

# Summary of Analytical Services for the Hanford Site Radionuclide NESHAP Program

Prepared for the U.S. Department of Energy  
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy  
under Contract DE-AC06-09RL14728



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**TERMS AND ACRONYMS**

ABCASH	Automated Bar Coding of All Samples at Hanford
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response Compensation and Liability Act of 1980
CFR	<i>Code of Federal Regulations</i>
CHPRC	CH2M HILL Plateau Remediation Company
DOE	U.S. Department of Energy
DOE/RL	U.S. Department of Energy – Richland Operations Office
EDP	Electronic Data Processing code
EIS	Environmental Integration Services
ERS	Environmental Release Summary
MDA	minimum detectable activity
MDC	minimum detectable concentration
MSA	Mission Support Alliance, LLC
NESHAP	National Emission Standards for Hazardous Air Pollutants
PNNL	Pacific Northwest National Laboratory
WAC	<i>Washington Administrative Code</i>
WRPS	Washington River Protection Solutions LLC

## 1.0 INTRODUCTION

This Mission Support Alliance, LLC (MSA) document serves as a summary of the analytical requirements used to demonstrate compliance on the Hanford Site to 40 CFR 61, “National Emission Standards for Hazardous Air Pollutants,” Subpart H, “National Emission Standards for Emissions of Radionuclides Other Than Radon From Department of Energy Facilities,” and WAC 246-247, “Radiation Protection – Air Emissions.” This document is intended as a reference summarizing information from multiple requirement source documents and does not implement any contractual, Department of Energy (DOE), federal, state, or permit requirements.

The MSA Environmental Integration Services (EIS) organization is responsible for managing and reporting data collected from the sampling and monitoring of radioactive air emissions from point sources, known as stacks. The EIS organization coordinates the analyses and reporting of samples collected at various facilities across the Hanford Site. These facilities operate 50 stacks that require sampling and monitoring for radioactive air emissions. The stacks are operated by the CH2M HILL Plateau Remediation Company (CHPRC), Washington River Protection Solutions LLC (WRPS), and Pacific Northwest National Laboratory (PNNL). Stack samples are collected by the operating contractor staff, shipped to MSA, and subsequently shipped to the laboratories for analysis.

The field and laboratory sample data are uploaded into the Automated Bar Coding of All Samples at Hanford (ABCASH) database where sample volumes and concentration values are calculated. Sample concentrations are reviewed and evaluated to determine the compliance status with federal and state regulations and permits. The ABCASH stack sample concentration data are also uploaded into the Environmental Release Summary (ERS) database where the total curies released are calculated. All these data are published annually in publicly available reports.

The PNNL operates three stacks subject to the requirements of 40 CFR 61, Subpart H applicable to DOE-Richland Operations (DOE/RL). The curies released from the three PNNL stacks are included in the annual radioactive air emissions report and dose modeling evaluation. These three stacks are outside the scope of MSA responsibilities for sample collection and analyses and are not discussed further in this document.

## 2.0 CONTRACTED ANALYTICAL SERVICES

Analytical services for effluent radiological samples are currently contracted through MSA with The GEL Laboratories Group. Analytical details for the GEL contract services are specified in Statement of Work #61771, authorized until September 30, 2019. A comparison of analytical laboratory procedures with methods specified by federal regulation is documented in HNF-60182, *A Compliance Demonstration with 40 CFR 61, Appendix B, Method 114 for the GEL Laboratories, LLC*, published in August 2016. Table 1 contains contract-required detection limits specified in the MSA contract statement of work.

Table 1. Contract Required Detection Limits.

Chemical Abstract Services # (CAS)	Long Name	MDA <sup>a</sup> (pCi/sample) <sup>b</sup>	MDC <sup>c</sup> (μCi/mL) <sup>d</sup>
12587-46-1	Gross alpha	5	8.8E-15
12587-47-2	Gross beta	10	1.8E-14
14133-76-7	Technetium-99	1.5	2.0E-16
10028-17-8	Tritium	30	5.3E-14
10028-17-8	Tritium (LL)	30	5.3E-14
14762-75-5	Carbon-14	5	8.8E-15
14762-75-5	Carbon-14 (LL)	1	1.8E-15
15046-84-1	Iodine-129	2	3.5E-15
15046-84-1	Iodine-129 (LL)	1	1.8E-15
14255-04-0	Lead-210	5	6.7E-16
14336-70-0	Nickel-59	60	8.1E-15
13981-37-8	Nickel-63	30	4.0E-15
14119-32-5	Plutonium-241	15	2.0E-15
15758-45-9	Selenium-79	10	1.3E-15
14158-27-1	Strontium-89	1	1.3E-16
10098-97-2	Strontium-90	1	1.3E-16
RAD-SR	Total Radioactive Sr	1	1.3E-16
14331-85-2	Protactinium-231	10	1.3E-15
14331-83-0	Actinium-228	0.5	6.7E-17
14234-35-6	Antimony-125	0.3	4.0E-17
13966-02-4	Beryllium-7	0.5	6.7E-17
14733-03-0	Bismuth-214	0.5	6.7E-17
13967-70-9	Cesium-134	0.5	6.7E-17
10045-97-3	Cesium-137	0.1	1.3E-17
10045-97-3	Cesium-137 (LL)	0.04	5.4E-18
10198-40-0	Cobalt-60	0.05	6.7E-18
14683-23-9	Europium-152	0.1	1.3E-17
15585-10-1	Europium-154	0.1	1.3E-17
14391-16-3	Europium-155	0.1	1.3E-17
14596-10-2	Americium-241	1	1.3E-16
13981-15-2	Curium-244	1	1.3E-16
13994-20-2	Neptunium-237	1	1.3E-16
13981-16-3	Plutonium-238	1	1.3E-16
PU-239/240	Plutonium-239/240	1	1.3E-16
13982-63-3	Radium-226	1	1.3E-16
15262-20-1	Radium-228	1.6	2.2E-16
14274-82-9	Thorium-228	1	1.3E-16
14269-63-7	Thorium-230	1	1.3E-16
TH-232	Thorium-232	0.43	5.8E-17
13966-29-5	Uranium-234	1	1.3E-16
15117-96-1	Uranium-235	1	1.3E-16
U-238	Uranium-238	1	1.3E-16

<sup>a</sup>MDA = minimum detectable activity.

<sup>b</sup>pCi = picocurie.

<sup>c</sup>MDC = minimum detectable concentration; these concentrations assume a single sample volume = 20,000

<sup>d</sup>μCi/mL = cubic feet and a quarterly composite sample volume = 262,000 cubic feet.  
microcurie per milliliter.

### 3.0 FACILITY SPECIFIC STACK INFORMATION

Tables 2 and 3 present information specific to Hanford stacks operated by the CHPRC and WRPS contractors.

Table 2 shows the unique identifiers used to index the sample locations. Within the ABCASH database, the identifiers are referred to as “ABCASH Location Codes” and within the ERS database the identifiers are referred to as “EDP Codes” (Electronic Data Processing). The ERS database may use multiple EDP codes to index data from the sample location. This list of codes helps end users find specific stack sample results in the databases.

Table 2. ABCASH and ERS Sample Location Codes. (4 pages)

ABCASH Location Code	ERS EDP Codes	Stack Identification Number	AOP EU ID	Facility	Operations Contractor
A006	A006, P006	291-A-1	369	PUREX	CHPRC
A007	A007				
B001	B001, X001	296-B-1	402	B Plant	CHPRC
B748	B748, X748	296-B-10	340	WESF	CHPRC
C601	C601, X601	296-H-212	435	CSB	CHPRC
E015	E015	296-A-41	205	241-AP Tank Farm Annuli	WRPS
E036	E036	296-E-1	301	ETF	WRPS
E047	E047, X047	296-P-45	50	241-T Tank Farm Portable Exhauster	WRPS
E060	E060, X060	296-A-18	217	241-AY-101 Annulus	WRPS
E061	E061, X061	296-A-19	218	241-AY-102 Annulus	WRPS
E100	E100, P100	296-P-49	885	241-AX Tank Farm Waste Retrieval Exhauster	WRPS
E102	E102, X102	296-P-50	886	241-AX Tank Farm Waste Retrieval Exhauster	WRPS

Table 2. ABCASH and ERS Sample Location Codes. (4 pages)

ABCASH Location Code	ERS EDP Codes	Stack Identification Number	AOP EU ID	Facility	Operations Contractor
E106	E106, X106	296-P-71	1524	241-A Tank Farm Waste Retrieval Exhauster	WRPS
E108	E108, X108	296-P-75	1525	241-A Tank Farm Waste Retrieval Exhauster	WRPS
E147	E147, X147	296-A-42	93	241-AY/AZ Tank Farm Primary Exhauster	WRPS
E148	E148	296-A-43	216	702AZ Building Exhauster	WRPS
E197	E197	296-A-20	174	241-AZ Tank Farm Annuli	WRPS
E272	E272	296-A-28	156	241-AW Tank Farm Annuli	WRPS
E340	E340	219-S	447	219-S PTRAEU	WRPS
E643	E643, X643	296-A-22	142	242A Evaporator Vessel Vent	WRPS
E651	E651	296-A-21A	1294	242A Building Vent	WRPS
E903	E903	296-A-30	228	241-AN Tank Farm Annuli	WRPS
E920	E920, X920	296-A-44	735	241-AN Tank Farm Primary Exhauster	WRPS
E922	E922, X922	296-A-45	736	241-AN Tank Farm Primary Exhauster	WRPS
E924	E924, X924	296-A-46	855	241-AW Tank Farm Primary Exhauster	WRPS
E926	E926, X926	296-A-47	856	241-AW Tank Farm Primary Exhauster	WRPS
E986	E986, X986	296-A-48	1328	241-AP Tank Farm Primary Exhauster	WRPS
E988	E988, X988	296-A-49	1329	241-AP Tank Farm Primary Exhauster	WRPS
F011	F011	FFTF-CB-EX	397	FFTF Combined Exhaust	CHPRC
F014	F014	437-MN&ST	285	FFTF MASF	CHPRC

Table 2. ABCASH and ERS Sample Location Codes. (4 pages)

ABCASH Location Code	ERS EDP Codes	Stack Identification Number	AOP EU ID	Facility	Operations Contractor
F019	F019	437-1-61	399	FFTF MASF	CHPRC
F025	F025, F603	EP-324-01-S	N/A	324 Building	CHPRC
S006	S006, X006	291-S-1	332	S Plant	CHPRC
S264	S264	296-S-16	337	219-S	WRPS
S289	S289, X289	296-S-21	254	222-S Ventilation	WRPS
T154	T154, X154	296-T-7	315	2706T	CHPRC
T785	T785, X785	291-T-1	314	T Plant	CHPRC
W123	W123, X123	296-W-4	193	WRAP	CHPRC
W145	W145	296-S-25	59	241-SY Tank Farm Primary Exhauster	WRPS
W152	W152, X152	296-S-26	1335	241-SY Tank Farm Primary Exhauster	WRPS
W154	W154, X154	296-S-27	1342	241-SY Tank Farm Primary Exhauster	WRPS
W190	W190	296-P-23	56	241-SY Tank Farm Primary Exhauster	WRPS
W191	W191	296-P-22	53	241-SY Tank Farm Annuli	WRPS
Y230	Y230	105KW Annex	N/A	105KW Annex	CHPRC
Y234	Y234, X234	105KW	N/A	KW Fuel Storage Basin	CHPRC
Y236	Y236, X236	105KW	N/A	KW Fuel Storage Basin	CHPRC
None	None	296-S-23	438	219-S Sample Gallery	WRPS
None	None	EP-325-01-S	361	325 Radiochemical Processing Laboratory	PNNL

Table 2. ABCASH and ERS Sample Location Codes. (4 pages)

ABCASH Location Code	ERS EDP Codes	Stack Identification Number	AOP EU ID	Facility	Operations Contractor
None	None	EP-331-01-V	412	331 Life Sciences Laboratory	PNNL
None	None	EP-331-09-S	1370	331 Life Sciences Laboratory	PNNL

ABCASH = Automated Bar Coding of All Samples at Hanford	FFTF = Fast Flux Test Facility
AOP EU ID = Air Operating Permit Emission Unit Identification	MASF = Maintenance and Storage Facility
CHPRC = CH2M HILL Plateau Remediation Company	PNNL = Pacific Northwest National Laboratory
CSB = Canister Storage Building	PUREX = Plutonium Uranium Extraction Plant
EDP = Electronic Data Processing	PTRAEU = Portable Temporary Radioactive Air Emissions Unit
ERS = Environmental Release Summary	WESF = Waste Encapsulation and Storage Facility
ETF = Effluent Treatment Facility	WRPS = Washington River Protection Solutions LLC

Table 3 lists an estimate of the number of samples collected and the type and number of analyses requested for the calendar year.

Table 3. Estimated Sample Collection and Analyses, Calendar Year 2019. (3 pages)

Facility	Stack ID	Sampling Frequency	Annual Sample Collection (Typical)	Gross Alpha Gross Beta	<sup>129</sup> I	Gamma Energy Analysis	<sup>90</sup> Sr	Isotopic Plutonium	<sup>241</sup> Pu	<sup>241</sup> Am
105KW Basin	105KW	Continuous	26	26	0	4	4	4	4	4
	105KW	Continuous	16	16	0	4	4	4	4	4
	105KW Annex	Continuous	26	26	0	4	4	4	4	4
PUREX	291-A-1	Continuous	26	26	22	4	4	4	0	4
B Plant	296-B-1	Continuous	26	26	0	4	4	4	0	4
WESF	296-B-10	Continuous	26	26	0	4	4	4	0	4
East Tank Farms	296-A-18	1 week sample/4 times per year	12	12	0	0	0	0	0	0
	296-A-19	Continuous	1	1	0	1	1	1	0	1
	296-A-20	1 week sample/4 times per year	12	12	0	0	0	0	0	0
	296-A-28	1 week sample/4 times per year	12	12	0	0	0	0	0	0
	296-A-30	1 week sample/4 times per year	12	12	0	0	0	0	0	0
	296-A-41	1 week sample/4 times per year	12	12	0	0	0	0	0	0
	296-A-42	Continuous	26	26	0	2	2	2	0	2
	296-A-43	1 week sample/4 times per year	26	26	0	0	0	0	0	0
	296-A-44	Continuous	12	12	0	2	2	2	2	2
	296-A-45	Continuous	12	12	0	2	2	2	2	2
	296-A-46	Continuous	12	12	0	2	2	2	2	2
	296-A-47	Continuous	12	12	0	2	2	2	2	2

Table 3. Estimated Sample Collection and Analyses, Calendar Year 2019. (3 pages)

Facility	Stack ID	Sampling Frequency	Annual Sample Collection (Typical)	Gross Alpha Gross Beta	<sup>129</sup> I	Gamma Energy Analysis	<sup>90</sup> Sr	Isotopic Plutonium	<sup>241</sup> Pu	<sup>241</sup> Am
East Tank Farms	296-A-48	Continuous	12	12	0	2	2	2	2	2
	296-A-49	Continuous	12	12	0	2	2	2	2	2
	296-P-49	Continuous	8	8	0	2	2	2	0	2
	296-P-50	Continuous	8	8	0	2	2	2	0	2
	296-P-71	Continuous	4	4	0	1	1	1	0	1
	296-P-75	Continuous	4	4	0	1	1	1	0	1
242A Evaporator	296-A-21A	1 week sample/4 times per year	16	16	0	0	0	0	0	0
	296-A-22	One week sample per quarter, continuous (during waste processing)	16	16	0	2	2	2	0	2
CSB	296-H-212	Continuous	12	12	0	4	4	4	4	4
ETF	296-E-1	4 week sample/year	4	4	0	0	0	0	0	0
222-S Laboratory	296-S-16	1 week sample/4 times per year	26	26	0	0	0	0	0	0
	296-S-21	Continuous	26	26	0	2	2	2	0	2
	296-S-23	1 every 2 years	HEPA filter analysis.							
	219-S PTRAEU	Annual	2	2	0	0	0	0	0	0
S Plant	291-S-1	4 week sample/year	1	1	0	0	0	0	0	0
T Plant	291-T-1	Continuous	26	26	0	4	4	4	0	4
	296-T-7	Continuous (when operating)	12	12	0	4	4	4	0	4

Table 3. Estimated Sample Collection and Analyses, Calendar Year 2019. (3 pages)

Facility	Stack ID	Sampling Frequency	Annual Sample Collection (Typical)	Gross Alpha Gross Beta	<sup>129</sup> I	Gamma Energy Analysis	<sup>90</sup> Sr	Isotopic Plutonium	<sup>241</sup> Pu	<sup>241</sup> Am
West Tank Farms	296-P-22	1 week sample/4 times per year	4	4	0	0	0	0	0	0
	296-P-23	1 week sample/4 times per year	4	4	0	0	0	0	0	0
	296-P-45	Continuous	20	20	0	2	2	2	0	2
	296-S-25	1 week sample/4 times per year	4	4	0	0	0	0	0	0
	296-S-26	Continuous	6	6	0	1	1	1	0	1
	296-S-27	Continuous	6	6	0	1	1	1	0	1
WRAP	296-W-4	Continuous	26	26	0	4	4	4	4	4
Fast Flux FFTF	437-MN&ST	One sample per year	1	1	0	0	0	0	0	0
	437-1-61	One sample per year	1	1	0	0	0	0	0	0
324 Building	EP-324-01-S	Continuous	12	12	0	4	4	4	0	4
Totals			580	580	22	73	73	73	32	73

CSB = Canister Storage Building  
 ETF = Effluent Treatment Facility  
 FFTF = Fast Flux Test Facility  
 PUREX = Plutonium Uranium Extraction Plant

PTRAEU = Portable Temporary Radioactive Air Emissions Unit  
 WESF = Waste Encapsulation and Storage Facility  
 WRAP = Waste Receiving and Processing Facility

Table 4 presents the minimum analytical requirements for various radiological stack samples and the originating source document for those requirements. Stack sample analytical requirements are derived from stack specific radioactive air emission licenses, the Hanford Site Radioactive Air Emissions License, and *Comprehensive Environmental Response Compensation and Liability Act* (CERCLA) air monitoring plans. As a best management practice adopted by MSA, most samples are analyzed for a common suite of isotopes. Gross alpha and gross beta analyses are also performed for all stack samples to ensure that the stack emission dose estimate includes contributions from any radionuclides that are not specifically evaluated.

Table 4. Radiological Stack Sample Analyses. (2 pages)

Stack ID	Facility	Individual Sample Analyses	Required Isotopic Analyses	Additional Analytical Requirements	Source Document
105KW <sup>a</sup>	KW Fuel Storage Basin	Alpha, Beta	137Cs, 90Sr, 239/240Pu, Am241	Sampled monthly and characterized quarterly	DOE/RL-2010-63, Rev.1
291-A-1	PUREX	Alpha, Beta	129I, 239/240Pu, 241Am	Sampled continuously and analyzed every two weeks for gross alpha/beta, composited quarterly and analyzed isotopically	AIR 17-1006
296-A-18	241-AY-101 Annulus	Alpha, Beta	None	None	RAEL-FF-01
296-A-19	241-AY-102 Annulus	Alpha, Beta	Cs137	None	RAEL-FF-01
296-A-20	241-AZ Tank Farm Annuli	Alpha, Beta	None	None	RAEL-FF-01
296-A-21A	242A Building Vent	Alpha, Beta	None	None	RAEL-FF-01
296-A-22	242A Evaporator Vessel Vent	Alpha, Beta	137Cs, 90Sr, 239/240 Pu, 238Pu, 241Am	None	RAEL-FF-01
296-A-28	241-AW Tank Farm Annuli	Alpha, Beta	None	None	RAEL-FF-01
296-A-30	241-AN Tank Farm Annuli	Alpha, Beta	None	None	RAEL-FF-01
296-A-41	241-AP Tank Farm Annuli	Alpha, Beta	None	None	RAEL-FF-01
296-A-42	241-AY/AZ Tank Farm	Alpha, Beta	137Cs, 90Sr, 241Am	None	RAEL-FF-01
296-A-43	702AZ Building Exhauster	Alpha, Beta	None	None	RAEL-FF-01
296-A-44	241-AN Tank Farm	Alpha, Beta	90Sr, 90Y, 137Cs, 154Eu, 238Pu, 239/240Pu, 241Am, 241Pu	None	RAEL-FF-01
296-A-45	241-AN Tank Farm	Alpha, Beta	90Sr, 90Y, 137Cs, 154Eu, 238Pu, 239/240Pu, 241Am, 241Pu	None	RAEL-FF-01
296-A-46	241-AW Tank Farm	Alpha, Beta	90Sr, 90Y, 137Cs, 154Eu, 238Pu, 239/240Pu, 241Am, 241Pu	None	RAEL-FF-01
296-A-47	241-AW Tank Farm	Alpha, Beta	90Sr, 90Y, 137Cs, 154Eu, 238Pu, 239/240Pu, 241Am, 241Pu	None	RAEL-FF-01
296-A-48	241-AP Tank Farm	Alpha, Beta	90Sr, 90Y, 137Cs, 154Eu, 238Pu, 239/240Pu, 241Am, 241Pu	None	RAEL-FF-01
296-A-49	241-AP Tank Farm	Alpha, Beta	90Sr, 90Y, 137Cs, 154Eu, 238Pu, 239/240Pu, 241Am, 241Pu	None	RAEL-FF-01
296-B-1	B Plant	Alpha, Beta	137Cs, 90Sr	Samples analyzed every two weeks for gross alpha/beta, composited quarterly and analyzed isotopically	RAEL-FF-01
296-B-10	WESF	Alpha, Beta	137Cs, 90Sr	Samples analyzed every two weeks for gross alpha/beta, composited quarterly and analyzed isotopically	RAEL-FF-01

Table 4. Radiological Stack Sample Analyses. (2 pages)

Stack ID	Facility	Individual Sample Analyses	Required Isotopic Analyses	Additional Analytical Requirements	Source Document
296-E-1	Effluent Treatment Facility	Alpha, Beta	None	None	RAEL-FF-01
FFTF-CB-EX	FFTF	None	Emissions estimated by calculation	Emissions will be estimated annually using the Radionuclide Air Emissions Report in lieu of monitoring	RAEL-FF-01
437-MN&ST	FFTF MASF	Alpha, Beta	None	None	RAEL-FF-01
437-1-61	FFTF MASF	Alpha, Beta	None	None	RAEL-FF-01
296-H-212	CSB	Alpha, Beta	137Cs	Record sample is replaced monthly and analyzed quarterly using a gamma spectrometer calibrated to Cs-137	RAEL-FF-01
296-P-22	241-SY Tank Farm Annuli	Alpha, Beta	None	None	RAEL-FF-01
296-P-23	241-SY Tank Farm	Alpha, Beta	None	None	RAEL-FF-01
296-P-45	241-T Tank Exhauster	Alpha, Beta	90Sr, 137Cs, 239/240Pu	None	RAEL-FF-01
296-P-49	241-AX Tanks Exhauster	Alpha, Beta	90Sr, 137Cs, 239/240Pu, 241Am	None	RAEL-FF-01
296-P-50	241-AX Tanks Exhauster	Alpha, Beta	90Sr, 137Cs, 239/240Pu, 241Am	None	RAEL-FF-01
296-P-71	241-A Tanks Exhauster	Alpha, Beta	90Sr, 90Y, 137Cs, 154Eu, 238Pu, 239/240Pu, 241Am, 241Pu	None	TOC-ENV-NOC-5282 <sup>b</sup>
296-P-75	241-A Tanks Exhauster	Alpha, Beta	90Sr, 90Y, 137Cs, 154Eu, 238Pu, 239/240Pu, 241Am, 241Pu	None	TOC-ENV-NOC-5282 <sup>b</sup>
291-S-1	S Plant	Alpha, Beta	None	None	RAEL-FF-01
296-S-16	219-S	Alpha, Beta	None	None	RAEL-FF-01
296-S-21	222-S	Alpha, Beta	90Sr, 137Cs, 239/240Pu, 241Am	None	RAEL-FF-01
296-S-23	219-S	Alpha, Beta	None	None	RAEL-FF-01
296-S-25	241-SY Tank Farm	Alpha, Beta	None	None	RAEL-FF-01
296-S-26	241-SY Tank Farm	Alpha, Beta	90Sr, 137Cs, 154Eu, 238Pu, 239/240Pu, 241Am	None	RAEL-FF-01
296-S-27	241-SY Tank Farm	Alpha, Beta	90Sr, 137Cs, 154Eu, 238Pu, 239/240Pu, 241Am	None	RAEL-FF-01
291-T-1	T Plant	Alpha, Beta	90Sr, 137Cs, 238Pu, 239/240Pu, 241Am	Samples analyzed every two weeks for gross alpha/beta, composited quarterly and analyzed isotopically	RAEL-FF-01
296-T-7	2706T	Alpha, Beta	90Sr, 137Cs, 238Pu, 239/240Pu, 241Am	Samples collected monthly when ventilation system operated, samples composited and analyzed quarterly	RAEL-FF-01
296-W-4	WRAP	Alpha, Beta	90Sr, 137Cs, 238Pu, 239/240Pu, 241Am	Collect samples biweekly at a minimum	RAEL-FF-01
EP-324-01-S <sup>a</sup>	324 Building	Alpha, Beta	137Cs, 90Sr	None	DOE/RL-2004-77 Rev3

CSB = Canister Storage Building  
 PTRAEU = Portable Temporary Radioactive Air  
 ETF = Emissions Unit  
 PUREX = Effluent Treatment Facility  
 Plutonium Uranium Extraction Plant

MASF = Maintenance and Storage Facility  
 WRAP = Waste Receiving and Processing Facility  
 FFTF = Fast Flux Test Facility  
 WESF = Waste Encapsulation Storage Facility

<sup>a</sup>CERCLA requirements applicable.

<sup>b</sup>Radioactive License Notice of Construction application with no final approval issued as of this publication.

#### 4.0 REFERENCES

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