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Release Date: 12/02/94

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7. Abstract Sample projections have been categorized into 7 major areas: Environmental Restoration, Tank Waste Remediation, Solid Waste, Liquid Effluents, Site Monitoring, Industrial Hygiene, and General Process Support Programs. The estimates are through the Fiscal Year 2000 and are categorized by radiation level.		
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12/1/94
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APPENDIX 3 DATA FOR THE SOLID WASTE PROGRAM

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APPENDIX 5 DATA FOR THE SITE MONITORING PROGRAM

APPENDIX 6 DATA FOR THE INDUSTRIAL HYGIENE PROGRAM

APPENDIX 7 DATA FOR THE GENERAL PROCESS CONTROL PROGRAM

1.0 PURPOSE

This document provides the bases and assumptions of the yearly sample projection strategy through fiscal year 2000. This document is an update to WHC-SD-WM-TI-608, Rev. 0. Sample projections are included for Environmental Restoration, Tank Waste Remediation Systems (TWRS), Solid Waste, Liquid Effluents, Site Monitoring, Industrial Hygiene, and Hanford Site's Process Control Samples programs. This information will be used for outyear planning with respect to laboratory versus sample analyses requirements.

2.0 SCOPE

The yearly sample projection for each program will be categorized as follows:

- Category 1 Non-Radioactive
- Category 2 <1 mR/hr B- γ ; <10 nCi/g α
- Category 3 1 mR/hr B- γ to <10 mR/hr B- γ ; and <10 nCi/g α
- Category 4 <10 mR/hr B- γ ; and <200 nCi/g α
- Category 5 10 mR/hr B- γ to <100 mR/hr B- γ ; and <200 nCi/g α
- Category 6 >100 mR/hr B- γ
- Category 7 >200 nCi/g α

Each program will provide sample projections for the facilities or processes under their jurisdiction:

- Environmental Restoration - 100, 200, and 300 Area Ponds, Basins, Cribbs, and cleanup sites.
- TWRS - All tank samples, 242-A, Pretreatment, Retrieval, HWVP and Development.
- Solid Waste - Building 616, 213-W Compactor, Central Waste Complex, Transuranic Waste Storage and Assay Facility, Low level burial grounds, Pilot TRU, WRAP 1, Full Scale TRU, and WRAP 2A.
- Liquid Waste - 200 Area ETF and TEDF, 300 Area TEDF.
- Site Monitoring - Hazardous and Bioassay Chemistry
- Industrial Hygiene - Industrial Hygiene, Drinking Water.
- General Process Support - Process Control, Development, Environmental, Air and Stack monitoring.

3.0 SUMMARY

Sample projections increased for the Environmental Restoration (ER), and Site Monitoring Programs. ER projections increased due to the inclusion of additional field samples. These additional field samples are required due to the changes in the Large Scale Remediation (LSR) strategy. Site Monitoring numbers increased due to bio-assay sample numbers which were not provided previously. TWRS, and Liquid Effluents each decreased. No changes were seen for Solid Waste, Industrial Hygiene or Process Support. The total projected numbers show an increase over the February 1994 estimates. However, a slower growth is seen from FY 1995 through FY 2000.

Uncertainties still remain in ER, TWRS, Solid Waste, and Liquid Effluents programs. ER numbers are expected to change because of the sample uncertainties that still remain for the LSR strategy. No liquid grab samples supporting TWRS are included beyond 1995, nor are samples for retrieval, pre-treatment, and disposal well defined. Solid Waste numbers are expected to change as WIP and Solid Waste Processing become better defined. Liquid Effluent numbers may change as permit negotiations are finalized.

The largest and most varied need remains in the Process Support program with a requirement of 130,000 samples/year. This requirement remains fairly constant because of the need to take routine air/water samples.

4.0 DISCUSSION

Sample projections through FY 2000 will continue to escalate, but the rate of escalation has decreased. Compared to the February 1994 projections sample projections will increase 17,000 over the next 5 years in contrast to an increase of 50,000 samples by the year 2000. The main areas of growth appear to be in Environmental restoration with the change in direction concerning the Large Scale Remediation (LSR) cleanup effort. This change will require more field samples to be taken. For example, the vapor extraction program has escalated to over 32,000 samples per year.

4.1 ENVIRONMENTAL RESTORATION

Sample projections for the Environmental Restoration program are based on the existing workscope as defined in the Tri-Party Agreement. The sample projections are for characterization, treatability and remediation of the 100, 200, and 300 areas (Attachment 1). Field samples were increased due to changes in the LSR strategy. For example the 200-ZP-2 vapor extraction system is expected to provide over 32,000 samples per year. The trend appears to be to increase field activity and decrease work in laboratories.

The categorization by radiation level is shown in Table 1 with the majority of the samples being non-radioactive.

Table 1
Yearly Sample Projections by Radiation Level for Environmental Restoration

ENVIRONMENTAL RESTORATION ¹						
	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000
Non-Radioactive ²	923	784	820	846	811	811
	32,585	32,520	32,520	32,520	32,520	32,520
<1 mR/hr B-γ; <10 nCi/g α	0	0	0	0	0	0
1 mR/hr B-γ to <10 mR/hr B-γ; and <10 nCi/g α	2,465	2,658	3,072	2,994	2,897	2,897
	24	617	1324	2278	1522	1522
<10 mR/hr B-γ; and <200 nCi/g α	0	0	0	0	0	0
10 mR/hr B-γ to <100 mR/hr B-γ; and <200 nCi/g α	208	48	35	0	0	0
>100 mR/hr B-γ	0	0	0	0	0	0
>200 nCi/g α	0	0	0	0	0	0

- Assumptions for categorizing the samples per radiation level are found in Attachment 2 under Environmental Restoration.
- Samples for Categories 1 and 3 show the split for non-field and field samples with the second row of numbers being the field samples.

4.2 TWRS

Sample projections for the Tank Waste Remediation System program (Attachment 2) are based on the Data Quality Objectives (DQO) which were applicable as of 10/03/94 and a TWRS tank sample matrix as provided by TWRS Program. Sampling requirements for retrieval, pre-treatment, and disposal are not well defined. Also, the tank characterization program is undergoing drastic revisions at this writing and is expected to drop 50% from the FYWP 1995 levels. No liquid grab samples supporting TWRS are included beyond 1995.

The categorization by radiation level (Table 2) was based on the assumption that all samples would highly radioactive (>100 mR/hr Beta-Gamma). The transuranic levels were assumed to be less than 200 nCi/g alpha. Sample projections are based on core samples with a minimum of 2 cores/tank average. A minimum of 128 tanks will be sampled through FY1996.

Table 2
Yearly Sample Projections by Radiation Levels for TWRS Program

TWRS ¹						
	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000
Non-Radioactive	0	0	0	0	0	0
<1 mR/hr β - γ ; <10 nCi/g α	0	0	0	0	0	0
1 mR/hr β - γ to <10 mR/hr β - γ ; and <10 nCi/g α	0	0	0	0	0	0
<10 mR/hr β - γ ; and <200 nCi/g α	0	0	0	0	0	0
10 mR/hr β - γ to <100 mR/hr β - γ ; and <200 nCi/g α	0	0	0	0	0	0
>100 mR/hr β - γ	1,259	1,233	1,710	600	200	100
>200 nCi/g α	0	0	0	0	0	0

1. Assumptions for categorizing the samples per radiation level are found in Attachment 2 under TWRS.

4.3 SOLID WASTE

Sample projections provided (Attachment 3) for the following facilities:

Non-radioactive Dangerous Waste Storage Facility (NRDWSF)

Sample projections were based on sampling 10% of the received containers using data from the past 3 years. These samples are projected to be in category 1.

Compactor 213-W

Data are based on the FY-1992 SWMP database container volumes by waste class, 3/4/93. The air monitor samples are projected to be in category 2. The LLW1 samples are projected to be in category 3.

Central Waste Complex

Chemical, screening and radiological samples are for the backlog waste program. The LLW1 samples are based on FY-1992 SWMP database container volumes by waste class, 3/4/93. The samples are projected to be split between categories 2, 3, and 5.

Transuranic Waste Storage and Assay Facility (TRUSAF)

Samples are projected to be mainly in category 2.

Low-level Burial Grounds

Samples are projected to be mainly in category 3.

Sample support for five separate projects will be required;

TRU Pilot Retrieval

Sample projections are estimated from the soil sampling plan, WHC-CD-EN-AP-039, June 1992. 90% of the soil samples will be in category 2, with the remaining samples in categories 3 and 4. Glovebox waste samples will be 50% category 2, 30% category 3, and 20% category 4.

Waste Immobilization Demonstration

Sample projections are estimated from cementitious and polyethylene material. One-half from each material type will be category 1. The radioactive samples will be 80% category 3 with the remainder split between categories 1 and 2.

WRAP Module 1

Samples are assumed to be primarily dry solid waste with some liquids. They are projected to be primarily categories 2-4 with small amounts in categories 5-7.

Full Scale TRU Retrieval

Samples are assumed to be soil with 94% in category 2 and the remainder in category 3.

WRAP Module 2A

Samples are primarily solids with 85% in category 2 and 15% in category 1.

Total sample projections by category are shown in Table 3.

Table 3
Yearly Sample Projections by Radiation Level for the Solid Waste Program

SOLID WASTE ¹						
	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000
Non-Radioactive	1,136	500	300	100		100
<1 mR/hr B-γ; <10 nCi/g α	3,590	3,435	3,466	4,077	4,031	4,631
1 mR/hr B-γ to <10 mR/hr B-γ; and <10 nCi/g α	380	554	794	1,937	1,396	1,399
<10 mR/hr B-γ; and <200 nCi/g α	90	52	88	1,990	2,079	2,079
10 mR/hr B-γ to <100 mR/hr B-γ; and <200 nCi/g α	0	3	4	191	208	208
>100 mR/hr B-γ	12	3	3	0	0	0
>200 nCi/g α	12	4	5	191	208	208

- Assumptions for categorizing the samples per radiation level are found in Attachment 2 under Solid Waste. Beginning with WRAP startup in 1997, the majority of samples may possibly be in Categories 4 and 7. There will be samples spread through the other categories, but the split is not known at this time.

4.4 LIQUID EFFLUENTS (Process Support)

Sample projections (Attachment 4) for the Liquid Waste Disposal program are based on requirements for the 200 Area Effluent Treatment Facility (200 ETF), the 200 Area Treated Effluent Disposal Facility (200 TEDF), the 300 Area Treated Effluent Disposal Facility (300 TEDF), and pilot plant activities (PP).

Sample estimates were provided for the following facilities:

200 Area Effluent Treatment Facility (ETF).

The sample forecast is based on the designed 72% TOE during the year. Samples are expected to be primarily category 2 with a small percentage in categories 1 and 5 (Table 4).

200 Area Treated Effluent Disposal Facility (200 TEDF)

Sample projections are subject to change as permit conditions are still in negotiation. Samples are estimated to be in category 1 or 2 as far as radiation levels are concerned, see Table 4.

300 Area Effluent Treatment Facility (300 TEDF)

This update includes changes to the 300 TEDF projections and are based on the 300 Area Treated Effluent Disposal Facility Sampling Schedule, WHC-SD-L045H-SM-001, and the 300 Area Treated Effluent Disposal Facility Compliance Schedule, WHC-SD-L045H-PLN-004. The major change in the 300 area projections is in the pH sample requirement. The February 1994, projections were based on permitting uncertainties as to whether or not the pH analysis could be performed in the facility. Resolution of these uncertainties have yielded lower projections.

The categorization by radiation level is shown in Table 4.

Table 4
Yearly Sample Projections by Radiation Level for the Liquid Effluents Program

LIQUID EFFLUENTS ¹						
	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000
Non-Radioactive	1,572	1,622	1,622	1,622	1,622	1,622
<1 mR/hr B- γ ; <10 nCi/g α	3,900	6,800	6,800	6,800	6,800	6,800
1 mR/hr B- γ to <10 mR/hr B- γ ; and <10 nCi/g α	0	0	0	0	0	0
<10 mR/hr B- γ ; and <200 nCi/g α	0	0	0	0	0	0
10 mR/hr B- γ to <100 mR/hr B- γ ; and <200 nCi/g α	200	900	900	900	900	900
>100 mR/hr B- γ	0	0	0	0	0	0
>200 nCi/g α	0	0	0	0	0	0

- Assumptions for categorizing the samples per radiation level are found in Attachment 2 under Liquid Effluents.

4.5 SITE MONITORING

The estimated sample load for Site Monitoring is based on the assumption that the FY 1995 analytical testing needs of the Hanford projects will be approximately equal to those needed during FY 1994. A constant sample load through the year 2000 was used. These samples consist of hazardous chemicals, potentially contaminated ground surface and bioassay samples. Bioassay samples are included in these estimates, therefore a significant increase is shown in these projections over the February 1994 projections.

The categorization by radiation level is shown in Table 5 as provided in Attachment 5.

Table 5
Yearly Sample Projections by Radiation Level for the Site Monitoring Program

SITE MONITORING ¹						
	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000
Non-Radioactive	1,850	1,850	1,850	1,850	1,850	1,850
<1 mR/hr B- γ ; <10 nCi/g α	13,505	13,505	13,505	13,505	13,505	13,505
1 mR/hr B- γ to <10 mR/hr B- γ ; and <10 nCi/g α	0	0	0	0	0	0
<10 mR/hr B- γ ; and <200 nCi/g α	0	0	0	0	0	0
10 mR/hr B- γ to <100 mR/hr B- γ ; and <200 nCi/g α	0	0	0	0	0	0
>100 mR/hr B- γ	0	0	0	0	0	0
>200 nCi/g α	0	0	0	0	0	0

1. Assumptions for categorizing the samples per radiation level are found in Attachment 2 under Site Monitoring.

4.6 INDUSTRIAL HYGIENE

Sample projections for the Industrial Hygiene program are based on the traditional industrial hygiene samples as well as chemical and microbiological drinking water analyses. The updated sample numbers have not changed from those in Rev. 0.

The categorization by radiation level was based on the assumption that >99% of the samples will be nonradioactive, while a small number (<1%) may be slightly radioactive (Table 6).

Table 6
Yearly Sample Projections by Radiation Level for the Industrial Hygiene Program

INDUSTRIAL HYGIENE ¹						
	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000
Non-Radioactive	13,800	15,200	17,700	19,500	21,400	23,500
<1 mR/hr B- γ ; <10 nCi/g α ²	-	-	-	-	-	-
1 mR/hr B- γ to <10 mR/hr B- γ ; and <10 nCi/g α	0	0	0	0	0	0
<10 mR/hr B- γ ; and <200 nCi/g α	0	0	0	0	0	0
10 mR/hr B- γ to <100 mR/hr B- γ ; and <200 nCi/g α	0	0	0	0	0	0
>100 mR/hr B- γ	0	0	0	0	0	0
>200 nCi/g α	0	0	0	0	0	0

1. Assumptions for categorizing the samples per radiation level are found in Attachment 2 under Industrial Hygiene.
2. A very small number of samples <1% may be in this category.

4.7 PROCESS SUPPORT

Sample projections, which include process control, development support, environmental, and air/stack monitoring were based on the requirements over the years FY 1989 through FY 1993. Specific details are given in attachment 7.

The categorization by radiation level was based on the assumption that development support samples would be considered non-radioactive, see Table 7. Air/stack monitoring samples are primarily >99% low level, <1 mR/hr Beta-Gamma and <10 nCi/g alpha. Process samples were considered to be high level with 1% in each category of 1 mR/hr to <10 mR/hr Beta-Gamma and <10 nCi/g Alpha, <10 mR/hr Beta-Gamma and <200 nCi/g Alpha, >100 mR/hr Beta-Gamma, >200 nCi/g Alpha. The remaining 96% of the process samples are assumed to be in the 10 to 100 mR/hr Beta-Gamma and <200 nCi/g Alpha category.

Table 7
Yearly Sample Projections by Radiation Level for the Process Support Program

PROCESS SUPPORT ¹						
	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000
Non-Radioactive ²	-	-	-	-	-	-
<1 mR/hr B- γ ; <10 nCi/g α	120,000	120,000	120,000	120,000	120,000	120,000
1 mR/hr B- γ to <10 mR/hr B- γ ; and <10 nCi/g α ³	-	-	-	-	-	-
<10 mR/hr B- γ ; and <200 nCi/g α ³	-	-	-	-	-	-
10 mR/hr B- γ to <100 mR/hr B- γ ; and <200 nCi/g α	9,600	9,600	9,600	9,600	9,600	9,600
>100 mR/hr B- γ	100	100	100	100	100	100
>200 nCi/g α	100	100	100	100	100	100

1. Assumptions for categorizing the samples per radiation level are found in Attachment 2 under Process Support.
2. The majority of samples are shown in category 3 because the distribution is unknown at this time.
3. The majority of samples are shown in category 5 because the distribution is unknown at this time.

5.0 CONCLUSIONS

Sample requirements will continue to increase with time through the end of the decade. Commercial laboratories will have a key role in supporting these growth requirements. The two major programs to be supported by commercial laboratories are Environmental Restoration and Solid Waste.

ATTACHMENT 1: DATA FOR THE ENVIRONMENTAL RESTORATION PROGRAM

PAGE 1 OF 6

100 Areas - K, H, F, BC, D

WHC-SD-WM-TI-608, REV. 1

- does not include N
- does not include D-Ponds

100 AREA SAMPLES		Non rad samples		< 10 mR samples		> 10 mR samples	
		Samples	HEIS	Samples	HEIS	Samples	HEIS
Characterization	Lab						
1995		30	60	196	392		
1996		30	60	196	392		
1997		30	60	196	392		
1998		30	60	196	392		
1999		30	60	196	392		
	Field						
1995							
1996							
1997							
1998							
1999							
Treatability Studies	Lab						
1995		8	8	163	169		
1996				345	351		
1997				484	491		
1998				462	462		
1999				462	462		
	Field						
1995		40	40	10	10		
1996				10	10		
1997				5	5		
1998							
1999							

Remedia tion	Lab						
1995		2	2	4	4		
1996		16	16	92 -	92		
1997		52	52	257	257		
1998		78	78	366	366		
1999		43	43	269	269		
	Field						
1995				14	14		
1996				607	607		
1997				1319	1319		
1998				2278	2278		
1999				1522	1522		

Assumptions:

General

1. No samples > 10 mR will be collected.

Groundwater Monitoring

2. Groundwater monitoring continues as bi-annual sampling.

Remediation

3. 90% of remediation samples are for field analysis. 10% are for lab analysis.
4. An additional 10% of remediation lab samples are included for QA/QC.
5. An additional 10% of total remediation samples are included for confirmation sampling of the clean site.
6. Remediation sample number based upon 1 sample per 24 cubic yards of material excavated.
7. Excavation volumes are based upon the Subproject Baseline Summary from the Project Plan.

100-HR-3 Treatability Test

8. Treatability Study mixed waste 1 sample only at first discharge.
9. A new pump and treat starts in 1995, 1996 and 1997. A reduced analyte list for the first year consists of 6 samples and 12 HEIS numbers for each starting year.
10. A hazardous waste sample (canister discharge) will be taken every 2 weeks for each Pump and Treat.
11. Chromium 6 verification samples weekly at influent and effluent point of the IX unit.

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100 N Area (Project Site)

100 AREA SAMPLES		Non rad samples		< 10 mR samples		> 10 mR samples	
		Samples	HEIS	Samples	HEIS	Samples	HEIS
100-NA-2	LAB						
1995				44	44		
1996				↓	↓		
1997							
1998							
1999				↓	↓		
100-NA-1	LAB						
1995						* 108	108
1996							
1997							
1998							
1999							
*	work will be rescope by 12/94						
Pump & Treat							
1995						* 65	65
1996						* 13	13
* assumed 13 chemical samples per well with five wells constructed & developed							

<u>Project</u>		FY95	96	97	98	99
100-D Ponds		20 (non Rad)	?	?	?	?
118-B-1		5 (non Rad)				
		35 (<10 mR)	?	?	?	?
100-HR-3		128 (non Rad)	?	?	?	?
		58 (<10 mR)				
100D Soil Wash		200 (<10 mR)	?	?	?	?
190-D		20 (non Rad)				
183-H		52 (<10 mR)				
		20 (non Rad)				
183-C	field	25 (non Rad)				
	lab	5 (non Rad)				
HGP		100				
108-F		20 (<10 mR)				

THE 200 AREA PROJECTS SAMPLE PROJECTIONS IS BASED ON THE FOLLOWING:

- CCl₄ remains a listed waste (200W Water and Soils)
- Groundwater pump & treat systems operate 12 months
- at current production rates for FY-95
- Pump & TREAT SYSTEM AT 200-ZP-1 IS UPGRADDED TO 100 gpm in FY-96 and up to a maximum of 300 gpm in FY-97
- Pump & TREAT SYSTEM AT 200-UP-1 IS UPGRADDED TO 50 gpm for FY-96 and 100 gpm for FY-97
- PUMP & TREAT SYSTEMS AT 200-BP-5 REMAIN AT CURRENT CAPACITY
- 200-ZP-2 VAPOR EXTRACTION SYSTEMS OPERATE ~~24 HR PER DAY~~ 24 HR PER DAY 7 DAYS PER WEEK AT 214-Z-14 & 24 HR/DAY 5 DAYS/WEEK at 214-Z-9.

Media	200-UP-1 *	200-ZP-1 (RAD) *	200-BP-5 (RAD)	200-UP-2 (RAD+NONRAD) *	200-ZP-2 (NONRAD) *	200-BP-11
Water						
- Groundwater Monitoring	110	64	80	0	0	0
- Process Control	300	90	1250	0	0	0
- Bench Scale test	50	30	60	0	0	0
Soil	30	10	10	0	0	77
Biota	0	0	0	0	0	0
Soil Gas	0	25	0	0	3000	0
- Process Control	0	0	0	0	0	0
Waste Characterization (optional)	6	2	2	5	12	0

* Samples may contain listed waste (CCl₄)

INTERNATIONAL
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WHC-SD-WM-TI-608, REV. 1

By _____ Date _____ Subject To: Bob Henckle Sheet No. _____ of _____
Chkd. By _____ Date _____ Proj. No. _____

Soil } non rad.
H₂O }
Soil } < 10 mr
H₂O }
Soil } > 10 mr
H₂O }

300 Area Projects

	'95	'96	'97	'98	'99
Soil } non rad.	55	55	155	20	20
H ₂ O }	20	20	20	20	20
Soil } < 10 mr	35	35	135	∅	∅
H ₂ O }	20	20	20	20	20
Soil } > 10 mr	35	35	35	∅	∅
H ₂ O }	∅	∅	∅	∅	∅

ATTACHMENT 2: DATA FOR TWRS PROGRAM

PAGE 1 OF 3

FY1995 TWRS SCHEDULE										REV.3.8	AEU's												Sep. 30, 1994
Sample		Core/	Seg	Total	Applied	Total	AEU	Date	Designated Laboratory	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Carry over
Yr	Mode	samples	core	Segs	DDO	Sub Seg																	
10	U-108	lg grab	3	0	3	C	3	6.25	18-Sep-94	222-5	0.0129	0.03	0.063	0.1	0.075	0	0	0	0	0	0	0	0
11	BK-105	super	2	1	2	SA F, P (R)	2	0.53	21-Sep-94	222-5	0.04	0.18	0	0	0	0	0	0	0	0	0	0	0
12	AW-104	lg grab	3	0	3	SA F, P (R)	3	0.53	26-Sep-94	222-5	0.027	0.012	0.133	0.212	0.051	0	0	0	0	0	0	0	0
13	SV-103	push	2	15	30	SA F, P (R)	30	3.08	26-Sep-94	222-5	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	
14	AW-103	lg grab	3	0	3	C	3	0.15	05-Oct-94	222-5	0.008	0.003	0.008	0.008	0.008	0	0	0	0	0	0	0	0
15	B-102	super	2	1	2	SA	2	0.2	05-Oct-94	222-5	0.018	0.04	0	0	0	0	0	0	0	0	0	0	0
16	AV-101	lg grab	3	0	3	SA F, P (R)	3	0.53	10-Oct-94	222-5	0.053	0.108	0.108	0.212	0.108	0	0	0	0	0	0	0	0
17	AK-104	super	2	1	2	SA	2	0.2	10-Oct-94	222-5	0.053	0.108	0.108	0.212	0.108	0	0	0	0	0	0	0	0
18	BY-108	rotary	2	13	26	SA F, P (R)	104	4.772	26-Oct-94	222-SALTCO	0	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	
19	BK-105	super	2	1	2	SA F, P (R)	2	0.53	02-Nov-94	222-5	0	0.42	0.42	0.42	0.42	0.21	0.21	0	0	0	0	0	
20	C-108	push	2	1	2	SA F, P (R)	2	0.6	02-Nov-94	222-5	0	0.12	0.12	0.12	0.12	0.06	0.06	0	0	0	0	0	
21	C-108	super	2	1	2	SA F, P (R)	2	0.6	02-Nov-94	222-5	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	0	
22	C-108	lg grab	3	0	3	C	3	0.15	02-Nov-94	222-5	0	0.004	0.018	0.2	0.32	0.08	0	0	0	0	0	0	
23	AP-108	lg grab	10	0	10	Evap Feed	10	0.8	18-Nov-94	325	0	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
24	C-102	super	2	1	2	SA	2	0.2	18-Nov-94	325	0	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	
25	AV-105	rotary	2	9	18	SA F, P (R)	72	3.558	28-Nov-94	222-SALTCO	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	0	
26	AW-101	super	2	1	2	SA F, P (R)	2	0.53	02-Dec-94	325	0	0.24	0.06	0	0	0	0	0	0	0	0	0	
27	C-105	push	2	1	2	SA F, P (R)	2	0.6	02-Dec-94	325	0	0.04	0.18	0.2	0.32	0.08	0	0	0	0	0	0	
28	AP-101	lg grab	10	0	10	Evap Feed	10	0.8	12-Dec-94	325	0	0	0.01	0.1	0	0	0	0	0	0	0	0	
29	BY-108	super	1	1	1	Free Dev	1	0.2	18-Dec-94	325	0	0	0	0	0	0	0	0	0	0	0	0	
30	AZ-102	lg grab	3	0	3	C	3	0.15	18-Dec-94	222-5	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	0	
31	C-111	super	2	1	2	SA F, P (R)	2	0.6	03-Jan-95	325	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
32	AZ-101	lg grab	3	0	3	C	3	0.15	04-Jan-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
33	BY-104	rotary	2	7	14	SA F, P (R)	36	2.508	05-Jan-95	222-SALTCO	0	0	0.502	0.502	0.502	0.502	0.502	0.502	0.502	0.502	0.502	0.502	
34	AZ-101	lg grab	3	0	3	C	3	0.15	11-Jan-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
35	AZ-101	super	2	1	2	SA	2	0.2	17-Jan-95	325	0	0	0.01	0.1	0	0	0	0	0	0	0	0	
36	AP-103	lg grab	10	0	10	Evap Feed	10	0.8	18-Jan-95	325	0	0	0.04	0.16	0.2	0.32	0.08	0	0	0	0	0	
37	C-101	push	2	2	4	SA	4	0.4	24-Jan-95	325	0	0	0.08	0.32	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	
38	U-103	lg grab	3	0	3	C	3	0.15	25-Jan-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
39	AK-107	super	2	1	2	SA F, P (R)	2	0.53	31-Jan-95	325	0	0	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	
40	AK-103	lg grab	3	0	3	C	3	0.15	01-Feb-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
41	SV-105	rotary	2	9	18	SA F, P (R)	72	3.558	02-Feb-95	222-SALTCO	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
42	U-108	lg grab	3	0	3	C	3	0.15	08-Feb-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
43	TV-104	super	2	1	2	SA F, P, O, P (R)	2	0.95	11-Feb-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
44	C-108	lg grab	3	0	3	C	3	0.15	15-Feb-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
45	B-105	super	2	1	2	SA	2	0.2	22-Feb-95	325	0	0.032	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	
46	C-107	push	2	9	18	SA	18	1.8	22-Feb-95	325	0	0	0.15	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
47	B-111	lg grab	3	0	3	C	3	0.15	23-Feb-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
48	A-112	lg grab	3	0	3	C	3	0.15	02-Mar-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
49	SV-103	rotary	2	1	2	SA F, P, P (R)	2	0.9	05-Mar-95	325-SALTCO	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
50	BY-103	super	2	1	2	SA F, P (R)	2	0.53	06-Mar-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
51	AK-101	lg grab	3	0	3	C	3	0.15	08-Mar-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
52	B-102	lg grab	3	0	3	SA F, P (R)	3	0.30	14-Mar-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
53	C-201	super	2	1	2	SA	2	0.2	22-Mar-95	325	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
54	C-110	push	2	4	8	SA F, P	24	1.22	22-Mar-95	325	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
55	AK-101	lg grab	3	0	3	C	3	0.15	28-Mar-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
56	C-202	super	2	1	2	SA	2	0.2	06-Apr-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
57	BK-103	lg grab	3	0	3	C	3	0.15	07-Apr-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
58	BK-104	lg grab	3	0	3	C	3	0.15	14-Apr-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
59	C-303	super	2	1	2	SA	2	0.2	18-Apr-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
60	T-111	push	2	14	28	SA	28	2.8	18-Apr-95	325	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
61	BK-103	lg grab	3	0	3	C	3	0.15	21-Apr-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
62	BY-108	rotary	2	8	16	SA F, P	32	1.492	24-Apr-95	222-SALTCO	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	0	
63	AK-101	lg grab	3	0	3	C	3	0.15	26-Apr-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
64	C-204	super	2	1	2	SA F, P, P (R)	2	0.53	03-May-95	325	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
65	AK-107	lg grab	3	0	3	SA F, P, P (R)	3	1.03	05-May-95	325	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
66	AW-101	push	2	27	54	SA F, P (R)	54	3.276	12-May-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
67	B-112	super	2	1	2	SA	2	0.2	17-May-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
68	BY-112	rotary	2	8	16	SA F, P (R)	48	1.72	22-May-95	325	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
69	BK-101	lg grab	3	0	3	C	3	0.15	24-May-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
70	AK-102	lg grab	3	0	3	SA F, P (R)	3	0.53	01-Jun-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
71	AP-102	lg grab	3	0	3	C	3	0.15	01-Jun-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
72	BK-113	super	2	2	4	SA	4	0.4	01-Jun-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
73	Evap	lg grab	10	0	10	Evap Feed	10	0.8	13-Jun-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
74	U-203	push	2	1	2	SA	2	0.2	13-Jun-95	222-5	0	0	0.008	0.003	0.008	0.008	0.015	0	0	0	0	0	
75	SV-118	super	2	1	2	SA F, P (R)	2	0.53	15-Jun-95	325	0	0	0.008	0.003	0.008								

FY1996 TWRS SCHEDULE										REV.3.0		AEU's												Sep. 30, 1994	
Tank	Sample Mode	Cores/ samples	Seg/ core	Total Segs	Applied DOO	Total Sub Seg	AEU 14	Date FY 95	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Carry over				
Carry over									2.8	2.8	2.8	2.8	2.8	0	0	0	0	0	0	0	0				
AN-102	liq grab	150	0	150	P	2	0.5	02-Oct-95	0.1	0.1	0.1	0.1	0.05	0.05	0	0	0	0	0	0	0				
BY-101	rotary	3	8	24	SS, P	48	2.238	04-Oct-95	0.4476	0.4476	0.448	0.4476	0.224	0.224	0	0	0	0	0	0	0				
AY-101	liq grab	3	0	3	C	3	0.15	05-Oct-95	0.0075	0.03	0.038	0.08	0.015	0	0	0	0	0	0	0	0				
U-101	auger	2	1	2	SS	4	0.2	10-Oct-95	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0				
AN-104	push	2	21	42	SS, P	84	3.944	20-Oct-95	0.3944	0.7888	0.789	0.7888	0.592	0.394	0.197	0	0	0	0	0	0				
A-102	auger	2	1	2	SS	4	0.2	24-Oct-95	0.04	0.16	0	0	0	0	0	0	0	0	0	0	0				
C-104	rotary	2	5	10	SS, P	20	1.12	02-Nov-95	0	0.224	0.224	0.224	0.224	0.112	0.112	0	0	0	0	0	0				
TY-102	rotary	2	2	4	SS	8	0.24	03-Nov-95	0	0.192	0.048	0	0	0	0	0	0	0	0	0	0				
TX-107	auger	2	1	2	SS	4	0.2	07-Nov-95	0	0.16	0.04	0	0	0	0	0	0	0	0	0	0				
AN-103	push	2	19	38	SS	76	2.356	13-Nov-95	0	1.178	1.178	0	0	0	0	0	0	0	0	0	0				
BY-102	rotary	2	5	10	SS	20	0.62	27-Nov-95	0	0	0.496	0.124	0	0	0	0	0	0	0	0	0				
AN-105	push	2	22	44	SS	44	1.408	07-Dec-95	0	0	1.126	0.2816	0	0	0	0	0	0	0	0	0				
U-111	rotary	2	7	14	SS, O	28	2.268	20-Dec-95	0	0	0.227	0.4536	0.454	0.454	0.34	0.227	0.1134	0	0	0	0				
TY-105	rotary	2	5	10	SS	20	0.8	21-Dec-95	0	0	0.12	0.48	0	0	0	0	0	0	0	0	0				
AN-107	push	2	22	44	SS	44	1.408	09-Jan-96	0	0	0	1.1264	0.282	0	0	0	0	0	0	0	0				
B-104	rotary	2	7	14	SS, P	28	1.368	25-Jan-96	0	0	0	0.1368	0.274	0.274	0.274	0.205	0.1368	0.0684	0	0	0				
S-111	push	2	11	22	SS, O, P	44	4.064	31-Jan-96	0	0	0	0	0.813	0.813	0.813	0.813	0.4064	0.4064	0	0	0				
U-106	rotary	2	5	10	SS, O	20	2.9	13-Feb-96	0	0	0	0	0.29	0.58	0.58	0.58	0.435	0.29	0.145	0	0				
BX-102	rotary	2	2	4	SS, F, P (0.2)	8	1.18	14-Feb-96	0	0	0	0	0.118	0.236	0.236	0.236	0.177	0.118	0.059	0	0				
S-107	push	2	8	16	SS, P	32	1.492	23-Feb-96	0	0	0	0	0.149	0.298	0.298	0.298	0.2238	0.1492	0.0746	0	0				
B-107	rotary	2	4	8	SS, P	16	0.98	12-Mar-96	0	0	0	0	0	0.098	0.196	0.196	0.196	0.147	0.098	0.049	0				
BX-109	push	2	4	8	SS	16	0.8	18-Mar-96	0	0	0	0	0	0.4	0.4	0	0	0	0	0	0				
U-107	rotary	2	8	16	SS, O	32	2.592	29-Mar-96	0	0	0	0	0	0	0.518	0.518	0.5184	0.5184	0.2592	0.259	0				
BX-110	rotary	2	4	8	SS, P	16	1.246	01-Apr-96	0	0	0	0	0	0	0.249	0.249	0.2492	0.2492	0.1246	0.125	0				
BX-104	push	2	2	4	SS, P	8	0.74	09-Apr-96	0	0	0	0	0	0	0.148	0.148	0.148	0.148	0.074	0.074	0				
B-105	rotary	2	3	6	SS, P	12	0.86	25-Apr-96	0	0	0	0	0	0	0.086	0.172	0.172	0.172	0.129	0.086	0.043				
BX-112	push	2	4	8	SS, P	16	0.98	29-Apr-96	0	0	0	0	0	0	0	0.196	0.196	0.196	0.196	0.098	0.098				
U-103	rotary	2	9	18	SS, O, P	36	3.416	14-May-96	0	0	0	0	0	0	0	0.342	0.6832	0.6832	0.6832	0.512	0.5124				
BX-111	rotary	2	4	8	SS, P	16	0.996	15-May-96	0	0	0	0	0	0	0	0	0.1	0.1992	0.1992	0.1992	0.149				
BX-106	push	2	1	2	SS, F (0/1)	8	0.34	17-May-96	0	0	0	0	0	0	0	0.034	0.068	0.068	0.068	0.051	0.051				
BX-103	push	2	1	2	SS	4	0.2	07-Jun-96	0	0	0	0	0	0	0	0	0.16	0.04	0	0	0				
TX-105	rotary	2	12	24	SS, O	48	3.84	11-Jun-96	0	0	0	0	0	0	0	0	0.384	0.768	0.768	0.768	1.152				
U-105	rotary	2	8	16	SS, O	32	2.592	24-Jun-96	0	0	0	0	0	0	0	0	0.2592	0.5184	0.5184	0.518	0.7776				
BX-107	push	2	7	14	SS	28	0.84	27-Jun-96	0	0	0	0	0	0	0	0	0	0.168	0.168	0.168	0.336				
SX-108	rotary	2	2	4	SS, P	8	0.74	01-Jul-96	0	0	0	0	0	0	0	0	0	0.148	0.148	0.148	0.296				
AW-105	push	2	20	40	SS, P	80	2.96	10-Jul-96	0	0	0	0	0	0	0	0	0	0.596	0.596	0.596	1.192				
TX-118	rotary	2	7	14	SS, F, O (0/1)	56	3.568	29-Jul-96	0	0	0	0	0	0	0	0	0	0	0.7138	0.714	2.1408				
AW-106	push	2	14	28	SS	56	1.68	30-Jul-96	0	0	0	0	0	0	0	0	0	0	1.344	0.336	0				
U-109	rotary	2	9	18	SS, P	36	1.616	05-Aug-96	0	0	0	0	0	0	0	0	0	0	0.3232	0.323	0.9696				
SX-103	rotary	2	11	22	SS, O, P	44	4.704	12-Aug-96	0	0	0	0	0	0	0	0	0	0	0.9408	0.941	2.8224				
T-105	push	2	2	4	SS, P	8	0.74	19-Aug-96	0	0	0	0	0	0	0	0	0	0	0.074	0.148	0.518				
TX-116	rotary	2	12	24	SS	48	1.488	06-Sep-96	0	0	0	0	0	0	0	0	0	0	0	1.19	0.2976				
T-110	push	2	8	16	SS, P	32	1.492	09-Sep-96	0	0	0	0	0	0	0	0	0	0	0	0.298	1.1936				
U-104	rotary	2	2	4	SS, P	8	0.74	13-Sep-96	0	0	0	0	0	0	0	0	0	0	0	0.148	0.592				
SX-109	rotary	2	5	10	SS, P	20	1.1	20-Sep-96	0	0	0	0	0	0	0	0	0	0	0	0.11	0.99				
B-101	push	2	2	4	SS, P	8	0.74	27-Sep-96	0	0	0	0	0	0	0	0	0	0	0	0	0.74				
TOTAL		242	317	795		1233	84.466		3.89	6.18	7.63	7.0228	6.28	3.93	4.45	4.31	4.726	5.651	7.704	7.81	14.8714				
Total FY96														69.6											

FY1997			TWRS		SCHEDULE		REV.3.0		AEU's												Sep. 30, 1994		SEP	
Sample	Core/	Seg	Total	Applied	Total	Sub Seg	AEU	Date	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Carry over			
Tank	Mode	samples	Segs	DOO	Sub Seg	AEU	15	FY 96	3	3	3	3	3	3	3	3	3	3	3	3	3			
Carry over																								
B-109	push	2	3	SS, P	12	0.88	0.88	10-Oct-96	0.172	0.172	0.172	0.172	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086			
TX-101	roliary	2	3	SS, P	12	0.86	0.86	16-Oct-96	0.086	0.086	0.172	0.172	0.129	0.086	0.043	0.043	0.043	0.043	0.043	0.043	0.043			
U-108	roliary	2	9	SS	36	1.116	1.116	23-Oct-96	0.2232	0.8928	0	0	0	0	0	0	0	0	0	0	0			
SX-106	roliary	2	11	SS, O	44	3.564	3.564	30-Oct-96	0	0.7128	0.7128	0.7128	0.7128	0.3564	0.3564	0.3564	0.3564	0.3564	0.3564	0.3564	0.3564			
B-203	push	2	14	SS	56	1.68	1.68	06-Nov-96	0	1.344	0.336	0.336	0	0.172	0.086	0.043	0.043	0.043	0.043	0.043	0.043			
TX-103	roliary	2	3	SS, P	12	0.86	0.86	26-Nov-96	0	0.336	0.172	0.172	0.172	0.172	0.086	0.043	0.043	0.043	0.043	0.043	0.043			
B-204	push	2	14	SS	56	1.68	1.68	04-Dec-96	0	0	0.336	0.336	0.336	0.172	0.086	0.043	0.043	0.043	0.043	0.043	0.043			
U-112	push	2	11	SS, P	44	0.82	0.82	11-Dec-96	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
SX-102	roliary	2	11	SS, P	44	1.864	1.864	18-Dec-96	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
B-108	push	2	2	SS	8	0.4	0.4	08-Jan-97	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
B-202	push	2	6	SS	32	0.96	0.96	08-Jan-97	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
TX-104	roliary	2	13	SS, P	52	2.06	2.06	18-Jan-97	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
U-102	push	2	2	SS	8	0.24	0.24	17-Jan-97	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
A-106	push	2	7	SS	28	0.868	0.868	23-Jan-97	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
SX-114	roliary	2	3	SS, P	12	0.86	0.86	28-Jan-97	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
A-103	push	2	8	SS, P	32	1.492	1.492	30-Jan-97	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
A-102	push	2	19	SS, P, RCRA	76	3.68	3.68	08-Feb-97	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
SX-101	roliary	2	10	SS, P	44	1.74	1.74	18-Feb-97	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
TX-115	roliary	2	11	SS	44	1.364	1.364	26-Feb-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
AZ-101	push	2	18	SS, P	72	2.72	2.72	05-Mar-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
S-102	push	2	11	SS, O	44	3.564	3.564	11-Mar-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
SX-105	roliary	2	14	SS	56	1.736	1.736	18-Mar-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
TX-106	roliary	2	7	SS, P	28	1.368	1.368	25-Mar-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
S-112	roliary	2	11	SS	44	1.364	1.364	31-Mar-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
SX-111	roliary	2	3	SS	12	0.36	0.36	07-Apr-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
TX-108	roliary	2	3	SS	12	1.492	1.492	14-Apr-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
S-110	roliary	2	8	SS, P	32	0.992	0.992	25-Apr-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
SX-112	roliary	2	3	SS	12	3.564	3.564	02-May-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
TX-109	roliary	2	6	SS, O	24	0.36	0.36	08-May-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
S-102	roliary	2	11	SS	44	1.44	1.44	15-May-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
SX-107	roliary	2	12	SS	48	1.32	1.32	22-May-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
TX-112	roliary	2	11	SS	44	0.24	0.24	29-May-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
S-109	roliary	2	2	SS	8	1.32	1.32	04-Jun-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
SX-110	roliary	2	4	SS	16	0.72	0.72	11-Jun-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
TX-113	roliary	2	11	SS	44	0.36	0.36	18-Jun-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
S-103	roliary	2	6	SS	24	1.32	1.32	24-Jun-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
AX-103	roliary	2	3	SS	12	1.32	1.32	01-Jul-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
TX-114	roliary	2	11	SS	44	1.86	1.86	10-Jul-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
A-105	roliary	2	15	SS	60	1.2	1.2	23-Jul-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
AX-101	roliary	2	5	SS	20	0.54	0.54	30-Jul-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
TX-102	roliary	2	10	SS	40	1.08	1.08	05-Aug-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
S-106	roliary	2	9	SS	36	1.08	1.08	12-Aug-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
T-201	roliary	2	9	SS	36	1.08	1.08	18-Aug-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
TX-110	roliary	2	9	SS	36	1.08	1.08	25-Aug-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
S-108	roliary	2	6	SS	24	1.08	1.08	02-Sep-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
TX-202	roliary	2	8	SS	32	0.96	0.96	08-Sep-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
TX-111	roliary	2	8	SS	32	0.96	0.96	15-Sep-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
A-101	roliary	2	10	SS	40	1.2	1.2	22-Sep-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
T-203	roliary	2	10	SS	40	0.74	0.74	28-Sep-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
TX-117	roliary	2	10	SS	40	0.74	0.74	28-Sep-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
T-101	roliary	2	2	SS	8	0.8	0.8	28-Sep-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
T-204	roliary	2	10	SS	40	0.8	0.8	28-Sep-97	0	0	0	0	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			
Total		108	445	890	1710	85.94			3,4812	6,6726	6,4856	6,5912	7,6642	6,7148	7,4918	7,4542	7,7962	6,9632	6,492	8,416	8,416			

ATTACHMENT 3: DATA FOR THE SOLID WASTE PROGRAM

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376-4393

12] From: Judith A Nielsen at -WHC180 1/7/94 7:49AM (611 bytes: 9 ln)
 To: Curtis R Stroup at -WHC325, Steven M Joyce at -WHC321
 Subject: Analytical Service Requirements

----- Message Contents -----

I am forwarding the CC:mail with lab requirements from Lauri Gaschott. I am under the assumption that others in Solid Waste Disposal worked directly with you, as they have not responded through me.

Let me know if you need further information.

Judith Nielsen
 376-4393

WHC-SD-WM-TI-608, REV. 1

SAMPLE REQUIREMENT PROJECTION THROUGH THE YEAR 2000

SAMPLE REQUIREMENT PROJECTIONS

FACILITY - NON-RADIOACTIVE DANGEROUS WASTE STORAGE FACILITY (NRDWSF) BLDG 616

1. Non-Radioactive - (units = drums/containers)

	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>
Fingerprint Samples	144	144	144	144	144	144	144

ASSUMPTIONS:

- a) Based on sampling 10% of received containers at 616.
- b) Sampling will be performed at the 616 facility.
- c) SWITS Database reports that 4325 drum/containers have been received at 616 from 1/1/90 to 12/31/92.

$$.10 \times (4325 \text{ drum/containers} \div 3 \text{ years}) = 144 \text{ drum/containers per year}$$

SAMPLE REQUIREMENT PROJECTIONS

FACILITY - COMPACTOR 213-W

2. < 1 mr/hr Beta-Gamma & < 10 nanocuries/gram Alpha

	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>
Air Monitor Samples	104	104	104	104	104	104	104

3. 1 mr/hr to < 10 mr/hr Beta-Gamma & < 10 nanocuries/gram Alpha

	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>
LLWI Samples	63	70	72	66	67	63	65

ASSUMPTIONS:

- a) Air Monitoring Sampling will be performed at 222S Labs.
- b) The LLWI Samples are estimated at 10% of the drums/boxes that will be confirmed in the Confirmation/Verification activities that will be performed at CWC. Data is based on the FY-1992 SWMP database container volumes by waste class, 3/4/93.

SAMPLE REQUIREMENT PROJECTIONSFACILITY - CENTRAL WASTE COMPLEX

2. < 1 mr/hr Beta-Gamma & < 10 nanocuries/gram Alpha

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>
Chemical Sample	*	370						
Screening Samples	*	370						
Air Monitor Samples	*	2652	2652	2652	2652	2652	2652	

3. 1 mr/hr to < 10 mr/hr Beta-Gamma & < 10 nanocuries/gram Alpha

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>
Chemical Samples	*	15						
Screening Samples	*	15						
Radiological Samples	*	50						
LLWMI Samples	**	31	45	54	57	44	46	47
Additional Rad Samples		10	10	10	10	10	10	10

5. 10 mr/hr to < 100 mr/hr Beta-Gamma & < 200 nanocuries/gram Alpha

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>
Chemical Samples	*	15						
Screening Samples	*	15						
Radiological Samples	*	50						

ASSUMPTIONS:

- a) * Chemical, Screening and Radiological Samples are for 1994 are for the backlog waste program. Chemical Sampling will be performed at off-site labs, Screening Sampling will be performed at 222S Labs and Radiological Sampling will be performed at PNL.
- b) ** The LLWI Samples are estimated at 10% of the drums/boxes that will be confirmed in the Confirmation/Verification activities that will be performed at CWC. Data is based on the FY-1992 SWMP database container volumes by waste class, 3/4/93.
- c) Air Monitor Samples and Additional Rad Samples will be performed at 222S Labs.

SAMPLE REQUIREMENT PROJECTIONS

FACILITY - TRANSURANIC WASTE STORAGE AND ASSAY FACILITY (TRUSAF)

2. < 1 mr/hr Beta-Gamma & < 10 nanocuries/gram Alpha

	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>
Air Monitor Samples	624	624	624	624	624	624	624

ASSUMPTIONS:

a) Air Monitor Samples will be performed at 222S Labs.

SAMPLE REQUIREMENT PROJECTIONS

FACILITY - LOW-LEVEL BURIAL GROUNDS

3. 1 mr/hr to < 10 mr/hr Beta-Gamma & < 10 nanocuries/gram Alpha

	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>
Radiological Samples	15	15	15	15	15	15	15

ASSUMPTIONS:

a) Various Radiological Samples may be required and will be performed at 2225 Labs.

SAMPLING REQUIREMENTS FOR THE SOLID WASTE DIVISION

For the time frame indicated by the memo from C.R. Stroup to Distribution of 11/29/93, sampling support for the Solid Waste Division will be required for five separate projects or programs: 1) TRU Pilot Retrieval, 2) Waste Immobilization Demonstration, 3) WRAP Module 1, 4) Full Scale TRU Retrieval (Project W-113), and 5) WRAP Module 2A.

Each project will be discussed separately. The time base will be fiscal years in all cases.

Samples will be broken down by number corresponding to the seven radiation categories given in the 11/29 Stroup memo: Category 1 = nonradioactive, 2 = <1mr/hr beta-gamma & <10 nanocuries/g alpha, 3 = 1 to <10 mr/hr beta-gamma & <10nCi/g alpha, 4 = < 10 mr/hr beta-gamma & <200 nanocuries/g alpha, 5 = 10 to <100 mr/hr beta-gamma & <200 nanocuries/g alpha, 6 = >100mr/hr beta-gamma, and 7 = >200 nanocuries/g alpha. The sample breakdown is purely an estimate; better numbers would require more detailed analysis using health physics expertise for waste matrix characterization and isotopic decay assumptions.

GENERAL ASSUMPTIONS

- *Any soil sample coming from a radiologically controlled area (such as the Low Level Burial Grounds) is assumed to require handling as a radioactive sample.
- *Pilot TRU Retrieval drum removal occurs in FY 1994-1995. Glovebox examination of such drums occurs from FY 1995-1996.
- *The Waste Immobilization Demonstration will take place from FY 94-98.
- *WRAP 1 LLW processing begins operation in 3/98, at 50% throughput for the first year.
- *WRAP 1 TRU processing begins operation in 3/98, at 50% throughput for the first year.
- *Full-scale TRU Retrieval begins in 4/98, shipping 9900 drums in 3 1/4 years or 3046 suspect TRU drums per year.
- *WRAP 2A begins operation in 9/99, at 50% throughput for the first year.
- *Sufficient newly generated TRU (TRUSAF storage is considered in this category) and newly generated LLW to provide WRAP 1 its capacity throughput prior to shipments from Full-scale Retrieval.
- *Samples taken from separate packages in a single drum in WRAP 1 will be composited to one sample.

1) TRU PILOT RETRIEVAL

Most samples will be soil in 1994-1995, taken during in-trench excavation for drum retrieval and inspection to establish presence or absence of contamination spread, although some very minor numbers of plywood or plastic tarp samples could be requested. In 1995-1996, samples from glovebox waste examination will be miscellaneous dry solid waste (paper, plastic, etc.) with some liquids or particulates. Volumes per sample will be approximately one-quarter to one-half of a liter. The Sample and Analysis Form used for the TRU Pilot Retrieval Program is SAF 94-218, and this will identify the quantities

of soils to be sampled for each analyte. There were approximately 50 samples obtained in FY 94 and to date, none of the samples were identified as radioactive. To date, 10 drums of Z-9 crib soils have been retrieved. There are several interested parties in conducting analysis of this soil and vermiculite. The drums have been assayed and are TRU drums.

Samples numbers are estimated from "Soil sampling Plan for Retrieval of Transuranic Waste Stored in the 200 West Burial Trenches", WHC-SD-EN-AP-039, June 1992.

The numbers given below are approximates for total number of samples and the category the samples might fit within, based on current knowledge of drums, contents, and dose readings of the containers inspected.

<u>1995</u>	<u>1996</u>	<u>1997</u>
600	20	20
56% Cat. 1	5 Cat. 2	5 Cat. 2
30% Cat. 2	3 Cat. 3	3 Cat. 3
10% Cat. 4	2 Cat. 4	2 Cat. 4
2% Cat. 6	3 Cat. 5	3 Cat. 5
2% Cat. 7	3 Cat. 6	3 Cat. 6
	4 Cat. 7	4 Cat. 7

2) WASTE IMMOBILIZATION DEMONSTRATION

A total of 5000 samples for this are estimated, 3200 from cementitious material and 1800 from polyethylene. One-half from each material type will be nonradioactive. Relatively more nonradioactive sampling will occur early in the project and relatively more radioactive sampling will occur in the later years.

Sample numbers are estimated from a personal communication from Dewey A. Burbank, 1/25/94.

<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>
800(Cat.1)	800(Cat.1)	500(Cat.1)	300(Cat.1)	100(Cat.1)
100	300	500	800	800
(10% Cat. 2.	(10% Cat. 2.	(10% Cat. 2.	(10% Cat. 2.	(10% Cat. 2.
80% Cat. 3	80% Cat. 3	80% Cat. 3	80% Cat. 3	80% Cat. 3
10% Cat. 4)	10% Cat.4)	10% Cat. 4)	10% Cat. 4)	10% Cat. 4)

3 WRAP MODULE 1

Samples will be primarily miscellaneous dry solid waste (including particulates) with some liquids. Sample volumes will be 250 ml to 1 liter.

LLW/TRU Processing

	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>
LLW NG (lines C1/E1b; 2.3 of SDRD)	11	21	21	21
TRU NG (lines B1/D1a; 2.3 of SDRD)		11	21	21
Retr. LLW (Lines A1/Eb; 2.3 of SDRD)		659	659	659
Retr. TRU (Lines A2/D1; 2.3 of SDRD)		328	656	656
Totals	11	1019	1357	1357

Restricted Waste Management

<u>1998</u>	<u>1999</u>	<u>2000</u>
165-2800	213-2800	213-2800

Lower number from lines D1b2, D1b3, E1c2 of SDRD and assumption that one sample will be taken per drum sent to RWM; higher number from 2.4.5.1 of SDRD giving sample transfer capacity from RWM to Sample Management (16/day). This transfer capacity is the same as that of Sample Management.

Samples will be primarily Categories 2 through 4 but small amounts of Categories 5-7 will also be present.

Numbers of samples are taken from "Supplemental Design Requirements Document, Rev. 3," WHC-SD-W026-SDRD-001, 10/93.

4) FULL SCALE TRU RETRIEVAL

Samples will be soil taken during retrieval operations in the trenches, to establish presence or absence of contamination spread. The samples are classed as Category 2 but would probably be nonradioactive if they originated outside a radiologically controlled area. Sample sizes would be a maximum of one liter. Samples are taken approximately 10/week, assuming 25 weeks of in-trench excavation per year.

Sample numbers are from a personal communication from Dale M. Johnson, January 1994.

1998

250

(235 Cat. 2,
15 Cat. 3)

1999

250

(235 Cat. 2,
15 Cat. 3)

2000

250

(235 Cat. 2,
15 Cat. 3)

5) WRAP MODULE 2A

Samples are primarily solids. Sample size is expected to be primarily 250 ml.

Sample numbers are estimated from a personal communication from Michelle A. LeClair, January 12, 1994.

2000

600 (Cat. 2)

100 (Cat. 1)

ATTACHMENT 4: DATA FOR THE LIQUID EFFLUENTS PROGRAM

PAGE 1 OF 9

DON'T SAY IT --- Write It!

DATE: October 7, 1994

TO: F. M. Simmons

H4-19

FROM: P. M. Olson

H6-28

Telephone: 372-2872

cc: D. L. Flyckt T7-39
 P. G. Haigh T7-38
 D. L. Halgren S6-70
 C. M. Loll L6-04
 J. D. Williams H6-28

SUBJECT: SAMPLE PROJECTION UPGRADE

Attached to this DSI are the known changes to the five year sample projections provided to C. R. Stroup on January 7, 1994.

This update includes sample projection changes to only the 300 Area Treated Effluent Disposal Facility (300 Area TEDF). The sample schedule documents of the 300 Area TEDF for which the sample projections were drawn are in draft form.

The 200 Area Effluent Treatment Facility (ETF), the 200 Area Treated Effluent Disposal Facility (200 Area TEDF), and the Pilot Plant activities have not been changed. The sampling requirements are currently being refined for the 200 Area Liquid Effluent Facilities so no new projections can be provided. Conversations with P. G. Haigh, the author of the draft sampling schedule, indicated that the sample projections from January 7, 1994 remain a valid estimate at this time.

300 Area TEDF Analytical Samples

All samples from the 300 Area TEDF will be nonradioactive.
The following are the process control sample requirements.

Sample Location	Total Yearly Samples
WCS	24
INF	104
GFE	104
IXE/UVI	365
UVE	365
PS	52
FP	24
OUT	<u>24</u>
Total	1166

Table 1 details the requirements of these process control samples. The following tables were extracted from the draft 300 Area Treated Effluent Disposal Facility Sampling Schedule, document number WHC-SD-L045H-SM-001. The total yearly samples for the next five years are expected to be similar.

The following are sample requirements for permit compliance monitoring.

Sample Location	Total Yearly Samples
NE corner of TEDF Bldg.	156
River	<u>4</u>
Total	160

Table 2 details the requirements of these permit compliance samples. The following tables were extracted from the draft 300 Area Treated Effluent Disposal Facility compliance sampling schedule, document number WHC-SD-L045H-PLN-004. The total yearly samples for the next five years are expected to be similar.

Mn						10	µg/L
Ni						1	µg/L
Se						4	µg/L
Ag						2	µg/L
Zn						5	µg/L
Total Alpha	COMPOSITE	1/MONTH	1 L	-	48 HR	9	pCi/L
Total Beta	COMPOSITE	1/MONTH		-	48 HR	40	pCi/L

54-3000-101 (12/92) GEF014

TSS	GRAB	2/WEEK	250 ml	-	48 HR	1	ppm
-----	------	--------	--------	---	-------	---	-----

Table 1 300 Area TEF Process Control Analytical Samples

Page 3 of 5

SAMPLE IDENT.	SAMPLE PT. #	PARAMETER	SAMPLE TYPE	SAMPLE FREQ.	SAMPLE VOLUME	BATCHING FREQ.	TURNAROUND TIME	DESIRED DETECTION	UNITS	NOTES
GFE	WN-V-521	Metals	GRAB	2/WEEK	250 ml	-	48 HR			
		Al						70	µg/L	
		As						4	µg/L	
		Be						5	µg/L	
		Cd						0.8	µg/L	
		Cu						3	µg/L	
		Fe						100	µg/L	
		Pb						0.7	µg/L	
		Mg						10	µg/L	
		Ni						1	µg/L	
		Se						4	µg/L	
		Ag						2	µg/L	
		Zn						5	µg/L	
		Hg	GRAB	2/WEEK	100 ml	-	48 HR	0.1	µg/L	
		TSS	GRAB	2/WEEK	250 ml	-	48 HR	1	ppm	
IXE	V-1381	Hg	GRAB	2/WEEK	100 ml	-	48 HR	0.1	µg/L	
		Ag	GRAB	2/WEEK	250 ml	-	48 HR	2	µg/L	
		TSS	GRAB	2/WEEK	250 ml	-	48 HR	1	ppm	
UVI	V-1381	TOC	GRAB	1/24 HR	100 ml	2/WEEK	48 HR	1	ppm	
		Bis (2-ethylhexyl) phthalate	GRAB	1/24 HR	1 L	2/WEEK	48 HR	2	µg/L	
		VOA	GRAB	1/24 HR	2 x 40 ml	2/WEEK	48 HR			
		Chloroform						1	µg/L	
		Acetone						5	µg/L	

WHC-SD-WM-TI-608, REV. 1

Table 1 300 Area TEDF Process Control Analytical Samples

Page 4 of 5

SAMPLE IDENT.	SAMPLE PT. #	PARAMETER	SAMPLE TYPE	SAMPLE FREQ.	SAMPLE VOLUME	BATCHING FREQ.	TURNAROUND TIME	DESIRED DETECTION	UNITS	NOTES
UVE	WM-V-583	TOC	GRAB	1/24 HR	100 ml	2/WEEK	48 HR	1	ppm	
		Bis (2-ethylhexyl) phthalate	GRAB	1/24 HR	1 L	2/WEEK	48 HR	2	µg/L	
		VOA	GRAB	1/24 HR	2 x 40 ml	2/WEEK	48 HR			
		Chloroform						5	µg/L	
		Acetone						5	µg/L	
PS		TSS	GRAB	1/WEEK	250 ml	-	48 HR	1	ppm	
		TOC	GRAB	1/WEEK	100 ml	-	48 HR	1	ppm	
FP	SL-M-1	% Solids	GRAB	2/MONTH	250 ml	-	48 HR		NA	1
		TOC	GRAB	2/MONTH	100 ml	-	48 HR			
		TCLP	GRAB	2/MONTH	500 ml	-	48 HR			
		GEA	GRAB	2/MONTH		-	48 HR			
		Total Alpha	GRAB	2/MONTH		-	48 HR		pCi/L	
		Total Beta	GRAB	2/MONTH		-	48 HR		pCi/L	

Table 1 300 Area TEF Process Control Analytical Samples

Page 5 of 5

SAMPLE IDENT.	SAMPLE PT. #	PARAMETER	SAMPLE TYPE	SAMPLE FREQ.	SAMPLE VOLUME	BATCHING FREQ.	TURNAROUND TIME	DESIRED DETECTION	UNITS	NOTES
OUT	WM-M-9	pH	COMPOSITE	2/MONTH	250 ml	-	48 HR	0.1 UNITS	NA	
		TSS	COMPOSITE	2/MONTH	250 ml	-	48 HR	1 PPM	PPM	
		TOC	COMPOSITE	2/MONTH	100 ml					
		Metals	COMPOSITE	2/MONTH	250 ml	-	48 HR			
		Al						70	µg/L	
		As						4	µg/L	
		Be						5	µg/L	
		Cd						0.8	µg/L	
		Cu						3	µg/L	
		Fe						100	µg/L	
		Pb						0.7	µg/L	
		Mn						10	µg/L	
		Ni						1	µg/L	
		Se						4	µg/L	
		Ag						2	µg/L	
		Zn						5	µg/L	
		TOC	COMPOSITE	2/MONTH	100 ml	-	48 HR	1	ppm	

¹Estimated sampling frequencies were included for these sample points to allow the Laboratories to approximate sample load. Actual sampling frequencies will be determined by LEPE.

1 - Analysis for this parameter is run off of sample volume for parameter above it.

Table 2 300 Area TEDF Permit Compliance Monitoring Sample Schedule

Analyte	Schedule	EPA Method	Total
Bis(2-	biweekly, annual	625	30
Dichlorobromomethane	"	624	30
Chlorodiflouromethane	"	624	30
Methylene Chloride	"	624	30
Toluene	"	624	30
1,1,1,-Trichloroethane	"	624	30
Trichloroethylene	"	624	30
Chloroform	"	624	30
1,1-Dichloroethane	"	624	30
Tetrachloroethylene	"	624	30
Aluminum (Al)	"	202.2	30
Arsenic (As)	"	206.2	30
Beryllium (Be)	"	210.2	30
Cadmium (Cd)	"	213.2	30
Copper (Cu)	"	220.2	30
Cyanide(Cn)	"	335.2	30
Iron (Fe)	"	236.2	30
Lead (Pb)	"	239.2	30
Manganese (Mn)	"	243.2	30
Mercury (Hg)	"	245.1	30
Nickel (Ni)	"	249.2	30
Nitrite (NO3)	"	353.1	30
Selenium (Se)	"	270.2	30
Silver (Ag)	"	272.2	30
Zinc (Zn)	"	289.2	30
Radium (pci/l)	"	900.1	30
TSS	3/week, annual	160.2	160
Coliform	biweekly, annual	9131	30
Ammonia (as N)	"	350.2	30
pH (pH units)	daily	Online	NA
Hardness (as CaCO ₃)	annual		4
Whole Effluent Testing	quarterly	EPA/600/4-90/027	4

Table 1 Liquid Waste Division Wastewater Sample Forecast (Page 1 of 1)

Table 1 Liquid Waste Division Wastewater Sample Forecast (Page 1 of 2)								
Facility	Sample Radiation Level	Sample Forecast						
		CY 1994	CY 1995	CY 1996	CY 1997	CY 1998	CY 1999	CY 2000
200 Area EIF ¹								
	non-radioactive	--	100	100	100	100	100	100
	< 1 mR/hr β - γ and < 10 nanocuries/gram α	--	3,500	6,400	6,400	6,400	6,400	6,400
	10 to 100 mR/hr β - γ and < 200 nanocuries/gram α	--	200	900	900	900	900	900
200 Area TEDF ²								
	non-radioactive	--	100	100	100	100	100	100
	< 1 mR/hr β - γ and < 10 nanocuries/gram α	--	400	400	400	400	400	400
300 Area TEDF ³								
	non-radioactive	--	60	60	60	60	60	60
	< 1 mR/hr β - γ and < 10 nanocuries/gram α	--	6,700	6,700	6,700	6,700	6,700	6,700
Pilot Plant activities ⁴								
	non-radioactive or < 1 mR/hr β - γ and < 10 nanocuries/gram α	50	100	100	100	100		
<div><div><div>1</div><div>permit conditions are still in negotiation.</div></div><div><div>2</div><div>percent operating efficiency during the year.</div></div><div><div>3</div><div>Permit conditions are still in negotiation. Radiation levels could be either category. If permit conditions are still in negotiation. Radiation levels could be either category. If permit   are</div></div></div>								

- Permit conditions are still in negotiation. Sample forecast based on the designed 72 percent operating efficiency during the year.
- Permit conditions are still in negotiation. Radiation levels could be either category. If permit conditions are still in negotiation, Radiation levels could be either category. If permit conditions are still in negotiation, Radiation levels could be either category.
- Permit conditions are still in negotiation. Radiation levels could be either category. If permit conditions are still in negotiation, Radiation levels could be either category.
- All analysis is not performed at the 300 Area TEDF, an additional 2545 samples are required. RCRA sample protocols (e.g., SM-846 Methods 8240, 8260, 8270, 6010).

ATTACHMENT 5: DATA FOR THE SITE MONITORING PROGRAM

PAGE 1 OF 2

Battelle

Pacific Northwest Laboratories

WHC-SD-WM-TI-608, REV. 1

Project Number _____

Internal Distribution

Date September 22, 1994

To FM Simmons

From BL Thomas

Berta S. Thomas

Subject Sample Projection Upgrade

RE Jaquish
TE Jones
File/LB

As your September 6, 1994, memo of the same subject requested, I have reviewed and updated the sample projections that were provided by the PNL Analytical Support Services Project (ASSP) at the beginning of the 1994 calendar year. My update (Attachment 1) shows the estimated sample load for analytical testing using the ASSP contracts with commercial laboratories for fiscal year 1995. It also shows the estimated costs for these analytical services. The estimated sample load is based on an assumption that the fiscal year 1995 analytical testing needs of the Hanford projects using ASSP contracts will be approximately equal to those needed during fiscal year 1994. The estimated analytical costs for fiscal 1995 is based on current analytical testing costs. The ASSP administers four analytical contracts and each contract is scheduled for annual revision to better meet current data users' needs. These modifications may result in changed analytical costs.

Your memo requests sample loading projections for each out-year through fiscal year 2000. Please assume a constant sample load relative to the fiscal year 1995 projection through the year 2000. However, because the ASSP sample load is dictated by the needs of the Hanford projects that use the analytical service contracts, it is important to recognize that the actual sample load may be quite different from this projection. Analytical costs, for the out-years, could be expected to increase proportionately with the rate of inflation.

FM Simmons
September 22, 1994
Page 2

Attachment 1

PNL ANALYTICAL SUPPORT SERVICES PROJECT

Sample Projections for FY 1995

Environmental Hazardous Chemistry Testing

Category 1	Category 2	Analytical Test Cost
1850	5	\$2800K

Environmental Radiochemical Testing

Category 1	Category 2	Analytical Test Budget
0	5000	\$2600K

Bioassay Radiochemical Testing

Category 1	Category 2	Analytical Test Budget
0	8500	\$2300K

ATTACHMENT 6: DATA FOR THE INDUSTRIAL HYGIENE PROGRAM

PAGE 1 OF 1

HANFORD ENVIRONMENTAL HEALTH FOUNDATION

September 27, 1994

Fen M. Simmons
Principle Engineer
Westinghouse Hanford Company (WHC)
PO Box 1970
Richland, Washington 99352

Dear Mr. Simmons:

SAMPLE PROJECTION UPGRADE

As requested in you letter of September 6, 1994, the following is a projection of the number of samples to be analyzed by the Hanford Environmental Health Foundation Industrial Hygiene Laboratory through the year 2000:

	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>
Samples	13800	15200	17700	19500	21400	23500

The following assumptions/qualifiers apply to this forecast:

1. These numbers include all samples analyzed as part of the HEHF work scope, including traditional industrial hygiene samples as well as chemical and microbiological drinking water analyses.
2. Most of the samples (>99%) will be nonradioactive. A very small number(<1%) may fall into the lowest radiation category (<1 mR/hr beta-gamma & <10 nanocuries/gram alpha).
3. 90-95% of the analyses will be performed in the HEHF IH Laboratory. The remainder will be sent to off-site commercial laboratories subcontracted by HEHF.
4. The number of analyses per sample varies from 1 to >60, with an average analyses/sample ratio of 2.
5. Sample workload is highly variable. Most samples are received in small batches (<10 samples) with >50% arriving with less than 1 week prior notification.

If you have any questions, please contact Joseph Samuels on 376-7355.

Sincerely,

Sandra J. Matheson
President

JKS/ddd

cc: RH Ronish, HEHF
JK Samuels, HEHF
RO Volk, HEHF
HP Mooers, DOE-RL
DL White, DOE-RL

ATTACHMENT 7: DATA FOR THE GENERAL PROCESS CONTROL PROGRAM

PAGE 1 OF 3

WHC-SD-WM-TI-608, REV. 1

91												92									
JUN	JUL	AUG	SEP	OCT 91	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT 92	NOV	DEC	JAN	FEB	MAR
3,399	413	444	255	317	72	251	671	489	384	780	773	1,555	1,051	833	1,088	1,439	1,351	384	793	806	477
2,560	2,694	1,224	1,327	1,146	1,089	1,506	1,577	2,063	1,730	1,145	1,039	1,280	1,296	1,249	1,775	1,562	1,617	1,289	1,198	963	1,083
826	2,336	1,089	986	1,184	809	948	1,278	1,253	1,132	1,215	1,448	2,089	2,544	992	989	1,768	1,360	1,198	1,221	1,819	2,103
12,536	17,212	13,708	17,754	11,828	11,896	10,732	13,804	11,802	15,002	12,428	12,720	13,506	11,980	13,500	13,812	15,392	12,410	15,784	10,100	11,421	17,324

91												92									
JUN	JUL	AUG	SEP	OCT 91	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT 92	NOV	DEC	JAN	FEB	MAR
5.42	2.82	1.52	1.44	1.33	1.06	1.60	2.04	2.32	1.92	1.75	1.65	2.58	2.13	1.89	2.60	2.73	2.70	1.52	1.81	1.61	1.42
0.08	0.17	0.08	0.07	0.09	0.06	0.07	0.09	0.08	0.08	0.09	0.10	0.18	0.18	0.07	0.07	0.13	0.10	0.08	0.09	0.13	0.15
0.05	0.07	0.05	0.07	0.05	0.05	0.04	0.05	0.05	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.05	0.06	0.04	0.04	0.07
							0.40	0.50	0.75	0.90	1.40	1.40	1.10	1.10	1.20	1.20	1.00	0.40	0.40	0.50	0.75

WHC-SD-WM-TI-608, REV. 1

93												94								
APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
374	1,051	653	382	884	262	1,145	905	911	1,280	904	935	1,321	1,834	1,892	786	595	1,072	467	655	
1,010	743	587	732	1,003	1,130	544	573	854	1,066	431	676	1,650	2,032	1,733	1,875	1,868	962	760	1,859	1,383
1,314	968	900	1,059	1,535	1,180	1,226	968	1,153	1,282	1,127	1,410	1,853	1,434	1,605	1,392	1,818	1,503	1,477	1,414	
10,791	10,574	12,704	11,092	15,752	11,944	10,752	10,548	12,896	12,332	10,412	9,312	8,476	12,036	9,616	8,904	12,080	9,070	18,186	10,812	11,100

1611 2971 3866 3625

93												94								
APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1.26	1.63	1.13	1.01	1.72	1.27	1.54	1.34	1.60	2.13	1.21	1.46	2.70	3.51	3.30	2.42	2.24	1.85	1.12	2.29	1.26
0.10	0.07	0.07	0.08	0.11	0.05	0.05	0.07	0.05	0.09	0.08	0.10	0.13	0.10	0.11	0.10	0.12	0.11	0.11	0.10	0.00
0.04	0.04	0.05	0.04	0.06	0.05	0.04	0.04	0.05	0.05	0.04	0.04	0.03	0.05	0.04	0.03	0.05	0.04	0.07	0.04	0.04
0.90	1.40	1.40	1.10	1.10	1.20	0.90	1.30	0.92	0.11	0.15	0.38	1.13	1.72	1.62	0.78	0.96	0.84	0.27	0.015	0.130

DETERMINATIONS PERFORMED BY LABORATORY 222-S IN FY 1994

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
PROCESS CONTROL	467	655	794	725	657	724	638	1,229	869	883	939	824	1,091
DEVELOPMENT SUPPORT	760	1,859	1,383	352	547	648	868	569	947	739	1,563	627	856
ENVIRONMENTAL	1,477	1,414	1,548	1,587	1,415	1,386	2,826	1,423	1,310	2,023	1,685	1,517	2,047
AIR/STACK MONITORING	18,186	10,812	11,100	10,672	7,816	9,464	8,700	7,660	9,912	8,396	9,024	9,972	8,656

TOTAL: 174,241