

Survey Unit A

Sample ID	Lab ID	In-situ gross	ISOCs Activity	STL Results (pCi/g)									
		(cpm)	(pCi/g Cs-137)	Cs-137	Sr-90	Ra-226	Pu 238	Pu 239/240	U-234	U-235	U-238	Am-241	H3
SS05A101	20690-001	6000	5.3	4.57	1.18	0.29	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A102	20690-002	3300	2.0	2.24	0.18	0.35	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A103	20690-003	4500	6.5	9.50	0.59	0.21	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A104	20690-004	5040	6.0	7.70	0.81	0.29	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A105	20690-005	4300	6.8	7.00	0.34	0.36	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A106	20690-006	12200	19.9	23.10	0.49	0.47	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A107	20690-007	4600	5.8	6.60	0.12	0.28	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A108	20690-008	5100	9.2	10.50	0.56	0.27	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A109	20690-009	9300	17.8	16.90	1.07	0.43	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A110	20690-010	9200	5.7	6.20	1.16	0.31	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A111	20690-011	5200	3.7	4.56	0.44	0.41	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A112	20690-012	4600	5.5	5.85	0.28	0.08	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A113	20690-013	5000	2.2	2.24	0.28	0.20	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A114	20690-014	3700	4.5	4.10	0.09	0.23	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A115	20690-015	3900	4.8	2.44	0.34	0.53	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A116	20690-016	3100	1.6	1.49	0.06	0.47	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A117	20690-017	3900	2.6	4.12	0.50	0.44	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A118	20690-018	3900	1.5	1.66	11.80	0.53	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A119	20690-019	3400	0.6	0.22	0.52	0.33	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A120	20690-020	8300	11.0	11.50	20.10	0.29	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A121	20690-021	5200	5.0	6.01	0.78	0.58	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A122	20690-022	8300	10.1	14.40	4.82	0.53	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A123	20690-023	2700	3.6	3.92	1.13	0.29	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A124	20690-024	4300	4.4	4.10	2.70	0.23	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A125	20690-025	4900	2.3	2.74	2.82	0.65	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A126	20690-026	3900	0.9	1.08	1.56	0.43	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A127	20690-027	5000	3.5	3.44	2.05	0.54	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A128	20690-028	4900	5.3	6.20	7.40	1.27	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A129	20690-029	5200	4.5	5.42	2.98	0.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A130	20690-030	2700	2.2	1.67	0.24	0.26	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A131	20690-031	6100	9.5	12.00	1.70	0.24	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05A132	20690-032	4200	0.0	0.06	1.89	0.36	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Avg of Cs-137, Sr-90 and Ra-226		5186	5	6.05	2.22	0.40							
Composite Sample Results							0.03	0.11	0.60	0.02	0.49	0.04	0.00

Survey Unit C-1

Sample ID	Lab ID	In-situ gross (cpm)	ISOCs Activity (pCi/g Cs-137)	STL Results (pCi/g)									
				Cs-137	Sr-90	Ra-226	Pu 238	Pu 239/240	U-234	U-235	U-238	Am-241	H3
SS05C101	20298-001	4800	9.3	6.80	0.50	0.26	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C102	20298-002	6100	8.5	9.30	0.47	0.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C103	20298-003	13800	36.8	41.80	1.44	0.49	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C104	20298-004	31000	1.5	0.19	0.20	0.45	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C105	20298-005	7500	17.8	18.00	1.11	0.44	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C106	20298-006	3700	2.1	0.96	0.10	0.78	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C107	20298-007	3300	2.1	0.61	1.69	0.61	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C108	20298-008	4100	5.2	4.80	0.47	0.64	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C109	20298-009	3100	2.3	1.20	0.15	0.54	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C110	20298-010	4200	6.6	5.60	1.39	0.41	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C111	20298-011	4400	8.6	7.00	1.29	0.48	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C112	20298-012	3800	4.2	3.22	0.41	0.64	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C113	20298-013	3800	4.1	6.60	0.50	0.53	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C114	20298-014	5300	6.8	1.67	0.71	0.41	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C115	20298-015	4200	0.0	3.62	0.65	0.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C116	20298-016	3100	2.0	0.47	0.28	0.71	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C117	20298-017	3900	1.3	0.20	6.95	0.52	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C118	20298-018	3100	1.9	0.36	3.94	0.62	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C119	20298-019	3700	2.2	0.20	0.18	0.47	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C120	20298-020	2300	2.0	2.76	0.80	1.08	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C121	20298-021	2300	1.2	0.49	0.28	0.49	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C122	20298-022	4100	3.1	1.78	0.15	0.33	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C123	20298-023	3100	1.6	10.20	0.80	0.33	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C124	20298-024	3600	14.2	6.14	0.44	0.42	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C125	20298-025	5400	3.9	0.21	0.24	0.36	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Avg of Cs-137, Sr-90 and Ra-226		5508	5.97	5.37	1.01	0.52							
Composite Sample Results							0.00	0.02	0.65	0.04	0.54	0.04	0.69

Survey Unit C-2

Sample ID	Lab ID	In-situ gross (cpm)	ISOCs Activity (pCi/g Cs-137)	STL Results (pCi/g)									
				Cs-137	Sr-90	Ra-226	Pu 238	Pu 239/240	U-234	U-235	U-238	Am-241	H3
SS05C201	20300-001	5100	6.1	6.60	0.55	0.51	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C202	20300-002	5500	2.0	0.42	0.48	0.63	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C203	20300-003	20600	95.4	59.60	1.93	0.36	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C204	20300-004	4200	3.1	1.53	0.05	0.54	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C205	20300-005	5700	6.4	0.04	0.33	0.61	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C206	20300-006	3200	1.8	2.89	0.18	0.73	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C207	20300-007	3200	4.1	0.00	0.25	0.78	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C208	20300-008	3200	3.5	2.19	0.26	0.71	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C209	20300-009	3400	1.3	7.80	4.05	0.30	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C210	20300-010	3225	4.3	2.36	5.12	0.65	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C211	20300-011	10900	6.1	0.00	0.00	0.77	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C212	20300-012	4700	4.8	0.88	0.37	0.24	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C213	20300-013	3400	1.6	0.29	0.50	0.75	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C214	20300-014	2900	3.0	0.33	0.52	0.55	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C215	20300-015	3000	1.7	2.48	0.72	0.48	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C216	20300-016	3900	1.6	1.47	4.74	0.52	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C217	20300-017	4200	2.0	0.00	0.32	0.99	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C218	20300-018	5400	2.4	0.04	0.49	0.77	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C219	20300-019	5400	2.3	0.63	0.40	0.79	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C220	20300-020	6000	2.1	0.08	0.15	0.95	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C221	20300-021	3700	1.3	0.06	0.43	0.96	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C222	20300-022	3200	1.5	1.39	2.30	0.58	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C223	20300-023	4500	2.7	4.42	0.97	0.62	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C224	20300-024	3500	1.3	1.42	1.32	0.31	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Avg for Cs-137, Sr-90 and Ra-226		5084	6.8	4.04	1.10	0.63							
Composite Sample Results							0.00	0.05	0.87	0.01	0.63	0.04	0.39

Survey Unit C-3

Sample ID	Lab ID	In-situ gross (cpm)	ISOCs Activity (pCi/g Cs-137)	STL Results (pCi/g)									
				Cs-137	Sr-90	Ra-226	Pu 238	Pu 239/240	U-234	U-235	U-238	Am-241	H3
SS05C301	20301-001	3800	9.8	6.70	0.41	0.39	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C302	20301-002	6100	12.3	12.40	1.10	0.32	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C303	20301-003	4000	5.5	2.18	0.62	0.46	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C304	20301-004	3400	7.8	3.60	0.15	0.13	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C305	20301-005	4600	8.6	9.00	0.89	0.38	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C306	20301-006	11300	41.0	35.70	0.76	0.52	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C307	20301-007	10700	24.2	27.00	3.79	0.53	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C308	20301-008	10700	22.5	1.78	0.99	0.54	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C309	20301-009	3100	5.1	10.20	0.53	0.40	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C310	20301-010	6200	12.1	6.50	0.59	0.37	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C311	20301-011	4200	8.8	13.80	1.01	0.47	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C312	20301-012	4735	15.0	5.86	1.70	0.36	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C313	20301-013	5000	8.1	24.70	0.76	0.35	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C314	20301-014	9000	29.3	74.00	2.63	0.47	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05C315	20301-015	14800	51.3	8.50	0.47	0.37	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Avg for Cs-137, Sr-90 and Ra-226		6776	17.4	16.13	1.09	0.40							
Composite Sample Results							0.00	0.10	0.36	0.01	0.43	0.02	0.52

Survey Unit D-1

Sample ID	Lab ID	In-situ gross (cpm)	ISOCs Activity (pCi/g Cs-137)	STL Results (pCi/g)									
				Cs-137	Sr-90	Ra-226	Pu 238	Pu 239/240	U-234	U-235	U-238	Am-241	H3
SS05D101	20673-001	4200	1.5	1.43	0.17	0.40	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D102	20673-002	13000	39.1	42.60	1.23	0.15	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D103	20692-001	6900	10.8	4.77	0.70	0.33	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D104	20673-004	3100	0.6	0.32	0.52	0.19	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D105	20673-005	2900	1.4	1.11	0.44	0.44	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D106	20673-007	3900	2.0	1.71	0.40	0.51	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D107	20673-008	10400	22.3	27.20	0.93	0.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D108	20673-009	4600	5.7	6.90	1.50	0.58	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D109	20673-010	8300	18.6	18.20	1.29	0.32	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D110	20673-011	3400	1.6	1.79	0.22	0.51	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D111	20673-012	3200	1.4	1.23	0.74	0.55	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D112	20673-013	14100	15.4	14.20	0.76	0.38	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D113	20673-014	5700	11.6	10.70	1.74	0.43	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D114	20692-002	4400	2.2	1.96	0.26	0.27	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D115	20692-003	5300	3.6	3.29	0.25	0.31	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D116	20673-015	5000	17.4	9.20	0.60	0.23	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D117	20692-005	5500	4.5	3.43	0.00	0.26	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D118	20673-016	4100	2.4	2.64	0.81	0.58	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Avg for Cs-137, Sr-90 and Ra-226		6000	9.0	8.48	0.70	0.39							
Composite Sample Results							0.00	0.06	0.44	0.09	0.28	0.03	0.09

Survey Unit D-2

Sample ID	Lab ID	In-situ gross (cpm)	ISOCs Activity (pCi/g Cs-137)	STL Results (pCi/g)									
				Cs-137	Sr-90	Ra-226	Pu 238	Pu 239/240	U-234	U-235	U-238	Am-241	H3
SS05D219	20674-001	3200	1.1	0.88	0.34	0.21	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D220	20674-002	3600	2.4	1.82	0.2	0.44	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D221	20674-003	3700	0.8	0.48	0.78	0.47	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D222	20674-004	5700	2.8	2.33	0.37	0.29	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D223	20674-005	5500	1.4	2.39	3.22	1.28	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D224	20674-007	4800	5.0	4.96	0.58	0.49	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D225	20674-008	5600	0.9	0.86	0.00	0.21	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D226	20674-009	3900	0.7	0.62	0.34	0.55	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D227	20674-010	9200	15.3	16.50	3.89	0.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D228	20674-011	3400	0.5	0.26	0.33	0.35	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D229	20674-012	4800	0.4	0.03	0.32	0.78	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D230	20674-013	3100	0.6	0.40	0.53	0.43	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D231	20674-014	4500	0.7	0.51	0.41	0.44	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D232	20674-015	4000	0.4	0.11	0.68	0.61	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D233	20674-016	3900	2.6	2.37	0.39	0.32	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D234	20674-017	5500	6.0	7.50	12.6	0.46	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D235	20674-018	4200	2.8	2.56	1.23	0.39	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D236	20674-019	4300	0.4	0.15	0.68	0.69	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Avg for Cs-137, Sr-90 and Ra-226		4606	2.5	2.49	1.49	0.50							
Composite Sample Results							0.00	0.00	0.55	0.02	0.57	0.09	0.00

Survey Unit D-3

Sample ID	Lab ID	In-situ gross (cpm)	ISOCs Activity (pCi/g Cs-137)	STL Results (pCi/g)									
				Cs-137	Sr-90	Ra-226	Pu 238	Pu 239/240	U-234	U-235	U-238	Am-241	H3
SS05D337	20692-004	2100	23.4	71	1.46	0.63	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D338	20675-001	4700	0.9	0.11	2.07	1.22	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D339	20675-002	3600	7.6	11.90	0.75	0.49	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D340	20692-008	5500	0.9	0.88	0.53	0.43	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D341	20675-003	6200	1.2	0.70	32.10	0.42	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D342	20675-004	3300	4.6	5.19	0.59	0.54	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D343	20675-005	3600	19.0	64	1.85	0.40	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D344	20675-006	2700	3.7	4.84	1.88	0.78	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D345	20675-007	6700	0.6	0.36	0.91	0.57	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D346	20675-008	6400	1.0	2.11	0.12	0.87	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D347	20692-007	6100	8.7	9.10	0.26	0.38	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D348	20675-009	5100	1.6	1.71	1.11	0.51	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D349	20675-011	4400	1.6	2.27	0.32	0.76	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D350	20675-012	3400	2.0	2.04	0.33	0.65	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D351	20675-013	4000	1.1	0.97	1.38	0.60	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D352	20689-001	5700	0.2	0.02	0.14	0.14	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D353	20689-002	2400	0.9	1.23	1.46	0.24	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D354	20675-014	8300	2.0	3.15	0.47	0.54	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Avg for Cs-137, Sr-90 and Ra-226		4678	4.5	10.09	2.65	0.57							
Composite Sample Results							0.05	0.12	0.69	0.02	0.66	0.04	0.00

Survey Unit D-4

Sample ID	Lab ID	In-situ gross (cpm)	ISOCs Activity (pCi/g Cs-137)	STL Results (pCi/g)									
				Cs-137	Sr-90	Ra-226	Pu 238	Pu 239/240	U-234	U-235	U-238	Am-241	H3
SS05D455	20692-006	4200	1.6	1.23	0.23	0.26	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D456	20692-009	6000	8.3	9.80	0.75	0.34	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D457	20676-001	3600	2.2	2.51	1.10	0.42	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D458	20676-002	3800	0.4	0.19	0.61	0.42	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D459	20676-003	5100	4.0	7.30	3.49	0.63	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D460	20676-005	4100	0.5	0.10	1.33	0.63	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D461	20692-010	9500	9.6	12.90	1.11	0.20	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D462	20676-006	4800	2.8	6.01	0.54	0.61	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D463	20676-007	4800	0.8	0.59	0.98	0.74	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D464	20676-008	3800	0.3	0.11	0.42	0.83	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D465	20697-001	1900	6.0	0.79	1.59	0.36	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D466	20697-002	2100	0.0	0.14	0.28	0.51	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D467	20676-009	4800	0.6	0.15	43.50	0.66	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D468	20676-010	4200	3.6	3.72	0.46	0.32	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D469	20676-011	3900	1.8	2.09	14.90	0.87	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D470	20697-003	2300	4.6	0.59	81.10	0.27	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D471	20697-004	2100	0.0	0.02	0.16	0.86	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D472	20697-005	2600	0.0	2.52	2.26	0.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Avg for Cs-137, Sr-90 and Ra-226		4089	2.6	2.82	8.60	0.52							
Composite Sample Results							0.04	0.01	0.47	0.00	0.43	0.00	0.16

Note: Sampling not completed in this SU as of 6/01/05 due to ongoing excavation operation

Survey Unit D-5

Sample ID	Lab ID	In-situ gross (cpm)	ISOCs Activity (pCi/g Cs-137)	STL Results (pCi/g)									
				Cs-137	Sr-90	Ra-226	Pu 238	Pu 239/240	U-234	U-235	U-238	Am-241	H3
SS05D573	20677-001	5200	11.6	14.70	2.06	0.49	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D574	20677-002	3900	1.7	1.84	5.41	0.44	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D575	20697-006	4100	0.0	11.30	8.70	0.52	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D577	20677-003	5000	5.0	5.69	0.32	0.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D578	20677-004	5600	3.8	4.44	0.24	0.57	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D579	20697-007	1900	0.0	0.37	0.11	0.35	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D580	20677-005	9500	25.7	27.20	2.18	0.52	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D581	20677-006	3800	1.5	1.66	4.22	0.12	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D582	20677-007	4300	1.8	1.49	3.95	0.56	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D583	20677-008	4500	0.9	0.63	0.43	0.56	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D584	20677-009	4100	3.3	2.84	2.22	0.35	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D585	20697-010	3000	18.9	4.90	0.60	0.35	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D586	20697-009	3800	16.6	2.72	0.16	0.44	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D587	20697-011	6900	14.7	0.32	0.02	0.24	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D589	20677-010	3600	2.5	1.55	0.24	0.19	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D576	20677-011	3800	7.1	7.90	0.96	0.49	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D588	20677-012	5400	11.8	11.00	1.27	0.46	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D590	20677-013	8100	31.3	43.60	2.55	0.42	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Avg for Cs-137, Sr-90 and Ra-226		4806	8.8	8.01	1.98	0.42							
Composite Sample Results							0.00	0.10	0.47	0.07	0.68	0.02	0.12

Note: Sampling not completed in this SU as of 6/01/05 due to ongoing excavation operation

Survey Unit D-6

Sample ID	Lab ID	In-situ gross (cpm)	ISOCs Activity (pCi/g Cs-137)	STL Results (pCi/g)									
				Cs-137	Sr-90	Ra-226	Pu 238	Pu 239/240	U-234	U-235	U-238	Am-241	H3
SS05D691	20678-001	4100	2.5	2.96	1.43	0.41	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D692	20678-002	3790	2.9	3.43	2.53	0.38	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D693	20678-003	4000	1.8	1.88	0.61	0.51	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D694	20678-004	4500	1.9	1.91	1.15	0.86	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D695	20678-005	3700	0.8	0.57	0.78	0.62	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D696	20678-006	4100	1.3	0.98	0.81	0.70	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D697	20678-007	3800	1.2	0.99	0.38	0.45	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D698	20678-009	5400	8.9	8.60	0.64	0.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D6100	20678-010	5900	7.2	7.40	0.01	0.65	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D6101	20678-011	4100	0.4	0.03	0.10	0.42	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D6102	20678-012	3400	8.6	11.20	4.43	0.31	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D6103	20678-013	3700	1.3	1.13	0.72	0.71	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D6104	20678-014	4400	0.5	0.46	1.81	0.86	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D6105	20678-015	5300	7.0	7.40	2.22	0.78	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D6106	20678-016	4000	1.9	1.91	0.17	0.76	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D6107	20678-017	3300	0.6	0.13	0.44	0.23	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D699	20678-018	4000	2.1	2.16	1.97	0.51	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05D6108	20678-019	5300	1.4	1.60	0.69	0.81	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Avg for Cs-137, Sr-90 and Ra-226		4266	2.9	3.04	1.16	0.58							
Composite Sample Results							0.03	0.08	0.76	0.02	0.60	0.00	0.07

Survey Unit L

Sample ID	Lab ID	In-situ gross (cpm)	ISOCs Activity (pCi/g Cs-137)	STL Results (pCi/g)									
				Cs-137	Sr-90	Ra-226	Pu 238	Pu 239/240	U-234	U-235	U-238	Am-241	H3
SS05L101	20695-001	4500	1.5	1.10	0.13	0.56	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05L102	20695-002	5000	6.8	6.30	0.00	0.33	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05L103	20695-003	8700	16.5	18.30	0.30	0.65	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05L104	20695-004	5100	2.5	4.50	0.43	0.41	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05L105	20695-005	4000	6.2	10.10	0.57	0.54	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05L106	20695-006	6100	13.2	8.40	0.16	0.69	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05L107	20695-007	4100	4.5	1.92	0.28	0.62	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05L108	20695-008	7000	9.4	17.40	0.03	0.48	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05L109	20695-009	10200	22.8	19.00	0.00	0.37	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05L110	20695-010	10100	11.2	15.60	0.17	0.54	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05L111	20695-011	5100	11.9	7.50	0.66	0.61	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05L112	20695-012	6100	10.9	9.20	0.54	0.42	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05L113	20695-013	12200	48.0	44.60	0.35	0.64	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05L114	20695-015	8500	15.2	27.90	0.02	0.51	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05L115	20695-016	5000	7.5	5.84	0.14	0.56	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05L116	20695-017	5800	7.6	16.20	0.25	0.48	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05L117	20695-018	4000	2.0	1.90	0.20	0.37	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Avg for Cs-137, Sr-90 and Ra-226		6559	11.6	12.69	0.25	0.52							
Composite Sample Results							0.00	0.31	0.55	0.02	0.48	0.11	0.00

Survey Unit Z-1

Sample ID	Lab ID	In-situ gross (cpm)	ISOCs Activity (pCi/g Cs-137)	STL Results (pCi/g)									
				Cs-137	Sr-90	Ra-226	Pu 238	Pu 239/240	U-234	U-235	U-238	Am-241	H3
SS05Z101	20693-001	3200	1.2	0.66	0.41	0.36	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z102	20689-003	3600	1.9	2.57	1.08	0.48	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z103	20693-003	8400	8.3	9.80	0.76	0.43	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z104	20693-004	4100	1.9	0.54	0.29	0.53	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z105	20693-005	7900	2.8	2.64	0.62	0.32	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z106	20693-007	4400	1.9	1.69	0.30	0.45	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z107	20693-008	3200	1.7	1.76	0.64	0.43	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z108	20693-009	5700	6.1	6.80	0.55	0.33	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z109	20693-010	3500	1.9	2.28	0.36	0.39	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z110	20693-011	5600	5.8	6.60	0.38	0.47	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z111	20693-012	4500	2.2	2.18	0.03	0.39	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z112	20693-013	4900	4.0	4.35	0.22	0.42	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z113	20693-014	15400	20.8	29.70	0.16	0.43	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z114	20693-015	3100	1.9	1.08	0.84	0.36	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Avg for Cs-137, Sr-90 and Ra-226		5536	4.5	5.19	0.47	0.41							
Composite Sample Results							0.01	0.18	0.60	0.07	0.53	0.02	0.00

Survey Unit Z-2

Sample ID	Lab ID	In-situ gross (cpm)	ISOCs Activity (pCi/g Cs-137)	STL Results (pCi/g)									
				Cs-137	Sr-90	Ra-226	Pu 238	Pu 239/240	U-234	U-235	U-238	Am-241	H3
SS05Z201	20694-001	3300	1.2	1.10	0.36	0.35	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z202	20694-002	2400	0.6	0.05	0.03	0.28	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z203	20694-003	3000	1.1	1.60	0.12	0.39	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z204	20694-004	4500	0.2	0.02	0.07	0.21	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z205	20694-005	5000	3.4	4.65	0.99	0.61	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z206	20694-006	3600	1.0	0.69	0.19	0.30	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z207	20694-007	3500	1.2	0.95	0.00	0.43	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z208	20694-008	3800	1.2	1.03	0.33	0.42	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z209	20694-009	3400	1.3	1.06	0.37	0.24	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z210	20694-010	7910	8.3	10.10	1.97	0.36	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z211	20694-012	5500	5.3	6.30	0.98	0.41	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z212	20694-013	3500	1.1	0.73	0.04	0.53	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z213	20694-014	2600	1.0	0.76	0.46	0.23	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z214	20694-015	5100	5.7	5.52	1.19	0.33	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Avg for Cs-137, Sr-90 and Ra-226		4079	2.3	2.47	0.51	0.36							
Composite Sample Results							0.01	0.20	0.27	0.01	0.41	0.01	0.02

Survey Unit K-1

Sample ID	Lab ID	In-situ gross (cpm)	ISOCs Activity (pCi/g Cs-137)	STL Results (pCi/g)									
				Cs-137	Sr-90	Ra-226	Pu 238	Pu 239/240	U-234	U-235	U-238	Am-241	H3
SS05K101	20729-001	4,600	4.6	0.24	0.91	0.80	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K102	20729-002	4,100	4.2	0.32	0.36	0.56	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K103	20729-003	5,600	4.6	0.15	0.10	0.74	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K104	20729-004	9,400	7.4	2.33	0.24	0.39	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K105	20729-005	16,800	42.1	50.40	1.50	0.68	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K106	20729-006	5,200	5.1	1.02	0.26	0.82	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K107	20729-007	4,700	4.9	0.30	0.00	0.97	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K108	20729-008	4,600	4.5	0.06	0.00	0.81	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K109	20729-009	8,000	18.5	15.40	3.04	0.30	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K110	20729-010	5,100	5.1	0.91	0.20	0.55	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K111	20729-011	4,700	6.1	2.33	0.00	0.55	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K112	20729-012	15,700	34.7	34.50	3.01	0.47	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K113	20729-013	6,900	51.1	16.40	12.90	0.62	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K114	20729-014	4,000	4.8	0.28	0.34	0.39	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K115	20729-015	3,900	4.8	0.40	0.65	0.40	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K116	20729-016	3,900	6.5	1.54	0.00	0.32	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K117	20729-017	7,000	7.3	3.60	0.87	0.79	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K118	20729-018	52,900	25.8	27.10	2.25	0.60	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Avg for Cs-137, Sr-90 and Ra-226		9283	13.5	8.74	1.48	0.60							
Composite Sample Results							0.03	0.04	0.91	0.01	0.38	0.07	0.00

Survey Unit K-2

Sample ID	Lab ID	In-situ gross (cpm)	ISOCs Activity (pCi/g Cs-137)	STL Results (pCi/g)									
				Cs-137	Sr-90	Ra-226	Pu 238	Pu 239/240	U-234	U-235	U-238	Am-241	H3
SS05K201	20755-001	5000	13.4	5.71	0.31	0.37	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K202	20755-002	5400	5.5	0.24	0.48	0.66	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K203	20755-003	7300	11.1	6.80	0.33	0.33	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K204	20755-004	6500	6.1	0.42	0.00	0.24	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K205	20755-005	4000	5.7	0.02	0.00	0.31	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K206	20755-006	12800	6.8	1.67	0.07	0.16	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K207	20755-007	8800	6.3	0.53	0.15	0.19	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K208	20755-008	6500	7.8	1.63	0.11	0.17	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K209	20755-009	5900	6.9	1.62	0.45	0.78	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K210	20755-010	8800	20.9	16.40	0.58	1.13	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K211	20755-011	7100	7.7	2.26	0.00	0.54	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K212	20755-012	14100	26.4	23.20	0.93	0.46	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K213	20755-013	12500	10.2	3.44	0.39	0.29	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K214	20755-014	6400	6.0	0.20	0.17	0.35	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K215	20755-015	7900	10.4	4.40	0.20	0.31	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K216	20755-016	5400	8.1	2.85	0.06	0.41	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K217	20755-017	4100	6.7	1.00	0.64	0.35	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K218	20755-018	4000	5.8	0.10	0.12	0.48	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Avg for Cs-137, Sr-90 and Ra-226		7361	9.5	4.03	0.28	0.42							
Composite Sample Results							0.03	0.01	0.31	0.03	0.27	0.04	0.00

Survey Unit K-3

Sample ID	Lab ID	In-situ gross (cpm)	ISOCs Activity (pCi/g Cs-137)	STL Results (pCi/g)									
				Cs-137	Sr-90	Ra-226	Pu 238	Pu 239/240	U-234	U-235	U-238	Am-241	H3
SS05K301	20910-001	3800	5.5	0.17	0.13	0.45	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K302	20910-002	4200	6.7	1.45	0.52	0.46	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K303	20910-003	3100	5.9	0.40	0.52	0.37	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K304	20910-004	3300	6.4	1.11	0.00	0.40	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K305	20910-005	3100	5.4	0.12	0.05	0.35	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K306	20910-006	4000	6.5	1.23	0.65	0.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K307	20910-007	2800	5.3	0.55	0.10	0.46	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K308	20910-008	3600	6.8	2.31	0.44	0.42	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K309	20910-009	5300	12.6	7.80	0.39	0.49	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K310	20910-010	12000	57.8	47.60	0.69	0.39	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K311	20910-011	5200	6.5	1.24	0.42	0.29	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K312	20910-012	11000	68.5	72.00	0.96	0.31	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K313	20910-013	4800	6.5	2.89	0.13	0.24	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K314	20910-014	8100	26.6	15.60	0.20	0.36	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K315	20910-015	4400	7.1	1.10	0.11	0.31	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K316	20910-016	2500	5.5	0.03	0.27	0.16	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K317	20910-017	8500	8.9	3.74	0.08	0.34	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Avg for Cs-137, Sr-90 and Ra-226		5276	14.6	9.37	0.33	0.37							
Composite Sample Results							0.02	0.05	0.32	0.00	0.40	0.02	0.13

Survey Unit K-4

Sample ID	Lab ID	In-situ gross (cpm)	ISOCs Activity (pCi/g Cs-137)	STL Results (pCi/g)									
				Cs-137	Sr-90	Ra-226	Pu 238	Pu 239/240	U-234	U-235	U-238	Am-241	H3
SS05K401	20921-001	3500	11.8	0.02	1.35	0.27	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K402	20921-002	7400	20.9	10.40	1.46	0.68	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K403	20921-003	10300	48.6	47.90	2.02	0.74	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K404	20921-004	5700	13.7	1.56	0.59	0.51	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K405	20921-005	8500	24.0	10.00	1.02	0.18	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K406	20921-006	4000	14.8	2.35	0.47	0.42	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K407	20921-007	10800	42.0	42.00	2.35	0.59	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K408	20921-008	16400	109.1	96.00	8.20	0.67	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K409	20921-009	4700	15.2	2.58	1.14	0.62	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K410	20921-010	7400	21.9	14.60	0.33	0.64	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K411	20921-011	7800	61.7	39.30	1.15	0.27	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K412	20921-012	7700	14.7	5.23	0.28	0.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K413	20921-013	6300	14.0	2.67	0.13	0.86	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K414	20921-014	3700	14.6	1.71	0.26	0.29	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K415	20921-015	5800	14.0	2.08	0.20	0.32	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K416	20921-016	5900	13.0	0.71	0.40	0.36	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05K417	20921-017	5400	23.5	8.10	0.24	0.40	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Avg for Cs-137, Sr-90 and Ra-226		7135	28.1	16.89	1.27	0.49							
Composite Sample Results							0.06	0.10	0.58	0.05	0.59	0.00	0.01

Survey Unit Z-3

Sample ID	Lab ID	In-situ gross (cpm)	ISOCs Activity (pCi/g Cs-137)	STL Results (pCi/g)									
				Cs-137	Sr-90	Ra-226	Pu 238	Pu 239/240	U-234	U-235	U-238	Am-241	H3
SS05Z301	20757-001	3000	6.4	1.49	0.10	0.43	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z302	20757-002	3500	8.3	3.40	0.68	0.38	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z303	20757-003	3400	8.2	3.81	0.95	0.55	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z304	20757-004	3800	7.6	2.77	0.31	0.63	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z305	20757-005	4300	9.7	5.39	0.69	0.67	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z306	20757-006	3400	6.6	1.47	0.11	0.51	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z307	20757-007	3500	9.0	3.86	1.00	0.71	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z308	20757-008	3800	6.7	1.59	0.47	0.74	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z309	20757-009	3900	6.2	0.98	0.51	0.57	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z310	20757-010	24000	74.3	95.00	1.64	0.72	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z311	20757-011	15500	40.8	41.70	0.30	0.80	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z312	20757-012	6600	14.3	13.50	0.52	0.55	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z313	20757-013	4200	8.3	3.65	1.08	0.85	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS05Z314	20757-015	4000	8.3	5.14	1.04	0.66	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Avg for Cs-137, Sr-90 and Ra-226		6207	15.3	13.13	0.67	0.63							
Composite Sample Results							0.00	0.00	0.61	0.03	0.76	0.12	0.03

¹ Sr-90 and Ra-226 results pending mean of all confirmation samples used to complete Dose Modelling

Appendix B
Summary of Railcar Shipments to Envirocare

Environmental Restoration Railcar Volumes

Total CF 504,555
Total CY 18,687

FHWMF CF 431,424
FHWMF CY 15,979

811 CF 73,131
811 CY 2,709

Total Railcars Shipped 339

Railcar #	Shipment ID	Total Weight	FHWMF Weight	811 Weight	Cubic Feet	FHWMF Cubic Feet	811 Cubic Feet	Shipment Date	Tons	WCS Number
MHFX 5684	257	192,791	192,791	0	1,886	1,886	0	10/29/2004	96.40	WCS-01
MHFX 5613	258	192,791	192,791	0	1,886	1,886	0	10/29/2004	96.40	WCS-01
MHFX 5662	259	192,791	192,791	0	1,886	1,886	0	10/29/2004	96.40	WCS-01
CEFX 31057	262	194,222	194,222	0	1,900	1,900	0	11/12/2004	97.11	WCS-01
CEFX 31031	263	194,222	194,222	0	1,900	1,900	0	11/12/2004	97.11	WCS-01
CEFX 31068	264	194,528	0	194,528	1,903	0	1,903	11/12/2004	0.00	NA
CEFX 31058	265	194,324	0	194,324	1,901	0	1,901	11/12/2004	0.00	NA
CEFX 31029	266	194,937	0	194,937	1,907	0	1,907	11/12/2004	0.00	NA
MHFX 5710	267	193,506	0	193,506	1,893	0	1,893	11/12/2004	0.00	NA
MHFX 5725	268	192,893	38,559	154,333	1,887	377	1,510	11/12/2004	0.00	NA
MHFX 5809	269	193,915	0	193,915	1,897	0	1,897	11/17/2004	19.28	NA
MHFX 5719	270	193,199	156,202	36,998	1,890	1,528	362	11/17/2004	0.00	NA
CEFX 30919	271	192,535	0	192,535	1,884	0	1,884	11/17/2004	78.10	WCS-02
MHFX 5849	272	194,569	0	194,569	1,903	0	1,903	11/17/2004	0.00	NA
MHFX 5844	273	194,089	0	194,089	1,899	0	1,899	11/17/2004	0.00	NA
MHFX 5699	274	193,711	0	193,711	1,895	0	1,895	11/17/2004	0.00	NA
MHFX 5630	275	191,635	0	191,635	1,875	0	1,875	11/17/2004	0.00	NA
MHFX 5788	276	192,739	0	192,739	1,886	0	1,886	11/17/2004	0.00	NA
MHFX 5714	277	193,015	54,932	138,083	1,888	537	1,351	11/17/2004	0.00	NA
MHFX 5782	278	192,862	192,862	0	1,887	1,887	0	11/17/2004	27.47	NA
MHFX 5814	280	193,946	0	193,946	1,897	0	1,897	11/23/2004	96.43	WCS-02
MHFX 5795	281	192,780	192,780	0	1,886	1,886	0	11/23/2004	0.00	NA
MHFX 5773	282	192,780	192,780	0	1,886	1,886	0	11/23/2004	96.39	WCS-02
MHFX 5656	283	192,586	0	192,586	1,884	0	1,884	11/23/2004	96.39	WCS-02
MHFX 5851	284	193,935	0	193,935	1,897	0	1,897	11/23/2004	0.00	NA
MHFX 5738	285	193,302	0	193,302	1,891	0	1,891	11/23/2004	0.00	NA
MHFX 5619	286	192,688	0	192,688	1,885	0	1,885	11/23/2004	0.00	NA
CEFX 30610	287	193,199	0	193,199	1,890	0	1,890	11/23/2004	0.00	NA
MHFX 5682	288	192,944	158,214	34,730	1,888	1,548	340	11/23/2004	0.00	NA
MHFX 5690	289	192,934	192,934	0	1,887	1,887	0	12/2/2004	79.11	WCS-02
MHFX 5764	290	193,036	158,289	34,746	1,888	1,548	340	12/2/2004	96.47	WCS-03
MHFX 5691	291	192,555	157,895	34,660	1,884	1,545	339	12/2/2004	79.14	WCS-03
CEFX 32098	292	193,077	193,077	0	1,889	1,889	0	12/2/2004	78.95	WCS-03
MHFX 5692	293	193,240	170,051	23,189	1,890	1,664	227	12/2/2004	96.54	WCS-03
MHFX 5833	294	193,864	160,907	32,957	1,897	1,574	322	12/2/2004	85.03	WCS-03
MHFX 5668	295	193,251	166,195	27,055	1,891	1,626	265	12/2/2004	80.45	WCS-04
MHFX 5770	296	193,179	193,179	0	1,890	1,890	0	12/2/2004	83.10	WCS-04
									96.59	WCS-04

Railcar #	Shipment ID	Total Weight	FHMF Weight	811 Weight	Cubic Feet	FHMF Cubic Feet	811 Cubic Feet	Shipment Date	Tons	WCS Number
MHFX 5799	297	192,678	192,678	0	1,885	1,885	0	12/2/2004	96.34	WCS-04
CEFX 30927	298	191,717	0	191,717	1,876	0	1,876	12/2/2004	0.00	NA
MHFX 5642	299	193,087	169,917	23,170	1,889	1,662	227	12/2/2004	84.96	WCS-04
MHFX 5808	302	194,078	194,078	0	1,899	1,899	0	12/2/2004	97.04	WCS-05
MHFX 5832	303	192,739	192,739	0	1,886	1,886	0	12/7/2004	96.37	WCS-05
MHFX 5812	304	193,598	193,598	0	1,894	1,894	0	12/7/2004	96.80	WCS-05
MHFX 5780	305	192,944	192,944	0	1,888	1,888	0	12/7/2004	96.47	WCS-05
MHFX 5767	306	193,036	193,036	0	1,888	1,888	0	12/7/2004	96.52	WCS-05
MHFX 5859	307	193,803	193,803	0	1,896	1,896	0	12/7/2004	96.90	WCS-06
MHFX 5804	308	192,739	192,739	0	1,886	1,886	0	12/7/2004	96.37	WCS-06
MHFX 5734	310	193,036	193,036	0	1,888	1,888	0	12/7/2004	96.17	WCS-06
MHFX 5638	311	192,331	192,331	0	1,882	1,882	0	12/7/2004	96.17	WCS-07
MHFX 5861	312	193,843	193,843	0	1,896	1,896	0	12/7/2004	95.41	WCS-07
NDYX 320818	313	192,331	192,331	0	1,884	1,884	0	12/15/2004	91.32	WCS-07
HLMX 1151	314	190,828	190,828	0	1,898	1,898	0	12/15/2004	96.27	WCS-07
HLMX 1209	315	182,640	182,640	0	1,863	1,863	0	12/15/2004	97.00	WCS-08
MHFX 5755	316	192,535	192,535	0	1,887	1,887	0	12/15/2004	95.22	WCS-08
NDYX 320647	317	193,997	193,997	0	1,887	1,887	0	12/15/2004	96.45	WCS-08
HLMX 1243	318	190,439	190,439	0	1,884	1,884	0	12/15/2004	96.44	WCS-08
MHFX 5647	319	192,893	192,893	0	1,890	1,890	0	12/15/2004	96.29	WCS-08
NDYX 322002	320	192,883	192,883	0	1,888	1,598	289	12/15/2004	96.60	WCS-09
NDYX 322012	321	192,586	192,586	0	1,885	1,562	323	12/15/2004	81.70	WCS-09
MHFX 5688	322	193,199	193,199	0	1,897	1,549	348	12/15/2004	79.86	WCS-09
MHFX 5709	323	192,985	163,400	29,585	1,897	0	1,897	12/15/2004	79.16	WCS-09
MHFX 5628	324	192,688	159,719	32,969	1,888	1,598	289	12/15/2004	0.00	NA
PW 30008	325	193,884	158,326	35,558	1,885	1,562	323	12/15/2004	96.47	WCS-10
MHFX 5706	326	193,874	0	193,874	1,897	1,549	348	12/15/2004	66.97	WCS-10
MHFX 5648	327	192,944	192,944	0	1,888	1,888	0	12/15/2004	59.93	WCS-10
MHFX 5604	328	193,302	133,940	59,410	1,891	1,310	581	12/15/2004	59.21	WCS-10
MHFX 5802	329	193,537	119,857	73,679	1,893	1,173	721	12/22/2004	97.01	WCS-10
MHFX 5766	330	193,097	118,426	74,671	1,889	1,159	730	12/22/2004	0.00	NA
NDYX 320654	332	194,017	194,017	0	1,898	1,898	0	12/22/2004	0.00	NA
CEFX 31025	333	194,528	0	194,528	1,903	0	1,903	12/22/2004	0.00	NA
CEFX 31043	334	194,528	0	194,528	1,903	0	1,903	12/22/2004	0.00	NA
NDYX 320782	335	191,973	0	191,973	1,878	0	1,878	1/4/2004	0.00	NA
MHFX 5713	336	193,199	193,199	0	1,890	1,890	0	1/4/2004	0.00	NA
NDYX 320668	337	194,119	194,119	0	1,899	1,899	0	1/4/2004	96.60	WCS-11
MHFX 5649	338	192,893	0	192,893	1,887	0	1,887	1/4/2004	97.06	WCS-11
HLMX 1280	339	191,053	124,184	66,868	1,869	1,215	654	1/4/2004	0.00	NA
CEFX 32718	340	193,813	129,855	63,958	1,896	1,270	626	1/4/2004	62.09	WCS-12
MHFX 5735	341	193,302	0	193,302	1,891	0	1,891	1/4/2004	64.93	WCS-12
NDYX 320776	342	192,075	0	192,075	1,879	0	1,879	1/4/2004	0.00	NA
CEFX 32084	343	193,302	193,302	0	1,891	1,891	0	1/6/2004	0.00	NA
MHFX 5613	344	192,791	192,791	0	1,886	1,886	0	1/6/2004	96.65	WCS-12
									96.40	WCS-11

Railcar #	Shipment ID	Total Weight	FHWMF Weight	811 Weight	Cubic Feet	FHWMF Cubic Feet	811 Cubic Feet	Shipment Date	Tons	WCS Number
MHFX 5662	345	192,586	192,586	0	1,884	1,884	0	1/6/2004	96.29	WCS-11
MHFX 5684	346	192,995	192,995	0	1,888	1,888	0	1/6/2004	96.50	WCS-11
NDYX 320793	347	192,688	192,688	0	1,885	1,885	0	1/6/2004	96.34	WCS-13
HLMX 1263	348	189,928	189,928	0	1,858	1,858	0	1/6/2004	94.96	WCS-13
NDYX 320800	349	192,279	192,279	0	1,881	1,881	0	1/6/2004	96.14	WCS-13
NDYX 320809	350	192,791	192,791	0	1,886	1,886	0	1/11/2004	96.40	WCS-13
NDYX 320152	351	193,097	193,097	0	1,889	1,889	0	1/11/2004	96.55	WCS-13
NDYX 320091	352	193,711	193,711	0	1,895	1,895	0	1/11/2004	96.86	WCS-12
MHFX 5687	353	193,097	0	193,097	1,889	0	1,889	1/11/2004	0.00	NA
MHFX 5851	354	194,222	159,262	34,960	1,900	1,558	342	1/17/2004	79.63	WCS-14
MHFX 5814	355	194,119	128,119	66,001	1,899	1,253	646	1/17/2004	64.06	WCS-15
MHFX 5619	356	192,791	163,872	28,919	1,886	1,603	283	1/17/2004	81.94	WCS-14
CEFX 30610	357	193,097	150,616	42,481	1,889	1,473	416	1/17/2004	75.31	WCS-14
MHFX 5656	358	192,791	192,791	0	1,886	1,886	0	1/17/2004	96.40	WCS-14
MHFX 5725	359	192,177	163,351	28,827	1,880	1,598	282	1/22/2004	81.68	WCS-15
MHFX 5719	360	193,302	164,306	28,995	1,891	1,607	284	1/22/2004	82.15	WCS-15
DJLX 98542	361	192,791	0	192,791	1,886	0	1,886	1/22/2004	0.00	NA
DJLX 98519	362	194,119	194,119	0	1,899	1,899	0	1/31/2004	97.06	WCS-17
DJLX 19109	363	193,813	193,813	0	1,896	1,896	0	1/31/2004	96.91	WCS-17
MHFX 5811	364	194,017	194,017	0	1,898	1,898	0	1/22/2004	97.01	WCS-15
MHFX 5841	365	192,791	192,791	0	1,886	1,886	0	1/22/2004	96.40	WCS-15
MHFX 5623	366	192,791	192,791	0	1,886	1,886	0	1/22/2004	96.40	WCS-15
MHFX 5738	369	192,893	192,893	0	1,887	1,887	0	1/31/2004	96.45	WCS-17
MHFX 5795	370	192,893	192,893	0	1,887	1,887	0	1/31/2004	96.45	WCS-17
MHFX 5773	371	192,893	192,893	0	1,887	1,887	0	1/31/2004	96.45	WCS-17
CEFX 31029	372	189,519	189,519	0	1,854	1,854	0	2/4/2005	94.76	WCS-18
MHFX 5699	373	192,791	192,791	0	1,886	1,886	0	2/4/2005	96.40	WCS-18
MHFX 5682	374	188,088	188,088	0	1,840	1,840	0	2/4/2005	94.04	WCS-18
MHFX 5809	377	173,020	0	173,020	1,693	0	1,693	2/4/2005	0.00	NA
MHFX 5788	378	188,140	188,140	0	1,841	1,841	0	2/4/2005	94.07	WCS-18
MHFX 5630	379	187,910	187,910	0	1,838	1,838	0	2/4/2005	93.96	WCS-18
CEFX 31057	380	189,590	189,590	0	1,855	1,855	0	2/4/2005	94.80	WCS-019
MHFX 5714	381	188,160	188,160	0	1,841	1,841	0	2/10/2005	94.08	WCS-019
MHFX 5830	382	189,120	0	189,120	1,850	0	1,850	2/10/2005	0.00	NA
MHFX 5849	383	189,050	189,050	0	1,849	1,849	0	2/10/2005	94.53	WCS-020
MHFX 5863	384	189,270	189,270	0	1,852	1,852	0	2/10/2005	94.64	WCS-020
CEFX 31058	385	188,800	188,800	0	1,847	1,847	0	2/10/2005	94.40	WCS-020
MHFX 5844	386	188,480	188,480	0	1,844	1,844	0	2/10/2005	94.24	WCS-019
CEFX 32039	387	188,250	188,250	0	1,842	1,842	0	2/10/2005	94.13	WCS-019
CEFX 30919	388	188,110	188,110	0	1,840	1,840	0	2/10/2005	94.06	WCS-019
MHFX 5867	389	189,600	189,600	0	1,855	1,855	0	2/10/2005	94.80	WCS-019
CEFX 31068	391	194,350	194,350	0	1,901	1,901	0	2/16/2005	97.18	WCS-020
CEFX 31031	392	194,380	194,380	0	1,902	1,902	0	2/16/2005	97.19	WCS-021
MHFX 5710	393	193,080	193,080	0	1,889	1,889	0	2/16/2005	96.54	WCS-021

NA-Not sampled under this project. See 811 Project Closeout for WCS results.

Railcar #	Shipment ID	Total Weight	FHWMF Weight	811 Weight	Cubic Feet	FHWMF Cubic Feet	811 Cubic Feet	Shipment Date	Tons	WCS Number
MHFX 5654	394	192,930	192,930	0	1,887	1,887	0	2/23/2005	96.47	WCS-024
HLMX 1170	395	191,060	191,060	0	1,869	1,869	0	2/23/2005	95.53	WCS-024
DJLX 98504	396	193,590	193,590	0	1,894	1,894	0	2/23/2005	96.80	WCS-024
MHFX 5605	397	193,410	193,410	0	1,892	1,892	0	2/23/2005	96.71	WCS-021
HLMX 1103	398	191,090	191,090	0	1,869	1,869	0	2/23/2005	95.55	WCS-021
NDYX 320638	399	194,415	194,415	0	1,902	1,902	0	2/23/2005	97.21	WCS-021
MHFX 5672	400	193,100	193,100	0	1,889	1,889	0	2/23/2005	96.55	WCS-024
NDYX 320681	401	194,360	194,360	0	1,901	1,901	0	2/27/2005	97.18	WCS-024
MHFX 5806	402	193,370	193,370	0	1,892	1,892	0	2/27/2005	96.69	WCS-025
NDYX 320637	403	194,245	194,245	0	1,900	1,900	0	2/27/2005	97.12	WCS-022
MHFX 5607	404	193,260	193,260	0	1,891	1,891	0	2/27/2005	96.63	WCS-022
NDYX 320135	405	193,830	193,830	0	1,896	1,896	0	2/27/2005	96.92	WCS-022
HLMX 1206	406	190,890	190,890	0	1,867	1,867	0	2/27/2005	95.45	WCS-022
HLMX 1293	407	191,170	191,170	0	1,870	1,870	0	2/27/2005	95.59	WCS-022
MHFX 5770	408	193,105	193,105	0	1,889	1,889	0	3/3/2005	96.55	WCS-023
NDYX 320821	409	192,580	192,580	0	1,884	1,884	0	3/3/2005	96.29	WCS-023
HLMX 1171	410	189,980	189,980	0	1,859	1,859	0	3/3/2005	94.99	WCS-023
MHFX 5773	420	192,910	192,910	0	1,887	1,887	0	4/28/2005	96.46	WCS-023
JTLX 239	421	194,480	194,480	0	1,903	1,903	0	4/28/2005	97.24	WCS-023
MHFX 5719	422	193,420	193,420	0	1,892	1,892	0	4/28/2005	96.71	WCS-025
MHFX 5795	423	193,800	193,800	0	1,896	1,896	0	4/28/2005	96.90	WCS-025
NDYX 320657	425	194,590	194,590	0	1,904	1,904	0	5/5/2005	97.30	WCS-025
MHFX 5790	426	193,240	193,240	0	1,890	1,890	0	5/5/2005	96.62	WCS-025
HLMX 1267	427	191,080	191,080	0	1,869	1,869	0	5/5/2005	95.54	WCS-027
NDYX 320785	428	193,160	193,160	0	1,890	1,890	0	5/5/2005	96.58	WCS-027
CEFX 32083	429	194,200	143,610	50,590	1,900	1,405	495	5/5/2005	71.81	WCS-027
HLMX 1221	430	191,580	191,580	0	1,874	1,874	0	5/5/2005	95.79	WCS-027
MHFX 5739	431	193,100	193,100	0	1,889	1,889	0	5/5/2005	96.55	WCS-028
MHFX 5831	432	194,840	194,840	0	1,906	1,906	0	5/5/2005	97.42	WCS-028
CEFX 31063	433	195,180	195,180	0	1,909	1,909	0	5/12/2005	97.59	WCS-028
CEFX 30318	434	185,990	185,990	0	1,819	1,819	0	5/12/2005	93.00	WCS-028
DJLX 98548	435	194,660	194,660	0	1,904	1,904	0	5/12/2005	97.33	WCS-028
CEFX 31053	436	194,150	194,150	0	1,899	1,899	0	5/12/2005	97.08	WCS-029
CEFX 31062	437	195,140	195,140	0	1,909	1,909	0	5/12/2005	97.57	WCS-029
DJLX 9937	439	182,810	182,810	0	1,788	1,788	0	5/20/2005	91.41	WCS-029
JTLX 100107	440	183,070	183,070	0	1,791	1,791	0	5/20/2005	91.54	WCS-029
DJLX 9927	441	183,560	183,560	0	1,796	1,796	0	5/20/2005	91.78	WCS-029
CEFX 33559	443	194,010	194,010	0	1,898	1,898	0	6/2/2005	97.01	WCS-030
CEFX 33444	444	193,890	193,890	0	1,897	1,897	0	6/2/2005	96.95	WCS-030
DJLX 9926	445	183,640	183,640	0	1,796	1,796	0	6/2/2005	91.82	WCS-030
DJLX 9924	446	183,710	183,710	0	1,797	1,797	0	6/2/2005	91.86	WCS-030
DJLX 9957	448	183,660	147,160	36,500	1,797	1,440	357	6/7/2005	73.58	WCS-030
DJLX 9960	449	183,770	151,600	32,170	1,798	1,483	315	6/10/2005	75.80	WCS-031
JTLX 100114	450	183,660	140,090	43,570	1,797	1,370	426	6/10/2005	70.05	WCS-031

Railcar #	Shipment ID	Total Weight	FHMF Weight	811 Weight	Cubic Feet	FHMF Cubic Feet	811 Cubic Feet	Shipment Date	Tons	WCS Number
NDYX 360020	451	184,750	184,750	0	1,807	1,807	0	6/7/2005	92.38	WCS-031
DJLX 9978	452	183,290	183,290	0	1,793	1,793	0	6/7/2005	91.65	WCS-031
NDYX 360025	453	185,390	185,390	0	1,814	1,814	0	6/7/2005	92.70	WCS-031
MHFX 5795	454	193,770	193,770	0	1,896	1,896	0	6/7/2005	96.89	WCS-032
MHFX 5782	455	193,580	193,580	0	1,894	1,894	0	6/7/2005	96.79	WCS-032
JTLX 30132	456	193,980	193,980	0	1,898	1,898	0	6/7/2005	96.99	WCS-032
NDYX 360066	457	185,030	185,030	0	1,810	1,810	0	6/7/2005	92.52	WCS-032
NDYX 360067	458	185,180	185,180	0	1,812	1,812	0	6/7/2005	92.59	WCS-032
NDYX 360064	459	184,970	183,470	1,500	1,809	1,795	15	6/7/2005	91.74	WCS-033
NDYX 360063	460	185,380	185,380	0	1,814	1,814	0	6/7/2005	92.69	WCS-033
DJLX 9958	463	183,760	183,760	0	1,798	1,798	0	6/10/2005	91.88	WCS-033
JTLX 100116	464	183,770	183,770	0	1,798	1,798	0	6/10/2005	91.89	WCS-033
DJLX 9907	465	182,840	182,840	0	1,789	1,789	0	6/10/2005	91.42	WCS-033
MHFX 5719	466	193,880	193,880	0	1,897	1,897	0	6/10/2005	96.94	WCS-034
DJLX 9905	467	184,040	184,040	0	1,800	1,800	0	6/10/2005	92.02	WCS-034
DJLX 9915	468	183,540	183,540	0	1,796	1,796	0	6/14/2005	91.77	WCS-034
DJLX 9947	469	183,440	183,440	0	1,795	1,795	0	6/10/2005	91.72	WCS-034
DJLX 9918	470	183,590	183,590	0	1,796	1,796	0	6/10/2005	91.80	WCS-034
HLMX 1172	471	191,550	191,550	0	1,874	1,874	0	6/14/2005	95.78	WCS-035
DJLX 9923	472	183,570	183,570	0	1,796	1,796	0	6/14/2005	91.79	WCS-035
DJLX 9921	473	183,550	183,550	0	1,796	1,796	0	6/14/2005	91.78	WCS-035
DJLX 9906	474	183,900	183,900	0	1,799	1,799	0	6/14/2005	91.95	WCS-035
JTLX 100110	475	183,860	89,450	94,410	1,799	875	924	6/14/2005	44.73	WCS-035
JTLX 100108	476	183,410	123,690	59,720	1,794	1,210	584	6/14/2005	61.85	WCS-036
JTLX 5835	477	194,470	0	194,470	1,902	0	1,902	6/18/2005	0.00	WCS-036
JTLX 5801	478	193,820	63,850	129,970	1,896	625	1,271	6/18/2005	31.93	WCS-036
JTLX 100105	479	183,850	183,850	0	1,799	1,799	0	6/18/2005	91.93	WCS-036
JTLX 100111	480	183,820	140,900	42,920	1,798	1,378	420	6/18/2005	70.45	WCS-036
DJLX 9950	482	183,630	183,630	0	1,796	1,796	0	6/18/2005	91.82	WCS-037
DJLX 9948	483	183,570	183,570	0	1,796	1,796	0	6/18/2005	91.79	WCS-037
DJLX 9942	484	183,880	183,880	0	1,799	1,799	0	6/18/2005	91.94	WCS-037
DJLX 9945	485	183,700	183,700	0	1,797	1,797	0	6/18/2005	91.85	WCS-037
DJLX 9900	498	183,790	183,790	0	1,798	1,798	0	6/18/2005	91.90	WCS-037
DJLX 9930	499	183,600	183,600	0	1,796	1,796	0	6/18/2005	91.80	WCS-038
MHFX 5739	500	193,870	193,870	0	1,897	1,897	0	6/18/2005	96.94	WCS-038
NDYX 320657	501	194,900	194,900	0	1,907	1,907	0	6/18/2005	97.45	WCS-038
MHFX 5773	502	193,450	193,450	0	1,892	1,892	0	6/22/2005	96.73	WCS-038
MHFX 5790	503	193,320	193,320	0	1,891	1,891	0	6/22/2005	96.66	WCS-038
JTSX 8	504	180,120	180,120	0	1,762	1,762	0	6/22/2005	90.06	WCS-039
JTSX 16	505	181,230	181,230	0	1,773	1,773	0	6/22/2005	90.62	WCS-039
JTSX 32	506	180,300	180,300	0	1,764	1,764	0	6/22/2005	90.15	WCS-039
DJLX 60908	507	182,290	182,290	0	1,783	1,783	0	6/22/2005	91.15	WCS-039
CEFX 32083	508	194,410	194,410	0	1,902	1,902	0	6/22/2005	97.21	WCS-039
NDYX 320785	509	193,100	193,100	0	1,889	1,889	0	6/22/2005	96.55	WCS-040

Railcar #	Shipment ID	Total Weight	FHMF Weight	811 Weight	Cubic Feet	FHMF Cubic Feet	811 Cubic Feet	Shipment Date	Tons	WCS Number
HLMX 1267	510	191,050	191,050	0	1,869	1,869	0	6/22/2005	95.53	WCS-040
JTSX 41	512	180,830	180,830	0	1,427	1,427	0	ONSITE	90.42	WCS-040
JTSX 17	513	181,210	181,210	0	1,430	1,430	0	8/6/2005	90.61	WCS-040
AM 916	514	181,750	181,750	0	1,434	1,434	0	8/6/2005	90.88	WCS-040
AM 951	515	181,880	181,880	0	1,436	1,436	0	8/6/2005	90.94	WCS-041
AM 917	516	181,900	181,900	0	1,436	1,436	0	ONSITE	90.95	WCS-041
AM 963	517	181,890	181,890	0	1,436	1,436	0	ONSITE	90.95	WCS-041
JTLX 100113	521	183,220	183,220	0	1,446	1,446	0	ONSITE	91.61	WCS-041
DJXX 9917	522	183,420	183,420	0	1,448	1,448	0	ONSITE	91.71	WCS-041
CEFX 33493	523	194,060	194,060	0	1,532	1,532	0	ONSITE	97.03	WCS-042
CEFX 33484	524	194,140	194,140	0	1,532	1,532	0	ONSITE	97.07	WCS-042
JTLX 100119	525	183,880	183,880	0	1,451	1,451	0	ONSITE	91.94	WCS-042
NDYX 320698	534	194,610	194,610	0	1,536	1,536	0	ONSITE	97.31	WCS-042
NDYX 320167	535	194,300	194,300	0	1,535	1,535	0	ONSITE	97.15	WCS-042
NDYX 320181	536	194,480	194,480	0	1,446	1,446	0	ONSITE	97.24	WCS-043
DJXX 9937	540	183,270	183,270	0	1,447	1,447	0	8/1/2005	91.64	WCS-047
JTLX 100107	541	183,390	183,390	0	1,446	1,446	0	8/1/2005	91.70	WCS-046
DJXX 9927	542	183,190	183,190	0	1,467	1,467	0	8/1/2005	91.60	WCS-046
DJXX 9918	543	185,860	185,860	0	1,450	1,450	0	8/1/2005	92.93	WCS-046
DJXX 9931	544	183,700	183,700	0	1,436	1,436	0	8/1/2005	91.85	WCS-046
AM 931	545	181,890	181,890	0	1,445	1,445	0	8/1/2005	90.95	WCS-046
DJXX 9962	546	183,030	183,030	0	1,446	1,446	0	8/1/2005	91.52	WCS-045
DJXX 9903	547	183,250	183,250	0	1,449	1,449	0	8/1/2005	91.63	WCS-045
DJXX 9922	548	183,540	183,540	0	1,447	1,447	0	8/1/2005	91.77	WCS-045
DJXX 9904	549	183,370	183,370	0	1,575	1,575	0	8/1/2005	91.69	WCS-045
CEFX 33163	550	199,560	199,560	0	1,539	1,539	0	8/2/2005	99.78	WCS-045
CEFX 31070	551	194,960	194,960	0	1,530	1,530	0	8/2/2005	97.48	WCS-044
MHFX 5610	552	193,890	193,890	0	1,513	1,513	0	8/2/2005	96.95	WCS-044
HLMX 1279	553	191,680	191,680	0	1,440	1,440	0	8/2/2005	95.84	WCS-044
DJXX 9932	554	182,400	182,400	0	1,432	1,432	0	8/2/2005	91.20	WCS-044
JTSX 43	555	181,390	181,390	0	1,576	1,576	0	8/2/2005	90.70	WCS-044
CEFX 33123	556	199,700	199,700	0	1,513	1,513	0	8/2/2005	99.85	WCS-043
HLMX 1221	557	191,720	191,720	0	1,536	1,536	0	8/2/2005	95.86	WCS-043
NDYX 320686	558	194,590	194,590	0	1,539	1,539	0	8/2/2005	97.30	WCS-043
CEFX 31028	559	194,940	194,940	0	1,453	1,453	0	8/2/2005	97.47	WCS-043
DJXX 9926	560	184,050	184,050	0	1,450	1,450	0	8/2/2005	92.03	WCS-047
DJXX 9924	561	183,750	183,750	0	1,462	1,462	0	8/2/2005	91.88	WCS-047
NDYX 360063	562	185,210	185,210	0	1,577	1,577	0	7/28/2005	92.61	WCS-047
MRMX 100108	563	199,820	199,820	0	1,533	1,533	0	8/2/2005	99.91	WCS-047
CEFX 33559	564	194,170	194,170	0	1,462	1,462	0	8/1/2005	97.09	WCS-048
NDYX 360064	565	185,230	185,230	0	1,530	1,530	0	7/28/2005	92.62	WCS-048
CEFX 33444	566	193,880	193,880	0	1,444	1,444	0	7/28/2005	96.94	WCS-048
DJXX 9915	575	182,960	182,960	0	1,444	1,444	0	7/29/2005	91.48	WCS-048
DJXX 9906	576	182,910	182,910	0	1,444	1,444	0	7/29/2005	91.46	WCS-048

Railcar #	Shipment ID	Total Weight	FHWMF Weight	811 Weight	Cubic Feet	FHWMF Cubic Feet	811 Cubic Feet	Shipment Date	Tons	WCS Number
DJXX 9948	577	182,850	182,850	0	1,443	1,443	0	7/29/2005	91.43	WCS-049
DJXX 9950	578	182,340	182,340	0	1,439	1,439	0	7/29/2005	91.17	WCS-049
DJXX 9921	579	183,560	183,560	0	1,449	1,449	0	7/29/2005	91.78	WCS-049
DJXX 9930	580	183,450	183,450	0	1,448	1,448	0	7/29/2005	91.73	WCS-049
DJXX 9900	581	183,730	183,730	0	1,450	1,450	0	7/29/2005	91.87	WCS-049
NDYX 360017	582	185,180	185,180	0	1,462	1,462	0	7/29/2005	92.59	WCS-050
NDYX 360097	583	184,160	184,160	0	1,454	1,454	0	7/29/2005	92.08	WCS-050
NDYX 360052	584	185,000	185,000	0	1,460	1,460	0	7/29/2005	92.50	WCS-050
NDYX 360066	585	185,060	185,060	0	1,461	1,461	0	7/29/2005	92.53	WCS-050
MRMX 100116	586	200,760	200,760	0	1,585	1,585	0	7/29/2005	100.38	WCS-050
DJXX 9947	587	183,450	183,450	0	1,448	1,448	0	8/6/2005	91.73	WCS-051
JTLX 100108	588	182,290	182,290	0	1,439	1,439	0	8/6/2005	91.15	WCS-051
MRMX 100101	589	200,540	200,540	0	1,583	1,583	0	8/6/2005	100.27	WCS-051
NDYX 360067	590	185,200	185,200	0	1,462	1,462	0	8/6/2005	92.60	WCS-051
JTLX 5822	591	193,970	193,970	0	1,531	1,531	0	8/6/2005	96.99	WCS-051
NDYX 360006	592	185,060	185,060	0	1,461	1,461	0	8/6/2005	92.53	WCS-052
MRMX 100102	593	200,640	200,640	0	1,584	1,584	0	8/6/2005	100.32	WCS-052
AM 940	594	181,820	181,820	0	1,435	1,435	0	8/6/2005	90.91	WCS-052
DJXX 9905	595	183,790	183,790	0	1,451	1,451	0	8/6/2005	91.90	WCS-052
JTLX 100110	596	183,870	183,870	0	1,451	1,451	0	8/6/2005	91.94	WCS-052
MRMX 100112	597	200,200	200,200	0	1,580	1,580	0	8/6/2005	100.10	WCS-053
DJXX 9923	598	183,400	183,400	0	1,448	1,448	0	8/6/2005	91.70	WCS-053
DJXX 9954	599	183,770	183,770	0	1,450	1,450	0	8/6/2005	91.89	WCS-053
AM 915	600	182,720	182,720	0	1,442	1,442	0	8/6/2005	91.36	WCS-053
AM 929	601	182,250	182,250	0	1,438	1,438	0	8/6/2005	91.13	WCS-053
JTSX 8	602	180,130	180,130	0	1,422	1,422	0	8/6/2005	90.07	WCS-054
JTSX 32	603	180,240	180,240	0	1,423	1,423	0	8/6/2005	90.12	WCS-054
DJXX 60908	604	182,230	182,230	0	1,438	1,438	0	8/6/2005	91.12	WCS-054
NDYX 320698	605	194,790	194,790	0	1,537	1,537	0	8/6/2005	97.40	WCS-054
DJXX 9978	606	183,640	183,640	0	1,449	1,449	0	8/18/2005	91.82	WCS-054
MRMX 100118	607	200,580	200,580	0	1,583	1,583	0	8/18/2005	100.29	WCS-055
MRMX 100103	608	200,660	200,660	0	1,584	1,584	0	8/18/2005	100.33	WCS-055
JTLX 100116	609	183,770	183,770	0	1,450	1,450	0	8/20/2005	91.89	WCS-055
DJXX 9958	610	183,410	183,410	0	1,448	1,448	0	8/20/2005	91.71	WCS-055
MRMX 100110	611	199,770	199,770	0	1,577	1,577	0	8/20/2005	99.89	WCS-055
DJXX 9907	612	183,520	183,520	0	1,448	1,448	0	8/20/2005	91.76	WCS-056
AM 961	613	181,920	181,920	0	1,436	1,436	0	8/20/2005	90.96	WCS-056
AM 925	614	181,940	181,940	0	1,436	1,436	0	8/20/2005	90.97	WCS-056
DJXX 9960	615	183,720	183,720	0	1,450	1,450	0	8/20/2005	91.86	WCS-056
JTLX 100114	616	183,700	183,700	0	1,450	1,450	0	8/20/2005	91.85	WCS-056
MRMX 100113	617	200,170	200,170	0	1,580	1,580	0	8/20/2005	100.09	WCS-057
DJXX 9957	619	183,630	183,630	0	1,449	1,449	0	8/26/2005	91.82	WCS-057
NDYX 322032	620	193,800	193,800	0	1,530	1,530	0	8/26/2005	96.90	WCS-057
AM 959	621	182,260	182,260	0	1,439	1,439	0	8/26/2005	91.13	WCS-057
JTSX 28	622	181,100	181,100	0	1,429	1,429	0	8/26/2005	90.55	WCS-057

Railcar #	Shipment ID	Total Weight	FHMF Weight	811 Weight	Cubic Feet	FHMF Cubic Feet	811 Cubic Feet	Shipment Date	Tons	WCS Number
JTSX 7	623	180,800	180,800	0	1,427	1,427	0	8/26/2005	90.40	WCS-058
CEFX 31033	624	195,100	195,100	0	1,540	1,540	0	8/26/2005	97.55	WCS-058
CEFX 30296	625	185,600	185,600	0	1,465	1,465	0	8/26/2005	92.80	WCS-058
CEFX 31719	626	194,670	194,670	0	1,536	1,536	0	8/26/2005	97.34	WCS-058
CEFX 31700	627	193,620	193,620	0	1,528	1,528	0	8/26/2005	96.81	WCS-058
CEFX 31036	628	194,660	194,660	0	1,536	1,536	0	8/26/2005	97.33	WCS-059
AM 947	629	181,780	181,780	0	1,435	1,435	0	8/26/2005	90.89	WCS-059
CEFX 31974	630	193,900	193,900	0	1,530	1,530	0	8/26/2005	96.95	WCS-059
CEFX 31677	631	194,560	194,560	0	1,536	1,536	0	8/26/2005	97.28	WCS-059
CEFX 31037	632	194,810	194,810	0	1,538	1,538	0	8/26/2005	97.41	WCS-059
MRMX 100111	633	200,000	200,000	0	1,579	1,579	0	8/26/2005	100.00	WCS-060
CEFX 31039	634	195,000	195,000	0	1,539	1,539	0	9/1/2005	97.50	WCS-24R
CEFX 33121	635	199,960	199,960	0	1,578	1,578	0	9/1/2005	99.98	WCS-24R
JTSX 24	636	182,450	182,450	0	1,440	1,440	0	9/1/2005	91.23	WCS-24R
DJTX 9945	637	183,660	183,660	0	1,450	1,450	0	9/1/2005	91.83	WCS-24R
CEFX 316500	638	194,500	194,500	0	1,535	1,535	0	9/1/2005	97.25	WCS-24R
JTLX 4058	639	194,180	194,180	0	1,533	1,533	0	9/1/2005	97.09	WCS-25R
CEFX 31041	640	194,890	194,890	0	1,538	1,538	0	9/3/2005	97.45	WCS-25R
CEFX 31956	641	193,890	193,890	0	1,530	1,530	0	9/3/2005	96.95	WCS-25R
CEFX 32016	642	194,060	194,060	0	1,532	1,532	0	9/3/2005	97.03	WCS-25R
CEFX 32094	643	194,080	194,080	0	1,532	1,532	0	9/3/2005	97.04	WCS-25R
JTLX 234	644	194,640	194,640	0	1,536	1,536	0	9/3/2005	97.32	WCS-26R
JTLX 185	645	193,910	193,910	0	1,530	1,530	0	9/3/2005	96.96	WCS-26R
MHFX 5794	646	193,630	193,630	0	1,528	1,528	0	9/3/2005	96.82	WCS-26R
CEFX 31960	647	193,960	193,960	0	1,531	1,531	0	9/3/2005	96.98	WCS-26R
DJTX 9942	648	183,880	183,880	0	1,451	1,451	0	9/3/2005	91.94	WCS-26R
JTLX 100105	649	183,780	183,780	0	1,451	1,451	0	9/3/2005	91.89	WCS-26R
DJTX 19041	650	194,700	194,700	0	1,537	1,537	0	9/8/2005	97.35	WCS-060
MHFX 5765	651	193,540	193,540	0	1,528	1,528	0	9/8/2005	96.77	WCS-060
MHFX 5725	652	193,640	193,640	0	1,440	1,440	0	9/8/2005	96.82	WCS-060
DJTX 9915	653	182,480	182,480	0	1,452	1,452	0	9/8/2005	91.24	WCS-061
DJTX 9906	654	183,980	183,980	0	1,445	1,445	0	9/8/2005	91.99	WCS-061
NDYX 9921	655	183,020	183,020	0	1,464	1,464	0	9/8/2005	91.51	WCS-061
NDYX 360025	656	185,510	185,510	0	1,536	1,536	0	9/8/2005	92.76	WCS-061
CEFX 31735	657	194,630	194,630	0	1,535	1,535	0	9/8/2005	97.32	WCS-061
NDYX 316076	658	194,500	194,500	0	1,522	1,522	0	9/8/2005	97.25	WCS-062
NDYX 316103	659	192,790	192,790	0	1,522	1,522	0	9/8/2005	96.40	WCS-062

Appendix C
RESRAD Reports

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Dose Conversion Factor (and Related) Parameter Summary
File: FGR 13 MORBIDITY

Menu	Parameter	Current Value	Base Case*	Parameter Name
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Cs-137+D	3.190E-05	3.190E-05	DCF2(3)
B-1	H-3	6.400E-08	6.400E-08	DCF2(4)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(5)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(6)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(7)
B-1	Pu-238	3.920E-01	3.920E-01	DCF2(8)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(10)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(11)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(13)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(14)
B-1	Sr-90+D	1.308E-03	1.300E-03	DCF2(15)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(16)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(17)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(18)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(19)
B-1	U-233	1.350E-01	1.350E-01	DCF2(20)
B-1	U-234	1.320E-01	1.320E-01	DCF2(21)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(22)
B-1	U-236	1.250E-01	1.250E-01	DCF2(23)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Cs-137+D	5.000E-05	5.000E-05	DCF3(3)
D-1	H-3	6.400E-08	6.400E-08	DCF3(4)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(5)
D-1	Pb-210+D	1.060E-02	1.060E-02	DCF3(6)
D-1	Pu-238	7.276E-03	5.370E-03	DCF3(7)
D-1	Pu-239	3.200E-03	3.200E-03	DCF3(8)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(10)
D-1	Ra-226+D	3.540E-03	3.540E-03	DCF3(11)
D-1	Ra-228+D	1.331E-03	1.320E-03	DCF3(13)
D-1	Sr-90+D	1.442E-03	1.440E-03	DCF3(14)
D-1	Th-228+D	1.528E-04	1.420E-04	DCF3(15)
D-1	Th-229+D	8.086E-04	3.960E-04	DCF3(16)
D-1	Th-230	4.027E-03	3.530E-03	DCF3(17)
D-1	Th-232	5.480E-04	5.480E-04	DCF3(18)
D-1	U-233	2.730E-03	2.730E-03	DCF3(19)
D-1	U-234	2.890E-04	2.890E-04	DCF3(20)
D-1	U-235+D	2.830E-04	2.830E-04	DCF3(21)
D-1	U-236	2.673E-04	2.660E-04	DCF3(22)
		2.690E-04	2.690E-04	DCF3(23)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,3)

Dose Conversion Factor (and Related) Parameter Summary (continued)
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Menu	Parameter	Current Value	Base Case	Parameter Name
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Cs-137+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(3,1)
D-34	Cs-137+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.000E-02	3.000E-02	RTF(3,2)
D-34	Cs-137+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	8.000E-03	8.000E-03	RTF(3,3)
D-34				
D-34	H-3 , plant/soil concentration ratio, dimensionless	4.800E+00	4.800E+00	RTF(4,1)
D-34	H-3 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.200E-02	1.200E-02	RTF(4,2)
D-34	H-3 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-02	1.000E-02	RTF(4,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(5,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(5,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(5,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(6,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF(6,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(6,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(7,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(7,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(7,3)
D-34				
D-34	Pu-238 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,1)
D-34	Pu-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(8,2)
D-34	Pu-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(8,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(10,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(10,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(10,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(11,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(11,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(11,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(13,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(13,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(13,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(14,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(14,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(14,3)
D-34				
D-34	Sr-90+D , plant/soil concentration ratio, dimensionless	3.000E-01	3.000E-01	RTF(15,1)
D-34	Sr-90+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-03	8.000E-03	RTF(15,2)
D-34	Sr-90+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-03	2.000E-03	RTF(15,3)
D-34				

Dose Conversion Factor (and Related) Parameter Summary (continued)
 File: FGR 13 MORBIDITY

Menu	Parameter	Current Value	Base Case*	Parameter Name
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(16,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(16,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(16,3)
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(17,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(17,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(17,3)
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(18,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(18,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(18,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(19,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(19,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(19,3)
D-34	U-233 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(20,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(20,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(21,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(21,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(22,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(22,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(22,3)
D-34	U-236 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(23,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(23,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(23,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5	Am-241 , fish	3.000E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5	Cs-137+D , fish	2.000E+01	2.000E+01	BIOFAC(3,1)
D-5	Cs-137+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(3,2)
D-5	H-3 , fish	1.000E+00	1.000E+00	BIOFAC(4,1)
D-5	H-3 , crustacea and mollusks	1.000E+00	1.000E+00	BIOFAC(4,2)
D-5	Np-237+D , fish	3.000E+01	3.000E+01	BIOFAC(5,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(5,2)
D-5	Pa-231 , fish	1.000E+01	1.000E+01	BIOFAC(6,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(6,2)

Dose Conversion Factor (and Related) Parameter Summary (continued)
File: FGR 13 MORBIDITY

Menu	Parameter	Current Value	Base Case*	Parameter Name
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC(7,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Pu-238 , fish	3.000E+01	3.000E+01	BIOFAC(8,1)
D-5	Pu-238 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(8,2)
D-5				
D-5	Pu-239 , fish	3.000E+01	3.000E+01	BIOFAC(10,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(10,2)
D-5				
D-5	Pu-240 , fish	3.000E+01	3.000E+01	BIOFAC(11,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(11,2)
D-5				
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC(13,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(13,2)
D-5				
D-5	Ra-228+D , fish	5.000E+01	5.000E+01	BIOFAC(14,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(14,2)
D-5				
D-5	Sr-90+D , fish	6.000E+01	6.000E+01	BIOFAC(15,1)
D-5	Sr-90+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(15,2)
D-5				
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(16,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(16,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(17,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(17,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(18,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(18,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(19,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(19,2)
D-5				
D-5	U-233 , fish	1.000E+01	1.000E+01	BIOFAC(20,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-234 , fish	1.000E+01	1.000E+01	BIOFAC(21,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)
D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC(22,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(22,2)
D-5				
D-5	U-236 , fish	1.000E+01	1.000E+01	BIOFAC(23,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(23,2)

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	5.200E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.000E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	1.000E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	1.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	2.500E+01	1.000E+00	---	T(2)
R011	Times for calculations (yr)	5.000E+01	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+02	1.000E+01	---	T(4)
R011	Times for calculations (yr)	not used	3.000E+01	---	T(5)
R011	Times for calculations (yr)	not used	1.000E+02	---	T(6)
R011	Times for calculations (yr)	not used	3.000E+02	---	T(7)
R011	Times for calculations (yr)	not used	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	4.000E-02	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Cs-137	7.630E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): H-3	1.200E-01	0.000E+00	---	S1(4)
R012	Initial principal radionuclide (pCi/g): Pu-238	2.000E-02	0.000E+00	---	S1(5)
R012	Initial principal radionuclide (pCi/g): Pu-239	8.000E-02	0.000E+00	---	S1(10)
R012	Initial principal radionuclide (pCi/g): Pu-240	8.000E-02	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): Sr-90	1.510E+00	0.000E+00	---	S1(15)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Cs-137	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): H-3	not used	0.000E+00	---	W1(4)
R012	Concentration in groundwater (pCi/L): Pu-238	not used	0.000E+00	---	W1(8)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(10)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): Sr-90	not used	0.000E+00	---	W1(15)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.660E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	3.300E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	5.000E+03	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	4.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	2.000E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	8.000E+00	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	4.600E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.230E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	0.000E+00	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.660E+00	1.500E+00	---	DENSAQ

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Saturated zone total porosity	3.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.400E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.000E+04	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	4.800E-03	2.000E-02	---	HGWT
R014	Saturated zone b parameter	4.900E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	1.800E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m ³ /yr)	not used	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	0.000E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm ³)	1.660E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	3.300E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.400E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FPUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	4.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	5.000E+03	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm ³ /g)	2.000E+01	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm ³ /g)	2.000E+01	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm ³ /g)	2.000E+01	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.182E-03	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Cs-137				
R016	Contaminated zone (cm ³ /g)	4.600E+03	4.600E+03	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm ³ /g)	4.600E+03	4.600E+03	---	DCNUCU(3,1)
R016	Saturated zone (cm ³ /g)	4.600E+03	4.600E+03	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.392E-05	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for H-3				
R016	Contaminated zone (cm ³ /g)	0.000E+00	0.000E+00	---	DCNUCC(4)
R016	Unsaturated zone 1 (cm ³ /g)	0.000E+00	0.000E+00	---	DCNUCU(4,1)
R016	Saturated zone (cm ³ /g)	0.000E+00	0.000E+00	---	DCNUCS(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.314E-01	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)
R016	Distribution coefficients for Pu-238				
R016	Contaminated zone (cm ³ /g)	2.000E+03	2.000E+03	---	DCNUCC(8)
R016	Unsaturated zone 1 (cm ³ /g)	2.000E+03	2.000E+03	---	DCNUCU(8,1)
R016	Saturated zone (cm ³ /g)	2.000E+03	2.000E+03	---	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.201E-05	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.201E-05	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCC(11)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCU(11,1)
R016	Saturated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCS(11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.201E-05	ALEACH(11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(11)
R016	Distribution coefficients for Sr-90				
R016	Contaminated zone (cm**3/g)	3.000E+01	3.000E+01	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	3.000E+01	3.000E+01	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	3.000E+01	3.000E+01	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.125E-03	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.182E-03	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for daughter Np-237				
R016	Contaminated zone (cm**3/g)	-1.000E+00	-1.000E+00	2.574E+02	DCNUCC(5)
R016	Unsaturated zone 1 (cm**3/g)	-1.000E+00	-1.000E+00	2.574E+02	DCNUCU(5,1)
R016	Saturated zone (cm**3/g)	-1.000E+00	-1.000E+00	2.574E+02	DCNUCS(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.486E-04	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.277E-03	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.394E-04	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.130E-04	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.130E-04	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.067E-06	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(17)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(17,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.067E-06	ALEACH(17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(17)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(18)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(18,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.067E-06	ALEACH(18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(18)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.067E-06	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(20)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(20,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.277E-03	ALEACH(20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(20)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-234				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(21)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(21,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(21)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.277E-03	ALEACH(21)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(21)
R016	Distribution coefficients for daughter U-235				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(22)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(22,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(22)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.277E-03	ALEACH(22)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(22)
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(23)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(23,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(23)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.277E-03	ALEACH(23)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(23)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	1.000E-04	1.000E-04	---	MLINH
R017	Exposure duration	2.500E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	8.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.000E-02	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.700E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radial of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	not used	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	not used	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	not used	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	not used	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	not used	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	not used	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	3.650E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	3.500E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHNW
R018	Contamination fraction of livestock water	not used	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	not used	1.000E+00	---	FIW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	not used	-1	---	FPLANT
R018	Contamination fraction of meat	not used	-1	---	FMEAT
R018	Contamination fraction of milk	not used	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	not used	6.000E+01	---	LF15
R019	Livestock fodder intake for milk (kg/day)	not used	5.500E+01	---	LF16
R019	Livestock water intake for meat (L/day)	not used	5.000E+01	---	LW15
R019	Livestock water intake for milk (L/day)	not used	1.600E+02	---	LW16
R019	Livestock soil intake (kg/day)	not used	5.000E-01	---	LS1
R019	Mass loading for foliar deposition (g/m**3)	not used	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	not used	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	EGWHH
R019	Livestock water fraction from ground water	not used	1.000E+00	---	EGWLW
R019	Irrigation fraction from ground water	not used	1.000E+00	---	EGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	not used	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	not used	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	not used	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	not used	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	not used	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	not used	8.000E-02	---	TE(3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	not used	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	not used	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	not used	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	not used	2.000E+01	---	WLAH
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12C2
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DHC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSH
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSH
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
C14	DCF correction factor for gaseous forms of C14	not used	0.000E+00	---	CO2F
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HNIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	EAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DHFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Number of graphical time points	32	---	---	NPTS
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	257	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	suppressed
4 -- meat ingestion	suppressed
5 -- milk ingestion	suppressed
6 -- aquatic foods	suppressed
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	suppressed

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	52000.00 square meters	Am-241	4.000E-02
Thickness:	5.00 meters	Cs-137	7.630E+00
Cover Depth:	0.00 meters	H-3	1.200E-01
		Pu-238	2.000E-02
		Pu-239	8.000E-02
		Pu-240	8.000E-02
		Sr-90	1.510E+00

Total Dose TDOSE(t), mrem/yr
 Basic Radiation Dose Limit = 1.500E+01 mrem/yr
 Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	2.500E+01	5.000E+01	1.000E+02
TDOSE(t):	5.419E+00	3.138E+00	1.797E+00	6.004E-01
M(t):	3.612E-01	2.092E-01	1.198E-01	4.002E-02

Maximum TDOSE(t): 5.419E+00 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.754E-04	0.0001	5.778E-04	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.219E-03	0.0002
Cs-137	5.393E+00	0.9953	7.846E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.166E-03	0.0006
H-3	0.000E+00	0.0000	4.695E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.007E-08	0.0000
Pu-238	6.540E-07	0.0000	2.547E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.352E-04	0.0001
Pu-239	5.020E-06	0.0000	1.119E-03	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.377E-03	0.0004
Pu-240	2.537E-06	0.0000	1.119E-03	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.377E-03	0.0004
Sr-90	7.707E-03	0.0014	6.360E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.912E-03	0.0004
Total	5.401E+00	0.9968	3.189E-03	0.0006	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.159E-02	0.0021

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.453E-03	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.625E-03	0.0007
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.396E+00	0.9958
H-3	3.907E-04	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.377E-04	0.0001
Pu-238	7.247E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.905E-04	0.0001
Pu-239	9.757E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.502E-03	0.0006
Pu-240	2.882E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.499E-03	0.0006
Sr-90	9.595E-04	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.067E-02	0.0020
Total	2.833E-03	0.0005	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.419E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 2.500E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.332E-04	0.0001	5.126E-04	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.082E-03	0.0003
Cs-137	3.026E+00	0.9642	4.402E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.776E-03	0.0006
H-3	0.000E+00	0.0000	2.211E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.637E-19	0.0000
Pu-238	5.365E-07	0.0000	2.089E-04	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.389E-04	0.0001
Pu-239	5.012E-06	0.0000	1.117E-03	0.0004	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.374E-03	0.0008
Pu-240	2.529E-06	0.0000	1.115E-03	0.0004	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.369E-03	0.0008
Sr-90	4.031E-03	0.0013	3.326E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.000E-03	0.0003
Total	3.030E+00	0.9655	2.992E-03	0.0010	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.040E-03	0.0029

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 2.500E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.874E-03	0.0219	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.067E-02	0.0225
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.027E+00	0.9647
H-3	2.290E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.511E-15	0.0000
Pu-238	1.329E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.483E-04	0.0002
Pu-239	1.917E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.456E-03	0.0011
Pu-240	5.598E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.487E-03	0.0011
Sr-90	2.734E-02	0.0087	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.240E-02	0.0103
Total	9.608E-02	0.0306	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.138E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 5.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.957E-04	0.0002	4.548E-04	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.599E-04	0.0005
Cs-137	1.698E+00	0.9445	2.470E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.965E-04	0.0006
H-3	0.000E+00	0.0000	9.281E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.920E-31	0.0000
Pu-238	4.401E-07	0.0000	1.713E-04	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.606E-04	0.0002
Pu-239	5.005E-06	0.0000	1.116E-03	0.0006	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.370E-03	0.0013
Pu-240	2.520E-06	0.0000	1.111E-03	0.0006	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.361E-03	0.0013
Sr-90	2.109E-03	0.0012	1.740E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.230E-04	0.0003
Total	1.700E+00	0.9458	2.873E-03	0.0016	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.570E-03	0.0042

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 5.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.372E-02	0.0355	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.543E-02	0.0364
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.699E+00	0.9450
H-3	9.642E-27	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.057E-26	0.0000
Pu-238	4.859E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.317E-04	0.0003
Pu-239	7.909E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.491E-03	0.0019
Pu-240	2.167E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.475E-03	0.0019
Sr-90	2.322E-02	0.0129	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.587E-02	0.0144
Total	8.694E-02	0.0484	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.797E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.329E-04	0.0004	3.580E-04	0.0006	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.557E-04	0.0013
Cs-137	5.343E-01	0.8900	7.774E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.137E-04	0.0005
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-238	2.963E-07	0.0000	1.152E-04	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.421E-04	0.0004
Pu-239	4.990E-06	0.0000	1.112E-03	0.0019	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.363E-03	0.0039
Pu-240	2.503E-06	0.0000	1.104E-03	0.0018	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.345E-03	0.0039
Sr-90	5.766E-04	0.0010	4.758E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.430E-04	0.0002
Total	5.351E-01	0.8913	2.695E-03	0.0045	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.162E-03	0.0103

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	5.004E-02	0.0833	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.139E-02	0.0856
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.346E-01	0.8905
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-238	1.508E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.578E-04	0.0006
Pu-239	2.987E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.480E-03	0.0058
Pu-240	7.627E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.451E-03	0.0057
Sr-90	6.338E-03	0.0106	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.062E-03	0.0118
Total	5.638E-02	0.0939	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.004E-01	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)			
			0.000E+00	2.500E+01	5.000E+01	1.000E+02
Am-241	Am-241	1.000E+00	9.063E-02	1.767E+00	1.636E+00	1.285E+00
Am-241	Np-237+D	1.000E+00	4.689E-05	2.951E-06	6.228E-06	1.167E-05
Am-241	U-233	1.000E+00	3.633E-15	1.548E-11	9.239E-11	3.986E-10
Am-241	Th-229+D	1.000E+00	2.342E-17	1.580E-13	1.175E-12	8.561E-12
Am-241	ΣDSR(j)		9.063E-02	1.767E+00	1.636E+00	1.285E+00
Cs-137+D	Cs-137+D	1.000E+00	7.072E-01	3.968E-01	2.226E-01	7.007E-02
H-3	H-3	1.000E+00	3.648E-03	2.093E-14	8.809E-26	0.000E+00
Pu-238	Pu-238	1.840E-09	7.272E-11	5.964E-11	4.891E-11	3.290E-11
Pu-238	Pu-238	1.000E+00	3.952E-02	3.241E-02	2.658E-02	1.788E-02
Pu-238	U-234	1.000E+00	9.924E-09	1.100E-06	3.201E-06	6.777E-06
Pu-238	Th-230	1.000E+00	6.575E-14	1.191E-10	4.339E-10	1.492E-09
Pu-238	Ra-226+D	1.000E+00	1.264E-15	6.823E-11	5.026E-10	3.575E-09
Pu-238	Pb-210+D	1.000E+00	5.934E-16	8.405E-13	1.729E-11	3.436E-10
Pu-238	ΣDSR(j)		3.952E-02	3.241E-02	2.659E-02	1.789E-02
Pu-239	Pu-239	1.000E+00	4.377E-02	4.370E-02	4.364E-02	4.350E-02
Pu-239	U-235+D	1.000E+00	8.243E-11	4.360E-09	8.939E-09	1.864E-08
Pu-239	Pa-231	1.000E+00	1.823E-15	4.627E-12	3.085E-11	1.960E-10
Pu-239	Ac-227+D	1.000E+00	1.633E-15	5.688E-12	6.011E-11	4.338E-10
Pu-239	ΣDSR(j)		4.377E-02	4.370E-02	4.364E-02	4.350E-02
Pu-240	Pu-240	4.950E-08	2.165E-09	2.158E-09	2.150E-09	2.135E-09
Pu-240	Pu-240	1.000E+00	4.374E-02	4.359E-02	4.344E-02	4.314E-02
Pu-240	U-236	1.000E+00	9.800E-11	1.173E-08	3.629E-08	1.130E-07
Pu-240	Th-232	1.000E+00	1.862E-20	3.595E-17	1.394E-16	5.398E-16
Pu-240	Ra-228+D	1.000E+00	9.641E-21	3.409E-16	1.745E-15	8.096E-15
Pu-240	Th-228+D	1.000E+00	1.061E-21	4.295E-16	2.512E-15	1.214E-14
Pu-240	ΣDSR(j)		4.374E-02	4.359E-02	4.344E-02	4.314E-02
Sr-90+D	Sr-90+D	1.000E+00	7.068E-03	2.146E-02	1.713E-02	4.677E-03

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines $G(i,t)$ in pCi/g
 Basic Radiation Dose Limit = $1.500E+01$ mrem/yr

Nuclide	(i)	$t = 0.000E+00$	$2.500E+01$	$5.000E+01$	$1.000E+02$
Am-241		1.655E+02	8.490E+00	9.170E+00	1.168E+01
Cs-137		2.121E+01	3.780E+01	6.738E+01	2.141E+02
H-3		4.112E+03	7.168E+14	*9.597E+15	*9.597E+15
Pu-238		3.795E+02	4.628E+02	5.642E+02	8.385E+02
Pu-239		3.427E+02	3.432E+02	3.437E+02	3.448E+02
Pu-240		3.430E+02	3.441E+02	3.453E+02	3.477E+02
Sr-90		2.122E+03	6.990E+02	8.755E+02	3.207E+03

*At specific activity limit

Summed Dose/Source Ratios $DSR(i,t)$ in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines $G(i,t)$ in pCi/g
 at t_{min} = time of minimum single radionuclide soil guideline
 and at t_{max} = time of maximum total dose = $0.000E+00$ years

Nuclide	Initial	t_{min}	$DSR(i,t_{min})$	$G(i,t_{min})$	$DSR(i,t_{max})$	$G(i,t_{max})$
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)
Am-241	4.000E-02	26.49 ± 0.05	1.832E+00	8.188E+00	9.063E-02	1.655E+02
Cs-137	7.630E+00	0.000E+00	7.072E-01	2.121E+01	7.072E-01	2.121E+01
H-3	1.200E-01	0.000E+00	3.648E-03	4.112E+03	3.648E-03	4.112E+03
Pu-238	2.000E-02	0.000E+00	3.952E-02	3.795E+02	3.952E-02	3.795E+02
Pu-239	6.000E-02	0.000E+00	4.377E-02	3.427E+02	4.377E-02	3.427E+02
Pu-240	6.000E-02	0.000E+00	4.374E-02	3.430E+02	4.374E-02	3.430E+02
Sr-90	1.510E+00	34.82 ± 0.07	2.224E-02	6.744E+02	7.068E-03	2.122E+03

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide Parent (j)	THF(i) (i)	DOSE(j,t), mrem/yr			
		t= 0.000E+00	2.500E+01	5.000E+01	1.000E+02
Am-241	Am-241	1.000E+00	3.625E-03	7.067E-02	6.543E-02
Np-237	Am-241	1.000E+00	1.876E-09	1.180E-07	2.491E-07
U-233	Am-241	1.000E+00	1.453E-16	6.192E-13	3.695E-12
Th-229	Am-241	1.000E+00	9.367E-19	6.322E-15	4.700E-14
Cs-137	Cs-137	1.000E+00	5.396E+00	3.027E+00	1.699E+00
H-3	H-3	1.000E+00	4.377E-04	2.511E-15	1.057E-26
Pu-238	Pu-238	1.840E-09	1.454E-12	1.193E-12	9.783E-13
Pu-238	Pu-238	1.000E+00	7.905E-04	6.483E-04	5.317E-04
Pu-238	ΣDOSE(j)		7.905E-04	6.483E-04	5.317E-04
U-234	Pu-238	1.000E+00	1.985E-10	2.200E-08	6.402E-08
Th-230	Pu-238	1.000E+00	1.315E-15	2.381E-12	8.678E-12
Ra-226	Pu-238	1.000E+00	2.528E-17	1.365E-12	1.005E-11
Pb-210	Pu-238	1.000E+00	1.187E-17	1.681E-14	3.459E-13
Pu-239	Pu-239	1.000E+00	3.502E-03	3.496E-03	3.491E-03
U-235	Pu-239	1.000E+00	6.594E-12	3.488E-10	7.151E-10
Pa-231	Pu-239	1.000E+00	1.459E-16	3.702E-13	2.468E-12
Ac-227	Pu-239	1.000E+00	1.306E-16	4.551E-13	4.809E-12
Pu-240	Pu-240	4.950E-08	1.732E-10	1.726E-10	1.720E-10
Pu-240	Pu-240	1.000E+00	3.499E-03	3.487E-03	3.475E-03
Pu-240	ΣDOSE(j)		3.499E-03	3.487E-03	3.475E-03
U-236	Pu-240	1.000E+00	7.840E-12	9.383E-10	2.903E-09
Th-232	Pu-240	1.000E+00	1.489E-21	2.876E-18	1.115E-17
Ra-228	Pu-240	1.000E+00	7.713E-22	2.727E-17	1.396E-16
Th-228	Pu-240	1.000E+00	8.490E-23	3.436E-17	3.009E-16
Sr-90	Sr-90	1.000E+00	1.067E-02	3.240E-02	2.587E-02

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g			
			t= 0.000E+00	2.500E+01	5.000E+01	1.000E+02
Am-241	Am-241	1.000E+00	4.000E-02	3.549E-02	3.149E-02	2.479E-02
Np-237	Am-241	1.000E+00	0.000E+00	3.043E-07	5.724E-07	1.016E-06
U-233	Am-241	1.000E+00	0.000E+00	1.680E-11	6.382E-11	2.306E-10
Th-229	Am-241	1.000E+00	0.000E+00	1.339E-14	1.030E-13	7.624E-13
Cs-137	Cs-137	1.000E+00	7.630E+00	4.281E+00	2.402E+00	7.559E+00
H-3	H-3	1.000E+00	1.200E-01	5.662E-13	2.381E-24	0.000E+00
Pu-238	Pu-238	1.840E-09	3.680E-11	3.013E-11	2.475E-11	1.665E-11
Pu-238	Pu-238	1.000E+00	2.000E-02	1.640E-02	1.345E-02	9.048E-03
Pu-238	ΣS(j):		2.000E-02	1.640E-02	1.345E-02	9.048E-03
U-234	Pu-238	1.000E+00	0.000E+00	1.265E-06	2.262E-06	3.643E-06
Th-230	Pu-238	1.000E+00	0.000E+00	1.478E-10	5.491E-10	1.904E-09
Ra-226	Pu-238	1.000E+00	0.000E+00	5.393E-13	4.046E-12	2.856E-11
Pb-210	Pu-238	1.000E+00	0.000E+00	9.119E-14	1.205E-12	1.362E-11
Pu-239	Pu-239	1.000E+00	8.000E-02	7.988E-02	7.976E-02	7.951E-02
U-235	Pu-239	1.000E+00	0.000E+00	1.937E-09	3.810E-09	7.374E-09
Pa-231	Pu-239	1.000E+00	0.000E+00	5.096E-13	1.994E-12	7.637E-12
Ac-227	Pu-239	1.000E+00	0.000E+00	1.107E-13	7.257E-13	4.131E-12
Pu-240	Pu-240	4.950E-08	3.960E-09	3.946E-09	3.933E-09	3.906E-09
Pu-240	Pu-240	1.000E+00	8.000E-02	7.972E-02	7.945E-02	7.890E-02
Pu-240	ΣS(j):		8.000E-02	7.972E-02	7.945E-02	7.890E-02
U-236	Pu-240	1.000E+00	0.000E+00	5.817E-08	1.143E-07	2.208E-07
Th-232	Pu-240	1.000E+00	0.000E+00	3.608E-17	1.427E-16	5.575E-16
Ra-228	Pu-240	1.000E+00	0.000E+00	1.966E-17	1.029E-16	4.712E-16
Th-228	Pu-240	1.000E+00	0.000E+00	1.504E-17	9.075E-17	4.444E-16
Sr-90	Sr-90	1.000E+00	1.510E+00	7.697E-01	4.130E-01	1.130E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 71.35 seconds

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Dose Conversion Factor (and Related) Parameter Summary
File: FGR 13 MORBIDITY

Menu	Parameter	Current Value	Base Case*	Parameter Name
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Cs-137+D	3.190E-05	3.190E-05	DCF2(3)
B-1	H-3	6.400E-08	6.400E-08	DCF2(4)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(5)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(6)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(7)
B-1	Pu-238	3.920E-01	3.920E-01	DCF2(8)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(10)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(11)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(13)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(14)
B-1	Sr-90+D	1.308E-03	1.300E-03	DCF2(15)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(16)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(17)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(18)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(19)
B-1	U-233	1.350E-01	1.350E-01	DCF2(20)
B-1	U-234	1.320E-01	1.320E-01	DCF2(21)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(22)
B-1	U-236	1.250E-01	1.250E-01	DCF2(23)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Cs-137+D	5.000E-05	5.000E-05	DCF3(3)
D-1	H-3	6.400E-08	6.400E-08	DCF3(4)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(5)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(6)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(7)
D-1	Pu-238	3.200E-03	3.200E-03	DCF3(8)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(10)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(11)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(13)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(14)
D-1	Sr-90+D	1.528E-04	1.420E-04	DCF3(15)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(16)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(17)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(18)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(19)
D-1	U-233	2.890E-04	2.890E-04	DCF3(20)
D-1	U-234	2.830E-04	2.830E-04	DCF3(21)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(22)
D-1	U-236	2.690E-04	2.690E-04	DCF3(23)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,3)

Dose Conversion Factor (and Related) Parameter Summary (continued)
File: FGR 13 MORBIDITY

Menu	Parameter	Current Value	Base Case*	Parameter Name
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Cs-137+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(3,1)
D-34	Cs-137+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.000E-02	3.000E-02	RTF(3,2)
D-34	Cs-137+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	8.000E-03	8.000E-03	RTF(3,3)
D-34				
D-34	H-3 , plant/soil concentration ratio, dimensionless	4.800E+00	4.800E+00	RTF(4,1)
D-34	H-3 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.200E-02	1.200E-02	RTF(4,2)
D-34	H-3 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-02	1.000E-02	RTF(4,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(5,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(5,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(5,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(6,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF(6,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(6,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(7,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(7,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(7,3)
D-34				
D-34	Pu-238 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,1)
D-34	Pu-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(8,2)
D-34	Pu-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(8,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(10,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(10,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(10,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(11,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(11,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(11,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(13,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(13,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(13,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(14,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(14,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(14,3)
D-34				
D-34	Sr-90+D , plant/soil concentration ratio, dimensionless	3.000E-01	3.000E-01	RTF(15,1)
D-34	Sr-90+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-03	8.000E-03	RTF(15,2)
D-34	Sr-90+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-03	2.000E-03	RTF(15,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(16,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(16,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(16,3)

Dose Conversion Factor (and Related) Parameter Summary (continued)
File: FGR 13 MORBIDITY

Menu	Parameter	Current Value	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(17,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(17,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(17,3)
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(18,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(18,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(18,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(19,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(19,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(19,3)
D-34	U-233 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(20,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(20,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(21,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(21,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(22,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(22,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(22,3)
D-34	U-236 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(23,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(23,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(23,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5	Am-241 , fish	3.000E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5	Cs-137+D , fish	2.000E+03	2.000E+03	BIOFAC(3,1)
D-5	Cs-137+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(3,2)
D-5	H-3 , fish	1.000E+00	1.000E+00	BIOFAC(4,1)
D-5	H-3 , crustacea and mollusks	1.000E+00	1.000E+00	BIOFAC(4,2)
D-5	Np-237+D , fish	3.000E+01	3.000E+01	BIOFAC(5,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(5,2)
D-5	Pa-231 , fish	1.000E+01	1.000E+01	BIOFAC(6,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(6,2)
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC(7,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)

Dose Conversion Factor (and Related) Parameter Summary (continued)
File: FGR 13 MORBIDITY

Menu	Parameter	Current Value	Base Case*	Parameter Name
D-5	Pu-238 , fish	3.000E+01	3.000E+01	BIOFAC(8,1)
D-5	Pu-238 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(8,2)
D-5	Pu-239 , fish	3.000E+01	3.000E+01	BIOFAC(10,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(10,2)
D-5	Pu-240 , fish	3.000E+01	3.000E+01	BIOFAC(11,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(11,2)
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC(13,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(13,2)
D-5	Ra-228+D , fish	5.000E+01	5.000E+01	BIOFAC(14,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(14,2)
D-5	Sr-90+D , fish	6.000E+01	6.000E+01	BIOFAC(15,1)
D-5	Sr-90+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(15,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(16,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(16,2)
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(17,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(17,2)
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(18,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(18,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(19,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(19,2)
D-5	U-233 , fish	1.000E+01	1.000E+01	BIOFAC(20,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5	U-234 , fish	1.000E+01	1.000E+01	BIOFAC(21,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC(22,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(22,2)
D-5	U-236 , fish	1.000E+01	1.000E+01	BIOFAC(23,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(23,2)

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	5.200E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.000E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	1.000E+02	1.000E+02	---	LC2PAQ
R011	Basic radiation dose limit (mrem/yr)	1.500E+01	3.000E+01	---	BFDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	T1
R011	Times for calculations (yr)	2.500E+01	1.000E+00	---	T(2)
R011	Times for calculations (yr)	5.000E+01	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+02	1.000E+01	---	T(4)
R011	Times for calculations (yr)	not used	3.000E+01	---	T(5)
R011	Times for calculations (yr)	not used	1.000E+02	---	T(6)
R011	Times for calculations (yr)	not used	3.000E+02	---	T(7)
R011	Times for calculations (yr)	not used	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.100E-01	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Cs-137	1.663E+01	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): H-3	5.300E-01	0.000E+00	---	S1(4)
R012	Initial principal radionuclide (pCi/g): Pu-238	6.000E-02	0.000E+00	---	S1(5)
R012	Initial principal radionuclide (pCi/g): Pu-239	2.500E-01	0.000E+00	---	S1(10)
R012	Initial principal radionuclide (pCi/g): Pu-240	2.500E-01	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): Sr-90	5.300E+00	0.000E+00	---	S1(15)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Cs-137	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): H-3	not used	0.000E+00	---	W1(4)
R012	Concentration in groundwater (pCi/L): Pu-238	not used	0.000E+00	---	W1(8)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(10)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): Sr-90	not used	0.000E+00	---	W1(15)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.660E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	3.300E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	5.000E+03	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	4.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	2.000E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	8.000E+00	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	4.600E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.230E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	0.000E+00	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.660E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	3.300E-01	4.000E-01	---	TPSZ

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Saturated zone effective porosity	2.400E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.000E+04	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	4.800E-03	2.000E-02	---	HGWT
R014	Saturated zone b parameter	4.900E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	1.800E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	not used	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	HS
R015	Unsat. zone 1, thickness (m)	0.000E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.660E+00	1.500E+00	---	DEUSU2(1)
R015	Unsat. zone 1, total porosity	3.300E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.400E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	4.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	5.000E+03	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(2)
R016	Unsat. zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.182E-03	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Cs-137				
R016	Contaminated zone (cm**3/g)	4.600E+03	4.600E+03	---	DCNUCC(3)
R016	Unsat. zone 1 (cm**3/g)	4.600E+03	4.600E+03	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	4.600E+03	4.600E+03	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.392E-05	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for H-3				
R016	Contaminated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCC(4)
R016	Unsat. zone 1 (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCU(4,1)
R016	Saturated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCS(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.314E-01	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)
R016	Distribution coefficients for Pu-238				
R016	Contaminated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCC(8)
R016	Unsat. zone 1 (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCU(8,1)
R016	Saturated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.201E-05	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.201E-05	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCC(11)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCU(11,1)
R016	Saturated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCS(11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.201E-05	ALEACH(11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(11)
R016	Distribution coefficients for Sr-90				
R016	Contaminated zone (cm**3/g)	3.000E+01	3.000E+01	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	3.000E+01	3.000E+01	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	3.000E+01	3.000E+01	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.125E-03	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.182E-03	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for daughter Np-237				
R016	Contaminated zone (cm**3/g)	-1.000E+00	-1.000E+00	2.574E+02	DCNUCC(5)
R016	Unsaturated zone 1 (cm**3/g)	-1.000E+00	-1.000E+00	2.574E+02	DCNUCU(5,1)
R016	Saturated zone (cm**3/g)	-1.000E+00	-1.000E+00	2.574E+02	DCNUCS(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.486E-04	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.277E-03	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.394E-04	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.130E-04	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.130E-04	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.067E-06	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(17)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(17,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.067E-06	ALEACH(17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(17)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(18)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(18,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.067E-06	ALEACH(18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(18)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.067E-06	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(20)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(20,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.277E-03	ALEACH(20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(20)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-234				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(21)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(21,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(21)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.277E-03	ALEACH(21)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(21)
R016	Distribution coefficients for daughter U-235				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(22)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(22,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(22)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.277E-03	ALEACH(22)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(22)
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(23)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(23,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(23)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.277E-03	ALEACH(23)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(23)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	1.000E-04	1.000E-04	---	MLINH
R017	Exposure duration	2.500E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---	SHE3
R017	Shielding factor, external gamma	8.000E-01	7.000E-01	---	SHE1
R017	Fraction of time spent indoors	6.000E-02	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.700E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	not used	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	not used	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	not used	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	not used	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	not used	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	not used	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	3.650E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	3.500E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	not used	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	not used	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	not used	-1	---	FPLANT
R018	Contamination fraction of meat	not used	-1	---	FMEAT
R018	Contamination fraction of milk	not used	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	not used	6.800E+01	---	LFIS
R019	Livestock fodder intake for milk (kg/day)	not used	5.500E+01	---	LFIS
R019	Livestock water intake for meat (L/day)	not used	5.000E+01	---	LWIS
R019	Livestock water intake for milk (L/day)	not used	1.600E+02	---	LWIS
R019	Livestock soil intake (kg/day)	not used	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	not used	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	not used	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	not used	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	not used	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	not used	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	not used	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	not used	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	not used	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	not used	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	not used	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	not used	1.000E-01	---	TIV(1)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Leafy	not used	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	not used	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	not used	2.000E+01	---	WLAH
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12C2
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIF
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DHC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSNI
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSNI
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
C14	DCF correction factor for gaseous forms of C14	not used	0.000E+00	---	CO2F
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Wall water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building-foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFC2
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	RMIX
R023	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	32	---	---	NPTS
TITL	Maximum number of integration points for dose	17	---	---	LYMAX

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for risk	257	---	---	KYNAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	suppressed
4 -- meat ingestion	suppressed
5 -- milk ingestion	suppressed
6 -- aquatic foods	suppressed
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	suppressed

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	52000.00 square meters	Am-241	1.100E-01
Thickness:	5.00 meters	Cs-137	1.663E+01
Cover Depth:	0.00 meters	H-3	5.300E-01
		Pu-238	6.000E-02
		Pu-239	2.500E-01
		Pu-240	2.500E-01
		Sr-90	5.300E+00

Total Dose TDOSE(t), mrem/yr
 Basic Radiation Dose Limit = 1.500E+01 mrem/yr
 Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	2.500E+01	5.000E+01	1.000E+02
TDOSE(t):	1.183E+01	6.910E+00	3.996E+00	1.354E+00
M(t):	7.890E-01	4.620E-01	2.664E-01	9.027E-02

Maximum TDOSE(t): 1.183E+01 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide i	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.032E-03	0.0001	1.589E-03	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.353E-03	0.0003
Cs-137	1.175E+01	0.9932	1.710E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.900E-03	0.0006
H-3	0.000E+00	0.0000	2.074E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.770E-07	0.0000
Pu-238	1.962E-06	0.0000	7.640E-04	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.605E-03	0.0001
Pu-239	1.569E-05	0.0000	3.497E-03	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.429E-03	0.0006
Pu-240	7.929E-06	0.0000	3.497E-03	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.429E-03	0.0006
Sr-90	2.705E-02	0.0023	2.232E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.711E-03	0.0006
Total	1.178E+01	0.9956	9.795E-03	0.0008	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.343E-02	0.0028

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.995E-03	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.969E-03	0.0008
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.176E+01	0.9939
H-3	1.726E-03	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.933E-03	0.0002
Pu-238	2.174E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.371E-03	0.0002
Pu-239	3.049E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.094E-02	0.0009
Pu-240	9.007E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.093E-02	0.0009
Sr-90	3.473E-03	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.746E-02	0.0032
Total	9.194E-03	0.0008	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.183E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 2.500E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.162E-04	0.0001	1.410E-03	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.975E-03	0.0004
Cs-137	6.595E+00	0.9516	9.594E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.871E-03	0.0006
H-3	0.000E+00	0.0000	9.766E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.334E-19	0.0000
Pu-238	1.610E-06	0.0000	6.266E-04	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.317E-03	0.0002
Pu-239	1.566E-05	0.0000	3.492E-03	0.0005	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.418E-03	0.0011
Pu-240	7.902E-06	0.0000	3.485E-03	0.0005	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.403E-03	0.0011
Sr-90	1.415E-02	0.0020	1.167E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.510E-03	0.0005
Total	6.610E+00	0.9537	9.140E-03	0.0013	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.649E-02	0.0039

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 2.500E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.890E-01	0.0273	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.943E-01	0.0280
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.598E+00	0.9521
H-3	1.011E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.109E-14	0.0000
Pu-238	3.986E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.945E-03	0.0003
Pu-239	5.989E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.093E-02	0.0016
Pu-240	1.749E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.090E-02	0.0016
Sr-90	9.595E-02	0.0138	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.137E-01	0.0164
Total	2.850E-01	0.0411	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.930E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 5.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.131E-04	0.0002	1.251E-03	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.640E-03	0.0007
Cs-137	3.700E+00	0.9259	5.383E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.172E-03	0.0005
H-3	0.000E+00	0.0000	4.099E-27	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.498E-30	0.0000
Pu-238	1.320E-06	0.0000	5.139E-04	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.080E-03	0.0003
Pu-239	1.564E-05	0.0000	3.487E-03	0.0009	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.407E-03	0.0019
Pu-240	7.875E-06	0.0000	3.473E-03	0.0009	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.378E-03	0.0018
Sr-90	7.399E-03	0.0019	6.106E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.836E-03	0.0005
Total	3.708E+00	0.9279	8.791E-03	0.0022	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.251E-02	0.0056

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 5.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.752E-01	0.0438	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.799E-01	0.0450
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.702E+00	0.9264
H-3	4.258E-26	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.669E-26	0.0000
Pu-238	1.458E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.595E-03	0.0004
Pu-239	2.440E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.091E-02	0.0027
Pu-240	6.772E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.096E-02	0.0027
Sr-90	8.151E-02	0.0204	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.081E-02	0.0227
Total	2.567E-01	0.0642	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.996E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.404E-04	0.0005	9.846E-04	0.0007	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.078E-03	0.0015
Cs-137	1.165E+00	0.8600	1.694E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.837E-04	0.0005
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-238	8.888E-07	0.0000	3.457E-04	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.263E-04	0.0005
Pu-239	1.560E-05	0.0000	3.476E-03	0.0026	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.384E-03	0.0055
Pu-240	7.821E-06	0.0000	3.449E-03	0.0025	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.327E-03	0.0054
Sr-90	2.024E-03	0.0015	1.670E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.020E-04	0.0004
Total	1.167E+00	0.8620	8.274E-03	0.0061	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.670E-03	0.0138

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.376E-01	0.1016	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.413E-01	0.1044
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.165E+00	0.8605
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-238	4.525E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.073E-03	0.0008
Pu-239	9.333E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.088E-02	0.0080
Pu-240	2.383E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.078E-02	0.0080
Sr-90	2.225E-02	0.0164	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.479E-02	0.0183
Total	1.599E-01	0.1181	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.354E+00	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t)	At Time in Years	(mrem/yr)/(pCi/q)
			0.000E+00	2.500E+01	5.000E+01 1.000E+02
Am-241	Am-241	1.000E+00	9.063E-02	1.767E+00	1.636E+00 1.285E+00
Am-241	Np-237+D	1.000E+00	4.689E-06	2.951E-06	6.228E-06 1.167E-05
Am-241	U-233	1.000E+00	3.633E-15	1.548E-11	9.239E-11 3.986E-10
Am-241	Th-229+D	1.000E+00	2.342E-17	1.580E-13	1.175E-12 8.561E-12
Am-241	ΣDSR(j)		9.063E-02	1.767E+00	1.636E+00 1.285E+00
Cs-137+D	Cs-137+D	1.000E+00	7.072E-01	3.968E-01	2.226E-01 7.007E-02
H-3	H-3	1.000E+00	3.648E-03	2.093E-14	8.809E-26 0.000E+00
Pu-238	Pu-238	1.840E-09	7.272E-11	5.964E-11	4.691E-11 3.290E-11
Pu-238	Pu-238	1.000E+00	3.952E-02	3.241E-02	2.658E-02 1.788E-02
Pu-238	U-234	1.000E+00	9.924E-09	1.100E-06	3.201E-06 8.777E-06
Pu-238	Th-230	1.000E+00	6.575E-14	1.191E-10	4.339E-10 1.492E-09
Pu-238	Ra-226+D	1.000E+00	1.264E-15	6.823E-11	5.026E-10 3.575E-09
Pu-238	Pb-210+D	1.000E+00	5.934E-16	8.405E-13	1.729E-11 3.436E-10
Pu-238	ΣDSR(j)		3.952E-02	3.241E-02	2.659E-02 1.789E-02
Pu-239	Pu-239	1.000E+00	4.377E-02	4.370E-02	4.364E-02 4.350E-02
Pu-239	U-235+D	1.000E+00	8.243E-11	4.360E-09	8.939E-09 1.864E-08
Pu-239	Pa-231	1.000E+00	1.823E-15	4.627E-12	3.085E-11 1.960E-10
Pu-239	Ac-227+D	1.000E+00	1.633E-15	5.688E-12	6.011E-11 4.338E-10
Pu-239	ΣDSR(j)		4.377E-02	4.370E-02	4.364E-02 4.350E-02
Pu-240	Pu-240	4.950E-08	2.165E-09	2.158E-09	2.150E-09 2.135E-09
Pu-240	Pu-240	1.000E+00	4.374E-02	4.359E-02	4.344E-02 4.314E-02
Pu-240	U-236	1.000E+00	9.800E-11	1.173E-08	3.629E-08 1.130E-07
Pu-240	Th-232	1.000E+00	1.862E-20	3.595E-17	1.394E-16 5.398E-16
Pu-240	Ra-228+D	1.000E+00	9.641E-21	3.409E-16	1.745E-15 8.096E-15
Pu-240	Th-228+D	1.000E+00	1.061E-21	4.295E-16	2.512E-15 1.214E-14
Pu-240	ΣDSR(j)		4.374E-02	4.359E-02	4.344E-02 4.314E-02
Sr-90+D	Sr-90+D	1.000E+00	7.068E-03	2.146E-02	1.713E-02 4.677E-03

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 1.500E+01 mrem/yr

Nuclide	t= 0.000E+00	2.500E+01	5.000E+01	1.000E+02
Am-241	1.655E+02	8.490E+00	9.170E+00	1.168E+01
Cs-137	2.121E+01	3.780E+01	6.738E+01	2.141E+02
H-3	4.112E+03	7.168E+14	*9.597E+15	*9.597E+15
Pu-238	3.795E+02	4.628E+02	5.642E+02	8.395E+02
Pu-239	3.427E+02	3.432E+02	3.437E+02	3.448E+02
Pu-240	3.430E+02	3.441E+02	3.453E+02	3.477E+02
Sr-90	2.122E+03	6.990E+02	8.755E+02	3.207E+03

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)
Am-241	1.100E-01	26.49 ± 0.05	1.832E+00	8.188E+00	9.063E-02	1.655E+02
Cs-137	1.663E+01	0.000E+00	7.072E-01	2.121E+01	7.072E-01	2.121E+01
H-3	5.300E-01	0.000E+00	3.648E-03	4.112E+03	3.648E-03	4.112E+03
Pu-238	6.000E-02	0.000E+00	3.952E-02	3.795E+02	3.952E-02	3.795E+02
Pu-239	2.500E-01	0.000E+00	4.377E-02	3.427E+02	4.377E-02	3.427E+02
Pu-240	2.500E-01	0.000E+00	4.374E-02	3.430E+02	4.374E-02	3.430E+02
Sr-90	5.300E+00	34.82 ± 0.07	2.224E-02	6.744E+02	7.068E-03	2.122E+03

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide {j}	Parent {i}	THF(i)	DOSE(j,t), mrem/yr			
			t= 0.000E+00	2.500E+01	5.000E+01	1.000E+02
Am-241	Am-241	1.000E+00	9.969E-03	1.943E-01	1.799E-01	1.413E-01
Np-237	Am-241	1.000E+00	5.158E-09	3.246E-07	6.851E-07	1.284E-06
U-233	Am-241	1.000E+00	3.997E-16	1.703E-12	1.016E-11	4.385E-11
Th-229	Am-241	1.000E+00	2.576E-18	1.739E-14	1.292E-13	9.417E-13
Cs-137	Cs-137	1.000E+00	1.176E+01	6.596E+00	3.702E+00	1.165E+00
H-3	H-3	1.000E+00	1.933E-03	1.109E-14	4.669E-26	0.000E+00
Pu-238	Pu-238	1.840E-09	4.363E-12	3.578E-12	2.935E-12	1.974E-12
Pu-238	Pu-238	1.000E+00	2.371E-03	1.945E-03	1.595E-03	1.073E-03
Pu-238	ΣDOSE(j)		2.371E-03	1.945E-03	1.595E-03	1.073E-03
U-234	Pu-238	1.000E+00	5.954E-10	6.599E-08	1.921E-07	5.266E-07
Th-230	Pu-238	1.000E+00	3.945E-15	7.144E-12	2.603E-11	8.950E-11
Ra-226	Pu-238	1.000E+00	7.583E-17	4.094E-12	3.016E-11	2.145E-10
Pb-210	Pu-238	1.000E+00	3.560E-17	5.043E-14	1.038E-12	2.061E-11
Pu-239	Pu-239	1.000E+00	1.094E-02	1.093E-02	1.091E-02	1.088E-02
U-235	Pu-239	1.000E+00	2.061E-11	1.090E-09	2.235E-09	4.661E-09
Pa-231	Pu-239	1.000E+00	4.558E-16	1.157E-12	7.713E-12	4.900E-11
Ac-227	Pu-239	1.000E+00	4.082E-16	1.422E-12	1.503E-11	1.085E-10
Pu-240	Pu-240	4.950E-08	5.412E-10	5.394E-10	5.375E-10	5.338E-10
Pu-240	Pu-240	1.000E+00	1.093E-02	1.090E-02	1.086E-02	1.078E-02
Pu-240	ΣDOSE(j)		1.093E-02	1.090E-02	1.086E-02	1.078E-02
U-236	Pu-240	1.000E+00	2.450E-11	2.932E-09	9.073E-09	2.826E-08
Th-232	Pu-240	1.000E+00	4.654E-21	8.986E-18	3.454E-17	1.349E-16
Ra-228	Pu-240	1.000E+00	2.410E-21	8.522E-17	4.363E-16	2.024E-15
Th-228	Pu-240	1.000E+00	2.653E-22	1.074E-16	6.279E-16	3.035E-15
Sr-90	Sr-90	1.000E+00	3.746E-02	1.137E-01	9.081E-02	2.479E-02

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (i)	Parent (1)	THF(1)	S(j,t), pCi/g			
			t= 0.000E+00	2.500E+01	5.000E+01	1.000E+02
Am-241	Am-241	1.000E+00	1.100E-01	9.760E-02	8.659E-02	6.616E-02
Am-241	Am-241	1.000E+00	0.000E+00	8.368E-07	1.574E-06	2.794E-06
U-233	Am-241	1.000E+00	0.000E+00	4.621E-11	1.755E-10	6.341E-10
Th-229	Am-241	1.000E+00	0.000E+00	3.602E-14	2.832E-13	2.096E-12
Cs-137	Cs-137	1.000E+00	1.663E+01	9.330E+00	5.234E+00	1.648E+00
H-3	H-3	1.000E+00	5.300E-01	2.501E-12	1.052E-23	0.000E+00
Pu-238	Pu-238	1.840E-09	1.104E-10	9.054E-11	7.426E-11	4.994E-11
Pu-238	Pu-238	1.000E+00	6.000E-02	4.921E-02	4.036E-02	2.714E-02
Pu-238	ΣS(j):		6.000E-02	4.921E-02	4.036E-02	2.714E-02
U-234	Pu-238	1.000E+00	0.000E+00	3.794E-06	6.787E-06	1.093E-05
Th-230	Pu-238	1.000E+00	0.000E+00	4.435E-10	1.647E-09	5.713E-09
Ra-226	Pu-238	1.000E+00	0.000E+00	1.618E-12	1.214E-11	8.568E-11
Pb-210	Pu-238	1.000E+00	0.000E+00	2.736E-13	3.616E-12	4.086E-11
Pu-239	Pu-239	1.000E+00	2.500E-01	2.496E-01	2.492E-01	2.485E-01
U-235	Pu-239	1.000E+00	0.000E+00	6.054E-09	1.191E-08	2.304E-08
Pa-231	Pu-239	1.000E+00	0.000E+00	1.593E-12	6.233E-12	2.397E-11
Ac-227	Pu-239	1.000E+00	0.000E+00	3.458E-13	2.268E-12	1.291E-11
Pu-240	Pu-240	4.950E-08	1.237E-08	1.233E-08	1.229E-08	1.221E-08
Pu-240	Pu-240	1.000E+00	2.500E-01	2.491E-01	2.483E-01	2.466E-01
Pu-240	ΣS(j):		2.500E-01	2.491E-01	2.483E-01	2.466E-01
U-236	Pu-240	1.000E+00	0.000E+00	1.818E-07	3.572E-07	6.899E-07
Th-232	Pu-240	1.000E+00	0.000E+00	1.128E-16	4.458E-16	1.742E-15
Ra-228	Pu-240	1.000E+00	0.000E+00	6.143E-17	3.215E-16	1.472E-15
Th-228	Pu-240	1.000E+00	0.000E+00	4.701E-17	2.836E-16	1.389E-15
Sr-90	Sr-90	1.000E+00	5.300E+00	2.772E+00	1.450E+00	3.965E-01

THF(1) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 76.60 seconds

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Dose Conversion Factor (and Related) Parameter Summary
 File: FGR 13 MORBIDITY

Menu	Parameter	Current Value	Base Case	Parameter Name
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Cs-137+D	3.190E-05	3.190E-05	DCF2(3)
B-1	H-3	6.400E-08	6.400E-08	DCF2(4)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(5)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(6)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(7)
B-1	Pu-238	3.920E-01	3.920E-01	DCF2(8)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(10)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(11)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(13)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(14)
B-1	Sr-90+D	1.308E-03	1.300E-03	DCF2(15)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(16)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(17)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(18)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(19)
B-1	U-233	1.350E-01	1.350E-01	DCF2(20)
B-1	U-234	1.320E-01	1.320E-01	DCF2(21)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(22)
B-1	U-236	1.250E-01	1.250E-01	DCF2(23)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Cs-137+D	5.000E-05	5.000E-05	DCF3(3)
D-1	H-3	6.400E-08	6.400E-08	DCF3(4)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(5)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(6)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(7)
D-1	Pu-238	3.200E-03	3.200E-03	DCF3(8)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(10)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(11)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(13)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(14)
D-1	Sr-90+D	1.528E-04	1.420E-04	DCF3(15)
D-1	Th-228+D	6.086E-04	3.960E-04	DCF3(16)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(17)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(18)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(19)
D-1	U-233	2.890E-04	2.890E-04	DCF3(20)
D-1	U-234	2.830E-04	2.830E-04	DCF3(21)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(22)
D-1	U-236	2.690E-04	2.690E-04	DCF3(23)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,3)

Dose Conversion Factor (and Related) Parameter Summary (continued)
 File: FGR 13 MORBIDITY

Menu	Parameter	Current Value	Base Case*	Parameter Name
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Cs-137+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(3,1)
D-34	Cs-137+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.000E-02	3.000E-02	RTF(3,2)
D-34	Cs-137+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	8.000E-03	8.000E-03	RTF(3,3)
D-34				
D-34	H-3 , plant/soil concentration ratio, dimensionless	4.800E+00	4.500E+00	RTF(4,1)
D-34	H-3 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.200E-02	1.200E-02	RTF(4,2)
D-34	H-3 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-02	1.000E-02	RTF(4,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(5,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(5,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(5,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(6,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF(6,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(6,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(7,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(7,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(7,3)
D-34				
D-34	Pu-238 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,1)
D-34	Pu-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(8,2)
D-34	Pu-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(8,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(10,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(10,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(10,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(11,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(11,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(11,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(13,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(13,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(13,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(14,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(14,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(14,3)
D-34				
D-34	Sr-90+D , plant/soil concentration ratio, dimensionless	3.000E-01	3.000E-01	RTF(15,1)
D-34	Sr-90+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-03	8.000E-03	RTF(15,2)
D-34	Sr-90+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-03	2.000E-03	RTF(15,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(16,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(16,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(16,3)

Dose Conversion Factor (and Related) Parameter Summary (continued)
 File: FGR 13 MORBIDITY

Menu	Parameter	Current Value	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(17,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(17,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(17,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(18,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(18,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(18,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(19,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(19,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(19,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(20,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(20,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(21,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(21,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(22,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(22,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(22,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(23,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(23,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(23,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	3.000E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Cs-137+D , fish	2.000E+03	2.000E+03	BIOFAC(3,1)
D-5	Cs-137+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(3,2)
D-5				
D-5	H-3 , fish	1.000E+00	1.000E+00	BIOFAC(4,1)
D-5	H-3 , crustacea and mollusks	1.000E+00	1.000E+00	BIOFAC(4,2)
D-5				
D-5	Np-237+D , fish	3.000E+01	3.000E+01	BIOFAC(5,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(5,2)
D-5				
D-5	Pa-231 , fish	1.000E+01	1.000E+01	BIOFAC(6,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(6,2)
D-5				
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC(7,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				

Dose Conversion Factor (and Related) Parameter Summary (continued)
File: FGR 13 MORBIDITY

Menu	Parameter	Current Value	Base Case*	Parameter Name
D-5	Pu-238 , fish	3.000E+01	3.000E+01	BIOFAC(5,1)
D-5	Pu-238 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	3.000E+01	3.000E+01	BIOFAC(10,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(10,2)
D-5				
D-5	Pu-240 , fish	3.000E+01	3.000E+01	BIOFAC(11,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(11,2)
D-5				
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC(13,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(13,2)
D-5				
D-5	Ra-228+D , fish	5.000E+01	5.000E+01	BIOFAC(14,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(14,2)
D-5				
D-5	Sr-90+D , fish	6.000E+01	6.000E+01	BIOFAC(15,1)
D-5	Sr-90+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(15,2)
D-5				
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(16,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(16,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(17,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(17,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(18,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(18,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(19,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(19,2)
D-5				
D-5	U-233 , fish	1.000E+01	1.000E+01	BIOFAC(20,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-234 , fish	1.000E+01	1.000E+01	BIOFAC(21,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)
D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC(22,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(22,2)
D-5				
D-5	U-236 , fish	1.000E+01	1.000E+01	BIOFAC(23,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(23,2)

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	5.200E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.000E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	1.000E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	1.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	T1
R011	Times for calculations (yr)	2.500E+01	1.000E+00	---	T(2)
R011	Times for calculations (yr)	5.000E+01	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+02	1.000E+01	---	T(4)
R011	Times for calculations (yr)	not used	3.000E+01	---	T(5)
R011	Times for calculations (yr)	not used	1.000E+02	---	T(6)
R011	Times for calculations (yr)	not used	3.000E+02	---	T(7)
R011	Times for calculations (yr)	not used	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	4.000E-02	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Cs-137	7.630E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): H-3	1.200E-01	0.000E+00	---	S1(4)
R012	Initial principal radionuclide (pCi/g): Pu-238	2.000E-02	0.000E+00	---	S1(8)
R012	Initial principal radionuclide (pCi/g): Pu-239	8.000E-02	0.000E+00	---	S1(10)
R012	Initial principal radionuclide (pCi/g): Pu-240	8.000E-02	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): Sr-90	1.510E+00	0.000E+00	---	S1(15)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Cs-137	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): H-3	not used	0.000E+00	---	W1(4)
R012	Concentration in groundwater (pCi/L): Pu-238	not used	0.000E+00	---	W1(8)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(10)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): Sr-90	not used	0.000E+00	---	W1(15)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.660E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	3.300E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	5.000E+03	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	4.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	2.000E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	8.000E+00	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	4.600E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.230E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.600E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.660E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	3.300E-01	4.000E-01	---	TPSZ

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (if different from user input)	Parameter Name
R014	Saturated zone effective porosity	2.400E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.000E+04	1.000E+02	---	HCSZ
RQ14	Saturated zone hydraulic gradient	4.800E-03	2.000E-02	---	HGWT
R014	Saturated zone b parameter	4.900E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	WMT
R014	Well pump intake depth (m below water table)	1.800E+01	1.000E+01	---	DWISWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	0.000E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.660E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	3.300E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.400E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	4.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	5.000E+03	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(2)
R016	Unsat. zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.023E-03	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Cs-137				
R016	Contaminated zone (cm**3/g)	4.600E+03	4.600E+03	---	DCNUCC(3)
R016	Unsat. zone 1 (cm**3/g)	4.600E+03	4.600E+03	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	4.600E+03	4.600E+03	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.759E-05	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for H-3				
R016	Contaminated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCC(4)
R016	Unsat. zone 1 (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCU(4,1)
R016	Saturated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCS(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.718E-01	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)
R016	Distribution coefficients for Pu-238				
R016	Contaminated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCC(8)
R016	Unsat. zone 1 (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCU(8,1)
R016	Saturated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.047E-05	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.047E-05	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCC(11)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCU(11,1)
R016	Saturated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCS(11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.047E-05	ALEACH(11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(11)
R016	Distribution coefficients for Sr-90				
R016	Contaminated zone (cm**3/g)	3.000E+01	3.000E+01	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	3.000E+01	3.000E+01	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	3.000E+01	3.000E+01	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.687E-03	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.023E-03	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for daughter Np-237				
R016	Contaminated zone (cm**3/g)	-1.000E+00	-1.000E+00	2.574E+02	DCNUCC(5)
R016	Unsaturated zone 1 (cm**3/g)	-1.000E+00	-1.000E+00	2.574E+02	DCNUCU(5,1)
R016	Saturated zone (cm**3/g)	-1.000E+00	-1.000E+00	2.574E+02	DCNUCS(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.143E-04	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.615E-03	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-04	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.154E-03	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.154E-03	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.349E-06	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(17)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(17,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.349E-06	ALEACH(17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(17)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(18)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(18,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.349E-06	ALEACH(18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(18)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.349E-06	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(20)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(20,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.615E-03	ALEACH(20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(20)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-234				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(21)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(21,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(21)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.615E-03	ALEACH(21)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(21)
R016	Distribution coefficients for daughter U-235				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(22)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(22,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(22)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.615E-03	ALEACH(22)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(22)
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(23)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(23,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(23)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.615E-03	ALEACH(23)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(23)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	1.000E-04	1.000E-04	---	MLINH
R017	Exposure duration	2.500E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	8.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	5.000E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	2.500E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radil of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.600E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	not used	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	not used	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	not used	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	not used	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	4.380E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	7.000E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	not used	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	2.000E-01	-1	---	FPLANT
R018	Contamination fraction of meat	not used	-1	---	FMEAT
R018	Contamination fraction of milk	not used	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	not used	6.800E+01	---	LF15
R019	Livestock fodder intake for milk (kg/day)	not used	5.500E+01	---	LF16
R019	Livestock water intake for meat (L/day)	not used	5.000E+01	---	LW15
R019	Livestock water intake for milk (L/day)	not used	1.600E+02	---	LW16
R019	Livestock soil intake (kg/day)	not used	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	1.000E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	not used	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	not used	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	not used	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	not used	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	2.000E+01	2.000E+01	---	WLAH
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12C2
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DHC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSH
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVEN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
C14	DCF correction factor for gaseous forms of C14	not used	0.000E+00	---	CO2F
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.800E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	EAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	32	---	---	NPTS
TITL	Maximum number of integration points for dose	17	---	---	LYMAX

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for risk	257	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	suppressed
5 -- milk ingestion	suppressed
6 -- aquatic foods	suppressed
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	suppressed

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	52000.00 square meters	Am-241	4.000E-02
Thickness:	5.00 meters	Cs-137	7.630E+00
Cover Depth:	0.00 meters	H-3	1.200E-01
		Pu-238	2.000E-02
		Pu-239	8.000E-02
		Pu-240	8.000E-02
		Sr-90	1.510E+00

Total Dose TDOSE(t), mrem/yr
 Basic Radiation Dose Limit = 1.500E+01 mrem/yr
 Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	2.500E+01	5.000E+01	1.000E+02
TDOSE(t):	1.909E+01	1.087E+01	6.146E+00	2.005E+00
M(t):	1.273E+00	7.248E-01	4.097E-01	1.337E-01

Maximum TDOSE(t): 1.909E+01 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.119E-03	0.0001	1.340E-03	0.0001	0.000E+00	0.0000	5.054E-03	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	4.770E-03	0.0002
Cs-137	1.608E+01	0.8421	1.820E-05	0.0000	0.000E+00	0.0000	5.250E-01	0.0275	0.000E+00	0.0000	0.000E+00	0.0000	1.239E-02	0.0006
H-3	0.000E+00	0.0000	1.742E-04	0.0000	0.000E+00	0.0000	1.026E-03	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	1.411E-07	0.0000
Pu-238	1.950E-06	0.0000	5.907E-04	0.0000	0.000E+00	0.0000	2.219E-03	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	2.094E-03	0.0001
Pu-239	1.497E-05	0.0000	2.596E-03	0.0001	0.000E+00	0.0000	9.856E-03	0.0005	0.000E+00	0.0000	0.000E+00	0.0000	9.303E-03	0.0005
Pu-240	7.566E-06	0.0000	2.596E-03	0.0001	0.000E+00	0.0000	9.856E-03	0.0005	0.000E+00	0.0000	0.000E+00	0.0000	9.302E-03	0.0005
Sr-90	2.297E-02	0.0012	1.475E-04	0.0000	0.000E+00	0.0000	2.377E+00	0.1245	0.000E+00	0.0000	0.000E+00	0.0000	7.480E-03	0.0004
Total	1.610E+01	0.8434	7.462E-03	0.0004	0.000E+00	0.0000	2.930E+00	0.1535	0.000E+00	0.0000	0.000E+00	0.0000	4.534E-02	0.0024

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.709E-03	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	1.027E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.609E-02	0.0008
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.662E+01	0.8703
H-3	8.989E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.745E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.157E-03	0.0001
Pu-238	1.932E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.144E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.905E-03	0.0003
Pu-239	2.582E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.867E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.177E-02	0.0011
Pu-240	7.685E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.046E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.176E-02	0.0011
Sr-90	2.540E-03	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	7.567E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.411E+00	0.1262
Total	7.148E-03	0.0004	0.000E+00	0.0000	0.000E+00	0.0000	2.358E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.909E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 2.500E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.724E-04	0.0001	1.164E-03	0.0001	0.000E+00	0.0000	4.392E-03	0.0004	0.000E+00	0.0000	0.000E+00	0.0000	4.144E-03	0.0004
Cs-137	9.021E+00	0.8297	1.021E-05	0.0000	0.000E+00	0.0000	2.945E-01	0.0271	0.000E+00	0.0000	0.000E+00	0.0000	6.950E-03	0.0006
H-3	0.000E+00	0.0000	1.208E-18	0.0000	0.000E+00	0.0000	7.192E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.788E-22	0.0000
Pu-238	1.599E-06	0.0000	4.843E-04	0.0000	0.000E+00	0.0000	1.819E-03	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	1.717E-03	0.0002
Pu-239	1.494E-05	0.0000	2.591E-03	0.0002	0.000E+00	0.0000	9.839E-03	0.0009	0.000E+00	0.0000	0.000E+00	0.0000	9.287E-03	0.0009
Pu-240	7.538E-06	0.0000	2.586E-03	0.0002	0.000E+00	0.0000	9.820E-03	0.0009	0.000E+00	0.0000	0.000E+00	0.0000	9.268E-03	0.0009
Sr-90	1.185E-02	0.0011	7.606E-05	0.0000	0.000E+00	0.0000	1.226E+00	0.1128	0.000E+00	0.0000	0.000E+00	0.0000	3.857E-03	0.0004
Total	9.033E+00	0.8308	6.912E-03	0.0006	0.000E+00	0.0000	1.546E+00	0.1422	0.000E+00	0.0000	0.000E+00	0.0000	3.522E-02	0.0032

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 2.500E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.737E-01	0.0160	0.000E+00	0.0000	0.000E+00	0.0000	5.055E-03	0.0005	0.000E+00	0.0000	0.000E+00	0.0000	1.894E-01	0.0174
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.322E+00	0.8574
H-3	7.950E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.258E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.688E-17	0.0000
Pu-238	3.526E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.025E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.023E-03	0.0004
Pu-239	5.089E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.480E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.173E-02	0.0020
Pu-240	1.488E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.327E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.168E-02	0.0020
Sr-90	6.968E-02	0.0064	0.000E+00	0.0000	0.000E+00	0.0000	2.186E-03	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	1.314E+00	0.1208
Total	2.434E-01	0.0224	0.000E+00	0.0000	0.000E+00	0.0000	7.241E-03	0.0007	0.000E+00	0.0000	0.000E+00	0.0000	1.087E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 5.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.450E-04	0.0001	1.011E-03	0.0002	0.000E+00	0.0000	3.817E-03	0.0006	0.000E+00	0.0000	0.000E+00	0.0000	3.600E-03	0.0006
Cs-137	5.060E+00	0.8234	5.728E-06	0.0000	0.000E+00	0.0000	1.652E-01	0.0269	0.000E+00	0.0000	0.000E+00	0.0000	3.899E-03	0.0006
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-238	1.312E-06	0.0000	3.971E-04	0.0001	0.000E+00	0.0000	1.492E-03	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	1.408E-03	0.0002
Pu-239	1.492E-05	0.0000	2.587E-03	0.0004	0.000E+00	0.0000	9.822E-03	0.0016	0.000E+00	0.0000	0.000E+00	0.0000	9.271E-03	0.0015
Pu-240	7.510E-06	0.0000	2.577E-03	0.0004	0.000E+00	0.0000	9.784E-03	0.0016	0.000E+00	0.0000	0.000E+00	0.0000	9.235E-03	0.0015
Sr-90	6.110E-03	0.0010	3.922E-05	0.0000	0.000E+00	0.0000	6.322E-01	0.1029	0.000E+00	0.0000	0.000E+00	0.0000	1.989E-03	0.0003
Total	5.067E+00	0.8245	6.617E-03	0.0011	0.000E+00	0.0000	8.224E-01	0.1338	0.000E+00	0.0000	0.000E+00	0.0000	2.940E-02	0.0046

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 5.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.561E-01	0.0254	0.000E+00	0.0000	0.000E+00	0.0000	4.548E-03	0.0007	0.000E+00	0.0000	0.000E+00	0.0000	1.699E-01	0.0276
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.230E+00	0.8509
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-238	1.284E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.738E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.298E-03	0.0005
Pu-239	2.065E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.011E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.169E-02	0.0035
Pu-240	5.744E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.672E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.160E-02	0.0035
Sr-90	5.769E-02	0.0094	0.000E+00	0.0000	0.000E+00	0.0000	1.812E-03	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	6.999E-01	0.1139
Total	2.138E-01	0.0348	0.000E+00	0.0000	0.000E+00	0.0000	6.359E-03	0.0010	0.000E+00	0.0000	0.000E+00	0.0000	6.146E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.382E-04	0.0003	7.632E-04	0.0004	0.000E+00	0.0000	2.882E-03	0.0014	0.000E+00	0.0000	0.000E+00	0.0000	2.717E-03	0.0014
Cs-137	1.593E+00	0.7943	1.802E-06	0.0000	0.000E+00	0.0000	5.199E-02	0.0259	0.000E+00	0.0000	0.000E+00	0.0000	1.227E-03	0.0006
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-238	8.826E-07	0.0000	2.670E-04	0.0001	0.000E+00	0.0000	1.003E-03	0.0005	0.000E+00	0.0000	0.000E+00	0.0000	9.466E-04	0.0005
Pu-239	1.487E-05	0.0000	2.578E-03	0.0013	0.000E+00	0.0000	9.788E-03	0.0049	0.000E+00	0.0000	0.000E+00	0.0000	9.239E-03	0.0046
Pu-240	7.456E-06	0.0000	2.558E-03	0.0013	0.000E+00	0.0000	9.713E-03	0.0048	0.000E+00	0.0000	0.000E+00	0.0000	9.167E-03	0.0046
Sr-90	1.625E-03	0.0008	1.043E-05	0.0000	0.000E+00	0.0000	1.681E-01	0.0839	0.000E+00	0.0000	0.000E+00	0.0000	5.290E-04	0.0003
Total	1.595E+00	0.7954	6.179E-03	0.0031	0.000E+00	0.0000	2.435E-01	0.1214	0.000E+00	0.0000	0.000E+00	0.0000	2.383E-02	0.0119

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.175E-01	0.0586	0.000E+00	0.0000	0.000E+00	0.0000	3.424E-03	0.0017	0.000E+00	0.0000	0.000E+00	0.0000	1.279E-01	0.0638
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.646E+00	0.8208
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-238	3.888E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.133E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.218E-03	0.0011
Pu-239	7.727E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.251E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.162E-02	0.0108
Pu-240	1.983E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.777E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.145E-02	0.0107
Sr-90	1.531E-02	0.0076	0.000E+00	0.0000	0.000E+00	0.0000	4.807E-04	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	1.861E-01	0.0928
Total	1.328E-01	0.0662	0.000E+00	0.0000	0.000E+00	0.0000	3.905E-03	0.0019	0.000E+00	0.0000	0.000E+00	0.0000	2.005E+00	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)			
			0.000E+00	2.500E+01	5.000E+01	1.000E+02
Am-241	Am-241	1.000E+00	4.023E-01	4.736E+00	4.247E+00	3.198E+00
Am-241	Np-237+D	1.000E+00	6.145E-07	3.232E-05	6.147E-05	1.081E-04
Am-241	U-233	1.000E+00	2.016E-14	5.266E-11	2.839E-10	1.164E-09
Am-241	Th-229+D	1.000E+00	6.661E-17	5.118E-13	3.776E-12	2.712E-11
Am-241	ΣDSR(j)		4.023E-01	4.736E+00	4.248E+00	3.199E+00
Cs-137+D	Cs-137+D	1.000E+00	2.178E+00	1.222E+00	6.854E-01	2.157E-01
H-3	H-3	1.000E+00	1.797E-02	1.406E-16	8.449E-31	0.000E+00
Pu-238	Pu-238	1.840E-09	4.513E-10	3.700E-10	3.034E-10	2.040E-10
Pu-238	Pu-238	1.000E+00	2.453E-01	2.011E-01	1.649E-01	1.109E-01
Pu-238	U-234	1.000E+00	6.213E-08	4.642E-06	1.159E-05	2.792E-05
Pu-238	Th-230	1.000E+00	2.771E-13	4.795E-10	1.741E-09	5.944E-09
Pu-238	Ra-226+D	1.000E+00	5.087E-15	2.551E-10	1.867E-09	1.310E-08
Pu-238	Pb-210+D	1.000E+00	1.761E-15	1.540E-11	2.112E-10	2.734E-09
Pu-238	ΣDSR(j)		2.453E-01	2.011E-01	1.649E-01	1.109E-01
Pu-239	Pu-239	1.000E+00	2.721E-01	2.717E-01	2.712E-01	2.702E-01
Pu-239	U-235+D	1.000E+00	2.565E-10	1.345E-08	2.730E-08	5.592E-08
Pu-239	Pa-231	1.000E+00	1.550E-14	3.734E-11	1.781E-10	8.721E-10
Pu-239	Ac-227+D	1.000E+00	3.684E-15	1.710E-11	1.714E-10	1.191E-09
Pu-239	ΣDSR(j)		2.721E-01	2.717E-01	2.712E-01	2.702E-01
Pu-240	Pu-240	4.950E-08	1.347E-08	1.342E-08	1.337E-08	1.327E-08
Pu-240	Pu-240	1.000E+00	2.720E-01	2.710E-01	2.700E-01	2.681E-01
Pu-240	U-236	1.000E+00	6.161E-10	5.001E-08	1.337E-07	3.691E-07
Pu-240	Th-232	1.000E+00	7.859E-20	1.449E-16	5.599E-16	2.155E-15
Pu-240	Ra-228+D	1.000E+00	3.964E-20	1.532E-15	7.780E-15	3.557E-14
Pu-240	Th-228+D	1.000E+00	3.262E-21	1.285E-15	7.492E-15	3.600E-14
Pu-240	ΣDSR(j)		2.720E-01	2.710E-01	2.700E-01	2.681E-01
Sr-90+D	Sr-90+D	1.000E+00	1.596E+00	8.700E-01	4.635E-01	1.232E-01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 1.500E+01 mrem/yr

Nuclide (i)	t= 0.000E+00	2.500E+01	5.000E+01	1.000E+02
Am-241	3.728E+01	3.167E+00	3.531E+00	4.690E+00
Cs-137	6.887E+00	1.228E+01	2.189E+01	6.954E+01
H-3	8.346E+02	*9.597E+15	*9.597E+15	*9.597E+15
Pu-238	6.116E+01	7.458E+01	9.096E+01	1.353E+02
Pu-239	5.512E+01	5.522E+01	5.531E+01	5.550E+01
Pu-240	5.514E+01	5.534E+01	5.555E+01	5.596E+01
Sr-90	9.396E+00	1.724E+01	3.236E+01	1.217E+02

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	4.000E-02	26.21 ± 0.05	4.859E+00	3.087E+00	4.023E-01	3.728E+01
Cs-137	7.630E+00	0.000E+00	2.178E+00	6.887E+00	2.178E+00	6.887E+00
H-3	1.200E-01	0.000E+00	1.797E-02	8.346E+02	1.797E-02	8.346E+02
Pu-238	2.000E-02	0.000E+00	2.453E-01	6.116E+01	2.453E-01	6.116E+01
Pu-239	8.000E-02	0.000E+00	2.721E-01	5.512E+01	2.721E-01	5.512E+01
Pu-240	8.000E-02	0.000E+00	2.720E-01	5.514E+01	2.720E-01	5.514E+01
Sr-90	1.510E+00	0.000E+00	1.596E+00	9.396E+00	1.596E+00	9.396E+00

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr			
			t= 0.000E+00	2.500E+01	5.000E+01	1.000E+02
Am-241	Am-241	1.000E+00	1.609E-02	1.094E-01	1.699E-01	1.279E-01
Np-237	Am-241	1.000E+00	2.458E-08	1.293E-06	2.459E-06	4.324E-06
U-233	Am-241	1.000E+00	8.065E-16	2.107E-12	1.136E-11	4.654E-11
Th-229	Am-241	1.000E+00	2.664E-18	2.047E-14	1.510E-13	1.085E-12
Cs-137	Cs-137	1.000E+00	1.662E+01	9.322E+00	5.230E+00	1.646E+00
H-3	H-3	1.000E+00	2.157E-03	1.688E-17	0.000E+00	0.000E+00
Pu-238	Pu-238	1.840E-09	9.026E-12	7.401E-12	6.068E-12	4.080E-12
Pu-238	Pu-238	1.000E+00	4.905E-03	4.022E-03	3.298E-03	2.217E-03
Pu-238	ΣDOSE(j)		4.905E-03	4.022E-03	3.298E-03	2.217E-03
U-234	Pu-238	1.000E+00	1.243E-09	9.285E-08	2.319E-07	5.583E-07
Th-230	Pu-238	1.000E+00	5.542E-15	9.590E-12	3.482E-11	1.189E-10
Ra-226	Pu-238	1.000E+00	1.017E-16	5.101E-12	3.733E-11	2.621E-10
Pb-210	Pu-238	1.000E+00	3.522E-17	3.080E-13	4.223E-12	5.468E-11
Pu-239	Pu-239	1.000E+00	2.177E-02	2.173E-02	2.169E-02	2.162E-02
U-235	Pu-239	1.000E+00	2.052E-11	1.076E-09	2.184E-09	4.473E-09
Pa-231	Pu-239	1.000E+00	1.240E-15	2.987E-12	1.425E-11	6.977E-11
Ac-227	Pu-239	1.000E+00	2.947E-16	1.368E-12	1.371E-11	9.530E-11
Pu-240	Pu-240	4.950E-08	1.077E-09	1.073E-09	1.069E-09	1.062E-09
Pu-240	Pu-240	1.000E+00	2.176E-02	2.168E-02	2.160E-02	2.145E-02
Pu-240	ΣDOSE(j)		2.176E-02	2.168E-02	2.160E-02	2.145E-02
U-236	Pu-240	1.000E+00	4.929E-11	4.001E-09	1.070E-08	2.953E-08
Th-232	Pu-240	1.000E+00	6.287E-21	1.159E-17	4.479E-17	1.724E-16
Ra-228	Pu-240	1.000E+00	3.172E-21	1.225E-16	6.224E-16	2.846E-15
Th-228	Pu-240	1.000E+00	2.610E-22	1.028E-16	5.994E-16	2.880E-15
Sr-90	Sr-90	1.000E+00	2.411E+00	1.314E+00	6.999E-01	1.861E-01

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide	Parent	THF(i)	S(j,t), pCi/g			
(j)	(i)		t= 0.000E+00	2.500E+01	5.000E+01	1.000E+02
Am-241	Am-241	1.000E+00	4.000E-02	3.475E-02	3.019E-02	2.279E-02
Np-237	Am-241	1.000E+00	0.000E+00	3.009E-07	5.600E-07	9.740E-07
U-233	Am-241	1.000E+00	0.000E+00	1.663E-11	6.254E-11	2.216E-10
Th-229	Am-241	1.000E+00	0.000E+00	1.329E-14	1.014E-13	7.400E-13
Cs-137	Cs-137	1.000E+00	7.630E+00	4.280E+00	2.401E+00	7.557E-01
H-3	H-3	1.000E+00	1.200E-01	8.342E-16	5.014E-30	0.000E+00
Pu-238	Pu-238	1.840E-09	3.680E-11	3.017E-11	2.474E-11	1.663E-11
Pu-238	Pu-238	1.000E+00	2.000E-02	1.640E-02	1.345E-02	9.040E-03
Pu-238	ΣS(j):		2.000E-02	1.640E-02	1.345E-02	9.040E-03
U-234	Pu-238	1.000E+00	0.000E+00	1.259E-06	2.242E-06	3.575E-06
Th-230	Pu-238	1.000E+00	0.000E+00	1.474E-10	5.459E-10	1.882E-09
Ra-226	Pu-238	1.000E+00	0.000E+00	5.373E-13	4.016E-12	2.613E-11
Pb-210	Pu-238	1.000E+00	0.000E+00	9.085E-14	1.196E-12	1.342E-11
Pu-239	Pu-239	1.000E+00	8.000E-02	7.986E-02	7.972E-02	7.945E-02
U-235	Pu-239	1.000E+00	0.000E+00	1.929E-09	3.778E-09	7.250E-09
Pa-231	Pu-239	1.000E+00	0.000E+00	5.068E-13	1.972E-12	7.467E-12
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-13	7.133E-13	4.001E-12
Pu-240	Pu-240	4.950E-08	3.960E-09	3.946E-09	3.931E-09	3.902E-09
Pu-240	Pu-240	1.000E+00	8.000E-02	7.971E-02	7.942E-02	7.884E-02
Pu-240	ΣS(j):		8.000E-02	7.971E-02	7.942E-02	7.884E-02
U-236	Pu-240	1.000E+00	0.000E+00	5.792E-08	1.133E-07	2.171E-07
Th-232	Pu-240	1.000E+00	0.000E+00	3.598E-17	1.418E-16	5.512E-16
Ra-228	Pu-240	1.000E+00	0.000E+00	1.959E-17	1.022E-16	4.655E-16
Th-228	Pu-240	1.000E+00	0.000E+00	1.500E-17	9.019E-17	4.392E-16
Sr-90	Sr-90	1.000E+00	1.510E+00	7.787E-01	4.016E-01	1.068E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 63.84 seconds



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Dose Conversion Factor (and Related) Parameter Summary
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Menu	Parameter	Current Value	Base Case*	Parameter Name
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Cs-137+D	3.190E-05	3.190E-05	DCF2(3)
B-1	H-3	6.400E-08	6.400E-08	DCF2(4)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(5)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(6)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(7)
B-1	Pu-238	3.920E-01	3.920E-01	DCF2(8)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(10)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(11)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(13)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(14)
B-1	Sr-90+D	1.308E-03	1.300E-03	DCF2(15)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(16)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(17)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(18)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(19)
B-1	U-233	1.350E-01	1.350E-01	DCF2(20)
B-1	U-234	1.320E-01	1.320E-01	DCF2(21)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(22)
B-1	U-236	1.250E-01	1.250E-01	DCF2(23)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Cs-137+D	5.000E-05	5.000E-05	DCF3(3)
D-1	H-3	6.400E-08	6.400E-08	DCF3(4)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(5)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(6)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(7)
D-1	Pu-238	3.200E-03	3.200E-03	DCF3(8)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(10)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(11)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(13)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(14)
D-1	Sr-90+D	1.528E-04	1.420E-04	DCF3(15)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(16)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(17)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(18)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(19)
D-1	U-233	2.890E-04	2.890E-04	DCF3(20)
D-1	U-234	2.830E-04	2.830E-04	DCF3(21)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(22)
D-1	U-236	2.690E-04	2.690E-04	DCF3(23)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,3)

Dose Conversion Factor (and Related) Parameter Summary (continued)
File: FGR 13 MORBIDITY

Menu	Parameter	Current Value	Base Case*	Parameter Name
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Cs-137+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(3,1)
D-34	Cs-137+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.000E-02	3.000E-02	RTF(3,2)
D-34	Cs-137+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	8.000E-03	8.000E-03	RTF(3,3)
D-34				
D-34	H-3 , plant/soil concentration ratio, dimensionless	4.800E+00	4.800E+00	RTF(4,1)
D-34	H-3 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.200E-02	1.200E-02	RTF(4,2)
D-34	H-3 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-02	1.000E-02	RTF(4,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(5,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(5,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(5,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(6,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF(6,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(6,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(7,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(7,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(7,3)
D-34				
D-34	Pu-238 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,1)
D-34	Pu-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(8,2)
D-34	Pu-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(8,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(10,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(10,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(10,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(11,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(11,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(11,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(13,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(13,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(13,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(14,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(14,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(14,3)
D-34				
D-34	Sr-90+D , plant/soil concentration ratio, dimensionless	3.000E-01	3.000E-01	RTF(15,1)
D-34	Sr-90+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-03	8.000E-03	RTF(15,2)
D-34	Sr-90+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-03	2.000E-03	RTF(15,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(16,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(16,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(16,3)

Dose Conversion Factor (and Related) Parameter Summary (continued)
File: FGR 13 MORBIDITY

Menu	Parameter	Current Value	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(17,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(17,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(17,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(18,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(18,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(18,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(19,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(19,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(19,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(20,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(20,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(21,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(21,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(22,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(22,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(22,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(23,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(23,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(23,3)
D-5				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	3.000E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Cs-137+D , fish	2.000E+03	2.000E+03	BIOFAC(3,1)
D-5	Cs-137+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(3,2)
D-5				
D-5	H-3 , fish	1.000E+00	1.000E+00	BIOFAC(4,1)
D-5	H-3 , crustacea and mollusks	1.000E+00	1.000E+00	BIOFAC(4,2)
D-5				
D-5	Np-237+D , fish	3.000E+01	3.000E+01	BIOFAC(5,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(5,2)
D-5				
D-5	Pa-231 , fish	1.000E+01	1.000E+01	BIOFAC(6,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(6,2)
D-5				
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC(7,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				

Dose Conversion Factor (and Related) Parameter Summary (continued)
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Menu	Parameter	Current Value	Base Case*	Parameter Name
D-5	Pu-238 , fish	3.000E+01	3.000E+01	BIOFAC(8,1)
D-5	Pu-238 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(8,2)
D-5				
D-5	Pu-239 , fish	3.000E+01	3.000E+01	BIOFAC(10,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(10,2)
D-5				
D-5	Pu-240 , fish	3.000E+01	3.000E+01	BIOFAC(11,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(11,2)
D-5				
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC(13,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(13,2)
D-5				
D-5	Ra-228+D , fish	5.000E+01	5.000E+01	BIOFAC(14,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(14,2)
D-5				
D-5	Sr-90+D , fish	6.000E+01	6.000E+01	BIOFAC(15,1)
D-5	Sr-90+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(15,2)
D-5				
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(16,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(16,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(17,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(17,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(18,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(18,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(19,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(19,2)
D-5				
D-5	U-233 , fish	1.000E+01	1.000E+01	BIOFAC(20,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-234 , fish	1.000E+01	1.000E+01	BIOFAC(21,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)
D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC(22,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(22,2)
D-5				
D-5	U-236 , fish	1.000E+01	1.000E+01	BIOFAC(23,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(23,2)

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	5.200E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.000E+00	2.000E+00	---	THICKO
R011	Length parallel to aquifer flow (m)	1.000E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	1.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	2.500E+01	1.000E+00	---	T(2)
R011	Times for calculations (yr)	5.000E+01	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+02	1.000E+01	---	T(4)
R011	Times for calculations (yr)	not used	3.000E+01	---	T(5)
R011	Times for calculations (yr)	not used	1.000E+02	---	T(6)
R011	Times for calculations (yr)	not used	3.000E+02	---	T(7)
R011	Times for calculations (yr)	not used	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.100E-01	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Cs-137	1.663E+01	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): H-3	5.300E-01	0.000E+00	---	S1(4)
R012	Initial principal radionuclide (pCi/g): Pu-238	6.000E-02	0.000E+00	---	S1(8)
R012	Initial principal radionuclide (pCi/g): Pu-239	2.500E-01	0.000E+00	---	S1(10)
R012	Initial principal radionuclide (pCi/g): Pu-240	2.500E-01	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): Sr-90	5.300E+00	0.000E+00	---	S1(15)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Cs-137	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): H-3	not used	0.000E+00	---	W1(4)
R012	Concentration in groundwater (pCi/L): Pu-238	not used	0.000E+00	---	W1(8)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(10)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): Sr-90	not used	0.000E+00	---	W1(15)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.660E+00	1.500E+00	---	DENSC2
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	3.300E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	5.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	4.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	2.000E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	8.000E+00	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	4.600E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.230E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.600E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.660E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	3.300E-01	4.000E-01	---	TPSZ

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Saturated zone effective porosity	2.400E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.000E+04	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	4.800E-03	2.000E-02	---	HGWT
R014	Saturated zone b parameter	4.900E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	1.800E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	0.000E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.660E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	3.300E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.400E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	4.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	5.000E+03	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(2)
R016	Unsat. zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.023E-03	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Cs-137				
R016	Contaminated zone (cm**3/g)	4.600E+03	4.600E+03	---	DCNUCC(3)
R016	Unsat. zone 1 (cm**3/g)	4.600E+03	4.600E+03	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	4.600E+03	4.600E+03	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.759E-05	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for H-3				
R016	Contaminated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCC(4)
R016	Unsat. zone 1 (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCU(4,1)
R016	Saturated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCS(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.718E-01	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)
R016	Distribution coefficients for Pu-238				
R016	Contaminated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCC(8)
R016	Unsat. zone 1 (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCU(8,1)
R016	Saturated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.047E-05	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.047E-05	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCC(11)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCU(11,1)
R016	Saturated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCS(11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.047E-05	ALEACH(11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(11)
R016	Distribution coefficients for Sr-90				
R016	Contaminated zone (cm**3/g)	3.000E+01	3.000E+01	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	3.000E+01	3.000E+01	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	3.000E+01	3.000E+01	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.687E-03	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.023E-03	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for daughter Np-237				
R016	Contaminated zone (cm**3/g)	-1.000E+00	-1.000E+00	2.574E+02	DCNUCC(5)
R016	Unsaturated zone 1 (cm**3/g)	-1.000E+00	-1.000E+00	2.574E+02	DCNUCU(5,1)
R016	Saturated zone (cm**3/g)	-1.000E+00	-1.000E+00	2.574E+02	DCNUCS(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.143E-04	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.615E-03	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-04	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.154E-03	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.154E-03	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.349E-06	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(17)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(17,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.349E-06	ALEACH(17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(17)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(18)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(18,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.349E-06	ALEACH(18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(18)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.349E-06	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(20)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(20,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.615E-03	ALEACH(20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(20)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-234				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(21)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(21,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(21)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.615E-03	ALEACH(21)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(21)
R016	Distribution coefficients for daughter U-235				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(22)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(22,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(22)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.615E-03	ALEACH(22)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(22)
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(23)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(23,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(23)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.615E-03	ALEACH(23)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(23)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	1.000E-04	1.000E-04	---	MLINH
R017	Exposure duration	2.500E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	8.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	5.000E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	2.500E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radil of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.600E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	not used	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	not used	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	not used	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	not used	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	4.380E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	7.000E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	not used	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	2.000E-01	-1	---	FPLANT
R018	Contamination fraction of meat	not used	-1	---	FMEAT
R018	Contamination fraction of milk	not used	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	not used	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	not used	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	not used	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	not used	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day) -	not used	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	1.000E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DRDOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	not used	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	EGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	not used	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	not used	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (if different from user input)	Parameter Name
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	not used	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	2.000E+01	2.000E+01	---	WLAH
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DHC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSU
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSU
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
C14	DCF correction factor for gaseous forms of C14	not used	0.000E+00	---	CO2F
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building-foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	32	---	---	NPTS
TITL	Maximum number of integration points for dose	17	---	---	LYMAX

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for risk	257	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	suppressed
5 -- milk ingestion	suppressed
6 -- aquatic foods	suppressed
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	suppressed

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	52000.00 square meters	Am-241	1.100E-01
Thickness:	5.00 meters	Cs-137	1.663E+01
Cover Depth:	0.00 meters	H-3	5.300E-01
		Pu-238	6.000E-02
		Pu-239	2.500E-01
		Pu-240	2.500E-01
		Sr-90	5.300E+00

Total Dose TDOSE(t), mrem/yr
 Basic Radiation Dose Limit = 1.500E+01 mrem/yr
 Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	2.500E+01	5.000E+01	1.000E+02
TDOSE(t):	4.488E+01	2.560E+01	1.447E+01	4.733E+00
M(t):	2.992E+00	1.706E+00	9.645E-01	3.155E-01

Maximum TDOSE(t): 4.488E+01 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(l,p,t) for Individual Radionuclides (l) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.077E-03	0.0001	3.684E-03	0.0001	0.000E+00	0.0000	1.390E-02	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	1.312E-02	0.0003
Cs-137	3.505E+01	0.7808	3.967E-05	0.0000	0.000E+00	0.0000	1.144E+00	0.0255	0.000E+00	0.0000	0.000E+00	0.0000	2.700E-02	0.0006
H-3	0.000E+00	0.0000	7.695E-04	0.0000	0.000E+00	0.0000	4.531E-03	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	6.232E-07	0.0000
Pu-238	5.850E-06	0.0000	1.772E-03	0.0000	0.000E+00	0.0000	6.656E-03	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	6.282E-03	0.0001
Pu-239	4.677E-05	0.0000	8.112E-03	0.0002	0.000E+00	0.0000	3.080E-02	0.0007	0.000E+00	0.0000	0.000E+00	0.0000	2.907E-02	0.0006
Pu-240	2.364E-05	0.0000	8.112E-03	0.0002	0.000E+00	0.0000	3.080E-02	0.0007	0.000E+00	0.0000	0.000E+00	0.0000	2.907E-02	0.0006
Sr-90	8.064E-02	0.0018	5.177E-04	0.0000	0.000E+00	0.0000	8.344E+00	0.1859	0.000E+00	0.0000	0.000E+00	0.0000	2.625E-02	0.0006
Total	3.513E+01	0.7827	2.301E-02	0.0005	0.000E+00	0.0000	9.575E+00	0.2133	0.000E+00	0.0000	0.000E+00	0.0000	1.308E-01	0.0029

Total Dose Contributions TDOSE(l,p,t) for Individual Radionuclides (l) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.020E-02	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	2.824E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.426E-02	0.0010
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.622E+01	0.8069
H-3	3.970E-03	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	2.537E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.525E-03	0.0002
Pu-238	5.797E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.543E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.472E-02	0.0003
Pu-239	8.070E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.146E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.803E-02	0.0015
Pu-240	2.402E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.394E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.801E-02	0.0015
Sr-90	8.916E-03	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	2.656E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.461E+00	0.1885
Total	2.309E-02	0.0005	0.000E+00	0.0000	0.000E+00	0.0000	8.018E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.488E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 2.500E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.674E-03	0.0001	3.201E-03	0.0001	0.000E+00	0.0000	1.208E-02	0.0005	0.000E+00	0.0000	0.000E+00	0.0000	1.140E-02	0.0004
Cs-137	1.966E+01	0.7681	2.225E-05	0.0000	0.000E+00	0.0000	6.419E-01	0.0251	0.000E+00	0.0000	0.000E+00	0.0000	1.515E-02	0.0006
H-3	0.000E+00	0.0000	5.337E-18	0.0000	0.000E+00	0.0000	3.176E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.323E-21	0.0000
Pu-238	4.798E-06	0.0000	1.453E-03	0.0001	0.000E+00	0.0000	5.458E-03	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	5.151E-03	0.0002
Pu-239	4.669E-05	0.0000	8.098E-03	0.0003	0.000E+00	0.0000	3.075E-02	0.0012	0.000E+00	0.0000	0.000E+00	0.0000	2.902E-02	0.0011
Pu-240	2.356E-05	0.0000	8.082E-03	0.0003	0.000E+00	0.0000	3.069E-02	0.0012	0.000E+00	0.0000	0.000E+00	0.0000	2.896E-02	0.0011
Sr-90	4.158E-02	0.0016	2.670E-04	0.0000	0.000E+00	0.0000	4.303E+00	0.1681	0.000E+00	0.0000	0.000E+00	0.0000	1.354E-02	0.0005
Total	1.971E+01	0.7698	2.112E-02	0.0008	0.000E+00	0.0000	5.024E+00	0.1963	0.000E+00	0.0000	0.000E+00	0.0000	1.032E-01	0.0040

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 2.500E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.777E-01	0.0187	0.000E+00	0.0000	0.000E+00	0.0000	1.390E-02	0.0005	0.000E+00	0.0000	0.000E+00	0.0000	5.209E-01	0.0204
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.032E+01	0.7937
H-3	3.511E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.322E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.454E-17	0.0000
Pu-238	1.058E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.076E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.207E-02	0.0005
Pu-239	1.590E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.624E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.791E-02	0.0027
Pu-240	4.650E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.352E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.776E-02	0.0026
Sr-90	2.446E-01	0.0096	0.000E+00	0.0000	0.000E+00	0.0000	7.673E-03	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	4.611E+00	0.1801
Total	7.223E-01	0.0282	0.000E+00	0.0000	0.000E+00	0.0000	2.157E-02	0.0008	0.000E+00	0.0000	0.000E+00	0.0000	2.560E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TD_{DOSE}(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 5.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.324E-03	0.0002	2.781E-03	0.0002	0.000E+00	0.0000	1.050E-02	0.0007	0.000E+00	0.0000	0.000E+00	0.0000	9.900E-03	0.0007
Cs-137	1.103E+01	0.7624	1.248E-05	0.0000	0.000E+00	0.0000	3.601E-01	0.0249	0.000E+00	0.0000	0.000E+00	0.0000	8.497E-03	0.0006
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-238	3.935E-06	0.0000	1.191E-03	0.0001	0.000E+00	0.0000	4.475E-03	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	4.224E-03	0.0003
Pu-239	4.662E-05	0.0000	8.084E-03	0.0005	0.000E+00	0.0000	3.069E-02	0.0021	0.000E+00	0.0000	0.000E+00	0.0000	2.897E-02	0.0020
Pu-240	2.347E-05	0.0000	8.053E-03	0.0005	0.000E+00	0.0000	3.058E-02	0.0021	0.000E+00	0.0000	0.000E+00	0.0000	2.886E-02	0.0020
Sr-90	2.144E-02	0.0015	1.377E-04	0.0000	0.000E+00	0.0000	2.219E+00	0.1534	0.000E+00	0.0000	0.000E+00	0.0000	6.982E-03	0.0005
Total	1.105E+01	0.7640	2.026E-02	0.0014	0.000E+00	0.0000	2.655E+00	0.1835	0.000E+00	0.0000	0.000E+00	0.0000	8.743E-02	0.0060

Total Dose Contributions TD_{DOSE}(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 5.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.292E-01	0.0297	0.000E+00	0.0000	0.000E+00	0.0000	1.251E-02	0.0009	0.000E+00	0.0000	0.000E+00	0.0000	4.672E-01	0.0323
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.140E+01	0.7879
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-238	3.852E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.121E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.895E-03	0.0007
Pu-239	6.453E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.878E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.780E-02	0.0047
Pu-240	1.795E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.225E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.751E-02	0.0047
Sr-90	2.025E-01	0.0140	0.000E+00	0.0000	0.000E+00	0.0000	6.360E-03	0.0004	0.000E+00	0.0000	0.000E+00	0.0000	2.457E+00	0.1698
Total	6.317E-01	0.0437	0.000E+00	0.0000	0.000E+00	0.0000	1.867E-02	0.0013	0.000E+00	0.0000	0.000E+00	0.0000	1.447E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.755E-03	0.0004	2.099E-03	0.0004	0.000E+00	0.0000	7.927E-03	0.0017	0.000E+00	0.0000	0.000E+00	0.0000	7.473E-03	0.0016
Cs-137	3.471E+00	0.7333	3.929E-06	0.0000	0.000E+00	0.0000	1.133E-01	0.0239	0.000E+00	0.0000	0.000E+00	0.0000	2.674E-03	0.0006
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-238	2.648E-06	0.0000	8.011E-04	0.0002	0.000E+00	0.0000	3.009E-03	0.0006	0.000E+00	0.0000	0.000E+00	0.0000	2.840E-03	0.0006
Pu-239	4.646E-05	0.0000	8.056E-03	0.0017	0.000E+00	0.0000	3.059E-02	0.0065	0.000E+00	0.0000	0.000E+00	0.0000	2.887E-02	0.0061
Pu-240	2.330E-05	0.0000	7.994E-03	0.0017	0.000E+00	0.0000	3.035E-02	0.0064	0.000E+00	0.0000	0.000E+00	0.0000	2.865E-02	0.0061
Sr-90	5.703E-03	0.0012	3.661E-05	0.0000	0.000E+00	0.0000	5.901E-01	0.1247	0.000E+00	0.0000	0.000E+00	0.0000	1.857E-03	0.0004
Total	3.479E+00	0.7349	1.899E-02	0.0040	0.000E+00	0.0000	7.753E-01	0.1638	0.000E+00	0.0000	0.000E+00	0.0000	7.236E-02	0.0153

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.232E-01	0.0693	0.000E+00	0.0000	0.000E+00	0.0000	9.416E-03	0.0020	0.000E+00	0.0000	0.000E+00	0.0000	3.518E-01	0.0743
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.587E+00	0.7578
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-238	1.166E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.398E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.654E-03	0.0014
Pu-239	2.415E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.035E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.756E-02	0.0143
Pu-240	6.198E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.805E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.702E-02	0.0142
Sr-90	5.373E-02	0.0114	0.000E+00	0.0000	0.000E+00	0.0000	1.687E-03	0.0004	0.000E+00	0.0000	0.000E+00	0.0000	6.531E-01	0.1380
Total	3.769E-01	0.0796	0.000E+00	0.0000	0.000E+00	0.0000	1.110E-02	0.0023	0.000E+00	0.0000	0.000E+00	0.0000	4.733E+00	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years 0.000E+00 2.500E+01 5.000E+01 1.000E+02
Am-241	Am-241	1.000E+00	4.023E-01 4.736E+00 4.247E+00 3.196E+00
Am-241	Np-237+D	1.000E+00	6.145E-07 3.232E-05 6.147E-05 1.081E-04
Am-241	U-233	1.000E+00	2.016E-14 5.266E-11 2.839E-10 1.164E-09
Am-241	Th-229+D	1.000E+00	6.661E-17 5.118E-13 3.776E-12 2.712E-11
Am-241	ΣDSR(j)		4.023E-01 4.736E+00 4.248E+00 3.199E+00
Cs-137+D	Cs-137+D	1.000E+00	2.178E+00 1.222E+00 6.854E-01 2.157E-01
H-3	H-3	1.000E+00	1.797E-02 1.406E-16 8.449E-31 0.000E+00
Pu-238	Pu-238	1.840E-09	4.513E-10 3.700E-10 3.034E-10 2.040E-10
Pu-238	Pu-238	1.000E+00	2.453E-01 2.011E-01 1.649E-01 1.109E-01
Pu-238	U-234	1.000E+00	6.213E-08 4.642E-06 1.159E-05 2.792E-05
Pu-238	Th-230	1.000E+00	2.771E-13 4.795E-10 1.741E-09 5.944E-09
Pu-238	Ra-226+D	1.000E+00	5.087E-15 2.551E-10 1.867E-09 1.310E-08
Pu-238	Pb-210+D	1.000E+00	1.761E-15 1.540E-11 2.112E-10 2.734E-09
Pu-238	ΣDSR(j)		2.453E-01 2.011E-01 1.649E-01 1.109E-01
Pu-239	Pu-239	1.000E+00	2.721E-01 2.717E-01 2.712E-01 2.702E-01
Pu-239	U-235+D	1.000E+00	2.565E-10 1.345E-08 2.730E-08 5.592E-08
Pu-239	Pa-231	1.000E+00	1.550E-14 3.734E-11 1.781E-10 8.721E-10
Pu-239	Ac-227+D	1.000E+00	3.684E-15 1.710E-11 1.714E-10 1.191E-09
Pu-239	ΣDSR(j)		2.721E-01 2.717E-01 2.712E-01 2.702E-01
Pu-240	Pu-240	4.950E-08	1.347E-08 1.342E-08 1.337E-08 1.327E-08
Pu-240	Pu-240	1.000E+00	2.720E-01 2.710E-01 2.700E-01 2.681E-01
Pu-240	U-236	1.000E+00	6.161E-10 5.001E-08 1.337E-07 3.691E-07
Pu-240	Th-232	1.000E+00	7.859E-20 1.449E-16 5.599E-16 2.155E-15
Pu-240	Ra-228+D	1.000E+00	3.964E-20 1.532E-15 7.780E-15 3.557E-14
Pu-240	Th-228+D	1.000E+00	3.262E-21 1.285E-15 7.492E-15 3.600E-14
Pu-240	ΣDSR(j)		2.720E-01 2.710E-01 2.700E-01 2.681E-01
Sr-90+D	Sr-90+D	1.000E+00	1.596E+00 8.700E-01 4.635E-01 1.232E-01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 1.500E+01 mrem/yr

Nuclide				
(i)	t= 0.000E+00	2.500E+01	5.000E+01	1.000E+02
Am-241	3.728E+01	3.167E+00	3.531E+00	4.690E+00
Cs-137	6.887E+00	1.228E+01	2.189E+01	6.954E+01
H-3	8.346E+02	*9.597E+15	*9.597E+15	*9.597E+15
Pu-238	6.116E+01	7.458E+01	9.096E+01	1.353E+02
Pu-239	5.512E+01	5.522E+01	5.531E+01	5.550E+01
Pu-240	5.514E+01	5.534E+01	5.555E+01	5.596E+01
Sr-90	9.396E+00	1.724E+01	3.236E+01	1.217E+02

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at t_{min} = time of minimum single radionuclide soil guideline
 and at t_{max} = time of maximum total dose = 0.000E+00 years

Nuclide	Initial	t _{min}	DSR(i,t _{min})	G(i,t _{min})	DSR(i,t _{max})	G(i,t _{max})
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)
Am-241	1.100E-01	26.21 ± 0.05	4.859E+00	3.087E+00	4.023E-01	3.728E+01
Cs-137	1.663E+01	0.000E+00	2.178E+00	6.887E+00	2.178E+00	6.887E+00
H-3	5.300E-01	0.000E+00	1.797E-02	8.346E+02	1.797E-02	8.346E+02
Pu-238	6.000E-02	0.000E+00	2.453E-01	6.116E+01	2.453E-01	6.116E+01
Pu-239	2.500E-01	0.000E+00	2.721E-01	5.512E+01	2.721E-01	5.512E+01
Pu-240	2.500E-01	0.000E+00	2.720E-01	5.514E+01	2.720E-01	5.514E+01
Sr-90	5.300E+00	0.000E+00	1.596E+00	9.396E+00	1.596E+00	9.396E+00

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr			
			t= 0.000E+00	2.500E+01	5.000E+01	1.000E+02
Am-241	Am-241	1.000E+00	4.426E-02	5.209E-01	4.672E-01	3.518E-01
Np-237	Am-241	1.000E+00	6.760E-08	3.555E-06	6.761E-06	1.189E-05
U-233	Am-241	1.000E+00	2.218E-15	5.793E-12	3.123E-11	1.280E-10
Th-229	Am-241	1.000E+00	7.327E-18	5.629E-14	4.153E-13	2.983E-12
Cs-137	Cs-137	1.000E+00	3.622E+01	2.032E+01	1.140E+01	3.587E+00
H-3	H-3	1.000E+00	9.525E-03	7.454E-17	0.000E+00	0.000E+00
Pu-238	Pu-238	1.840E-09	2.708E-11	2.220E-11	1.820E-11	1.224E-11
Pu-238	Pu-238	1.000E+00	1.472E-02	1.207E-02	9.894E-03	6.652E-03
Pu-238	ΣDOSE(j)		1.472E-02	1.207E-02	9.894E-03	6.652E-03
U-234	Pu-238	1.000E+00	3.728E-09	2.785E-07	6.956E-07	1.675E-06
Th-230	Pu-238	1.000E+00	1.663E-14	2.877E-11	1.044E-10	3.567E-10
Ra-226	Pu-238	1.000E+00	3.052E-16	1.530E-11	1.120E-10	7.863E-10
Pb-210	Pu-238	1.000E+00	1.057E-16	9.239E-13	1.267E-11	1.640E-10
Pu-239	Pu-239	1.000E+00	6.803E-02	6.791E-02	6.780E-02	6.756E-02
U-235	Pu-239	1.000E+00	6.412E-11	3.362E-09	6.825E-09	1.398E-08
Pa-231	Pu-239	1.000E+00	3.875E-15	9.334E-12	4.452E-11	2.180E-10
Ac-227	Pu-239	1.000E+00	9.210E-16	4.276E-12	4.285E-11	2.978E-10
Pu-240	Pu-240	4.950E-09	3.366E-09	3.354E-09	3.342E-09	3.317E-09
Pu-240	Pu-240	1.000E+00	6.801E-02	6.776E-02	6.751E-02	6.702E-02
Pu-240	ΣDOSE(j)		6.801E-02	6.776E-02	6.751E-02	6.702E-02
U-236	Pu-240	1.000E+00	1.540E-10	1.250E-08	3.343E-08	9.228E-08
Th-232	Pu-240	1.000E+00	1.965E-20	3.623E-17	1.400E-16	5.388E-16
Ra-228	Pu-240	1.000E+00	9.911E-21	3.829E-16	1.945E-15	8.893E-15
Th-228	Pu-240	1.000E+00	8.155E-22	3.213E-16	1.873E-15	8.999E-15
Sr-90	Sr-90	1.000E+00	8.461E+00	4.611E+00	2.457E+00	6.531E-01

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g			
			t= 0.000E+00	2.500E+01	5.000E+01	1.000E+02
Am-241	Am-241	1.000E+00	1.100E-01	9.557E-02	8.303E-02	6.267E-02
Np-237	Am-241	1.000E+00	0.000E+00	8.276E-07	1.540E-06	2.679E-06
U-233	Am-241	1.000E+00	0.000E+00	4.574E-11	1.720E-10	6.093E-10
Th-229	Am-241	1.000E+00	0.000E+00	3.654E-14	2.789E-13	2.035E-12
Cs-137	Cs-137	1.000E+00	1.663E+01	9.329E+00	5.234E+00	1.647E+00
H-3	H-3	1.000E+00	5.300E-01	3.685E-15	2.215E-29	0.000E+00
Pu-238	Pu-238	1.840E-09	1.104E-10	9.052E-11	7.422E-11	4.990E-11
Pu-238	Pu-238	1.000E+00	6.000E-02	4.920E-02	4.034E-02	2.712E-02
Pu-238	ΣS(j):		6.000E-02	4.920E-02	4.034E-02	2.712E-02
U-234	Pu-238	1.000E+00	0.000E+00	3.777E-06	6.725E-06	1.072E-05
Th-230	Pu-238	1.000E+00	0.000E+00	4.422E-10	1.638E-09	5.645E-09
Ra-226	Pu-238	1.000E+00	0.000E+00	1.612E-12	1.205E-11	8.440E-11
Pb-210	Pu-238	1.000E+00	0.000E+00	2.725E-13	3.589E-12	4.025E-11
Pu-239	Pu-239	1.000E+00	2.500E-01	2.496E-01	2.491E-01	2.483E-01
U-235	Pu-239	1.000E+00	0.000E+00	6.028E-09	1.181E-08	2.266E-08
Pa-231	Pu-239	1.000E+00	0.000E+00	1.584E-12	6.162E-12	2.333E-11
Ac-227	Pu-239	1.000E+00	0.000E+00	3.427E-13	2.229E-12	1.250E-11
Pu-240	Pu-240	4.950E-08	1.237E-08	1.233E-08	1.228E-08	1.220E-08
Pu-240	Pu-240	1.000E+00	2.500E-01	2.491E-01	2.482E-01	2.464E-01
Pu-240	ΣS(j):		2.500E-01	2.491E-01	2.482E-01	2.464E-01
U-236	Pu-240	1.000E+00	0.000E+00	1.810E-07	3.542E-07	6.783E-07
Th-232	Pu-240	1.000E+00	0.000E+00	1.124E-16	4.432E-16	1.723E-15
Ra-228	Pu-240	1.000E+00	0.000E+00	6.122E-17	3.195E-16	1.455E-15
Th-228	Pu-240	1.000E+00	0.000E+00	4.686E-17	2.819E-16	1.372E-15
Sr-90	Sr-90	1.000E+00	5.300E+00	2.733E+00	1.409E+00	3.748E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 67.95 seconds

Appendix D
Concrete Slab Survey Results Summary

Radiological Survey and Dose Assessment Summary
FHWMF Building Foundations/Structures

Building Foundation	SU No.	No. Measurement Locations	Avg Dose Rate (μ R/hr) Year 0	Avg Dose Rate (μ R/hr) Year 50	Projected Annual Dose (mrem/yr) Year 50 ¹
Bldg 444	1	41	10.2	3.2	6.4
Bldg 444	2	32	6.8	2.1	4.3
Bldg 444 Avg.			8.7	2.7	5.5
Bldg 445	1	30	6.6	2.1	4.2
Bldg 445	2	17	4.0	1.2	2.5
Bldg 445	3	27	2.2	0.7	1.4
Bldg 445	4	30	1.2	0.4	0.7
Bldg 445 Avg.			3.5	1.1	2.2
Bldg 446	1	15	7.7	2.4	4.8
Bldg 446	2	50	7.3	2.3	4.6
Bldg 446 Avg.			7.4	2.3	4.7
Bldg 447 Avg.	1	30	1.3	0.4	0.8
Bldg 448	1	30	7.0	2.2	4.4
Bldg 448	2	30	5.6	1.8	3.5
Bldg 448	3	20	8.6	2.7	5.4
Bldg 448 Avg.			6.8	2.2	4.3
Structure (Area C/E) Avg.	1	24	9.3	2.9	5.9

¹ Based on an occupancy factor of 1.0 (2000 hours per year) for an industrial worker.

Appendix E
Oak Ridge Institute for Science and Education (ORISE) Independent
Verification Survey and Sampling Report

ORISE
OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION

September 29, 2005

Ms. Terri Kneitel
Brookhaven Group
U.S. Department of Energy
Building 464
P.O. Box 5000
Upton, NY 11973-5000

DOE CONTRACT NO. DE-AC05-00OR22750
SUBJECT: FINAL IN-PROCESS VERIFICATION SURVEY REPORT FOR THE FORMER
HAZARDOUS WASTE MANAGEMENT FACILITY, BROOKHAVEN
NATIONAL LABORATORY, UPTON, NEW YORK

Dear Ms. Kneitel:

The Environmental Survey and Site Assessment Program (ESSAP) of the Oak Ridge Institute for Science and Education (ORISE) has prepared a final report for the Former Hazardous Waste Management Facility (FHWMF) at the Brookhaven National Laboratory in Upton, New York. Please find enclosed the subject document with your comments incorporated.

Please direct any questions you may have to me at (865) 576-5321 or Scott Kirk at (865) 574-0685.

Sincerely,



Phyllis C. Weaver
Project Leader/Health Physicist
Environmental Survey and
Site Assessment Program

PCW:db

Attachment

cc: R. Rimondo, DOE/Brookhaven Group
L. Hill, DOE/Brookhaven Group
A. Boerner, ORISE/ESSAP

E. Abelquist, ORISE/ESSAP
S. Kirk, ORISE/ESSAP
File/0438

P. O. BOX 117, OAK RIDGE, TENNESSEE 37831-0117

Operated by Oak Ridge Associated Universities for the U.S. Department of Energy



**IN-PROCESS VERIFICATION SURVEY REPORT
FOR THE
FORMER HAZARDOUS WASTE MANAGEMENT FACILITY
BROOKHAVEN NATIONAL LABORATORY
UPTON, NEW YORK**

P. C. WEAVER

Prepared for the
U.S. Department of Energy
Brookhaven Group

**Environmental Survey
and Site Assessment Program**

Further dissemination authorized to U.S. Government
Agencies and their contractors; other requests shall be
approved by the originating facility or higher DOE
programmatic authority.



The Oak Ridge Institute for Science and Education (ORISE) is a U.S. Department of Energy facility focusing on scientific initiatives to research health risks from occupational hazards, assess environmental cleanup, respond to radiation medical emergencies, support national security and emergency preparedness, and educate the next generation of scientists. ORISE is managed by Oak Ridge Associated Universities. Established in 1946, ORAU is a consortium of 91 colleges and universities.

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**IN-PROCESS VERIFICATION SURVEY REPORT
FOR THE
FORMER HAZARDOUS WASTE MANAGEMENT FACILITY
BROOKHAVEN NATIONAL LABORATORY
UPTON, NEW YORK**

Prepared by

P. C. Weaver

Environmental Survey and Site Assessment Program
Oak Ridge Institute for Science and Education
Oak Ridge, Tennessee 37831-0117

Prepared for the

U.S. Department of Energy
Brookhaven Group

FINAL REPORT

SEPTEMBER 2005

Oak Ridge Institute for Science and Education performs complementary work under contract number DE-AC05-00OR22750 with the U.S. Department of Energy.

**IN-PROCESS VERIFICATION SURVEY REPORT
FOR THE
FORMER HAZARDOUS WASTE MANAGEMENT FACILITY
BROOKHAVEN NATIONAL LABORATORY
UPTON, NEW YORK**

Prepared by: 
Phyllis Weaver, Project Leader
Environmental Survey and Site Assessment Program

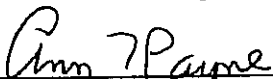
Date: 9/27/05

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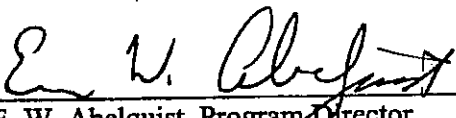
Date: 9/28/05

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SOIL SAMPLING

ESSAP collected 119 soil samples typically from a depth of 0 to 15 cm. Sample locations were both randomly selected and based on judgment (where elevated gamma radiation levels were identified by surface scans) (Figures 4 and 5). On average, at least six samples per survey unit were collected from each Class 1 survey unit. Soil samples 001 through 007 were obtained from the wetlands portion of the FHWMF during the initial sampling period (April 19 to 20, 2005). The water level in the wetlands ranged from shallow to approximately a meter in depth. Because of safety concerns, the actual samples were collected by the BNL contractor while ESSAP observed and labeled each sample. Samples 008 through 072 were obtained during the second sampling campaign (June 13 through 16, 2005) from survey unit A, C-1 through C-3, D-1 through D-6, and Z-1 and Z-2 survey units. The last campaign (August 9 through 11, 2005) included re-sampling of previous locations identified by laboratory analysis as having Cs-137 concentrations greater than the elevated measurement concentration and at locations where the NaI post sampling count rate remained high (074 – 083 and 119). Sample 073 was not a re-sample but was collected from an area on the north side of the 448 pad in survey unit Z-1 that had been excavated after the ESSAP June 2005 survey effort. Samples 084 through 118 were collected from the K-1 through K-4 and Z-3 survey units during the August survey.

ESSAP and the BNL contractor split samples (a divided aliquot of the same sample) during the June 2005 effort in survey units C-2 through C-3, D-1 through D-6, and Z-1 and Z-2. During the re-sample effort conducted by ESSAP, split samples were made available for the BNL contractor.

SAMPLE ANALYSIS AND DATA INTERPRETATION

Radiological samples and data were returned to the ORISE/ESSAP laboratory in Oak Ridge, Tennessee, for analysis and interpretation. Radiological sample analyses were performed in accordance with the ORISE/ESSAP Laboratory Procedures Manual (ORISE 2005c). Soil samples were analyzed primarily for Cs-137 by gamma spectroscopy; however, the spectra were reviewed for other identifiable total absorption peaks (photopeaks) (Appendix A and B). In

accordance with the survey plan, gamma spectroscopy results, and contractor information, samples were selected randomly for Sr-90 analysis using wet chemistry procedures. The results were reported in picocuries per gram (pCi/g).

All radiological data and results were compared with the approved release criteria established for this project. Data and samples collected, as part of this survey, are currently archived by ESSAP until the final project report is approved by the BSO.

The predominant radionuclides of concern for the FHWMF area are Cs-137 and Sr-90. The cleanup goal for the project is based on a total dose limit of 15 mrem/y above background under an industrial use scenario after 50 years of institutional controls. Soil sample data were compared to the following site specific release criteria: Cs-137 (67 pCi/g), Sr-90 (15 pCi/g), and Ra-226 (5 pCi/g) as specified in the BNL implementation plan and approved by DOE (BNL 1999). The maximum Cs-137 hot spot criteria (or elevated measurement concentration) for a 1 m² area is 200 pCi/g.

FINDINGS AND RESULTS

DOCUMENT REVIEW

ESSAP reviewed the BNL Remedial Action Field Sampling Plan and determined that the final status survey (FSS) generally followed the guidance provided in the plan to demonstrate compliance with the guidelines. The expectation is that surface activity (0-15 cm) would meet the established criteria with few, if any, additional areas requiring remediation. Documentation of sample analysis data and walkover count rate data were provided by the contractor prior to ESSAP's verification survey in June (BNL 2005a). The data provided indicated that the contractor had met the project-specific criteria. A review of this final status survey data summary for the FHWMF did not indicate any areas having Cs-137 concentrations exceeding the criteria. However, in survey units A, D-3, and D-4 the maximum Sr-90 concentrations determined by BNL were 20.1, 32.1, and 81.1 pCi/g, respectively (BNL 2005a). These results exceed the 15 pCi/g guideline for Sr-90 used for other site projects at BNL. The summary consisted of a table of composite and individual soil sample results. ESSAP did not receive a

final status survey report prior to the preparation of this document.

SURFACE SCANS

Gamma surface scans were performed within the boundary fence of the wetlands and FHWMF. Surface scans of the wetlands were performed after the initial sampling campaign in April. Typically, the wetlands retain water throughout the year, but by June the water had evaporated allowing ESSAP unlimited access. Gamma activity in the wetlands ranged from 6,000 to 24,000 cpm. The wetlands are a part of the A survey unit. Activity in the remaining survey unit A areas also ranged from 6,000 to 24,000 cpm.

During the period of survey activities from June 13 through 19, ESSAP scanned Class 1 survey units C-1 through C-3 and D-1 through D-6, and Class 2 survey units Z-1 (excluding the boundary control station and adjacent area) and Z-2. Gamma scans identified activity ranging from 4,000 to 300,000 cpm in the Class 1 survey units. The highest reading was identified in a core hole located on the former Building 448 Pad in survey unit A. Gamma scan activity in Class 2 survey units ranged from 4,000 to 420,000 cpm. The highest gamma activity was detected on the asphalt in the southern section of survey unit Z-2 (Class 2). This asphalt area is located near the south entry gate just in front of the 445 Pad. The affected area consisted of approximately 60 to 80 m².

ESSAP conducted scans of the remaining survey units K-1 through K-4 and survey unit Z-3 (north and south) during the period of August 9 through 11, 2005. Initial scans identified several locations above the field action level in survey units K-1, K-2, K-3, and Z-3 north that were marked for either additional investigation or sampling. The contractor decided to remediate most of these locations to expedite the verification while ESSAP was present. Gamma scan activity prior to remediation ranged from 4,000 to 170,000 cpm. The highest activity was identified in survey unit K-1. After remediation the gamma scan activity ranged from approximately 4,000 to 28,000 cpm.

RADIONUCLIDE CONCENTRATIONS IN SOIL

The primary radionuclide of concern at the FHWMF is Cs-137 based upon previous characterization information and the results of the contractor's sampling effort during remedial activities. Sr-90 was present as a mixed fission product in numerous waste streams that were processed at the former facility. Therefore, Sr-90 analysis was performed on selected samples where the Cs-137 concentrations were significantly greater than background and for samples where the contractor indicated that higher Sr-90 concentrations had been identified. Table 1 provides the radionuclide concentrations in the soil samples collected in all survey units for the radionuclides of interest. Also included in Table 1 are the BNL contractor's comparison gamma spectroscopy results using the ISOCS methodology. All samples were analyzed by gamma spectroscopy. Thirty-seven of these samples were selected for analyses to determine Sr-90 concentrations. Sample selection for Sr-90 was based upon samples with a Cs-137 concentration greater than 200 pCi/g as well as information per the BNL contractor results that identified particular areas within a survey unit as having higher Sr-90 concentrations than Cs-137. Radionuclide concentrations in soils ranged from 0.04 to 2550 pCi/g for Cs-137, -0.64 to 64.1 pCi/g for Sr-90, and 0.17 to 1.35 pCi/g for Ra-226. In soil sample 118 collected from the horseshoe area in K-4, gamma spectroscopy analysis identified 490 pCi/g of depleted uranium. All other sample uranium results were within background ranges.

In June 2005 when ESSAP conducted the initial scanning survey, several locations were determined to have exceeded the Cs-137 criteria. Upon returning to the site in August 2005 to complete in-process verification efforts, ESSAP selected eleven of the previous locations that had either a Cs-137 concentration exceeding the 200 pCi/g or had a post sampling NaI count rate measurement that was greater than 30,000 cpm (Table 2). The radionuclide concentrations for Cs-137 ranged from 2.81 to 437 pCi/g; Sr-90 concentration ranged from -0.10 to 9.35 pCi/g; and Ra-226 concentrations ranged from 0.45 to 1.26 pCi/g. Three of the eleven samples were selected for Sr-90 analysis based on information received from the contractor.

COMPARISON OF RESULTS WITH GUIDELINES

Verification survey data results were compared with the DOE-approved site-specific release criteria established for the BNL (BNL 2004a). Cs-137 is the dominant radiological contaminant; however, Sr-90 was present as a mixed fission product in a variety of waste streams.

Gamma spectroscopy results of the seventy-two samples collected in April and June of 2005 from survey units A, C-1 through C-3, D-1 through D-6, and Z-1 and Z-2, identified eleven samples that ranged from 262.9 to 2550 pCi/g for Cs-137 (Table 1). Four of the highest concentrations were identified in survey unit C-1. All Sr-90 results for these samples were below the 15 pCi/g guideline. Ten of the eleven locations were re-sampled in August 2005 to determine if additional remediation by BNL removed or reduced the initial radionuclide concentrations. A visual inspection at each of these locations identified several where it appeared that no additional remediation had been performed prior to ORISE arrival. The Cs-137 concentrations ranged from 2.81 to 437 pCi/g (Table 2). The two locations (074 and 075) previously identified were noted as still having Cs-137 concentrations exceeding the 200 pCi/g Elevated Measurement Comparison (EMC) guideline after the re-sampling effort. Samples 074 and 075 in survey unit C-1 represent previous sample locations 009 and 011, respectively. BNL performed additional remediation at these locations. This process revealed that contamination was often greater than 15 cm below the soil surface and covered an area of at least a square meter in size. Because of time constraints ESSAP did not take additional samples; instead additional post-remediation NaI count rate measurements were obtained. The count rate (after the additional removal of soil) decreased from 60,000 to 22,000 cpm for sample 074 (below the field action level) and from 105,000 to 8,000 cpm for sample 075.

The BNL comparison results from split sampling are also provided in Table 1. Comparison data is available only for samples 019 through 072. Sample results between ESSAP and BNL were not statistically equivalent, possibly a result of the inability to completely homogenize a sample in the field. It is likely that radioactivity was not evenly distributed during the blending. Therefore, either of these split samples could have contained a greater concentration of radioactivity.

Although sample collection was initiated in April 2005, scans of the FHWMF did not begin until the survey effort in June. During this period, ESSAP indicated to DOE and BNL that gamma activity on an area on the 448 Pad was found to be approximately 300,000 cpm¹. BNL conducted additional remediation and removed soil from the northwest portion of the pad to a depth of at least a half meter. Sample 073 collected from that excavation location had a Cs-137 concentration of 149.5 pCi/g, less than the 200 pCi/g hot spot guideline, and a Sr-90 concentration of 64.1 pCi/g. This is the only sample that had a Sr-90 concentration greater than 15 pCi/g. The ESSAP post sample count rate was 44,000 cpm. Additional soil and concrete was removed from that location after which ESSAP obtained a post-remediation count rate of 26,000 cpm inferring that the concentration of the radionuclide of concern is below the Cs-137 guideline of 67 pCi/g.

The results for the remaining soils collected from survey units K-1 through K-4 and Z-3 (north and south) were below the site-specific guidelines for the radionuclides of concern. Sample 118 was the only anomaly identified containing 490 pCi/g of depleted uranium. BNL was informed by ESSAP of this finding through correspondence with the DOE. BNL responded by removing additional soil and collecting samples to document that the remediation effort was successful (BNL 2005b and c).

Several locations of elevated radioactivity were identified in the Class 2 survey unit Z-2. These locations were marked and identified to the BNL contractor. Soil samples were not obtained at these locations because they were on an asphalt surface. However, ESSAP rescanned these locations post-remediation. These measurements were less than the field action levels, averaging 10,000 cpm.

SUMMARY

At the request of the Department of Energy Brookhaven Site Office, the Environmental Survey and Site Assessment Program of the Oak Ridge Institute for Science and Education conducted

¹ Note: The former building pads were not initially in the scope of the verification.

verification survey activities of the Former Hazardous Waste Management Facility at the Brookhaven National Laboratory in Upton, New York. Verification activities included document and data reviews, independent surface scans, surface activity measurements, and soil sampling during the periods of April 19 through 20, June 13 through 16, and August 9 through 11, 2005. The initial visit in April addressed sampling the wetlands area which was at the time under water and was expected to remain under water during the remainder of the remediation and final status surveys. The remaining visits included the scanning and sampling of sixteen survey units. Survey units verified by ESSAP included A areas, C-1 through C-3, D-1 through D-4, K-1 through K-4, and Z-1 through Z-3 (north and south areas). Scans identified numerous locations throughout the site that were above the field action level. Numerous locations were marked for either additional investigation, sampling, or remediation. The surface activity in Class 1 area soils ranged from 4,000 to 300,000 cpm. Several locations were identified in a Class 2 survey unit above the field action level. Surface activity ranged from 4,000 to 420,000 cpm. ESSAP's responsibility in the verification process is not to perform characterization of the area. Therefore, there is a potential for contamination above the guideline to exist on the surface as well as below the surface. Note: Not all areas of contamination identified by ESSAP were sampled or bounded during the verification surveys.

ESSAP collected 119 samples, 26 exceeded the average Cs-137 guideline and eleven of these samples indicated radionuclide concentrations above the EMC level. However, BNL's reported final survey data indicated that no areas exhibited Cs-137 levels above the release criteria. Therefore, ESSAP is not able to confirm that BNL's documentation adequately describes the existing radiological conditions in the FHWMF. During ESSAP's re-evaluation of areas that were sampled in June, additional contamination above the guideline was identified. BNL remediated the contaminated areas identified by the ESSAP survey. However, given the number of samples identified as exceeding the release criteria, and the necessary remediation that followed each independent verification sampling campaign, it is ESSAP's opinion that additional contamination at levels greater than the release criteria are likely, particularly in subsurface soils.

FIGURES

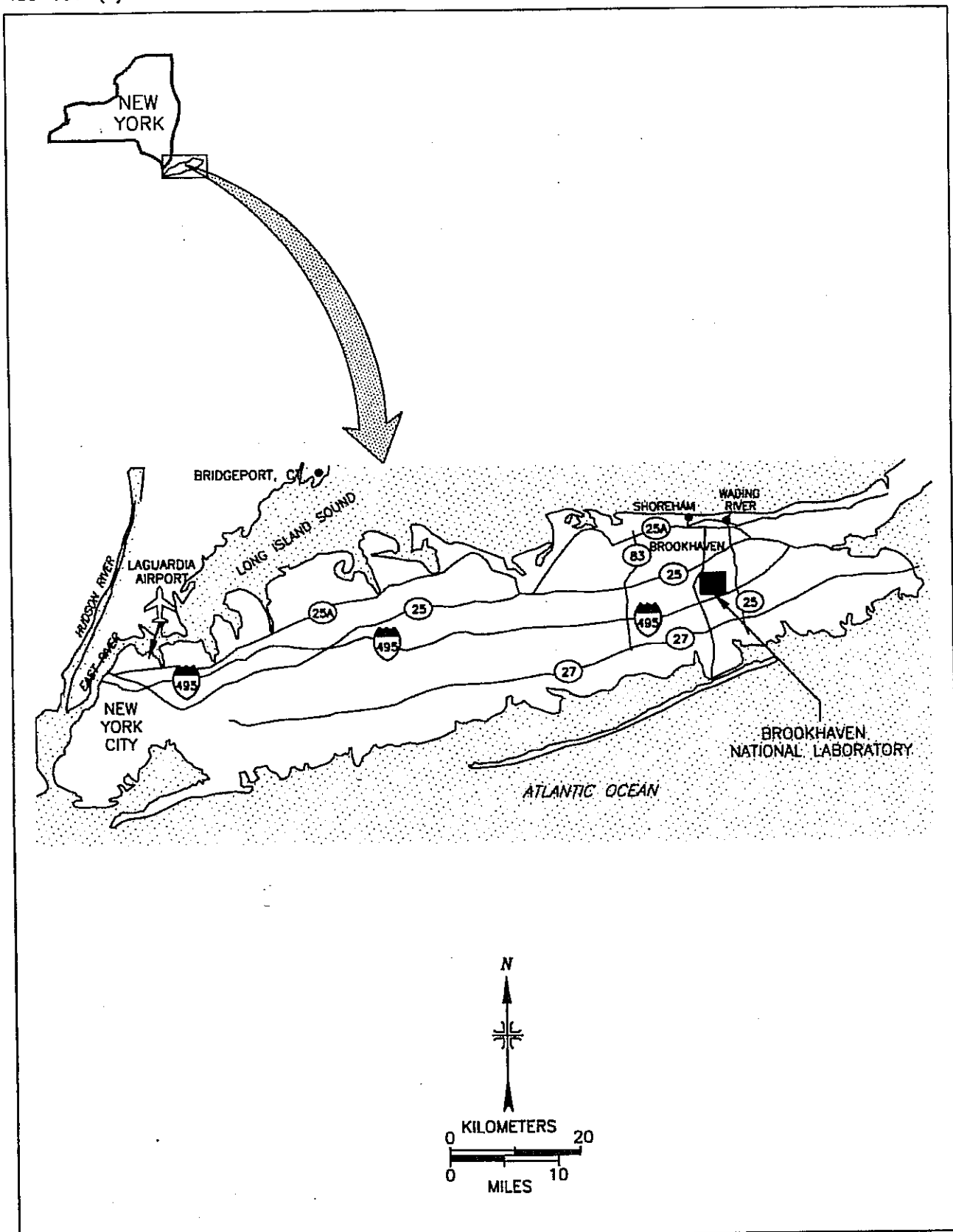


FIGURE 1: Location of Brookhaven National Laboratory, Upton, New York

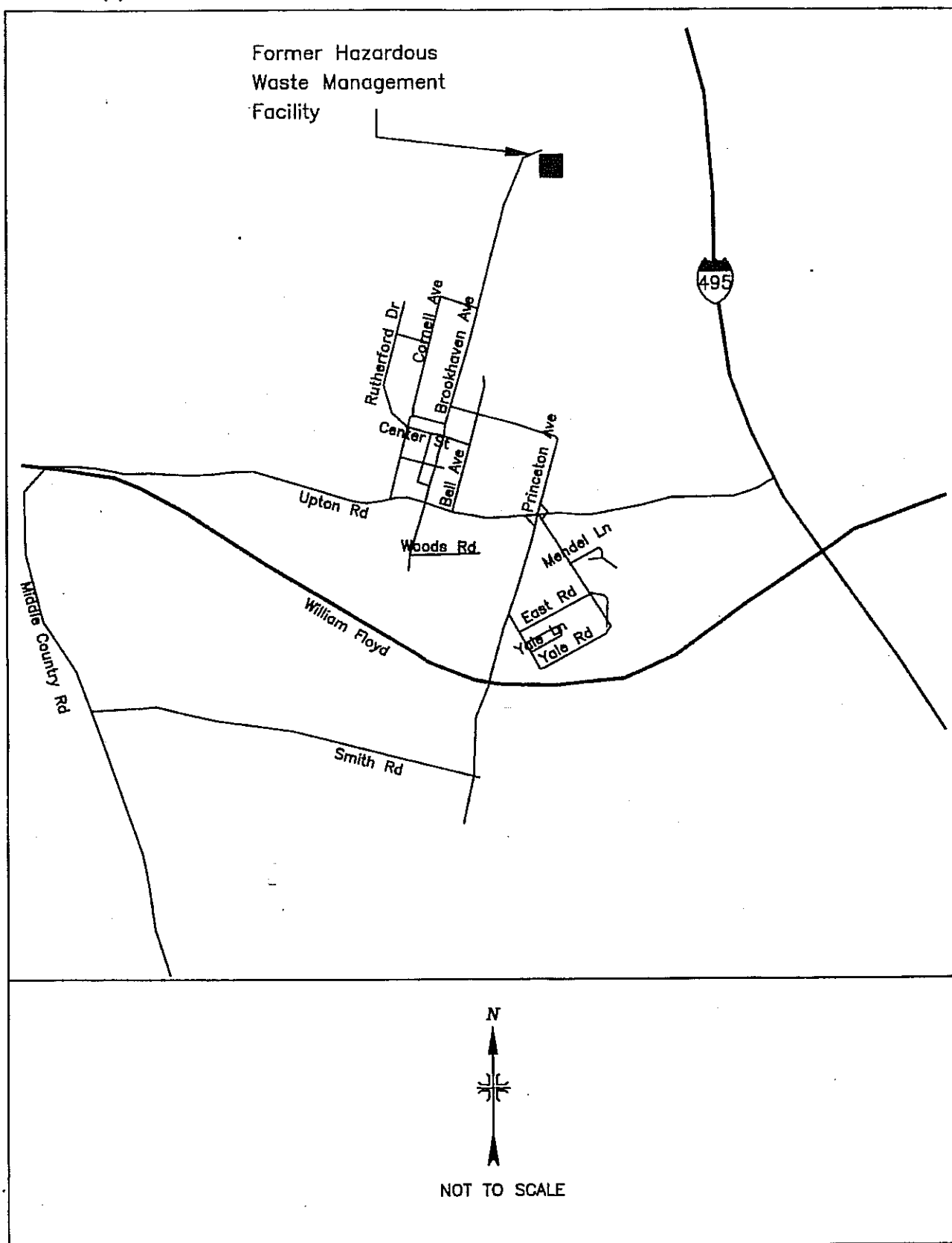


FIGURE 2: Location of the Former Hazardous Waste Management Facility – Upton, New York

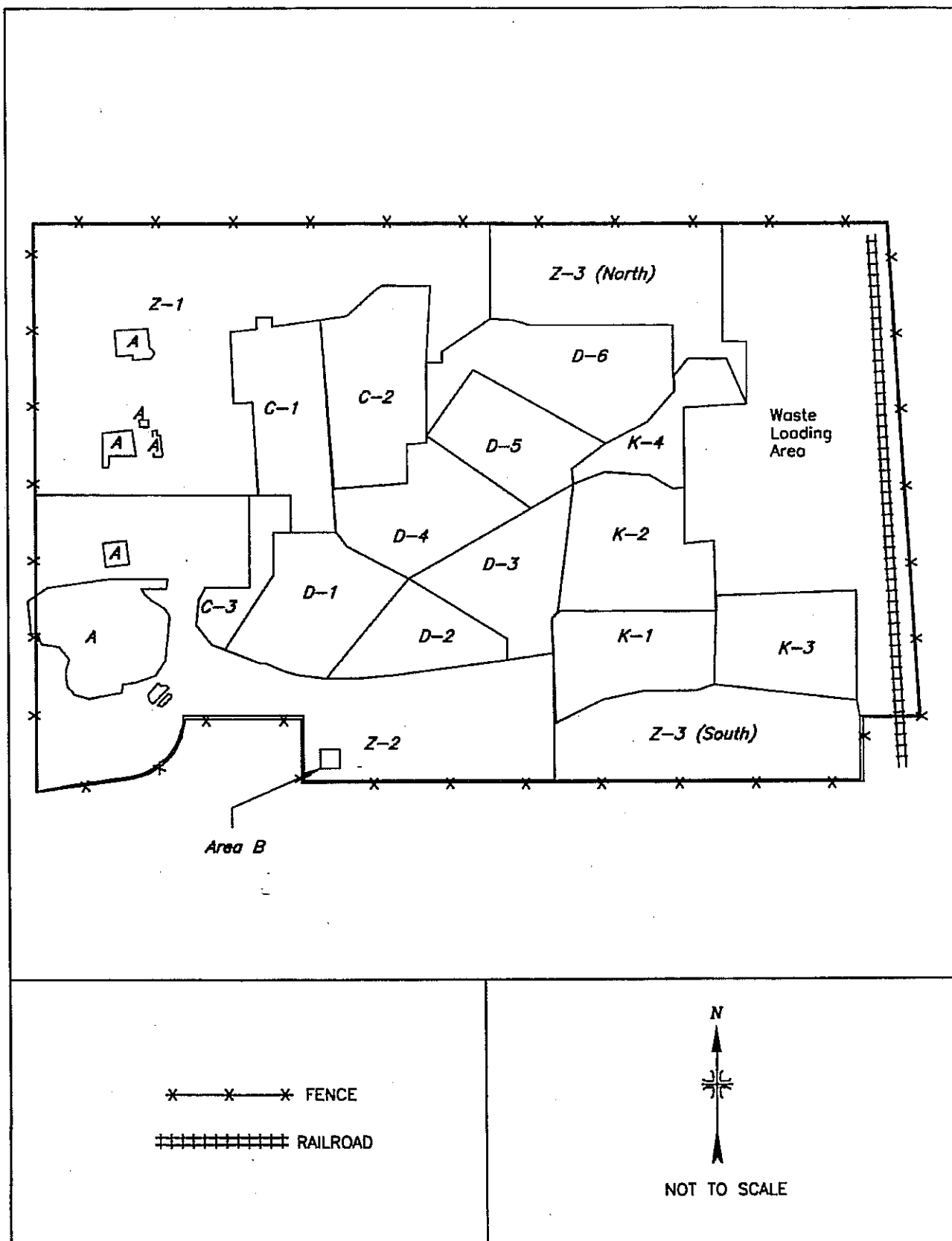


FIGURE 3: Plot Plan of the Former Hazardous Waste Management Facility

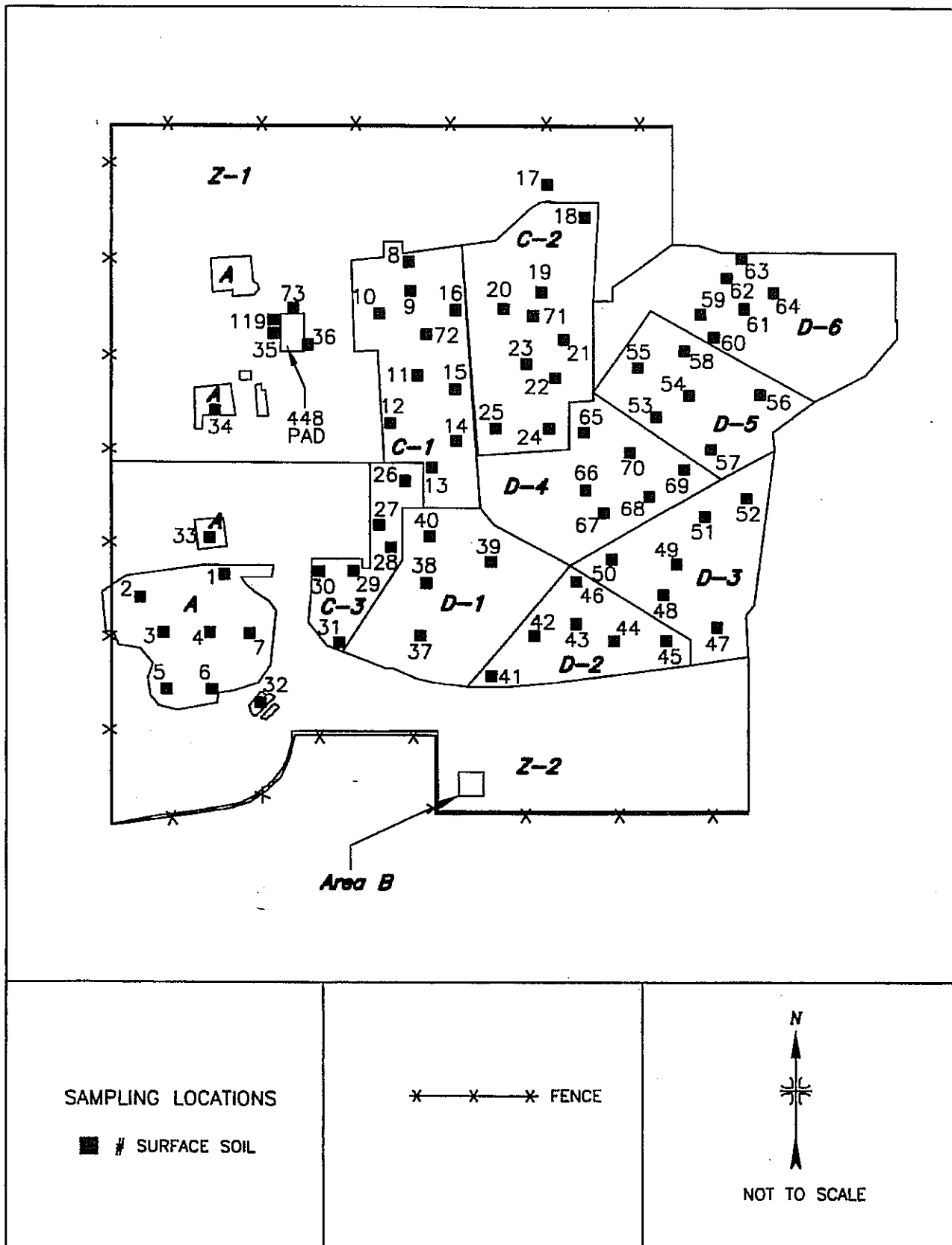


FIGURE 4: Former Hazardous Waste Management Facility, Survey Units A, C-1 to C-3, D-1 to D-6, and Z-1 to Z-2 – Sampling Locations

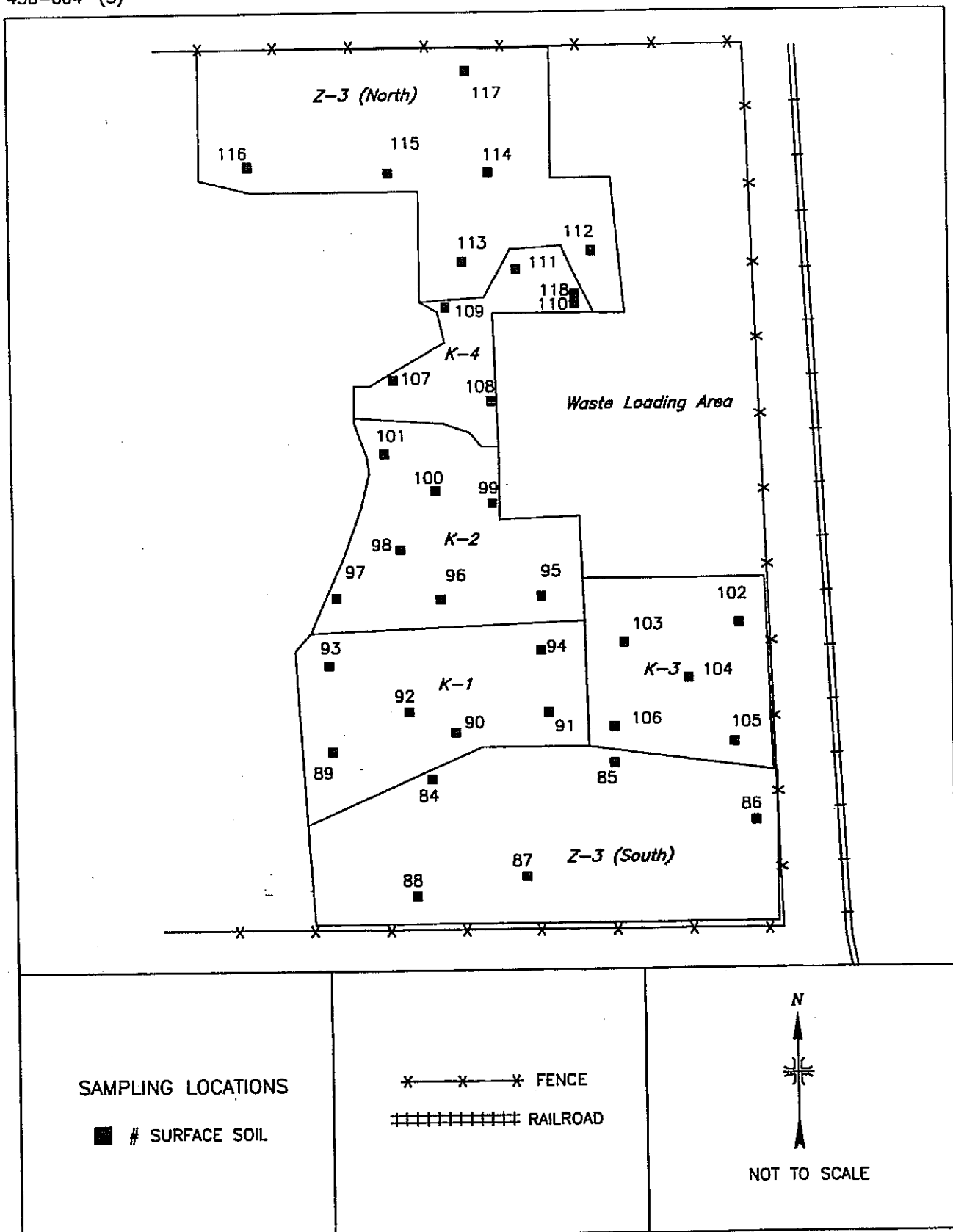


FIGURE 5: Former Hazardous Waste Management Facility, Survey Units K-1 to K-4 and Z-3 North and South – Sampling Locations

TABLES

TABLE 1

**RADIONUCLIDE CONCENTRATIONS IN SOIL
FORMER HAZARDOUS WASTE MANAGEMENT FACILITY
BROOKHAVEN NATIONAL LABORATORY
UPTON, NEW YORK**

Sample No. ^a	Radionuclide Concentration (pCi/g)			
	ESSAP	BNL	Sr-90	Ra-226
	Cs-137	Cs-137		
Survey Unit A (Wetlands)				
001	20.60 ± 0.71	NS ^b	0.66 ± 0.27	0.37 ± 0.14
002	8.43 ± 0.31	NS	0.41 ± 0.26	0.45 ± 0.09
003	10.46 ± 0.34	NS	0.19 ± 0.25	0.41 ± 0.09
004	5.79 ± 0.21	NS	-- ^c	0.42 ± 0.08
005	2.88 ± 0.13	NS	--	0.53 ± 0.08
006	8.66 ± 0.32	NS	0.65 ± 0.26	0.47 ± 0.11
007	2.92 ± 0.12	NS	--	0.53 ± 0.07
Survey Unit C-1				
008	95.6 ± 3.2	NS	-0.13 ± 0.28	0.17 ± 0.40
009	669 ± 22	NS	4.06 ± 0.43	0.61 ± 0.96
010	5.72 ± 0.22	NS	0.44 ± 0.26	0.54 ± 0.08
011	1496 ± 47	NS	1.62 ± 0.33	1.00 ± 1.10
012	47.9 ± 1.5	NS	0.74 ± 0.28	0.45 ± 0.15
013	274.8 ± 8.4	NS	0.56 ± 0.30	0.69 ± 0.63
014	0.10 ± 0.03	NS	1.90 ± 0.34	0.58 ± 0.06
015	2550 ± 83	NS	0.68 ± 0.23	1.30 ± 2.00
016	8.00 ± 0.31	NS	0.52 ± 0.23	0.68 ± 0.13
Survey Unit Z-1				
017	62.0 ± 2.0	NS	1.05 ± 0.26	0.74 ± 0.25
Survey Unit C-2				
018	407 ± 13	NS	8.03 ± 0.56	1.22 ± 0.95
019	145.6 ± 4.8	139.8	9.85 ± 0.63	1.35 ± 0.41
020	0.16 ± 0.03	0.8	0.18 ± 0.20	0.81 ± 0.08
021	158.8 ± 4.9	119.3	0.59 ± 0.22	0.95 ± 0.40
022	755 ± 25	1369.7	1.45 ± 0.32	1.06 ± 0.72
023	21.33 ± 0.74	34.3	1.79 ± 0.36	0.82 ± 0.14
024	0.47 ± 0.04	0.9	0.13 ± 0.26	0.61 ± 0.06
025	2.27 ± 0.12	3.2	0.00 ± 0.27	0.59 ± 0.09
Survey Unit C-3				
026	2.81 ± 0.13	3.5	-0.20 ± 0.25	0.54 ± 0.07
027	111.2 ± 3.7	105.2	2.47 ± 0.37	0.58 ± 0.25

TABLE 1 (Continued)

**RADIONUCLIDE CONCENTRATIONS IN SOIL
FORMER HAZARDOUS WASTE MANAGEMENT FACILITY
BROOKHAVEN NATIONAL LABORATORY
UPTON, NEW YORK**

Sample No. ^a	Radionuclide Concentration (pCi/g)			
	ESSAP	BNL	Sr-90	Ra-226
	Cs-137	Cs-137		
Survey Unit C-3 (Continued)				
028	323 ± 11	432.0	-0.09 ± 0.27	0.45 ± 0.45
029	105.4 ± 3.5	79.8	1.20 ± 0.29	0.32 ± 0.28
030	78.0 ± 2.5	52.2	1.90 ± 0.33	0.71 ± 0.24
031	7.78 ± 0.30	5.8	1.48 ± 0.31	0.40 ± 0.09
Survey Unit A				
032	0.36 ± 0.04	1.1	--	0.34 ± 0.04
033	0.45 ± 0.04	1.5	--	0.42 ± 0.05
034	85.6 ± 2.9	63.2	--	0.77 ± 0.30
Survey Unit Z-1				
035	262.9 ± 8.6	307.3	--	0.40 ± 0.36
036	108.3 ± 3.6	157.5	--	0.65 ± 0.32
Survey Unit D-1				
037	90.4 ± 3.0	80.4	--	0.40 ± 0.24
038	107.8 ± 3.6	87.9	--	0.78 ± 0.40
039	0.04 ± 0.03	1.1	--	0.50 ± 0.07
040	54.4 ± 1.7	213.7	--	0.30 ± 0.23
Survey Unit D-2				
041	0.25 ± 0.04	0.0	--	0.36 ± 0.06
042	123.3 ± 3.7	25.6	--	0.30 ± 0.27
043	361 ± 11	61.2	--	0.51 ± 0.49
044	13.09 ± 0.51	0.0	--	0.70 ± 0.12
045	4.36 ± 0.16	0.0	--	0.50 ± 0.08
046	0.21 ± 0.03	1.8	--	0.48 ± 0.07
Survey Unit D-3				
047	66.8 ± 2.1	54.1	--	0.76 ± 0.26
048	40.4 ± 1.4	32.2	--	0.56 ± 0.16
049	295.9 ± 9.7	279.7	--	1.25 ± 0.55
050	25.77 ± 0.86	25.8	--	0.31 ± 0.13
051	18.69 ± 0.70	14.6	--	0.66 ± 0.21
052	45.4 ± 1.5	35.1	--	0.66 ± 0.19

TABLE 1 (Continued)

**RADIONUCLIDE CONCENTRATIONS IN SOIL
FORMER HAZARDOUS WASTE MANAGEMENT FACILITY
BROOKHAVEN NATIONAL LABORATORY
UPTON, NEW YORK**

Sample No. ^a	Radionuclide Concentration (pCi/g)			
	ESSAP	BNL	Sr-90	Ra-226
	Cs-137	Cs-137		
Survey Unit D-5				
053	54.3 ± 1.8	56.2	--	0.70 ± 0.24
054	16.78 ± 0.56	0.7	--	0.53 ± 0.09
055	7.37 ± 0.29	3.1	--	0.57 ± 0.11
056	1.53 ± 0.08	4.1	--	0.23 ± 0.05
057	4.59 ± 0.20	4.8	--	0.93 ± 0.11
058	1.74 ± 0.09	2.9	--	0.61 ± 0.07
Survey Unit D-6				
059	129.2 ± 4.3	114.0	--	0.52 ± 0.30
060	2.33 ± 0.11	4.7	--	0.51 ± 0.07
061	5.93 ± 0.24	6.5	--	0.58 ± 0.09
062	433 ± 14	546.1	--	0.98 ± 0.84
063	1.38 ± 0.07	3.1	--	0.65 ± 0.07
064	3.51 ± 0.14	3.4	--	0.38 ± 0.06
Survey Unit D-4				
065	0.26 ± 0.03	2.0	--	0.61 ± 0.06
066	95.8 ± 3.0	82.2	--	0.24 ± 0.23
067	0.18 ± 0.03	1.7	0.83 ± 0.26	0.45 ± 0.06
068	160.4 ± 4.9	93.6	--	0.47 ± 0.37
069	0.10 ± 0.03	1.6	--	0.51 ± 0.08
070	3.35 ± 0.14	3.3	3.05 ± 0.40	0.26 ± 0.06
Survey Unit C-2				
071	1.03 ± 0.07	2.4	4.18 ± 0.43	0.66 ± 0.08
Survey Unit C-1				
072	1.21 ± 0.08	1.8	0.30 ± 0.21	0.89 ± 0.09
Survey Unit Z-1				
073	149.5 ± 5.2	NS	64.1 ± 2.4	0.87 ± 0.54
Survey Unit Z-3 (South)				
084	41.2 ± 1.4	NS	--	0.59 ± 0.16
085	1.40 ± 0.08	NS	--	0.57 ± 0.08
086	2.51 ± 0.12	NS	--	0.27 ± 0.05
087	12.23 ± 0.45	NS	--	0.48 ± 0.13

TABLE 1 (Continued)

**RADIONUCLIDE CONCENTRATIONS IN SOIL
FORMER HAZARDOUS WASTE MANAGEMENT FACILITY
BROOKHAVEN NATIONAL LABORATORY
UPTON, NEW YORK**

Sample No. ^a	Radionuclide Concentration (pCi/g)			
	ESSAP	BNL	Sr-90	Ra-226
	Cs-137	Cs-137		
Survey Unit Z-3 (South) (Continued)				
088	6.97 ± 0.28	NS	--	0.59 ± 0.11
Survey Unit K-1				
089	21.09 ± 0.69	NS	--	0.80 ± 0.12
090	10.03 ± 0.37	NS	--	0.75 ± 0.11
091	11.25 ± 0.38	NS	--	0.45 ± 0.10
092	0.33 ± 0.04	NS	--	0.65 ± 0.08
093	0.67 ± 0.05	NS	--	0.50 ± 0.07
094	1.54 ± 0.09	NS	--	0.40 ± 0.07
Survey Unit K-2				
095	2.50 ± 0.12	NS	--	0.50 ± 0.07
096	1.36 ± 0.09	NS	--	0.43 ± 0.07
097	1.25 ± 0.08	NS	--	0.49 ± 0.07
098	0.10 ± 0.03	NS	--	0.51 ± 0.06
099	34.8 ± 1.1	NS	--	0.44 ± 0.13
100	1.87 ± 0.09	NS	--	0.32 ± 0.06
101	52.9 ± 1.7	NS	3.10 ± 0.43	0.50 ± 0.12
Survey Unit K-3				
102	0.23 ± 0.04	NS	--	0.43 ± 0.07
103	0.78 ± 0.06	NS	--	0.41 ± 0.06
104	0.45 ± 0.04	NS	--	0.29 ± 0.04
105	1.25 ± 0.08	NS	--	0.58 ± 0.06
106	0.05 ± 0.02	NS	--	0.50 ± 0.05
Survey Unit K-4				
107	33.8 ± 1.1	NS	-0.64 ± 0.34	0.61 ± 0.11
108	3.21 ± 0.15	NS	--	0.46 ± 0.08
109	1.14 ± 0.08	NS	--	0.67 ± 0.08
110	0.21 ± 0.03	NS	--	0.57 ± 0.06
111	4.97 ± 0.20	NS	--	0.57 ± 0.09
Survey Unit Z-3 (North)				
112	1.99 ± 0.10	NS	--	0.61 ± 0.08
113	0.28 ± 0.03	NS	--	0.43 ± 0.06

TABLE 1 (Continued)
RADIONUCLIDE CONCENTRATIONS IN SOIL
FORMER HAZARDOUS WASTE MANAGEMENT FACILITY
BROOKHAVEN NATIONAL LABORATORY
UPTON, NEW YORK

Sample No. ^a	Radionuclide Concentration (pCi/g)			
	ESSAP	BNL	Sr-90	Ra-226
	Cs-137	Cs-137		
Survey Unit Z-3 (North) (Continued)				
114	46.6 ± 1.5	NS	--	0.53 ± 0.13
115	8.26 ± 0.32	NS	--	0.74 ± 0.11
116	3.54 ± 0.16	NS	--	0.66 ± 0.09
117	0.28 ± 0.03	NS	--	0.61 ± 0.06
Survey Unit K-4				
118	0.12 ± 0.14	NS	0.07 ± 0.24	0.42 ± 0.22

^aRefer to Figures 4 and 5.

^bNS = not sampled.

^c--Analysis not performed.

TABLE 2

**RADIONUCLIDE CONCENTRATIONS IN SOIL
AT RE-SAMPLED LOCATIONS
FORMER HAZARDOUS WASTE MANAGEMENT FACILITY
BROOKHAVEN NATIONAL LABORATORY
UPTON, NEW YORK**

Sample No.	Location	Radionuclide Concentration (pCi/g)		
		Cs-137	Sr-90 ^c	Ra-226
074	C-1 (009) ^b	304 ± 10	--	0.48 ± 0.76
075	C-1 (011)	437 ± 14	--	0.96 ± 0.77
076	C-1 (015)	2.97 ± 0.14	--	0.77 ± 0.09
077	C-2 (018)	35.0 ± 1.2	--	0.87 ± 0.18
078	C-2 (022)	25.56 ± 0.88	--	0.45 ± 0.15
079	C-3 (028)	97.9 ± 3.0	--	0.47 ± 0.19
080	D-1 (040)	2.81 ± 0.13	--	0.48 ± 0.07
081	D-4 (068)	25.57 ± 0.78	--	0.45 ± 0.13
082	D-3 (049)	42.6 ± 1.4	9.35 ± 0.68	0.49 ± 0.18
083	D-6 (062)	76.9 ± 2.5	1.00 ± 0.33	0.74 ± 0.20
119 ^a	Z-1 (West edge of 448 pad) (035)	58.5 ± 1.8	-0.10 ± 0.33	1.26 ± 0.19

^aRefer to figure 4.

^b() indicates previous sample location.

^c--Analysis not performed.

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APPENDIX A
MAJOR INSTRUMENTATION

APPENDIX A

MAJOR INSTRUMENTATION

The display of a specific product is not to be construed as an endorsement of the product or its manufacturer by the author or employer.

SCANNING INSTRUMENT/DETECTOR COMBINATIONS

Ludlum Model 12
(Ludlum Measurements, Inc., Sweetwater, TX)
coupled to
Victoreen NaI Scintillation Detector Model 489-55, Crystal: 3.2 cm x 3.8 cm
(Victoreen, Cleveland, OH)

LABORATORY ANALYTICAL INSTRUMENTATION

Low Background Gas Proportional Counter
Model LB-5100-W
(Canberra/Tennelec, Oak Ridge, TN)

High Purity Extended Range Intrinsic Detector
CANBERRA/Tennelec Model No: ERVDS30-25195
(Canberra, Meriden, CT)
Used in conjunction with:
Lead Shield Model G-11
(Nuclear Lead, Oak Ridge, TN) and
Multichannel Analyzer
DEC ALPHA Workstation
(Canberra, Meriden, CT)

High Purity Extended Range Intrinsic Detector
Model No. GMX-45200-5
(AMETEK/ORTEC, Oak Ridge, TN)
used in conjunction with:
Lead Shield Model SPG-16-K8
(Nuclear Data)
Multichannel Analyzer
DEC ALPHA Workstation
(Canberra, Meriden, CT)

LABORATORY ANALYTICAL INSTRUMENTATION (CONTINUED)

High-Purity Germanium Detector

Model GMX-30-P4, 30% Eff.

(AMETEK/ORTEC, Oak Ridge, TN)

Used in conjunction with:

Lead Shield Model G-16

(Gamma Products, Palos Hills, IL) and

Multichannel Analyzer

DEC ALPHA Workstation

(Canberra, Meriden, CT)

APPENDIX B
SURVEY AND ANALYTICAL PROCEDURES

APPENDIX B

SURVEY AND ANALYTICAL PROCEDURES

PROJECT HEALTH AND SAFETY

The proposed survey and sampling procedures were evaluated to ensure that any hazards inherent to the procedures themselves were addressed in current job hazard analyses (JHAs). All survey and laboratory activities were conducted in accordance with ORISE health and safety and radiation protection procedures.

A walkdown of the survey areas was performed in order to evaluate and identify potential health and safety issues. BNL provided general site-specific safety awareness, fall protection, and confined space training. Verification survey activities were performed according to ORISE generic health and safety plan requirements, a site-specific integrated safety management (ISM) pre-job hazard checklist, and the safety procedures discussed during the training provided by BNL.

QUALITY ASSURANCE

Analytical and field survey activities were conducted in accordance with procedures from the following documents of the Environmental Survey and Site Assessment Program:

- Survey Procedures Manual (September 2004)
- Laboratory Procedures Manual (June 2005)
- Quality Assurance Manual (July 2005)

The procedures contained in these manuals were developed to meet the requirements of Department of Energy (DOE) Order 414.1C and the U.S. Nuclear Regulatory Commission *Quality Assurance Manual for the Office of Nuclear Material Safety and Safeguards* and contain measures to assess processes during their performance.

Quality control procedures include:

- Daily instrument background and check-source measurements to confirm that equipment operation is within acceptable statistical fluctuations.

- Participation in MAPEP, NRIP, and ITP Laboratory Quality Assurance Programs.
- Training and certification of all individuals performing procedures.
- Periodic internal and external audits.

SURVEY PROCEDURES

Surface Scans

The scan minimum detectable concentrations (MDCs) for the NaI scintillation detector for the contaminants of concern in surface soil were obtained directly from NUREG-1507 when available. The scan MDCs provided in NUREG-1507¹, are 10.4 pCi/g for Cs-137 and 4.5 pCi/g for Ra-226. In such a case, it is standard procedure for ESSAP staff to pause and investigate any locations where gamma radiation is distinguishable from background levels.

ANALYTICAL PROCEDURES

Strontium 90 Analyses

Soil samples are dissolved by a combination of potassium hydrogen fluoride and pyrosulfate fusions. The fusion cake was dissolved and strontium was coprecipitated on lead sulfate. The strontium was separated from residual calcium and lead by reprecipitating strontium sulfate from EDTA at a pH of 4.0. Strontium was separated from barium by complexing the strontium in DTPA while precipitating barium as barium chromate. The strontium was ultimately converted to strontium carbonate and counted on a low-background gas proportional counter. The typical MDC of the procedure is 0.8 pCi/g for a one hour count time.

Gamma Spectroscopy

Samples of soil were dried, mixed, crushed, and/or homogenized as necessary, and a portion sealed in a 0.5-liter Marinelli beaker or other appropriate container. The quantity placed in the beaker was chosen to reproduce the calibrated counting geometry. Net material weights were determined and the samples counted using intrinsic germanium detectors coupled to a pulse

¹NUREG-1507. Minimum Detectable Concentrations with Typical Radiation Survey Instruments for Various Contaminants and Field Conditions. US Nuclear Regulatory Commission. Washington, DC; June 1998.

height analyzer system. Background and Compton stripping, peak search, peak identification, and concentration calculations were performed using the computer capabilities inherent in the analyzer system. All total absorption peaks (TAP) associated with the radionuclides of concern were reviewed for consistency of activity. Total absorption peaks used for determining the activities of radionuclides of concern and the typical associated MDCs for a one-hour count time were:

Radionuclide	TAP (MeV)	MDC (pCi/g)
Cs-137	0.662	0.05
Ra-226 (from Pb-214)	0.351	0.19
Depleted Uranium (from Th-234)	0.063	1.74

Spectra were also reviewed for other identifiable TAPs.

Uncertainties

The uncertainties associated with the analytical data presented in the tables of this report represent the total propagated uncertainties for that data. These uncertainties were calculated based on both the gross sample count levels and the associated background count level.

Appendix F
Waste Loading Area As-Left Radiological Walkover Survey

BNL RADIOLOGICAL SURVEY FORM

Date: 9-16-5 Time: 1600 Bldg. # 14 Location: 445

Reason for Survey

- ☐ ROUTINE
☐ SPECIAL
☐ RWP#
☐ WP#

INSTRUMENTS

BONE ARD

MODEL	SERIAL #	Cal Due Date	Source Check (Y/N)
DICKON	C386 F	3-7-6	YES
14	14	14	14

COMMENTS:

CONTAMINATION AREA
 SURVEY
 MONTHLY

DOSE RATES (HIGHEST)

AIRBORNE CONTAMINATION

CONTACT	SAMPLE #	VOLUME	uCi/cc	%DAC
GENERAL AREA		14		

LEGEND

- O SMEAR SURVEY LOCATION XXX Y
 D MASSLINN SURVEY LOCATION ZZZ
 Δ AIR SAMPLE LOCATION
 XXX = CONTACT READING
 ZZZ = READING @ 30 Cm
 Y = RADIATION TYPE

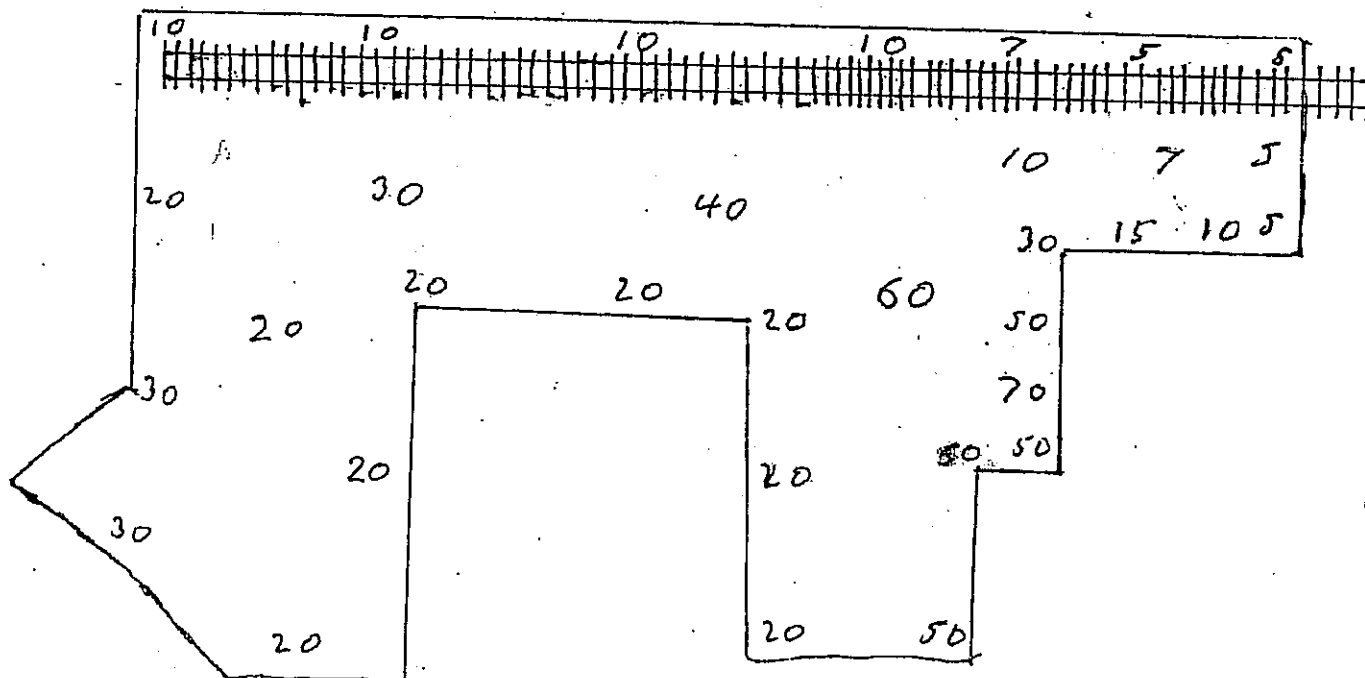
SMEAR SURVEY LOCATIONS (DPM/100 cm²) ³H B-γ α (See Attached Printout for Survey Results)

1.	8.	15.	22.
2.	9.	16.	23.
3.	10.	17.	24.
4.	11.	18.	25.
5.	12.	19.	26.
6.	13.	20.	27.
7.	14.	21.	28.

MASSLINN SURVEY RESULTS (DPM)

1.	8.
2.	9.
3.	10.
4.	11.
5.	12.
6.	13.
7.	14.

ALL DOSE READINGS ARE IN MR/HR



Surveyed By:

Peter Enright Raitel 9-16-5

Signature/Date

Reviewed By:

Signature/Date