Blank V116

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS4

Matrix: (soil/water) WATER

Lab Sample ID: V129

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V129.D

Level: (low/med) LOW

Date Received: 05/23/94

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

Date Extracted: 05/24/94

Concentrated Extract Volume: 1000 (UL)

Date Analyzed: 06/15/94

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

WHC-SD-WM-DP-067, REV. 0

CONCENTRATION UNITS: ADDENDUM 1A,
(ug/L or ug/Kg) UG/L Q Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	
108-95-2	Phenol	2000	U UR
111-44-4	bis(-2-Chloroethyl) Ether	4000	U
95-57-8	2-Chlorophenol	2000	U
541-73-1	1,3-Dichlorobenzene	2000	U
106-46-7	1,4-Dichlorobenzene	2000	U
95-50-1	1,2-Dichlorobenzene	2000	U
95-48-7	2-Methylphenol	2000	U UR
108-60-1	2,2'-oxybis(1-Chloropropane)	4000	U
106-44-5	4-Methylphenol	2000	U UR
621-64-7	N-Nitroso-di-n-propylamine	4000	U
67-72-1	Hexachloroethane	2000	U
98-95-3	Nitrobenzene	2000	U
78-59-1	Isophorone	2000	U UR
88-75-5	2-Nitrophenol	2000	U UR
105-67-9	2,4-Dimethylphenol	2000	U UR
111-91-1	bis(-2-Chloroethoxy) methane	4000	U
120-83-2	2,4-Dichlorophenol	2000	U
120-82-1	1,2,4-Trichlorobenzene	2000	U
91-20-3	Naphthalene	2000	U
106-47-8	4-Chloroaniline	2000	U
87-68-3	Hexachlorobutadiene	2000	U
59-50-7	4-Chloro-3-Methylphenol	2000	U
91-57-6	2-Methylnaphthalene	2000	U
77-47-4	Hexachlorocyclopentadiene	2000	U
88-06-2	2,4,6-Trichlorophenol	2000	U
95-95-4	2,4,5-Trichlorophenol	2000	U
91-58-7	2-Chloronaphthalene	4000	U
88-74-4	2-Nitroaniline	2000	U
131-11-3	Dimethylphthalate	480	U J
208-96-8	Acenaphthylene	2000	U
606-20-2	2,6-Dinitrotoluene	2000	U
99-09-2	3-Nitroaniline	2000	U
83-32-9	Acenaphthene	2000	U

FORM I SV-1

~~213~~

3/90 i/d/17

63

1A320

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V129

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS4

Matrix: (soil/water) WATER

Lab Sample ID: V129

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V129.D

Level: (low/med) LOW

Date Received: 05/23/94

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

Date Extracted: 05/24/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 06/15/94

Injection Volume: 1.0(UL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV.0

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

ADDENDUM 1A,

CAS NO.

COMPOUND

Q

(Q)

51-28-5	2,4-Dinitrophenol	2000	U-UR
100-02-7	4-Nitrophenol	2000	U-UR
132-64-9	Dibenzofuran	2000	U-UR
121-14-2	2,4-Dinitrotoluene	2000	U
84-66-2	Diethylphthalate	2000	U-UR
7005-72-3	4-Chlorophenyl-phenylether	4000	U
86-73-7	Fluorene	2000	U
100-01-6	4-Nitroaniline	2000	U
534-52-1	4,6-Dinitro-2-methylphenol	2000	U-UR
86-30-6	N-nitrosodiphenylamine (1)	4000	U
101-55-3	4-Bromophenyl-phenylether	4000	U
118-74-1	Hexachlorobenzene	2000	U
87-86-5	Pentachlorophenol	2000	U
85-01-8	Phenanthrene	2000	U
120-12-7	Anthracene	2000	U
86-74-8	Carbazole	2000	U
84-74-2	Di-n-butylphthalate	4000	U-UR
206-44-0	Fluoranthene	2000	U
129-00-0	Pyrene	2000	U
85-68-7	Butylbenzylphthalate	4000	U-UR
91-94-1	3,3'-Dichlorobenzidine	2000	U
56-55-3	Benzo(a)anthracene	2000	U
218-01-9	Chrysene	2000	U
117-81-7	bis(2-Ethylhexyl)phthalate	4000	U-UR
117-84-0	Di-n-octylphthalate	4000	U-UR
205-99-2	Benzo(b)fluoranthene	2000	U
207-08-9	Benzo(k)fluoranthene	2000	U
50-32-8	Benzo(a)pyrene	2000	U
193-39-5	Indeno(1,2,3-cd)pyrene	2000	U
53-70-3	Dibenzo(a,h)anthracene	2000	U
191-24-2	Benzo(g,h,i)perylene	2000	U
110-86-1	Pyridine	2000	U
71-36-3	1-Butanol	2000	U

FORM I SV-2

1A321

214

64

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V129

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS4

Matrix: (soil/water) WATER

Lab Sample ID: V129

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V129.D

Level: (low/med) LOW

Date Received: 05/23/94

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

Date Extracted: 05/24/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 06/15/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

111-76-2-----	2-Butoxyethanol	2000	U
126-73-8-----	Phosphoric acid, tributyleste	2000	U
108-39-4-----	3-Methylphenol	2000	U UR

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

v129

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS4

Matrix: (soil/water) WATER

Lab Sample ID: v129

Sample wt/vol: 10

(g/mL) ML

Lab File ID: V129.D

Level: (low/med) LOW

Date Received: 05/23/94

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

Date Extracted: 05/24/94

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 06/15/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0

Number TICs found: 2

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L ADDENDUM 1A,

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 110-82-7	Cyclohexane	2.694	4000	NJB R
2.	Unknown	6.953	11000	J
3.				
4.				
5.				
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27.				
28.				
29.				
30.				

FORM I SV-TIC

1A-323

4080 3/90

66

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V129DU

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS4

Matrix: (soil/water) WATER

Lab Sample ID: V129DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V129DU.D

Level: (low/med) LOW

Date Received: 05/23/94

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

Date Extracted: 05/24/94

Concentrated Extract Volume: 1000 (UL)

Date Analyzed: 06/15/94

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A,

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

108-95-2-----	Phenol	2000	U
111-44-4-----	bis(-2-Chloroethyl) Ether	4000	U
95-57-8-----	2-Chlorophenol	2000	U
541-73-1-----	1,3-Dichlorobenzene	2000	U
106-46-7-----	1,4-Dichlorobenzene	2000	U
95-50-1-----	1,2-Dichlorobenzene	2000	U
95-48-7-----	2-Methylphenol	2000	U
108-60-1-----	2,2'-oxybis(1-Chloropropane)	4000	U
106-44-5-----	4-Methylphenol	2000	U
621-64-7-----	N-Nitroso-di-n-propylamine	4000	U
67-72-1-----	Hexachloroethane	2000	U
98-95-3-----	Nitrobenzene	2000	U
78-59-1-----	Isophorone	2000	U
88-75-5-----	2-Nitrophenol	2000	U
105-67-9-----	2,4-Dimethyphenol	2000	U
111-91-1-----	bis(-2-Chloroethoxy) methane	4000	U
120-83-2-----	2,4-Dichlorophenol	2000	U
120-82-1-----	1,2,4-Trichlorobenzene	2000	U
91-20-3-----	Naphthalene	2000	U
106-47-8-----	4-Chloroaniline	2000	U
87-68-3-----	Hexachlorobutadiene	2000	U
59-50-7-----	4-Chloro-3-Methylphenol	2000	U
91-57-6-----	2-Methylnaphthalene	2000	U
77-47-4-----	Hexachlorocyclopentadiene	2000	U
88-06-2-----	2,4,6-Trichlorophenol	2000	U
95-95-4-----	2,4,5-Trichlorophenol	2000	U
91-58-7-----	2-Chloronaphthalene	4000	U
88-74-4-----	2-Nitroaniline	2000	U
131-11-3-----	Dimethylphthalate	4000	U
208-96-8-----	Acenaphthylene	2000	U
606-20-2-----	2,6-Dinitrotoluene	2000	U
99-09-2-----	3-Nitroaniline	2000	U
83-32-9-----	Acenaphthene	2000	U

FORM I SV-1

3/90

1A-324

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V129DU

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS4

Matrix: (soil/water) WATER

Lab Sample ID: V129DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V129DU.D

Level: (low/med) LOW

Date Received: 05/23/94

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

Date Extracted: 05/24/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 06/15/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A,

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

51-28-5-----	2,4-Dinitrophenol	2000	U
100-02-7-----	4-Nitrophenol	2000	U
132-64-9-----	Dibenzofuran	2000	U
121-14-2-----	2,4-Dinitrotoluene	2000	U
84-66-2-----	Diethylphthalate	2000	U
7005-72-3-----	4-Chlorophenyl-phenylether	4000	U
86-73-7-----	Fluorene	2000	U
100-01-6-----	4-Nitroaniline	2000	U
534-52-1-----	4,6-Dinitro-2-methylphenol	2000	U
86-30-6-----	N-nitrosodiphenylamine (1)	4000	U
101-55-3-----	4-Bromophenyl-phenylether	4000	U
118-74-1-----	Hexachlorobenzene	2000	U
87-86-5-----	Pentachlorophenol	2000	U
85-01-8-----	Phenanthrene	2000	U
120-12-7-----	Anthracene	2000	U
86-74-8-----	Carbazole	2000	U
84-74-2-----	Di-n-butylphthalate	4000	U
206-44-0-----	Fluoranthene	2000	U
129-00-0-----	Pyrene	2000	U
85-68-7-----	Butylbenzylphthalate	4000	U
91-94-1-----	3,3'-Dichlorobenzidine	2000	U
56-55-3-----	Benzo(a)anthracene	2000	U
218-01-9-----	Chrysene	2000	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	4000	U
117-84-0-----	Di-n-octylphthalate	4000	U
205-99-2-----	Benzo(b)fluoranthene	2000	U
207-08-9-----	Benzo(k)fluoranthene	2000	U
50-32-8-----	Benzo(a)pyrene	2000	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	2000	U
53-70-3-----	Dibenzo(a,h)anthracene	2000	U
191-24-2-----	Benzo(g,h,i)perylene	2000	U
110-86-1-----	Pyridine	2000	U
71-36-3-----	1-Butanol	2000	U

FORM I SV-2

3/90

1A-325

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V129DU

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242AS4

Matrix: (soil/water) WATER

Lab Sample ID: V129DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V129DU.D

Level: (low/med) LOW

Date Received: 05/23/94

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

Date Extracted: 05/24/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 06/15/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

111-76-2-----	2-Butoxyethanol	2000	U
126-73-8-----	Phosphoric acid, tributyleste	2000	U
108-39-4-----	3-Methylphenol	2000	U

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A,

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

v129du

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A4

Matrix: (soil/water) WATER

Lab Sample ID: v129du

Sample wt/vol: 10

(g/mL) ML

Lab File ID: V129DU.D

Level: (low/med) LOW

Date Received: 05/23/94

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

Date Extracted: 05/24/94

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 06/15/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0

Number TICs found: 1

CONCENTRATION UNITS: ADDENDUM 1A
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 110-82-7	Cyclohexane	2.630	3700	NFB R
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
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12.				
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21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

FORM I SV-TIC

1A-327

4093

3/90

70

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: WHCWA

Contract:

V130
Field Blank VIII

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A5

Matrix: (soil/water) WATER

Lab Sample ID: V130

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V130.D

Level: (low/med) LOW

Date Received: 06/10/94

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

Date Extracted: 06/13/94

Concentrated Extract Volume: 1000 (UL)

Date Analyzed: 06/21/94

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

108-95-2	Phenol	2000	U
111-44-4	bis(-2-Chloroethyl) Ether	4000	U
95-57-8	2-Chlorophenol	2000	U
541-73-1	1,3-Dichlorobenzene	2000	U
106-46-7	1,4-Dichlorobenzene	2000	U
95-50-1	1,2-Dichlorobenzene	2000	U
95-48-7	2-Methylphenol	2000	U
108-60-1	2,2'-oxybis(1-Chloropropane)	4000	U
106-44-5	4-Methylphenol	2000	U
621-64-7	N-Nitroso-di-n-propylamine	4000	U
67-72-1	Hexachloroethane	2000	U
98-95-3	Nitrobenzene	2000	U
78-59-1	Isophorone	2000	U
88-75-5	2-Nitrophenol	2000	U
105-67-9	2,4-Dimethylphenol	2000	U
111-91-1	bis(-2-Chloroethoxy) methane	4000	U
120-83-2	2,4-Dichlorophenol	2000	U
120-82-1	1,2,4-Trichlorobenzene	2000	U
91-20-3	Naphthalene	2000	U
106-47-8	4-Chloroaniline	2000	U
87-68-3	Hexachlorobutadiene	2000	U
59-50-7	4-Chloro-3-Methylphenol	2000	U
91-57-6	2-Methylnaphthalene	2000	U
77-47-4	Hexachlorocyclopentadiene	2000	U
88-06-2	2,4,6-Trichlorophenol	2000	U
95-95-4	2,4,5-Trichlorophenol	2000	U
91-58-7	2-Chloronaphthalene	4000	U
88-74-4	2-Nitroaniline	2000	U
131-11-3	Dimethylphthalate	4000	U
208-96-8	Acenaphthylene	2000	U
606-20-2	2,6-Dinitrotoluene	2000	U
99-09-2	3-Nitroaniline	2000	U
83-32-9	Acenaphthene	2000	U

Handwritten: 10/17/91

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V130

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A5

Matrix: (soil/water) WATER

Lab Sample ID: V130

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V130.D

Level: (low/med) LOW

Date Received: 06/10/94

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

Date Extracted: 06/13/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 06/21/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0

CONCENTRATION UNITS: ADDENDUM 1A,
(ug/L or ug/Kg) UG/L Q

CAS NO.

COMPOUND

51-28-5-----	2,4-Dinitrophenol	2000	U
100-02-7-----	4-Nitrophenol	2000	U
132-64-9-----	Dibenzofuran	2000	U
121-14-2-----	2,4-Dinitrotoluene	2000	U
84-66-2-----	Diethylphthalate	2000	U
7005-72-3-----	4-Chlorophenyl-phenylether	4000	U
86-73-7-----	Fluorene	2000	U
100-01-6-----	4-Nitroaniline	2000	U
534-52-1-----	4,6-Dinitro-2-methylphenol	2000	U
86-30-6-----	N-nitrosodiphenylamine (1)	4000	U
101-55-3-----	4-Bromophenyl-phenylether	4000	U
118-74-1-----	Hexachlorobenzene	2000	U
87-86-5-----	Pentachlorophenol	2000	U
85-01-8-----	Phenanthrene	2000	U
120-12-7-----	Anthracene	2000	U
86-74-8-----	Carbazole	2000	U
84-74-2-----	Di-n-butylphthalate	4000	U
206-44-0-----	Fluoranthene	2000	U
129-00-0-----	Pyrene	2000	U
85-68-7-----	Butylbenzylphthalate	4000	U
91-94-1-----	3,3'-Dichlorobenzidine	2000	U
56-55-3-----	Benzo(a)anthracene	2000	U
218-01-9-----	Chrysene	2000	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	4000	U
117-84-0-----	Di-n-octylphthalate	4000	U
205-99-2-----	Benzo(b)fluoranthene	2000	U
207-08-9-----	Benzo(k)fluoranthene	2000	U
50-32-8-----	Benzo(a)pyrene	2000	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	2000	U
53-70-3-----	Dibenzo(a,h)anthracene	2000	U
191-24-2-----	Benzo(g,h,i)perylene	2000	U
110-86-1-----	Pyridine	2000	U
71-36-3-----	1-Butanol	2000	U

FORM I SV-2

3/90

1A-329

~~220~~

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V130

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A5

Matrix: (soil/water) WATER

Lab Sample ID: V130

Sample wt/vol: 10 (g/mL). ML

Lab File ID: V130.D

Level: (low/med) LOW

Date Received: 06/10/94

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

Date Extracted: 06/13/94

Concentrated Extract Volume: 1000 (UL)

Date Analyzed: 06/21/94

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

111-76-2-----	2-Butoxyethanol	2000	U
126-73-8-----	Phosphoric acid, tributyleste	770	J
108-39-4-----	3-Methylphenol	2000	U

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A,

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

v130

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A5

Matrix: (soil/water) WATER

Lab Sample ID: v130

Sample wt/vol: 10

(g/mL) ML

Lab File ID: V130.D

Level: (low/med) LOW

Date Received: 06/10/94

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

Date Extracted: 06/13/94

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 06/21/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0

Number TICs found: 1

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L ADDENDUM 1A,

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 110-82-7	Cyclohexane	2.594	4800	NR R
2.				
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30.				

FORM I SV-TIC

4116 3/90

/A331

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V130DU

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A5

Matrix: (soil/water) WATER

Lab Sample ID: V130DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V130DU.D

Level: (low/med) LOW

Date Received: 06/10/94

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

Date Extracted: 06/13/94

Concentrated Extract Volume: 1000(UL)

Date Analyzed: 06/21/94

Injection Volume: 1.0(UL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0

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

ADDENDUM 1A,

CAS NO.

COMPOUND

Q

108-95-2-----	Phenol	2000	U
111-44-4-----	bis(-2-Chloroethyl) Ether	4000	U
95-57-8-----	2-Chlorophenol	2000	U
541-73-1-----	1,3-Dichlorobenzene	2000	U
106-46-7-----	1,4-Dichlorobenzene	2000	U
95-50-1-----	1,2-Dichlorobenzene	2000	U
95-48-7-----	2-Methylphenol	2000	U
108-60-1-----	2,2'-oxybis(1-Chloropropane)	4000	U
106-44-5-----	4-Methylphenol	2000	U
621-64-7-----	N-Nitroso-di-n-propylamine	4000	U
67-72-1-----	Hexachloroethane	2000	U
98-95-3-----	Nitrobenzene	2000	U
78-59-1-----	Isophorone	2000	U
88-75-5-----	2-Nitrophenol	2000	U
105-67-9-----	2,4-Dimethyphenol	2000	U
111-91-1-----	bis(-2-Chloroethoxy) methane	4000	U
120-83-2-----	2,4-Dichlorophenol	2000	U
120-82-1-----	1,2,4-Trichlorobenzene	2000	U
91-20-3-----	Naphthalene	2000	U
106-47-8-----	4-Chloroaniline	2000	U
87-68-3-----	Hexachlorobutadiene	2000	U
59-50-7-----	4-Chloro-3-Methylphenol	2000	U
91-57-6-----	2-Methylnaphthalene	2000	U
77-47-4-----	Hexachlorocyclopentadiene	2000	U
88-06-2-----	2,4,6-Trichlorophenol	2000	U
95-95-4-----	2,4,5-Trichlorophenol	2000	U
91-58-7-----	2-Chloronaphthalene	4000	U
88-74-4-----	2-Nitroaniline	2000	U
131-11-3-----	Dimethylphthalate	4000	U
208-96-8-----	Acenaphthylene	2000	U
606-20-2-----	2,6-Dinitrotoluene	2000	U
99-09-2-----	3-Nitroaniline	2000	U
83-32-9-----	Acenaphthene	2000	U

FORM I SV-1

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1A332

~~222~~

75

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V130DU

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A5

Matrix: (soil/water) WATER

Lab Sample ID: V130DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V130DU.D

Level: (low/med) LOW

Date Received: 06/10/94

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

Date Extracted: 06/13/94

Concentrated Extract Volume: 1000 (UL)

Date Analyzed: 06/21/94

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0

CAS NO. COMPOUND CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L ADDENDUM 1A,
Q

51-28-5-----	2,4-Dinitrophenol	2000	U
100-02-7-----	4-Nitrophenol	2000	U
132-64-9-----	Dibenzofuran	2000	U
121-14-2-----	2,4-Dinitrotoluene	2000	U
84-66-2-----	Diethylphthalate	2000	U
7005-72-3-----	4-Chlorophenyl-phenylether	4000	U
86-73-7-----	Fluorene	2000	U
100-01-6-----	4-Nitroaniline	2000	U
534-52-1-----	4,6-Dinitro-2-methylphenol	2000	U
86-30-6-----	N-nitrosodiphenylamine (1)	4000	U
101-55-3-----	4-Bromophenyl-phenylether	4000	U
118-74-1-----	Hexachlorobenzene	2000	U
87-86-5-----	Pentachlorophenol	2000	U
85-01-8-----	Phenanthrene	2000	U
120-12-7-----	Anthracene	2000	U
86-74-8-----	Carbazole	2000	U
84-74-2-----	Di-n-butylphthalate	4000	U
206-44-0-----	Fluoranthene	2000	U
129-00-0-----	Pyrene	2000	U
85-68-7-----	Butylbenzylphthalate	4000	U
91-94-1-----	3,3'-Dichlorobenzidine	2000	U
56-55-3-----	Benzo(a)anthracene	2000	U
218-01-9-----	Chrysene	2000	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	4000	U
117-84-0-----	Di-n-octylphthalate	4000	U
205-99-2-----	Benzo(b)fluoranthene	2000	U
207-08-9-----	Benzo(k)fluoranthene	2000	U
50-32-8-----	Benzo(a)pyrene	2000	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	2000	U
53-70-3-----	Dibenzo(a,h)anthracene	2000	U
191-24-2-----	Benzo(g,h,i)perylene	2000	U
110-86-1-----	Pyridine	2000	U
71-36-3-----	1-Butanol	2000	U

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10/17/94

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1A333

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V130DU

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A5

Matrix: (soil/water) WATER

Lab Sample ID: V130DU

Sample wt/vol: 10 (g/mL) ML

Lab File ID: V130DU.D

Level: (low/med) LOW

Date Received: 06/10/94

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

Date Extracted: 06/13/94

Concentrated Extract Volume: 1000 (UL)

Date Analyzed: 06/21/94

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

111-76-2-----	2-Butoxyethanol	2000	U
126-73-8-----	Phosphoric acid, tributyleste	2000	U
108-39-4-----	3-Methylphenol	2000	U

WHC-SD-WM-DP-067, REV. 0
ADDENDUM 1A,

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

v130du

Lab Name: WHCWA

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 242A5

Matrix: (soil/water) WATER

Lab Sample ID: v130du

Sample wt/vol: 10

(g/mL) ML

Lab File ID: V130DU.D

Level: (low/med) LOW

Date Received: 06/10/94

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

Date Extracted: 06/13/94

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 06/21/94

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 7.0

WHC-SD-WM-DP-067, REV. 0

CONCENTRATION UNITS: ADDENDUM 1A,
(ug/L or ug/Kg) UG/L

Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 110-82-7	Cyclohexane	2.584	4400	NF
2.				
3.				
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FORM I SV-TIC

1A335

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4127

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WHC-SD-WM-DP-067
ADDENDUM 1A REV. 0

APPENDIX 2
DATA ASSESSMENT FORMS

APPENDIX D

LEVEL B DOCUMENTATION

WHC-SD-WM-DP- 067
ADDENDUM 1A REV. 0 Westinghouse
Hanford Company

OFFICE OF SAMPLE MANAGEMENT RCRA DATA VALIDATION - LEVEL B

Date 10/11/94Reviewed By A. Schult

DATA ASSESSMENT SUMMARY

Sample # V126, V128, V129, V130
V106, V111, V116, V121, V122,
Matrix water
Sample Date 5/4/94 - 6/9/94
Laboratory 222-S

Chain of Custody O
Analysis Completeness O
Holding Times N/A
Analytical Blanks O
MS or MS/MSD X
Duplicate Analysis X
Surrogate Recovery M

O -data had no problems; X -data qualified due to minor problems
M -data qualified due to major problems/some data may be unusable

Overall Assessment: _____

Comments: _____

1A337

SAMPLE MANAGEMENT AND ADMINISTRATION
DATA VALIDATION FOR RCRA ANALYSES

Manual
Section
Page
Effective Date

WHC-CM-5-3
2.0, REV 0
19 of 24
08/27/90

APPENDIX D

LEVEL B DOCUMENTATION (cont)

WHC-SD-WM-DP- 067
ADDENDUM 11 REV. 0

RCRA Level B QC (cont)

Date 10/11/94 Reviewed by S. Schlob

Sample # V106, V111, V116, V121, V122, V126, V128, V129, V130

Analysis Semi-volatile

ANALYTICAL BLANK ANALYSIS

Blank Sample # SEB1K01

Associated Samples V106 V121

V122 V126 V128

Comments: Blanks not run within 24 hrs of samples
no compounds detected

Action: none

MATRIX SPIKE or MS/MSD (circle one)

Sample Spiked V111

Associated Samples V106 V111

Matrix water

V126

Comments: 1-hexanol, 2-chlorophenol, 4-chloro-3-methylphenol,
4-nitrophenol, acenaphthene, styrene, outside control
limits

Action: J, UJ to associated compounds

1A338

APPENDIX D

LEVEL B DOCUMENTATION (cont)

WHC-SD-WM-DP-067
ADDENDUM 11 REV. 0

RCRA Level B QC (cont)

Date 10/11/94 Reviewed by A. Schultz

Sample # V106, V111, V116, V121, V122, V126, V128, V129, V130

Analysis semivolatiles

ANALYTICAL BLANK ANALYSIS

Blank Sample # SEBIK01

Associated Samples V116 V129

Comments: Blanks not run within 24 hrs of sample
no compounds detected

Action: none

MATRIX SPIKE or MS/MSD (circle one)

Sample Spiked V116

Associated Samples V116

Matrix water

Comments: phenol, 4-chloro-3-methylphenol, 4-nitrophenol, pentachloro
phenol, 2-chlorophenol, outside control limits

Action: J, US to associated compounds

17339

APPENDIX D

LEVEL B DOCUMENTATION (cont)

WHC-SD-WM-DP-067
ADDENDUM 1A REV. 0

RCRA Level B QC (cont)

Date 10/11/94 Reviewed by S. SchilokSample # Analysis semivolatiles

ANALYTICAL BLANK ANALYSIS

Blank Sample # SEB1K02Associated Samples V111 V130Comments: Blanks not run within 24 hrs of sample
no compounds detectedAction: noneMATRIX SPIKE or (MS/MSD) (circle one)Sample Spiked V121Associated Samples V106 V121Matrix V126 Comments: 4-chloro-3-methylphenol, 4-nitrophenol, 2,4-dinitrotoluene
pentachlorophenol, outside control limitsAction: J, UJ to associated compounds

1A-340

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APPENDIX D

LEVEL B DOCUMENTATION (cont)

WHC-SD-WM-DP-0617
ADDENDUM 1A REV. 0

RCRA Level B QC

Date 10/11/94 Reviewed by S. SchmidtSample # V106, V111, V116, V121, V122, V126, V128, V129, V130 ^{xxx} 10/11/94Analysis semivolatile

DUPLICATE ANALYSIS

Duplicate Sample V106DU Associated Samples V106Matrix waterComments: 1-butanol RPD > 20%Action: JSURROGATE RECOVERY V106, V106DUComments: Phenol-d5, 2-fluorophenol, 2-chlorophenol-d4 recovery < 10%, nitrated compounds recovered as TICs.Action: J, US to associated compounds.

1A341

RCRA QC - 1 of 34

APPENDIX D

LEVEL B DOCUMENTATION (cont)

WHC-SD-WM-DP-067
ADDENDUM 11 REV. 0

RCRA Level B QC

Date 10/11/94 Reviewed by A. SchindlerSample # V116Analysis semivolatiles

DUPLICATE ANALYSIS

Duplicate Sample V116 DU Associated Samples V116Matrix water

Comments: tributyl ester phosphoric acid RPD > 20%

Action: J

SURROGATE RECOVERY V111, V111 DU, V121, V126, V116 DUComments: Phenol-d5, 2-fluorophenol, 2,4,6-tribromophenol,
2-chlorophenol-d4 recoveries < 10%

Action: J, UJ to associated compounds

1A-342

85

APPENDIX D

WHC-SD-WM-DP-061
ADDENDUM 11 REV. 0

LEVEL B DOCUMENTATION (cont)

RCRA Level B QC

Date 10/11/94 Reviewed by S. SchmidtSample # V121Analysis semivolatiles

DUPLICATE ANALYSIS

Duplicate Sample V121DU Associated Samples V121Matrix waterComments: tributyl ester phosphoric acidAction: JSURROGATE RECOVERY V121DU, V126DU,Comments: Phenol-¹⁵, 2-fluorophenol, 2-chlorophenol-¹⁴,
recoveries <10%V121DU 2-fluorobiphenyl recovery >116%Action: J, UT to associated compounds.

1A343

APPENDIX D

LEVEL B DOCUMENTATION (cont)

WHC-SD-WM-DP-007
ADDENDUM 11 REV. 0

RCRA Level B QC

Date 10/11/94 Reviewed by A. SchickelSample # V129Analysis semivolatiles

DUPLICATE ANALYSIS

Duplicate Sample ✓ Associated Samples _____Matrix ✓ _____

Comments:

Action:

SURROGATE RECOVERY

Comments: Phenol 25 recovery 0%. This sample is
a field blank and should not have had matrix
interference

Action: Associated compounds rejected. (R)

1A344

APPENDIX D

LEVEL B DOCUMENTATION (cont)

WHC-SD-WM-DP-061
ADDENDUM 11 REV. 0

RCRA Level B QC

Date 10/11/94 Reviewed by S. SchubertSample # —Analysis semivolatiles

DUPLICATE ANALYSIS

Duplicate Sample V116 MSN Associated Samples V116Matrix water

Comments: 1,4-dichlorobenzene, acenaphthene, 4-nitrophenol, pentachlorophenol. RPD > 20%

Action: Associated compounds of 1,4-dichlorobenzene and acenaphthene qualified. ^{in this sample} Associated compounds of other spike duplicates exceeding 20% not low, need qualification due to ~~and~~ MS exceedance.

SURROGATE RECOVERY

Comments:

Action:

1A-345

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APPENDIX D

LEVEL B DOCUMENTATION (cont)

WHC-SD-WM-DP-067
ADDENDUM 18 REV. 0

RCRA Level B QC

Date 10/11/94 Reviewed by A. SchultsSample # —Analysis semivolatiles

DUPLICATE ANALYSIS

Duplicate Sample V121.MSD Associated Samples V121.Matrix waterComments: 4-chloro-3-methylphenol RPD > 20%Action: None needed as MS out of control limits

SURROGATE RECOVERY

Comments:

Action:

1A346

APPENDIX D

LEVEL B DOCUMENTATION (cont)

WHC-SD-WM-DP-067
ADDENDUM 1A REV. 0

RCRA Level B QC

Date 10/11/94 Reviewed by S. SchultSample # Analysis semi-volatiles

DUPLICATE ANALYSIS

Duplicate Sample VIII MSN Associated Samples VIIIMatrix waterComments: Pentachlorophenol, RPD > 20%, pyrene, acenaphthene
4-nitrophenol RPD > 20%Action: None needed as associated surrogates and MS
out of limits

SURROGATE RECOVERY

Comments:

Actions:

1A347

90

WHC-SD-WM-DP-067
ADDENDUM 1A REV. 0

APPENDIX 3

DATA SUMMARY FORM

Validated Data Summary, Data Package: V81-222-094

Parameter	Samp# Date Location Depth Type Comments	V106 5-4-94 242-A --- WATER		V106DU 5-4-94 242-A --- WATER		V111 6-9-94 242-A --- WATER		V111DU 6-9-94 242-A --- WATER		V116 5-23-94 242-A --- WATER		V116DU 5-23-94 242-A --- WATER	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
PHENOL	UG/KG	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ
BIS(2-CHLOROETHYL)ETHER	UG/KG	2000.000	UJ	2000.000	UJ	4000.000	UJ	4000.000	UJ	4000.000	UJ	4000.000	UJ
2-CHLOROPHENOL	UG/KG	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ
1,3-DICHLOROBENZENE	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	UJ	2000.000	U
1,4-DICHLOROBENZENE	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	UJ	2000.000	U
1,2-DICHLOROBENZENE	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	UJ	2000.000	U
2-METHYLPHENOL	UG/KG	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/L	2000.000	UJ	2000.000	UJ	4000.000	UJ	4000.000	UJ	4000.000	UJ	4000.000	UJ
4-METHYLPHENOL	UG/KG	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	2000.000	UJ	2000.000	UJ	4000.000	U	4000.000	U	4000.000	U	4000.000	U
HEXACHLOROETHANE	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	UJ	2000.000	U
NITROBENZENE	UG/KG	2000.000	UJ	2000.000	UJ	2000.000	U	2000.000	U	2000.000	U	2000.000	U
ISOPHORONE	UG/KG	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ
2-NITROPHENOL	UG/KG	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ
2,4-DIMETHYLPHENOL	UG/KG	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ
BIS(2-CHLOROETHOXY)METHANE	UG/KG	2000.000	UJ	2000.000	UJ	4000.000	UJ	4000.000	UJ	4000.000	UJ	4000.000	UJ
2,4-DICHLOROPHENOL	UG/KG	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ
1,2,4-TRICHLOROBENZENE	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U
NAPHTHALENE	UG/KG	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	U
4-CHLOROANILINE	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U
HEXACHLOROBUTADIENE	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	UJ	2000.000	U
4-CHLORO-3-METHYLPHENOL	UG/KG	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ
2-METHYLNAPHTHALENE	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	UJ	2000.000	U
2,4,6-TRICHLOROPHENOL	UG/KG	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ
2,4,5-TRICHLOROPHENOL	UG/KG	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ
2-CHLORONAPHTHALENE	UG/KG	2000.000	UJ	2000.000	UJ	4000.000	UJ	4000.000	UJ	4000.000	UJ	4000.000	U
2-NITROANILINE	UG/KG	2000.000	UJ	2000.000	UJ	2000.000	U	2000.000	U	2000.000	U	2000.000	U
DIMETHYLPHTHALATE	UG/KG	2000.000	UJ	2000.000	UJ	4000.000	UJ	4000.000	UJ	4000.000	UJ	4000.000	UJ
ACENAPHTHYLENE	UG/KG	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	U
2,6-DINITROTOLUENE	UG/KG	2000.000	UJ	2000.000	UJ	2000.000	U	2000.000	U	2000.000	U	2000.000	U
3-NITROANILINE	UG/KG	2000.000	UJ	2000.000	UJ	2000.000	U	2000.000	U	2000.000	U	2000.000	U
ACENAPHTHENE	UG/KG	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	U
2,4-DINITROPHENOL	UG/KG	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ
4-NITROPHENOL	UG/KG	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	U	2000.000	UJ
DIBENZOFURAN	UG/KG	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ
2,4-DINITROTOLUENE	UG/KG	2000.000	UJ	2000.000	UJ	2000.000	U	2000.000	U	2000.000	U	2000.000	U
DIETHYLPHTHALATE	UG/KG	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ
4-CHLOROPHENYL-PHENYLETHER	UG/KG	2000.000	UJ	2000.000	UJ	4000.000	UJ	4000.000	UJ	4000.000	UJ	4000.000	UJ
FLUORENE	UG/KG	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	UJ	2000.000	U
4-NITROANILINE	UG/KG	2000.000	UJ	2000.000	UJ	2000.000	U	2000.000	U	2000.000	U	2000.000	U

WHC-SD-WM-DP-067
ADDENDUM 1A . REV. 0

WHC-SD-WM-DP-242-
ADDENDUM REV.0

Sample#	Date	Location	Depth	Type	Comments	Parameter	Units	Result	Q
V121	5-9-94	242-A	---	WATER		PHENOL	UG/KG	2000.000	U
V121DU	5-9-94	242-A	---	WATER		BIS(2-CHLOROETHYL)ETHER	UG/KG	4000.000	U
V122	5-9-94	242-A	---	WATER		2-CHLOROPHENOL	UG/KG	2000.000	U
V122DU	5-9-94	242-A	---	WATER		1,3-DICHLOROBENZENE	UG/KG	2000.000	U
V126	5-16-94	242-A	---	WATER		1,4-DICHLOROBENZENE	UG/KG	2000.000	U
V126DU	5-16-94	242-A	---	WATER		2-METHYLPHENOL	UG/KG	2000.000	U
						2,2'-OXYBIS(1-CHLOROPROPANE)	UG/L	4000.000	U
						4-METHYLPHENOL	UG/KG	2000.000	U
						N-NITROSO-DI-N-PROPYLAMINE	UG/KG	4000.000	U
						HEXACHLOROETHANE	UG/KG	2000.000	U
						NITROBENZENE	UG/KG	2000.000	U
						ISOPHORONE	UG/KG	2000.000	U
						2-NITROPHENOL	UG/KG	2000.000	U
						2,4-DIMETHYLPHENOL	UG/KG	2000.000	U
						BIS(2-CHLOROETHOXY)METHANE	UG/KG	4000.000	U
						2,4-DICHLOROPHENOL	UG/KG	2000.000	U
						1,2,4-TRICHLOROBENZENE	UG/KG	2000.000	U
						NAPHTHALENE	UG/KG	2000.000	U
						4-CHLORONAPHTHALENE	UG/KG	2000.000	U
						HEXACHLOROBTADIENE	UG/KG	2000.000	U
						4-CHLORO-3-METHYLPHENOL	UG/KG	2000.000	U
						2-METHYLNAPHTHALENE	UG/KG	2000.000	U
						HEXACHLOROCYCLOPENTADIENE	UG/KG	2000.000	U
						2,4,6-TRICHLOROPHENOL	UG/KG	2000.000	U
						2,4,5-TRICHLOROPHENOL	UG/KG	2000.000	U
						2-CHLORONAPHTHALENE	UG/KG	4000.000	U
						2-NITRONAPHTHALENE	UG/KG	2000.000	U
						DIMETHYLPHTHALATE	UG/KG	4000.000	U
						ACENAPHTHYLENE	UG/KG	2000.000	U
						2,4-DINITROPHENOL	UG/KG	2000.000	U
						4-NITROPHENOL	UG/KG	2000.000	U
						DIBENZOFURAN	UG/KG	2000.000	U
						2,4-DINITROTOLUENE	UG/KG	2000.000	U
						DIETHYLPHTHALATE	UG/KG	2000.000	U
						4-CHLOROPHENYL-PHENYLETHER	UG/KG	4000.000	U
						FLUORENE	UG/KG	2000.000	U
						4-NITRONAPHTHLENE	UG/KG	2000.000	U
						3-NITRONAPHTHLENE	UG/KG	2000.000	U
						2,6-DINITROTOLUENE	UG/KG	2000.000	U
						2,4-DINITROTOLUENE	UG/KG	2000.000	U
						4-NITROPHENYL-PHENYLETHER	UG/KG	4000.000	U
						FLUORENE	UG/KG	2000.000	U
						4-NITRONAPHTHLENE	UG/KG	2000.000	U
						3-NITRONAPHTHLENE	UG/KG	2000.000	U
						2,6-DINITROTOLUENE	UG/KG	2000.000	U
						2,4-DINITROTOLUENE	UG/KG	2000.000	U
						DIETHYLPHTHALATE	UG/KG	2000.000	U
						4-CHLOROPHENYL-PHENYLETHER	UG/KG	4000.000	U
						FLUORENE	UG/KG	2000.000	U

Validated Data Summary, Data Package: V81-222-094

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Sample#	Date	Location	Depth	Type	Comments	Parameter	
						Units	Result
V121	5-9-94	242-A	---	WATER		UG/KG	2000.000
V121DU	5-9-94	242-A	---	WATER		UG/KG	2000.000
V122	5-9-94	242-A	---	WATER		Result	q
V122DU	5-9-94	242-A	---	WATER		Result	q
V126	5-16-94	242-A	---	WATER		Result	q
V126DU	5-16-94	242-A	---	WATER		Result	q

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WHC-SD-WM-DP-267
 ADDENDUM 1A REV.

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 11/11/94

Validated Data Summary, Data Package: V81-222-094

Parameter	Sample# Date Location Depth Type Comments	V12B 5-16-94 242-A --- WATER FIELD BLANK	V1280U 5-16-94 242-A --- WATER FIELD BLANK	V129 5-23-94 242-A --- WATER FIELD BLANK	V1290U 5-23-94 242-A --- WATER FIELD BLANK	V130 6-9-94 242-A --- WATER FIELD BLANK	V1300U 6-9-94 242-A --- WATER FIELD BLANK
PHENOL	UG/KG	Result	Q	Result	Q	Result	Q
3 IS(2-CHLOROETHYL)ETHER	UG/KG	2000.000	U	2300.030	UR	2000.000	U
2-CHLOROPHENOL	UG/KG	4000.000	U	4300.030	U	4000.000	U
1,3-DI-CHLOROBENZENE	UG/KG	2000.000	U	2300.030	U	2000.000	U
1,4-DI-CHLOROBENZENE	UG/KG	2000.000	U	2000.000	U	2000.000	U
1,2-DI-CHLOROBENZENE	UG/KG	2000.000	U	2000.000	U	2000.000	U
2-NETHYLPHENOL	UG/KG	2000.000	U	2000.000	U	2000.000	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/L	4000.000	U	4000.000	U	4000.000	U
4-METHYLPHENOL	UG/KG	2000.000	U	2000.000	U	2000.000	U
N-N-TRICSO-DI-1-1-PROPYLAMINE	UG/KG	4000.000	U	4000.000	U	4000.000	U
HEXACHLOROETHANE	UG/KG	2000.000	U	2000.000	U	2000.000	U
NITROBENZENE	UG/KG	2000.000	U	2000.000	U	2000.000	U
ISOPHORENE	UG/KG	2000.000	U	2000.000	U	2000.000	U
2-VITROPHENOL	UG/KG	2000.000	U	2000.000	U	2000.000	U
2,4-DIMETHYLPHENOL	UG/KG	4000.000	U	4000.000	U	4000.000	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	2000.000	U	2000.000	U	2000.000	U
2,4-DI-CHLOROPHENOL	UG/KG	2000.000	U	2000.000	U	2000.000	U
1,2,4-TRICHLOROBENZENE	UG/KG	2000.000	U	2000.000	U	2000.000	U
NAPHTHALENE	UG/KG	2000.000	U	2000.000	U	2000.000	U
4-CHLORANILINE	UG/KG	2000.000	U	2000.000	U	2000.000	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	2000.000	U	2000.000	U	2000.000	U
4-CHLORO-3-METHYLPHENOL	UG/KG	2000.000	U	2000.000	U	2000.000	U
2-METHYLNAPHTHALENE	UG/KG	2000.000	U	2000.000	U	2000.000	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	2000.000	U	2000.000	U	2000.000	U
2,3,6-TRICHLOROPHENOL	UG/KG	2000.000	U	2000.000	U	2000.000	U
2,4,5-TRICHLOROPHENOL	UG/KG	2000.000	U	2000.000	U	2000.000	U
2-CHLORONAPHTHALENE	UG/KG	4000.000	U	4000.000	U	4000.000	U
2-N-TRODANILINE	UG/KG	4000.000	U	4000.000	U	4000.000	U
DIMETHYLPHENALATE	UG/KG	4000.000	U	4000.000	U	4000.000	U
ACENAPHTHYLENE	UG/KG	2000.000	U	2000.000	U	2000.000	U
2,6-DINITROTOLUENE	UG/KG	2000.000	U	2000.000	U	2000.000	U
3-NITROBENZENE	UG/KG	2000.000	U	2000.000	U	2000.000	U
ACENAPHTHENE	UG/KG	2000.000	U	2000.000	U	2000.000	U
2,4-DINITROPHENOL	UG/KG	2000.000	U	2000.000	U	2000.000	U
4-NITROPHENOL	UG/KG	2000.000	U	2000.000	U	2000.000	U
DIBENZOFURAN	UG/KG	2000.000	U	2000.000	U	2000.000	U
2,4-DINITROTOLUENE	UG/KG	2000.000	U	2000.000	U	2000.000	U
DIETHYLPHENALATE	UG/KG	4000.000	U	4000.000	U	4000.000	U
4-CHLOROPHENYL-PHENYLETHYLENE	UG/KG	2000.000	U	2000.000	U	2000.000	U
FLUORENE	UG/KG	2000.000	U	2000.000	U	2000.000	U
4-NITROANILINE	UG/KG	2000.000	U	2000.000	U	2000.000	U

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10/21/94

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Validated Data Summary, Data Package: V81-222-094

Parameter	Sample Date Location Depth Type Comments	V128 5-16-94 242-A --- WATER FIELD BLANK		V128U 5-16-94 242-A --- WATER FIELD BLANK		V129 5-23-94 242-A --- WATER FIELD BLANK		V129U 5-23-94 242-A --- WATER FIELD BLANK		V130 6-9-94 242-A --- WATER FIELD BLANK		V130U 6-9-94 242-A --- WATER FIELD BLANK	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
4,6-DINITRO-2-METHYLPHENOL	UG/KG	2000.000	U	2000.000	U	2000.000	UR	2000.000	U	2000.000	U	2000.000	U
N-NITROSODIPHENYLAMINE	UG/KG	4000.000	U	4000.000	U	4000.000	U	4000.000	U	4000.000	U	4000.000	U
4-BROMOPHENYL-PHENYLETHINE	UG/KG	4000.000	U	4000.000	U	4000.000	U	4000.000	U	4000.000	U	4000.000	U
HEXACHLOROBENZENE	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U
PENTACHLOROPHENO.	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U
PHENANTHRENE	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U
ANTHRACENE	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U
CARBAZOLE	UG/L	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U
DI-N-BUTYLPHthalate	UG/KG	4000.000	U	4000.000	U	4000.000	UR	4000.000	U	4000.000	U	4000.000	U
FLUORANTHENE	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U
PYRENE	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U
BUTYLBENZYLPHthalate	UG/KG	4000.000	U	4000.000	U	4000.000	UR	4000.000	U	4000.000	U	4000.000	U
3,3'-DICHLOROBIENZIDINE	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U
BENZO(A)ANTHRACENE	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U
CHRYSENE	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U
BIS(2-ETHYLHEXYL)PHthalate	UG/KG	4000.000	U	4000.000	U	4000.000	UR	4000.000	U	4000.000	U	4000.000	U
DI-N-OCTYLPHthalate	UG/KG	4000.000	U	4000.000	U	4000.000	UR	4000.000	U	4000.000	U	4000.000	U
BENZO(B)FLUORANTHENE	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U
BENZO(K)FLUORANTHENE	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U
BENZO(A)PYRENE	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U
INDENO(1,2,3-CD)PYRENE	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U
DIBENZO(A,H)ANTHRACENE	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U
BENZOC(G,H,I)PERYLENE	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U
PYRIDINE	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U
1-ETHANOL	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U
2-BUTOXYETHANOL	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U
TRIBUTYL ESTER PHOSPHORIC ACID	UG/KG	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U	2000.000	U
3-METHYLPHENOL	UG/L	2000.000	U	2000.000	U	2000.000	UR	2000.000	U	2000.000	U	2000.000	U

WHC-SD-WM-DP-067
ADDENDUM 14 REV.0

Validated
10/21/94

WHC-SD-WM-DP- 067
ADDENDUM 1A REV. 0

APPENDIX 4

CHAIN OF CUSTODY INFORMATION

/A-355

TANK FARM PLANT OPERATING PROCEDURE

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A

COPY

CHAIN OF CUSTODY FORM

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5/4/94 TIME 1430
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2603
REMARKS	This COC is used for the first of two 60 mL slurry samples in a glass bottle labeled PNLS1. This sample is for organic analysis.		
ICE CHEST OR SAMPLE PIG No.	B-21	SAMPLE CONTAINER No.	PNLS1 V106
DESTINATION	222-S Laboratory		

TOC
510A

(HP)

HPT SHIPPING CONTAINER RELEASE: Tim R

DATE: 5-5-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)
PNLS1

CHAIN OF POSSESSION

Relinquished by: <u>J.W. McMullen</u>	Received by: <u>GBH</u>	Date/Time: <u>5/4/94 1625</u>
Relinquished by: <u>GBH</u>	Received by: <u>Dea. Buttle</u>	Date/Time: <u>5/4/94 2350</u>
Relinquished by: <u>Dea. Buttle</u>	Received by: <u>J.W. McMullen</u>	Date/Time: <u>5-5-94 0835</u>
Relinquished by: <u>J.W. McMullen</u>	Received by: <u>John Unan</u>	Date/Time: <u>5-5-94 0920</u>
Relinquished by: <u>John Unan</u>	Received by: <u>Spencer Webb</u>	Date/Time: <u>05-05-94 1015</u>
Relinquished by: <u> </u>	Received by: <u> </u>	Date/Time: <u> </u>
Relinquished by: <u> </u>	Received by: <u> </u>	Date/Time: <u> </u>

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TANK FARM PLANT OPERATING PROCEDURE

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WHC-SD-WM-DP-067, REV. 0 ADDENDUM 1A

CHAIN OF CUSTODY FORM			
COMPANY CONTACT:	BH Von Bargaen	TELEPHONE:	373-1829
BILL OF LADING No:	N/A	OFFSITE PROPERTY No:	N/A
METHOD OF SHIPMENT:	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY:	<i>[Signature]</i>	DATE:	6-9-94 TIME 1130
SAMPLE LOCATIONS:	242-A - Slurry	CUSTODY SEAL No:	2290
REMARKS:	This COC is used for the second of two 60 mL slurry samples in a glass bottle labeled PNLS5. This sample is for organic analysis.		
ICE CHEST OR SAMPLE PIG No:	G-2	SAMPLE CONTAINER No:	✓ 111
DESTINATION:	222-S Laboratory		

(HP) HPT SHIPPING CONTAINER RELEASE: _____ DATE: _____

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)	
PNLS5	_____
_____	_____

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	6-9-94 1457
Relinquished by:	Received by:	Date/Time:
<i>[Signature]</i>	<i>[Signature]</i>	6-9-94 1600
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

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TANK FARM PLANT OPERATING PROCEDURE

WHC-SD-WM-DP-067, REV. 0

COPY

CHAIN OF CUSTODY FORM

ADDENDUM 1A,

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. MCMULLEN	DATE	5/9/94 TIME 1130
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2415
REMARKS	This COC is used for the second of two 60 ml slurry samples in a glass bottle labeled PNLS2. This sample is for organic analysis.		
ICE CHEST OR SAMPLE PIG No.	B-24	SAMPLE CONTAINER No.	PNLS2 V121
DESTINATION	222-S Laboratory		

TOC
SVOR

(HP)

HPT SHIPPING CONTAINER RELEASE: [Signature]

DATE: 5-9-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)	
PNLS2	

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
<u>[Signature]</u>	<u>[Signature]</u>	5/9/94 1415
Relinquished by:	Received by:	Date/Time:
<u>[Signature]</u>	<u>[Signature]</u>	05-09-94 1510
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

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10/17

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TANK FARM PLANT OPERATING PROCEDURE

WHC-SD-WM-DP-067, REV. 0 ADDENDUM 1

CHAIN OF CUSTODY FORM

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5-9-94 TIME 1130
SAMPLE LOCATIONS	242-A - Slurry (field blank)	CUSTODY SEAL No.	2434
REMARKS	This COC is used for the 60 mL slurry field blank sample in a glass bottle labeled PNLB2.		
ICE CHEST OR SAMPLE PIG No.	N/A	SAMPLE CONTAINER No.	PNLB2 ✓ 122
DESTINATION	222-S Laboratory		

(HP) HPT SHIPPING CONTAINER RELEASE:

DATE: 5-9-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)
PNLB2

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
J.W. McMullen	SA Sinc	5/9/94 1415
SA Sinc	SA Sinc	05-09-94 1510
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

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TANK FARM PLANT OPERATING PROCEDURE

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A,

COPY

②

CHAIN OF CUSTODY FORM

COMPANY CONTACT	B.H. VON BARGEN	TELEPHONE	373-1829
BILL OF LADING No.	N.A.	OFFSITE PROPERTY No.	N.A.
METHOD OF SHIPMENT	B-PLANT SAMPLE TRUCK		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5/16/94 TIME 1130
SAMPLE LOCATIONS	242-A	CUSTODY SEAL No.	2644
REMARKS			
ICE CHEST OR SAMPLE PIG No.	B-21	SAMPLE CONTAINER No.	PNLS3-B V 126
DESTINATION	222-S LAB		

(HP)

HPT SHIPPING CONTAINER RELEASE: Relinquished

DATE: 5-16-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)
PNLS3

CHAIN OF POSSESSION

Relinquished by: <u>J.W. McMullen</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5-16-94 1320</u>
Relinquished by: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: <u>05-16-94 1355</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

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TANK FARM PLANT OPERATING PROCEDURE COPY

WHC-SD-WM-DP-067, REV. 0 ADDENDUM 1A, ⑨

CHAIN OF CUSTODY FORM

COMPANY CONTACT	B.H. VON BARGEN	TELEPHONE	373-1829
BILL OF LADING No.	N.A.	OFFSITE PROPERTY No.	N.A.
METHOD OF SHIPMENT	B-PIANT SAMPLE TRUCK		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. MEMULLEN	DATE	TIME
SAMPLE LOCATIONS	242-A	CUSTODY SEAL No.	3366
REMARKS	Field Blank		
ICE CHEST OR SAMPLE PIG No.	N/A	SAMPLE CONTAINER No.	PNL B3-B V128
DESTINATION	222-S LAB		

(HP)

HPT SHIPPING CONTAINER RELEASE: Ref. 1101

DATE: 5-16-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)
<u>PNL B3</u>

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
<u>J.W. Memullen</u>	<u>[Signature]</u>	<u>5-16-94 1320</u>
Relinquished by:	Received by:	Date/Time:
<u>[Signature]</u>	<u>[Signature]</u>	<u>05-16-94 1355</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

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TANK FARM PLANT OPERATING PROCEDURE

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A

②

CHAIN OF CUSTODY FORM

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5/23/94 TIME NIS
SAMPLE LOCATIONS	242-A - Slurry	CUSTODY SEAL No.	2637 V 116
REMARKS:	This COC is used for the second of two 60 mL slurry samples in a glass bottle labeled PNLS4.		
ICE CHEST OR SAMPLE PIG No.	G-10	SAMPLE CONTAINER No.	
DESTINATION	222-S Laboratory		

(HP)

HPT SHIPPING CONTAINER RELEASE: *J.W. McMullen*

DATE: 5-23-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(S)	
PNLS4	

CHAIN OF POSSESSION

Relinquished by: <i>J.W. McMullen</i>	Received by: <i>Mh. Darg</i>	Date/Time: 5-23-94 8:14:10
Relinquished by: <i>Mh. Darg</i>	Received by: <i>Donna Cobb</i>	Date/Time: 5-23-94 1500
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

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10/17/94*

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TANK FARM PLANT OPERATING PROCEDURE

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A, 9

CHAIN OF CUSTODY FORM

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	J.W. McMullen	DATE	5/23/94 TIME 12/5
SAMPLE LOCATIONS	242-A - Slurry (field blank)	CUSTODY SEAL No.	2088
REMARKS	This COC is used for the second of two 60 mL field blanks in a glass bottle labeled PNLB4.		
ICE CHEST OR SAMPLE PIG No.	N/A	SAMPLE CONTAINER No.	N/A V129
DESTINATION	222-S Laboratory		

(HP)

HPT SHIPPING CONTAINER RELEASE: *[Signature]* DATE: 5-23-94

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(s)	
PNLB4	

CHAIN OF POSSESSION

Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date/Time: 5-23-94 1410
Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date/Time: 5-23-94 1500
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

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TANK FARM PLANT OPERATING PROCEDURE

WHC-SD-WM-DP-067, REV. 0

ADDENDUM 1A

CHAIN OF CUSTODY FORM

COMPANY CONTACT	BH Von Bargaen	TELEPHONE	373-1829
BILL OF LADING No.	N/A	OFFSITE PROPERTY No.	N/A
METHOD OF SHIPMENT	B-Plant Truck		
SAMPLING INFORMATION			
SAMPLE COLLECTED BY	<i>[Signature]</i>	DATE	6-9-94 TIME 1130
SAMPLE LOCATIONS	242-A - Slurry (field blank)	CUSTODY SEAL No.	2287
REMARKS	This COC is used for the second of two 60 mL field blanks in a glass bottle labeled PNLB5.		
ICE CHEST OR SAMPLE PIG No.	N/A	SAMPLE CONTAINER No.	V130
DESTINATION	222-S Laboratory		

(HP) HPT SHIPPING CONTAINER RELEASE: _____ DATE: _____

SAMPLE IDENTIFICATION

SAMPLE SERIAL NUMBER(s)	
PNLB5	

CHAIN OF POSSESSION

Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date/Time: 6-9-94 1457
Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date/Time: 6-9-94 1600
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Document No.

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REQUEST FOR SPECIAL ANALYSIS (RSA)					RSA No. 1907	
1. Sample Origin Slurry, 242-A Evaporator (protocol analyses)		2. Date Submitted 5/4/94		4. Requester Name George L Miller		6. Charge Code/Work Package NIA7F
		3. Submitted By George L Miller		5. Requester Phone/MSIN 373-4739/TWO6		7. Date Required 30 days <small>received from sample receipt date</small>
B. Customer ID	Collected		9. Laboratory ID	12. Number of Samples	13. Volume of Samples	14. Protocols Technology per
	Date	Time				
SLY-A (for VOA)	10/15		V103	2 bottles from SLY-A, 1 bottle from Field Blank	60 ml	☐ None ☒ RCRA ☐ NOAA-1 ☐ Other ☐ CERCLA
SLY-A (for Semi-VOA and TOC)			V106			
Field Blank (B1)	10/15		V107	15. Sample Type		
				☐ Solid ☐ Soil ☒ Slurry ☐ Gas ☐ Water ☐ Waste ☐ Solution ☐ Sludge ☐ Oil ☐ Other (specify) _____		
WHC-SD-WM-DP-067, REV. 0 ADDENDUM 1A,				16. Storage Requirements		
				☐ None ☒ Specify Place all 3 bottles in the VOA refrigerator (4°C)		
				17. Process Knowledge/Known Listed Wastes		
				☐ Unknown ☒ Known (Please attach list) Prior Evaporator runs ☐ Previously submitted for this Project		
10. Determination		11. Expected Range		18. Survey Dose Rate		
VOA - RCRA (Direct)				HPT Signature _____		
Semi-VOA - RCRA (Direct)						
TOC (Direct)		Use LA-344-105		19. Disposition of Waste		
				☐ Return to Client/Location _____ ☐ Dispose per 222-S Procedures ☒ Other per TPP: WHC-SD-WM-TPP-048		
Field Blank VOA only						
				20. Additional Information		
				Sample shipping # PNL-S1 is customer ID SLY-A Sample shipping # PNL-B1 is customer ID Field Blank VOA: Analyses in duplicate from one bottle. Semi-VOA and TOC: Analyses in duplicate on each of the other (2nd) bottle. TOC: Perform spike and spike duplicate analysis STD V104 Blank V105		
21. Chain of Custody				22. Assigned Custodial Group (select one)		
☐ No ☒ Yes Number: Serial #: 2602-Blank				☐ PCL ☒ POSU ☐ ENV ☐ Process		
23. Sample Received By: Pandora Cobb				24. Laboratory Manager (if required)		
Date: 05-05-94 Time: 1015				1A-365 <div style="text-align: right;">10</div>		

REQUEST FOR SPECIAL ANALYSIS (RSA)				RSA No.	
1. In Origin Curry, 242-A Evaporator 1 (protocol analyses)		2. Date Submitted 5/11/94		4. Requester Name George L Miller	
3. Submitted By George L Miller		5. Requester Phone/MSIN 373-4739 / T6-06		6. Charge Code/Work Package NIA7F	
7. Date Required 30 days from date samples were received		8. Customer ID		9. Laboratory ID	
Collected Date Time		12. Number of Samples 2 bottles from SLY-A, 1 bottle from Field Blank		13. Volume of Samples 60ml	
4-A. (For VOA)		V108 -		14. Protocols Technology per ☐ None ☒ RCRA ☐ NQA-1 ☐ Other ☐ CERCLA	
1-A (for Semi-VOA & TOC)		V111 -			
Field Blank 1		V112 -		15. Sample Type ☐ Solid ☐ Soil ☒ Slurry ☐ Gas ☐ Water ☐ Waste ☐ Solution ☐ Sludge ☐ Oil ☐ Other (specify) _____	
Field Blank 2		V130 -		16. Storage Requirements ☐ None ☒ Specify Place all 3 bottles into the VOA refrigerator (4°C)	
				17. Process Knowledge/Known Listed Wastes ☐ Unknown ☒ Known (Please attach list) Prior Evaporator Runs ☐ Previously submitted for this Project	
10. Determination		11. Expected Range		18. Survey Dose Rate	
Direct:				HPT Signature _____	
VOA (RCRA)				19. Disposition of Waste ☐ Return to Client/Location ☐ Dispose per 222-S Procedures ☒ Other per TPP: WHC-SD-WM-TPP-0118	
Semi-VOA (RCRA)		USE LA-344-105		20. Additional Information Sample Shipping # PNL-SS is Customer ID SLY-A, Sample Shipping # PNL-B5 is Customer ID Field Blank. VOA: Analyze in duplicate from the first bottle. Semi-VOA and TOC: Analyze in duplicate from the other (2nd) bottle. TOC: Perform spike and spike checker Analyze Field Blank in duplicate STD V107 Field V110	
TOC				22. Assigned Custodial Group (select one) ☐ PCL ☒ PSDU ☐ ENV ☐ Process	
Chain of Custody ☐ No ☒ Yes Number: 19-366		24. Laboratory Manager (if required) FIELD Blank 1: VOA FIELD Blank 2: Semi VOA, TOC		Date: 06-10-94 Time: 11:00	

REQUEST FOR SPECIAL ANALYSIS (RSA)					RSA No. 1910		
1. Sample Origin Curry, 242-A Evaporator (Protocol Samples)		2. Date Submitted 5/4/94		4. Requester Name George L Miller		6. Charge Code/Work Package NIA7F	
		3. Submitted By George L Miller		5. Requester Phone/MSIN 373-4739 / TG-06		7. Date Required 30 days from date samples were received	
8. Customer ID		Collected Date Time		9. Laboratory ID		12. Number of Samples 13. Volume of Samples	
SLY-A (for VOA)		Deal 2601 V113				14. Protocols Technology per ☐ None ☒ RCRA ☐ NOAA-1 ☐ Other ☐ CERCLA	
SLY-A (for Semi-VOA & TOC)		Deal 2637 V116		2 Bottles from SLY-A, 1 Bottle from Field Blank		60 ml	
Field Blank 1		Deal 2642 V117				15. Sample Type ☐ Solid ☐ Gas ☐ Solution ☐ Other (specify)	
Field Blank 2		Deal 2688 V129				☐ Soil ☐ Water ☐ Sludge ☐ Slurry ☐ Waste ☐ Oil	
						16. Storage Requirements ☐ None ☒ Specify Place all 3 Bottles into the VOA refrigerator (4°C)	
						17. Process Knowledge/Known Listed Wastes ☐ Unknown ☒ Known (Please attach list) Prior Evaporator Run ☐ Previously submitted for this Project	
10. Determination		11. Expected Range		18. Survey		Dose Rate	
Direct:				HPT Signature			
VOA (RCRA)				19. Disposition of Waste ☐ Return to Client/Location ☐ Dispose per 222-S Procedures ☒ Other per TPP: WHC-SD-WM-TPP-048			
Semi-VOA (RCRA)				20. Additional Information Sample Shipping # PNL-54 is Customer ID SLY-A, Sample Shipping # PNL-84 is Customer ID Field Blank. VOA: Analyze in Duplicate from one (1st) bottle. Semi-VOA and TOC: Analyze in duplicate from the other (2nd bottle). Poc: perform spike and spike duplicate analyses. Analyze Field Blank in duplicate			
TOC		Use LA-344-105		21. Chain of Custody ☐ No ☒ Yes Number: Seal #: 1A367		22. Assigned Custodial Group (select one) STD V114 Blank V115 ☐ PCL ☒ POSU ☐ ENV ☐ Process	
23. Sample Received By: [Signature]		Date: 05-23-94 Time: 1500		24. Laboratory Manager (if required) FIELD BLANK 1 - VOA FIELD Blank 2 - Semi VOA, TOC			

REQUEST FOR SPECIAL ANALYSIS (RSA)					RSA No. 1911		
1. Sample Origin rm, 242-A Evaporator (protocol analyses)		2. Date Submitted 5/4/94		4. Requester Name George L Miller		6. Charge Code/Work Package N1A7F	
		3. Submitted By George L Miller		5. Requester Phone/MSIN		7. Date Required 30 days from date samples are received	
8. Customer ID		Collected Date Time		9. Laboratory ID		12. Number of Samples 2 bottles from SLY-A, 1 bottle from Field Blank	
SLY-A (for VOA)		Seal #		V118		13. Volume of Samples 60 ml	
SLY-A (for Semi-VOA and TOC)		Seal #		V121		14. Protocols Technology per ☐ None ☒ RCRA ☐ NQA-1 ☐ Other ☐ CERCLA	
Field Blank		Seal # 2634		V122		15. Sample Type ☐ Solid ☐ Soil ☒ Slurry ☐ Gas ☐ Water ☐ Waste ☐ Solution ☐ Sludge ☐ Oil ☐ Other (specify)	
WHC-SD-WM-DR-067, REV. 0 ADDENDUM 1A				16. Storage Requirements ☐ None ☒ Specify place all 3 bottles into the VOA refrigerator (4°C)			
				17. Process Knowledge/Known Listed Wastes ☐ Unknown ☒ Known (Please attach list) Prior Evaporator runs ☐ Previously submitted for this Project			
10. Determination Direct: VOA (RCRA) Semi-VOA (RCRA) TOC		11. Expected Range Use LA-344-105		18. Survey C. Belu HPT Signature		Dose Rate 400 mrad (Corrected)	
BEST AVAILABLE COPY				19. Disposition of Waste ☐ Return to Client/Location ☐ Dispose per 222-S Procedures ☒ Other per TPP: WHC-SD-WM-TPP-048			
311				20. Additional Information Sample Shipping # PNL-S2 is Customer ID SLY-A Sample Shipping # PNL-B2 is Customer ID Field Blank. VOA: Analyze in duplicate from one (1st) bottle. Semi-VOA & TOC: Analyze in duplicate from the contents of the other (2nd) bottle. VOA, Semi-VOA and TOC: Perform Spike and spike duplicate analyses. Analyze Field Blank in duplicate (VOA & TOC only)			
21. Chain of Custody ☐ No ☒ Yes Number: Seal #: 1A368				22. Assigned Custodial Group (select one) STD V119 Blank V120 ☐ PCL ☒ POSU ☐ ENV ☐ Process			
23. Sample Received By: Braden Kobb Date: 05-09-04 Time: 1455				24. Laboratory Manager (if required)			

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