Table C-35. Par Pond - Radiological doses associated with the No-Action Alternative and resulting health effects to the offsite maximally exposed individual.[a]

Exposure pathway	Individual annual dose (rem)[b] Cesium-137	Cobalt-60	Total	Probability of fatal cancer[c]	Lifetime dose (rem)[d]	Probability of fatal cancer[c]
Ingestion:						
Soil	1.2×10^{-9}	2.2×10^{-13}	1.2×10^{-9}	6.1×10^{-13}	4.2×10^{-8}	2.1×10^{-11}
Soil dermal	2.4×10^{-10}	1.1×10^{-13}	2.4×10^{-10}	1.2×10^{-13}	8.5×10^{-9}	4.2×10^{-12}
Leafy vegetables	2.0×10^{-8}	3.6×10^{-12}	2.0×10^{-8}	9.8×10^{-12}	6.8×10^{-7}	3.4×10^{-10}
Other vegetables	2.0×10^{-8}	3.4×10^{-12}	2.0×10^{-8}	9.8×10^{-12}	6.8×10^{-7}	3.4×10^{-10}
Meat	8.6×10^{-9}	1.5×10^{-12}	8.6×10^{-9}	4.3×10^{-12}	3.0×10^{-7}	1.5×10^{-10}
Milk	9.4×10^{-8}	4.8×10^{-12}	9.4×10^{-8}	4.7×10^{-11}	3.3×10^{-6}	1.6×10^{-9}
Subtotal	1.4×10^{-7}	1.4×10^{-11}	1.4×10^{-7}	7.2×10^{-11}	5.0×10^{-6}	2.5×10^{-9}
Inhalation:						
Air	2.4×10^{-8}	5.5×10^{-11}	2.4×10^{-8}	1.2×10^{-11}	8.5×10^{-7}	4.2×10^{-10}
Resuspension	2.4×10^{-10}	5.7×10^{-13}	2.4×10^{-10}	1.2×10^{-13}	8.5×10^{-9}	4.2×10^{-12}
Subtotal	2.4×10^{-8}	5.7×10^{-11}	2.4×10^{-8}	1.2×10^{-11}	8.5×10^{-7}	4.2×10^{-10}
External:						
Soil	6.3×10^{-6}	9.6×10^{-9}	6.4×10^{-6}	3.2×10^{-9}	$2.2\times10-4$	1.1×10^{-7}
Air	3.1×10^{-10}	5.1×10^{-13}	3.1×10^{-10}	1.5×10^{-13}	1.1×10^{-8}	5.4×10^{-12}
Subtotal	6.3×10^{-6}	9.6×10^{-9}	6.4×10^{-6}	3.2×10^{-9}	$2.2\times10-4$	1.1×10^{-7}
Total	6.5×10^{-6}	9.8×10^{-9}	6.5×10^{-6}	3.3×10^{-9}	$2.3\times10-4$	1.1×10^{-7}

a. For the No-Action Alternative, the general public exposures result from the atmospheric transport of exposed Par Pond sediments.
b. The offsite maximally exposed individual is a member of the public residing at the SRS boundary.
c. Based on a risk of 0.0005 latent fatal cancers per person-rem of radiation exposure (NCRP 1993).
d. Based on a 70-year exposure period. Doses are corrected for radioactive decay over the exposure period.

Table C-36. Par Pond - Radiological doses associated with the No-Action Alternative and resulting health effects to the general public.[a]

Exposure pathway	Population annual dose (rem)[b] Cesium-137	Cobalt-60	Total	Number of fatal cancers[c]	Lifetime dose (person-rem)[d]	Number of fatal cancers[c]
Ingestion:						
Soil	4.2×10-7	7.5×10-11	4.2×10-7	2.1×10-10	1.5×10-5	7.4×10-9
Soil dermal	8.5×10-8	3.9×10-11	8.5×10-8	4.2×10-11	2.9×10-6	1.5×10-9
Leafy vegetables	6.8×10-6	1.2×10-9	6.8×10-6	3.4×10-9	2.4×10-4	1.2×10-7
Other vegetables	6.8×10-6	1.1×10-9	6.8×10-6	3.4×10-9	2.4×10-4	1.2×10-7
Meat	3.0×10-6	5.0×10-10	3.0×10-6	1.5×10-9	1.0×10-4	5.2×10-8
Milk	3.3×10-5	1.6×10-9	3.3×10-5	1.6×10-8	1.1×10-3	5.7×10-7
Subtotal	5.0×10-5	4.6×10-9	4.9×10-5	2.5×10-8	1.7×10-3	8.7×10-7
Inhalation:						
Air	8.5×10-6	1.9×10-8	8.5×10-6	4.3×10-9	2.9×10-4	1.5×10-7
Resuspension	8.5×10-8	1.9×10-10	8.5×10-8	4.3×10-11	2.9×10-6	1.5×10-9
Subtotal	8.5×10-6	1.9×10-8	8.5×10-6	4.3×10-9	2.9×10-4	1.5×10-7
External:						
Soil	2.2×10-3	3.3×10-6	2.2×10-3	1.1×10-6	7.7×10-2	3.8×10-5
Air	1.1×10-7	1.7×10-10	1.1×10-7	5.4×10-11	3.7×10-6	1.9×10-9
Subtotal	2.2×10-3	3.3×10-6	2.2×10-3	1.1×10-6	7.7×10-2	3.8×10-5
Total	2.3×10-3	3.3×10-6	2.3×10-3	1.1×10-6	7.6×10-2	3.8×10-5

a. For the No-Action Alternative, the general public exposures result from the atmospheric transport of exposed Par Pond sediments.
b. Offsite population within 80 kilometers (50 miles) of SRS.
c. Based on a risk of 0.0005 latent fatal cancers per person-rem of radiation exposure (NCRP 1993).
d. Based on a 70-year exposure period. Doses are corrected for radioactive decay over the exposure period.

Table C-37. Par Pond - Nonradiological hazard index associated with the No-Action Alternative for the offsite maximally exposed individual (future use).[a]

Exposure pathway	Hazard quotient		Hazard index[b]
	Mercury	Thallium	
Ingestion:			
Soil	5.3×10^{-7}	1.4×10^{-7}	6.7×10^{-7}
Soil dermal	4.9×10^{-6}	2.6×10^{-8}	5.0×10^{-6}
Leafy vegetables	9.1×10^{-6}	2.2×10^{-6}	1.1×10^{-5}
Other vegetables	9.9×10^{-6}	2.0×10^{-6}	1.2×10^{-5}
Meat	4.9×10^{-5}	1.8×10^{-6}	5.1×10^{-5}
Milk	2.6×10^{-6}	2.9×10^{-6}	5.6×10^{-6}
Subtotal	7.8×10^{-5}	9.3×10^{-6}	8.7×10^{-5}
Inhalation:			
Air	5.7×10^{-5}	4.2×10^{-6}	6.1×10^{-5}
Resuspension	5.7×10^{-7}	4.3×10^{-8}	6.1×10^{-7}
Subtotal	5.7×10^{-5}	4.3×10^{-6}	6.1×10^{-5}
Total	1.4×10^{-4}	1.4×10^{-5}	1.5×10^{-4}

a. For the No-Action Alternative, the general public exposures result from the atmospheric transport of exposed Par Pond sediments. No carcinogenic constituents are released.
b. Hazard index is the sum of hazard quotients added across exposure pathways or pollutants.

Table C-38. Par Pond - Involved worker (current use) radiological doses associated with the No-Action Alternative and resulting health effects.[a]

Exposure pathway	Annual dose (rem)			Probability of fatal cancer[b]	Lifetime dose (rem)[c]	Probability of fatal cancer[b]	Population annual dose (person-rem)[d]	Number of fatal cancers[b]	Population lifetime dose (person-rem)[c,d]	Number of fatal cancers[b]
	Cesium-137	*Cobalt-60*	Total							
Ingestion:										
Soil	3.1×10^{-7}	6.1×10^{-10}	3.1×10^{-7}	1.2×10^{-10}	1.5×10^{-6}	5.9×10^{-10}	2.2×10^{-5}	8.7×10^{-9}	1.0×10^{-4}	4.1×10^{-8}
Soil dermal	2.5×10^{-8}	1.4×10^{-10}	2.6×10^{-8}	1.0×10^{-11}	1.2×10^{-7}	4.8×10^{-11}	1.8×10^{-6}	7.2×10^{-10}	8.5×10^{-6}	3.4×10^{-9}
Subtotal	3.4×10^{-7}	7.5×10^{-10}	3.4×10^{-7}	1.3×10^{-10}	1.6×10^{-6}	6.3×10^{-10}	2.4×10^{-5}	9.4×10^{-9}	1.1×10^{-4}	4.4×10^{-8}
Inhalation:										
Resuspension	3.9×10^{-9}	9.9×10^{-11}	4.0×10^{-9}	1.6×10^{-12}	1.9×10^{-8}	7.5×10^{-12}	2.8×10^{-7}	1.1×10^{-10}	1.3×10^{-6}	5.3×10^{-10}
Subtotal	3.9×10^{-9}	9.9×10^{-11}	4.0×10^{-9}	1.6×10^{-12}	1.9×10^{-8}	7.5×10^{-12}	2.8×10^{-7}	1.1×10^{-10}	1.3×10^{-6}	5.3×10^{-10}
External:										
Soil	4.1×10^{-4}	6.9×10^{-6}	4.2×10^{-4}	1.7×10^{-7}	2.0×10^{-3}	7.8×10^{-7}	2.9×10^{-2}	1.2×10^{-5}	1.4×10^{-1}	5.5×10^{-5}
Subtotal	4.1×10^{-4}	6.9×10^{-6}	4.2×10^{-4}	1.7×10^{-7}	2.0×10^{-3}	7.8×10^{-7}	2.9×10^{-2}	1.2×10^{-5}	1.4×10^{-1}	5.5×10^{-5}
Total	4.1×10^{-4}	6.9×10^{-6}	4.2×10^{-4}	1.7×10^{-7}	2.0×10^{-3}	7.9×10^{-7}	2.9×10^{-2}	1.2×10^{-5}	1.4×10^{-1}	5.5×10^{-5}

a. For the No-Action Alternative, the involved worker exposures result from direct contact with and atmospheric resuspension of the exposed Par Pond sediments.
b. Based on a risk of 0.0004 latent fatal cancers per person-rem of radiation exposure (NCRP 1993).
c. Based on a 5-year exposure period. Doses are corrected for radioactive decay over the exposure period.
d. The number of involved workers is estimated to be 70.

Table C-39. Par Pond - Involved worker (future use) radiological doses associated with the No-Action Alternative and resulting health effects.[a]

Exposure pathway	Individual annual dose (rem)			Probability of fatal cancer[b]	Lifetime dose (rem)[c]	Probability of fatal cancer[b]	Population annual dose (person-rem)[d]	Number of fatal cancers[b]	Population lifetime dose (person-rem)[c,d]	Number of fatal cancers[b]
	Cesium-137	Cobalt-60	Total							
Ingestion:										
Soil	6.7×10^{-6}	1.3×10^{-8}	6.7×10^{-6}	2.7×10^{-9}	1.3×10^{-4}	5.1×10^{-8}	4.7×10^{-4}	1.9×10^{-7}	8.9×10^{-3}	3.6×10^{-6}
Soil dermal	4.2×10^{-7}	2.1×10^{-9}	4.2×10^{-7}	1.7×10^{-10}	8.0×10^{-6}	3.2×10^{-9}	2.9×10^{-5}	1.2×10^{-8}	5.6×10^{-4}	2.2×10^{-7}
Subtotal	7.1×10^{-6}	1.5×10^{-8}	7.1×10^{-6}	2.9×10^{-9}	1.4×10^{-4}	5.4×10^{-8}	5.0×10^{-4}	2.0×10^{-7}	9.5×10^{-3}	3.8×10^{-6}
Inhalation:										
Resuspension	8.6×10^{-8}	2.1×10^{-9}	8.8×10^{-8}	3.5×10^{-11}	1.6×10^{-6}	6.6×10^{-10}	6.2×10^{-6}	2.5×10^{-9}	1.2×10^{-4}	4.6×10^{-8}
Subtotal	8.6×10^{-8}	2.1×10^{-9}	8.8×10^{-8}	3.5×10^{-11}	1.6×10^{-6}	6.6×10^{-10}	6.2×10^{-6}	2.5×10^{-9}	1.2×10^{-4}	4.6×10^{-8}
External:										
Soil	2.3×10^{-2}	3.8×10^{-4}	2.3×10^{-2}	9.4×10^{-6}	4.4×10^{-1}	1.8×10^{-4}	1.6×10^{0}	6.5×10^{-4}	3.1×10^{1}	1.2×10^{-2}
Subtotal	2.3×10^{-2}	3.8×10^{-4}	2.3×10^{-2}	9.4×10^{-6}	4.4×10^{-1}	1.8×10^{-4}	1.6×10^{0}	6.5×10^{-4}	3.1×10^{1}	1.2×10^{-2}
Total	2.3×10^{-2}	3.8×10^{-4}	2.3×10^{-2}	9.4×10^{-6}	4.4×10^{-1}	1.8×10^{-4}	1.6×10^{0}	6.5×10^{-4}	3.1×10^{1}	1.2×10^{-2}

a. For the No-Action Alternative, the involved worker exposures result from direct contact with and atmospheric resuspension of the exposed Par Pond sediments.
b. Based on a risk of 0.0004 latent fatal cancers per person-rem of radiation exposure (NCRP 1993).
c. Based on a 25-year exposure period. Doses are corrected for radioactive decay over the exposure period.
d. The number of involved workers is estimated to be 70.

Table C-40. Par Pond - Uninvolved worker (L-Area) radiological doses associated with the No-Action Alternative and resulting health effects.[a]

Exposure pathway	Individual annual dose (rem)[b] Cesium-137	Cobalt-60	Total	Probability of fatal cancer[c]	Lifetime dose (rem)[d]	Probability of fatal cancer[c]	Population annual dose (person-rem)[e]	Number of fatal cancers[c]	Population lifetime dose (person-rem)[d,e]	Number of fatal cancers[c]
Ingestion:										
Soil	2.1×10^{-11}	4.2×10^{-14}	2.1×10^{-11}	8.4×10^{-15}	4.0×10^{-10}	1.6×10^{-13}	2.2×10^{-9}	8.8×10^{-13}	4.2×10^{-8}	1.7×10^{-11}
Soil dermal	1.4×10^{-12}	7.5×10^{-15}	1.4×10^{-12}	5.5×10^{-16}	2.6×10^{-11}	1.0×10^{-14}	1.4×10^{-10}	5.8×10^{-14}	2.7×10^{-9}	1.1×10^{-12}
Subtotal	2.2×10^{-11}	5.0×10^{-14}	2.2×10^{-11}	9.0×10^{-15}	4.3×10^{-10}	1.7×10^{-13}	2.4×10^{-9}	9.4×10^{-13}	4.5×10^{-8}	1.8×10^{-11}
Inhalation:										
Air	4.4×10^{-10}	1.1×10^{-11}	4.5×10^{-10}	1.8×10^{-13}	8.4×10^{-9}	3.4×10^{-12}	4.7×10^{-8}	1.9×10^{-11}	8.9×10^{-7}	3.5×10^{-10}
Resuspension	4.4×10^{-12}	1.1×10^{-13}	4.5×10^{-12}	1.8×10^{-15}	8.4×10^{-11}	3.4×10^{-14}	4.7×10^{-10}	1.9×10^{-13}	8.9×10^{-9}	3.5×10^{-12}
Subtotal	4.4×10^{-10}	1.1×10^{-11}	4.5×10^{-10}	1.8×10^{-13}	8.4×10^{-9}	3.4×10^{-12}	4.7×10^{-8}	1.9×10^{-11}	8.9×10^{-7}	3.5×10^{-10}
External:										
Soil	7.5×10^{-8}	1.3×10^{-9}	7.6×10^{-8}	3.1×10^{-11}	1.4×10^{-6}	5.7×10^{-10}	8.0×10^{-6}	3.2×10^{-9}	1.5×10^{-4}	6.0×10^{-8}
Air	3.7×10^{-12}	6.7×10^{-14}	3.8×10^{-12}	1.5×10^{-15}	7.1×10^{-11}	2.8×10^{-14}	4.0×10^{-10}	1.6×10^{-13}	7.4×10^{-9}	3.0×10^{-12}
Subtotal	7.5×10^{-8}	1.3×10^{-9}	7.6×10^{-8}	3.1×10^{-11}	1.4×10^{-6}	5.7×10^{-10}	8.0×10^{-6}	3.2×10^{-9}	1.5×10^{-4}	6.0×10^{-8}
Total	7.5×10^{-8}	1.3×10^{-9}	7.7×10^{-8}	3.1×10^{-11}	1.4×10^{-6}	5.8×10^{-10}	8.1×10^{-6}	3.2×10^{-9}	1.5×10^{-4}	6.1×10^{-8}

a. For the No-Action Alternative, the uninvolved worker is exposed by the atmospheric transport of exposed Par Pond sediments.
b. The maximally exposed uninvolved worker is located at L-Area.
c. Based on a risk of 0.0004 latent fatal cancers per person-rem of radiation exposure (NCRP 1993).
d. Based on a 25-year exposure period. Doses are corrected for radioactive decay over the exposure period.
e. L-Area. Total uninvolved workers estimated to be 251 (Simpkins 1996).

Table C-41. Par Pond - Involved worker (current use) nonradiological hazard indexes and cancer risks associated with the No-Action Alternative.[a]

Exposure pathway	Hazard quotient			Hazard index[b]
	Mercury	Manganese	Thallium	
Ingestion:				
Soil	5.6×10^{-6}	5.3×10^{-8}	1.1×10^{-6}	6.8×10^{-6}
Soil dermal	2.3×10^{-5}	4.5×10^{-8}	9.5×10^{-8}	2.4×10^{-5}
Subtotal	2.9×10^{-5}	9.8×10^{-8}	1.2×10^{-6}	3.0×10^{-5}
Inhalation:				
Resuspension	4.0×10^{-7}	5.2×10^{-8}	2.3×10^{-8}	4.8×10^{-7}
Subtotal	4.0×10^{-7}	5.2×10^{-8}	2.3×10^{-8}	4.8×10^{-7}
Total	2.9×10^{-5}	1.5×10^{-7}	1.2×10^{-6}	3.1×10^{-5}

a. For the No-Action Alternative, the involved worker exposures result from direct contact with and atmospheric resuspension of the exposed Par Pond sediments. The worker is not exposed to any carcinogenic contaminants.
b. Hazard index is the sum of hazard quotients added across exposure pathways or pollutants.

Table C-42. Par Pond - Involved worker (future use) nonradiological hazard indexes and cancer risks associated with the No-Action Alternative.[a]

Exposure pathway	Hazard quotient			Hazard index[b]
	Mercury	Manganese	Thallium	
Ingestion:				
Soil	1.3×10^{-4}	1.2×10^{-6}	2.5×10^{-5}	1.6×10^{-4}
Soil dermal	3.9×10^{-4}	7.5×10^{-7}	1.6×10^{-6}	3.9×10^{-4}
Subtotal	5.2×10^{-4}	2.0×10^{-6}	2.7×10^{-5}	5.5×10^{-4}
Inhalation:				
Resuspension	8.8×10^{-6}	1.2×10^{-6}	5.0×10^{-7}	1.1×10^{-5}
Subtotal	8.8×10^{-6}	1.2×10^{-6}	5.0×10^{-7}	1.1×10^{-5}
Total	5.3×10^{-4}	3.2×10^{-6}	2.7×10^{-5}	5.6×10^{-4}

a. For the No-Action Alternative, the involved worker exposures result from direct contact with and atmospheric resuspension of the exposed Par Pond sediments. The worker is not exposed to any carcinogenic contaminants.
b. Hazard index is the sum of hazard quotients added across exposure pathways or pollutants.

Table C-43. Par Pond – Uninvolved worker (L-Area) nonradiological hazard indexes and cancer risks associated with the No-Action Alternative.[a]

Exposure pathway	Hazard quotient			Hazard index[b]
	Mercury	Manganese	Thallium	
Ingestion:				
Soil	1.1×10^{-10}	1.0×10^{-12}	2.1×10^{-11}	1.3×10^{-10}
Soil dermal	3.4×10^{-10}	6.3×10^{-13}	1.4×10^{-12}	3.4×10^{-10}
Subtotal	4.5×10^{-10}	1.6×10^{-12}	2.2×10^{-11}	4.7×10^{-10}
Inhalation:				
Air	1.2×10^{-8}	1.5×10^{-9}	6.6×10^{-10}	1.4×10^{-8}
Resuspension	1.2×10^{-10}	1.6×10^{-11}	6.9×10^{-12}	1.4×10^{-10}
Subtotal	1.2×10^{-8}	1.5×10^{-9}	6.6×10^{-10}	1.4×10^{-8}
Total	1.2×10^{-8}	1.5×10^{-9}	6.8×10^{-10}	1.5×10^{-8}

a. For the No-Action Alternative, the involved worker exposures result from the atmospheric transport of exposed Par Pond sediments. The worker is not exposed to any carcinogenic contaminants.
b. Hazard index is the sum of hazard quotients added across exposure pathways or pollutants.

Table C-44. Combined radiological doses associated with the No-Action Alternative and resulting health effects to the offsite maximally exposed individual (current use).[a]

Exposure Pathway	Individual annual dose (rem)			Probability of fatal cancer[b]	Individual lifetime dose (rem)[c]			Probability of fatal cancer[b]
	L-Lake	Par Pond	Combined		L-Lake	Par Pond	Combined	
Ingestion:								
Soil	5.7×10^{-11}	1.2×10^{-9}	1.3×10^{-9}	6.4×10^{-13}	9.9×10^{-10}	4.2×10^{-8}	4.3×10^{-8}	2.2×10^{-11}
Soil Dermal	1.1×10^{-11}	2.4×10^{-10}	2.6×10^{-10}	1.3×10^{-13}	2.0×10^{-10}	8.5×10^{-9}	8.7×10^{-9}	4.3×10^{-12}
Leafy Vegetables	9.8×10^{-9}	2.0×10^{-8}	2.9×10^{-8}	1.5×10^{-11}	1.7×10^{-7}	6.8×10^{-7}	8.5×10^{-7}	4.2×10^{-10}
Other Vegetables	7.7×10^{-8}	2.0×10^{-8}	9.7×10^{-8}	4.8×10^{-11}	1.3×10^{-6}	6.8×10^{-7}	2.0×10^{-6}	1.0×10^{-9}
Meat	4.8×10^{-9}	8.6×10^{-9}	1.3×10^{-8}	6.7×10^{-12}	8.3×10^{-8}	3.0×10^{-7}	3.8×10^{-7}	1.9×10^{-10}
Milk	1.7×10^{-8}	9.4×10^{-8}	1.1×10^{-7}	5.6×10^{-11}	3.1×10^{-7}	3.3×10^{-6}	3.6×10^{-6}	1.8×10^{-9}
Subtotal	1.1×10^{-7}	1.4×10^{-7}	2.5×10^{-7}	1.3×10^{-10}	1.9×10^{-6}	5.0×10^{-6}	6.9×10^{-6}	3.5×10^{-9}
Inhalation:								
Air	4.0×10^{-8}	2.4×10^{-8}	6.4×10^{-8}	3.2×10^{-11}	7.0×10^{-7}	8.5×10^{-7}	1.5×10^{-6}	7.7×10^{-10}
Resuspension	2.7×10^{-11}	2.4×10^{-10}	2.7×10^{-10}	1.4×10^{-13}	4.8×10^{-10}	8.5×10^{-9}	9.0×10^{-9}	4.5×10^{-12}
Subtotal	4.0×10^{-8}	2.4×10^{-8}	6.4×10^{-8}	3.2×10^{-11}	7.0×10^{-7}	8.5×10^{-7}	1.5×10^{-6}	7.7×10^{-10}
External:								
Soil	0.0×10^{0}	6.4×10^{-6}	6.4×10^{-6}	3.2×10^{-9}	0.0×10^{0}	2.2×10^{-4}	2.2×10^{-4}	1.1×10^{-7}
Air	0.0×10^{0}	3.1×10^{-10}	3.1×10^{-10}	1.5×10^{-13}	0.0×10^{0}	1.1×10^{-8}	1.1×10^{-8}	5.4×10^{-12}
Subtotal	0.0×10^{0}	6.4×10^{-6}	6.4×10^{-6}	3.2×10^{-9}	0.0×10^{0}	2.2×10^{-4}	2.2×10^{-4}	1.1×10^{-7}
Total	1.5×10^{-7}	6.5×10^{-6}	6.6×10^{-6}	3.3×10^{-9}	2.6×10^{-6}	2.3×10^{-4}	2.3×10^{-4}	1.1×10^{-7}

a. For the current land use scenario, the offsite maximally exposed individual is a member of the public residing at the SRS boundary.
b. Based on a risk of 0.0005 latent fatal cancers per person-rem of radiation exposure (NCRP 1993).
c. Based on a 70-year exposure period. Doses are corrected for radioactive decay over the exposure period.

Table C-45. Combined radiological doses associated with the No-Action Alternative and resulting health effects to the offsite maximally exposed individual (future use).[a]

Exposure Pathway	Individual annual dose (rem)			Probability of fatal cancer[b]	Individual lifetime dose (rem)[c]			Probability of fatal cancer[b]
	L-Lake	Par Pond	Combined		L-Lake	Par Pond	Combined	
Ingestion:								
Finfish	3.8×10^{-4}	NA[d]	3.8×10^{-4}	1.9×10^{-7}	1.3×10^{-2}	NA	1.3×10^{-2}	6.5×10^{-6}
Leafy Vegetables	9.8×10^{-9}	2.0×10^{-8}	2.9×10^{-8}	1.5×10^{-11}	9.9×10^{-10}	6.8×10^{-7}	6.8×10^{-7}	3.4×10^{-10}
Other Vegetables	7.7×10^{-8}	2.0×10^{-8}	9.7×10^{-8}	4.8×10^{-11}	1.3×10^{-6}	6.8×10^{-7}	2.0×10^{-6}	1.0×10^{-9}
Meat	4.8×10^{-9}	8.6×10^{-9}	1.3×10^{-8}	6.7×10^{-12}	8.3×10^{-8}	3.0×10^{-7}	3.8×10^{-7}	1.9×10^{-10}
Milk	1.7×10^{-8}	9.4×10^{-8}	1.1×10^{-7}	5.6×10^{-11}	3.1×10^{-7}	3.3×10^{-6}	3.6×10^{-6}	1.8×10^{-9}
Soil	6.9×10^{-11}	1.2×10^{-9}	1.3×10^{-9}	6.4×10^{-13}	1.2×10^{-9}	4.2×10^{-8}	4.4×10^{-8}	2.2×10^{-11}
Soil Dermal	1.7×10^{-9}	2.4×10^{-10}	2.0×10^{-9}	9.8×10^{-13}	3.0×10^{-8}	8.5×10^{-9}	3.8×10^{-8}	1.9×10^{-11}
Subtotal	3.8×10^{-4}	1.4×10^{-7}	3.8×10^{-4}	1.9×10^{-7}	1.3×10^{-2}	5.0×10^{-6}	1.3×10^{-2}	6.5×10^{-6}
Inhalation:								
Air	4.3×10^{-8}	2.4×10^{-8}	6.7×10^{-8}	3.4×10^{-11}	7.5×10^{-7}	8.5×10^{-7}	1.6×10^{-6}	8.0×10^{-10}
Resuspension	3.1×10^{-11}	2.4×10^{-10}	2.8×10^{-10}	1.4×10^{-13}	5.4×10^{-10}	8.5×10^{-9}	9.0×10^{-9}	4.5×10^{-12}
Subtotal	4.3×10^{-8}	2.5×10^{-8}	6.8×10^{-8}	3.4×10^{-11}	7.5×10^{-7}	8.6×10^{-7}	1.6×10^{-6}	8.0×10^{-10}
External:								
Soil	NA	6.4×10^{-6}	6.4×10^{-6}	3.2×10^{-9}	NA	2.2×10^{-4}	2.2×10^{-4}	1.1×10^{-7}
Air	NA	3.1×10^{-10}	3.1×10^{-10}	1.5×10^{-13}	NA	1.1×10^{-8}	1.1×10^{-8}	5.4×10^{-12}
Subtotal	0.0×10^{0}	6.4×10^{-6}	6.4×10^{-6}	3.2×10^{-9}	0.0×10^{0}	2.2×10^{-4}	2.2×10^{-4}	1.1×10^{-7}
Total	3.8×10^{-4}	6.5×10^{-6}	3.8×10^{-4}	1.9×10^{-7}	1.3×10^{-2}	2.3×10^{-4}	1.3×10^{-2}	6.6×10^{-6}

a. Since there is no recreational use of Par Pond for the future land use scenario, the combined impacts are the same as those reported in Table C-2 for L-Lake.
b. Based on a risk of 0.0005 latent fatal cancers per person-rem of radiation exposure (NCRP 1993).
c. Based on a 70-year exposure period. Doses are corrected for radioactive decay over the exposure period.
d. NA = not applicable; the contaminant is not transferred through the listed exposure pathway.

Table C-46. Combined radiological doses associated with the No-Action Alternative and resulting health effects to the general public.[a]

Exposure Pathway	Population annual dose (person-rem)			Number of fatal cancers[b]	Population lifetime dose (person-rem)[c]			Number of fatal cancers[b]
	L-Lake	Par Pond	Combined		L-Lake	Par Pond	Combined	
Ingestion:								
Soil	5.2×10^{-7}	4.2×10^{-7}	9.4×10^{-7}	4.7×10^{-10}	9.0×10^{-6}	1.5×10^{-5}	2.4×10^{-5}	1.2×10^{-8}
Soil Dermal	1.0×10^{-7}	8.5×10^{-8}	1.9×10^{-7}	9.3×10^{-11}	1.8×10^{-6}	2.9×10^{-6}	4.7×10^{-6}	2.4×10^{-9}
Leafy Vegetables	8.9×10^{-5}	6.8×10^{-6}	9.6×10^{-5}	4.8×10^{-8}	1.6×10^{-3}	2.4×10^{-4}	1.8×10^{-3}	9.0×10^{-7}
Other Vegetables	7.0×10^{-4}	6.8×10^{-6}	7.1×10^{-4}	3.5×10^{-7}	1.2×10^{-2}	2.4×10^{-4}	1.2×10^{-2}	6.2×10^{-6}
Meat	4.3×10^{-5}	3.0×10^{-6}	4.6×10^{-5}	2.3×10^{-8}	7.6×10^{-4}	1.0×10^{-4}	8.6×10^{-4}	4.3×10^{-7}
Milk	1.6×10^{-4}	3.3×10^{-5}	1.9×10^{-4}	9.6×10^{-8}	2.8×10^{-3}	1.1×10^{-3}	3.9×10^{-3}	2.0×10^{-6}
Subtotal	9.9×10^{-4}	5.0×10^{-5}	1.0×10^{-3}	5.2×10^{-7}	1.7×10^{-2}	1.7×10^{-3}	1.9×10^{-2}	9.6×10^{-6}
Inhalation:								
Air	3.6×10^{-4}	8.5×10^{-6}	3.7×10^{-4}	1.9×10^{-7}	6.3×10^{-3}	2.9×10^{-4}	6.6×10^{-3}	3.3×10^{-6}
Resuspension	2.5×10^{-7}	8.5×10^{-8}	3.3×10^{-7}	1.7×10^{-10}	4.3×10^{-6}	2.9×10^{-6}	7.3×10^{-6}	3.6×10^{-9}
Subtotal	3.6×10^{-4}	8.5×10^{-6}	3.7×10^{-4}	1.9×10^{-7}	6.3×10^{-3}	2.9×10^{-4}	6.6×10^{-3}	3.3×10^{-6}
External:								
Soil	0.0×10^{0}	2.2×10^{-3}	2.2×10^{-3}	1.1×10^{-6}	0.0×10^{0}	7.7×10^{-2}	7.7×10^{-2}	3.8×10^{-5}
Air	0.0×10^{0}	1.1×10^{-7}	1.1×10^{-7}	5.4×10^{-11}	0.0×10^{0}	3.7×10^{-6}	3.7×10^{-6}	1.9×10^{-9}
Subtotal	0.0×10^{0}	2.2×10^{-3}	2.2×10^{-3}	1.1×10^{-6}	0.0×10^{0}	7.7×10^{-2}	7.7×10^{-2}	3.8×10^{-5}
Total	1.4×10^{-3}	2.2×10^{-3}	3.6×10^{-3}	1.8×10^{-6}	2.4×10^{-2}	7.6×10^{-2}	1.0×10^{-1}	5.0×10^{-5}

a. Offsite population within 80 kilometers (50 miles) of SRS.
b. Based on a risk of 0.0005 latent fatal cancers per person-rem of radiation exposure (NCRP 1993).
c. Based on a 70-year exposure period. Doses are corrected for radioactive decay over the exposure period.

Table C-47. Combined nonradiological hazard indexes associated with the No-Action Alternative for members of the public (current use).[a]

Exposure pathway	Hazard index		
	L-Lake[b]	Par Pond	Combined
Ingestion:			
Soil	NA[c]	6.7×10^{-7}	6.7×10^{-7}
Soil dermal	NA	5.0×10^{-6}	5.0×10^{-6}
Leafy vegetables	NA	1.1×10^{-5}	1.1×10^{-5}
Other vegetables	NA	1.2×10^{-5}	1.2×10^{-5}
Meat	NA	5.1×10^{-5}	5.1×10^{-5}
Milk	NA	5.6×10^{-6}	5.6×10^{-6}
Subtotal	0.0×10^{0}	8.7×10^{-5}	8.7×10^{-5}
Inhalation:			
Air	NA	6.1×10^{-5}	6.1×10^{-5}
Resuspension	NA	6.1×10^{-7}	6.1×10^{-7}
Subtotal	0.0×10^{0}	6.1×10^{-5}	6.1×10^{-5}
Total	0.0×10^{0}	1.5×10^{-4}	1.5×10^{-4}

a. No carcinogenic constituents are released from either L-Lake or Par Pond for current land use under the No-Action Alternative.
b. Nonradiological constituents not released from L-Lake.
c. NA = not applicable; the contaminant is not transferred through the listed exposure pathway.

Table C-48. Combined nonradiological hazard indexes and cancer risks associated with the No-Action Alternative for members of the public (future use).[a]

Exposure pathway	Hazard index			Annual cancer risk			Lifetime cancer risk[c]
	L-Lake	Par Pond	Combined	L-Lake	Par Pond[b]	Combined	
Ingestion:							
Finfish	6.2×10^{-2}	NA[d]	6.2×10^{-2}	1.6×10^{-7}	NA	1.6×10^{-7}	1.1×10^{-5}
Swimming	2.8×10^{-5}	NA	2.8×10^{-5}	1.1×10^{-9}	NA	1.1×10^{-9}	7.7×10^{-8}
Swimming dermal	9.5×10^{-5}	NA	9.5×10^{-5}	4.4×10^{-8}	NA	4.4×10^{-8}	3.1×10^{-6}
Shoreline dermal	2.2×10^{-4}	NA	2.2×10^{-4}	1.0×10^{-7}	NA	1.0×10^{-7}	7.0×10^{-6}
Shoreline	1.5×10^{-5}	NA	1.5×10^{-5}	6.2×10^{-10}	NA	6.2×10^{-10}	4.3×10^{-8}
Soil	NA	6.7×10^{-7}	6.7×10^{-7}	NA	NA	NA	NA
Soil dermal	NA	5.0×10^{-6}	5.0×10^{-6}	NA	NA	NA	NA
Leafy vegetables	NA	1.1×10^{-5}	1.1×10^{-5}	NA	NA	NA	NA
Other vegetables	NA	1.2×10^{-5}	1.2×10^{-5}	NA	NA	NA	NA
Meat	NA	5.1×10^{-5}	5.1×10^{-5}	NA	NA	NA	NA
Milk	NA	5.6×10^{-6}	5.6×10^{-6}	NA	NA	NA	NA
Subtotal	6.2×10^{-2}	8.7×10^{-5}	6.2×10^{-2}	3.1×10^{-7}	0.0×10^{0}	3.1×10^{-7}	2.1×10^{-5}
Inhalation:							
Air	NA	6.1×10^{-5}	6.1×10^{-5}	NA	NA	NA	NA
Resuspension	NA	6.1×10^{-7}	6.1×10^{-7}	NA	NA	NA	NA
Subtotal	0.0×10^{0}	6.1×10^{-5}	6.1×10^{-5}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}
Total	6.2×10^{-2}	1.5×10^{-4}	6.2×10^{-2}	3.1×10^{-7}	0.0×10^{0}	3.1×10^{-7}	2.1×10^{-5}

a. Assumes future recreational use of L-Lake.
b. No carcinogenic constituents are released from Par Pond for future land use under the No-Action Alternative.
c. Based on a 70-year exposure period.
d. NA = not applicable; the contaminant is not transferred through the listed exposure pathway.

Table C-49. Combined involved worker (current use) radiological doses and resulting impacts associated with the No-Action Alternative.

Exposure pathway	Individual annual dose (rem)			Probability of fatal cancers[b]	Individual lifetime dose (rem)[c]			Probability of fatal cancers[b]
	L-Lake	Par Pond	Combined[a]		L-Lake	Par Pond	Combined[a]	
Ingestion:								
Soil	1.4×10^{-10}	3.1×10^{-7}	3.1×10^{-7}	1.2×10^{-10}	6.1×10^{-10}	1.5×10^{-6}	1.5×10^{-6}	5.9×10^{-10}
Soil dermal	1.2×10^{-11}	2.6×10^{-8}	2.6×10^{-8}	1.0×10^{-11}	5.0×10^{-11}	1.2×10^{-7}	1.2×10^{-7}	4.8×10^{-11}
Subtotal	1.5×10^{-10}	3.4×10^{-7}	3.4×10^{-7}	1.3×10^{-10}	6.6×10^{-10}	1.6×10^{-6}	1.6×10^{-6}	6.3×10^{-10}
Inhalation:								
Air	5.0×10^{-8}	NA[e]	5.0×10^{-8}	2.0×10^{-11}	2.2×10^{-7}	NA	2.2×10^{-7}	8.6×10^{-11}
Resuspension	6.8×10^{-11}	4.0×10^{-9}	4.0×10^{-9}	1.6×10^{-12}	2.9×10^{-10}	1.9×10^{-8}	1.9×10^{-8}	7.5×10^{-12}
Subtotal	5.0×10^{-8}	4.0×10^{-9}	5.0×10^{-8}	2.0×10^{-11}	2.2×10^{-7}	1.9×10^{-8}	2.2×10^{-7}	8.6×10^{-11}
External:								
Soil	NA	4.2×10^{-4}	4.2×10^{-4}	1.7×10^{-7}	NA	2.0×10^{-3}	2.0×10^{-3}	7.8×10^{-7}
Subtotal	0.0×10^{0}	4.2×10^{-4}	4.2×10^{-4}	1.7×10^{-7}	0.0×10^{0}	2.0×10^{-3}	2.0×10^{-3}	7.8×10^{-7}
Total	5.0×10^{-8}	4.2×10^{-4}	4.2×10^{-4}	1.7×10^{-7}	2.2×10^{-7}	2.0×10^{-3}	2.0×10^{-3}	7.9×10^{-7}

a. Doses from the two release sites are not additive; the combined dose is the maximum dose of either site.
b. Based on a risk of 0.0004 latent fatal cancers per person-rem of radiation exposure (NCRP 1993).
c. Based on a 5-year exposure period. Doses are corrected for radioactive decay over the exposure period.
d. NA = not applicable; the contaminant is not transferred through the listed exposure pathway.

Table C-50. Combined involved worker population (current use) radiological doses associated with the No-Action Alternative.

Exposure pathway	Population annual dose (person-rem)[b]			Number of fatal cancers[c]	Population lifetime dose (person-rem)[b,d]			Number of fatal cancers[c]
	L-Lake	Par Pond	Combined[a]		L-Lake	Par Pond	Combined[a]	
Ingestion:								
Soil	9.8×10^{-9}	2.2×10^{-5}	2.2×10^{-5}	8.7×10^{-9}	4.3×10^{-8}	1.0×10^{-4}	1.0×10^{-4}	4.1×10^{-8}
Soil dermal	8.1×10^{-10}	1.8×10^{-6}	1.8×10^{-6}	7.2×10^{-10}	3.5×10^{-9}	8.5×10^{-6}	8.5×10^{-6}	3.4×10^{-9}
Subtotal	1.1×10^{-8}	2.4×10^{-5}	2.4×10^{-5}	9.4×10^{-9}	4.6×10^{-8}	1.1×10^{-4}	1.1×10^{-4}	4.4×10^{-8}
Inhalation:								
Air	3.5×10^{-6}	NA[e]	3.5×10^{-6}	1.4×10^{-9}	1.5×10^{-5}	NA	1.5×10^{-5}	6.0×10^{-9}
Resuspension	4.7×10^{-9}	2.8×10^{-7}	2.8×10^{-7}	1.1×10^{-10}	2.1×10^{-8}	1.3×10^{-6}	1.3×10^{-6}	5.3×10^{-10}
Subtotal	3.5×10^{-6}	2.8×10^{-7}	3.5×10^{-6}	1.4×10^{-9}	1.5×10^{-5}	1.3×10^{-6}	1.5×10^{-5}	6.1×10^{-9}
External:								
Soil	NA	2.9×10^{-2}	2.9×10^{-2}	1.2×10^{-5}	NA	1.4×10^{-1}	1.4×10^{-1}	5.5×10^{-5}
Subtotal	0.0×10^{0}	2.9×10^{-2}	2.9×10^{-2}	1.2×10^{-5}	0.0×10^{0}	1.4×10^{-1}	1.4×10^{-1}	5.5×10^{-5}
Total	3.5×10^{-6}	2.9×10^{-2}	2.9×10^{-2}	1.2×10^{-5}	1.5×10^{-5}	1.4×10^{-1}	1.4×10^{-1}	5.5×10^{-5}

a. Doses from the two release sites are not additive; the combined dose is the maximum dose of either site.
b. The number of involved workers is estimated to be 70.
c. Based on a risk of 0.0004 latent fatal cancers per person-rem of radiation exposure (NCRP 1993).
d. Based on a 5-year exposure period. Doses are corrected for radioactive decay over the exposure period.
e. NA = not applicable; the contaminant is not transferred through the listed exposure pathway.

Table C-51. Combined involved worker (future use) radiological doses associated with the No-Action Alternative.

Exposure Pathway	Individual annual dose (rem)			Probability of fatal cancer[b]	Individual lifetime dose (rem)[c]			Probability of fatal cancer[b]
	L-Lake	Par Pond	Combined[a]		L-Lake	Par Pond	Combined[a]	
Ingestion:								
Soil	3.1×10^{-9}	6.7×10^{-6}	6.7×10^{-6}	2.7×10^{-9}	4.2×10^{-8}	1.3×10^{-4}	1.3×10^{-4}	5.1×10^{-8}
Soil Dermal	1.9×10^{-10}	4.2×10^{-7}	4.2×10^{-7}	1.7×10^{-10}	2.6×10^{-9}	8.0×10^{-6}	8.0×10^{-6}	3.2×10^{-9}
Subtotal	3.3×10^{-9}	7.1×10^{-6}	7.1×10^{-6}	2.9×10^{-9}	4.4×10^{-8}	1.4×10^{-4}	1.4×10^{-4}	5.4×10^{-8}
Inhalation:								
Air	1.1×10^{-6}	NA[d]	1.1×10^{-6}	4.4×10^{-10}	1.5×10^{-5}	NA	1.5×10^{-5}	5.9×10^{-9}
Resuspension	1.5×10^{-9}	8.8×10^{-8}	8.8×10^{-8}	3.5×10^{-11}	2.0×10^{-8}	1.6×10^{-6}	1.6×10^{-6}	6.6×10^{-10}
Subtotal	1.1×10^{-6}	8.8×10^{-8}	1.1×10^{-6}	4.4×10^{-10}	1.5×10^{-5}	1.6×10^{-6}	1.5×10^{-5}	5.9×10^{-9}
External:								
Shoreline	0.0×10^{0}	NA	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}	NA	0.0×10^{0}	0.0×10^{0}
Soil	NA	2.3×10^{-2}	2.3×10^{-2}	9.4×10^{-6}	NA	4.4×10^{-1}	4.4×10^{-1}	1.8×10^{-4}
Subtotal	0.0×10^{0}	2.3×10^{-2}	2.3×10^{-2}	9.4×10^{-6}	0.0×10^{0}	4.4×10^{-1}	4.4×10^{-1}	1.8×10^{-4}
Total	1.1×10^{-6}	2.3×10^{-2}	2.3×10^{-2}	9.4×10^{-6}	1.5×10^{-5}	4.4×10^{-1}	4.4×10^{-1}	1.8×10^{-4}

a. Doses from the two release sites are not additive; the combined dose is the maximum dose of either site.
b. Based on a risk of 0.0004 latent fatal cancers per person-rem of radiation exposure (NCRP 1993).
c. Based on a 25-year exposure period. Doses are corrected for radioactive decay over the exposure period.
d. NA = not applicable; the contaminant is not transferred through the listed exposure pathway.

Table C-52. Combined involved worker population (future use) radiological doses associated with the No-Action Alternative.

Exposure pathway	Population annual dose (person-rem)[b]			Number of fatal cancers[c]	Population lifetime dose (person-rem)[b,d]			Number of fatal cancers[c]
	L-Lake	Par Pond	Combined[a]		L-Lake	Par Pond	Combined[a]	
Ingestion:								
Soil	2.2×10^{-7}	4.7×10^{-4}	4.7×10^{-4}	1.9×10^{-7}	2.9×10^{-6}	8.9×10^{-3}	8.9×10^{-3}	3.6×10^{-6}
Soil dermal	1.3×10^{-8}	2.9×10^{-5}	2.9×10^{-5}	1.2×10^{-8}	1.8×10^{-7}	5.6×10^{-4}	5.6×10^{-4}	2.2×10^{-7}
Subtotal	2.3×10^{-7}	5.0×10^{-4}	5.0×10^{-4}	2.0×10^{-7}	3.1×10^{-6}	9.5×10^{-3}	9.5×10^{-3}	3.9×10^{-6}
Inhalation:								
Air	7.7×10^{-5}	NA[e]	7.7×10^{-5}	3.1×10^{-8}	1.0×10^{-3}	NA	1.0×10^{-3}	4.1×10^{-7}
Resuspension	1.0×10^{-7}	6.2×10^{-6}	6.2×10^{-6}	2.5×10^{-9}	1.4×10^{-6}	1.2×10^{-4}	1.2×10^{-4}	4.6×10^{-8}
Subtotal	7.7×10^{-5}	6.2×10^{-6}	7.7×10^{-5}	3.1×10^{-8}	1.0×10^{-4}	1.2×10^{-4}	1.0×10^{-3}	4.1×10^{-7}
External:								
Soil	NA	1.6×10^{0}	1.6×10^{0}	6.5×10^{-4}	NA	3.1×10^{1}	3.1×10^{1}	1.2×10^{-2}
Subtotal	0.0×10^{0}	1.6×10^{0}	1.6×10^{0}	6.5×10^{-4}	0.0×10^{0}	3.1×10^{1}	3.1×10^{1}	1.2×10^{-2}
Total	7.7×10^{-5}	1.6×10^{0}	1.6×10^{0}	6.5×10^{-4}	1.0×10^{-3}	3.1×10^{1}	3.1×10^{1}	1.2×10^{-2}

a. Doses from the two release sites are not additive; the combined dose is the maximum dose of either site.
b. The number of involved workers is estimated to be 70.
c. Based on a risk of 0.0004 latent fatal cancers per person-rem of radiation exposure (NCRP 1993).
d. Based on a 25-year exposure period. Doses are corrected for radioactive decay over the exposure period.
e. NA = not applicable; the contaminant is not transferred through the listed exposure pathway.

Table C-53. Combined uninvolved worker radiological doses and resulting impacts associated with the No-Action Alternative.[a]

Exposure pathway	Individual annual dose (rem)			Probability of fatal cancer[b]	Individual lifetime dose (rem)[c]			Probability of fatal cancer[b]
	L-Lake	Par Pond	Combined		L-Lake	Par Pond	Combined	
Ingestion:								
Soil	5.5×10^{-11}	5.8×10^{-12}	6.1×10^{-11}	2.4×10^{-14}	7.4×10^{-10}	1.1×10^{-10}	8.5×10^{-10}	3.4×10^{-13}
Soil dermal	3.5×10^{-12}	3.6×10^{-13}	3.9×10^{-12}	1.5×10^{-15}	4.7×10^{-11}	6.9×10^{-12}	5.4×10^{-11}	2.2×10^{-14}
Subtotal	5.8×10^{-11}	6.2×10^{-12}	6.5×10^{-11}	2.6×10^{-14}	7.9×10^{-10}	1.2×10^{-10}	9.0×10^{-10}	3.6×10^{-13}
Inhalation:								
Air	2.0×10^{-8}	1.1×10^{-10}	2.0×10^{-8}	7.8×10^{-12}	2.6×10^{-7}	2.1×10^{-9}	2.6×10^{-7}	1.1×10^{-10}
Resuspension	2.7×10^{-11}	1.2×10^{-12}	2.8×10^{-11}	1.1×10^{-14}	3.6×10^{-10}	2.3×10^{-11}	3.9×10^{-10}	1.5×10^{-13}
Subtotal	2.0×10^{-8}	1.2×10^{-10}	2.0×10^{-8}	7.9×10^{-12}	2.6×10^{-7}	2.3×10^{-9}	2.6×10^{-7}	1.1×10^{-10}
External:								
Soil	NA[d]	2.0×10^{-8}	2.0×10^{-8}	8.1×10^{-12}	NA	3.8×10^{-7}	3.8×10^{-7}	1.5×10^{-10}
Air	NA	9.9×10^{-13}	9.9×10^{-13}	4.0×10^{-16}	NA	1.9×10^{-11}	1.9×10^{-11}	7.4×10^{-15}
Subtotal	0.0×10^{0}	2.0×10^{-8}	2.0×10^{-8}	8.1×10^{-12}	0.0×10^{0}	3.8×10^{-7}	3.8×10^{-7}	1.5×10^{-10}
Total	2.0×10^{-8}	2.0×10^{-8}	4.0×10^{-8}	1.6×10^{-11}	2.6×10^{-7}	3.8×10^{-7}	6.5×10^{-7}	2.6×10^{-10}

a. The maximally exposed uninvolved worker is located in L-Area.
b. Based on a risk of 0.0004 latent fatal cancers per person-rem of radiation exposure (NCRP 1993).
c. Based on a 25-year exposure period. Doses are corrected for radioactive decay over the exposure period.
d. NA = not applicable; the contaminant is not transferred through the listed exposure pathway.

Table C-54. Combined uninvolved worker population radiological doses and resulting impacts associated with the No-Action Alternative.[a]

Exposure pathway	Population annual dose (person-rem)			Number of fatal cancers[b]	Population lifetime dose (person-rem)[c]			Number of fatal cancers[b]
	L-Lake	Par Pond	Combined		L-Lake	Par Pond	Combined	
Ingestion:								
Soil	1.4×10^{-8}	1.5×10^{-9}	1.5×10^{-8}	6.1×10^{-12}	1.9×10^{-7}	2.8×10^{-8}	2.1×10^{-7}	8.5×10^{-11}
Soil dermal	8.8×10^{-10}	9.2×10^{-11}	9.7×10^{-10}	3.9×10^{-13}	1.2×10^{-8}	1.7×10^{-9}	1.4×10^{-8}	5.4×10^{-12}
Subtotal	1.5×10^{-8}	1.6×10^{-9}	1.6×10^{-8}	6.5×10^{-12}	2.0×10^{-7}	2.9×10^{-8}	2.3×10^{-7}	9.1×10^{-11}
Inhalation:								
Air	4.9×10^{-6}	2.8×10^{-8}	4.9×10^{-6}	2.0×10^{-9}	6.6×10^{-5}	5.3×10^{-7}	6.6×10^{-5}	2.7×10^{-8}
Resuspension	6.8×10^{-9}	3.1×10^{-10}	7.1×10^{-9}	2.8×10^{-12}	9.1×10^{-8}	5.8×10^{-9}	9.7×10^{-8}	3.9×10^{-11}
Subtotal	4.9×10^{-6}	3.1×10^{-8}	4.9×10^{-6}	2.0×10^{-9}	6.6×10^{-5}	5.8×10^{-7}	6.6×10^{-5}	2.7×10^{-8}
External:								
Soil	NA[d]	5.1×10^{-6}	5.1×10^{-6}	2.0×10^{-9}	NA	9.6×10^{-5}	9.6×10^{-5}	3.8×10^{-8}
Air	NA	2.5×10^{-10}	2.5×10^{-10}	9.9×10^{-14}	NA	4.7×10^{-9}	4.7×10^{-9}	1.9×10^{-12}
Subtotal	0.0×10^{0}	5.1×10^{-6}	5.1×10^{-6}	2.0×10^{-9}	0.0×10^{0}	9.6×10^{-5}	9.6×10^{-5}	3.8×10^{-8}
Total	4.9×10^{-6}	5.1×10^{-6}	1.0×10^{-5}	4.0×10^{-9}	6.6×10^{-5}	9.7×10^{-5}	1.6×10^{-4}	6.5×10^{-8}

a. L-Area; total uninvolved workers is estimated to be 251 (Simpkins 1996).
b. Based on a risk of 0.0004 latent fatal cancers per person-rem of radiation exposure (NCRP 1993).
c. Based on a 25-year exposure period. Doses are corrected for radioactive decay over the exposure period.
d. NA = not applicable; the contaminant is not transferred through the listed exposure pathway.

Table C-55. Combined nonradiological hazard indexes and cancer risks associated with the No-Action Alternative for the involved worker (current use).

Exposure pathway	Hazard index			Annual cancer risk			Lifetime cancer risk[c]
	L-Lake	Par Pond	Combined[a]	L-Lake	Par Pond[b]	Combined[a]	
Ingestion:							
Shoreline dermal	1.5×10^{-6}	NA[d]	1.5×10^{-6}	7.0×10^{-10}	NA	7.0×10^{-10}	3.5×10^{-9}
Shoreline	2.1×10^{-4}	NA	2.1×10^{-4}	8.4×10^{-9}	NA	8.4×10^{-9}	4.2×10^{-8}
Soil	NA	6.8×10^{-6}	6.8×10^{-6}	NA	NA	0.0×10^{0}	0.0×10^{0}
Soil dermal	NA	2.4×10^{-5}	2.4×10^{-5}	NA	NA	0.0×10^{0}	0.0×10^{0}
Subtotal	2.1×10^{-4}	3.0×10^{-5}	2.1×10^{-4}	9.1×10^{-9}	0.0×10^{0}	9.1×10^{-9}	4.5×10^{-8}
Inhalation:							
Resuspension	NA	4.8×10^{-7}	4.8×10^{-7}	NA	NA	0.0×10^{0}	0.0×10^{0}
Subtotal	0.0×10^{0}	4.8×10^{-7}	4.8×10^{-7}	NA	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}
Total	2.1×10^{-4}	3.1×10^{-5}	2.1×10^{-4}	9.1×10^{-9}	0.0×10^{0}	9.1×10^{-9}	4.5×10^{-8}

a. Hazard indexes and cancer risks from the two release sites are not additive; the combined result is the maximum of either site.
b. No carcinogenic constituents are released from Par Pond for current land use under the No-Action Alternative.
c. Based on a 5-year exposure period.
d. NA = not applicable; the contaminant is not transferred through the listed exposure pathway.

Table C-56. Combined nonradiological hazard indexes and cancer risks associated with the No-Action Alternative for the involved worker (future use).

Exposure pathway	Hazard index			Annual cancer risk			Lifetime cancer risk[c]
	L-Lake	Par Pond	Combined[a]	L-Lake	Par Pond[b]	Combined[a]	
Ingestion:							
Shoreline dermal	2.5×10^{-5}	NA[d]	2.5×10^{-5}	1.2×10^{-8}	NA	1.2×10^{-8}	2.9×10^{-7}
Shoreline	2.3×10^{-5}	NA	2.3×10^{-5}	9.2×10^{-10}	NA	9.2×10^{-10}	2.3×10^{-8}
Soil	NA	1.6×10^{-4}	1.6×10^{-4}	NA	NA	0.0×10^{0}	0.0×10^{0}
Soil dermal	NA	3.9×10^{-4}	3.9×10^{-4}	NA	NA	0.0×10^{0}	0.0×10^{0}
Subtotal	4.8×10^{-5}	5.5×10^{-4}	5.5×10^{-4}	1.3×10^{-8}	0.0×10^{0}	1.3×10^{-8}	3.1×10^{-7}
Inhalation:							
Resuspension	NA	1.1×10^{-5}	1.1×10^{-5}	NA	NA	0.0×10^{0}	0.0×10^{0}
Subtotal	0.0×10^{0}	1.1×10^{-5}	1.1×10^{-5}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}
Total	4.8×10^{-5}	5.6×10^{-4}	5.6×10^{-4}	1.3×10^{-8}	0.0×10^{0}	1.3×10^{-8}	3.1×10^{-7}

a. Hazard indexes and cancer risks from the two release sites are not additive; the combined result is the maximum of either site.
b. No carcinogenic constituents are released from Par Pond for current land use under the No-Action Alternative.
c. Based on a 25-year exposure period.
d. NA = not applicable; the contaminant is not transferred through the listed exposure pathway.

Table C-57. Combined nonradiological hazard indexes associated with the No-Action Alternative for uninvolved workers.[a]

	Hazard index		
Exposure pathway	L-Lake[b]	Par Pond	Combined
Ingestion:			
Soil	NA[c]	1.3×10^{-10}	1.3×10^{-10}
Soil Dermal	NA	3.4×10^{-10}	3.4×10^{-10}
Subtotal	0.0×10^{0}	4.7×10^{-10}	4.7×10^{-10}
Inhalation:			
Air	NA	1.4×10^{-8}	1.4×10^{-8}
Resuspension	NA	1.4×10^{-10}	1.4×10^{-10}
Subtotal	0.0×10^{0}	1.4×10^{-8}	1.4×10^{-8}
Total	0.0×10^{0}	1.5×10^{-8}	1.5×10^{-8}

a. No carcinogenic constituents are released from either L-Lake or Par Pond for current land use under the No-Action Alternative. The uninvolved worker is located in L-Area.
b. Nonradiological constituents not released from L-Lake.
c. NA = not applicable; the contaminant is not transferred through the listed exposure pathway.

Table C-58. Combined radiological doses associated with the Shut Down and Deactivate Alternative and resulting health effects to the offsite maximally exposed individual.

Exposure Pathway	Individual annual dose (rem)			Probability of fatal cancer[a]	Individual lifetime dose (rem)[b]			Probability of fatal cancer[a]
	L-Lake	Par Pond	Combined		L-Lake	Par Pond	Combined	
Ingestion:								
Drinking Water	2.5×10^{-9}	NA[c]	2.5×10^{-9}	1.2×10^{-12}	1.6×10^{-7}	NA	1.6×10^{-7}	8.1×10^{-11}
Finfish	1.1×10^{-8}	NA	1.1×10^{-8}	5.4×10^{-12}	4.9×10^{-7}	NA	4.9×10^{-7}	2.5×10^{-10}
Swimming	4.1×10^{-12}	NA	4.1×10^{-12}	2.1×10^{-15}	2.7×10^{-10}	NA	2.7×10^{-10}	1.3×10^{-13}
Swimming Dermal	2.7×10^{-10}	NA	2.7×10^{-10}	1.4×10^{-13}	1.9×10^{-8}	NA	1.9×10^{-8}	9.4×10^{-12}
Shoreline Dermal	1.8×10^{-12}	NA	1.8×10^{-12}	8.9×10^{-16}	1.2×10^{-10}	NA	1.2×10^{-10}	6.2×10^{-14}
Shoreline	1.1×10^{-13}	NA	1.1×10^{-13}	5.4×10^{-17}	7.0×10^{-12}	NA	7.0×10^{-12}	3.5×10^{-15}
Soil	7.5×10^{-12}	1.2×10^{-9}	1.2×10^{-9}	6.1×10^{-13}	3.6×10^{-10}	4.2×10^{-8}	4.3×10^{-8}	2.1×10^{-11}
Soil Dermal	3.4×10^{-10}	2.4×10^{-10}	5.8×10^{-10}	2.9×10^{-13}	2.4×10^{-8}	8.5×10^{-9}	3.2×10^{-8}	1.6×10^{-11}
Leafy Vegetables	4.5×10^{-8}	2.0×10^{-8}	6.4×10^{-8}	3.2×10^{-11}	2.2×10^{-6}	6.8×10^{-7}	2.8×10^{-6}	1.4×10^{-9}
Other Vegetables	4.2×10^{-8}	2.0×10^{-8}	6.1×10^{-8}	3.1×10^{-11}	2.0×10^{-6}	6.8×10^{-7}	2.7×10^{-6}	1.3×10^{-9}
Meat	1.2×10^{-8}	8.6×10^{-9}	2.0×10^{-8}	1.0×10^{-11}	4.1×10^{-7}	3.0×10^{-7}	7.1×10^{-7}	3.5×10^{-10}
Milk	1.3×10^{-7}	9.4×10^{-8}	2.3×10^{-7}	1.1×10^{-10}	4.8×10^{-6}	3.3×10^{-6}	8.0×10^{-6}	4.0×10^{-9}
Subtotal	2.5×10^{-7}	1.4×10^{-7}	3.9×10^{-7}	2.8×10^{-10}	1.0×10^{-5}	5.0×10^{-6}	1.5×10^{-5}	7.5×10^{-9}
Inhalation:								
Air	9.7×10^{-8}	2.4×10^{-8}	1.2×10^{-7}	6.1×10^{-11}	6.7×10^{-6}	8.5×10^{-7}	7.6×10^{-6}	3.8×10^{-9}
Resuspension	8.4×10^{-10}	2.4×10^{-10}	1.1×10^{-9}	5.4×10^{-13}	5.9×10^{-8}	8.5×10^{-9}	6.7×10^{-8}	3.4×10^{-11}
Subtotal	9.7×10^{-8}	2.4×10^{-8}	1.2×10^{-7}	6.1×10^{-11}	6.8×10^{-6}	8.5×10^{-7}	7.7×10^{-6}	3.8×10^{-9}
External:								
Swimming	9.4×10^{-14}	NA	9.4×10^{-14}	4.7×10^{-17}	2.6×10^{-12}	NA	2.6×10^{-12}	1.3×10^{-15}
Boating	4.7×10^{-14}	NA	4.7×10^{-14}	2.4×10^{-17}	1.3×10^{-12}	NA	1.3×10^{-12}	6.6×10^{-16}
Shoreline	2.4×10^{-12}	NA	2.4×10^{-12}	1.2×10^{-15}	6.7×10^{-11}	NA	6.7×10^{-11}	3.4×10^{-14}
Soil	7.5×10^{-8}	6.4×10^{-6}	6.4×10^{-6}	3.2×10^{-9}	2.7×10^{-6}	2.2×10^{-4}	2.2×10^{-4}	1.1×10^{-7}
Air	4.3×10^{-12}	3.1×10^{-10}	3.1×10^{-10}	1.6×10^{-13}	1.5×10^{-10}	1.1×10^{-8}	1.1×10^{-8}	5.4×10^{-12}
Subtotal	7.5×10^{-8}	6.4×10^{-6}	6.4×10^{-6}	3.2×10^{-9}	2.7×10^{-6}	2.2×10^{-4}	2.2×10^{-4}	1.1×10^{-7}
Total	4.2×10^{-7}	6.5×10^{-6}	6.9×10^{-6}	3.5×10^{-9}	1.9×10^{-5}	2.3×10^{-4}	2.4×10^{-4}	1.2×10^{-7}

a. Based on a risk of 0.0005 latent fatal cancers per person-rem of radiation exposure (NCRP 1993).
b. Based on a 70-year exposure period. Doses are corrected for radioactive decay over the exposure period.
c. NA = not applicable; the contaminant is not transferred through the listed exposure pathway.

Table C-59. Combined radiological doses associated with the Shut Down and Deactivate Alternative and resulting health effects to the general public.[a]

Exposure Pathway	Population annual dose (person-rem)			Number of fatal cancer[b]	Population lifetime dose (person-rem)[c]			Number of fatal cancer[b]
	L-Lake	Par Pond	Combined		L-Lake	Par Pond	Combined	
Ingestion:								
Drinking Water	3.5×10^{-5}	NA[d]	3.5×10^{-5}	1.8×10^{-8}	2.3×10^{-3}	NA	2.3×10^{-3}	1.1×10^{-6}
Soil	7.6×10^{-9}	4.2×10^{-7}	4.3×10^{-7}	2.2×10^{-10}	3.5×10^{-7}	1.5×10^{-5}	1.5×10^{-5}	7.5×10^{-9}
Soil Dermal	2.9×10^{-7}	8.5×10^{-8}	3.7×10^{-7}	1.9×10^{-10}	2.0×10^{-5}	2.9×10^{-6}	2.3×10^{-5}	1.1×10^{-8}
Leafy Vegetables	4.6×10^{-5}	6.8×10^{-6}	5.3×10^{-5}	2.6×10^{-8}	2.1×10^{-3}	2.4×10^{-4}	2.3×10^{-3}	1.2×10^{-6}
Other Vegetables	4.3×10^{-5}	6.8×10^{-6}	5.0×10^{-5}	2.5×10^{-8}	2.0×10^{-3}	2.4×10^{-4}	2.2×10^{-3}	1.1×10^{-6}
Meat	1.3×10^{-5}	3.0×10^{-6}	1.6×10^{-5}	8.1×10^{-9}	4.6×10^{-4}	1.0×10^{-4}	5.6×10^{-4}	2.8×10^{-7}
Milk	1.5×10^{-4}	3.3×10^{-5}	1.8×10^{-4}	9.2×10^{-8}	5.3×10^{-3}	1.1×10^{-3}	6.5×10^{-3}	3.2×10^{-6}
Subtotal	2.9×10^{-4}	5.0×10^{-5}	3.4×10^{-4}	1.7×10^{-7}	1.2×10^{-2}	1.7×10^{-3}	1.4×10^{-2}	7.0×10^{-6}
Inhalation:								
Air	8.2×10^{-5}	8.5×10^{-6}	9.1×10^{-5}	4.5×10^{-8}	5.7×10^{-3}	2.9×10^{-4}	6.0×10^{-3}	3.0×10^{-6}
Resuspension	7.1×10^{-7}	8.5×10^{-8}	8.0×10^{-7}	4.0×10^{-10}	5.0×10^{-5}	2.9×10^{-6}	5.3×10^{-5}	2.6×10^{-8}
Subtotal	8.3×10^{-5}	8.5×10^{-6}	9.1×10^{-5}	4.6×10^{-8}	5.8×10^{-3}	2.9×10^{-4}	6.1×10^{-3}	3.0×10^{-6}
External:								
Soil	8.5×10^{-5}	2.2×10^{-3}	2.3×10^{-3}	1.1×10^{-6}	3.0×10^{-3}	7.7×10^{-2}	8.0×10^{-2}	4.0×10^{-5}
Air	4.9×10^{-9}	1.1×10^{-7}	1.1×10^{-7}	5.6×10^{-11}	1.7×10^{-7}	3.7×10^{-6}	3.9×10^{-6}	1.9×10^{-9}
Subtotal	8.5×10^{-5}	2.2×10^{-3}	2.3×10^{-3}	1.1×10^{-6}	3.0×10^{-3}	7.7×10^{-2}	8.0×10^{-2}	4.0×10^{-5}
Total	4.6×10^{-4}	2.3×10^{-3}	2.7×10^{-3}	1.4×10^{-6}	2.1×10^{-2}	7.6×10^{-2}	9.7×10^{-2}	4.9×10^{-5}

a. For atmospheric pathways, offsite population within 80 kilometers (50 miles) of SRS; for aqueous pathway, downstream population using Savannah River as a drinking water source.
b. Based on a risk of 0.0005 latent fatal cancers per person-rem of radiation exposure (NCRP 1993).
c. Based on a 70-year exposure period. Doses are corrected for radioactive decay over the exposure period.
d. NA = not applicable; the contaminant is not transferred through the listed exposure pathway.

Table C-60. Combined nonradiological hazard indexes and cancer risks associated with the Shut Down and Deactivate Alternative for members of the public.

Exposure Pathway	Hazard Index			Annual cancer risk			Lifetime cancer risk[a]
	L-Lake	Par Pond	Combined	L-Lake	Par Pond	Combined	
Ingestion:							
Drinking Water	1.6×10^{-3}	NA[b]	1.6×10^{-3}	4.9×10^{-11}	NA	4.9×10^{-11}	3.4×10^{-9}
Finfish	2.1×10^{-1}	NA	2.1×10^{-1}	5.4×10^{-11}	NA	5.4×10^{-11}	3.8×10^{-9}
Swimming	2.7×10^{-6}	NA	2.7×10^{-6}	8.0×10^{-14}	NA	8.0×10^{-14}	5.6×10^{-12}
Swimming Dermal	6.8×10^{-7}	NA	6.8×10^{-7}	4.7×10^{-13}	NA	4.7×10^{-13}	3.3×10^{-11}
Shoreline Dermal	4.6×10^{-9}	NA	4.6×10^{-9}	3.2×10^{-15}	NA	3.2×10^{-15}	2.2×10^{-13}
Shoreline	7.3×10^{-8}	NA	7.3×10^{-8}	2.1×10^{-15}	NA	2.1×10^{-15}	1.5×10^{-13}
Soil	3.1×10^{-7}	6.7×10^{-7}	9.8×10^{-7}	6.3×10^{-13}	NA	6.3×10^{-13}	4.4×10^{-11}
Soil Dermal	7.5×10^{-7}	5.0×10^{-6}	5.7×10^{-6}	6.4×10^{-12}	NA	6.4×10^{-12}	4.5×10^{-10}
Leafy Vegetables	1.9×10^{-3}	1.1×10^{-5}	1.9×10^{-3}	3.8×10^{-9}	NA	3.8×10^{-9}	2.6×10^{-7}
Other Vegetables	1.7×10^{-3}	1.2×10^{-5}	1.7×10^{-3}	3.3×10^{-9}	NA	3.3×10^{-9}	2.3×10^{-7}
Meat	1.4×10^{-3}	5.1×10^{-5}	1.4×10^{-3}	1.3×10^{-10}	NA	1.3×10^{-10}	9.1×10^{-9}
Milk	2.2×10^{-3}	5.6×10^{-6}	2.2×10^{-3}	1.2×10^{-10}	NA	1.2×10^{-10}	8.1×10^{-9}
Subtotal	2.2×10^{-1}	8.5×10^{-5}	2.2×10^{-1}	7.5×10^{-9}	0.0×10^{0}	7.5×10^{-9}	5.2×10^{-7}
Inhalation:							
Air	3.5×10^{-5}	6.1×10^{-5}	9.6×10^{-5}	5.0×10^{-10}	NA	5.0×10^{-10}	3.5×10^{-8}
Resuspension	3.0×10^{-7}	6.1×10^{-7}	9.1×10^{-7}	4.3×10^{-12}	NA	4.3×10^{-12}	3.0×10^{-10}
Subtotal	3.5×10^{-5}	6.1×10^{-5}	9.6×10^{-5}	5.0×10^{-10}	0.0×10^{0}	5.0×10^{-10}	3.5×10^{-8}
Total	2.2×10^{-1}	1.5×10^{-4}	2.2×10^{-1}	8.0×10^{-9}	0.0×10^{0}	8.0×10^{-9}	5.6×10^{-7}

a. Based on a 70-year exposure period.
b. NA = not applicable; the contaminant is not transferred through the listed exposure pathway.

Table C-61. Combined involved worker (current use) radiological doses associated with the Shut Down and Deactivate Alternative.

Exposure Pathway	Individual annual dose (rem)			Probability of fatal cancer[b]	Individual lifetime dose (rem)[c]			Probability of fatal cancer[b]
	L-Lake	Par Pond	Combined[a]		L-Lake	Par Pond	Combined[a]	
Ingestion:								
Soil	3.5×10^{-7}	3.1×10^{-7}	3.5×10^{-7}	1.4×10^{-10}	1.7×10^{-6}	1.5×10^{-6}	1.7×10^{-6}	6.8×10^{-10}
Soil Dermal	5.2×10^{-6}	2.6×10^{-8}	5.2×10^{-6}	2.1×10^{-9}	2.6×10^{-5}	1.2×10^{-7}	2.6×10^{-5}	1.0×10^{-8}
Subtotal	5.6×10^{-6}	3.4×10^{-7}	5.6×10^{-6}	2.2×10^{-9}	2.8×10^{-5}	1.6×10^{-6}	2.8×10^{-5}	1.1×10^{-8}
Inhalation:								
Resuspension	1.3×10^{-6}	4.0×10^{-9}	1.3×10^{-6}	5.4×10^{-10}	6.7×10^{-6}	1.9×10^{-8}	6.7×10^{-6}	2.7×10^{-9}
Subtotal	1.3×10^{-6}	4.0×10^{-9}	1.3×10^{-6}	5.4×10^{-10}	6.7×10^{-6}	1.9×10^{-8}	6.7×10^{-6}	2.7×10^{-9}
External:								
Soil	2.4×10^{-4}	4.2×10^{-4}	4.2×10^{-4}	1.7×10^{-7}	1.1×10^{-3}	2.0×10^{-3}	2.0×10^{-3}	7.8×10^{-7}
Subtotal	2.4×10^{-4}	4.2×10^{-4}	4.2×10^{-4}	1.7×10^{-7}	1.1×10^{-3}	2.0×10^{-3}	2.0×10^{-3}	7.8×10^{-7}
Total	2.4×10^{-4}	4.2×10^{-4}	4.2×10^{-4}	1.7×10^{-7}	1.1×10^{-3}	2.0×10^{-3}	2.0×10^{-3}	7.9×10^{-7}

a. Doses from the two release sites are not additive; the combined dose is the maximum dose of either site.
b. Based on a risk of 0.0004 latent fatal cancers per person-rem of radiation exposure (NCRP 1993).
c. Based on a 5-year exposure period. Doses are corrected for radioactive decay over the exposure period.

Table C-62. Combined involved worker population (current use) radiological doses associated with the Shut Down and Deactivate Alternative.

Exposure Pathway	Population annual dose (person-rem)[a]			Number of fatal cancers[c]	Population lifetime dose (person-rem)[a,d]			Number of fatal cancers[c]
	L-Lake	Par Pond	Combined[b]		L-Lake	Par Pond	Combined[b]	
Ingestion:								
Soil	2.5×10^{-5}	2.2×10^{-5}	2.5×10^{-5}	9.8×10^{-9}	1.2×10^{-4}	1.0×10^{-4}	1.2×10^{-4}	4.8×10^{-8}
Soil Dermal	3.6×10^{-4}	1.8×10^{-6}	3.6×10^{-4}	1.5×10^{-7}	1.8×10^{-3}	8.5×10^{-6}	1.8×10^{-3}	7.3×10^{-7}
Subtotal	3.9×10^{-4}	2.4×10^{-5}	3.9×10^{-4}	1.6×10^{-7}	1.9×10^{-3}	1.1×10^{-4}	1.9×10^{-3}	7.8×10^{-7}
Inhalation:								
Resuspension	9.4×10^{-5}	2.8×10^{-7}	9.4×10^{-5}	3.8×10^{-8}	4.7×10^{-4}	1.3×10^{-6}	4.7×10^{-4}	1.9×10^{-7}
Subtotal	9.4×10^{-5}	2.8×10^{-7}	9.4×10^{-5}	3.8×10^{-8}	4.7×10^{-4}	1.3×10^{-6}	4.7×10^{-4}	1.9×10^{-7}
External:								
Soil	1.7×10^{-2}	2.9×10^{-2}	2.9×10^{-2}	1.2×10^{-5}	7.7×10^{-2}	1.4×10^{-1}	1.4×10^{-1}	5.5×10^{-5}
Subtotal	1.7×10^{-2}	2.9×10^{-2}	2.9×10^{-2}	1.2×10^{-5}	7.7×10^{-2}	1.4×10^{-1}	1.4×10^{-1}	5.5×10^{-5}
Total	1.7×10^{-2}	2.9×10^{-2}	2.9×10^{-2}	1.2×10^{-5}	7.9×10^{-2}	1.4×10^{-1}	1.4×10^{-1}	5.5×10^{-5}

a. The number of involved workers is estimated to be 70.
b. Doses from the two release sites are not additive; the combined dose is the maximum dose of either site.
c. Based on a risk of 0.0004 latent fatal cancers per person-rem of radiation exposure (NCRP 1993).
d. Based on a 5-year exposure period. Doses are corrected for radioactive decay over the exposure period.

Table C-63. Combined involved worker (future use) radiological doses associated with the Shut Down and Deactivate Alternative.

Exposure Pathway	Individual annual dose (rem)			Probability of fatal cancer[b]	Individual lifetime dose (rem)[c]			Probability of fatal cancer[b]
	L-Lake	Par Pond	Combined[a]		L-Lake	Par Pond	Combined[a]	
Ingestion:								
Soil	7.7×10^{-6}	6.7×10^{-6}	7.7×10^{-6}	3.1×10^{-9}	1.7×10^{-4}	1.3×10^{-4}	1.7×10^{-4}	6.8×10^{-8}
Soil Dermal	8.7×10^{-5}	4.2×10^{-7}	8.7×10^{-5}	3.5×10^{-8}	2.2×10^{-3}	8.0×10^{-6}	2.2×10^{-3}	8.7×10^{-7}
Subtotal	9.4×10^{-5}	7.1×10^{-6}	9.4×10^{-5}	3.8×10^{-8}	2.3×10^{-3}	1.4×10^{-4}	2.3×10^{-3}	9.3×10^{-7}
Inhalation:								
Resuspension	2.9×10^{-5}	8.8×10^{-8}	2.9×10^{-5}	1.2×10^{-8}	7.3×10^{-4}	1.6×10^{-6}	7.3×10^{-4}	2.9×10^{-7}
Subtotal	2.9×10^{-5}	8.8×10^{-8}	2.9×10^{-5}	1.2×10^{-8}	7.3×10^{-4}	1.6×10^{-6}	7.3×10^{-4}	2.9×10^{-7}
External:								
Soil	4.1×10^{-2}	2.3×10^{-2}	4.1×10^{-2}	1.6×10^{-5}	7.4×10^{-1}	4.4×10^{-1}	7.4×10^{-1}	3.0×10^{-4}
Subtotal	4.1×10^{-2}	2.3×10^{-2}	4.1×10^{-2}	1.6×10^{-5}	7.4×10^{-1}	4.4×10^{-1}	7.4×10^{-1}	3.0×10^{-4}
Total	4.1×10^{-2}	2.3×10^{-2}	4.1×10^{-2}	1.6×10^{-5}	7.5×10^{-1}	4.4×10^{-1}	7.5×10^{-1}	3.0×10^{-4}

a. Doses from the two release sites are not additive; the combined dose is the maximum dose of either site.
b. Based on a risk of 0.0004 latent fatal cancers per person-rem of radiation exposure (NCRP 1993).
c. Based on a 25-year exposure period. Doses are corrected for radioactive decay over the exposure period.

Table C-64. Combined involved worker population (future use) radiological doses associated with the Shut Down and Deactivate Alternative.

Exposure Pathway	Population annual dose (person-rem)[a]			Number of fatal cancers[c]	Population lifetime dose (person-rem)[a,d]			Number of fatal cancers[c]
	L-Lake	Par Pond	Combined[b]		L-Lake	Par Pond	Combined[b]	
Ingestion:								
Soil	5.4×10^{-4}	4.7×10^{-4}	5.4×10^{-4}	2.2×10^{-7}	1.2×10^{-2}	8.9×10^{-3}	1.2×10^{-2}	4.8×10^{-6}
Soil Dermal	6.1×10^{-3}	2.9×10^{-5}	6.1×10^{-3}	2.4×10^{-6}	1.5×10^{-1}	5.6×10^{-4}	1.5×10^{-1}	6.1×10^{-5}
Subtotal	6.6×10^{-3}	5.0×10^{-4}	6.6×10^{-3}	2.6×10^{-6}	1.6×10^{-1}	9.5×10^{-3}	1.6×10^{-1}	6.5×10^{-5}
Inhalation:								
Resuspension	2.0×10^{-3}	6.2×10^{-6}	2.0×10^{-3}	8.2×10^{-7}	5.1×10^{-2}	1.2×10^{-4}	5.1×10^{-2}	2.0×10^{-5}
Subtotal	2.0×10^{-3}	6.2×10^{-6}	2.0×10^{-3}	8.2×10^{-7}	5.1×10^{-2}	1.2×10^{-4}	5.1×10^{-2}	2.0×10^{-5}
External:								
Soil	2.9×10^{0}	1.6×10^{0}	2.9×10^{0}	1.1×10^{-3}	5.2×10^{-1}	3.1×10^{1}	5.2×10^{1}	2.1×10^{-2}
Subtotal	2.9×10^{0}	1.6×10^{0}	2.9×10^{0}	1.1×10^{-3}	5.2×10^{-1}	3.1×10^{1}	5.2×10^{1}	2.1×10^{-2}
Total	2.9×10^{0}	1.6×10^{0}	2.9×10^{0}	1.1×10^{-3}	5.2×10^{-1}	3.1×10^{1}	5.2×10^{1}	2.1×10^{-2}

a. Doses from the two release sites are not additive; the combined dose is the maximum dose of either site.
b. The number of involved workers is estimated to be 70.
c. Based on a risk of 0.0004 latent fatal cancers per person-rem of radiation exposure (NCRP 1993).
d. Based on a 25-year exposure period. Doses are corrected for radioactive decay over the exposure period.

Table C-65. Combined uninvolved worker radiological doses and resulting impacts associated with the Shut Down and Deactivate Alternative.[a]

Exposure Pathway	Individual annual dose (rem)			Probability of fatal cancer[b]	Individual lifetime dose (rem)[c]			Probability of fatal cancer[b]
	L-Lake	Par Pond	Combined		L-Lake	Par Pond	Combined	
Ingestion:								
Soil	6.3×10^{-11}	5.8×10^{-12}	6.8×10^{-11}	2.7×10^{-14}	1.4×10^{-9}	1.1×10^{-10}	1.5×10^{-9}	6.0×10^{-13}
Soil Dermal	1.1×10^{-9}	3.6×10^{-13}	1.1×10^{-9}	4.3×10^{-13}	2.7×10^{-8}	6.9×10^{-12}	2.7×10^{-8}	1.1×10^{-11}
Subtotal	1.1×10^{-9}	6.2×10^{-12}	1.2×10^{-9}	4.6×10^{-13}	2.8×10^{-8}	1.2×10^{-10}	2.9×10^{-8}	1.1×10^{-11}
Inhalation:								
Air	1.1×10^{-6}	1.1×10^{-10}	1.1×10^{-6}	4.4×10^{-10}	2.8×10^{-5}	2.1×10^{-9}	2.8×10^{-5}	1.1×10^{-8}
Resuspension	1.2×10^{-8}	1.2×10^{-12}	1.2×10^{-8}	4.8×10^{-12}	3.0×10^{-7}	2.3×10^{-11}	3.0×10^{-7}	1.2×10^{-10}
Subtotal	1.1×10^{-6}	1.2×10^{-10}	1.1×10^{-6}	4.5×10^{-10}	2.8×10^{-5}	2.3×10^{-9}	2.8×10^{-5}	1.1×10^{-8}
External:								
Soil	3.3×10^{-7}	2.0×10^{-8}	3.5×10^{-7}	1.4×10^{-10}	6.1×10^{-6}	3.8×10^{-7}	6.4×10^{-6}	2.6×10^{-9}
Air	1.5×10^{-11}	9.9×10^{-13}	1.6×10^{-11}	6.4×10^{-15}	2.7×10^{-10}	1.9×10^{-11}	2.9×10^{-10}	1.2×10^{-13}
Subtotal	3.3×10^{-7}	2.0×10^{-8}	3.5×10^{-7}	1.4×10^{-10}	6.1×10^{-6}	3.8×10^{-7}	6.4×10^{-6}	2.6×10^{-9}
Total	1.5×10^{-6}	2.0×10^{-8}	1.5×10^{-6}	5.9×10^{-10}	3.4×10^{-5}	3.8×10^{-7}	3.5×10^{-5}	1.4×10^{-8}

a. The maximally exposed uninvolved worker is located in L-Area.
b. Based on a risk of 0.0004 latent fatal cancers per person-rem of radiation exposure (NCRP 1993).
c. Based on a 25-year exposure period. Doses are corrected for radioactive decay over the exposure period.

Table C-66. Combined uninvolved worker population doses and resulting impacts associated with the Shut Down and Deactivate Alternative.[a]

Exposure Pathway	Population annual dose (person-rem)			Number of fatal cancers[b]	Population liftime dose (person-rem)[c]			Number of fatal cancers[b]
	L-Lake	Par Pond	Combined		L-Lake	Par Pond	Combined	
Ingestion:								
Soil	1.6×10^{-8}	1.5×10^{-9}	1.7×10^{-8}	6.9×10^{-12}	3.5×10^{-7}	2.8×10^{-8}	3.8×10^{-7}	1.5×10^{-10}
Soil Dermal	2.7×10^{-7}	9.2×10^{-11}	2.7×10^{-7}	1.1×10^{-10}	6.8×10^{-6}	1.7×10^{-9}	6.8×10^{-6}	2.7×10^{-9}
Subtotal	2.9×10^{-7}	1.6×10^{-9}	2.9×10^{-7}	1.2×10^{-10}	7.1×10^{-6}	2.9×10^{-8}	7.2×10^{-6}	2.9×10^{-9}
Inhalation:								
Air	2.8×10^{-4}	2.8×10^{-8}	2.8×10^{-4}	1.1×10^{-7}	7.0×10^{-3}	5.3×10^{-7}	7.0×10^{-3}	2.8×10^{-6}
Resuspension	3.0×10^{-6}	3.1×10^{-10}	3.0×10^{-6}	1.2×10^{-9}	7.5×10^{-5}	5.8×10^{-9}	7.5×10^{-5}	3.0×10^{-8}
Subtotal	2.8×10^{-4}	3.1×10^{-8}	2.8×10^{-4}	1.1×10^{-7}	7.0×10^{-3}	5.8×10^{-7}	7.0×10^{-3}	2.8×10^{-6}
External:								
Soil	8.3×10^{-5}	5.1×10^{-6}	8.9×10^{-5}	3.5×10^{-8}	1.5×10^{-3}	9.6×10^{-5}	1.6×10^{-3}	6.5×10^{-7}
Air	3.8×10^{-9}	2.5×10^{-10}	4.0×10^{-9}	1.6×10^{-12}	6.9×10^{-8}	4.7×10^{-9}	7.3×10^{-8}	2.9×10^{-11}
Subtotal	8.3×10^{-5}	5.1×10^{-6}	8.9×10^{-5}	3.5×10^{-8}	1.5×10^{-3}	9.6×10^{-5}	1.6×10^{-3}	6.5×10^{-7}
Total	3.7×10^{-4}	5.1×10^{-6}	3.7×10^{-4}	1.5×10^{-7}	8.6×10^{-3}	9.7×10^{-5}	8.7×10^{-3}	3.5×10^{-6}

a. L-Area. Total uninvolved workers is estimated to be 251 (Simpkins 1996).
b. Based on a risk of 0.0004 latent fatal cancers per person-rem of radiation exposure (NCRP 1993).
c. Based on a 25-year exposure period. Doses are corrected for radioactive decay over the exposure period.

Table C-67. Combined nonradiological hazard indexes and cancer risks associated with the Shut Down and Deactivate Alternative for the involved worker (current use).

Exposure Pathway	Hazard index			Annual cancer risk			Lifetime cancer risk[c]
	L-Lake	Par Pond	Combined[a]	L-Lake	Par Pond[b]	Combined[a]	
Ingestion:							
Soil	6.0×10^{-3}	6.8×10^{-6}	6.0×10^{-3}	1.3×10^{-8}	NA[d]	1.3×10^{-8}	6.4×10^{-8}
Soil Dermal	4.5×10^{-3}	2.4×10^{-5}	4.5×10^{-3}	5.1×10^{-8}	NA	5.1×10^{-8}	2.5×10^{-7}
Subtotal	1.0×10^{-2}	3.0×10^{-5}	1.0×10^{-2}	6.4×10^{-8}	0.0×10^{0}	6.4×10^{-8}	3.2×10^{-7}
Inhalation:							
Resuspension	1.3×10^{-4}	4.8×10^{-7}	1.3×10^{-4}	1.9×10^{-9}	NA	1.9×10^{-9}	9.3×10^{-9}
Subtotal	1.3×10^{-4}	4.8×10^{-7}	1.3×10^{-4}	1.9×10^{-9}	0.0×10^{0}	1.9×10^{-9}	9.3×10^{-9}
Total	1.1×10^{-2}	3.1×10^{-5}	1.1×10^{-2}	6.6×10^{-8}	0.0×10^{0}	6.6×10^{-8}	3.3×10^{-7}

a. Hazard indexes and cancer risks from the two release sites are not additive; the combined result is the maximum of either site.
b. No carcinogenic constituents are released from Par Pond for current land use under the No-Action Alternative.
c. Based on a 5-year exposure period.
d. NA = not applicable; the contaminant is not transferred through the listed exposure pathway.

Table C-68. Combined nonradiological hazard indexes and cancer risks associated with the Shut Down and Deactivate Alternative for the involved worker (future use).

Exposure Pathway	Hazard index			Annual cancer risk			Lifetime cancer risk[c]
	L-Lake	Par Pond	Combined[a]	L-Lake	Par Pond[b]	Combined[a]	
Ingestion:							
Soil	1.3×10^{-1}	1.6×10^{-4}	1.3×10^{-1}	2.9×10^{-7}	NA[d]	2.9×10^{-7}	7.2×10^{-6}
Soil Dermal	7.4×10^{-2}	3.9×10^{-4}	7.4×10^{-2}	8.5×10^{-7}	NA	8.5×10^{-7}	2.1×10^{-5}
Subtotal	2.1×10^{-1}	5.5×10^{-4}	2.1×10^{-1}	1.1×10^{-6}	0.0×10^{0}	1.1×10^{-6}	2.8×10^{-5}
Inhalation:							
Resuspension	2.9×10^{-3}	1.1×10^{-5}	2.9×10^{-3}	4.1×10^{-8}	NA	4.1×10^{-8}	1.0×10^{-6}
Subtotal	2.9×10^{-3}	1.1×10^{-5}	2.9×10^{-3}	4.1×10^{-8}	NA	4.1×10^{-8}	1.0×10^{-6}
Total	2.1×10^{-1}	5.6×10^{-4}	2.1×10^{-1}	1.2×10^{-6}	0.0×10^{0}	1.2×10^{-6}	2.9×10^{-5}

a. Hazard indexes and cancer risks from the two release sites are not additive; the combined result is the maximum of either site.
b. No carcinogenic constituents are released from Par Pond for current land use under the No-Action Alternative.
c. Based on a 25-year exposure period.
d. NA = not applicable; the contaminant is not transferred through the listed exposure pathway.

Table C-69. Combined nonradiological hazard indexes and cancer risk associated with the Shut Down and Deactivate Alternative for uninvolved workers.

Exposure Pathway	Total Hazard index			Annual cancer risk			Lifetime cancer risk[b]
	L-Lake	Par Pond	Combined	L-Lake	Par Pond[a]	Combined	
Ingestion:							
Soil	1.1×10^{-6}	1.3×10^{-10}	1.1×10^{-6}	2.3×10^{-12}	NA[c]	2.3×10^{-12}	5.6×10^{-11}
Soil Dermal	6.0×10^{-7}	3.4×10^{-10}	6.0×10^{-7}	7.1×10^{-12}	NA	7.1×10^{-12}	1.8×10^{-10}
Subtotal	1.7×10^{-6}	4.7×10^{-10}	1.7×10^{-6}	9.3×10^{-12}	0.0×10^{0}	9.3×10^{-12}	2.3×10^{-10}
Inhalation:							
Air	1.0×10^{-4}	1.4×10^{-8}	1.0×10^{-4}	1.4×10^{-9}	NA	1.4×10^{-9}	3.6×10^{-8}
Resuspension	1.1×10^{-6}	1.4×10^{-10}	1.1×10^{-6}	1.6×10^{-11}	NA	1.6×10^{-11}	4.1×10^{-10}
Subtotal	1.0×10^{-4}	1.4×10^{-8}	1.0×10^{-4}	1.4×10^{-9}	0.0×10^{0}	1.4×10^{-9}	3.6×10^{-8}
Total	1.1×10^{-4}	1.5×10^{-8}	1.1×10^{-4}	1.4×10^{-9}	0.0×10^{0}	1.4×10^{-9}	3.6×10^{-8}

a. No carcinogenic constituents are released from Par Pond for current land use under the No-Action Alternative.
b. Based on a 25-year exposure period.
c. NA = not applicable; the contaminant is not transferred through the listed exposure pathway.

Table C-70. Assumed human health exposure parameters.

Receptor	Parameter	Value	Comments	Source
Offsite maximally exposed individual (current use) and general (offsite) population	Exposure time	24 hr/d	Hours per day used for resident receptor in Par Pond Baseline Risk Assessment and MEPAS default.	WSRC 1992; Strenge and Chamberlain 1995
	Exposure frequency	365 d/yr	Days per year - MEPAS default.	Strenge and Chamberlain 1995
	Exposure duration	70 yr	Typical full lifetime expose based on DOE NEPA guidance and MEPAS default.	DOE 1993; Strenge and Chamberlain 1995
	Outdoor/Indoor time fraction	0.75/0.25	Offsite resident/maximally exposed individual spend 75 percent of time indoors and 25 percent of time outdoors.	Hamby 1993 (outdoor time fraction); best estimate (indoor time fraction)
	Body weight	70 kg	EPA standard default weight of an average adult.	EPA 1991
	Inhalation rate	20 m^3/d	EPA standard default adult breathing rate.	EPA 1991
	Soil ingestion rate	100 mg/d	EPA standard default soil and dust ingestion rate for adult residents.	EPA 1991
	Leafy vegetable intake rate	21 kg/yr	Site-specific data for SRS area.	Hamby 1993
	Other vegetable intake rate	163 kg/yr	Site-specific data for SRS area.	Hamby 1993
	Meat intake rate	43 kg/yr	Site-specific data for SRS area.	Hamby 1993
	Milk intake rate	120 L/yr	Site-specific data for SRS area.	Hamby 1993
	Skin area available for contact	19,400 cm^2	Offsite resident's whole body exposed. Based on EPA body part-specific areas for male adult.	EPA 1989
	For aqueous release pathways under Shut Down and Deactivate Alternative only:			
	Drinking water intake rate	2 L/d	EPA standard default for adult resident intake of drinking water.	EPA 1991
	Time spent boating	12 hr/yr	MEPAS and NRC Regulatory Guide 1.109 default.	Strenge and Chamberlain 1995; NRC 1977
	Time spent swimming	12 hr/yr	MEPAS and NRC Regulatory Guide 1.109 default.	Strenge and Chamberlain 1995; NRC 1977
	Shoreline exposure time	12 hr/yr	MEPAS and NRC Regulatory Guide 1.109 default.	Strenge and Chamberlain 1995; NRC 1977
	Skin area exposed during swimming	19,400 cm^2	Offsite resident's whole body exposed to water while swimming. Based on EPA body part-specific areas for male adult.	EPA 1989

Table C-70. (continued).

Receptor	Parameter	Value	Comments	Source
Offsite maximally exposed individual (current use) and general	Water ingestion during swimming	100 mL/hr	MEPAS default.	Strenge and Chamberlain 1995
(offsite) population (continued)	Ingestion of shoreline sediments	100 mg/hr	MEPAS default.	Strenge and Chamberlain 1995
	Fish ingestion rate	9 kg/yr	Site-specific data for SRS area.	Hamby 1993
Offsite maximally exposed individual (future use)	Exposure time	24 hr/d	Hours per day used for resident receptor in Par Pond Baseline Risk Assessment and MEPAS default.	WSRC 1992; Strenge and Chamberlain 1995
	Exposure frequency	365 d/yr	Days per year - MEPAS default.	Strenge and Chamberlain 1995
	Exposure duration	70 yr	Typical full lifetime expose based on DOE NEPA guidance and MEPAS default.	DOE 1993; Strenge and Chamberlain 1995
	Outdoor/Indoor time fraction	0.75/0.25	Offsite resident/maximally exposed individual spend 75 percent of time indoors and 25 percent of time outdoors.	Hamby 1993 (outdoor time fraction); best estimate (indoor time fraction)
	Body weight	70 kg	EPA standard default weight of an average adult.	EPA 1991
	Inhalation rate	20 m^3/d	EPA standard default adult breathing rate.	EPA 1991
	Soil ingestion rate	100 mg/d	EPA standard default soil and dust ingestion rate for adult residents.	EPA 1991
	Leafy vegetable intake rate	21 kg/yr	Site-specific data for SRS area.	Hamby 1993
	Other vegetable intake rate	163 kg/yr	Site-specific data for SRS area.	Hamby 1993
	Meat intake rate	43 kg/yr	Site-specific data for SRS area.	Hamby 1993
	Milk intake rate	120 L/yr	Site-specific data for SRS area.	Hamby 1993
	Skin area available for contact	19,400 cm^2	Offsite resident's whole body exposed. Based on EPA body part-specific areas for male adult.	EPA 1989
	For recreational pathways on L-Lake under No-Action Alternative only:			
	Time spent boating	12 hr/yr	MEPAS and NRC Regulatory Guide 1.109 default.	Strenge and Chamberlain 1995; NRC 1977
	Time spent swimming	12 hr/yr	MEPAS and NRC Regulatory Guide 1.109 default.	Strenge and Chamberlain 1995; NRC 1977

Table C-70. (continued).

Receptor	Parameter	Value	Comments	Source
Offsite maximally exposed individual (future use) (continued)	Shoreline exposure time	12 hr/yr	MEPAS and NRC Regulatory Guide 1.109 default.	Strenge and Chamberlain 1995; NRC 1977
	Fish ingestion rate	9 kg/yr	Site-specific data for SRS area.	Hamby 1993
	Skin area exposed during swimming	19,400 cm^2	Offsite resident's whole body exposed to water while swimming. Based on EPA body part-specific areas for male adult.	EPA 1989
	Water ingestion during swimming	100 mL/hr	MEPAS default.	Strenge and Chamberlain 1995
	Ingestion of shoreline sediments	100 mg/hr	MEPAS default.	Strenge and Chamberlain 1995
Involved worker (current use)	Exposure time	6 hr/wk	Value specified in inter-office memorandum from Hamm to Sidey. Based on discussions with field groups.	Hamm 1996
	Exposure frequency	15 wk/yr	Value specified in inter-office memorandum from Hamm to Sidey. Based on discussions with field groups.	Hamm 1996
	Exposure duration	5 yr	Value specified in inter-office memorandum from Hamm to Sidey. Based on discussions with field groups.	Hamm 1996
	Outdoor/Indoor time fraction	1.00/0.00	Worker spends100 percent of exposure time outdoors.	Most conservative estimate.
	Body weight	70 kg	EPA standard default weight of an average adult.	EPA 1991
	Inhalation rate	1.5 m^3/d	Based on daily inhalation rate of 30 m3/d for a worker performing moderate activity (24-hour exposure time) used in Par Pond Baseline Risk Assessment. Volume is scaled to reflect amount inhaled during a 6 hour work week (1.2 hr/d for 75 days per year).	WSRC 1992
	Soil ingestion rate	7.5 mg/d	Based on EPA standard default soil ingestion rate of 50 mg/d for commercial/industrial land use (8-hour exposure time). Volume is scaled to reflect amount ingested during a 6-hour work week (1.2 hr/d for 75 days per year).	EPA 1991

Table C-70. (continued).

Receptor	Parameter	Value	Comments	Source
Involved worker (current use) (continued)	Ingestion of potable water	NA	Worker does not ingest any contaminated drinking water.	NA
	Skin area available for contact	3,120 cm^2/day	Worker's hands and arms are exposed. Based on EPA body part-specific areas for male adult.	EPA 1989
Involved worker (future use)	Exposure time	8 hr/d	EPA standard default exposure duration for commercial/industrial land use. Also used in Par Pond Baseline Risk Assessment for future condition on-Par Pond Unit worker.	EPA 1991; WSRC 1992
	Exposure frequency	250 d/yr	EPA standard default exposure duration for commercial/industrial land use.	EPA 1991
	Exposure duration	25 yr	EPA standard default exposure duration for commercial/industrial land use.	EPA 1991
	Outdoor/Indoor time fraction	1.00/0.00	Worker spends100 percent of exposure time outdoors.	Most conservative estimate.
	Body weight	70 kg	EPA standard default weight of an average adult.	EPA 1991
	Inhalation rate	10 m^3/d	Based on daily inhalation rate of 30 m3/d for a worker performing moderate activity (24-hour exposure time) used in Par Pond Baseline Risk Assessment. Rate is scaled to reflect amount inhaled during an 8-hour work day.	WSRC 1992; EPA 1991
	Soil ingestion rate	50 mg/d	Based on EPA standard default soil ingestion rate of 50 mg/d for commercial/industrial land use (8-hour exposure time).	EPA 1991
	Ingestion of potable water	NA	Worker does not ingest any contaminated drinking water.	NA
	Skin area available for contact	3,120 cm^2	Worker's hands and arms are exposed. Based on EPA body part-specific areas for male adult.	EPA 1989
Uninvolved worker	Exposure time	8 hr/d	EPA standard default exposure duration for commercial/industrial land use.	EPA 1991
	Exposure frequency	250 d/yr	EPA standard default exposure duration for commercial/industrial land use.	EPA 1991
	Exposure duration	25 yr	EPA standard default exposure duration for commercial/industrial land use.	EPA 1991

Table C-70. (continued).

Receptor	Parameter	Value	Comments	Source
Uninvolved worker (continued)	Outdoor/Indoor time fraction	0.75/0.25	Uninvolved worker spends 75 percent of time indoors and 25 percent of time outdoors.	Best estimate.
	Body weight	70	EPA standard default weight of an average adult.	EPA 1991; NRC 1977
	Inhalation rate	10 m^3/d	Based on EPA standard default for average adult breathing rate. Rate is scaled to reflect amount inhaled during an 8-hour work day.	EPA 1991; NRC 1977
	Soil ingestion rate	50 mg/d	Based on EPA standard default soil ingestion rate of 50 mg/d for commercial/industrial land use (8-hour exposure time).	EPA 1991
	Ingestion of potable water	NA	Worker does not ingest any contaminated drinking water.	NA
	Skin area available for contact	3,120 cm^2	Worker's hands and arms are exposed. Based on EPA body part-specific areas for male adult.	EPA 1989

C. REFERENCES

Arnett, M. W., A. R. Mamatey, and D. Spitzer, 1996, *Savannah River Site Environmental Report for 1995, Draft*, WSRC-TR-96-075, Westinghouse Savannah River Company, Aiken, South Carolina.

DOE (U.S. Department of Energy, 1993, *Recommendations for the Preparation of Environmental Assessments and Environmental Impact Statements*, Office of NEPA Oversight, Washington, D.C., May.

EPA (U.S. Environmental Protection Agency), 1989, *Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual*, EPA/540/1-89/002, December.

EPA (U.S. Environmental Protection Agency), 1991, *Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual*, "Supplemental Guidance Standard Default Exposure Factors," PB91-921314, March 25.

Hamby, D. M., 1993, *Soil Concentration Guidelines for the Savannah River Site Using the DOE/RESRAD Methodology*, WSRC-TC-93,304, Savannah River Technology Center, Westinghouse Savannah River Company, Aiken, South Carolina, June 1.

Hamm, B., 1996, interoffice memorandum to K. O. Sidey, Savannah River Operations Office, "L-Lake Worker Exposure Scenario," Savannah River Site, Aiken, South Carolina, October 10.

NCRP (National Council on Radiation Protection and Measurements), 1993, *Limitation of Exposure to Ionizing Radiation*, Report No. 116, Washington, D.C., October.

NRC (U.S. Nuclear Regulatory Commission), 1977, *Regulatory Guide 1.109, Calculation of Annual Dose to Man from Routine Releases of Reactor Effluents for the Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50*, Appendix I, Nuclear Regulatory Commission, Washington, D.C., October.

Simpkins, A. A., 1996, interoffice memorandum to B. C. Marcy, "Worker Population and Doses," SRT-ETS-960107, Westinghouse Savannah River Company, Aiken, South Carolina, August 30.

Strenge, D. L. and P. J. Chamberlain, 1995, *Multimedia Environmental Pollutant Assessment System (MEPAS): Exposure Pathway and Human Health Impact Assessment Models*, PNL-10523, Pacific Northwest Laboratory, Richland, Washington, May.

WSRC (Westinghouse Savannah River Company), 1992, *Baseline Risk Assessment Using Existing Data for Par Pond (Draft Final)*, WSRC-RP-91-1197, Rev. 1, Westinghouse Savannah River Company, Aiken, South Carolina, October.