Table A1.1
Summary Statistics for Surface Soil/Sediment - Exposure Units

Analyte	Unit	IAEU					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[a]
Americium-241	pCi/g	1059	-0.048	51.20	0.50	2.43	0.83
Plutonium-239/240	pCi/g	1257	-0.046	183.00	1.19	6.49	1.98
Uranium-233/234	pCi/g	1223	0.082	34.50	1.24	1.57	1.44
Uranium-235	pCi/g	1223	-0.138	2.91	0.08	0.15	0.10
Uranium-238	pCi/g	1223	0.132	59.00	1.45	3.00	1.82

Analyte	Unit	UWOEU					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[a]
Americium-241	pCi/g	189	-0.029	0.80	0.04	0.07	0.06
Plutonium-239/240	pCi/g	214	-0.013	17.06	0.23	1.23	0.60
Uranium-233/234	pCi/g	192	0.191	47.48	1.47	3.53	2.58
Uranium-235	pCi/g	192	-0.023	2.24	0.09	0.23	0.16
Uranium-238	pCi/g	192	0.283	209.28	3.23	16.34	8.37

Analyte	Unit	WBEU					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[a]
Americium-241	pCi/g	290	0.000	15.60	1.81	2.42	2.43
Plutonium-239/240	pCi/g	319	-0.003	49.00	9.19	12.03	12.12
Uranium-233/234	pCi/g	328	0.119	7.96	1.03	0.86	1.24
Uranium-235	pCi/g	327	-0.144	0.69	0.08	0.10	0.10
Uranium-238	pCi/g	328	0.140	32.40	1.36	3.20	2.13

[a] EPC is the 95UCL concentration.

Table A1.2
Summary Statistics for Subsurface Soil/Sediment - Exposure Units

Analyte	Unit	IAEU					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[a]
Americium-241	pCi/g	941	-0.073	75.50	0.79	4.01	1.36
Plutonium-239/240	pCi/g	969	-0.095	527.00	2.25	19.26	4.95
Uranium-233/234	pCi/g	861	0.045	28.90	1.36	2.35	1.71
Uranium-235	pCi/g	862	-0.129	4.88	0.10	0.24	0.14
Uranium-238	pCi/g	862	-0.075	174.00	1.85	9.24	3.22

Analyte	Unit	UWOEU					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[a]
Americium-241	pCi/g	237	-0.017	2.97	0.03	0.20	0.09
Plutonium-239/240	pCi/g	244	-0.007	5.16	0.08	0.41	0.20
Uranium-233/234	pCi/g	241	0.048	288.29	6.58	28.81	18.17
Uranium-235	pCi/g	241	0.000	37.68	0.72	3.93	1.82
Uranium-238	pCi/g	241	0.238	1160.00	24.79	136.98	79.89

Analyte	Unit	WBEU					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[a]
Americium-241	pCi/g	396	-6.160	410.00	2.92	23.78	8.13
Plutonium-239/240	pCi/g	398	-0.018	2450.00	18.33	147.99	50.67
Uranium-233/234	pCi/g	267	0.053	14.00	1.04	1.68	1.49
Uranium-235	pCi/g	267	-0.114	1.70	0.06	0.13	0.09
Uranium-238	pCi/g	267	0.028	63.99	1.09	3.94	2.14

[a] EPC is the 95UCL concentration.

Table A1.3
Summary Statistics for Surface Soil/Sediment - 5-Acre Areas

Analyte	Unit	Former Building 776 Area[a]					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[b]
Americium-241	pCi/g	39	-0.001	51.20	3.81	9.33	10.32
Plutonium-239/240	pCi/g	39	-0.003	183.00	13.53	31.08	35.22
Uranium-233/234	pCi/g	43	0.379	3.30	0.93	0.48	1.05
Uranium-235	pCi/g	43	-0.013	0.24	0.06	0.05	0.10
Uranium-238	pCi/g	43	0.463	3.50	0.90	0.47	1.02

Analyte	Unit	Historical SEP Area					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[b]
Americium-241	pCi/g	31	0.003	16.43	1.53	3.11	2.62
Plutonium-239/240	pCi/g	30	0.004	23.00	4.72	6.20	8.32
Uranium-233/234	pCi/g	42	0.350	19.70	2.84	3.99	8.97
Uranium-235	pCi/g	42	-0.018	2.91	0.23	0.48	0.55
Uranium-238	pCi/g	42	0.300	8.00	1.50	1.54	2.54

Analyte	Unit	Historical East Trenches Area					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[b]
Americium-241	pCi/g	17	0.473	6.20	3.16	1.96	4.28
Plutonium-239/240	pCi/g	18	2.500	38.20	19.02	11.79	23.85
Uranium-233/234	pCi/g	27	0.301	3.42	1.01	0.67	1.23
Uranium-235	pCi/g	27	-0.144	0.22	0.07	0.09	0.10
Uranium-238	pCi/g	27	0.157	2.24	0.92	0.49	1.10

Analyte	Unit	Historical West Ash Pits Area					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[b]
Americium-241	pCi/g	10	-0.013	0.05	0.02	0.02	0.03
Plutonium-239/240	pCi/g	10	0.005	0.10	0.05	0.03	0.06
Uranium-233/234	pCi/g	8	0.552	47.48	7.55	16.15	47.48
Uranium-235	pCi/g	8	0.000	2.24	0.37	0.76	2.24
Uranium-238	pCi/g	8	0.495	209.28	28.66	2.85	209.28

Analyte	Unit	Historical East Ash Pits Area					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[b]
Americium-241	pCi/g	5	0.008	0.03	0.01	0.01	0.03
Plutonium-239/240	pCi/g	5	0.024	0.14	0.05	0.05	0.14
Uranium-233/234	pCi/g	5	0.610	2.20	1.48	0.57	2.02
Uranium-235	pCi/g	5	0.041	0.13	0.08	0.04	0.12
Uranium-238	pCi/g	5	0.760	2.60	1.94	0.70	2.60

[a] The maximum surface soil sample was collected from beneath the former Building 776 slab.

[b] EPC is the 95UCL concentration or the MDL if 95UCL is greater than the MDC.

Table A1.4
Summary Statistics for Subsurface Soil/Sediment - 5-Acre Areas

Analyte	Unit	Former Building 776 Area					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[a]
Americium-241	pCi/g	27	-0.061	1.17	0.15	0.32	0.42
Plutonium-239/240	pCi/g	27	-0.024	10.20	0.79	2.25	2.68
Uranium-233/234	pCi/g	23	0.279	1.66	0.85	0.31	0.96
Uranium-235	pCi/g	23	0.017	0.26	0.11	0.07	0.13
Uranium-238	pCi/g	23	0.338	1.35	0.81	0.26	0.91

Analyte	Unit	Historical SEP Area[b]					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[a]
Americium-241	pCi/g	66	-0.003	75.50	3.78	10.42	9.37
Plutonium-239/240	pCi/g	71	-0.004	527.00	14.08	64.61	47.50
Uranium-233/234	pCi/g	62	0.423	21.00	2.73	3.62	4.73
Uranium-235	pCi/g	62	-0.129	1.64	0.19	0.31	0.36
Uranium-238	pCi/g	62	0.513	11.00	1.80	1.86	2.83

Analyte	Unit	Historical East Trenches Area[b]					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[a]
Americium-241	pCi/g	47	-0.018	410.00	16.51	67.71	59.56
Plutonium-239/240	pCi/g	49	-0.018	2450.00	103.73	413.02	360.92
Uranium-233/234	pCi/g	38	0.060	14.00	2.64	3.60	4.52
Uranium-235	pCi/g	38	-0.105	1.70	0.13	0.29	0.33
Uranium-238	pCi/g	38	0.085	3.20	0.92	0.63	1.36

Analyte	Unit	Historical West Ash Pits Area					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[a]
Americium-241	pCi/g	33	0.001	2.97	0.14	0.52	1.04
Plutonium-239/240	pCi/g	39	-0.004	5.16	0.26	0.84	0.85
Uranium-233/234	pCi/g	39	0.592	288.29	29.65	65.22	133.56
Uranium-235	pCi/g	39	0.010	36.12	3.03	7.34	14.73
Uranium-238	pCi/g	39	0.660	1130.00	114.19	271.17	546.23

Analyte	Unit	Historical East Ash Pits Area					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[a]
Americium-241	pCi/g	22	0.001	0.08	0.01	0.02	0.02
Plutonium-239/240	pCi/g	25	-0.002	0.94	0.08	0.24	0.29
Uranium-233/234	pCi/g	30	0.550	105.70	6.08	19.74	41.94
Uranium-235	pCi/g	30	0.016	37.68	1.37	6.86	13.83
Uranium-238	pCi/g	30	0.779	1160.00	41.81	211.32	425.70

[a] EPC is the 95UCL concentration.

[b] Maximum americium-241/plutonium-239/240 concentration is located greater than or equal to 3 ft below the ground surface.

Table A1.5
RESRAD Parameters - WRW Exposure Scenario

Parameter	Unit	Surface Soil WRW Task 3[a]	Surface Soil WRW Dose Evaluation	Subsurface Soil WRW Dose Evaluation	Reason for Deviation From Task 3
Pathways					
External gamma		active	active	active	
Inhalation		active	active	active	
Plant ingestion		suppressed	suppressed	suppressed	
Meat ingestion		suppressed	suppressed	suppressed	
Milk ingestion		suppressed	suppressed	suppressed	
Aquatic foods		suppressed	suppressed	suppressed	
Drinking water		suppressed	suppressed	suppressed	
Soil ingestion		active	active	active	
Radon		suppressed	suppressed	suppressed	
Initial Principal Radionuclide					
Activity in Contaminated Zone					
Americium-241	pCi/g	100	EPC for CRA EU	EPC for CRA EU	Forward Dose Assessment
Plutonium-239	pCi/g	100	EPC for CRA EU	EPC for CRA EU	Forward Dose Assessment
Uranium-234	pCi/g	100	EPC for CRA EU	EPC for CRA EU	Forward Dose Assessment
Uranium-235	pCi/g	100	EPC for CRA EU	EPC for CRA EU	Forward Dose Assessment
Uranium-238	pCi/g	100	EPC for CRA EU	EPC for CRA EU	Forward Dose Assessment
Basic Radiation Dose Limit	mrem/yr	25	25	25	
Time for calculations	yr	1	1	1	
Time for calculations	yr	3	3	3	
Time for calculations	yr	10	10	10	
Time for calculations	yr	30	30	30	
Time for calculations	yr	100	100	100	
Time for calculations	yr	300	300	300	
Time for calculations	yr	1,000	1,000	1,000	
Time for calculations	yr				Radiation dose will also be calculated at year of maximum dose for dose assessment tables
Occupancy, Inhalation and External Gamma					
Inhalation Rate[b]	m^3/yr	14000	14000	11388	
Mass Loading for Inhalation[b]	g/m^3	0.000067	0.000067	0.000067	
Exposure Duration	yr	30	30	30	
Indoor Dust Filtration Factor		0.7	0.7	1	
External Gamma Shielding Factor		0.4	0.4	1	
Indoor Time Fraction		0.114	0.114	0	Exposure to subsurface soils only occurs outside
Outdoor Time Fraction		0.114	0.114	0.018	Limited exposure to subsurface soils over an 8-hour period
Shape Factor For External Gamma		1	1	1	
Area of Contaminated Zone (americium-241 and plutonium-239)	m^2	1400000	Entire EU	Entire EU	Entire EU assessed since WRW routinely traverses large areas
Area of Contaminated Zone (uranium-234, uranium-235, and uranium-238)	m^2	20000	Entire EU	Entire EU	Entire EU assessed since WRW routinely traverses large areas
Thickness of Contaminated Zone (americium-241 and plutonium-239)	m	0.15	0.15	0 to 2.44	Direct exposure to subsurface soils
Thickness of Contaminated Zone (uranium-234, uranium-235, and uranium-238)	m	0.5	0.5	0 to 2.44	Direct exposure to subsurface soils
Length Parallel to Aquifer Flow	m	200	200	200	
Cover and Contaminated Zone Hydrological Data					
Cover Depth (americium-241 and plutonium-239)	m	no cover	no cover	no cover	
Cover Depth (uranium-234, uranium-235, and uranium-238)	m	no cover	no cover	no cover	
Density Cover Material	g/cm^3	no cover	no cover	no cover	
Cover Erosion Rate	m/yr	no cover	no cover	no cover	
Density of Contaminated Zone	g/cm^3	1.7	1.7	1.7	
Contaminated Zone Erosion Rate	m/yr	0.0000749	0.0000749	0.0000749	
Contaminated Zone Total Porosity		0.3	0.3	0.3	
Contaminated Zone Field Capacity		0.1	0.1	0.1	
Contaminated Zone Hydraulic Conductivity	m/yr	44.5	44.5	44.5	
Contaminated Zone b Parameter		10.4	10.4	10.4	
Humidity in Air	g/m^3	not used	not used	not used	
Evapotranspiration Coefficient		0.253	0.253	0.253	
Average Annual Wind Speed	m/s	4.2	4.2	4.2	
Precipitation	m/yr	0.381	0.381	0.381	
Irrigation	m/yr	1	1	1	
Irrigation Mode		overhead	overhead	overhead	
Runoff Coefficient		0.004	0.004	0.004	
Watershed Area	m^2	8280000	8280000	8280000	
Accuracy For Water/Soil Computation		0.001	0.001	0.001	
Uncontaminated, Unsaturated Zone Parameters					

Table A1.5
RESRAD Parameters - WRW Exposure Scenario

Parameter	Unit	Surface Soil WRW Task 3[a]	Surface Soil WRW Dose Evaluation	Subsurface Soil WRW Dose Evaluation	Reason for Deviation From Task 3
Number of Unsaturated Zone Strata		1	1	0	Contaminated zone is assumed to be on saturated zone for subsurface soils
Thickness	m	3	3	not used	Contaminated zone is assumed to be on saturated zone for subsurface soils
Density	g/cm^3	1.7	1.7	not used	Contaminated zone is assumed to be on saturated zone for subsurface soils
TotalPorosity		0.3	0.3	not used	Contaminated zone is assumed to be on saturated zone for subsurface soils
Effective Porosity		0.1	0.1	not used	Contaminated zone is assumed to be on saturated zone for subsurface soils
Field Capacity		0.1	0.1	not used	Contaminated zone is assumed to be on saturated zone for subsurface soils
Hydraulic Conductivity	m/yr	44.5	44.5	not used	Contaminated zone is assumed to be on saturated zone for subsurface soils
b Parameter		10.4	10.4	not used	Contaminated zone is assumed to be on saturated zone for subsurface soils
Radionuclide Transport Factors					
Distribution coefficient contaminated zone	cm^3/g	Am=1800 Pu=2300 U=50	Am=1800 Pu=2300 U=170	Am=1800 Pu=2300 U=170	Uranium Kd consistent with Honeyman and Santschi (1997)[c]
Distribution coefficient unsaturated zone	cm^3/g	Am=1800 Pu=2300 U=50	Am=1800 Pu=2300 U=170	Am=1800 Pu=2300 U=170	Uranium Kd consistent with Honeyman and Santschi (1997)[c]
Distribution coefficient saturated zone	cm^3/g	Am=1800 Pu=2300 U=50	Am=1800 Pu=2300 U=170	Am=1800 Pu=2300 U=170	Uranium Kd consistent with Honeyman and Santschi (1997)[c]
Time since placement of materials	year	0	0	0	
Solubility Limit	mol/l	0	0	0	
Leach Rate	year-1	0	0	0	
Saturated Zone Hydrological Data					
Density of saturated zone	g/cm^3	1.7	1.7	1.7	
Saturated zone total porosity		0.3	0.3	0.3	
Saturated zone effective porosity		0.1	0.1	0.1	
Saturated zone field capacity		0.1	0.1	0.1	
Saturated zone hydraulic conductivity	m/yr	44.5	44.5	44.5	
Saturated zone hydraulic gradient		0.15	0.15	0.15	
Saturated zone b parameter		10.4	10.4	10.4	
Water table drop rate		0	0	0	
Well pump intake depth (below water table)	m	10	10	10	
Model: nondispersion (ND) or mass-balance (MB)		ND	ND	ND	
Well pumping rate	m^3/yr	250	250	250	
Ingestion Pathway, Dietary Data					
Fruit, Vegetable and Grain Consumption	kg/yr	not used	not used	not used	
Leafy Vegetable Consumption	kg/yr	not used	not used	not used	
Milk consumption	l/y	not used	not used	not used	
Meat and poultry consumption	kg/yr	not used	not used	not used	
Fish consumption	kg/yr	not used	not used	not used	
Other seafood consumption	kg/yr	not used	not used	not used	
Soil Ingestion[b]	g/yr	109.5	109.5	109.5	
Drinking water intake	l/yr	not used	not used	not used	
Contaminated fraction, drinking water		not used	not used	not used	
Contaminated fraction, household water		not used	not used	not used	
Contaminated fraction, livestock water		not used	not used	not used	
Contaminated fraction, irrigation water		not used	not used	not used	
Contaminated fraction, aquatic food		not used	not used	not used	
Contaminated fraction, plant food		not used	not used	not used	
Contaminated fraction, meat		not used	not used	not used	
Contaminated fraction, milk		not used	not used	not used	
Ingestion Pathway, Nondietary Data					
Livestock fodder intake for meat	kg/day	not used	not used	not used	
Livestock fodder intake for milk	kg/day	not used	not used	not used	
Livestock water intake for meat	l/d	not used	not used	not used	
Livestock water intake for milk	l/d	not used	not used	not used	
Livestock intake for soil	kg/day	not used	not used	not used	
Mass Loading For Foliar Deposition	g/m^3	not used	not used	not used	
Depth of Soil Mixing Layer	m	0.15	0.15	0.15	
Depth of Roots	m	0.15	not used	not used	Parameter unavailable for use since food ingestion pathway is incomplete

Table A1.5
RESRAD Parameters - WRW Exposure Scenario

Parameter	Unit	Surface Soil WRW Task 3[a]	Surface Soil WRW Dose Evaluation	Subsurface Soil WRW Dose Evaluation	Reason for Deviation From Task 3
Groundwater Fractional Usage, drinking water		not used	not used	not used	
Groundwater Fractional Usage, household water		not used	not used	not used	
Groundwater Fractional Usage, livestock water		not used	not used	not used	
Groundwater Fractional Usage, irrigation water		not used	not used	not used	
Plant Factors					
Soil-to-Plant Transfer Factor (Americium)		not used	not used	not used	
Soil-to-Plant Transfer Factor (Plutonium)		not used	not used	not used	
Soil-to-Plant Transfer Factor (Uranium)		not used	not used	not used	
Wet weight crop yield, Non-leafy	kg/m^2	not used	not used	not used	
Length of growing season, non-leafy	yr	not used	not used	not used	
Translocation factor, nonleafy		not used	not used	not used	
Weathering removal constant	1/yr	not used	not used	not used	
Wet foliar interception fraction, non-leafy		not used	not used	not used	
Dry foliar interception fraction, non-leafy		not used	not used	not used	
Wet weight crop yield, leafy	kg/m^2	not used	not used	not used	
Length of growing season, leafy	yr	not used	not used	not used	
Translocation factor, leafy		not used	not used	not used	
Wet foliar interception fraction, leafy		not used	not used	not used	
Dry foliar interception fraction, leafy		not used	not used	not used	
Wet weight crop yield, fodder	kg/m^2	not used	not used	not used	
Length of growing season, fodder	yr	not used	not used	not used	
Translocation factor, fodder		not used	not used	not used	
Weathering removal Constant, fodder	1/yr	not used	not used	not used	
Wet Foliar interception fraction, fodder		not used	not used	not used	
Dry foliar interception Fraction, Fodder		not used	not used	not used	
Storage Times Before Use Data					
Fruits, non-leafy vegetables and grain	days	not used	not used	not used	
Leafy vegetables	days	not used	not used	not used	
Milk	days	not used	not used	not used	
Meat	days	not used	not used	not used	
Fish	days	not used	not used	not used	
Crustacea and mollusks	days	not used	not used	not used	
Well water	days	not used	not used	not used	
Surface water	days	not used	not used	not used	
Livestock fodder	days	not used	not used	not used	
Dose Conversion Factors		ICRP 72	ICRP 72	ICRP 72	
Ingestion					
Americium-241	(mrem/pCi)	0.00074	0.00074	0.00074	
Plutonium-239	(mrem/pCi)	0.00093	0.00093	0.00093	
Uranium-234	(mrem/pCi)	0.00018	0.00018	0.00018	
Uranium-235	(mrem/pCi)	0.00017	0.00017	0.00017	
Uranium-238	(mrem/pCi)	0.00017	0.00017	0.00017	
Inhalation					
Americium-241	(mrem/pCi)	0.16	0.16	0.16	
Plutonium-239	(mrem/pCi)	0.19	0.19	0.19	
Uranium-234	(mrem/pCi)	0.013	0.013	0.013	
Uranium-235	(mrem/pCi)	0.011	0.011	0.011	
Uranium-238	(mrem/pCi)	0.0106	0.0106	0.0106	

[a] The Task 3 Report evaluated surface soil exposure only.

[b] These parameters were also evaluated probabilistically in the Task 3 Report.

[c] Range of Kd values is 30 to 170 cm^3/g and 170 cm^3/g was chosen to maximize radiation dose.

Table A1.6
RESRAD Parameters - Adult Resident Exposure Scenario

Parameter	Unit	Surface Soil Resident (Adult) Task 3[a]	Surface Soil Resident (Adult) Dose Evaluation	Subsurface Soil Resident (Adult) Dose Evaluation	Reason for Deviation From Task 3
Pathways					
External gamma		active	active	active	
Inhalation		active	active	active	
Plant ingestion		active	active	active	
Meat ingestion		suppressed	suppressed	suppressed	
Milk ingestion		suppressed	suppressed	suppressed	
Aquatic foods		suppressed	suppressed	suppressed	
Drinking water		suppressed	suppressed	suppressed	
Soil ingestion		active	active	active	
Radon		suppressed	suppressed	suppressed	
Initial Principal Radionuclide					
Activity in Contaminated Zone					
Americium-241	pCi/g	100	5-acre EPC	5-acre EPC	Forward Dose Assessment
Plutonium-239	pCi/g	100	5-acre EPC	5-acre EPC	Forward Dose Assessment
Uranium-234	pCi/g	100	5-acre EPC	5-acre EPC	Forward Dose Assessment
Uranium-235	pCi/g	100	5-acre EPC	5-acre EPC	Forward Dose Assessment
Uranium-238	pCi/g	100	5-acre EPC	5-acre EPC	Forward Dose Assessment
Basic Radiation Dose Limit	mrem/yr	25	25	25	
Time for calculations	yr	1	1	1	
Time for calculations	yr	3	3	3	
Time for calculations	yr	10	10	10	
Time for calculations	yr	30	30	30	
Time for calculations	yr	100	100	100	
Time for calculations	yr	300	300	300	
Time for calculations	yr	1,000	1,000	1,000	
Time for calculations	yr				Radiation dose will also be calculated at year of maximum dose for dose assessment tables
Occupancy, Inhalation and External Gamma					
Inhalation Rate[b]	m^3/yr	8400	8400	8400	
Mass Loading for Inhalation[b]	g/m^3	0.000067	0.000067	0.000067	
Exposure Duration	yr	30	30	30	
Indoor Dust Filtration Factor		0.7	0.7	0.7	
External Gamma Shielding Factor		0.4	0.4	0.4	
Indoor Time Fraction		0.82	0.82	0.047	Limited exposure to subsurface soils over a 24-hour period
Outdoor Time Fraction		0.14	0.14	0.008	Limited exposure to subsurface soils over a 24-hour period
Shape Factor For External Gamma		1	1	1	
Area of Contaminated Zone (americium-241 and plutonium-239)	m^2	1400000	20000	20000	5-acre area modeled for consistency with uranium
Area of Contaminated Zone (uranium-234, uranium-235, and uranium-238)	m^2	20000	20000	20000	
Thickness of Contaminated Zone (americium-241 and plutonium-239)	m	0.15	0.15	0 to 2.44	Direct exposure to subsurface soils
Thickness of Contaminated Zone (uranium-234, uranium-235, and uranium-238)	m	0.5	0.5	0 to 2.44	Direct exposure to subsurface soils
Length Parallel to Aquifer Flow	m	200	200	200	
Cover and Contaminated Zone Hydrological Data					
Cover Depth (americium-241 and plutonium-239)	m	no cover	no cover	no cover	
Cover Depth (uranium-234, uranium-235, and uranium-238)	m	no cover	no cover	no cover	
Density Cover Material	g/cm^3	no cover	no cover	no cover	
Cover Erosion Rate	m/yr	no cover	no cover	no cover	
Density of Contaminated Zone	g/cm^3	1.7	1.7	1.7	
Contaminated Zone Erosion Rate	m/yr	0.0000749	0.0000749	0.0000749	
Contaminated Zone Total Porosity		0.3	0.3	0.3	
Contaminated Zone Field Capacity		0.1	0.1	0.1	
Contaminated Zone Hydraulic Conductivity	m/yr	44.5	44.5	44.5	
Contaminated Zone b Parameter		10.4	10.4	10.4	
Humidity in Air	g/m3	not used	not used	not used	
Evapotranspiration Coefficient		0.253	0.253	0.253	
Average Annual Wind Speed	m/s	4.2	4.2	4.2	
Precipitation	m/yr	0.381	0.381	0.381	
Irrigation	m/yr	1	1	1	
Irrigation Mode		overhead	overhead	overhead	
Runoff Coefficient		0.004	0.004	0.004	
Watershed Area	m^2	8280000	8280000	8280000	
Accuracy For Water/Soil Computation		0.001	0.001	0.001	
Uncontaminated, Unsaturated Zone Parameters					

Table A1.6
RESRAD Parameters - Adult Resident Exposure Scenario

Parameter	Unit	Surface Soil Resident (Adult) Task 3[a]	Surface Soil Resident (Adult) Dose Evaluation	Subsurface Soil Resident (Adult) Dose Evaluation	Reason for Deviation From Task 3
Number of unsaturated Zone Strata		1	1	0	Contaminated zone is assumed to be on saturated zone for subsurface soils
Thickness	m	3	3	not used	Contaminated zone is assumed to be on saturated zone for subsurface soils
Density	g/cm^3	1.7	1.7	not used	Contaminated zone is assumed to be on saturated zone for subsurface soils
Total porosity		0.3	0.3	not used	Contaminated zone is assumed to be on saturated zone for subsurface soils
Effective porosity		0.1	0.1	not used	Contaminated zone is assumed to be on saturated zone for subsurface soils
Field capacity		0.1	0.1	not used	Contaminated zone is assumed to be on saturated zone for subsurface soils
Hydraulic Conductivity	m/yr	44.5	44.5	not used	Contaminated zone is assumed to be on saturated zone for subsurface soils
b Parameter		10.4	10.4	not used	Contaminated zone is assumed to be on saturated zone for subsurface soils
Radionuclide Transport Factors					
Distribution coefficient contaminated zone	cm^3/g	Am=1800 Pu=2300 U=50	Am=1800 Pu=2300 U=170	Am=1800 Pu=2300 U=170	Uranium Kd consistent with Honeyman and Santschi (1997)[c]
Distribution coefficient unsaturated zone	cm^3/g	Am=1800 Pu=2300 U=50	Am=1800 Pu=2300 U=170	Am=1800 Pu=2300 U=170	Uranium Kd consistent with Honeyman and Santschi (1997)[c]
Distribution coefficient saturated zone	cm^3/g	Am=1800 Pu=2300 U=50	Am=1800 Pu=2300 U=170	Am=1800 Pu=2300 U=170	Uranium Kd consistent with Honeyman and Santschi (1997)[c]
Time since placement of materials	year	0	0	0	
Solubility Limit	mol/l	0	0	0	
Leach Rate	year-1	0	0	0	
Saturated Zone Hydrological Data					
Density of saturated zone	g/cm^3	1.7	1.7	1.7	
Saturated zone total porosity		0.3	0.3	0.3	
Saturated zone effective porosity		0.1	0.1	0.1	
Saturated zone field capacity		0.1	0.1	0.1	
Saturated zone hydraulic conductivity	m/yr	44.5	44.5	44.5	
Saturated zone hydraulic gradient		0.15	0.15	0.15	
Saturated zone b parameter		10.4	10.4	10.4	
Water table drop rate		0	0	0	
Well pump intake depth (below water table)	m	10	10	10	
Model: nondispersion (ND) or mass-balance (MB)		ND	ND	ND	
Well pumping rate	m^3/yr	250	250	250	
Ingestion Pathway, Dietary Data					
Fruit, Vegetable and Grain Consumption[b]	kg/yr	85	85	85	
Leafy Vegetable Consumption[b]	kg/yr	6.4	6.4	6.4	
Milk consumption	l/yr	not used	not used	not used	
Meat and poultry consumption	kg/yr	not used	not used	not used	
Fish consumption	kg/yr	not used	not used	not used	
Other seafood consumption	kg/yr	not used	not used	not used	
Soil Ingestion[b]	g/yr	36.5	36.5	36.5	
Drinking water intake	l/yr	not used	not used	not used	
Contaminated fraction, drinking water		not used	not used	not used	
Contaminated fraction, household water		not used	not used	not used	
Contaminated fraction, livestock water		not used	not used	not used	
Contaminated fraction, irrigation water		0	0	0	
Contaminated fraction, aquatic food		not used	not used	not used	
Contaminated fraction, plant food		1	1	0.057	Limited exposure to subsurface soils
Contaminated fraction, meat		not used	not used	not used	
Contaminated fraction, milk		not used	not used	not used	
Ingestion Pathway, Nondietary Data					
Livestock fodder intake for meat	kg/day	not used	not used	not used	
Livestock fodder intake for milk	kg/day	not used	not used	not used	
Livestock water intake for meat	l/day	not used	not used	not used	
Livestock water intake for milk	l/day	not used	not used	not used	
Livestock intake for soil	kg/day	not used	not used	not used	
Mass Loading For Foliar Deposition	g/m^3	0.000168	0.000168	0.000168	
Depth of Soil Mixing Layer	m	0.15	0.15	0.15	

Table A1.6
RESRAD Parameters - Adult Resident Exposure Scenario

Parameter	Unit	Surface Soil Resident (Adult) Task 3[a]	Surface Soil Resident (Adult) Dose Evaluation	Subsurface Soil Resident (Adult) Dose Evaluation	Reason for Deviation From Task 3
Depth of Roots	m	0.15	0.15	0.15	
Groundwater Fractional Usage, drinking water		not used	not used	not used	
Groundwater Fractional Usage, household water		not used	not used	not used	
Groundwater Fractional Usage, livestock water		not used	not used	not used	
Groundwater Fractional Usage, irrigation water		not used	0	0	nearby, uncontaminated surface water sources
Plant Factors					
Soil-to-Plant Transfer Factor (Americium)		0.0012	0.0012	0.0012	
Soil-to-Plant Transfer Factor (Plutonium)		0.000058	0.000058	0.000058	
Soil-to-Plant Transfer Factor (Uranium)[b]		0.006	0.006	0.006	
Wet weight crop yield, Non-leafy	kg/m^2	0.7	0.7	0.7	
Length of growing season, non-leafy	yr	0.17	0.17	0.17	
Translocation factor, nonleafy		0.1	0.1	0.1	
Weathering removal constant	1/yr	20	20	20	
Wet foliar interception fraction, non-leafy		0.25	0.25	0.25	
Dry foliar interception fraction, non-leafy		0.25	0.25	0.25	
Wet weight crop yield, leafy	kg/m^2	1.5	1.5	1.5	
Length of growing season, leafy	yr	0.25	0.25	0.25	
Translocation factor, leafy		1	1	1	
Wet foliar interception fraction, leafy		0.25	0.25	0.25	
Dry foliar interception fraction, leafy		0.25	0.25	0.25	
Wet weight crop yield, fodder	kg/m^2	1.1	1.1	1.1	
Length of growing season, fodder	yr	0.08	0.08	0.08	
Translocation factor, fodder		1	1	1	
Weathering removal Constant, fodder	1/yr	20	20	20	
Wet Foliar interception fraction, fodder		0.25	0.25	0.25	
Dry foliar interception Fraction, Fodder		0.25	0.25	0.25	
Storage Times Before Use Data					
Fruits, non-leafy vegetables and grain	days	14	14	14	
Leafy vegetables	days	1	1	1	
Milk	days	not used	not used	not used	
Meat	days	not used	not used	not used	
Fish	days	not used	not used	not used	
Crustacea and mollusks	days	not used	not used	not used	
Well water	days	not used	not used	not used	
Surface water	days	not used	not used	not used	
Livestock fodder	days	not used	not used	not used	
Dose Conversion Factors		ICRP 72	ICRP 72	ICRP 72	
Ingestion					
Americium-241	(mrem/pCi)	0.00074	0.00074	0.00074	
Plutonium-239	(mrem/pCi)	0.00093	0.00093	0.00093	
Uranium-234	(mrem/pCi)	0.00018	0.00018	0.00018	
Uranium-235	(mrem/pCi)	0.00017	0.00017	0.00017	
Uranium-238	(mrem/pCi)	0.00017	0.00017	0.00017	
Inhalation					
Americium-241	(mrem/pCi)	0.16	0.16	0.16	
Plutonium-239	(mrem/pCi)	0.19	0.19	0.19	
Uranium-234	(mrem/pCi)	0.013	0.013	0.013	
Uranium-235	(mrem/pCi)	0.011	0.011	0.011	
Uranium-238	(mrem/pCi)	0.0106	0.0106	0.0106	

[a] The Task 3 Report evaluated surface soil exposure only.

[b] These parameters were evaluated probabilistically in the Task 3 Report.

[c] Range of Kd values is 30 to 170 cm3/g and 170 cm3/g was chosen to maximize radiation dose.

Table A1.7
RESRAD Parameters - Child Resident Exposure Scenario

Parameter	Unit	Surface Soil Resident (Child) Task 3[a]	Surface Soil Resident (Child) Dose Evaluation	Subsurface Soil Resident (Child) Dose Evaluation	Reason for Deviation From Task 3
Pathways					
External gamma		active	active	active	
Inhalation		active	active	active	
Plant ingestion		active	active	active	
Meat ingestion		suppressed	suppressed	suppressed	
Milk ingestion		suppressed	suppressed	suppressed	
Aquatic foods		suppressed	suppressed	suppressed	
Drinking water		suppressed	suppressed	suppressed	
Soil ingestion		active	active	active	
Radon		suppressed	suppressed	suppressed	
Initial Principal Radionuclide					
Activity in Contaminated Zone					
Americium-241	pCi/g	100	5-acre EPC	5-acre EPC	Forward Dose Assessment
Plutonium-239	pCi/g	100	5-acre EPC	5-acre EPC	Forward Dose Assessment
Uranium-234	pCi/g	100	5-acre EPC	5-acre EPC	Forward Dose Assessment
Uranium-235	pCi/g	100	5-acre EPC	5-acre EPC	Forward Dose Assessment
Uranium-238	pCi/g	100	5-acre EPC	5-acre EPC	Forward Dose Assessment
Basic Radiation Dose Limit	mrem/yr	25	25	25	
Time for calculations	yr	1	1	1	
Time for calculations	yr	3	3	3	
Time for calculations	yr	10	10	10	
Time for calculations	yr	30	30	30	
Time for calculations	yr	100	100	100	
Time for calculations	yr	300	300	300	
Time for calculations	yr	1,000	1,000	1,000	
Time for calculations	yr				Radiation dose will also be calculated at year of maximum dose for dose assessment tables
Occupancy, Inhalation and External Gamma					
Inhalation Rate[b]	m^3/yr	5256	5256	5256	
Mass Loading for Inhalation[b]	g/m^3	0.000067	0.000067	0.000067	
Exposure Duration	yr	30	30	30	
Indoor Dust Filtration Factor		0.7	0.7	0.7	
External Gamma Shielding Factor		0.4	0.4	0.4	
Indoor Time Fraction		0.82	0.82	0.047	Limited exposure to subsurface soils over a 24-hour period
Outdoor Time Fraction		0.14	0.14	0.008	Limited exposure to subsurface soils over a 24-hour period
Shape Factor for External Gamma		1	1	1	
Area of Contaminated Zone (americium-241 and plutonium-239)	m^2	1400000	20000	20000	5-acre area modeled for consistency with uranium
Area of Contaminated Zone (uranium-234, uranium-235, and uranium-238)	m^2	20000	20000	20000	
Thickness of Contaminated Zone (americium-241 and plutonium-239)	m	0.15	0.15	0 to 2.44	Direct exposure to subsurface soils
Thickness of Contaminated Zone (uranium-234, uranium-235, and uranium-238)	m	0.5	0.5	0 to 2.44	Direct exposure to subsurface soils
Length Parallel to Aquifer Flow	m	200	200	200	
Cover and Contaminated Zone Hydrological Data					
Cover Depth (americium-241 and plutonium-239)	m	no cover	no cover	no cover	
Cover Depth (uranium-234, uranium-235, and uranium-238)	m	no cover	no cover	no cover	
Density Cover Material	g/cm^3	no cover	no cover	no cover	
Cover Erosion Rate	m/y	no cover	no cover	no cover	
Density of Contaminated Zone	g/cm^3	1.7	1.7	1.7	
Contaminated Zone Erosion Rate	m/yr	0.0000749	0.0000749	0.0000749	
Contaminated Zone Total Porosity		0.3	0.3	0.3	
Contaminated Zone Field Capacity		0.1	0.1	0.1	
Contaminated Zone Hydraulic Conductivity	m/yr	44.5	44.5	44.5	
Contaminated Zone b Parameter		10.4	10.4	10.4	
Humidity in Air	g/m^3	not used	not used	not used	
Evapotranspiration Coefficient		0.253	0.253	0.253	
Average Annual Wind Speed	m/s	4.2	4.2	4.2	
Precipitation	m/yr	0.381	0.381	0.381	
Irrigation	m/yr	1	1	1	
Irrigation Mode		overhead	overhead	overhead	
Runoff Coefficient		0.004	0.004	0.004	
Watershed Area	m^2	8280000	8280000	8280000	
Accuracy For Water/Soil Computation		0.001	0.001	0.001	
Uncontaminated, Unsaturated Zone Parameters					
Number of Unsaturated Zone Strata		1	1	0	Contaminated zone is assumed to be on saturated zone for subsurface soils
Thickness	m	3	3	not used	Contaminated zone is assumed to be on saturated zone for subsurface soils
Density	g/cm^3	1.7	1.7	not used	Contaminated zone is assumed to be on saturated zone for subsurface soils

Table A1.7
RESRAD Parameters - Child Resident Exposure Scenario

Parameter	Unit	Surface Soil Resident (Child) Task 3[a]	Surface Soil Resident (Child) Dose Evaluation	Subsurface Soil Resident (Child) Dose Evaluation	Reason for Deviation From Task 3
Total porosity		0.3	0.3	not used	Contaminated zone is assumed to be on saturated zone for subsurface soils
Effective porosity		0.1	0.1	not used	Contaminated zone is assumed to be on saturated zone for subsurface soils
Field capacity		0.1	0.1	not used	Contaminated zone is assumed to be on saturated zone for subsurface soils
Hydraulic Conductivity	m/yr	44.5	44.5	not used	Contaminated zone is assumed to be on saturated zone for subsurface soils
b Parameter		10.4	10.4	not used	Contaminated zone is assumed to be on saturated zone for subsurface soils
Radionuclide Transport Factors					
Distribution coefficient contaminated zone	cm^3/g	Am=1800 Pu=2300 U=50	Am=1800 Pu=2300 U=170	Am=1800 Pu=2300 U=170	Uranium Kd consistent with Honeyman and Santschi (1997)[c]
Distribution coefficient unsaturated zone	cm^3/g	Am=1800 Pu=2300 U=50	Am=1800 Pu=2300 U=170	Am=1800 Pu=2300 U=170	Uranium Kd consistent with Honeyman and Santschi (1997)[c]
Distribution coefficient saturated zone	cm^3/g	Am=1800 Pu=2300 U=50	Am=1800 Pu=2300 U=170	Am=1800 Pu=2300 U=170	Uranium Kd consistent with Honeyman and Santschi (1997)[c]
Time since placement of materials	yr	0	0	0	
Solubility Limit	mol/l	0	0	0	
Leach Rate	yr-1	0	0	0	
Saturated Zone Hydrological Data					
Density of saturated zone	g/cm3	1.7	1.7	1.7	
Saturated zone total porosity		0.3	0.3	0.3	
Saturated zone effective porosity		0.1	0.1	0.1	
Saturated zone field capacity		0.1	0.1	0.1	
Saturated zone hydraulic conductivity	m/yr	44.5	44.5	44.5	
Saturated zone hydraulic gradient		0.15	0.15	0.15	
Saturated zone b parameter		10.4	10.4	10.4	
Water table drop rate		0	0	0	
Well pump intake depth (below water table)	m	10	10	10	
Model: nondispersion (ND) or mass-balance (MB)		ND	ND	ND	
Well pumping rate	m^3/yr	250	250	250	
Ingestion Pathway, Dietary Data					
Fruit, Vegetable and Grain Consumption[b]	kg/yr	42.5	42.5	42.5	
Leafy Vegetable Consumption[b]	kg/yr	3.2	3.2	3.2	
Milk consumption	l/yr	not used	not used	not used	
Meat and poultry consumption	kg/yr	not used	not used	not used	
Fish consumption	kg/yr	not used	not used	not used	
Other seafood consumption	kg/yr	not used	not used	not used	
Soil Ingestion[b]	g/yr	70	70	70	
Drinking water intake	l/yr	not used	not used	not used	
Contaminated fraction, drinking water		not used	not used	not used	
Contaminated fraction, household water		not used	not used	not used	
Contaminated fraction, livestock water		not used	not used	not used	
Contaminated fraction, irrigation water		0	0	0	
Contaminated fraction, aquatic food		not used	not used	not used	
Contaminated fraction, plant food		1	1	0.057	Limited exposure to subsurface soils
Contaminated fraction, meat		not used	not used	not used	
Contaminated fraction, milk		not used	not used	not used	
Ingestion Pathway, Nondietary Data					
Livestock fodder intake for meat	kg/day	not used	not used	not used	
Livestock fodder intake for milk	kg/day	not used	not used	not used	
Livestock water intake for meat	l/day	not used	not used	not used	
Livestock water intake for milk	l/day	not used	not used	not used	
Livestock intake for soil	kg/day	not used	not used	not used	
Mass Loading For Foliar Deposition	g/m^3	0.000168	0.000168	0.000168	
Depth of Soil Mixing Layer	m	0.15	0.15	0.15	
Depth of Roots	m	0.15	0.15	0.15	
Groundwater Fractional Usage, drinking water		not used	not used	not used	
Groundwater Fractional Usage, household water		not used	not used	not used	
Groundwater Fractional Usage, livestock water		not used	not used	not used	
Groundwater Fractional Usage, irrigation water		not used	0	0	All irrigation water obtained from nearby, uncontaminated surface water sources
Plant Factors					
Soil-to-Plant Transfer Factor (americium)		0.0012	0.0012	0.0012	
Soil-to-Plant Transfer Factor (plutonium)		0.000058	0.000058	0.000058	
Soil-to-Plant Transfer Factor (uranium)[b]		0.006	0.006	0.006	
Wet weight crop yield, Non-leafy	kg/m^2	0.7	0.7	0.7	
Length of growing season, non-leafy	yr	0.17	0.17	0.17	
Translocation factor, nonleafy		0.1	0.1	0.1	
Weathering removal constant	1/yr	20	20	20	
Wet foliar interception fraction, non-leafy		0.25	0.25	0.25	
Dry foliar interception fraction, non-leafy		0.25	0.25	0.25	

Table A1.7
RESRAD Parameters - Child Resident Exposure Scenario

Parameter	Unit	Surface Soil Resident (Child) Task 3[a]	Surface Soil Resident (Child) Dose Evaluation	Subsurface Soil Resident (Child) Dose Evaluation	Reason for Deviation From Task 3
Wet weight crop yield, leafy	kg/m^2	1.5	1.5	1.5	
Length of growing season, leafy	yr	0.25	0.25	0.25	
Translocation factor, leafy		1	1	1	
Wet foliar interception fraction, leafy		0.25	0.25	0.25	
Dry foliar interception fraction, leafy		0.25	0.25	0.25	
Wet weight crop yield, fodder	kg/m^2	1.1	1.1	1.1	
Length of growing season, fodder	yr	0.08	0.08	0.08	
Translocation factor, fodder		1	1	1	
Weathering removal Constant, fodder	1/yr	20	20	20	
Wet Foliar interception fraction, fodder		0.25	0.25	0.25	
Dry foliar interception Fraction, Fodder		0.25	0.25	0.25	
Storage Times Before Use Data					
Fruits, non-leafy vegetables and grain	days	14	14	14	
Leafy vegetables	days	1	1	1	
Milk	days	not used	not used	not used	
Meat	days	not used	not used	not used	
Fish	days	not used	not used	not used	
Crustacea and mollusks	days	not used	not used	not used	
Well water	days	not used	not used	not used	
Surface water	days	not used	not used	not used	
Livestock fodder	days	not used	not used	not used	
Dose Conversion Factors		ICRP 72	ICRP 72	ICRP 72	
Ingestion					
Americium-241	(mrem/pCi)	0.00074	0.00074	0.00074	
Plutonium-239	(mrem/pCi)	0.00093	0.00093	0.00093	
Uranium-234	(mrem/pCi)	0.00018	0.00018	0.00018	
Uranium-235	(mrem/pCi)	0.00017	0.00017	0.00017	
Uranium-238	(mrem/pCi)	0.00017	0.00017	0.00017	
Inhalation					
Americium-241	(mrem/pCi)	0.16	0.16	0.16	
Plutonium-239	(mrem/pCi)	0.19	0.19	0.19	
Uranium-234	(mrem/pCi)	0.013	0.013	0.013	
Uranium-235	(mrem/pCi)	0.011	0.011	0.011	
Uranium-238	(mrem/pCi)	0.0106	0.0106	0.0106	

[a] The Task 3 Report evaluated surface soil exposure only.

[b] These parameters were evaluated probabilistically in the Task 3 Report.

[c] Range of Kd values is 30 to 170 cm3/g and 170 cm3/g was chosen to maximize radiation dose.

Table A1.8
Summary Statistics for Surface Water - Exposure Units

Analyte	Unit	IAEU					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[a]
Americium-241	pCi/g	1480	-0.200	84.00	0.40	2.85	0.72
Plutonium-239/240	pCi/g	1606	-0.190	259.00	1.04	8.59	1.98
Uranium-233/234	pCi/g	1207	-0.044	710.00	2.84	23.88	5.83
Uranium-235	pCi/g	1207	-0.039	22.00	0.11	0.76	0.20
Uranium-238	pCi/g	1207	-0.017	290.00	1.96	10.43	3.27

Analyte	Unit	WBEU					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[a]
Americium-241	pCi/g	122	0.002	48.00	1.44	5.21	2.72
Plutonium-239/240	pCi/g	130	-0.004	250.00	9.66	29.64	21.00
Uranium-233/234	pCi/g	98	0.024	6.24	0.99	1.17	1.19
Uranium-235	pCi/g	98	-0.096	0.25	0.03	0.05	0.06
Uranium-238	pCi/g	98	0.026	5.00	0.88	0.94	1.05

Analyte	Unit	UWOEU					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[a]
Americium-241	pCi/g	284	-0.008	0.38	0.01	0.03	0.02
Plutonium-239/240	pCi/g	312	-0.023	0.57	0.02	0.05	0.03
Uranium-233/234	pCi/g	285	0.029	11.00	1.77	2.01	2.24
Uranium-235	pCi/g	285	-0.072	1.00	0.09	0.12	0.12
Uranium-238	pCi/g	285	-0.013	48.00	2.63	6.10	4.20

[a] EPC is the 95UCL concentration; EPC calculated using total surface water results post-1999.

Table A1.9
Summary Statistics for Surface Water - Vicinity of 5-Acre Areas

Analyte	Unit	Location SW018 - Vicinity of Former Building 776					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[a]
Americium-241	pCi/L	30	0.001	0.091	0.016	0.019	0.022
Plutonium-239/240	pCi/L	29	-0.002	0.197	0.028	0.038	0.059
Uranium-233/234	pCi/L	31	0.508	2.110	1.24	0.47	1.40
Uranium-235	pCi/L	31	0.016	0.130	0.056	0.026	0.064
Uranium-238	pCi/L	31	0.677	4.550	2.23	1.05	2.55

Analyte	Unit	Location SW093 - Vicinity of Historical SEP					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[a]
Americium-241	pCi/L	149	-0.007	14.10	0.19	1.18	0.61
Plutonium-239/240	pCi/L	156	-0.013	4.18	0.12	0.43	0.27
Uranium-233/234	pCi/L	158	-0.004	3.29	1.30	0.60	1.38
Uranium-235	pCi/L	157	0.002	0.131	0.049	0.027	0.053
Uranium-238	pCi/L	158	0.005	3.21	1.35	0.62	1.44

Analyte	Unit	Location GS10 - Vicinity of Historical East Trenches					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[a]
Americium-241	pCi/L	153	0.001	8.80	0.22	0.96	0.18
Plutonium-239/240	pCi/L	158	-0.004	2.48	0.16	0.32	0.27
Uranium-233/234	pCi/L	159	0.043	6.87	1.85	1.13	2.01
Uranium-235	pCi/L	159	0.001	0.250	0.069	0.048	0.076
Uranium-238	pCi/L	159	0.044	6.84	1.75	1.11	1.90

Analyte	Unit	Location GS59 - Vicinity of Historical West and East Ash Pits					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[a]
Americium-241	pCi/L	25	-0.004	0.015	0.001	0.004	0.005
Plutonium-239/240	pCi/L	27	-0.005	0.020	0.001	0.005	0.005
Uranium-233/234	pCi/L	30	0.125	2.24	0.48	0.39	0.59
Uranium-235	pCi/L	30	-0.013	0.076	0.017	0.015	0.029
Uranium-238	pCi/L	30	0.121	1.55	0.38	0.27	0.45

[a] EPC is the 95UCL concentration; EPC calculated using total surface water results post-1999.

Table A1.10
RESRAD Radiation Dose - WRW

Area/Radionuclide	IAEU (mrem/yr)	
	Surface Soil[a]	Subsurface Soil[a]
Americium-241	2.45E-02	3.47E-03
Plutonium-239	5.57E-02	1.09E-02
Uranium-234	7.02E-03	6.62E-04
Uranium-235	1.25E-02	1.96E-03
Uranium-238	5.27E-02	1.00E-02
TOTAL	1.5E-01	2.7E-02

Area/Radionuclide	UWOEU (mrem/yr)	
	Surface Soil[a]	Subsurface Soil[a]
Americium-241	1.77E-03	2.30E-04
Plutonium-239	1.69E-02	4.43E-04
Uranium-234	1.26E-02	7.04E-03
Uranium-235	2.00E-02	2.55E-02
Uranium-238	2.43E-01	2.49E-01
TOTAL	2.9E-01	2.8E-01

Area/Radionuclide	WBEU (mrem/yr)	
	Surface Soil[a]	Subsurface Soil[a]
Americium-241	7.22E-02	2.09E-02
Plutonium-239	3.44E-01	1.13E-01
Uranium-234	6.07E-03	5.79E-04
Uranium-235	1.25E-02	1.26E-03
Uranium-238	6.17E-02	6.66E-03
TOTAL	5.0E-01	1.4E-01

[a] Maximum dose occurs at time = 0 years.

Table A1.11
RESRAD Radiation Dose - Adult Resident

Area/Radionuclide	Former Building 776 Area (mrem/yr)	
	Surface Soil[a]	Subsurface Soil[a]
Americium-241	1.37E+00	3.19E-03
Plutonium-239	1.57E+00	6.84E-03
Uranium-234	1.11E-01	5.78E-03
Uranium-235	4.39E-02	3.28E-03
Uranium-238	1.78E-01	9.09E-03
TOTAL	3.3E+00	2.8E-02

Area/Radionuclide	Historical SEP Area (mrem/yr)	
	Surface Soil[a]	Subsurface Soil[a]
Americium-241	3.47E-01	7.11E-02
Plutonium-239	3.71E-01	1.21E-01
Uranium-234	9.45E-01	2.85E-02
Uranium-235	2.42E-01	9.07E-03
Uranium-238	4.43E-01	2.83E-02
TOTAL	2.3E+00	2.6E-01

Area/Radionuclide	Historical East Trenches Area (mrem/yr)	
	Surface Soil[a]	Subsurface Soil[a]
Americium-241	5.68E-01	4.52E-01
Plutonium-239	1.06E+00	9.21E-01
Uranium-234	1.30E-01	2.72E-02
Uranium-235	4.39E-02	8.31E-03
Uranium-238	1.92E-01	1.36E-02
TOTAL	2.0E+00	1.4E+00

Area/Radionuclide	Historical West Ash Pits Area (mrem/yr)	
	Surface Soil[a]	Subsurface Soil[a]
Americium-241	3.98E-03	7.89E-03
Plutonium-239	2.67E-03	2.17E-03
Uranium-234	5.00E+00	8.04E-01
Uranium-235	9.84E-01	3.71E-01
Uranium-238	3.65E+01	5.46E+00
TOTAL	4.3E+01	6.6E+00

Area/Radionuclide	Historical East Ash Pits Area (mrem/yr)	
	Surface Soil[a]	Subsurface Soil[a]
Americium-241	3.98E-03	1.52E-04
Plutonium-239	6.23E-03	7.40E-04
Uranium-234	2.13E-01	2.53E-01
Uranium-235	5.27E-02	3.48E-01
Uranium-238	4.54E-01	4.25E+00
TOTAL	7.3E-01	4.9E+00

[a] Maximum dose occurs at time = 0 years.

Table A1.12
RESRAD Radiation Dose - Child Resident

Area/Radionuclide	Former Building 776 Area (mrem/yr)	
	Surface Soil[a]	Subsurface Soil[a]
Americium-241	2.03E+00	4.72E-03
Plutonium-239	4.17E+00	1.82E-02
Uranium-234	1.72E-01	8.99E-03
Uranium-235	5.02E-02	3.74E-03
Uranium-238	2.27E-01	1.16E-02
TOTAL	6.6E+00	4.7E-02

Area/Radionuclide	Historical SEP Area (mrem/yr)	
	Surface Soil[a]	Subsurface Soil[a]
Americium-241	5.14E-01	1.05E-01
Plutonium-239	9.85E-01	3.22E-01
Uranium-234	1.47E+00	4.43E-02
Uranium-235	2.76E-01	1.04E-02
Uranium-238	5.65E-01	3.61E-02
TOTAL	3.8E+00	5.2E-01

Area/Radionuclide	Historical East Trenches Area (mrem/yr)	
	Surface Soil[a]	Subsurface Soil[a]
Americium-241	8.40E-01	6.69E-01
Plutonium-239	2.82E+00	2.45E+00
Uranium-234	2.01E-01	4.24E-02
Uranium-235	5.02E-02	9.50E-03
Uranium-238	2.45E-01	1.73E-02
TOTAL	4.2E+00	3.2E+00

Area/Radionuclide	Historical West Ash Pits West Area (mrem/yr)	
	Surface Soil[a]	Subsurface Soil[a]
Americium-241	5.89E-03	1.17E-02
Plutonium-239	7.10E-03	5.77E-03
Uranium-234	7.78E+00	1.25E+00
Uranium-235	1.12E+00	4.24E-01
Uranium-238	4.66E+01	6.96E+00
TOTAL	5.5E+01	8.7E+00

Area/Radionuclide	Historical East Ash Pits Area (mrem/yr)	
	Surface Soil[a]	Subsurface Soil[a]
Americium-241	5.89E-03	2.25E-04
Plutonium-239	1.66E-02	1.97E-03
Uranium-234	3.31E-01	3.93E-01
Uranium-235	6.02E-02	3.98E-01
Uranium-238	5.78E-01	5.42E+00
TOTAL	9.9E-01	6.2E+00

[a] Maximum dose occurs at time = 0 years.

Table A1.13
Surface Water Dose - WRW

Analyte	IAEU				
	EPC[a] (pCi/L)	Ingestion Rate (L/day)	Exposure Frequency (days/yr)	Ingestion DCF (mrem/pCi)	Radiation Dose (mrem/yr)
Americium-241	0.72	0.03	42	0.00074	6.74E-04
Plutonium-239	1.98	0.03	42	0.00093	2.32E-03
Uranium-234	5.83	0.03	42	0.00018	1.32E-03
Uranium-235	0.20	0.03	42	0.00017	4.39E-05
Uranium-238	3.27	0.03	42	0.00017	7.01E-04
				TOTAL	5.1E-03

Analyte	WBEU				
	EPC[a] (pCi/L)	Ingestion Rate (L/day)	Exposure Frequency (days/yr)	Ingestion DCF (mrem/pCi)	Radiation Dose (mrem/yr)
Americium-241	2.72	0.03	42	0.00074	2.54E-03
Plutonium-239	21.00	0.03	42	0.00093	2.46E-02
Uranium-234	1.19	0.03	42	0.00018	2.70E-04
Uranium-235	0.06	0.03	42	0.00017	1.19E-05
Uranium-238	1.05	0.03	42	0.00017	2.24E-04
				TOTAL	2.8E-02

Analyte	UWOEU				
	EPC[a] (pCi/L)	Ingestion Rate (L/day)	Exposure Frequency (days/yr)	Ingestion DCF (mrem/pCi)	Radiation Dose (mrem/yr)
Americium-241	0.02	0.03	42	0.00074	1.45E-05
Plutonium-239	0.03	0.03	42	0.00093	3.21E-05
Uranium-234	2.24	0.03	42	0.00018	5.09E-04
Uranium-235	0.12	0.03	42	0.00017	2.54E-05
Uranium-238	4.20	0.03	42	0.00017	9.00E-04
				TOTAL	1.5E-03

[a] EPC calculated using total surface water results post-1999.

Table A1.14
Surface Water Dose - Resident Adult

Analyte	Location SW018 - Vicinity of Former Building 776				
	EPC[a] (pCi/L)	Ingestion Rate (L/day)	Exposure Frequency (days/yr)	Ingestion DCF (mrem/pCi)	Radiation Dose (mrem/yr)
Americium-241	0.022	2	350	0.00074	1.14E-02
Plutonium-239	0.059	2	350	0.00093	3.84E-02
Uranium-234	1.40	2	350	0.00018	1.76E-01
Uranium-235	0.064	2	350	0.00017	7.62E-03
Uranium-238	2.55	2	350	0.00017	3.03E-01
				TOTAL	5.4E-01

Analyte	Location SW093 - Vicinity of Historical SEP				
	EPC[a] (pCi/L)	Ingestion Rate (L/day)	Exposure Frequency (days/yr)	Ingestion DCF (mrem/pCi)	Radiation Dose (mrem/yr)
Americium-241	0.61	2	350	0.00074	3.16E-01
Plutonium-239	0.27	2	350	0.00093	1.76E-01
Uranium-234	1.38	2	350	0.00018	1.74E-01
Uranium-235	0.053	2	350	0.00017	6.31E-03
Uranium-238	1.44	2	350	0.00017	1.71E-01
				TOTAL	8.4E-01

Analyte	Location GS10 - Vicinity of Historical East Trenches				
	EPC[a] (pCi/L)	Ingestion Rate (L/day)	Exposure Frequency (days/yr)	Ingestion DCF (mrem/pCi)	Radiation Dose (mrem/yr)
Americium-241	0.18	2	350	0.00074	9.32E-02
Plutonium-239	0.27	2	350	0.00093	1.76E-01
Uranium-234	2.01	2	350	0.00018	2.53E-01
Uranium-235	0.076	2	350	0.00017	9.04E-03
Uranium-238	1.90	2	350	0.00017	2.26E-01
				TOTAL	7.6E-01

Analyte	Location GS59 - Vicinity of Historical West and East Ash Pits				
	EPC (pCi/liter)	Ingestion Rate (liter/day)	Exposure Frequency (days/yr)	Ingestion DCF (mrem/pCi)	Radiation Dose (mrem/yr)
Americium-241	0.005	2	350	0.00074	2.59E-03
Plutonium-239	0.005	2	350	0.00093	3.26E-03
Uranium-234	0.59	2	350	0.00018	7.43E-02
Uranium-235	0.029	2	350	0.00017	3.45E-03
Uranium-238	0.45	2	350	0.00017	5.36E-02
				TOTAL	1.4E-01

[a] EPC calculated using total surface water results post-1999.

Table A1.15
Surface Water Dose - Resident Child

Analyte	Location SW018 - Vicinity of Former Building 776				
	EPC[a] (pCi/L)	Ingestion Rate (L/day)	Exposure Frequency (days/yr)	Ingestion DCF (mrem/pCi)	Radiation Dose (mrem/yr)
Americium-241	0.022	0.9	350	0.0014	9.70E-03
Plutonium-239	0.059	0.9	350	0.0016	2.97E-02
Uranium-234	1.40	0.9	350	0.000478	2.11E-01
Uranium-235	0.064	0.9	350	0.000475	9.58E-03
Uranium-238	2.55	0.9	350	0.00044	3.53E-01
				TOTAL	6.1E-01

Analyte	Location SW093 - Vicinity of Historical SEP				
	EPC[a] (pCi/L)	Ingestion Rate (L/day)	Exposure Frequency (days/yr)	Ingestion DCF (mrem/pCi)	Radiation Dose (mrem/yr)
Americium-241	0.61	0.9	350	0.0014	2.69E-01
Plutonium-239	0.27	0.9	350	0.0016	1.36E-01
Uranium-234	1.38	0.9	350	0.000478	2.08E-01
Uranium-235	0.053	0.9	350	0.000475	7.93E-03
Uranium-238	1.44	0.9	350	0.00044	2.00E-01
				TOTAL	8.2E-01

Analyte	Location GS10 - Vicinity of Historical East Trenches				
	EPC[a] (pCi/L)	Ingestion Rate (L/day)	Exposure Frequency (days/yr)	Ingestion DCF (mrem/pCi)	Radiation Dose (mrem/yr)
Americium-241	0.18	0.9	350	0.0014	7.94E-02
Plutonium-239	0.27	0.9	350	0.0016	1.36E-01
Uranium-234	2.01	0.9	350	0.000478	3.03E-01
Uranium-235	0.076	0.9	350	0.000475	1.14E-02
Uranium-238	1.90	0.9	350	0.00044	2.63E-01
				TOTAL	7.9E-01

Analyte	Location GS59 - Vicinity of Historical West and East Ash Pits				
	EPC[a] (pCi/L)	Ingestion Rate (L/day)	Exposure Frequency (days/yr)	Ingestion DCF (mrem/pCi)	Radiation Dose (mrem/yr)
Americium-241	0.005	0.9	350	0.0014	2.21E-03
Plutonium-239	0.005	0.9	350	0.0016	2.52E-03
Uranium-234	0.59	0.9	350	0.000478	8.88E-02
Uranium-235	0.029	0.9	350	0.000475	4.34E-03
Uranium-238	0.45	0.9	350	0.00044	6.24E-02
				TOTAL	1.6E-01

[a] EPC calculated using total surface water results post-1999.

Table A1.16
Dose Assessment Summary - Total Radiation Dose for WRW

Exposure Media	IAEU
	WRW (mrem/yr)
Surface Soil	1.52E-01
Subsurface Soil	2.70E-02
Surface Water	5.06E-03
TOTAL	1.8E-01

Exposure Media	UWOEU
	WRW (mrem/yr)
Surface Soil	2.94E-01
Subsurface Soil	2.82E-01
Surface Water	1.48E-03
TOTAL	5.8E-01

Exposure Media	WBEU
	WRW (mrem/yr)
Surface Soil	4.96E-01
Subsurface Soil	1.42E-01
Surface Water	2.76E-02
TOTAL	6.7E-01

Table A1.17
Dose Assessment Summary - Total Radiation Dose for Resident Adult and Resident Child

Exposure Media	Former Building 776 Area	
	Resident Adult (mrem/yr)	Resident Child (mrem/yr)
Surface Soil	3.27E+00	6.64E+00
Subsurface Soil	2.82E-02	4.72E-02
Surface Water	5.37E-01	6.13E-01
TOTAL	3.8E+00	7.3E+00

Exposure Media	Historical Solar Ponds Area	
	Resident Adult (mrem/yr)	Resident Child (mrem/yr)
Surface Soil	2.35E+00	3.81E+00
Subsurface Soil	2.58E-01	5.18E-01
Surface Water	8.43E-01	8.20E-01
TOTAL	3.4E+00	5.1E+00

Exposure Media	Historical East Trenches Area	
	Resident Adult (mrem/yr)	Resident Child (mrem/yr)
Surface Soil	2.00E+00	4.16E+00
Subsurface Soil	1.42E+00	3.19E+00
Surface Water	7.57E-01	7.93E-01
TOTAL	4.2E+00	8.1E+00

Exposure Media	Historical West Ash Pits Area	
	Resident Adult (mrem/yr)	Resident Child (mrem/yr)
Surface Soil	4.25E+01	5.55E+01
Subsurface Soil	6.64E+00	8.65E+00
Surface Water	1.37E-01	1.60E-01
TOTAL	4.9E+01	6.4E+01

Exposure Media	Historical East Ash Pits Area	
	Resident Adult (mrem/yr)	Resident Child (mrem/yr)
Surface Soil	7.29E-01	9.92E-01
Subsurface Soil	4.86E+00	6.22E+00
Surface Water	1.37E-01	1.60E-01
TOTAL	5.7E+00	7.4E+00

Table A1.18
Uncertainty Evaluation - Summary Statistics and Resident Dose for Groundwater Data Post-1999 - SEP Plume Area

Analyte	Unit	SEP Groundwater - Post-1999 Data					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC
Americium-241	pCi/L	37	-0.006	0.341	0.024	0.056	0.064
Plutonium-239	pCi/L	37	-0.004	0.062	0.011	0.013	0.020
Uranium-234	pCi/L	12	5.200	297.00	98.48	89.42	144.84
Uranium-235	pCi/L	12	0.384	36.70	6.99	9.96	14.27
Uranium-238	pCi/L	12	2.950	203.00	59.69	55.20	104.68

Analyte	Resident Adult Radiation Dose				
	EPC (pCi/L)	Ingestion Rate (L/day)	Exposure Frequency (days/yr)	Ingestion DCF (mrem/pCi)	Radiation Dose (mrem/yr)
Americium-241	0.064	2	350	0.00074	3.32E-02
Plutonium-239	0.02	2	350	0.00093	1.30E-02
Uranium-234	144.84	2	350	0.00018	1.82E+01
Uranium-235	14.27	2	350	0.00017	1.70E+00
Uranium-238	104.68	2	350	0.00017	1.25E+01
				TOTAL	3.2E+01

Analyte	Resident Child Radiation Dose				
	EPC (pCi/L)	Ingestion Rate (L/day)	Exposure Frequency (days/yr)	Ingestion DCF (mrem/pCi)	Radiation Dose (mrem/yr)
Americium-241	0.064	0.9	350	0.0014	2.82E-02
Plutonium-239	0.02	0.9	350	0.0016	1.01E-02
Uranium-234	144.84	0.9	350	0.000478	2.18E+01
Uranium-235	14.27	0.9	350	0.000475	2.14E+00
Uranium-238	104.68	0.9	350	0.00044	1.45E+01
				TOTAL	3.8E+01

Table A1.19
Uncertainty Evaluation - Summary Statistics for Soil/Sediment - Surface to 12 Ft Below Surface in 5-Acre Areas

Analyte	Unit	Former Building 776 Area[a]					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[b]
Americium-241	pCi/g	69	-0.061	51.20	2.25	7.21	6.03
Plutonium-239/240	pCi/g	69	-0.024	183.00	8.16	24.13	20.82
Uranium-233/234	pCi/g	69	0.279	16.40	1.12	1.91	2.12
Uranium-235	pCi/g	69	-0.013	0.89	0.09	0.11	0.15
Uranium-238	pCi/g	69	0.338	61.40	1.74	7.30	5.57

Analyte	Unit	Historical SEP Area					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[b]
Americium-241	pCi/g	104	-0.003	75.50	2.86	8.54	6.51
Plutonium-239/240	pCi/g	108	-0.004	527.00	10.58	52.59	32.64
Uranium-233/234	pCi/g	111	0.350	21.00	2.66	3.66	4.18
Uranium-235	pCi/g	111	-0.129	2.91	0.19	0.37	0.35
Uranium-238	pCi/g	111	0.300	11.00	1.64	1.69	2.34

Analyte	Unit	Historical East Trenches Area					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[b]
Americium-241	pCi/g	67	-0.018	410.00	12.38	56.90	42.68
Plutonium-239/240	pCi/g	70	-0.018	2450.00	77.51	346.91	258.24
Uranium-233/234	pCi/g	68	0.060	14.00	1.90	2.84	3.40
Uranium-235	pCi/g	68	-0.144	1.70	0.10	0.22	0.22
Uranium-238	pCi/g	68	0.085	3.20	0.91	0.56	1.21

Analyte	Unit	Historical West Ash Pits Area					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[b]
Americium-241	pCi/g	46	-0.013	2.97	0.11	0.44	0.39
Plutonium-239/240	pCi/g	52	-0.004	5.16	0.21	0.73	0.65
Uranium-233/234	pCi/g	50	0.552	288.29	24.42	58.62	76.19
Uranium-235	pCi/g	49	0.010	36.12	2.48	6.63	11.90
Uranium-238	pCi/g	50	0.495	1130.00	93.87	243.53	436.55

Analyte	Unit	Historical East Ash Pits Area					
		Total No. of Samples	Minimum	Maximum	Mean	Standard Deviation	EPC[b]
Americium-241	pCi/g	33	0.001	0.22	0.02	0.04	0.09
Plutonium-239/240	pCi/g	34	-0.002	0.94	0.07	0.21	0.22
Uranium-233/234	pCi/g	41	0.550	105.70	5.12	17.02	31.57
Uranium-235	pCi/g	41	0.014	37.68	1.04	5.87	10.16
Uranium-238	pCi/g	41	0.717	1160.00	31.73	180.77	312.63

[a] The maximum surface soil sample was collected from beneath the former Building 776 slab.

[b] EPC is the 95UCL concentration.

Table A1.20
Uncertainty Evaluation - RESRAD Radiation Dose - Adult Resident Excavation for Soil/Sediment in 5-Acre Areas

Area/Radionuclide	Former Building 776 Area (mrem/yr)
	Surface Soil[a]
Americium-241	8.00E-01
Plutonium-239	9.27E-01
Uranium-234	2.23E-01
Uranium-235	6.59E-02
Uranium-238	9.72E-01
TOTAL	3.0E+00

Area/Radionuclide	Historical SEP Area (mrem/yr)
	Surface Soil[a]
Americium-241	8.63E-01
Plutonium-239	1.45E+00
Uranium-234	4.40E-01
Uranium-235	1.54E-01
Uranium-238	4.08E-01
TOTAL	3.3E+00

Area/Radionuclide	Historical East Trenches Area (mrem/yr)
	Surface Soil[a]
Americium-241	5.66E+00
Plutonium-239	1.15E+01
Uranium-234	3.58E-01
Uranium-235	9.66E-02
Uranium-238	2.11E-01
TOTAL	1.8E+01

Area/Radionuclide	Historical West Ash Pits Area (mrem/yr)
	Surface Soil[a]
Americium-241	5.17E-02
Plutonium-239	2.89E-02
Uranium-234	8.03E+00
Uranium-235	5.23E+00
Uranium-238	7.62E+01
TOTAL	8.9E+01

Area/Radionuclide	Historical East Ash Pits Area (mrem/yr)
	Surface Soil[a]
Americium-241	1.19E-02
Plutonium-239	9.80E-03
Uranium-234	3.33E+00
Uranium-235	4.46E+00
Uranium-238	5.45E+01
TOTAL	6.2E+01

[a] Maximum dose occurs at time = 0 years.

Table A1.21
Uncertainty Evaluation - RESRAD Radiation Dose - Child Resident Excavation for Soil/Sediment in 5-Acre Areas

Area/Radionuclide	Former Building 776 Area (mrem/yr)
	Surface Soil[a]
Americium-241	1.18E+00
Plutonium-239	2.46E+00
Uranium-234	3.47E-01
Uranium-235	7.53E-02
Uranium-238	1.24E+00
TOTAL	5.3E+00

Area/Radionuclide	Historical SEP Area (mrem/yr)
	Surface Soil[a]
Americium-241	1.28E+00
Plutonium-239	3.86E+00
Uranium-234	6.85E-01
Uranium-235	1.76E-01
Uranium-238	5.20E-01
TOTAL	6.5E+00

Area/Radionuclide	Historical East Trenches Area (mrem/yr)
	Surface Soil[a]
Americium-241	8.38E+00
Plutonium-239	3.06E+01
Uranium-234	5.57E-01
Uranium-235	1.10E-01
Uranium-238	2.69E-01
TOTAL	4.0E+01

Area/Radionuclide	Historical West Ash Pits Area (mrem/yr)
	Surface Soil[a]
Americium-241	7.66E-02
Plutonium-239	7.69E-02
Uranium-234	1.25E+01
Uranium-235	5.97E+00
Uranium-238	9.71E+01
TOTAL	1.2E+02

Area/Radionuclide	Historical East Ash Pits Area (mrem/yr)
	Surface Soil[a]
Americium-241	1.77E-02
Plutonium-239	2.60E-02
Uranium-234	5.17E+00
Uranium-235	5.10E+00
Uranium-238	6.95E+01
TOTAL	8.0E+01

[a] Maximum dose occurs at time = 0 years.

Table A1.22
Uncertainty Evaluation - RESRAD Probabilistic Parameters and West Ash Pits Area Dose Rate for Child Resident

Probabilistic Parameter	Unit	RESRAD Probabilistic Distribution	RESRAD Probabilistic Value
Pathways			
Indoor Time Fraction	unitless	Triangular	From 0.408 to 0.815 With Mode = 0.545
Outdoor Time Fraction	unitless	Triangular	From 0.072 to 0.144 With Mode = 0.096
Fruit, Vegetable & Grain Consumption	kg/yr	Lognormal - N	MU = 2.02, SIGMA = 1.04
Leafy Vegetable Consumption	kg/yr	Lognormal - N	MU = -1.12, SIGMA = 1.77
Inhalation Rate	m^3/yr	Lognormal - N	MU = 8.08, SIGMA = 0.305
Mass Loading For Inhalation	g/m^3	Continuous Linear	X(1) = 0.00001, Cum Prob(1) = 0.000
			X(2) = 0.0000202, Cum Prob(2) = 0.338
			X(3) = 0.0000231, Cum Prob(3) = 0.788
			X(4) = 0.0000507, Cum Prob(4) = 0.919
			X(5) = 0.000058, Cum Prob(5) = 0.944
			X(6) = 0.0000957, Cum Prob(6) = 0.969
			X(7) = 0.000109, Cum Prob(7) = 0.994
			X(8) = 0.0002, Cum Prob(8) = 1.000
Mass Loading for Foliar Deposition	g/m^3	Continuous Linear	X(1) = 0.000025, Cum Prob(1) = 0.000
			X(2) = 0.0000505, Cum Prob(2) = 0.338
			X(3) = 0.0000577, Cum Prob(3) = 0.788
			X(4) = 0.000127, Cum Prob(4) = 0.919
			X(5) = 0.000145, Cum Prob(5) = 0.944
			X(6) = 0.000239, Cum Prob(6) = 0.969
			X(7) = 0.000274, Cum Prob(7) = 0.994
			X(8) = 0.0005, Cum Prob(8) = 1.000
Soil Ingestion	g/yr	Bounded Lognormal - N	From 1 to 365 With MU = 1.91, SIGMA = 1.37
Plant Transfer Factor for Uranium	unitless	Lognormal - N	MU = -6.84, SIGMA = 1.09

Radionuclide	Probabalistic Result (mrem/yr) 95th percentile	Probabalistic Result (mrem/yr) 90th percentile
Americium/Plutonium	9.60E-02	7.12E-02
Uranium isotopes	5.63E+01	4.47E+01
Total	5.6E+01	4.5E+01