DOE/ORO/2235

ENVIRONMENTAL MONITORING ON THE OAK RIDGE RESERVATION: 2006 RESULTS

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List of Tables

East Tennessee Technology Park

Oak Ridge National Laboratory

ENVIRONMENTAL MONITORING ON THE ORR - 2006 RESULTS

ORR Surveillance

Y-12 National Security Complex

Table 1.1. 2006 NPDES Permit Number TN 0002950
ETTP Storm Drain Discharge Points

Parameter	Number of samples	Concentration[a]			Reference Value[b]	No. of values exceeding reference
		Max	Min	Avg		
Discharge Point SD 05A						
Flow, GPD	12/12	14000	1000	3900		
Total Suspended Solids	2/4	4.0	1.0	<2.0		
pH, Standard Units	12/12	7.4	6.5	6.9	4.0 – 9.0	0
Oil & Grease	4/4	3.8	1.0	<1.9		
Discharge Point SD 100						
Flow, GPD	52/52	4135400	394000	929300		
Total Suspended Solids	2/4	8.88	0.667	<3.39		
pH, Standard Units	52/52	7.8	6.8	7.4	6.0 – 9.0	0
Oil & Grease	2/4	9	2.1	<3.3		
Total Residual Chlorine	52/52	0.20	<0.001	<0.014	0.14	1
Discharge Point SD 124						
Flow, GPD	4/4	511700	297700	377600		
pH, Standard Units	4/4	7.6	6.9	7.3	6.0 – 9.0	0
Discharge Point SD 142						
Flow, GPD	4/4	134800	84300	103300		
pH, Standard Units	4/4	7.9	7.5	7.8	4.0 – 9.0	0
Discharge Point SD 150						
Flow, GPD	4/4	494100	312200	380700		
pH, Standard Units	4/4	7.4	6.5	7.0	4.0 – 9.0	0
Discharge Point SD 154						
Flow, GPD	11/12	210700	35500	104100		
pH, Standard Units	11/12	7.5	6.9	7.1	4.0 – 9.0	0
Oil & Grease	3/4	3.4	1.6	<2.9		
Total Suspended Solids	4/4	21.1	10	<12		
Discharge Point SD 158						
Flow, GPD	7/12	47000	14600	32600		
pH, Standard Units	7/12	7.2	6.5	6.8	4.0 – 9.0	0
Oil & Grease	3/4	3.5	3.5	<2.8		
Total Suspended Solids	3/4	2.11	3.47	<2.7		
Discharge Point SD 170						
Flow, GPD	12/12	1431200	65000	578400		
Total Suspended Solids	3/4	6	0.8	<2.4		
pH, Standard Units	7/12	7.7	7.0	7.5	6.0 – 9.0	0
Oil & Grease	3/4	1.41	1.1	<2.2		

Table 1.1 (continued)

Parameter	Number of samples	Concentration[a]			Reference Value[b]	No. of values exceeding reference
		Max	Min	Avg		
		Discharge Point SD 180				
Flow, GPD	12/12	1306200	67300	549400		
Total Suspended	4/4	16	3.13	8.8		
pH, Standard Units	12/12	7.9	7.2	7.5	6.0 – 9.0	0
Oil & Grease	3/4	1.12	1.12	<2.5		
		Discharge Point SD 190				
Flow, GPD	12/12	1728800	142300	835200		
Total Suspended Solids	4/4	12.6	2.5	5.6		
pH, Standard Units	12/12	7.3	6.8	7.1	6.0 – 9.0	0
Oil & Grease	4/4	23.9	1.41	12.2		
		Discharge Point SD 195				
Flow, GPD	10/12	75200	300	26750		
pH, Standard Units	10/12	7.4	6.7	7.0	4.0 – 9.0	0
Oil & Grease	4/12	3.8	1.0	<1.9		
Total Suspended Solids	4/12	130	12	51		
		Discharge Point SD 198				
Flow, GPD	1/1	286500	286500	286500		
pH, Standard Units	1/1	7.5	7.5	7.5	4.0 – 9.0	0
		Discharge Point SD 210				
Flow, GPD	7/12	786500	241200	543500		
pH, Standard Units	7/12	7.6	6.9	7.3	4.0 – 9.0	0
Total Suspended Solids	4/4	39	5.6	14		
Oil & Grease	4/4	3.5	1.5	2.0		
		Discharge Point SD 230				
Flow, GPD	12/12	1103400	76800	520390		
pH, Standard Units	12/12	8.1	7.3	7.7	4.0 – 9.0	0
Oil & Grease	3/4	8.7	1.3	<4.1		
Total Suspended Solids	2/4	2	1.1	<1.8		
		Discharge Point SD 250				
Flow, GPD	3/4	137700	95900	111400		
Total Suspended Solids	1/1	18.5	18.5	18.5		
pH, Standard Units	3/4	7.2	6.8	7.0		
		Discharge Point SD 280				
Flow, GPD	8/12	59300	4900	28280		
pH, Standard Units	8/12	7.8	7.4	7.6	4.0 – 9.0	0
Oil & Grease	3/4	5.7	<5	<3.6		
Total Suspended Solids	4/4	1300	37	570		

Table 1.1 (continued)

Parameter	Number of samples	Concentration[a]			Reference Value[b]	No. of values exceeding reference
		Max	Min	Avg		
		Discharge Point SD 294				
Flow, GPD	6/12	66100	16400	40800		
pH, Standard Units	6/12	7.7	7.0	7.3	4.0 – 9.0	0
Total Suspended Solids	4/4	38.3	23	28.3		
Oil & Grease	2/4	2.1	<5	<3.3		
		Discharge Point SD 334				
Flow, GPD	1/1	26400	26400	26400		
pH, Standard Units	1/1	7.3	7.3	7.3	4.0 – 9.0	0
		Discharge Point SD 340				
Flow, GPD	12/12	489800	34700	238400		
pH, Standard Units	12/12	7.8	6.4	7.4	4.0 – 9.0	0
Oil & Grease	4/4	4	1.4	2.4		
Total Suspended Solids	3/4	1	0.67	<1.14		
		Discharge Point SD 350				
Flow, GPD	10/12	46700	3200	19000		
pH, Standard Units	10/12	7.5	6.7	7.2	4.0 – 9.0	0
Oil & Grease	3/4	<5	1.5	<2.6		
Total Suspended Solids	4/4	53	7.0	21.2		
		Discharge Point SD 360				
Flow, GPD	5/12	21600	9300	15200		
pH, Standard Units	5/12	7.4	6.7	6.9	4.0 – 9.0	0
Oil & Grease	2/3	<5	1.6	<2.9		
Total Suspended Solids	3/3	32	5.5	14		
		Discharge Point SD 380				
Flow, GPD	4/4	1000900	648600	781600		
pH, Standard Units	4/4	8.4	6.9	7.6	4.0 – 9.0	0
		Discharge Point SD 382				
Flow, GPD	12/12	111500	7300	52500		
pH, Standard Units	12/12	7.8	7.3	7.5	4.0 – 9.0	0
Oil & Grease	4/4	4.3	1.2	2.3		
Total Suspended Solids	3/4	9	1	<4.0		
		Discharge Point SD 390				
Flow, GPD	6/12	258300	106700	183100		
pH, Standard Units	6/12	6.9	6.5	6.7	4.0 – 9.0	0
Total Suspended Solids	4/4	15.0	3.5	7.5		
Oil & Grease	3/4	110	4.5	<30		
		Discharge Point SD 410				
Flow, GPD	1/1	44300	44300	44300		
pH, Standard Units	1/1	7.1	7.1	7.1	4.0 – 9.0	0

Table 1.1 (continued)

Parameter	Number of samples	Concentration[a]			Reference Value[b]	No. of values exceeding reference
		Max	Min	Avg		
		Discharge Point SD 430				
Flow, GPD	12/12	896400	56100	414300		
pH, Standard Units	12/12	7.7	7.0	7.3	4.0 – 9.0	0
Oil & Grease	3/4	18	1.5	<6.5		
Total Suspended Solids	2/4	6	1.3	<2.8		
		Discharge Point SD 490				
Flow, GPD	12/12	3833600	303100	1717000		
pH, Standard Units	12/12	7.3	6.7	7.1	4.0 – 9.0	0
Total Suspended Solids	3/4	4	1	<2.2		
		Discharge Point SD 510				
Flow, GPD	4/4	707500	441500	541500		
Total Suspended Solids	1/1	18.1	18.1	18.1		
pH, Standard Units	4/4	6.8	6.4	6.6	4.0 – 9.0	0
		Discharge Point SD 532				
Flow, GPD	1/1	25100	25100	25100		
pH, Standard Units	1/1	7.6	7.6	7.6		
		Discharge Point SD 570				
Flow, GPD	3/4	82200	57200	66500		
pH, Standard Units	3/4	7.0	6.9	7.0		
Total Suspended Solids	1/1	112	112	112		
		Discharge Point SD 660				
Flow, GPD	1/1	11700	11700	11700		
pH, Standard Units	1/1	7.5	7.5	7.5	4.0 – 9.0	0
		Discharge Point SD 690				
Flow, GPD	4/4	1718000	371300	1073600		
Total Suspended Solids	1/1	10.0	10.0	10.0		
pH, Standard Units	4/4	7.1	6.1	7.0	4.0 – 9.0	0
		Discharge Point SD 710				
Flow, GPD	12/12	1987300	127200	920200		
Total Suspended Solids	2/4	15.3	3.0	<5.6		
pH, Standard Units	12/12	7.3	6.7	7.0	4.0 – 9.0	0
		Discharge Point SD 724				
Flow, GPD	6/12	632100	43400	251500		
pH, Standard Units	6/12	7.7	6.9	7.5	4.0 – 9.0	0
Total Suspended Solids	3/4	58.3	7.7	24		
Oil & Grease	1/4	<5	1.11	<2.5		

Table 1.1 (continued)

Parameter	Number of samples	Concentration[a]			Reference Value[b]	No. of values Exceeding Reference
		Max	Min	Avg		
		Discharge Point SD 890				
Flow, GPD	3/4	194600	139600	160000		
pH, Standard Units	3/4	7.5	7.0	7.2	4.0 – 9.0	0
Total Suspended Solids	1/1	10.5	10.5	10.5		
		Discharge Point SD 900				
Flow, GPD	1/1	80300	80300	80300		
pH, Standard Units	1/1	7.3	7.3	7.3	4.0 – 9.0	0
		Discharge Point SD 992				
Flow, GPD	6/12	570500	30600	227400		
Total Suspended Solids	3/4	39	19.8	27		
pH, Standard Units	6/12	7.2	5.9	6.4	4.0 – 9.0	0
Oil & Grease	1/4	<5	1.7	<2.6		
		Discharge Point SD 996				
Flow, GPD	1/1	159100	159100	159100		
pH, Standard Units	1/1	7.2	7.2	7.2		

[a] – Units are mg/L unless otherwise noted

[b] - NPDES permit limit

Table 1.2. Radionuclide concentrations at ETTP discharges and surface water monitoring locations

Radionuclide	No. of samples	Concentration (pCi/L)				DCG	Percent of DCG	Sum of the fractions of the DCGs
		Max	Min	Median[a]	Average[a]			
				K-716				
U-234	2	5.7e-01	<3.2e-01	<4.5e-01	<4.5e-01	5.0e+02	8.9e-02	8.9e-04
U-238	2	6.6e-01	3.3e-01	3.0e-01	<8.0e-01	6.0e+02	8.0e-02	8.3e-04
All listed Isotopes								2.1e-03

[a]This calculated value includes sampling results that are at or below the detection limits and/or below background activities.
[b]Not applicable

Table 1.3. Radionuclide concentrations at ETTP discharges and surface water monitoring locations

Radionuclide	No. of samples	Concentration (pCi/L)				DCG	Percent of DCG	Sum of the fractions of the DCGs
		Max	Min	Median[a]	Average[a]			
K-901-A (settling basin for surface water runoff)								
Tc-99	2	1.3e+01	5.3e+00	9.4e-00	9.4e-00	1.0e+05	9.4e-03	9.4e-05
U-234	2	1.7e-00	8.0e-01	1.2e+00	1.2e+00	5.0e+02	2.5e-01	2.51e-03
U-235	2	1.1e-01	<7.2e-02	<9.2e-02	<9.2e-02	6.0e+02	1.5e-02	1.5e-04
U-238	2	1.4e+00	4.9e-01	9.5e-01	9.5e-01	6.0e+02	1.6e-01	1.6e-03
Alpha Activity		3.1e+00	5.8e-01	1.8e+00	1.8e+00	*b*	*b*	*b*
Beta Activity	2	9.8e+00	6.1e+00	8.0e+00	8.0e+00	*b*	*b*	*b*
All listed isotopes								4.3e-03

[a]This calculated value includes sampling results that are at or below the detection limits and/or below background activities.
[b]Not applicable

Table 1.4 Radionuclide concentrations at ETTP discharges and surface water monitoring locations

Radionuclide	No. of samples	Concentration (pCi/L)				DCG	Percent of DCG	Sum of the fractions of the DCGs
		Max	Min	Median[a]	Average[a]			
K-1007-B (settling basin for surface water runoff)								
Tc-99	2	1.3e+01	<5.6e+00	9.5e-00	9.5e-00	1.0e+05	9.5e-03	9.5e-05
U-234	2	1.1e-00	1.0e+00	1.0e+00	1.0e+00	5.0e+02	2.1e-01	2.1e-03
U-235	2	9.5e-02	<3.9e-02	6.7e-02	6.7e-02	6.0e+02	1.1e-02	1.1e-04
U-238	2	7.6e-01	6.9e-01	7.3e-01	7.3e-01	6.0e+02	1.2e-01	1.2e-03
Alpha Activity	2	2.6e+00	1.9e+00	2.3e+00	2.3e+00	*b*	*b*	*b*
Beta Activity	2	1.1e+00	6.9e+00	9.0e+00	9.0e+00	*b*	*b*	*b*
All listed isoptopes								3.5e-03

[a]This calculated value includes sampling results that are at or below the detection limits and/or below background activities.
[b]Not applicable

Table 1.5. Radionuclide concentrations at ETTP discharges and surface water monitoring locations

Radionuclide	No. of samples	Concentration (pCi/L)				DCG	Percent of DCG	Sum of the fractions of the DCGs
		Max	Min	Median[a]	Average[a]			
K-1407-J (treated effluents from Central Neutralization Facility and TSCA Incinerator)								
C-14	12	1.0e+09	0.0e+00	3.1e+03	4.0e+03	7.0e+04	5.6e-00	5.6e-02
Cs-137	12	1.3e+01	0.0e+00	0.0e+00	1.1e+00	3.0e+03	3.6e-02	3.6e-04
H-3	12	1.0e+04	0.0e+00	0.0e+00	1.6e+03	2.0e+06	8.1e-02	8.1e-04
Np-237	12	1.4e-01	0.0e+00	0.0e+00	1.2e-02	3.0e+01	3.9e-02	3.9e-04
Pu-239	12	2.0e-01	0.0e+00	0.0e+00	3.2e-02	3.0e+01	1.1e-01	1.1e-03
Tc-99	12	2.3e+04	6.7e+02	3.5e+03	5.8e+03	1.0e+05	5.8e+00	5.8e-02
Th-230	12	3.3e+01	0.0e+00	0.0e+00	2.8e+00	3.0e+02	9.2e-01	9.2e-03
U-234	12	1.4e+02	3.9e+00	2.8e+01	3.5e+01	0.0e+00	2.0e+00	7.0e-02
U-235	12	1.7e+01	0.0e+00	1.2e+00	2.8e+00	6.0e+02	4.6e-01	4.6e-03
U-236	12	4.6e+00	0.0e+00	0.0e+00	8.7e-01	5.0e+02	1.8e-01	1.8e-03
U-238	12	5.0e+02	6.1e+02	7.6e+01	9.9e+01	6.0e+02	1.7e+01	1.7e-01
Alpha Activity	12	6.4e+02	2.5e+01	8.0e+01	1.3e+02	*b*	*b*	*b*
Beta Activity	12	5.3e+03	2.2e+02	8.6e+02	1.5e+03	*b*	*b*	*b*
All listed Isotopes								3.7e-01

[a]This calculated value includes sampling results that are at or below the detection limits and/or below background activities.
[b]Not applicable

Table 1.6. Radionuclide concentrations at ETTP discharges and surface water monitoring locations

Radionuclide	No. of samples	Concentration (pCi/L)				DCG	Percent of DCG	Sum of the Fractions of the DCGs
		Max	Min	Median[a]	Average[a]			
K-1700 (Mitchell Branch)								
Tc-99	4	1.1e+02	9.2e+00	4.8e+01	5.4e+01	1.0e+05	5.4e-02	5.4e-04
U-234	4	4.1e+01	7.6e+00	1.6e+01	2.0e+01	5.0e+02	4.0e+00	4.0e-02
U-235	4	2.9e+00	<3.3e-01	<1.3e+00	<1.5e+00	6.0e+02	2.4e-01	2.4e-03
U-238	4	2.2e+01	3.7e+00	1.1e+01	1.2e+01	6.0e+02	2.0e+00	2.0e-02
Alpha Activity	4	6.5e+01	8.8e+00	2.1e+01	2.9e+01	*b*	*b*	*b*
Beta Activity	4	6.8e+01	1.1e+01	3.6e+01	3.8e+01	*b*	*b*	*b*
All listed Isotopes								6.4e-02

[a]This calculated value includes sampling results that are at or below the detection limits and/or below background activities.
[b]Not applicable

Table 1.7 Radionuclide concentrations at ETTP discharges and surface water monitoring locations

Radionuclide	No. of samples	Concentration (pCi/L)				DCG	Percent of DCG	Sum of the Fractions of the DCGs
		Max	Min	Median[a]	Average[a]			
				K-1710				
U-234	2	3.5e-01	2.8e-01	<3.2e-01	<3.2e-01	5.0e+02	6.3e-02	6.3e-04
All listed Isotopes								1.2e-03

[a]This calculated value includes sampling results that are at or below the detection limits and/or below background activities.
[b]Not applicable

Table 1.8. Radionuclide concentrations at ETTP discharges and surface water monitoring locations

Radionuclide	No. of samples	Concentration (pCi/L)				DCG	Percent of DCG	Sum of the Fractions of the DCGs
		Max	Min	Median[a]	Average[a]			
				MIK 1.4				
U-234	4	4.6e-01	<2.0e-01	<3.3e-01	<3.3e-01	5.0e+02	6.6e-02	6.6e-04
U-235	4	<4.0e-01	<-5.9e-02	<1.2e-01	<1.7e-01	6.0e+02	2.9e-02	2.9e-04
All listed Isotopes								1.1e-03

[a]This calculated value includes sampling results that are at or below the detection limits and/or below background activities.

Table 1.9. 2006 ETTP parameters detected at CRK-16

Parameter	Number detected/ Number of Samples	Detected results			Reference Value[a]	Number of values exceeding Reference
		Max	Min	Avg		
Aluminum (mg/L)	2/2	0.17	0.11	0.14		
Calcium (mg/L)	2/2	44	34	39		
Dissolved oxygen (mg/L)	2/2	11	9.3	10	5.0 min	0
Magnesium (mg/L)	2/2	12	10	11		
Manganese (mg/L)	2/2	0.076	0.042	0.059		
pH (standard units)	2/2	8.0	7.5	7.8	6.5-8.5	0
Potassium (mg/L)	2/2	1.9	1.8	1.9		
Sodium (mg/L)	2/2	7.2	5.8	6.5		
Temperature (C^o)	2/2	17	13	15		
Zinc (mg/L)	1/2	0.063	0.007	0.035	0.12	0

[a] All reference values are Tennessee Water Quality Criteria for fish and aquatic life.

Table 1.10. 2006 ETTP parameters detected at CRK-23

Parameter	Number detected/ number of Samples	Detected results			Reference Value[a]	Number of values Exceeding Reference
		Max	Min	Avg		
Aluminum (mg/L)	1/2	0.16	0.081	0.12		
Calcium (mg/L)	2/2	43	36	40		
Dissolved oxygen (mg/L)	2/2	11	9.3	9.9	5.0 min	0
Iron (mg/L)	1/2	0.24	0.054	0.15		
Magnesium (mg/L)	2/2	12	11	12		
Manganese (mg/L)	2/2	0.064	0.025	0.045		
pH (standard units)	2/2	7.8	7.5	7.7	6.5-8.5	0
Potassium (mg/L)	2/2	1.9	1.8	1.9		
Sodium (mg/L)	2/2	7.4	6.3	6.9		
Temperature (C^o)	2/2	17	13	15		
Toluene (mg/L)	1/2	1.1	10	1.1	200,000	0

[a] All reference values are Tennessee Water Quality Criteria for fish and aquatic life.

Table 1.11. 2006 ETTP parameters detected at K-716

Parameter	Number detected/ Number of Samples	Detected results			Reference Value[a]	Number of values Exceeding Reference
		Max	Min	Avg		
Dissolved Oxygen (mg/L)	2/2	9.4	8.8	9.1	5.0 min	0
pH (standard units)	2/2	7.4	6.8	7.1	6.5 – 8.5	0
Temperature (C^o)	2/2	17	14	16		

[a] All reference values are Tennessee Water Quality Criteria for fish and aquatic life.

Table 1.12. 2006 ETTP parameters detected at K-901-A

Parameter	Number detected/ number of Samples	Detected Results			Reference Value[a]	Number of values exceeding reference
		Max	Min	Avg		
Aluminum (mg/L)	2/2	0.17	0.12	0.15		
Calcium (mg/L)	2/2	40	34	37		
Dissolved Oxygen (mg/L)	2/2	7.7	6.1	6.9	5.0 min	0
Iron (mg/L)	1/2	0.27	0.22	0.25		
Magnesium (mg/L)	2/2	11	8.2	9.6		
Manganese (mg/L)	2/2	0.12	0.035	0.078		
pH (standard units)	2/2	7.5	7.1	7.3	6.5-8.5	0
Potassium (mg/L)	2/2	2.1	2.0	2.1		
Sodium (mg/L)	2/2	2.4	1.2	1.8		
Temperature (C^o)	2/2	2.3	14	18		
Zinc (mg/L)	2/2	0.015	0.0055	0.01	0.12	0

[a] All reference values are Tennessee Water Quality Criteria for fish and aquatic life.

Table 1.13. 2006 ETTP parameters detected at K-1007-B

Parameter	Number detected/ number of samples	Detected results			Reference Value[a]	Number of values exceeding reference
		Max	Min	Avg		
Aluminum (mg/L)	2/2	0.25	0.11	0.18		
Calcium (mg/L)	2/2	44	40	42		
Dissolved Oxygen (mg/L)	2/2	10	7.5	9.0	5.0 min	0
Iron (mg/L)	2/2	0.46	0.3	0.38		
Magnesium (mg/L)	2/2	12	11	12		
Manganese (mg/L)	2/2	0.068	0.026	0.047		
pH (standard units)	2/2	7.8	7.6	7.7	6.5 – 8.5	0
Potassium (mg/L)	2/2	2.7	1.2	2.0		
Sodium (mg/L)	2/2	3.4	0.82	2.1		
Temperature (C^o)	2/2	23	13	18		
Zinc (mg/L)	2/2	0.0063	0.0052	0.0058	0.12	0

[a] All Reference values are Tennessee Water Quality Standards for fish and aquatic life.

Table 1.14. 2006 ETTP parameters detected at K-1700

Parameter	Number detected/ number of Samples	Detected results			Reference Value[a]	Number of values exceeding reference
		Max	Min	Avg		
1,1-Dichloroethane (µg/L)	4/4	2.5	1.1	1.7		
1,2 Dichloroethane (µg/L)	1/4	1.1	0.27	1.4	370	0
1,1 Dichloroethene (µg/L)	3/4	1.8	0.86	1.3	32	0
Aluminum (mg/L)	4/4	0.34	0.022	0.14		
Barium (mg/L)	4/4	0.064	0.054	0.058		
Calcium (mg/L)	4/4	80	60	72		
Carbon tetrachloride (µg/L)	1/4	4.8	<0.57	1.7	16	0
Chloroform (µg/L)	4/4	3.7	<0.91	<2.1	4.7	0
Chromium (mg/L)	3/4	0.095	0.0018	0.027	0.1	0
cis-1,2 Dichloroethene (µg/L)	4/4	57	36	47		
Copper (mg/L)	1/4	0.0075	0.00027	0.0024	0.013	0
Dissolved Oxygen (mg/L)	4.4	8.5	3.3	7.0	5.0 min	1
Iron (mg/L)	4/4	0.66	0.14	0.3		
Magnesium (mg/L)	4/4	14	12	13		
Manganese (mg/L)	4/4	0.22	0.14	0.18		
Nickel (mg/L)	3/4	0.031	0.0079	0.016	1.4	0
Potassium (mg/L)	4/4	3.1	2.2	2.7		
Sodium (mg/L)	3/4	9.5	5.7	8.1		
Temperature (C^o)	4/4	23	6.8	15		
Tetrachloroethene (µg/L)	1/9	2.2	0.78	17	33	0
Trichloroethene (µg/L)	4/4	64	37	53	810	0
Vinyl Chloride (µg/L)	4/4	6.4	3.6	4.9	5300	
pH (standard units)	4/4	7.4	6.9	7.2	6.5 – 8.5	0
Zinc (mg/L)	4/4	0.012	0.0095	0.011	0.12	0

[a] All Reference values are Tennessee Water Quality Standards for fish and aquatic life.

Table 1.15. 2006 ETTP parameters detected at K-1710

Parameter	Number detected/ number of Samples	Detected results			Reference Value[a]	Number of values exceeding reference
		Max	Min	Avg		
Dissolved Oxygen (mg/L)	2/2	10	8.9	9.7	5.0 min	0
pH (standard units)	2/2	7.1	6.9	7.0	6.5 – 8.5	0
Temperature (C^o)	2/2	15	11	13		

[a] All Reference values are Tennessee Water Quality Standards for fish and aquatic life.

Table 1.16 2006 ETTP parameters detected at MIK 1.4

Parameter	Number detected/ number of Samples	Detected results			Reference Value[a]	Number of values exceeding reference
		Max	Min	Avg		
1,2 Dichloroethane (µg/L)	1/4	1.6	0.12	0.93	370	0
Aluminum (mg/L)	1/4	0.31	0.064	0.13		
Barium (mg/L0	2/4	0.066	0.044	0.051		
Calcium (mg/L)	4/4	25	16	20		
Dissolved Oxygen (mg/L)	4/4	9.9	5.3	8.0	5.0 min.	0
Iron (mg/L)	4/4	0.95	0.18	0.43		
Magnesium (mg/L)	4/4	14	8.1	10		
Manganese (mg/L)	4/4	0.28	0.11	0.20		
pH (standard units)	4/4	7.4	7.0	7.2	6.5 – 8.5	0
Potassium (mg/L)	4/4	1.02	0.86	0.93		
Sodium (mg/L)	4/4	1.2	0.63	0.96		
Temperature (C^o)	4/4	24	4.6	14		
Zinc (mg/L)	4/4	0.012	<0.0012	<0.0052	0.12	0

[a] All Reference values are Tennessee Water Quality Standards for fish and aquatic life.

Table 2.1. Radiological airborne emissions from all sources at ORNL, 2006 (Ci)[a]

Isotope	Stack							
	X-2026	X-3020	X-3039	X-7503	X-7911	X-8915	Total Minor Sources	Total ORNL
^{225}Ac							1.20E-06	1.20E-06
^{228}Ac							1.09E-05	1.09E-05
^{228}Ac							1.45E-08	1.45E-08
^{110m}Ag							2.51E-06	2.51E-06
^{241}Am	2.01E-07	1.44E-07	7.28E-07	5.41E-09	8.71E-09		7.27E-07	1.81E-06
^{243}Am							2.52E-11	2.52E-11
^{39}Ar							1.80E-05	1.80E-05
^{41}Ar					2.29E+02	5.00E-02	3.36E-02	2.29E+02
^{43}Ar[b]						5.10E-01		5.10E-01
^{44}Ar[b]						2.40E-01		2.40E-01
^{133}Ba							7.43E-09	7.43E-09
^{139}Ba					2.71E-01			2.71E-01
^{140}Ba					1.25E-04		4.90E-16	1.25E-04
^{7}Be	8.00E-08	1.67E-07	8.86E-06	1.18E-08	3.78E-07		4.68E-07	9.97E-06
^{212}Bi							4.44E-08	4.44E-08
^{212}Bi							3.34E-08	3.34E-08
^{213}Bi							1.12E-05	1.12E-05
^{214}Bi							3.43E-08	3.43E-08
^{72}Br[c]						3.00E-02		3.00E-02
^{11}C						1.25E+00	4.48E-02	1.29E+00
^{14}C							1.20E-07	1.20E-07
^{139}Ce							2.08E-09	2.08E-09
^{141}Ce							3.45E-08	3.45E-08
^{144}Ce							4.75E-11	4.75E-11
^{249}Cf							7.95E-14	7.95E-14
^{250}Cf							3.61E-07	3.61E-07
^{251}Cf							1.47E-14	1.47E-14
^{252}Cf					9.74E-10		1.00E-07	1.01E-07
^{242}Cm							3.96E-11	3.96E-11
^{243}Cm							3.69E-11	3.69E-11
^{244}Cm	1.22E-06	1.86E-08	1.55E-07	2.69E-08	8.50E-08		6.68E-05	6.83E-05
^{245}Cm							1.73E-09	1.73E-09
^{246}Cm							1.79E-09	1.79E-09
^{248}Cm							1.66E-13	1.66E-13
^{56}Co							9.99E-09	9.99E-09
^{57}Co							1.05E-06	1.05E-06
^{58}Co							1.20E-09	1.20E-09
^{60}Co			2.53E-06				1.52E-04	1.55E-04
^{51}Cr							1.08E-08	1.08E-08
^{134}Cs							7.25E-05	7.25E-05
^{136}Cs							2.76E-05	2.76E-05
^{137}Cs	3.76E-06	9.78E-07	2.26E-04	1.66E-08	8.30E-05		3.51E-03	3.83E-03

Table 2.1 (continued)

Isotope	Stack						Total Minor Sources	Total ORNL
	X-2026	X-3020	X-3039	X-7503	X-7911	X-8915		
^{138}Cs					1.21E+03			1.21E+03
^{152}Eu							1.90E-05	1.90E-05
^{154}Eu							1.05E-04	1.05E-04
^{155}Eu							2.71E-05	2.71E-05
^{55}Fe							3.27E-06	3.27E-06
^{59}Fe							8.80E-06	8.80E-06
^{67}Ga							1.82E-15	1.82E-15
^{153}Gd							3.00E-09	3.00E-09
^{68}Ge							3.75E-15	3.75E-15
^{3}H	1.39E+00		3.96E+01	1.54E+00	1.96E+01	1.10E-01	1.67E+00	6.39E+01
^{172}Hf							6.85E-14	6.85E-14
^{175}Hf							8.09E-13	8.09E-13
^{178m}Hf							5.14E-15	5.14E-15
^{181}Hf							3.51E-15	3.51E-15
^{203}Hg							4.04E-12	4.04E-12
^{117}I[d]						5.00E-02		5.00E-02
^{119}I[d]						4.00E-02		4.00E-02
^{124}I							5.27E-16	5.27E-16
^{125}I							5.22E-06	5.22E-06
^{126}I							2.33E-08	2.33E-08
^{129}I							2.60E-05	2.60E-05
^{131}I					5.19E-02		2.10E-04	5.21E-02
^{132}I					5.83E-01			5.83E-01
^{133}I					2.76E-01			2.76E-01
^{134}I					8.06E-01			8.06E-01
^{135}I					8.26E-01			8.26E-01
^{192}Ir							1.04E-08	1.04E-08
^{40}K							8.08E-05	8.08E-05
^{75}Kr[e]						3.00E-01		3.00E-01
^{77}Kr[f]						2.50E-01		2.50E-01
^{81}Kr							1.08E-12	1.08E-12
^{85}Kr					1.80E+02		9.17E-02	1.80E+02
^{85m}Kr					1.11E-01			1.11E-01
^{87}Kr					5.67E+01	1.10E-01		5.68E+01
^{88}Kr					5.04E+01			5.04E+01
^{89}Kr					2.52E+01	6.30E-01		2.58E+01
^{140}La					2.41E-03		4.63E-05	2.46E-03
^{173}Lu							7.57E-13	7.57E-13
^{174}Lu							1.60E-13	1.60E-13
^{177m}Lu							1.34E-14	1.34E-14
^{54}Mn							2.86E-06	2.86E-06
^{93}Mo							3.11E-08	3.11E-08

Table 2.1 (continued)

Isotope	Stack						Total Minor Sources	Total ORNL
	X-2026	X-3020	X-3039	X-7503	X-7911	X-8915		
^{99}Mo							6.20E-03	6.20E-03
^{13}N						3.00E-02	1.69E-01	1.99E-01
^{22}Na							4.53E-09	4.53E-09
^{92}Nb							6.24E-09	6.24E-09
^{92m}Nb							3.41E-13	3.41E-13
^{93m}Nb							4.88E-09	4.88E-09
^{94}Nb							2.37E-06	2.37E-06
^{95}Nb							8.55E-09	8.55E-09
^{59}Ni							6.00E-11	6.00E-11
^{63}Ni							1.60E-08	1.60E-08
^{239}Np							1.03E-11	1.03E-11
^{15}O						1.00E-01		1.00E-01
^{185}Os							2.18E-12	2.18E-12
^{191}Os			1.40E-02					1.40E-02
^{210}Pb							1.11E-06	1.11E-06
^{212}Pb			9.27E-01	7.08E-02			1.87E-03	1.00E+00
^{212}Pb	2.23E-01				6.67E-02		5.95E-06	2.90E-01
^{214}Pb							9.58E-09	9.58E-09
^{144}Pm							7.47E-09	7.47E-09
^{238}Pu	7.86E-08	1.07E-08	8.94E-08	3.91E-09			1.05E-06	1.23E-06
^{239}Pu	2.48E-07	1.20E-07	1.66E-06	1.43E-08	5.39E-09		9.70E-07	3.02E-06
^{240}Pu							6.75E-10	6.75E-10
^{241}Pu							6.48E-10	6.48E-10
^{242}Pu							6.97E-13	6.97E-13
^{244}Pu							1.88E-09	1.88E-09
^{225}Ra							1.00E-06	1.00E-06
^{226}Ra							4.55E-05	4.55E-05
^{228}Ra							4.27E-08	4.27E-08
^{228}Ra							1.45E-08	1.45E-08
^{88}Rb							1.76E-13	1.76E-13
^{89}Rb							2.10E-13	2.10E-13
^{188}Re							1.51E-05	1.51E-05
^{103}Ru							5.35E-11	5.35E-11
^{106}Ru							2.38E-05	2.38E-05
^{35}S							5.00E-06	5.00E-06
^{124}Sb							1.01E-07	1.01E-07
^{125}Sb							6.33E-06	6.33E-06
^{126}Sb							1.90E-16	1.90E-16
^{46}Sc							2.67E-10	2.67E-10
^{75}Se			2.20E-03					2.20E-03
^{113}Sn							4.00E-14	4.00E-14
^{85}Sr							2.00E-09	2.00E-09

Table 2.1 (continued)

Isotope	Stack							
	X-2026	X-3020	X-3039	X-7503	X-7911	X-8915	Total Minor Sources	Total ORNL
^{89}Sr							3.82E-05	3.82E-05
^{90}Sr	4.14E-07	6.65E-07	3.79E-05	9.98E-09	5.55E-06		2.08E-03	2.13E-03
^{91}Sr							5.48E-08	5.48E-08
^{92}Sr							1.90E-13	1.90E-13
^{179}Ta							9.49E-14	9.49E-14
^{182}Ta							3.40E-08	3.40E-08
^{95m}Tc							2.30E-14	2.30E-14
^{96}Tc							1.97E-14	1.97E-14
^{99}Tc							2.41E-05	2.41E-05
^{99m}Tc							1.20E-16	1.20E-16
^{125m}Te							1.20E-06	1.20E-06
^{129m}Te							3.76E-07	3.76E-07
^{228}Th	3.11E-08	4.22E-09			2.57E-09		6.18E-11	3.80E-08
^{228}Th			8.43E-09	1.03E-09			3.83E-06	3.84E-06
^{229}Th							1.02E-08	1.02E-08
^{230}Th	5.83E-09	3.94E-09			1.74E-08		1.02E-09	2.82E-08
^{230}Th			1.36E-08	3.09E-09			1.16E-08	2.83E-08
^{232}Th	3.01E-10	1.08E-09			3.00E-09		8.97E-12	4.39E-09
^{232}Th			3.48E-09	7.27E-11			1.08E-05	1.08E-05
^{234}Th							2.34E-05	2.34E-05
^{234}Th							2.51E-07	2.51E-07
^{208}Tl							5.46E-11	5.46E-11
^{208}Tl							2.54E-06	2.54E-06
^{232}U							8.07E-16	8.07E-16
^{233}U							1.06E-05	1.06E-05
^{234}U	1.95E-07	6.91E-08			2.09E-07		1.36E-04	1.36E-04
^{234}U			2.91E-07	1.86E-08			1.07E-05	1.10E-05
^{235}U	2.76E-09	1.69E-09	2.39E-08	1.70E-10	3.40E-08		1.83E-06	1.89E-06
^{236}U							3.26E-07	3.26E-07
^{238}U	3.68E-09	7.75E-09			7.74E-08		2.04E-05	2.05E-05
^{238}U			4.52E-08	1.63E-09			1.52E-06	1.56E-06
^{49}V							2.30E-10	2.30E-10
^{181}W							5.75E-09	5.75E-09
^{185}W							3.33E-08	3.33E-08
^{188}W							1.01E-05	1.01E-05
$^{118}Xe^{g}$						3.00E-02		3.00E-02
$^{119}Xe^{g}$						2.30E-01		2.30E-01
$^{121}Xe^{h}$						5.00E-02		5.00E-02
^{123}Xe						8.00E-02		8.00E-02
^{127}Xe							7.28E-09	7.28E-09
^{129m}Xe							2.29E-09	2.29E-09
^{131m}Xe					4.79E+00		2.82E-06	4.79E+00

Table 2.1 (continued)

Isotope	Stack						Total Minor Sources	Total ORNL
	X-2026	X-3020	X-3039	X-7503	X-7911	X-8915		
^{133}Xe			4.50E-06		1.59E+00		2.42E-08	1.59E+00
^{133m}Xe					1.84E+00			1.84E+00
^{135}Xe					2.57E+01	4.00E-02		2.57E+01
^{135m}Xe					1.76E+01			1.76E+01
^{137}Xe					9.91E+01			9.91E+01
^{138}Xe					1.27E+02			1.27E+02
^{87}Y							1.90E-16	1.90E-16
^{88}Y							2.81E-06	2.81E-06
^{90}Y	4.14E-07	6.65E-07	3.79E-05	9.98E-09	5.55E-06		2.08E-03	2.13E-03
^{65}Zn							6.33E-06	6.33E-06
^{88}Zr							8.15E-08	8.15E-08
^{95}Zr							6.27E-06	6.27E-06

[a] 1 Ci = 3.7E+10 Bq
[b] Ar^{41} was used as a surrogate for Ar^{43} and Ar^{44}
[c] Y^{86} was used as a surrogate for Br^{62}
[d] I^{122} was used as a surrogate for I^{117} and I^{119}
[e] Rb^{86} was used as a surrogate for Kr^{75}
[f] Ga^{68} was used as a surrogate for Kr^{77}
[g] Cs^{126} was used as a surrogate for Xe^{118} and Xe^{119}
[h] Xe^{123} was used as a surrogate for Xe^{121}

Table 2.2. Constituents Detected in Exit Pathway Groundwater at ORNL, 2006 (a)

Parameter	Wet Season (b)	Dry Season (b)	Reference value [ref](c)
Well 857 – WOC Discharge Area Exit Pathway			
Field measurements			
Conductivity (mS/cm)	0.01	0.02	n/a
Dissolved Oxygen (ppm)	8.3	7.8	n/a
pH (Std Unit)	5.0	4.6	n/a
RedOx (mV)	4.0	200	n/a
Temperature (deg C)	15	15	30.5[1]
Turbidity (NTU)	0.0	0.0	1[2]
Metals (mg/L)			
Aluminum	1.7	3.5	(0.05, 0.2)[3]
Barium	0.0094	0.027	2[1]
Beryllium	0.0001	0.00022	0.004[1]
Boron	<0.004	0.011	n/a
Cadmium	<0.0001	0.00018	0.005[1]
Calcium	0.14	0.41	n/a
Chromium	0.023	0.021	1[1]
Cobalt	0.00071	0.0012	n/a
Copper	0.0014	0.0022	1.3[2]
Iron	1.4	2.1	0.3[3]
Lead	0.0053	0.013	0.005[1]
Lithium	<0.002	0.0022	n/a
Magnesium	0.53	1.5	n/a
Manganese	0.039	0.074	0.05[3]
Molybdenum	0.0003	0.00069	n/a
Nickel	0.0071	0.0077	0.1[1]
Phosphorous	0.024	0.035	n/a
Potassium	0.54	1.2	n/a
Silicon		9.4	n/a
Sodium	0.21	0.75	n/a
Strontium	<0.002	0.004	n/a
Sulfur	E0.79	0.048	n/a

Table 2.2 (continued)

Parameter	Wet Season (b)	Dry Season (b)	Reference value [ref](c)
Thallium	<0.0004	0.00072	0.002[1]
Thorium	0.00025	0.00071	n/a
Titanium	0.037	0.036	n/a
Uranium	<0.00005	0.000076	n/a
Vanadium	0.0066	0.0021	n/a
Zinc	0.0064	0.024	5[3]
Zirconium	0.00082	0.013	n/a
Radionuclides (pCi/L) (d)			
Alpha activity	8.3*	U0.93	15[2]
Lead-214		11*	8,000[4]
Tritium	910*	470*	20,000[2]
Semi-volatile organics (ug/L) (e)			
Benzyl alcohol	J6.1	U10	n/a
Well 858 – WOC Discharge Area Exit Pathway			
Field measurements			
Conductivity (mS/cm)	0.14	0.21	n/a
Dissolved Oxygen (ppm)	5.8	1.5	n/a
pH (Std Unit)	8.3	8.2	n/a
RedOx (mV)	-94	83	n/a
Temperature (deg C)	16	15	30.5[1]
Turbidity (NTU)	0.1	0.0	1[2]
Metals (mg/L)			
Aluminum	0.016	0.01	(0.05, 0.2)[3]
Barium	0.11	0.12	2[1]
Boron	0.0049	0.0094	n/a
Calcium	31	29	n/a
Chromium	<0.001	0.0021	1[1]
Cobalt	0.00012	<0.0001	n/a
Copper	0.0005	0.0004	1.3[2]

Table 2.2 (continued)

Parameter	Wet Season (b)	Dry Season (b)	Reference value [ref](c)
Iron	0.097	0.14	0.3[3]
Lithium	0.0052	0.0059	n/a
Magnesium	6.9	6.9	n/a
Manganese	0.0017	<0.001	0.05[3]
Molybdenum	0.00031	0.00032	n/a
Nickel	0.00091	0.0011	0.1[1]
Phosphorous	0.023	0.023	n/a
Potassium	0.97	1.0	n/a
Silicon	7.8	7.1	n/a
Sodium	5.0	4.9	n/a
Strontium	0.089	0.091	n/a
Sulfur	4.3	4.1	n/a
Uranium	0.00011	0.00014	n/a
Zinc	0.0049	0.0038	5[3]
Zirconium	<0.0005	0.0014	n/a
Radionuclides (pCi/L) (d)			
Bismuth-214		14*	24,000[4]
Lead-214		9.6*	8,000[4]
Potassium-40	U39*	57*	280[4]
Semi-volatile organics (ug/L) (e)			
Benzyl alcohol	J5.7	U10	n/a
Bis(2-ethylhexyl)phthalate	U10	J4.9	n/a
Volatile organics (ug/L)			
Acetone	U5.0	J3.7	n/a
Well 1190 – WOC Discharge Area Exit Pathway			
Field measurements			
Conductivity (mS/cm)	0.77	0.78	n/a
Dissolved Oxygen (ppm)	2.3	1.9	n/a
pH (Std Unit)	6.8	7.0	n/a
RedOx (mV)	-240	-170	n/a

Table 2.2 (continued)

Parameter	Wet Season (b)	Dry Season (b)	Reference value [ref](c)
Temperature (deg C)	17	18	30.5[1]
Turbidity (NTU)	0.5	0.0	1[2]
Metals (mg/L)			
Aluminum	<0.005	0.0097	(0.05, 0.2)[3]
Barium	0.76	E0.73	2[1]
Boron	0.038	0.035	n/a
Calcium	150	140	n/a
Cobalt	0.0003	0.00037	n/a
Copper	0.001	0.00066	1.3[2]
Iron	0.62	E0.69	0.3[3]
Lithium	0.022	0.02	n/a
Magnesium	18	E19	n/a
Manganese	0.09	E0.068	0.05[3]
Nickel	0.0041	0.0054	0.1[1]
Potassium	2.0	1.9	n/a
Silicon	8.7	8.7	n/a
Silver	<0.0002	0.00032	0.1[3]
Sodium	E13	E12	n/a
Strontium	0.47	0.53	n/a
Sulfur	0.51	0.19	n/a
Titanium	<0.002	0.0024	n/a
Uranium	0.00046	0.00034	n/a
Zinc	0.013	0.012	5[3]
Radionuclides (pCi/L) (d)			
Tritium	53,000*	29,000*	20,000[2]
Semi-volatile organics (ug/L) (e)			
Bis(2-ethylhexyl)phthalate	34	U10	n/a
Volatile organics (ug/L)			
Acetone	U5.0	J1.5	n/a
Toluene	J0.29	U1.0	1,000[1]

Table 2.2 (continued)

Parameter	Wet Season (b)	Dry Season (b)	Reference value [ref](c)
Well 1191 – WOC Discharge Area Exit Pathway			
Field measurements			
Conductivity (mS/cm)	0.48	0.62	n/a
Dissolved Oxygen (ppm)	0.9	2.2	n/a
pH (Std Unit)	6.8	7.0	n/a
RedOx (mV)	-180	-170	n/a
Temperature (deg C)	17	20	30.5[1]
Turbidity (NTU)	0.3	1.0	1[2]
Metals (mg/L)			
Aluminum	0.018	0.051	(0.05, 0.2)[3]
Arsenic	0.002	<0.0015	0.01[1]
Barium	0.21	E0.14	2[1]
Boron	0.022	0.028	n/a
Calcium	64	76	n/a
Cobalt	0.00081	0.00093	n/a
Copper	0.00081	0.00065	1.3[2]
Iron	11	E3.0	0.3[3]
Magnesium	13	E19	n/a
Manganese	0.35	E0.36	0.05[3]
Molybdenum	0.00069	0.00031	n/a
Nickel	0.0086	0.021	0.1[1]
Phosphorous	0.093	0.039	n/a
Potassium	3.5	3.8	n/a
Silicon	3.5	3.5	n/a
Sodium	E15	E13	n/a
Strontium	0.13	0.15	n/a
Sulfur	2.9	1.3	n/a
Titanium	<0.002	0.0024	n/a
Uranium	0.00082	0.0021	n/a
Zinc	0.026	0.0045	5[3]
Zirconium	0.0019	0.0016	n/a

Table 2.2 (continued)

Parameter	Wet Season (b)	Dry Season (b)	Reference value [ref](c)
Radionuclides (pCi/L) (d)			
Beta activity	330*	340*	50[2]
Strontium-89/90	150*	140*	40[4]
Tritium	29,000*	37,000*	20,000[2]
Semi-volatile organics (ug/L)			
Bis(2-ethylhexyl)phthalate	70	U11	n/a
Volatile organics (ug/L)			
Acetone	U5.0	J2.2	n/a
Toluene	J0.27	U1.0	1,000[1]
Well 1239 – WOC Discharge Area Exit Pathway			
Field measurements			
Conductivity (mS/cm)	0.82	0.82	n/a
Dissolved Oxygen (ppm)	1.6	1.4	n/a
pH (Std Unit)	9.5	9.5	n/a
RedOx (mV)	-150	34	n/a
Temperature (deg C)	15	15	30.5[1]
Turbidity (NTU)	0.5	0.0	1[2]
Metals (mg/L)			
Aluminum	0.29	0.34	(0.05, 0.2)[3]
Arsenic	0.0025	0.0027	0.01[1]
Barium	0.062	0.051	2[1]
Boron	0.77	0.71	n/a
Calcium	0.89	0.86	n/a
Copper	0.0031	0.0019	1.3[2]
Iron	0.15	0.13	0.3[3]
Lead	0.00054	<0.0005	0.005[1]
Lithium	0.035	0.033	n/a
Magnesium	0.21	0.23	n/a
Manganese	0.003	0.0021	0.05[3]
Molybdenum	0.0022	0.0022	n/a

Table 2.2 (continued)

Parameter	Wet Season (b)	Dry Season (b)	Reference value [ref](c)
Nickel	0.0014	0.00067	0.1[1]
Phosphorous	0.064	0.074	n/a
Potassium	1.8	1.8	n/a
Silicon	4.7	5.0	n/a
Sodium	E220	210	n/a
Strontium	0.055	0.056	n/a
Sulfur	11	11	n/a
Thorium	<0.0002	0.00033	n/a
Titanium	0.0082	0.0072	n/a
Uranium	0.0015	0.0015	n/a
Zinc	0.011	0.0057	5[3]
Zirconium	0.0022	0.0025	n/a
Semi-volatile organics (ug/L) (e)			
Bis(2-ethylhexyl)phthalate	37	38	n/a
Volatile organics (ug/L)			
Acetone	U5.0	J1.3	n/a
Well 1198 – 7000 Area/Bearden Creek Watershed			
Field measurements			
Conductivity (mS/cm)	0.56	0.9	n/a
Dissolved Oxygen (ppm)	2.9	9.1	n/a
pH (Std Unit)	6.4	6.7	n/a
RedOx (mV)	-290	87	n/a
Temperature (deg C)	16	16	30.5[1]
Turbidity (NTU)	0.4	12	1[2]
Metals (mg/L)			
Aluminum	0.23	3.5	(0.05, 0.2)[3]
Antimony	0.0012	<0.0005	0.006[1]
Barium	0.03	0.041	2[1]
Beryllium	<0.0001	0.00018	0.004[1]
Boron	0.0057	0.016	n/a

Table 2.2 (continued)

Parameter	Wet Season (b)	Dry Season (b)	Reference value [ref](c)
Cadmium	<0.0001	0.00021	0.005[1]
Calcium	120	130	n/a
Chromium	<0.001	0.016	1[1]
Cobalt	0.00027	0.0012	n/a
Copper	0.0012	0.0034	1.3[2]
Iron	0.61	3.3	0.3[3]
Lead	<0.0005	0.0024	0.005[1]
Lithium	0.002	0.0054	n/a
Magnesium	4.0	5.7	n/a
Manganese	0.0038	0.046	0.05[3]
Molybdenum	0.00016	0.00032	n/a
Nickel	0.0033	0.012	0.1[1]
Phosphorous	<0.02	0.053	n/a
Potassium	1.4	1.9	n/a
Silicon	4.1	10	n/a
Silver	0.00048	0.0026	0.1[3]
Sodium	2.4	3.5	n/a
Strontium	0.16	0.2	n/a
Sulfur	3.9	3.1	n/a
Thallium	0.00049	0.0005	0.002[1]
Thorium	0.0012	0.001	n/a
Titanium	0.0035	0.026	n/a
Uranium	0.00028	0.00044	n/a
Zinc	0.0044	0.01	5[3]
Zirconium	0.0021	0.0017	n/a
Radionuclides (pCi/L) (d)			
Americium-241	9.6*	1.2[4]	
Tritium	1,000*	1,200*	20,000[2]
Semi-volatile organics (ug/L) (e)			
Bis(2-ethylhexyl)phthalate	J4.1	U10	n/a

Table 2.2 (continued)

Parameter	Wet Season (b)	Dry Season (b)	Reference value [ref](c)
Well 1199 – 7000 Area/Bearden Creek Watershed			
Field measurements			
Conductivity (mS/cm)	0.41	0.49	n/a
Dissolved Oxygen (ppm)	4.9	1.9	n/a
pH (Std Unit)	8.0	7.9	n/a
RedOx (mV)	-370	-320	n/a
Temperature (deg C)	16	16	30.5[1]
Turbidity (NTU)	0.3	4.0	1[2]
Metals (mg/L)			
Aluminum	0.01	0.0076	(0.05, 0.2)[3]
Antimony	0.001	<0.0005	0.006[1]
Barium	0.089	0.094	2[1]
Boron	0.23	0.24	n/a
Calcium	30	38	n/a
Cobalt	0.00015	0.00018	n/a
Copper	0.0006	0.00037	1.3[2]
Iron	0.11	0.19	0.3[3]
Lithium	0.011	0.0092	n/a
Magnesium	35	41	n/a
Manganese	<0.001	0.0014	0.05[3]
Nickel	0.00063	0.00075	0.1[1]
Potassium	4.6	4.5	n/a
Silicon	7.9	8.4	n/a
Sodium	6.3	5.9	n/a
Strontium	2.7	3.0	n/a
Sulfur	1.4	1.5	n/a
Thorium	0.00037	<0.0002	n/a
Zinc	0.0059	0.0026	5[3]
Zirconium	0.0014	<0.0005	n/a

Table 2.2 (continued)

Parameter	Wet Season (b)	Dry Season (b)	Reference value [ref](c)
Radionuclides (pCi/L) (d)			
Tritium	2,600*	2,300*	20,000[2]
Semi-volatile organics (ug/L)			
Bis(2-ethylhexyl)phthalate	16	U11	n/a
Volatile organics (ug/L)			
Carbon disulfide	U5.0	J2.3	n/a
Spring BC-01 – 7000 Area/Bearden Creek Watershed (f)			
Field measurements			
Conductivity (mS/cm)	0.12		n/a
Dissolved Oxygen (ppm)	6.0		n/a
pH (Std Unit)	8.9		n/a
Temperature (deg C)	15		30.5[1]
Turbidity (NTU)	10		1[2]
Metals (mg/L)			
Aluminum	1.2		(0.05, 0.2)[3]
Barium	0.028		2[1]
Boron	0.008		n/a
Calcium	16		n/a
Chromium	0.0015		1[1]
Cobalt	0.00045		n/a
Copper	0.001		1.3[2]
Iron	0.84		0.3[3]
Lead	0.00063		0.005[1]
Magnesium	2.9		n/a
Manganese	0.02		0.05[3]
Nickel	0.001		0.1[1]
Phosphorous	0.026		n/a
Potassium	2.7		n/a
Silicon	7.3		n/a
Sodium	0.8		n/a

Table 2.2 (continued)

Parameter	Wet Season (b)	Dry Season (b)	Reference value [ref](c)
Strontium	0.026		n/a
Sulfur	E2.5		n/a
Titanium	0.029		n/a
Zinc	0.0048		5[3]
Zirconium	0.00076		n/a
Radionuclides (pCi/L) (d)			
Tritium	820*		20,000[2]
Semi-volatile organics (ug/L)			
Benzyl alcohol	J7.7		n/a
Well 923 – East End Discharge Point			
Field measurements			
Conductivity (mS/cm)	0.41	0.41	n/a
Dissolved Oxygen (ppm)	6.1	0.5	n/a
pH (Std Unit)	6.9	7.3	n/a
RedOx (mV)	-82	-6.0	n/a
Temperature (deg C)	16	19	30.5[1]
Turbidity (NTU)	0.3	12	1[2]
Metals (mg/L)			
Aluminum	0.82	0.036	(0.05, 0.2)[3]
Antimony	<0.0017	0.00079	0.006[1]
Barium	0.52	0.14	2[1]
Beryllium	0.00036	<0.0001	0.004[1]
Boron	0.063	0.015	n/a
Cadmium	<0.00033	0.00028	0.005[1]
Calcium	460	33	n/a
Cobalt	0.00098	0.00013	n/a
Copper	0.01	0.0023	1.3[2]
Iron	40	E5.0	0.3[3]
Lead	0.026	0.0038	0.005[1]
Lithium	0.046	0.0098	n/a
Magnesium	37	E9.6	n/a

Table 2.2 (continued)

Parameter	Wet Season (b)	Dry Season (b)	Reference value [ref](c)
Manganese	0.57	0.09	0.05[3]
Mercury	0.00063	<0.00006	0.002[1]
Molybdenum	0.00054	0.0002	n/a
Nickel	0.0042	0.0011	0.1[1]
Phosphorous	0.43	0.051	n/a
Potassium	7.2	1.6	n/a
Silicon	8.6	9.2	n/a
Sodium	13	3.2	n/a
Strontium	1.7	0.54	n/a
Sulfur	17	13	n/a
Thallium	0.003	0.00053	0.002[1]
Titanium	0.016	<0.002	n/a
Uranium	<0.00017	0.000059	n/a
Zinc	0.016	0.006	5[3]
Zirconium	0.0018	0.00089	n/a
Spring/Surface Water Monitoring Point EE-01 – East End Discharge Area Exit Pathway			
Field measurements			
Conductivity (mS/cm)	0.32	0.45	n/a
Dissolved Oxygen (ppm)	8.0	3.0	n/a
pH (Std Unit)	7.1	6.6	n/a
Temperature (deg C)	16	22	30.5[1]
Turbidity (NTU)	0.0	18	1[2]
Metals (mg/L)			
Aluminum	E0.65	1.1	(0.05, 0.2)[3]
Barium	0.051	0.073	2[1]
Boron	0.022	0.04	n/a
Cadmium	<0.0001	0.00012	0.005[1]
Calcium	E43	65	n/a
Chromium	0.0021	0.0016	1[1]
Cobalt	0.00031	0.00055	n/a
Copper	0.001	0.0015	1.3[2]

Table 2.2 (continued)

Parameter	Wet Season (b)	Dry Season (b)	Reference value [ref](c)
Iron	0.61	0.97	0.3[3]
Lead	<0.0005	0.0006	0.005[1]
Magnesium	E9.3	11	n/a
Manganese	0.014	0.055	0.05[3]
Molybdenum	0.00037	0.00088	n/a
Nickel	0.0015	0.0025	0.1[1]
Phosphorous	<0.02	0.022	n/a
Potassium	1.7	2.8	n/a
Silicon	3.4	5.0	n/a
Sodium	4.8	6.1	n/a
Strontium	0.1	0.12	n/a
Sulfur	8.7	12	n/a
Thallium	<0.0004	0.00075	0.002[1]
Thorium	<0.0002	0.00037	n/a
Titanium	0.02	0.018	n/a
Uranium	0.0002	0.00059	n/a
Zinc	0.016	0.0067	5[3]
Zirconium	0.00057	0.0017	n/a
Radionuclides (pCi/L) (d)			
Tritium	U180*	170*	20,000[2]
Well 531 – Northwestern Discharge Area Exit Pathway			
Field measurements			
Conductivity (mS/cm)	0.93	0.73	n/a
Dissolved Oxygen (ppm)	0.82	0.52	n/a
pH (Std Unit)	8.8	8.4	n/a
RedOx (mV)	-350	-310	n/a
Temperature (deg C)	17	19	30.5[1]
Turbidity (NTU)	0.6	11	1[2]
Metals (mg/L)			
Aluminum	0.22	0.68	(0.05, 0.2)[3]
Barium	0.067	E0.14	2[1]

Table 2.2 (continued)

Parameter	Wet Season (b)	Dry Season (b)	Reference value [ref](c)
Boron	0.93	0.56	n/a
Calcium	E3.2	17	n/a
Chromium	0.007	0.0012	1[1]
Cobalt	<0.0001	0.00026	n/a
Copper	0.002	0.0015	1.3[2]
Iron	0.26	0.57	0.3[3]
Lead	0.00056	0.00063	0.005[1]
Lithium	0.13	0.099	n/a
Magnesium	E1.4	E5.8	n/a
Manganese	0.0092	0.013	0.05[3]
Molybdenum	0.00011	0.00026	n/a
Nickel	0.0017	0.0021	0.1[1]
Phosphorous	<0.02	0.035	n/a
Potassium	2.2	2.4	n/a
Silicon	6.3	7.3	n/a
Sodium	250	160	n/a
Strontium	0.29	0.82	n/a
Sulfur	1.3	2.0	n/a
Titanium	0.0021	0.022	n/a
Zinc	0.034	0.056	5[3]
Zirconium	0.00072	0.0017	n/a
Semi-volatile organics (ug/L)			
Benzyl alcohol	BJ3.3	U10	n/a
Bis(2-ethylhexyl)phthalate	BJ6.6	U10	n/a
Nitrobenzene	J4.5	U10	n/a
Volatile organics (ug/L)			
Acetone	J1.3	U5.0	n/a
Carbon disulfide	U5.0	J4.9	n/a
Toluene	J0.32	U1.0	1,000[1]

Table 2.2 (continued)

Parameter	Wet Season (b)	Dry Season (b)	Reference value [ref](c)
Well 535 – Northwestern Discharge Area Exit Pathway			
Field measurements			
Conductivity (mS/cm)	0.53	0.3	n/a
Dissolved Oxygen (ppm)	1.2	0.5	n/a
pH (Std Unit)	6.9	7.1	n/a
RedOx (mV)	-100	-92	n/a
Temperature (deg C)	17	24	30.5[1]
Turbidity (NTU)	0.3	2.0	1[2]
Metals (mg/L)			
Aluminum	0.34	2.3	(0.05, 0.2)[3]
Barium	0.037	E0.045	2[1]
Boron	0.023	0.017	n/a
Cadmium	0.00011	0.00012	0.005[1]
Calcium	E100	58	n/a
Chromium	0.0024	0.0028	1[1]
Cobalt	0.00094	0.0014	n/a
Copper	0.0039	0.0026	1.3[2]
Iron	2.6	3.7	0.3[3]
Lead	0.0041	0.0056	0.005[1]
Lithium	0.0028	0.0059	n/a
Magnesium	E6.1	E4.0	n/a
Manganese	0.62	0.33	0.05[3]
Molybdenum	0.0002	0.00057	n/a
Nickel	0.0025	0.0037	0.1[1]
Phosphorous	<0.02	0.063	n/a
Potassium	1.2	2.1	n/a
Silicon	4.5	6.1	n/a
Sodium	3.3	1.7	n/a
Strontium	0.22	0.16	n/a
Sulfur	0.013	1.4	n/a
Thallium	<0.0004	0.00086	0.002[1]

Table 2.2 (continued)

Parameter	Wet Season (b)	Dry Season (b)	Reference value [ref](c)
Thorium	<0.0002	0.00038	n/a
Titanium	0.0043	0.056	n/a
Uranium	0.00011	0.00011	n/a
Zinc	0.041	0.075	5[3]
Zirconium	0.00053	0.0023	n/a
Radionuclides (pCi/L) (d)			
Tritium	440*	320*	20,000[2]
Semi-volatile organics (ug/L)			
Benzidine	J12	U50	n/a
Bis(2-ethylhexyl)phthalate	BJ5.7	U10	n/a
Diethyl phthalate	U10	J6.7	n/a
Dimethyl phthalate	U10	J2.1	n/a
Volatile organics (ug/L)			
Acetone	J1.3	U5.0	n/a
Toluene	J0.26	U1.0	1,000[1]
Spring/Surface Water Monitoring Point S-01 – Southern Discharge Area Exit Pathway(f)			
Field measurements			
Conductivity (mS/cm)	0.27		n/a
Dissolved Oxygen (ppm)	5.6		n/a
pH (Std Unit)	7.5		n/a
Temperature (deg C)	15		30.5[1]
Turbidity (NTU)	0.0		1[2]
Metals (mg/L)			
Aluminum	E0.055		(0.05, 0.2)[3]
Barium	0.027		2[1]
Boron	0.0062		n/a
Calcium	E30		n/a
Chromium	0.0023		1[1]
Cobalt	0.00016		n/a
Copper	0.00045		1.3[2]

Table 2.2 (continued)

Parameter	Wet Season (b)	Dry Season (b)	Reference value [ref](c)
Iron	0.15		0.3[3]
Magnesium	E15		n/a
Manganese	0.011		0.05[3]
Nickel	0.00082		0.1[1]
Potassium	0.85		n/a
Silicon	3.5		n/a
Sodium	0.65		n/a
Strontium	0.023		n/a
Sulfur	0.93		n/a
Uranium	0.000051		n/a
Zinc	0.013		5[3]
Spring/Surface Water Monitoring Point S-02 – Southern Discharge Area Exit Pathway			
Field measurements			
Conductivity (mS/cm)	0.2	0.3	n/a
Dissolved Oxygen (ppm)	7.8	2.6	n/a
pH (Std Unit)	7.8	8.0	n/a
Temperature (deg C)	15	21	30.5[1]
Turbidity (NTU)	0.0	28	1[2]
Metals (mg/L)			
Aluminum	E0.7	0.84	(0.05, 0.2)[3]
Arsenic	<0.0015	0.0019	0.01[1]
Barium	0.034	0.04	2[1]
Boron	0.012	0.021	n/a
Calcium	E20	32	n/a
Chromium	0.0032	0.0016	1[1]
Cobalt	0.00059	0.00084	n/a
Copper	0.00097	0.0052	1.3[2]
Iron	0.68	0.86	0.3[3]
Lead	0.0016	0.002	0.005[1]
Magnesium	E12	20	n/a
Manganese	0.055	0.12	0.05[3]

Table 2.2 (continued)

Parameter	Wet Season (b)	Dry Season (b)	Reference value [ref](c)
Molybdenum	0.00028	0.00037	n/a
Nickel	0.0013	0.0018	0.1[1]
Phosphorous	0.02	0.025	n/a
Potassium	0.7	1.0	n/a
Silicon	4.5	5.4	n/a
Silver	<0.0002	0.00026	0.1[3]
Sodium	0.57	0.62	n/a
Strontium	0.014	0.02	n/a
Sulfur	0.47	0.71	n/a
Thallium	0.00057	<0.0004	0.002[1]
Thorium	0.00035	0.00029	n/a
Titanium	0.015	0.011	n/a
Uranium	0.00013	0.00048	n/a
Zinc	0.011	0.011	5[3]
Zirconium	0.00092	0.0011	n/a

(a) Only parameters that are detected are listed in the table. The sampling and analysis plan contains a complete list of analyses performed.
(b) Prefix "J" indicates the value was estimated at or below the analytical detection limit by the laboratory; "B" indicates that the analyte was detected in the associated lab blank; "U" indicates that the analyte was not detected; "<" indicates that the compound was not detected at the reported value; and "E" indicates that the percent difference between the parent sample and its serial dilution's concentration exceeds 10%.
© If a reference limit exists, the source is coded as:

1 Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200- 4-3, General Water Quality Criteria, Domestic Water Supply, as amended.

2 40 CFR Part 141–National Primary Drinking Water Regulations, Subparts B and G, as amended.

3 40 CFR Part 143–National Secondary Drinking Water Regulations, as amended.

4 DOE Order 5400.5, Chapter III, Derived Concentration Guides for Air and Water.

(d) Individual radionuclide concentrations significantly greater than zero are identified by an *. Detected radionuclides are those detected at or above MDA.
(e) Dry season samples had low LCS recovery; were re-extracted but prepped out of holding time.
(f) Dry season sampling not performed because the location was dry at the time of sampling.

Table 2.3. Constituents detected in SNS groundwater, 2006 (a)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard Error(d)
Spring S-1 – Discharge point east-southeast of SNS site					
Field measurements					
Conductivity	12/12	0.12	0.35	0.23	0.019
Dissolved Oxygen (ppm)	12/12	2.1	9.2	7.5	0.57
pH (Std Unit)	12/12	6.4	8.3	n/a	n/a
Temperature (deg C)	12/12	6.3	19	14	1.2
Turbidity	12/12	1.0	37	8.7	2.8
Radionuclides (pCi/L) (e)					
Alpha activity	1/6	U-0.82	U2.1*	~0.73	0.42
Beta activity	2/6	U0.76	8.3*	~3.5*	1.1
Bismuth-214	1/1	6.6*	6.6*	n/a	n/a
Cesium-137	1/1	6.0*	6.0*	n/a	n/a
Thorium-230	1/1	6.6*	6.6*	n/a	n/a
Tritium	1/12	U-7.8	U200*	~110*	19
Spring S-2 – Discharge point south of SNS site					
Field measurements					
Conductivity	12/12	0.32	0.58	0.39	0.022
Dissolved Oxygen (ppm)	12/12	-0.1	8.3	~2.7	0.87
pH (Std Unit)	12/12	6.2	8.2	n/a	n/a
RedOx (mV)	6/6	-530	-320	~-430	28
Temperature (deg C)	12/12	9.4	18	14	0.77
Turbidity	12/12	0.0	4.0	0.42	0.34

Table 2.3 (continued)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard Error(d)
Radionuclides (pCi/L) (e)					
Beta activity	3/6	U1.7	5.8*	~3.6*	0.69
Lead-212	1/1	11*	11*	n/a	n/a
Tritium	2/12	U-41	260*	~79*	27
Spring S-3 – Discharge point south of SNS site					
Field measurements					
Conductivity	12/12	0.16	0.48	0.31	0.026
Dissolved Oxygen (ppm)	12/12	1.2	13	6.1	0.76
pH (Std Unit)	12/12	6.4	7.7	n/a	n/a
Temperature (deg C)	12/12	12	19	15	0.61
Turbidity	12/12	0.0	140	13	12
Radionuclides (pCi/L) (e)					
Beta activity	1/6	U0.81	7.5*	~2.9*	0.96
Carbon-14	1/12	U-6.0	8.5*	~-0.21	1.1
Tritium	2/12	U-33	210*	~120*	20
Uranium-238	1/1	180*	180*	n/a	n/a
Spring S-4 – Discharge point west-southwest of SNS site					
Field measurements					
Conductivity	12/12	0.06	0.31	0.16	0.026
Dissolved Oxygen (ppm)	12/12	3.7	53	19	5.7
pH (Std Unit)	12/12	6.4	7.4	n/a	n/a
RedOx (mV)	6/6	-62	550	~140	92

Table 2.3 (continued)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard Error(d)
Temperature (deg C)	12/12	6.5	19	14	1.2
Turbidity	12/12	0.0	18	1.6	1.5
Radionuclides (pCi/L) (e)					
Beta activity	1/6	U0.4	U3.6*	~2.0*	0.58
Thorium-230	2/2	7.3*	8.5*	7.9*	0.59
Tritium	1/12	U0.0	200*	~96*	19
Spring S-5 – Discharge point north-northeast of SNS site					
Field measurements					
Conductivity	12/12	0.23	0.59	0.44	0.038
Dissolved Oxygen (ppm)	12/12	3.0	9.8	5.7	0.67
pH (Std Unit)	12/12	6.2	7.5	n/a	n/a
Temperature (deg C)	12/12	13	15	14	0.27
Turbidity	12/12	0.0	12	2.1	1.1
Radionuclides (pCi/L) (e)					
Alpha activity	6/6	4.2*	25*	11*	3.2
Beta activity	6/6	7.0*	32*	17*	4.3
Bismuth-214	1/1	15*	15*	n/a	n/a
Lead-214	1/1	8.0*	8.0*	n/a	n/a
Thorium-230	1/1	15*	15*	n/a	n/a
Tritium	2/12	U-43	210*	~91*	24

Table 2.3 (continued)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard Error(d)
Spring SP-1 – Discharge point south of SNS site					
Field measurements					
Conductivity	12/12	0.03	0.29	0.25	0.021
Dissolved Oxygen (ppm)	12/12	0.0	14	6.9	1.4
pH (Std Unit)	12/12	6.3	8.5	n/a	n/a
RedOx (mV)	4/4	-460	530	~49	200
Temperature (deg C)	12/12	6.8	21	16	1.2
Turbidity	12/12	0.0	6.0	1.0	0.49
Radionuclides (pCi/L) (e)					
Beta activity	1/6	U-1.3	6.6*	~2.4*	1.1
Bismuth-214	1/1	11*	11*	n/a	n/a
Thorium-230	1/1	11*	11*	n/a	n/a
Tritium	1/12	U0.0	U180*	~100*	17
Surface Water Point SW-1 – Discharge point east-southeast of SNS site					
Field measurements					
Conductivity	12/12	0.13	0.41	0.26	0.026
Dissolved Oxygen (ppm)	12/12	1.3	10	4.8	0.8
pH (Std Unit)	12/12	6.2	7.6	n/a	n/a
Temperature (deg C)	12/12	5.6	24	15	1.4
Turbidity	12/12	0.0	18	4.7	1.5

Table 2.3 (continued)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard Error(d)
Radionuclides (pCi/L) (e)					
Alpha activity	1/6	U-0.98	6.5*	~1.6	1.0
Beta activity	3/6	U0.74	10*	~3.9*	1.4
Bismuth-214	2/2	13*	17*	15*	2.0
Carbon-14	1/12	U-5.4	11*	~0.42	1.2
Thorium-230	2/2	13*	17*	15*	2.0
Tritium	2/12	U-68	170*	~60*	23

(a) All values were included in the calculations. Only parameters that have detections in one or more samples are listed in the table. The sampling and analysis plan contains a complete list of analyses performed.
(b) Prefix "U" indicates that the value was undetected at the analytical detection limit or MDA.
© A tilde (~) indicates that estimated values and/or detection limits were used in the calculation.
(d) Standard error of the mean.
(e) Individual and average radionuclide concentrations significantly greater than zero are identified by an *. Detected radionuclides are those detected at or above MDA.

Table 2.4. Constituents detected in HFIR groundwater at ORNL, 2006 (a)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard Error (d)
Well 1152 – Down-gradient well located south of Building 7900 and the remediated waste water impoundments					
Field measurements					
Conductivity	2/2	0.58	0.59	0.59	0.005
Dissolved Oxygen (ppm)	2/2	1.1	2.0	1.6	0.45
pH (Std Unit)	2/2	7.0	7.2	n/a	n/a
RedOx (mV)	2/2	-180	-48	~-120	67
Temperature (deg C)	2/2	14	16	15	1.4
Turbidity	2/2	2.0	18	10	8.0
Radionuclides (pCi/L) (e)					
Tritium	½	U210*	220,000*	~110,000	110,000
Well 4533 – Up-gradient well located north of Building 7900					
Field measurements					
Conductivity	1/1	0.45	0.45	n/a	n/a
Dissolved Oxygen (ppm)	1/1	5.0	5.0	n/a	n/a
pH (Std Unit)	1/1	7.5	7.5	n/a	n/a
RedOx (mV)	1/1	-96	-96	n/a	n/a
Temperature (deg C)	1/1	19	19	n/a	n/a
Turbidity	1/1	0.3	0.3	n/a	n/a
Radionuclides (pCi/L) (e)					
Tritium	1/1	560*	560*	n/a	n/a

Table 2.4 (continued)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard Error (d)
		Well 658 – Down-gradient well south of Building 7900			
Field measurements					
Conductivity	2/2	0.58	0.63	0.61	0.025
Dissolved Oxygen (ppm)	2/2	1.2	1.9	1.6	0.35
pH (Std Unit)	2/2	7.1	7.4	n/a	n/a
RedOx (mV)	2/2	-89	-18	~-54	36
Temperature (deg C)	2/2	17	19	18	1.1
Turbidity	2/2	1.0	58	30	29
Radionuclides (pCi/L) (e)					
Tritium	2/2	450*	48,000*	24,000	24,000
		Well 661 – Down-gradient well southwest of HFIR Cooling Tower			
Field measurements					
Conductivity	4/4	0.17	0.33	0.25	0.042
Dissolved Oxygen (ppm)	4/4	2.7	6.1	4.3	0.82
pH (Std Unit)	4/4	7.2	7.7	n/a	n/a
RedOx (mV)	4/4	-110	90	~-39	45
Temperature (deg C)	4/4	15	20	18	0.96
Turbidity	4/4	0.1	140	48	31
Radionuclides (pCi/L) (e)					
Tritium	¾	U120*	57,000*	~24,000	12,000

Table 2.4 (continued)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard Error (d)
Well 892 – Down-gradient well located between Wells 658 and 661					
Field measurements					
Conductivity	2/2	0.44	0.48	0.46	0.02
Dissolved Oxygen (ppm)	2/2	3.9	8.2	6.1	2.2
pH (Std Unit)	2/2	7.2	7.4	n/a	n/a
RedOx (mV)	2/2	-180	-170	~-180	3.0
Temperature (deg C)	2/2	18	20	19	1.4
Turbidity	2/2	0.0	15	7.5	7.5
Radionuclides (pCi/L) (e)					
Tritium	2/2	50,000*	230,000*	140,000	92,000
J-1- Down-gradient East Foundation Drain monitoring point southeast of Building 7900					
Radionuclides (pCi/L) (e)					
Tritium	¾	U130*	11,000*	~5,800*	2,400

(a) All values were included in the calculations. Only parameters that have detections in one or more samples are listed in the table. The sampling and analysis plan contains a complete list of analyses performed.
(b) Prefix "U" indicates that the value was undetected at the MDA.
© A tilde (~) indicates that estimated values and/or detection limits were used in the calculation.
(d) Standard error of the mean.
(e) Individual and average radionuclide concentrations significantly greater than zero are identified by an *. Detected radionuclides are those detected at or above MDA.

Table 2.5. 2006 radionuclide concentrations in surface waters around ORNL

Parameter	N det/ N total	Concentration (pCi/L) Min(a)	Max(a)	Avg(b)	Standard Error(c)	Percent of DCG(d)	DCG(e)
			White Oak Creek Headwaters				
Alpha activity	7/12	-1.1	5.0*	2.4*	0.53	n/a	n/a
Beta activity	6/12	-1.6	8.5*	4.8*	0.8	n/a	n/a
Carbon-14	3/12	-65	230*	51	31	70,000	0.072
Cesium-137	3/12	-1.8	4.5*	1.3*	0.63	3,000	0.042
Cobalt-60	3/12	-1.8	4.3*	1.6*	0.54	5,000	0.032
Tritium	3/12	-740	440*	110	95	2,000,000	0.0054

(a) Individual radionuclide concentrations significantly greater than zero are identified by an *.
(b) Average radionuclide concentrations significantly greater than zero are identified by an *.
© Standard error of the mean.
(d) Derived concentration guide for ingestion of water. From DOE Order 5400.5.
(e) Average concentration as a percentage of the derived concentration guide (DCG), calculated only when a DCG exists and when at least one result is detected at or above MDA

Table 2.6. 2006 radionuclide concentrations in stormwater at ORNL NPDES permitted locations

Parameter	Result detected above MDA?	Concentration (pCi/L) (a)	DCG(b)	Percent of DCG(c)
		Outfall 041		
Alpha activity	yes	3.2*	n/a	n/a
Beta activity	yes	5.3*	n/a	n/a
Cesium-137	yes	4.6*	3,000	0.15
Cobalt-60	yes	4.3*	5,000	0.086
Tritium	yes	340*	2,000,000	0.017
		Outfall 051		
Alpha activity		-0.77	n/a	n/a
Beta activity		4.8*	n/a	n/a
Cesium-137		-1.0	3,000	n/a
Cobalt-60		3.4*	5,000	n/a
Tritium		-69	2,000,000	n/a
		Outfall 084		
Alpha activity	yes	3.2*	n/a	n/a
Beta activity	yes	12*	n/a	n/a
Cesium-137	yes	4.6*	3,000	0.15
Cobalt-60	yes	4.6*	5,000	0.092
Potassium-40	yes	130*	7,000	1.9
Tritium	yes	410*	2,000,000	0.021
		Outfall 087		
Alpha activity	yes	3.2*	n/a	n/a
Beta activity	yes	92*	n/a	n/a
Cesium-137		1.3	3,000	n/a

Table 2.6 (continued)

Parameter	Result detected above MDA?	Concentration (pCi/L) (a)	DCG(b)	Percent of DCG(c)
Cobalt-60		0.07	5,000	n/a
Tritium		770*	2,000,000	n/a
		Outfall 102		
Alpha activity	yes	3.6*	n/a	n/a
Beta activity	yes	6.1*	n/a	n/a
Cesium-137	yes	6.1*	3,000	0.2
Cobalt-60	yes	6.3*	5,000	0.13
Tritium	yes	340*	2,000,000	0.017
		Outfall 104		
Alpha activity	yes	3.7*	n/a	n/a
Beta activity	yes	6.1*	n/a	n/a
Cesium-137	yes	4.8*	3,000	0.16
Cobalt-60	yes	5.7*	5,000	0.11
Tritium	yes	340*	2,000,000	0.017
		Outfall 161		
Alpha activity	yes	3.8*	n/a	n/a
Beta activity	yes	6.1*	n/a	n/a
Cesium-137	yes	3.6*	3,000	0.12
Cobalt-60	yes	4.1*	5,000	0.082
Tritium	yes	410*	2,000,000	0.021

Table 2.6 (continued)

Parameter	Result detected above MDA?	Concentration (pCi/L) (a)	DCG(b)	Percent of DCG(c)
		Outfall 165		
Alpha activity	yes	18*	n/a	n/a
Beta activity	yes	910*	n/a	n/a
Cesium-137	yes	3.7*	3,000	0.12
Cobalt-60	yes	4.0*	5,000	0.08
Strontium-89/90	yes	520*	1,000	52
Tritium	yes	340*	2,000,000	0.017
Uranium-233/234	yes	24*	500	4.8
Uranium-235	yes	2.5*	600	0.42
Uranium-236	yes	3.1*	500	0.62
Uranium-238	yes	2.8*	600	0.47
		Outfall 203		
Alpha activity	yes	12*	n/a	n/a
Beta activity	yes	160*	n/a	n/a
Cesium-137		-0.54	3,000	n/a
Cobalt-60		1.0	5,000	n/a
Tritium		-500	2,000,000	n/a
		Outfall 204		
Alpha activity	yes	4.5*	n/a	n/a
Beta activity	yes	110*	n/a	n/a
Cesium-137	yes	22*	3,000	0.73
Cobalt-60	yes	3.9*	5,000	0.078
Tritium	yes	360*	2,000,000	0.018

Table 2.6 (continued)

Parameter	Result detected above MDA?	Concentration (pCi/L) (a)	DCG(b)	Percent of DCG(c)
		Outfall 216		
Alpha activity	yes	3.3*	n/a	n/a
Beta activity	yes	8.0*	n/a	n/a
Cesium-137	yes	4.1*	3,000	0.14
Cobalt-60	yes	4.6*	5,000	0.092
Tritium	yes	340*	2,000,000	0.017
		Outfall 234		
Alpha activity	yes	3.1*	n/a	n/a
Beta activity		1.8	n/a	n/a
Cesium-137		1.4	3,000	n/a
Cobalt-60		1.7	5,000	n/a
Tritium		-280	2,000,000	n/a
		Outfall 249		
Alpha activity		-0.66	n/a	n/a
Beta activity	yes	3.9*	n/a	n/a
Cesium-137		0.4	3,000	n/a
Cobalt-60		2.8*	5,000	n/a
Tritium		310	2,000,000	n/a
		Outfall 265		
Alpha activity		0.9	n/a	n/a
Beta activity	yes	280*	n/a	n/a
Cesium-137		0.48	3,000	n/a

Table 2.6 (continued)

Parameter	Result detected above MDA?	Concentration (pCi/L) (a)	DCG(b)	Percent of DCG(c)
Cobalt-60		0.97	5,000	n/a
Tritium		-39	2,000,000	n/a
		Outfall 269		
Alpha activity	yes	3.3*	n/a	n/a
Beta activity	yes	5.9*	n/a	n/a
Cesium-137	yes	4.9*	3,000	0.16
Cobalt-60	yes	5.7*	5,000	0.11
Tritium	yes	410*	2,000,000	0.021
		Outfall 283		
Alpha activity	yes	3.3*	n/a	n/a
Beta activity	yes	28*	n/a	n/a
Cesium-137	yes	6.3*	3,000	0.21
Cobalt-60	yes	6.6*	5,000	0.13
Tritium	yes	360*	2,000,000	0.018
		Outfall 284		
Alpha activity	yes	6.1*	n/a	n/a
Beta activity	yes	25*	n/a	n/a
Cesium-137		3.0*	3,000	n/a
Cobalt-60		0.19	5,000	n/a
Tritium		-120	2,000,000	n/a

Table 2.6 (continued)

Parameter	Result detected above MDA?	Concentration (pCi/L) (a)	DCG(b)	Percent of DCG(c)
		Outfall 291		
Alpha activity	yes	6.0*	n/a	n/a
Beta activity	yes	7.0*	n/a	n/a
Cesium-137	yes	4.6*	3,000	0.15
Cobalt-60	yes	4.3*	5,000	0.086
Tritium	yes	360*	2,000,000	0.018
		Outfall 293		
Alpha activity	yes	3.7*	n/a	n/a
Beta activity	yes	6.6*	n/a	n/a
Cesium-137	yes	4.2*	3,000	0.14
Cobalt-60	yes	4.4*	5,000	0.088
Tritium	yes	360*	2,000,000	0.018
		Outfall 362		
Alpha activity	yes	3.4*	n/a	n/a
Beta activity	yes	5.6*	n/a	n/a
Cesium-137	yes	6.2*	3,000	0.21
Cobalt-60	yes	6.5*	5,000	0.13
Potassium-40	yes	380*	7,000	5.4
Tritium	yes	410*	2,000,000	0.021
		Outfall 364		
Alpha activity	yes	3.1*	n/a	n/a
Beta activity	yes	5.8*	n/a	n/a
Cesium-137	yes	4.4*	3,000	0.15

Table 2.6 (continued)

Parameter	Result detected above MDA?	Concentration (pCi/L) (a)	DCG(b)	Percent of DCG(c)
Cobalt-60	yes	4.3*	5,000	0.086
Tritium	yes	410*	2,000,000	0.021
		Outfall 365		
Alpha activity	yes	3.2*	n/a	n/a
Beta activity	yes	62*	n/a	n/a
Cesium-137		0.91	3,000	n/a
Cobalt-60		-0.48	5,000	n/a
Tritium		210	2,000,000	n/a
		Outfall 368		
Alpha activity	yes	3.2*	n/a	n/a
Beta activity	yes	14*	n/a	n/a
Cesium-137	yes	4.7*	3,000	0.16
Cobalt-60	yes	5.8*	5,000	0.12
Tritium	yes	360*	2,000,000	0.018
		Outfall 383		
Alpha activity		-0.61	n/a	n/a
Beta activity		4.4	n/a	n/a
Cesium-137		-0.81	3,000	n/a
Cobalt-60		-1.8	5,000	n/a
Tritium	yes	2,700*	2,000,000	0.14

(a) Individual radionuclide concentrations significantly greater than zero are identified by an *.
(b) Derived concentration guide for ingestion of water from DOE Order 5400.5.
© The concentration as a percentage of the derived concentration guide (DCG), calculated only when a DCG exist and when the individual result is detected at or above MDA.

Table 2.7. 2006 radionuclide concentrations at ORNL NPDES permitted locations

Parameter	N det/ N total	Concentration (pCi/L) Min(a)	Max(a)	Av(b)	Standard Error(c)	DCG(d)	Percent of DCG(e)
			Sewage Treatment Plant (X01)				
Alpha activity	6/12	-0.7	4.7*	2.1*	0.44	n/a	n/a
Beta activity	12/12	140*	390*	260*	22	n/a	n/a
Carbon-14	3/12	-16	230*	130*	19	70,000	0.19
Cesium-137	5/12	0.73	6.6*	2.9*	0.51	3,000	0.097
Cobalt-60	3/12	-3.0	6.7*	1.6*	0.7	5,000	0.032
Strontium-89/90	12/12	56*	160*	120*	9.9	1,000	12
Tritium	3/12	-590	2,800*	240	250	2,000,000	0.012
Uranium – Alpha Activity	0/1	0.65	0.65	0.65	n/a	500	n/a
Uranium-234	0/1	0.61	0.61	0.61	n/a	500	n/a
Uranium-235	0/1	0.039	0.039	0.039	n/a	600	n/a
Uranium-236	0/1	-0.011	-0.011	-0.011	n/a	500	n/a
Uranium-238	0/1	0.01	0.01	0.01	n/a	600	n/a
			Coal Yard Runoff Treatment Facility (X02)				
Alpha activity	5/12	-23	23*	4.5	3.8	n/a	n/a
Beta activity	12/12	310*	780*	560*	40	n/a	n/a
			Process Waste Treatment Complex (X12)				
Alpha activity	12/12	16*	38*	25*	2.3	n/a	n/a
Beta activity	12/12	170*	930*	420*	67	n/a	n/a
Cesium-137	12/12	62*	720*	310*	62	3,000	10
Cobalt-60	3/12	0.33	6.3*	2.5*	0.62	5,000	0.05
Strontium-89/90	12/12	36*	130*	74*	8.0	1,000	7.4
Tritium	12/12	35,000*	400,000*	230,000*	39,000	2,000,000	11
Uranium – Alpha Activity	8/8	16*	32*	23*	2.0	500	4.6
Uranium-233/234	12/12	6.4*	30*	20*	2.2	500	4.0

Table 2.7 (continued)

Parameter	N det/ N total	Concentration (pCi/L) Min(a)	Max(a)	Av(b)	Standard Error(c)	DCG(d)	Percent of DCG(e)
Uranium-235	2/12	-0.015	1.9*	0.26	0.16	600	0.043
Uranium-236	2/12	-0.048	2.5*	0.31	0.21	500	0.063
Uranium-238	12/12	0.56*	2.5*	1.2*	0.19	600	0.2
			Melton Branch 1 (X13)				
Alpha activity	8/12	0.13	9.0*	3.6*	0.74	n/a	n/a
Beta activity	12/12	97*	320*	210*	18	n/a	n/a
Cesium-137	4/12	-2.1	6.3*	1.7*	0.79	3,000	0.055
Cobalt-60	3/12	-2.4	5.8*	1.5*	0.76	5,000	0.03
Strontium-89/90	12/12	41*	140*	88*	7.8	1,000	8.8
Tritium	12/12	20,000*	170,000*	69,000*	14,000	2,000,000	3.4
Uranium – Alpha Activity	0/1	0.6	0.6	0.6	n/a	500	n/a
Uranium-234	0/1	0.49	0.49	0.49	n/a	500	n/a
Uranium-235	0/1	-0.033	-0.033	-0.033	n/a	600	n/a
Uranium-236	0/1	-0.011	-0.011	-0.011	n/a	500	n/a
Uranium-238	0/1	0.11	0.11	0.11	n/a	600	n/a
			White Oak Creek (X14)				
Alpha activity	10/12	0.87	13*	5.5*	1.1	n/a	n/a
Beta activity	12/12	56*	120*	88*	6.0	n/a	n/a
Cesium-137	12/12	9.5*	21*	15*	1.0	3,000	0.51
Cobalt-60	3/12	-0.054	4.7*	1.8*	0.44	5,000	0.036
Strontium-89/90	12/12	20*	46*	31*	2.1	1,000	3.1
Tritium	12/12	2,900*	40,000*	24,000*	3,400	2,000,000	1.2
Uranium – Alpha Activity	1/1	4.7*	4.7*	4.7	n/a	500	0.94
Uranium-233/234	1/1	4.3*	4.3*	4.3	n/a	500	0.86
Uranium-235	0/1	-0.0055	-0.0055	-0.0055	n/a	600	n/a
Uranium-236	0/1	-0.011	-0.011	-0.011	n/a	500	n/a
Uranium-238	0/1	0.37*	0.37*	0.37	n/a	600	n/a

Table 2.7 (continued)

Parameter	N det/ N total	Concentration (pCi/L) Min(a)	Max(a)	Av(b)	Standard Error(c)	DCG(d)	Percent of DCG(e)
			White Oak Dam (X15)				
Alpha activity	12/12	3.1	17*	8.6*	1.3	n/a	n/a
Beta activity	12/12	140*	560*	230*	33	n/a	n/a
Cesium-137	12/12	12*	410*	83*	32	3,000	2.8
Cobalt-60	3/12	-1.4	4.6*	1.3*	0.66	5,000	0.027
Potassium-40	1/1	130*	130*	130	n/a	7,000	1.9
Strontium-89/90	12/12	46*	100*	68*	5.0	1,000	6.8
Tritium	12/12	19,000*	55,000*	35,000*	3,100	2,000,000	1.7
Uranium – Alpha Activity	1/1	4.9*	4.9*	4.9	n/a	500	0.98
Uranium-233/234	1/1	4.4*	4.4*	4.4	n/a	500	0.88
Uranium-235	0/1	0.034	0.034	0.034	n/a	600	n/a
Uranium-236	0/1	0.016	0.016	0.016	n/a	500	n/a
Uranium-238	0/1	0.41*	0.41*	0.41	n/a	600	n/a
			Outfall 001				
Alpha activity	1/1	3.3*	3.3*	3.3	n/a	n/a	n/a
Beta activity	1/1	5.6*	5.6*	5.6	n/a	n/a	n/a
			Outfall 080				
Alpha activity	5/5	22*	2,000*	790	390	n/a	n/a
Americium-241	3/3	20*	36*	26*	5.0	30	87
Beta activity	5/5	62*	1,700*	620	320	n/a	n/a
Cesium-137	4/5	2.4*	56*	23*	10	3,000	0.75
Cobalt-60	1/5	-0.76	4.5*	0.75	0.95	5,000	0.015
Curium-243/244	3/3	530*	1,600*	1,100*	310	50	2,200
Neptunium-237	0/1	-0.092	-0.092	-0.092	n/a	30	n/a
Plutonium-238	2/3	3.9*	5.6*	4.5*	0.54	40	11
Plutonium-239/240	3/3	13*	18*	15*	1.5	30	50
Strontium-89/90	5/5	18*	900*	300	170	1,000	30

Table 2.7 (continued)

Parameter	N det/ N total	Concentration (pCi/L) Min(a)	Max(a)	Av(b)	Standard Error(c)	DCG(d)	Percent of DCG(e)
Thorium-228	½	0.0	0.3*	0.15	0.15	400	0.038
Thorium-230	½	0.43*	2.6	1.5	1.1	300	0.51
Thorium-232	½	0.1	0.15*	0.13	0.025	50	0.25
Thorium-234	0/1	0.16	0.16	0.16	n/a	10,000	n/a
Tritium	4/5	34	7,700*	2,300	1,400	2,000,000	0.11
Uranium – Alpha Activity	0/2	-4.1	0.48	-1.8	2.3	500	n/a
Uranium-233/234	1/1	1.5*	1.5*	1.5	n/a	500	0.3
Uranium-234	0/2	-3.3	0.32	-1.5	1.8	500	n/a
Uranium-235	1/3	-0.54	0.15*	-0.13	0.21	600	-0.022
Uranium-236	1/3	-0.32	0.15*	-0.057	0.14	500	-0.011
Uranium-238	1/3	-0.0062	0.33*	0.16	0.097	600	0.027
			Outfall 081				
Alpha activity	1/1	3.4*	3.4*	3.4	n/a	n/a	n/a
Beta activity	1/1	28*	28*	28	n/a	n/a	n/a
			Outfall 085				
Alpha activity	4/4	12*	15*	14*	0.65	n/a	n/a
Beta activity	4/4	270*	410*	320*	31	n/a	n/a
Strontium-89/90	4/4	120*	190*	150*	16	1,000	15
Uranium – Alpha Activity	3/3	9.7*	14*	12*	1.3	500	2.3
Uranium-233/234	4/4	8.1*	12*	9.4*	0.88	500	1.9
Uranium-235	¼	-0.018	0.85*	0.29	0.19	600	0.048
Uranium-236	¼	-0.029	1.2*	0.3	0.3	500	0.06
Uranium-238	4/4	1.3*	2.1*	1.8*	0.19	600	0.29

Table 2.7 (continued)

Parameter	N det/ N total	Concentration (pCi/L) Min(a)	Max(a)	Av(b)	Standard Error(c)	DCG(d)	Percent of DCG(e)
			Outfall 087				
Alpha activity	1/1	3.0*	3.0*	3.0	n/a	n/a	n/a
Beta activity	1/1	130*	130*	130	n/a	n/a	n/a
Cesium-137	1/1	5.3*	5.3*	5.3	n/a	3,000	0.18
Cobalt-60	1/1	5.8*	5.8*	5.8	n/a	5,000	0.12
			Outfall 203				
Alpha activity	1/1	7.2*	7.2*	7.2	n/a	n/a	n/a
Beta activity	1/1	110*	110*	110	n/a	n/a	n/a
			Outfall 204				
Alpha activity	¾	-3.4	7.9*	4.7	2.7	n/a	n/a
Beta activity	4/4	63*	280*	150*	48	n/a	n/a
Strontium-89/90	4/4	21*	170*	66	35	1,000	6.6
			Outfall 205				
Alpha activity	1/1	3.7*	3.7*	3.7	n/a	n/a	n/a
Beta activity	1/1	6.1*	6.1*	6.1	n/a	n/a	n/a
			Outfall 207				
Alpha activity	¾	1.2	11*	6.6*	2.3	n/a	n/a
Beta activity	4/4	29*	66*	50*	8.4	n/a	n/a
Cesium-137	¼	1.9*	5.0*	3.0*	0.69	3,000	0.1
Cobalt-60	¼	-0.89	5.6*	2.1	1.3	5,000	0.041
Strontium-89/90	4/4	9.9*	32*	25*	5.2	1,000	2.5
			Outfall 211				
Alpha activity	2/4	-2.9	3.4*	0.77	1.3	n/a	n/a
Beta activity	¼	0.95	5.9*	3.7*	1.2	n/a	n/a
Strontium-89/90	¼	-0.28	4.7*	2.1	1.0	1,000	0.21

Table 2.7 (continued)

Parameter	N det/ N total	Concentration (pCi/L) Min(a)	Max(a)	Av(b)	Standard Error(c)	DCG(d)	Percent of DCG(e)
			Outfall 217				
Alpha activity	1/1	3.2*	3.2*	3.2	n/a	n/a	n/a
Beta activity	1/1	6.1*	6.1*	6.1	n/a	n/a	n/a
			Outfall 219				
Alpha activity	1/1	3.0*	3.0*	3.0	n/a	n/a	n/a
Beta activity	1/1	5.9*	5.9*	5.9	n/a	n/a	n/a
			Outfall 234				
Alpha activity	1/1	2.8*	2.8*	2.8	n/a	n/a	n/a
Beta activity	1/1	5.6*	5.6*	5.6	n/a	n/a	n/a
			Outfall 265				
Alpha activity	1/1	3.7*	3.7*	3.7	n/a	n/a	n/a
Beta activity	1/1	6.1*	6.1*	6.1	n/a	n/a	n/a
Cesium-137	1/1	4.2*	4.2*	4.2	n/a	3,000	0.14
Cobalt-60	1/1	3.9*	3.9*	3.9	n/a	5,000	0.078
			Outfall 281				
Alpha activity	4/4	3.1*	4.0*	3.5*	0.19	n/a	n/a
Beta activity	4/4	5.3*	16*	9.8*	2.3	n/a	n/a
Cesium-137	¼	0.79	4.1*	2.0*	0.72	3,000	0.067
Cobalt-60	¼	-1.2	4.0*	1.5	1.2	5,000	0.029
Tritium	¾	630	2,800*	1,700*	450	2,000,000	0.085
			Outfall 282				
Alpha activity	¼	0.47	3.1*	1.8*	0.55	n/a	n/a
Beta activity	4/4	5.9*	10*	7.8*	0.9	n/a	n/a

Table 2.7 (continued)

Parameter	N det/ N total	Concentration (pCi/L) Min(a)	Max(a)	Av(b)	Standard Error(c)	DCG(d)	Percent of DCG(e)
			Outfall 302				
Alpha activity	10/12	0.97	27*	9.2*	2.3	n/a	n/a
Americium-241	½	0.5*	0.92*	0.71	0.21	30	2.4
Beta activity	12/12	110*	1,700*	570*	170	n/a	n/a
Cesium-137	12/12	19*	100*	53*	8.1	3,000	1.8
Cobalt-60	3/12	-0.085	6.3*	2.0*	0.59	5,000	0.041
Curium-243/244	½	0.21*	0.46*	0.34	0.13	50	0.67
Neptunium-237	0/1	-0.085	-0.085	-0.085	n/a	30	n/a
Plutonium-238	½	0.033	0.11*	0.072	0.039	40	0.18
Plutonium-239/240	½	0.11*	0.28*	0.2	0.085	30	0.65
Strontium-89/90	12/12	33*	1,200*	280*	100	1,000	28
Thorium-228	0/2	0.13*	0.19	0.16	0.03	400	n/a
Thorium-230	½	0.2*	0.39	0.3	0.095	300	0.098
Thorium-232	½	-0.031	0.1*	0.035	0.066	50	0.069
Thorium-234	1/1	0.57*	0.57*	0.57	n/a	10,000	0.0057
Tritium	12/12	1,300*	70,000*	31,000*	7,800	2,000,000	1.5
Uranium – Alpha Activity	2/2	6.6*	7.4*	7.0*	0.4	500	1.4
Uranium-233/234	3/3	6.0*	25*	13	6.2	500	2.5
Uranium-235	1/3	0.0022	0.21*	0.095	0.061	600	0.016
Uranium-236	1/3	-0.013	1.2*	0.4	0.4	500	0.079
Uranium-238	3/3	0.21*	0.57*	0.42*	0.11	600	0.07
			Outfall 304				
Alpha activity	12/12	2.8*	18*	8.5*	1.6	n/a	n/a
Beta activity	12/12	100*	1,100*	490*	98	n/a	n/a
Cesium-137	11/12	2.6	290*	83*	28	3,000	2.8
Cobalt-60	3/12	-1.4	6.8*	1.7*	0.76	5,000	0.033
Strontium-89/90	12/12	51*	450*	200*	40	1,000	20
Tritium	3/12	-99	24,000*	2,200	2,000	2,000,000	0.11

Table 2.7 (continued)

Parameter	N det/ N total	Concentration (pCi/L) Min(a)	Max(a)	Av(b)	Standard Error(c)	DCG(d)	Percent of DCG(e)
Uranium – Alpha Activity	3/3	8.4*	15*	12*	2.0	500	2.4
Uranium-233/234	3/3	6.3*	10*	8.4*	1.1	500	1.7
Uranium-235	1/3	0.047	0.27*	0.14	0.069	600	0.022
Uranium-236	0/3	-0.0041	0.11*	0.041	0.035	500	n/a
Uranium-238	3/3	2.1*	4.4*	3.3*	0.67	600	0.55
			Outfall 365				
Alpha activity	¾	1.1	6.2*	3.6*	1.1	n/a	n/a
Beta activity	4/4	16*	57*	33*	9.6	n/a	n/a
			Outfall 368				
Alpha activity	¼	-4.0	3.4*	-0.1	1.6	n/a	n/a
Beta activity	2/4	-0.8	21*	9.3	5.4	n/a	n/a
Cesium-137	¼	-1.1	4.0*	1.2	1.2	3,000	0.041
Cobalt-60	¼	-1.3	4.8*	1.2	1.3	5,000	0.025
			Outfall 383				
Alpha activity	1/1	3.4*	3.4*	3.4	n/a	n/a	n/a
Beta activity	1/1	80*	80*	80	n/a	n/a	n/a
Tritium	1/1	4,400*	4,400*	4,400	n/a	2,000,000	0.22

(a) Individual radionuclide concentrations significantly greater than zero are identified by an *.
(b) Average radionuclide concentrations significantly greater than zero are identified by an *.
© Standard error of the mean.
(d) Derived concentration guide for ingestion of water. From DOE Order 5400.5.
(e) Average concentration as a percentage of the derived concentration guide (DCG), calculated only when a DCG exists and when at least one result is detected at or above MDA.

Table 2.8. 2006 analyses for ORNL reference surface waters

Parameter	N det/ N total	Concentration (pCi/L) Min(a)	Max(a)	Avg(b)	Standard Error(c)	Ref. Value (d)	Percent of Ref. Value(e)
			White Oak Creek Headwaters				
Field measurements							
Conductivity	52/52	0.15	0.31	0.24	0.0056	n/a	n/a
Dissolved Oxygen	52/52	6.8	12	9.5	0.18	5	190
pH	52/52	7.1	8.2	n/a	0.033	n/a	n/a
Temperature	52/52	5.4	19	13	0.5	30.5	44
Turbidity	52/52	1.0	61	9.8	1.4	n/a	n/a
Metals (mg/L)							
Antimony	1/12	<0.0005	0.0009	~0.00053	0.000033	n/a	n/a
Arsenic	3/12	0.000072	0.002	0.001	0.00012	0.34	0.3
Beryllium	1/6	0.0000098	<0.0001	~0.000085	0.000015	n/a	n/a
Cadmium	0/12	<0.0000038	<0.0005	~0.00046	0.000041	0.002	23
Chromium	4/12	0.00062	0.0038	0.0021	0.00021	n/a	n/a
Cobalt	6/6	0.000065	0.00072	0.00035	0.000091	n/a	n/a
Copper	4/12	<0.00015	0.002	~0.0011	0.00012	0.013	8.3
Iron	9/12	0.085	2.0	0.55	0.15	n/a	n/a
Lead	12/12	0.00025	0.0045	0.0012	0.00039	0.065	1.8
Manganese	6/6	0.0039	0.04	0.021	0.0062	n/a	n/a
Mercury	0/2	<0.0002	<0.0002	~0.0002	0.0	0.0014	14
Molybdenum	6/6	0.0006	0.0018	0.001	0.0002	n/a	n/a
Nickel	2/12	<0.001	0.0029	~0.0012	0.00017	0.47	0.26
Selenium	2/12	<0.002	0.064	~0.0074	0.0052	0.02	37
Silver	0/12	<0.0000049	<0.0002	~0.00018	0.000016	0.0032	5.7
Strontium	6/6	0.039	0.055	0.045	0.0025	n/a	n/a
Thallium	1/6	0.000019	<0.0001	~0.000087	0.000014	n/a	n/a
Thorium	2/6	0.000014	0.00066	0.00025	0.000089	n/a	n/a

Table 2.8 (continued)

Parameter	N det/ N total	Concentration (pCi/L) Min(a)	Max(a)	Avg(b)	Standard Error(c)	Ref. Value (d)	Percent of Ref. Value(e)
Uranium	6/6	0.00017	0.00048	0.00027	0.000052	n/a	n/a
Zinc	11/12	0.003	<0.038	~0.0091	0.0027	0.12	7.6

(a) Prefix "<" indicates the value of a parameter was not quantifiable at the analytical detection limit.
(b) A tilde (~) indicates that estimated values and/or detection limits were used in the calculation.
© Standard error of the mean.
(d) Tennessee General Water Quality Criteria for Fish and Aquatic Life is used as a reference value for White Oak Creek headwaters.
(e) Average concentration as a percentage of the reference value, calculated only when a reference exists, the parameter is a contaminant, and the parameter is detected.

Table 2.9. NPDES Permit Number TN0002941, 2006 ORNL outfall monitoring

Parameter	N det/ N total	Concentration Min(a)	Max(a)	Avg(b)	Standard Error (c)
Category 1 outfalls					
Field measurements					
Flow (gpm)	19/19	0.1	80	8.7	4.2
pH (Std Unit)	19/19	7.0	8.1	n/a	n/a
Category 2 outfalls					
Field measurements					
Flow (gpm)	20/20	0.1	12	4.1	1.1
pH (Std Unit)	20/20	7.6	8.1	n/a	n/a
Category 3 outfalls					
Field measurements					
Flow (gpm)	49/49	0.1	33	10	1.4
pH (Std Unit)	49/49	7.2	8.1	n/a	n/a
Category 4 outfalls					
Field measurements					
Flow (gpm)	331/331	0.1	300	55	3.9
pH (Std Unit)	331/331	6.9	8.8	n/a	n/a
Temperature (deg C)	331/331	6.0	30	18	0.28
Cooling Tower Blowdown outfalls					
Field measurements					
Flow (gpm)	4/4	16	38	25	4.8
pH (Std Unit)	4/4	7.6	8.5	n/a	n/a
Temperature (deg C)	4/4	22	25	24	0.58
Total Residual Oxidant (mg/L)	0/4	<0.05	<0.05	~0.05	0.0
Physical					
Suspended Solids (mg/L)	¾	<1.0	29	~9.4	6.6

Table 2.9 (continued)

Parameter	N det/ N total	Concentration Min(a)	Max(a)	Avg(b)	Standard Error (c)
Cooling Tower Blowdown/Cooling Water outfalls					
Field measurements					
Flow (gpm)	48/48	20	150	60	5.2
pH (Std Unit)	48/48	7.0	8.1	n/a	n/a
Total Residual Oxidant (mg/L)	0/48	<0.05	<0.05	~0.05	0.0
Groundwater/Pumpwater outfalls					
Field measurements					
Flow (gpm)	6/6	0.1	25	4.3	4.2
pH (Std Unit)	6/6	7.5	8.1	n/a	n/a
Steam Condensate outfalls					
Field measurements					
Flow (gpm)	12/12	0.1	0.25	0.11	0.013
pH (Std Unit)	12/12	7.4	7.9	n/a	n/a
Temperature (deg C)	12/12	31	36	33	0.5

(a) Prefix "<" indicates the value for a parameter was not quantifiable at the analytical detection limit.
(b) A tilde (~) indicates that estimated values and/or detection limits were used in the calculation.
© Standard error of the mean.

Table 2.10. NPDES Permit Number TN0002941, 2006 ORNL Instream Chlorine monitoring

Parameter	N det/ N total	Concentration Min(a)	Max(a)	Avg(b)	Standard Error(c)
		First Creek			
Field measurements					
pH (Std Unit)	48/48	7.3	8.1	n/a	0.028
Temperature (deg C)	48/48	8.2	21	14	0.57
Total Residual Oxidant (mg/L)	0/48	<0.05	<0.05	~0.05	0.0
		Fifth Creek			
Field measurements					
pH (Std Unit)	72/72	7.2	9.0	n/a	0.031
Temperature (deg C)	72/72	9.1	20	15	0.39
Total Residual Oxidant (mg/L)	0/72	<0.05	<0.05	~0.05	0.0
		White Oak Creek			
Field measurements					
pH (Std Unit)	144/144	7.0	8.2	n/a	0.017
Temperature (deg C)	144/144	9.4	24	17	0.34
Total Residual Oxidant (mg/L)	0/144	<0.05	<0.05	~0.05	0.0

(a) Prefix "<" indicates the value for a parameter was not quantifiable at the analytical detection limit.
(b) A tilde (~) indicates that estimated values and/or detection limits were used in the calculation.
© Standard error of the mean.

Table 2.11. Surface water analyses (2006) at ORNL Environmental Monitoring Plan surface water locations (a)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard error(d)	TWQC(e)
First Creek just upstream of Northwest Tributary (1STCK 0.1)						
Field measurements						
Dissolved Oxygen (ppm)	2/2	7.7	10	8.9	1.2	n/a
pH (Std Unit)	2/2	8.1	8.3	n/a	n/a	n/a
Temperature (deg C)	2/2	13	17	15	2.0	n/a
Radionuclides (pCi/L) (f)						
Alpha activity	2/2	3.8*	4.3*	4.0*	0.28	n/a
Beta activity	2/2	41*	46*	43*	2.7	n/a
Strontium-89/90	2/2	14*	20*	17	3.1	40
Uranium-233/234	2/2	0.39*	2.1*	1.3	0.86	20
Uranium-238	½	0.0	0.24*	0.12	0.12	24
Bear Creek downstream from Y-12 Complex inputs (BCK 0.6)						
Field measurements						
Dissolved Oxygen (ppm)	2/2	4.7	8.9	6.8	2.1	5
pH (Std Unit)	2/2	7.0	7.7	n/a	n/a	n/a
Temperature (deg C)	2/2	9.6	16	13	3.3	30.5
Radionuclides (pCi/L) (f)						
Alpha activity	2/2	9.3*	11*	10*	0.84	n/a
Beta activity	2/2	8.5*	15*	12	3.5	n/a
Uranium-233/234	2/2	1.6*	2.5*	2.1	0.44	20
Uranium-238	2/2	4.2*	5.6*	4.9*	0.72	24
Clinch River downstream from ORNL (CRK 32)						
Field measurements						
Dissolved Oxygen (ppm)	12/12	4.1	12	8.4	0.7	n/a
pH (Std Unit)	12/12	7.5	8.7	n/a	n/a	n/a

Table 2.11 (continued)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard error(d)	TWQC(e)
Temperature (deg C)	12/12	8.7	23	15	1.5	30.5
Radionuclides (pCi/L) (f)						
Beta activity	7/12	U0.56	20*	~4.1*	1.5	n/a
Tritium	4/12	U-100	860*	~180*	75	80,000
Water supply intake for Knox County (CRK 58)						
Field measurements						
Dissolved Oxygen (ppm)	12/12	6.8	10	8.9	0.33	n/a
pH (Std Unit)	12/12	7.2	8.7	n/a	n/a	n/a
Temperature (deg C)	12/12	7.0	27	16	1.8	30.5
Radionuclides (pCi/L) (f)						
Alpha activity	1/12	U-0.62	1.7*	~0.5*	0.22	n/a
Beryllium-7	1/12	U-13	31*	~-2.4	3.1	40,000
Beta activity	4/12	U0.19	9.5*	~2.4*	0.71	n/a
Bismuth-214	1/12	0.0	5.8*	0.48	0.48	24,000
Potassium-40	1/12	U-22	33*	~12*	5.2	280
Melton Hill Reservoir above city of Oak Ridge water intake (CRK 66)						
Field measurements						
Dissolved Oxygen (ppm)	12/12	7.0	11	8.9	0.4	n/a
pH (Std Unit)	12/12	7.2	8.7	n/a	n/a	n/a
Temperature (deg C)	12/12	8.5	27	17	1.7	30.5
Radionuclides (pCi/L) (f)						
Alpha activity	1/12	U-2.4	2.4*	~0.3	0.32	n/a
Beta activity	3/12	U-0.38	3.4*	~1.6*	0.35	n/a
East Fork Poplar Creek prior to entering Poplar Creek (EFK 0.1)						
Field measurements						
Dissolved Oxygen (ppm)	2/2	6.1	7.8	7.0	0.85	5
pH (Std Unit)	2/2	7.7	7.8	n/a	n/a	n/a

Table 2.11 (continued)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard error(d)	TWQC(e)
Temperature (deg C)	2/2	12	17	15	2.6	30.5
Radionuclides (pCi/L) (f)						
Alpha activity	2/2	3.3*	3.3*	3.3*	0.015	n/a
Beta activity	½	U0.87	3.8*	~2.3	1.5	n/a
Uranium-233/234	2/2	1.0*	1.2*	1.1*	0.06	20
Uranium-238	2/2	1.3*	2.3*	1.8	0.49	24
East Fork Poplar Creek downstream from floodplain (EFK 5.4)						
Field measurements						
Dissolved Oxygen (ppm)	2/2	7.3	9.3	8.3	1.0	5
pH (Std Unit)	2/2	7.7	8.0	n/a	n/a	n/a
Temperature (deg C)	2/2	12	18	15	3.2	30.5
Radionuclides (pCi/L) (f)						
Alpha activity	2/2	2.6*	4.5*	3.5	0.92	n/a
Beta activity	2/2	4.9*	5.7*	5.3*	0.4	n/a
Uranium-233/234	½	0.0	1.1*	0.54	0.54	20
Uranium-238	½	0.0	1.3*	0.67	0.67	24
Fifth Creek just upstream of White Oak Creek at ORNL (FIFTHCK 0.1)						
Field measurements						
Dissolved Oxygen (ppm)	2/2	8.5	14	11	2.7	n/a
pH (Std Unit)	2/2	7.9	8.0	n/a	n/a	n/a
Temperature (deg C)	2/2	9.7	19	14	4.5	n/a
Radionuclides (pCi/L) (f)						
Beta activity	2/2	19*	67*	43	24	n/a
Strontium-89/90	2/2	5.3*	29*	17	12	40
Tritium	½	U0.0	280*	~140	140	80,000

Table 2.11 (continued)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard error(d)	TWQC(e)
			Grassy Creek upstream of SEG and IT Corp. (GCK 3.6)			
Field measurements						
Dissolved Oxygen (ppm)	2/2	6.1	10	8.1	2.0	n/a
pH (Std Unit)	2/2	7.2	7.8	n/a	n/a	n/a
Temperature (deg C)	2/2	9.8	15	13	2.7	n/a
Metals (mg/L)						
Aluminum	2/2	E0.19	1.4	~0.79	0.6	n/a
Arsenic	½	<0.0015	0.0022	~0.0018	0.00033	n/a
Barium	2/2	0.032	E0.037	~0.035	0.0024	n/a
Boron	2/2	0.0066	0.01	0.0083	0.0018	n/a
Calcium	2/2	17	E30	~24	6.8	n/a
Cobalt	2/2	0.00024	0.00046	0.00035	0.00011	n/a
Copper	2/2	0.0007	0.0009	0.0008	0.0001	n/a
Iron	2/2	0.23	0.97	0.6	0.37	n/a
Lead	½	<0.0005	0.0006	~0.00055	0.000052	n/a
Magnesium	2/2	4.4	E16	~10	5.7	n/a
Manganese	2/2	0.025	0.042	0.034	0.0084	n/a
Molybdenum	2/2	0.00015	0.00019	0.00017	0.00002	n/a
Nickel	2/2	0.00087	0.0013	0.0011	0.0002	n/a
Potassium	2/2	1.1	1.5	1.3	0.17	n/a
Sodium	2/2	1.9	E1.9	~1.9	0.025	n/a
Strontium	2/2	0.035	0.045	0.04	0.0052	n/a
Sulfur	2/2	1.3	1.9	1.6	0.3	n/a
Thallium	½	<0.0004	0.00052	~0.00046	0.000058	n/a
Titanium	2/2	0.0054	0.015	0.01	0.0046	n/a
Uranium	2/2	0.000075	0.00027	0.00017	0.000099	n/a

Table 2.11 (continued)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard error(d)	TWQC(e)
Vanadium	½	<0.002	0.0068	~0.0044	0.0024	n/a
Zinc	2/2	0.0059	0.0063	0.0061	0.00019	n/a
Zirconium	½	<0.0005	0.00086	~0.00068	0.00018	n/a
Ish Creek prior to entering CRK 30.8 (ICK 0.7)						
Field measurements						
Dissolved Oxygen (ppm)	2/2	6.9	9.8	8.4	1.5	n/a
pH (Std Unit)	2/2	7.9	8.1	n/a	n/a	n/a
Temperature (deg C)	2/2	9.5	15	13	3.0	n/a
Radionuclides (pCi/L) (f)						
Alpha activity	½	U0.43	2.6*	~1.5	1.1	n/a
Beta activity	½	U1.5*	2.7*	~2.1	0.59	n/a
McCoy Branch prior to entering CRK 60.3 (McCBK 1.8)						
Field measurements						
Dissolved Oxygen (ppm)	2/2	6.3	8.7	7.5	1.2	n/a
pH (Std Unit)	2/2	7.9	8.1	n/a	n/a	n/a
Temperature (deg C)	2/2	9.6	20	15	5.4	n/a
Radionuclides (pCi/L) (f)						
Beta activity	2/2	3.2*	3.8*	3.5*	0.31	n/a
Melton Branch downstream from ORNL (MEK 0.2)						
Field measurements						
Dissolved Oxygen (ppm)	6/6	5.4	12	9.1	1.1	5
pH (Std Unit)	6/6	7.6	8.6	n/a	n/a	n/a
Temperature (deg C)	6/6	6.9	23	15	2.8	30.5
Radionuclides (pCi/L) (f)						
Alpha activity	3/6	U0.14	5.4*	~2.8*	0.94	n/a
Beta activity	6/6	110*	400*	220*	42	n/a
Strontium-89/90	6/6	54*	170*	100*	18	40

Table 2.11 (continued)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard error(d)	TWQC(e)
Tritium	6/6	24,000*	210,000*	93,000*	31,000	80,000
Uranium-238	1/6	0.0	0.21*	0.035	0.035	24
Northwest Tributary prior to entering 1st Creek at ORNL (NWTK 0.1)						
Field measurements						
Dissolved Oxygen (ppm)	2/2	6.9	10	8.6	1.7	n/a
pH (Std Unit)	2/2	7.9	8.1	n/a	n/a	n/a
Temperature (deg C)	2/2	12	16	14	2.4	n/a
Radionuclides (pCi/L) (f)						
Alpha activity	2/2	5.0*	6.2*	5.6*	0.59	n/a
Beta activity	2/2	79*	100*	90*	11	n/a
Potassium-40	½	U-3.1	130*	~65	68	280
Strontium-89/90	2/2	27*	38*	33	5.4	40
Uranium-233/234	½	0.0	1.6*	0.8	0.8	20
Raccoon Creek sampling station prior to entering CRK 31 (RCK 2.0)						
Field measurements						
Dissolved Oxygen (ppm)	2/2	5.6	8.1	6.9	1.3	n/a
pH (Std Unit)	2/2	7.6	7.7	n/a	n/a	n/a
Temperature (deg C)	2/2	10	14	12	2.1	n/a
Radionuclides (pCi/L) (f)						
Alpha activity	½	U1.9*	2.1*	~2.0*	0.13	n/a
Beta activity	2/2	13*	89*	51	38	n/a
Strontium-89/90	2/2	1.7*	39*	20	18	40
Tritium	½	U31	220*	~120	94	80,000

Table 2.11 (continued)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard error(d)	TWQC(e)
Walker Branch prior to entering CRK 53.4 (WBK 0.1)						
Field measurements						
Dissolved Oxygen (ppm)	2/2	3.9	9.8	6.9	3.0	n/a
pH (Std Unit)	2/2	7.7	8.4	n/a	n/a	n/a
Temperature (deg C)	2/2	12	18	15	2.9	n/a
Radionuclides (pCi/L) (f)						
Beta activity	½	U1.6*	1.8*	~1.7*	0.075	n/a
White Oak Lake at White Oak Dam (WCK 1.0)						
Field measurements						
Dissolved Oxygen (ppm)	12/12	5.0	13	8.7	0.71	5
pH (Std Unit)	12/12	7.4	8.3	n/a	n/a	n/a
Temperature (deg C)	12/12	5.9	28	16	2.3	30.5
Metals (mg/L)						
Aluminum	12/12	0.45	2.3	1.3	0.18	n/a
Arsenic	5/12	<0.0015	0.0038	~0.0019	0.00019	0.34
Barium	12/12	0.037	0.057	0.046	0.002	n/a
Boron	12/12	0.017	0.037	0.026	0.0017	n/a
Calcium	12/12	32	46	41	0.97	n/a
Chromium	12/12	0.0019	0.012	0.0065	0.00093	n/a
Cobalt	12/12	0.00038	0.00095	0.00065	0.000061	n/a
Copper	12/12	0.0026	0.0055	0.0038	0.0003	0.013
Iron	12/12	0.69	2.0	1.3	0.14	n/a
Lead	12/12	0.00053	0.0023	0.0015	0.00017	0.065
Lithium	10/12	<0.002	0.0061	~0.0032	0.00032	n/a
Magnesium	12/12	6.6	E13	~9.9	0.56	n/a
Manganese	12/12	0.046	0.15	0.099	0.011	n/a
Mercury	3/12	<0.00005	0.000098	~0.000065	0.000005	0.0014

Table 2.11 (continued)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard error(d)	TWQC(e)
Molybdenum	12/12	0.0029	0.018	0.0098	0.0017	n/a
Nickel	12/12	0.0013	0.0027	0.0021	0.00012	0.47
Phosphorous	12/12	0.1	0.41	0.23	0.028	n/a
Potassium	12/12	1.8	5.4	3.3	0.34	n/a
Silver	5/12	<0.0002	0.00039	~0.00025	0.000023	0.0032
Sodium	12/12	6.6	36	23	2.6	n/a
Strontium	12/12	0.069	0.13	0.11	0.005	n/a
Sulfur	12/12	6.3	25	17	1.7	n/a
Thallium	2/12	<0.0004	0.00042	~0.0004	0.0000017	n/a
Titanium	12/12	0.0053	0.033	0.015	0.0024	n/a
Uranium	12/12	0.00092	0.0036	0.0017	0.0002	n/a
Vanadium	5/12	<0.002	0.014	~0.0034	0.00098	n/a
Zinc	12/12	0.0085	0.023	0.017	0.0015	0.12
Zirconium	10/12	<0.0005	0.0045	~0.0015	0.00031	n/a
Radionuclides (pCi/L) (f)						
Alpha activity	9/12	U0.76	14*	~4.9*	0.98	n/a
Beta activity	12/12	140*	290*	180*	13	n/a
Bismuth-214	1/12	0.0	5.6*	0.46	0.46	24,000
Cesium-137	12/12	6.4*	130*	37*	11	120
Plutonium-238	1/12	0.0	0.19*	0.016	0.016	1.6
Plutonium-239/240	2/12	0.0	0.44*	0.053	0.038	1.2
Potassium-40	1/12	U-5.7	54*	~11*	4.8	280
Strontium-89/90	12/12	23*	120*	66*	7.2	40
Thorium-230	2/12	0.0	0.6*	0.095	0.064	12
Tritium	12/12	12,000*	57,000*	34,000*	4,700	80,000
Uranium-233/234	9/12	0.0	5.8*	2.5*	0.56	20
Uranium-235/236	1/12	0.0	0.17*	0.014	0.014	n/a
Uranium-238	9/12	0.0	0.92*	0.45*	0.089	24

Table 2.11 (continued)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard error(d)	TWQC(e)
Volatile organics (ug/L)						
Acetone	5/12	U1.3	7.1	~4.5	0.4	n/a
Bromodichloromethane	1/12	U0.25	U1.0	~0.88	0.083	n/a
Chloroform	12/12	J0.28	J1.6	~0.62	0.098	n/a
Methylene chloride	2/12	U2.0	U5.0	~4.3	0.37	n/a
Tetrachloroethene	1/12	U0.25	U1.0	~0.9	0.07	n/a
White Oak Creek downstream from ORNL (WCK 2.6)						
Field measurements						
Dissolved Oxygen (ppm)	6/6	7.6	11	9.4	0.52	5
pH (Std Unit)	6/6	7.4	8.7	n/a	n/a	n/a
Temperature (deg C)	6/6	11	24	17	2.3	30.5
Radionuclides (pCi/L) (f)						
Alpha activity	6/6	3.2*	7.6*	6.1*	0.63	n/a
Beta activity	6/6	76*	200*	120*	20	n/a
Cesium-137	6/6	14*	110*	59*	17	120
Plutonium-239/240	1/6	0.0	0.21*	0.035	0.035	1.2
Potassium-40	1/6	U0.0	U45*	~19*	8.4	280
Strontium-89/90	6/6	20*	66*	37*	7.0	40
Tritium	6/6	4,300*	54,000*	23,000*	7,600	80,000
Uranium-233/234	6/6	1.6*	4.8*	2.8*	0.46	20
Uranium-238	6/6	0.44*	1.2*	0.77*	0.12	24
White Oak Creek upstream from ORNL (WCK 6.8)						
Field measurements						
Dissolved Oxygen (ppm)	4/4	7.8	11	9.5	0.67	5
pH (Std Unit)	4/4	7.6	8.2	n/a	n/a	n/a
Temperature (deg C)	4/4	9.5	20	14	2.2	30.5

Table 2.11 (continued)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard error(d)	TWQC(e)
Radionuclides (pCi/L) (f)						
Alpha activity	¼	U-0.39	1.4*	~0.55	0.39	n/a
Beta activity	¼	U0.33	5.8*	~2.1	1.3	n/a

(a) All values were included in the calculations. Only parameters that have detections in one or more samples are listed in the table. The sampling and analysis plan contains a complete list of analyses performed.
(b) Prefix "J" indicates the value was estimated at or below the analytical detection limit by the laboratory; "U" indicates that the value was undetected at the analytical detection limit or MDA; "E" indicates that the percent difference between the parent sample and its serial dilution's concentration exceeds 10%; and "<" indicates the value for a parameter was not quantifiable at the analytical detection limit.
© A tilde (~) indicates that estimated values and/or detection limits were used in the calculation.
(d) Standard error of the mean.
(e) Tennessee General Water Quality Criteria for Recreation and Domestic Use, as amended (CRK 32, CRK 58, CRK 66) or Tennessee General Water Quality Criteria for Freshwater Fish and Aquatic Life, as amended (BCK 0.6, EFK 0.1, EFK 5.4, MEK 0.2, WCK 1.0, WCK 2.6, WCK 6.8). 4% of DOE DCG used for radionuclides, where applicable.
(f) Individual and average radionuclide concentrations significantly greater than zero are identified by an *. Detected radionuclides are those detected at or above MDA.

Table 3.1. 2006 tissue concentrations in Sunfish(a)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard Error(d)
Clinch River downstream from all DOE ORR inputs (CRK 16)					
Metals (mg/kg)					
Aluminum	2/2	0.92	2.1	1.5	0.59
Arsenic	2/2	0.55	0.58	0.57	0.015
Barium	2/2	0.082	0.11	0.096	0.014
Cadmium	½	<0.0057	0.006	~0.0059	0.00015
Calcium	2/2	640	1,200	920	280
Chromium	2/2	0.045	0.057	0.051	0.006
Copper	2/2	0.25	0.28	0.27	0.015
Iron	2/2	3.3	5.8	4.6	1.3
Lead	2/2	0.066	0.077	0.072	0.0055
Lithium	2/2	0.031	0.032	0.032	0.0005
Magnesium	2/2	230	260	250	15
Manganese	2/2	0.65	0.84	0.75	0.095
Mercury	2/2	0.16	0.17	0.17	0.005
Molybdenum	½	<0.016	0.026	~0.021	0.005
Phosphorous	2/2	2,100	2,400	2,300	150
Potassium	2/2	2,800	2,800	2,800	0.0
Selenium	2/2	1.1	1.2	1.2	0.05
Silicon	2/2	2.2	3.5	2.9	0.65
Sodium	2/2	520	530	530	5.0
Strontium	2/2	0.51	0.94	0.73	0.22
Thallium	2/2	0.0038	0.0038	0.0038	0.0
Titanium	2/2	0.013	0.025	0.019	0.006

Table 3.1 (continued)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard Error(d)
Uranium	2/2	0.00079	0.0009	0.00085	0.000055
Zinc	2/2	12	19	16	3.5
Pesticides and PCBs (ug/kg)					
delta-BHC	2/2	J0.3	J0.39	~0.35	0.045
PCB-1260	2/2	24	24	24	0.0
Radionuclides (pCi/g) (e)					
Alpha activity	½	U0.0081	0.12*	~0.065	0.057
Beta activity	2/2	1.6*	1.9*	1.7*	0.15
Potassium-40	2/2	3.9*	5.4*	4.7	0.77
Clinch River downstream from ORNL (CRK 32)					
Metals (mg/kg)					
Aluminum	2/2	0.12	0.44	0.28	0.16
Arsenic	2/2	0.55	0.62	0.59	0.035
Barium	2/2	0.21	0.24	0.23	0.015
Cadmium	2/2	0.0081	0.0084	0.0083	0.00015
Calcium	2/2	2,100	2,400	2,300	150
Chromium	2/2	0.066	0.069	0.068	0.0015
Copper	2/2	0.2	0.32	0.26	0.06
Iron	2/2	2.8	3.7	3.3	0.45
Lead	2/2	0.062	0.09	0.076	0.014
Lithium	2/2	0.038	0.04	0.039	0.001
Magnesium	2/2	270	270	270	0.0
Manganese	2/2	0.51	1.0	0.76	0.25
Mercury	2/2	0.071	0.082	0.077	0.0055

Table 3.1 (continued)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard Error(d)
Molybdenum	2/2	0.021	0.048	0.035	0.014
Phosphorous	2/2	3,000	3,200	3,100	100
Potassium	2/2	3,000	3,100	3,100	50
Selenium	2/2	1.4	1.4	1.4	0.0
Silicon	2/2	1.2	1.7	1.5	0.25
Sodium	2/2	520	550	540	15
Strontium	2/2	1.9	2.1	2.0	0.1
Thallium	2/2	0.0055	0.0063	0.0059	0.0004
Uranium	2/2	0.00074	0.0009	0.00082	0.00008
Zinc	2/2	12	14	13	1.0
Pesticides and PCBs (ug/kg)					
PCB-1260	2/2	J13	33	~23	10
Radionuclides (pCi/g) (e)					
Beta activity	2/2	1.8*	1.9*	1.9*	0.03
Cesium-137	1/1	0.39*	0.39*	n/a	n/a
Potassium-40	2/2	3.1*	3.6*	3.4*	0.25
Strontium-90	2/2	0.032*	0.13*	0.081	0.049
Tritium	½	U-0.13	2.8*	~1.3	1.5
Clinch River (Solway Bridge) upstream from all DOE ORR inputs (CRK 70)					
Metals (mg/kg)					
Aluminum	2/2	0.89	5.2	3.1	2.2
Arsenic	2/2	0.49	0.66	0.58	0.085
Barium	2/2	0.13	0.14	0.14	0.005
Calcium	2/2	1,200	1,300	1,300	50

Table 3.1 (continued)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard Error(d)
Chromium	2/2	0.067	0.085	0.076	0.009
Copper	2/2	0.22	0.31	0.27	0.045
Iron	2/2	4.2	4.9	4.6	0.35
Lead	2/2	0.078	0.12	0.099	0.021
Lithium	2/2	0.04	0.04	0.04	0.0
Magnesium	2/2	260	270	270	5.0
Manganese	2/2	0.75	1.1	0.93	0.18
Mercury	2/2	0.039	0.043	0.041	0.002
Molybdenum	½	<0.016	0.017	~0.017	0.0005
Phosphorous	2/2	2,500	2,500	2,500	0.0
Potassium	2/2	3,000	3,000	3,000	0.0
Selenium	2/2	1.4	1.7	1.6	0.15
Silicon	2/2	2.7	2.8	2.8	0.05
Sodium	2/2	540	550	550	5.0
Strontium	2/2	1.1	1.1	1.1	0.0
Thallium	2/2	0.0045	0.0048	0.0047	0.00015
Titanium	½	<0.011	0.038	~0.025	0.014
Uranium	2/2	0.00086	0.0012	0.001	0.00017
Zinc	2/2	17	19	18	1.0
Pesticides and PCBs (ug/kg)					
delta-BHC	½	J0.24	U1.6	~0.92	0.68
PCB-1260	2/2	J5.6	J16	~11	5.2

Table 3.1 (continued)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard Error(d)
Radionuclides (pCi/g) (e)					
Alpha activity	2/2	0.29*	0.87*	0.58	0.29
Beta activity	2/2	2.2*	4.0*	3.1	0.9
Potassium-40	2/2	3.0*	4.0*	3.5*	0.53

(a) All values were included in the calculations. Only parameters that have detections in one or more samples are listed in the table. The sampling and analysis plan contains a complete list of analyses performed.
(b) Prefix "J" indicates the value was estimated at or below the analytical detection limit by the laboratory; "<" indicates the value for a parameter was not quantifiable at the analytical detection limit; and "U" indicates that the value was undetected at the analytical detection limit or MDA.
© A tilde (~) indicates that estimated values and/or detection limits were used in the calculation.
(d) Standard error of the mean.
(e) Individual and average radionuclide concentrations significantly greater than zero are identified by an *. Detected radionuclides are those detected at or above MDA.

Table 3.2. 2006 tissue concentrations in Catfish(a)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard Error(d)
Clinch River downstream from all DOE ORR inputs (CRK 16)					
Metals (mg/kg)					
Aluminum	2/2	0.31	0.31	0.31	0.0
Arsenic	2/2	0.45	0.49	0.47	0.02
Barium	2/2	0.0085	0.032	0.02	0.012
Cadmium	½	<0.0056	0.0066	~0.0061	0.0005
Calcium	2/2	77	290	180	110
Chromium	2/2	0.036	0.048	0.042	0.006
Copper	2/2	0.24	0.32	0.28	0.04
Iron	2/2	3.6	5.1	4.4	0.75
Lead	2/2	0.04	0.071	0.056	0.016
Lithium	2/2	0.05	0.053	0.052	0.0015
Magnesium	2/2	240	250	250	5.0
Manganese	2/2	0.22	0.46	0.34	0.12
Mercury	2/2	0.16	0.23	0.2	0.035
Molybdenum	½	<0.016	0.017	~0.017	0.0005
Phosphorous	2/2	2,000	2,200	2,100	100
Potassium	2/2	3,200	3,300	3,300	50
Selenium	2/2	0.68	0.79	0.74	0.055
Silicon	2/2	1.2	1.4	1.3	0.1
Sodium	2/2	390	410	400	10
Strontium	2/2	0.032	0.21	0.12	0.089
Thallium	2/2	0.0028	0.0034	0.0031	0.0003
Uranium	2/2	0.00075	0.0011	0.00093	0.00018
Zinc	2/2	5.8	7.7	6.8	0.95

Table 3.2 (continued)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard Error(d)
Pesticides and PCBs (ug/kg)					
PCB-1260	2/2	50	85	68	18
Radionuclides (pCi/g) (e)					
Alpha activity	½	U0.0083*	0.038*	~0.023	0.015
Beta activity	2/2	2.4*	2.5*	2.5*	0.06
Potassium-40	2/2	3.0*	5.5*	4.3	1.3
Clinch River downstream from ORNL (CRK 32)					
Metals (mg/kg)					
Aluminum	2/2	0.34	0.45	0.4	0.055
Arsenic	2/2	0.46	0.47	0.47	0.005
Barium	2/2	0.016	0.025	0.021	0.0045
Cadmium	2/2	0.006	0.0061	0.0061	0.00005
Calcium	2/2	72	75	74	1.5
Chromium	2/2	0.054	0.08	0.067	0.013
Copper	2/2	0.27	0.31	0.29	0.02
Iron	2/2	3.6	4.3	4.0	0.35
Lead	2/2	0.077	0.084	0.081	0.0035
Lithium	2/2	0.05	0.053	0.052	0.0015
Magnesium	2/2	220	220	220	0.0
Manganese	2/2	0.19	0.24	0.22	0.025
Mercury	2/2	0.081	0.13	0.11	0.025
Molybdenum	½	<0.016	0.017	~0.017	0.0005
Phosphorous	2/2	2,100	2,200	2,200	50
Potassium	2/2	3,200	3,300	3,300	50
Selenium	2/2	0.68	0.72	0.7	0.02

Table 3.2 (continued)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard Error(d)
Silicon	2/2	1.1	1.3	1.2	0.1
Sodium	2/2	420	430	430	5.0
Strontium	2/2	0.044	0.048	0.046	0.002
Thallium	2/2	0.0024	0.0027	0.0026	0.00015
Uranium	2/2	0.00076	0.00094	0.00085	0.00009
Zinc	2/2	6.9	7.9	7.4	0.5
Pesticides and PCBs (ug/kg)					
alpha-Chlordane	2/2	1.8	3.3	2.6	0.75
gamma-Chlordane	½	J0.66	U1.7	~1.2	0.52
PCB-1260	2/2	180	720	450	270
Radionuclides (pCi/g) (e)					
Alpha activity	½	U0.0018	0.035*	~0.018	0.017
Beta activity	2/2	2.1*	2.2*	2.2*	0.03
Potassium-40	2/2	3.5*	4.8*	4.2	0.69
Clinch River (Solway Bridge) upstream from all DOE ORR inputs (CRK 70)					
Metals (mg/kg)					
Aluminum	2/2	0.49	1.0	0.75	0.26
Arsenic	2/2	0.41	0.46	0.44	0.025
Barium	2/2	0.025	0.068	0.047	0.022
Cadmium	½	<0.0055	0.0068	~0.0062	0.00065
Calcium	2/2	130	140	140	5.0
Chromium	2/2	0.05	0.068	0.059	0.009
Copper	2/2	0.26	0.46	0.36	0.1
Iron	2/2	4.1	6.2	5.2	1.1
Lead	2/2	0.075	0.11	0.093	0.018
Lithium	2/2	0.055	0.063	0.059	0.004

Table 3.2 (continued)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard Error(d)
Magnesium	2/2	220	240	230	10
Manganese	2/2	0.21	0.23	0.22	0.01
Mercury	2/2	0.051	0.14	0.096	0.045
Molybdenum	2/2	0.048	0.072	0.06	0.012
Phosphorous	2/2	2,000	2,100	2,100	50
Potassium	2/2	2,900	3,100	3,000	100
Selenium	2/2	0.79	0.9	0.85	0.055
Silicon	2/2	1.2	1.8	1.5	0.3
Sodium	2/2	310	410	360	50
Strontium	2/2	0.072	0.11	0.091	0.019
Thallium	2/2	0.0016	0.0029	0.0023	0.00065
Uranium	2/2	0.00088	0.0035	0.0022	0.0013
Zinc	2/2	6.4	7.6	7.0	0.6
Pesticides and PCBs (ug/kg)					
alpha-Chlordane	2/2	6.0	12	9.0	3.0
Dieldrin	½	U1.6	8.6	~5.1	3.5
gamma-Chlordane	2/2	2.4	10	6.2	3.8
Heptachlor epoxide	½	U1.6	J1.6	~1.6	0.0
PCB-1260	2/2	160	190	180	15

Table 3.2 (continued)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard Error(d)
Radionuclides (pCi/g) (e)					
Alpha activity	½	U0.012*	0.053*	~0.032	0.021
Beta activity	2/2	2.3*	3.1*	2.7*	0.4
Potassium-40	2/2	2.9*	2.9*	2.9*	0.01

(a) All values were included in the calculations. Only parameters that have detections in one or more samples are listed in the table. The sampling and analysis plan contains a complete list of analyses performed.
(b) Prefix "J" indicates the value was estimated at or below the analytical detection limit by the laboratory; "<" indicates the value for a parameter was not quantifiable at the analytical detection limit; and "U" indicates that the value was undetected at the analytical detection limit or MDA.
© A tilde (~) indicates that estimated values and/or detection limits were used in the calculation.
(d) Standard error of the mean.
(e) Individual and average radionuclide concentrations significantly greater than zero are identified by an *. Detected radionuclides are those detected at or above MDA.

Table 3.3. Concentration of radionuclides detected in raw milk, 2006

Analysis	No. detected/ no. total	Detected concentration (pCi/L)[a,b]			Standard error of mean
		Max	Min	Avg	
Claxton					
Potassium-40	6/6	1200*	1100*	1200*	17
Total rad Sr	2/6	1.9*	0.51*	1.2*	0.21
Maryville					
Potassium-40	6/6	1400*	1100*	1300*	45
Total rad Sr	2/6	1.2*	0.12	0.76	0.16
Powell					
Potassium-40	6/6	1300*	1100*	1200*	28
Total rad Sr	3/6	2.1*	1.1*	1.6*	0.17

[a]Detected radionuclides are those detected above minimum detectable activity. 1 pCi = 3.7×10^{-2} Bq.

[b]Individual and average concentrations significantly greater than zero at the 95% confidence level are identified by an asterisk (*).

Table 3.4. Surface water analyses (2006) at ORR Environmental Monitoring Plan surface water locations (a)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard Error(d)	TWQC(e)
Clinch River downstream from all DOE ORR inputs (CRK 16)						
Field measurements						
Dissolved Oxygen (ppm)	12/12	5.3	11	8.0	0.45	n/a
pH (Std Unit)	12/12	7.6	8.6	n/a	n/a	n/a
Temperature (deg C)	12/12	8.0	24	16	1.7	30.5
Metals (mg/L)						
Aluminum	12/12	0.098	0.45	0.25	0.028	n/a
Antimony	1/12	<0.0005	0.00055	~0.0005	0.0000041	0.014
Arsenic	3/12	<0.0015	0.0028	~0.0017	0.00013	0.05
Barium	12/12	0.027	0.042	0.036	0.0014	n/a
Boron	12/12	0.01	0.023	0.016	0.00096	n/a
Calcium	12/12	29	E40	~34	0.82	n/a
Chromium	5/12	<0.001	0.0037	~0.0015	0.00023	n/a
Cobalt	12/12	0.00023	0.00043	0.0003	0.000017	n/a
Copper	12/12	0.00099	0.0031	0.0015	0.00018	n/a
Iron	12/12	0.19	0.74	0.39	0.045	n/a
Lithium	11/12	<0.002	0.004	~0.0028	0.00015	n/a
Magnesium	12/12	E8.5	13	~11	0.36	n/a
Manganese	12/12	0.032	0.066	0.045	0.0031	n/a
Molybdenum	12/12	0.00044	0.0012	0.00069	0.000057	n/a
Nickel	12/12	0.00095	0.0016	0.0013	0.000056	0.61
Phosphorous	6/12	<0.02	0.07	~0.031	0.0043	n/a
Potassium	12/12	1.6	2.0	1.8	0.036	n/a
Sodium	12/12	4.7	E9.7	~6.8	0.4	n/a
Strontium	12/12	0.078	0.13	0.11	0.0048	n/a
Sulfur	12/12	5.2	9.9	7.8	0.42	n/a

Table 3.4 (continued)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard Error(d)	TWQC(e)
Thallium	3/12	<0.0004	0.0007	~0.00045	0.000033	0.0017
Titanium	12/12	0.0022	0.0067	0.0038	0.00039	n/a
Uranium	12/12	0.00022	0.00044	0.00032	0.00002	n/a
Vanadium	1/12	<0.002	0.0022	~0.002	0.000017	n/a
Zinc	12/12	0.0027	0.008	0.0046	0.00047	n/a
Zirconium	6/12	<0.0005	0.0021	~0.00079	0.00015	n/a
Radionuclides (pCi/L) (f)						
Beryllium-7	1/12	U-15	U18	~4.0	2.8	40,000
Beta activity	6/12	U-2.9	7.2*	~2.5*	0.69	n/a
Volatile organics (ug/L)						
Acetone	3/12	U1.3	U5.0	~4.0	0.44	n/a
Methylene chloride	2/12	U2.0	U5.0	~4.3	0.38	47
Water supply intake for the ETTP (CRK 23)						
Field measurements						
Dissolved Oxygen (ppm)	12/12	4.2	13	8.4	0.65	n/a
pH (Std Unit)	12/12	7.4	8.6	n/a	n/a	n/a
Temperature (deg C)	12/12	8.9	23	16	1.5	30.5
Radionuclides (pCi/L) (f)						
Alpha activity	3/12	U-0.83	4.1*	~0.83*	0.37	n/a
Beta activity	8/12	U0.36	8.0*	~3.1*	0.6	n/a
Potassium-40	1/12	U-2.9	U70*	~18*	5.9	280
Tritium	2/12	U-120	440*	~120*	45	80,000
Uranium-233/234	1/12	0.0	0.26*	0.022	0.022	20

Table 3.4 (continued)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard Error(d)	TWQC(e)
Clinch River (Solway Bridge) upstream from all DOE ORR inputs (CRK 70)						
Field measurements						
Dissolved Oxygen (ppm)	12/12	6.6	11	8.5	0.4	n/a
pH (Std Unit)	12/12	7.0	8.6	n/a	n/a	n/a
Temperature (deg C)	12/12	9.4	27	17	1.5	30.5
Metals (mg/L)						
Aluminum	12/12	0.081	1.8	0.36	0.14	n/a
Arsenic	2/12	<0.0015	0.0021	~0.0016	0.000058	0.05
Barium	12/12	0.03	0.043	0.037	0.0011	n/a
Boron	12/12	0.012	0.022	0.017	0.00083	n/a
Calcium	12/12	32	39	35	0.64	n/a
Chromium	5/12	<0.001	0.0033	~0.0014	0.00021	n/a
Cobalt	12/12	0.00019	0.00084	0.00033	0.00005	n/a
Copper	12/12	0.0007	0.0044	0.0021	0.00032	n/a
Iron	12/12	0.19	1.7	0.46	0.12	n/a
Lead	2/12	<0.0005	0.0012	~0.00056	0.000055	n/a
Lithium	12/12	0.0021	0.0057	0.0036	0.00029	n/a
Magnesium	12/12	E8.3	E12	~11	0.34	n/a
Manganese	12/12	0.042	0.098	0.06	0.0058	n/a
Molybdenum	12/12	0.00023	0.0023	0.00095	0.00019	n/a
Nickel	12/12	0.00098	0.0023	0.0015	0.0001	0.61
Phosphorous	5/12	<0.02	0.069	~0.029	0.0048	n/a
Potassium	12/12	1.5	2.3	1.8	0.066	n/a
Sodium	12/12	4.6	8.3	7.0	0.34	n/a
Strontium	12/12	0.083	0.13	0.12	0.0046	n/a
Sulfur	12/12	5.2	10	8.4	0.45	n/a
Thallium	4/12	<0.0004	0.0007	~0.00046	0.000033	0.0017

Table 3.4 (continued)

Parameter	N det/ N total	Min(b)	Max(b)	Avg(c)	Standard Error(d)	TWQC(e)
Titanium	9/12	<0.002	0.017	~0.0057	0.0017	n/a
Uranium	12/12	0.00019	0.00035	0.00026	0.000015	n/a
Vanadium	1/12	<0.002	0.012	~0.0029	0.00087	n/a
Zinc	12/12	0.0034	0.016	0.0066	0.00093	n/a
Zirconium	4/12	<0.0005	0.002	~0.00078	0.00014	n/a
Radionuclides (pCi/L) (f)						
Beta activity	4/12	U0.0073	4.2*	~2.1*	0.31	n/a
Tritium	2/12	U-160	230*	~54	40	80,000
Volatile organics (ug/L)						
Acetone	3/12	U1.3	U5.0	~4.0	0.44	n/a
Methylene chloride	2/12	U2.0	U5.0	~4.3	0.38	47
Tetrachloroethene	1/12	U0.25	U1.0	~0.88	0.084	8

(a) All values were included in the calculations. Only parameters that have detections in one or more samples are listed in the table. The sampling and analysis plan contains a complete list of analyses performed.
(b) Prefix "U" indicates that the value was undetected at the analytical detection limit or MDA; "E" indicates that the percent difference between the parent sample and its serial dilution's concentration exceeds 10%; and "<" indicates the value for a parameter was not quantifiable at the analytical detection limit.
© A tilde (~) indicates that estimated values and/or detection limits were used in the calculation.
(d) Standard error of the mean.
(e) Tennessee General Water Quality Criteria for Recreation and Domestic Use, as amended (CRK 16, CRK 23,CRK 70). 4% of DOE DCG used for radionuclides, where applicable.
(f) Individual and average radionuclide concentrations significantly greater than zero are identified by an *. Detected radionuclides are those detected at or above MDA.

Table 3.5 Radiological constituents in settleable solids near the ORR, 2006[a]

Event	Co-60	Cs-137	Gross alpha	Gross beta
White Oak Creek Headwaters upstream from ORNL (WOCHW)				
January	b	b	b	b
April	b	0.069 ± 0.015	b	b
Melton Branch upstream from ORNL (MEK 2.1)				
January	b	b	b	130 ± 40
April	b	0.096 ± 0.032	6.8 ± 3.5	380 ± 20
White Oak Creek downstream from ORNL (WCK 2.6)				
January	b	890 ± 20	12 ± 3	590 ± 10
April	b	1.7 ± 0.1	b	230 ± 30
White Oak Lake at White Oak Dam (WCK 1.0)				
January	b	1500 ± 100	21 ± 6	110 ± 30
April	b	3.1 ± 0.1	b	790 ± 70

[a]All data are given in picocuries per liter (1 pCi = 3.7E-02 Bq).
[b]No value detected above MDA.

Table 4.1. Y-12 Plant Discharge Point C11, STORMWATER MONITORING SITE C11

From: 2006/05/01 To: 2006/12/31

Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, mgd	230	24.5	2.513	7.45	d	0
pH, Standard Unit	18	8.0	7.4	d	9/ 6(e)	0
Temperature, deg C	18	22.3	15.3	18.5	30.5	0
Total Residual Chlorine	16	<0.05	<0.05	<0.05	d	0
Silver	10	<0.0004	<0.0004	<0.0004	d	0
Aluminum	10	1.25	<0.2	<0.5	d	0
Arsenic	10	<0.002	<0.002	<0.002	d	0
Boron	10	<0.1	<0.1	<0.1	d	0
Barium	10	0.0454	0.0352	0.0409	d	0
Beryllium	10	<0.0002	<0.0002	<0.0002	d	0
Cadmium	10	<0.001	<0.001	<0.001	d	0
Cobalt	10	0.0007	0.0003	0.0004	d	0
Chromium	10	<0.004	<0.004	<0.004	d	0
Copper	10	0.0121	0.0022	0.0047	d	0
Hexane Extractable Material	10	<6.9	<5.6	<6.0	d	0
Mercury	18	0.0007	<0.0002	<0.0003	d	0
Lithium	10	0.195	0.0111	0.0338	d	0
Magnesium	10	13.0	6.19	10.9	d	0
Molybdenum	10	0.0108	0.0017	0.0056	d	0
Total Nitrogen	8	2.26	0.832	1.39	d	0
Nickel	10	0.0023	<0.002	<0.002	d	0
Nitrate/Nitrite as Nitrogen	10	1.42	0.748	1.05	d	0
Phosphorus	10	<0.5	<0.5	<0.5	d	0
Lead	10	0.0025	<0.0002	<0.001	d	0
Antimony	10	<0.001	<0.001	<0.001	d	0
Strontium	10	0.138	0.0667	0.120	d	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.2. Y-12 Plant Discharge Point C11, STORMWATER MONITORING SITE C11

From: 2006/05/01 To: 2006/12/31

Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
Surfactant	10	0.273	<0.05	<0.08	d	0
Suspended Solids	18	23.2	1.6	6.0	d	0
Thallium	10	<0.0002	<0.0002	<0.0002	d	0
Uranium	10	0.0329	0.0022	0.0074	d	0
Vanadium	10	<0.02	<0.02	<0.02	d	0
Zinc	10	0.122	0.0104	0.0416	d	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.3. Y-12 Plant Discharge Point 017, OUTFALL 017

From: 2006/01/01 To: 2006/04/30

Parameter	Number of Samples	Concentration Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, mgd	68	0.219	0.011	0.046	d	d
pH, Standard Unit	17	7.2	6.7	d	9/ 6(e)	0
Kjeldahl Nitrogen	17	2.94	<1.0	<1.3	d	d
Ammonia as Nitrogen	17	2.2	0.408	0.79	64.8	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.4. Y-12 Plant Discharge Point 021, OUTFALL 021

From: 2006/05/01 To: 2006/12/31

Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, mgd	242	6.2726	0.006	0.2	d	0
pH, Standard Unit	4	7.4	7.0	d	9/ 6(e)	0
Total Residual Chlorine	3	<0.05	<0.05	<0.05	0.188	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.5. Y-12 Plant Discharge Point 021, OUTFALL 021

From: 2006/01/01 To: 2006/04/30

Parameter	Number of Samples	Concentration Max	Concentration Min	Concentration Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, mgd	120	1.942	0.044	0.25	d	d
pH, Standard Unit	51	7.8	7.1	d	9/ 6(e)	0
Temperature, deg C	51	16.7	8.8	12	30.5	0
Total Residual Chlorine	51	<0.05	<0.05	<0.05	0.188	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.6. Y-12 Plant Discharge Point 051, OUTFALL 051

From: 2006/05/01 To: 2006/12/31

Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, mgd	245	1.601	0.004	0.1	d	0
pH, Std Unit	8	7.2	7.0	d	9/ 6(e)	0
Mercury	35	0.0024	0.001	0.0017	0.1	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.7. Y-12 Plant Discharge Point 051, OUTFALL 051

From: 2006/01/01 To: 2006/04/30

Parameter	Number of Samples	Concentration Max	Concentration Min	Concentration Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, mgd	120	1.812	0.015	0.17	d	d
pH, Standard Unit	34	7.3	6.8	d	9/ 6(e)	0
Mercury	17	0.0019	0.0009	0.001	d	d

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.8. Y-12 Plant Discharge Point 055, OUTFALL 055

From: 2006/01/01 To: 2006/12/31

Parameter	Number of Samples	Concentration Max	+/-	Min	+/-	Average	Standard Error	Percentage of DCG	Total Curies
Alpha activity (pCi/L)	2	0.91*	+/-2.4	0.88*	+/-3	0.90	0.015	e	6.6E-06
Beta activity (pCi/L)	2	6.4	+/-2.7	4.0*	+/-3.2	5.2	1.2	e	3.8E-05
Cobalt-60 (pCi/L)	2	0.4*	+/-1.8	-0.37*	+/-1.9	0.015	0.38	0.0003	1.1E-07
Cesium-137 (pCi/L)	2	0.64*	+/-1.9	-0.14*	+/-1.8	0.25	0.39	0.0083	1.8E-06
Neptunium-237 (pCi/L)	1	-0.03*	+/-0.13	-0.03*	+/-0.13	-0.03		-0.1	-2E-07
Plutonium-238 (pCi/L)	1	-0.058*	+/-0.18	-0.058*	+/-0.18	-0.058		-0.14	-4.2E-07
Plutonium-239/240 (pCi/L)	1	0.0032*	+/-0.068	0.0032*	+/-0.068	0.0032		0.011	2.3E-08
Radium-226 (pCi/L)	2	0.61*	+/-0.47	0.011*	+/-0.019	0.31	0.30	0.31	2.3E-06
Radium-228 (pCi/L)	2	0.43*	+/-0.69	0.35*	+/-1.2	0.39	0.04	0.39	2.9E-06
Strontium-89/90 (pCi/L)	2	1.7*	+/-1.2	0.61*	+/-1	1.2	0.54	0.12	8.5E-06
Total Radium Alpha (pCi/L)	2	0.79	+/-0.30	0.32	+/-0.17	0.56	0.24	e	4.1E-06
Technetium-99 (pCi/L)	2	-0.97*	+/-8.7	-1.3*	+/-9	-1.1	0.16	-0.0011	-8.3E-06
Thorium-228 (pCi/L)	2	-0.037*	+/-0.41	-0.11*	+/-0.24	-0.074	0.036	-0.018	-5.4E-07
Thorium-230 (pCi/L)	2	0.17*	+/-0.3	-0.43*	+/-0.66	-0.13	0.30	-0.043	-9.5E-07
Thorium-232 (pCi/L)	2	0.016*	+/-0.063	-0.071*	+/-0.11	-0.028	0.044	-0.055	-2.0E-07
Thorium-234 (pCi/L)	2	1.2	+/-0.37	0.48	+/-0.08	0.84	0.36	0.0084	6.2E-06
Uranium-234 (pCi/L)	2	1.6	+/-0.43	0.75*	+/-0.45	1.2	0.42	0.24	8.6E-06
Uranium-235 (pCi/L)	2	0.045*	+/-0.11	0.031*	+/-0.063	0.038	0.007	0.0063	2.8E-07
Uranium-236 (pCi/L)	2	0.051*	+/-0.08	0.0*	+/-0	0.026	0.026	0.0051	1.9E-07
Uranium-238 (pCi/L)	2	1.2	+/-0.37	0.48	+/-0.24	0.84	0.36	0.14	6.2E-06

(e) Not applicable
* Provisional Result

Table 4.9. Y-12 Plant Discharge Point 055, OUTFALL 055

From: 2006/05/01 To: 2006/12/31

Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, mgd	245	0.0545	0.0001	0.003	d	0
pH, Std Unit	13	8.0	7.4	d	9/ 6(e)	0
Total Residual Chlorine	2	<0.05	<0.05	<0.05	0.5	0
Mercury	35	0.0005	<0.0002	<0.0002	0.004	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.10. Y-12 Plant Discharge Point 055, OUTFALL 055

From: 2006/01/01 To: 2006/04/30

Parameter	Number of Samples	Concentration Max	Concentration Min	Concentration Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, mgd	120	0.0494	0.0007	0.009	d	d
pH, Standard Unit	34	7.9	7.1	d	9/ 6(e)	0
Total Residual Chlorine	32	<0.05	<0.05	<0.05	0.5	0
Mercury	34	0.0005	<0.0002	<0.0002	0.004	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.11. Y-12 Plant Discharge Point 077, OUTFALL 077

From: 2006/05/01 To: 2006/12/31

Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, mgd	8	0.0114	0.0114	0. 0114	d	0
pH, Standard Unit	8	8.4	7.5	d	9/ 6(e)	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.12. Y-12 Plant Discharge Point 077, OUTFALL 077

From: 2006/01/01 To: 2006/04/30

Parameter	Number of Samples	Concentration Max	Concentration Min	Concentration Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, mgd	4	0.0114	0.0114	0.0114	d	d
pH, Standard Unit	4	8.0	7.7	d	9/ 6(e)	0
Total Residual Chlorine	4	<0.05	<0.05	<0.05	0.5	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.13. Y-12 Plant Discharge Point 109, OUTFALL 109

From: 2006/05/01 To: 2006/12/31

Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, mgd	4	1.4	0.0913	0.42	d	0
pH, Standard Unit	4	7.7	6.9	d	9/ 6(e)	0
Total Residual Chlorine	3	<0.05	<0.05	<0.05	0.5	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.14. Y-12 Plant Discharge Point 125, OUTFALL 125

From: 2006/01/01 To: 2006/12/31

Parameter	Number of Samples	Concentration Max	+/-	Min	+/-	Average	Standard Error	Percentage of DCG	Total Curies
Alpha activity (pCi/L)	2	6.4	+/-3.1	4.0	+/-2.9	5.2	1.2	e	6.0E-03
Beta activity (pCi/L)	2	4.2*	+/-3.3	3.9	+/-3	4.0	0.15	e	4.6E-03
Cobalt-60 (pCi/L)	2	0.85*	+/-2.3	0.19*	+/-2.3	0.52	0.33	0.010	6.0E-04
Cesium-137 (pCi/L)	2	-0.11*	+/-2.2	-0.36*	+/-2.3	-0.24	0.12	-0.0078	-2.7E-04
Plutonium-238 (pCi/L)	1	-0.063*	+/-0.17	-0.063*	+/-0.17	-0.063		-0.16	-7.2E-05
Plutonium-239/240 (pCi/L)	1	-0.054*	+/-0.27	-0.054*	+/-0.27	-0.054		-0.18	-6.2E-05
Radium-228 (pCi/L)	2	7.1*	+/-12	2.3*	+/-17	4.7	2.4	4.7	5.4E-03
Thorium-228 (pCi/L)	2	1.1	+/-0.5	-0.043*	+/-0.079	0.53	0.57	0.13	6.0E-04
Thorium-230 (pCi/L)	2	0.017*	+/-0.14	-4.8*	+/-18	-2.4	2.4	-0.80	-2.7E-03
Thorium-232 (pCi/L)	2	0.0037*	+/-0.061	0.0033*	+/-0.082	0.0035	0.0002	0.0070	4.0E-06
Thorium-234 (pCi/L)	2	1.4	+/-0.57	0.57	+/-0.30	0.99	0.42	0.0099	1.1E-03
Tritium (pCi/L)	2	5.4*	+/-11	-20.0*	+/-550	-7.3	13	-0.0004	-8.4E-03
Uranium-234 (pCi/L)	2	0.99	+/-0.42	0.75*	+/-1	0.87	0.12	0.17	9.9E-04
Uranium-235 (pCi/L)	2	0.059*	+/-0.12	0.052*	+/-0.13	0.056	0.0035	0.0093	6.4E-05
Uranium-236 (pCi/L)	2	0.066*	+/-0.094	-0.02*	+/-0.059	0.02	0.04	0.005	3E-05
Uranium-238 (pCi/L)	2	1.4	+/-0.57	0.57	+/-0.3	0.98	0.42	0.16	1.1E-03

(e) Not applicable
* Provisional Result

Table 4.15. Y-12 Plant Discharge Point 125, OUTFALL 125

From: 2006/05/01 To: 2006/12/31

Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, mgd	220	4.037	0.068	0.83		0
IC 25 Ceriodaphnia, %	3	>36.0	>36.0	>36.0		0
IC 25 Fathead Minnows, %	3	>36.0	>36.0	>36.0		0
pH, Standard Unit	8	7.2	6.8	d	9/ 6(e)	0
Total Residual Chlorine	8	<0.05	<0.05	<0.05		0
Cadmium	8	<0.001	<0.001	<0.001	0.025	0
Mercury	35	<0.0002	<0.0002	<0.0002		0
Lead	8	0.0045	<0.0002	<0.001	1.19	0
PCB, Total	3	<0.0005	<0.0005	<0.0005	0.002	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.16. Y-12 Plant Discharge Point 125, OUTFALL 125

From: 2006/01/01 To: 2006/04/30

Parameter	Number of Samples	Concentration Max	Concentration Min	Concentration Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, mgd	4	0.615	0.357	0.467	d	d
pH, Standard Unit	4	7.1	6.7	d	9/ 6(e)	0
Total Residual Chlorine	4	<0.05	<0.05	<0.05	0.5	0
Mercury	2	<0.0002	<0.0002	<0.0002	d	d
Lead	2	0.0002	<0.0002	<0.0002	d	d

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.17. Y-12 Plant Discharge Point 135, OUTFALL 135

From: 2006/01/01 To: 2006/12/31

Parameter	Number of Samples	Concentration Max	+/-	Min	+/-	Average	Standard Error	Percentage of DCG	Total Curies
Alpha activity (pCi/L)	2	10.0	+/-3.6	6.6	+/-4.6	8.3	1.7	e	2.4E-03
Beta activity (pCi/L)	2	8.1	+/-4.2	6.1	+/-3.7	7.1	1.0	e	2.0E-03
Cobalt-60 (pCi/L)	2	0.45*	+/-2.2	0.13*	+/-1.7	0.29	0.16	0.0058	8.2E-05
Cesium-137 (pCi/L)	2	0.77*	+/-1.9	-0.664*	+/-2.1	0.053	0.72	0.0018	1.5E-05
Neptunium-237 (pCi/L)	2	0.048*	+/-0.27	0.019*	+/-0.22	0.034	0.014	0.11	9.5E-06
Plutonium-238 (pCi/L)	2	0.014*	+/-0.62	0.0034*	+/-0.22	0.0087	0.0053	0.022	2.5E-06
Plutonium-239/240 (pCi/L)	2	0.024*	+/-0.25	-0.015*	+/-0.069	0.0045	0.020	0.015	1.3E-06
Radium-226 (pCi/L)	2	0.55*	+/-0.42	0.35*	+/-1.7	0.45	0.10	0.45	1.3E-04
Radium-228 (pCi/L)	2	0.94*	+/-1.0	-0.12*	+/-0.57	0.41	0.53	0.41	1.2E-04
Strontium-89/90 (pCi/L)	2	1.2*	+/-1.9	0.95*	+/-1.3	1.1	0.12	0.11	3.0E-04
Total Radium Alpha (pCi/L)	2	0.53	+/-0.24	-0.034*	+/-0.13	0.25	0.28	e	7.0E-05
Technetium-99 (pCi/L)	2	-7.2*	+/-8.8	-11.0*	+/-9.2	-9.1	1.9	-0.0091	-2.6E-03
Thorium-228 (pCi/L)	2	0.067*	+/-0.2	-0.1*	+/-0.46	-0.016	0.084	-0.0041	-4.7E-06
Thorium-230 (pCi/L)	2	-0.075*	+/-0.78	-4.8*	+/-19	-2.4	2.4	-0.81	-6.9E-04
Thorium-232 (pCi/L)	2	0.024*	+/-0.092	0.0026*	+/-0.088	0.013	0.011	0.027	3.8E-06
Thorium-234 (pCi/L)	2	2.2*	+/-0.56	2.1	+/-0.66	2.2	0.05	0.022	6.1E-04
Uranium-234 (pCi/L)	2	2.0*	+/-0.5	1.7*	+/-1.1	1.8	0.15	0.37	5.2E-04
Uranium-235 (pCi/L)	2	0.17*	+/-0.18	0.13*	+/-0.14	0.15	0.020	0.025	4.3E-05
Uranium-236 (pCi/L)	2	0.12*	+/-0.12	0.11*	+/-0.13	0.12	0.0050	0.023	3.3E-05
Uranium-238 (pCi/L)	2	2.2*	+/-0.56	2.1	+/-0.66	2.2	0.050	0.36	6.1E-04

(e) Not applicable
* Provisional Result

Table 4.18. Y-12 Plant Discharge Point 135, OUTFALL 135

From: 2006/05/01 To: 2006/12/31

Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, mgd	245	2.503	0.008	0.2	d	0
IC 25 Ceriodaphnia, %	3	>20.0	>20.0	>20.0	d	0
IC 25 Fathead Minnows, %	3	>20.0	>20.0	>20.0	d	0
pH, Standard Unit	16	8.4	7.4	d	9/ 6(e)	0
Total Residual Chlorine	10	0.79	<0.05	<0.2	d	0
Lead	8	0.0033	<0.0002	<0.001	1.19	0
PCB, Total	3	<0.0005	<0.0005	<0.0005	0.002	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.19. Y-12 Plant Discharge Point 135, OUTFALL 135

From: 2006/01/01 To: 2006/04/30

Parameter	Number of Samples	Concentration Max	Concentration Min	Concentration Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, mgd	120	1.194	0.121	0.175	d	d

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.20. Y-12 Plant Discharge Point 200, OUTFALL 200

From: 2006/01/01 To: 2006/05/31

Parameter	Number of Samples	Concentration Max	+/-	Min	+/-	Average	Standard Error	Percentage of DCG	Total Curies
Alpha activity (pCi/L)	22	46.0	+/-6.7	1.8*	+/-3.6	18.	2.4	e	1.9E-02
Americium-241 (pCi/L)	22	0.12*	+/-0.31	-0.27*	+/-0.35	-0.052	0.024	-0.17	-5.3E-05
Beta activity (pCi/L)	22	28.0	+/-7.3	4.2*	+/-4.4	13	1.2	e	1.3E-02
Cobalt-60 (pCi/L)	22	2.7*	+/-2.4	-1.9*	+/-1.8	0.39	0.23	0.0078	4.0E-04
Cesium-137 (pCi/L)	22	2.4*	+/-2.2	-1.4*	+/-1.9	0.40	0.23	0.014	4.2E-04
Gamma Activity (pCi/L)	22	2.4*	+/-2.2	-1.4*	+/-1.9	0.40	0.23	e	4.2E-04
Neptunium-237 (pCi/L)	22	0.11*	+/-0.15	-0.19*	+/-0.27	-0.0073	0.015	-0.0241	-7.5E-06
Plutonium-238 (pCi/L)	22	0.29*	+/-0.32	-0.2*	+/-0.23	-0.02	0.03	-0.06	-2E-05
Plutonium-239/240 (pCi/L)	22	0.18*	+/-0.17	-0.07*	+/-0.09	0.006	0.01	0.02	6E-06
Radium-226 (pCi/L)	22	1.2	+/-2.3	-0.63*	+/-0.72	0.23	0.084	0.23	2.4E-04
Radium-228 (pCi/L)	22	2.4*	+/-1.2	-1.2*	+/-0.86	0.48	0.15	0.48	4.9E-04
Strontium-89/90 (pCi/L)	22	2.7	+/-1.6	-1.5*	+/-2.9	0.93	0.25	0.093	9.6E-04
Total Radium Alpha (pCi/L)	22	0.74	+/-0.27	-0.08*	+/-0.13	0.2	0.05	e	2E-04
Technetium-99 (pCi/L)	22	17.0	+/-10	-14.0*	+/-9.3	1.12	1.57	0.00110	1.15E-03
Thorium-228 (pCi/L)	22	0.12*	+/-0.25	-0.18*	+/-0.2	-0.037	0.020	-0.0092	-3.8E-05
Thorium-230 (pCi/L)	22	0.59*	+/-0.6	-0.77*	+/-2	-0.17	0.082	-0.057	-1.8E-04
Thorium-232 (pCi/L)	22	0.077*	+/-0.13	-0.089*	+/-0.13	-0.011	0.0096	-0.022	-1.1E-05
Thorium-234 (pCi/L)	22	48.0	+/-5.1	5.1	+/-0.94	16.	2.2	0.16	1.7E-02
Tritium (pCi/L)	22	1100.0	+/-550	-690.0*	+/-540	168.3	86.26	0.008400	1.740E-01
Uranium-234 (pCi/L)	22	9.4	+/-1.3	1.8	+/-0.55	4.0	0.41	0.81	4.2E-03
Uranium-235 (pCi/L)	22	0.72	+/-0.31	-0.028*	+/-0.12	0.25	0.039	0.042	2.6E-04
Uranium-236 (pCi/L)	21	0.31	+/-0.18	-0.015*	+/-0.065	0.073	0.015	0.015	7.6E-05
Uranium-238 (pCi/L)	22	48.0	+/-5.1	5.1	+/-0.94	16.	2.2	2.7	1.7E-02

(e) Not applicable
* Provisional Result

Table 4.21. Y-12 Plant Discharge Point 200, OUTFALL 200

From: 2006/05/01 To: 2006/12/31

Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, mgd	36	5.136	0.55	1.9	d	0
IC 25 Ceriodaphnia, %	3	>100.0	>100.0	>100.0	d	0
IC 25 Fathead Minnows, %	3	>100.0	>100.0	>100.0	d	0
pH, Standard Unit	36	8.1	7.4	d	9/ 6(e)	0
Total Residual Chlorine	8	<0.05	<0.05	<0.05	d	0
Cadmium	9	<0.001	<0.001	<0.001	0.025	0
Dissolved Solids	3	229.0	215.0	222.7	d	0
Hexane Extractable Material	36	<6.4	<0.5	<6	15	0
Mercury	36	0.002	0.0005	0.0011	d	0
Nitrate/Nitrite as Nitrogen	4	4.3	3.15	4.0	d	0
Lead	9	0.007	<0.0002	<0.002	1.19	0
PCB, Total	10	<0.0005	<0.0005	<0.0005	d	0
Uranium	19	0.0677	0.0063	0.021	d	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.22. Y-12 Plant Discharge Point 200, OUTFALL 200

From: 2006/01/01 To: 2006/04/30

Parameter	Number of Samples	Concentration Max	Concentration Min	Concentration Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, mgd	51	5.22	0.87	1.8	d	d
Beryllium	4	<0.0005	<0.0002	<0.0003	d	d
Cadmium	4	<0.001	<0.001	<0.001	d	d
Copper	4	0.009	0.0041	0.007	d	d
Iron	4	2.78	0.154	1.23	d	d
Fluoride	4	1.1	0.574	0.84	d	d
Hexane Extractable	51	<6.6	<6.0	<6.1	15	0
Mercury	17	0.0014	0.0007	0.0009	d	d
Nitrate/Nitrite as Nitrogen	4	5.92	4.0	4.7	d	d
Lead	4	0.0011	0.0003	0.0005	d	d
Phosphate as Phosphorus	4	0.475	0.362	0.417	d	d
Sulfate	17	74.6	29.8	42.9	d	d
Uranium	20	0.156	0.015	0.060	d	d
Zinc	4	0.0368	0.024	0.030	d	d

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.23. Y-12 Plant Discharge Point 201, OUTFALL 201

From: 2006/01/01 To: 2006/04/30

Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
96-Hour Toxicity Test With Ceriodaphnia	1	>100.0	>100.0	>100.0	d/ 100(e)	0
96-Hour Toxicity Test With Fathead minnows	1	>100.0	>100.0	>100.0	d/ 100(e)	0
NOEC, With Ceriodaphnia	1	100.0	100.0	100.0	d/ 100(e)	0
NOEC, With Fathead minnows	1	100.0	100.0	100.0	d/ 100(e)	0
pH, Standard Unit	51	8.2	7.3	d	8.5/ 6.5(e)	0
Temperature, deg C	51	24.0	8.4	13	30.5	0
Total Residual Chlorine	58	0.099	<0.05	<0.05	0.019	1
Suspended Solids	17	17.9	<1.0	<4.5	d	d

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.24. Y-12 Plant Discharge Point 512, OUTFALL 512 (GWTF)

From: 2006/01/01 To: 2006/12/31

Parameter	Number of Samples	Concentration Max	+/-	Min	+/-	Average	Standard Error	Percentage of DCG	Total Curies
Alpha activity (pCi/L)	27	19.0	+/-7.6	2.0*	+/-4.4	9.5	0.83	e	1.2E-04
Americium-241 (pCi/L)	24	0.2*	+/-0.29	-0.23*	+/-0.34	-0.03	0.03	-0.1	-4E-07
Beta activity (pCi/L)	27	19.0	+/-6.1	6.7	+/-3.8	12	0.63	e	1.5E-04
Cobalt-60 (pCi/L)	28	1.7*	+/-1.8	-2.0*	+/-2	0.29	0.18	0.0058	3.5E-06
Cesium-137 (pCi/L)	28	2.7*	+/-1.9	-1.9*	+/-2.1	0.40	0.20	0.014	4.9E-06
Neptunium-237 (pCi/L)	27	0.2*	+/-0.19	-0.23*	+/-0.26	0.02	0.02	0.06	2E-07
Plutonium-238 (pCi/L)	27	0.18*	+/-0.31	-0.23*	+/-0.28	-0.022	0.020	-0.054	-2.6E-07
Plutonium-239/240 (pCi/L)	27	0.13*	+/-0.16	-0.12*	+/-0.18	-0.0016	0.0099	-0.0055	-2.0E-08
Radium-226 (pCi/L)	28	2.6	+/-1.6	-2.9*	+/-2.6	0.16	0.16	0.16	2.0E-06
Radium-228 (pCi/L)	28	2.0*	+/-1.5	-0.83*	+/-1.1	0.45	0.13	0.45	5.4E-06
Strontium-89/90 (pCi/L)	28	5.4	+/-2.5	-0.39*	+/-0.97	1.6	0.25	0.16	1.9E-05
Total Radium Alpha (pCi/L)	56	1.3	+/-0.28	0.08*	+/-0.18	0.52	0.045	e	6.4E-06
Technetium-99 (pCi/L)	28	8.7*	+/-9.7	-17.0*	+/-9.1	-4.1	1.1	-0.0041	-5.0E-05
Thorium-228 (pCi/L)	28	1.6	+/-0.62	-0.19*	+/-0.35	0.0014	0.062	0.00040	1.7E-08
Thorium-230 (pCi/L)	28	0.76*	+/-0.64	-0.84*	+/-2	-0.12	0.070	-0.040	-1.5E-06
Thorium-232 (pCi/L)	28	0.054*	+/-0.13	-0.096*	+/-0.14	-0.015	0.0065	-0.030	-1.8E-07
Thorium-234 (pCi/L)	28	13.0	+/-1.6	1.8	+/-0.44	7.4	0.56	0.074	9.0E-05
Tritium (pCi/L)	24	1700.0	+/-660	18.0	+/-11	892	81.1	0.0446	1.08E-02
Uranium-234 (pCi/L)	28	4.3	+/-0.79	0.94	+/-0.38	2.6	0.15	0.52	3.2E-05
Uranium-235 (pCi/L)	28	0.27*	+/-0.21	-0.015*	+/-0.085	0.15	0.015	0.026	1.9E-06
Uranium-236 (pCi/L)	28	0.17	+/-0.15	-0.019*	+/-0	0.058	0.010	0.012	7.0E-07
Uranium-238 (pCi/L)	28	13.0	+/-1.6	1.8	+/-0.44	7.4	0.56	1.2	9.0E-05

(e) Not applicable
* Provisional Result

Table 4.25. Y-12 Plant Discharge Point 512, OUTFALL 512 (GWTF)

From: 2006/05/01 To: 2006/12/31

Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, mgd	132	0.018	0.001	0.0084	d	0
pH, Std Unit	8	8.1	7.5	d	9/ 6(e)	0
Copper	8	<0.005	<0.002	<0.004	d	0
Lead	8	<0.0005	<0.0002	<0.0004	d	0
PCB, Total	4	<0.0005	<0.0005	<0.0005	0.001	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.26. Y-12 Plant Discharge Point 512, OUTFALL 512 (GWTF)

From: 2006/01/01 To: 2006/04/30

Parameter	Number of Samples	Concentration Max	Concentration Min	Concentration Avg	Reference Value(b)	Number of Values Exceeding Reference
48-Hour Toxicity Test With Ceriodaphnia	1	92.4	92.4	92.4	d	d
Flow, mgd	72	0.019	0.004	0.009	d	d
pH, Standard Unit	45	8.2	7.4	d	9/ 6(e)	0
Copper	45	<0.02	<0.02	<0.02	d	d
Iron	45	0.136	<0.05	<0.05	1	0
Manganese	45	1.78	0.0193	0.376	d	d
Lead	45	<0.1	<0.1	<0.1	d	d
PCB, Total	4	<0.0005	<0.0005	<0.0005	0.001	0
Uranium	15	0.037	0.012	0.021	d	d

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.27. Y-12 Plant Discharge Point 520, OUTFALL 520

From: 2006/01/01 To: 2006/12/31

Parameter	Number of Samples	Concentration Max	+/-	Min	+/-	Average	Standard Error	Percentage of DCG	Total Curies
Alpha activity (pCi/L)	1	0.5*	+/-2.9	0.5*	+/-2.9	0.5		e	e
Americium-241 (pCi/L)	1	0.02*	+/-0.38	0.02*	+/-0.38	0.02		0.07	e
Beta activity (pCi/L)	1	4.0*	+/-3.7	4.0*	+/-3.7	4.0		e	e
Cobalt-60 (pCi/L)	1	1.32*	+/-2.5	1.32*	+/-2.5	1.32		0.0264	e
Cesium-137 (pCi/L)	1	-1.47*	+/-2.1	-1.47*	+/-2.1	-1.47		-0.0490	e
Gamma Activity (pCi/L)	1	-1.47*	+/-2.1	-1.47*	+/-2.1	-1.47		e	e
Neptunium-237 (pCi/L)	1	-0.02*	+/-0.088	-0.02*	+/-0.088	-0.02		-0.07	e
Plutonium-238 (pCi/L)	1	0.05*	+/-0.62	0.05*	+/-0.62	0.05		0.1	e
Plutonium-239/240 (pCi/L)	1	0.028*	+/-0.26	0.028*	+/-0.26	0.028		0.093	e
Radium-226 (pCi/L)	1	0.39*	+/-0.88	0.39*	+/-0.88	0.39		0.39	e
Radium-228 (pCi/L)	1	-0.15*	+/-0.87	-0.15*	+/-0.87	-0.15		-0.15	e
Strontium-89/90 (pCi/L)	1	0.094*	+/-1.3	0.094*	+/-1.3	0.094		0.0094	e
Total Radium Alpha (pCi/L)	1	0.078*	+/-0.16	0.078*	+/-0.16	0.078		e	e
Technetium-99 (pCi/L)	1	3.7*	+/-8.7	3.7*	+/-8.7	3.7		0.0037	e
Thorium-228 (pCi/L)	1	0.0*	+/-0.19	0.0*	+/-0.19	0.0		0.0	e
Thorium-230 (pCi/L)	1	0.3*	+/-0.83	0.3*	+/-0.83	0.3		0.1	e
Thorium-232 (pCi/L)	1	-0.029*	+/-0.1	-0.029*	+/-0.1	-0.029		-0.058	e
Thorium-234 (pCi/L)	1	-0.025*	+/-0.051	-0.025*	+/-0.051	-0.025		-0.00020	e
Tritium (pCi/L)	1	89.0*	+/-550	89.0*	+/-550	89.0		0.00440	e
Uranium-234 (pCi/L)	1	-0.026*	+/-0.14	-0.026*	+/-0.14	-0.026		-0.0052	e
Uranium-235 (pCi/L)	1	-0.032*	+/-0.064	-0.032*	+/-0.064	-0.032		-0.0053	e
Uranium-238 (pCi/L)	1	-0.025*	+/-0.051	-0.025*	+/-0.051	-0.025		-0.0042	e

(e) Not applicable
* Provisional Result

Table 4.28. Y-12 Plant Discharge Point 520, OUTFALL 520

From: 2006/05/01 To: 2006/12/31

Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
pH, Std Unit	14	8.0	6.1	d	9/ 6(e)	0
Dissolved Solids	14	134.0	<1.0	<18	d	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.29. Y-12 Plant Discharge Point 550, OUTFALL 550

From: 2006/01/01 To: 2006/12/31

Parameter	Number of Samples	Concentration Max	+/-	Min	+/-	Average	Standard Error	Percentage of DCG	Total Curies
Alpha activity (pCi/L)	2	3.8	+/-2.9	1.2*	+/-3.5	2.5	1.3	e	3.9E-05
Beta activity (pCi/L)	2	6.2	+/-3.3	4.1*	+/-3.2	5.2	1.1	e	8.0E-05
Cobalt-60 (pCi/L)	2	2.0*	+/-2	-0.95*	+/-2.1	0.52	1.5	0.010	8.2E-06
Cesium-137 (pCi/L)	2	-0.39*	+/-2	-1.4*	+/-2.2	-0.90	0.50	-0.030	-1.4E-05
Neptunium-237 (pCi/L)	1	0.026*	+/-0.14	0.026*	+/-0.14	0.026		0.087	4.0E-07
Plutonium-238 (pCi/L)	1	-0.033*	+/-0.22	-0.033*	+/-0.22	-0.033		-0.082	-5.1E-07
Plutonium-239/240 (pCi/L)	1	-0.024*	+/-0.057	-0.024*	+/-0.057	-0.024		-0.08	-3.7E-07
Radium-226 (pCi/L)	2	0.71*	+/-0.52	0.11*	+/-0.26	0.41	0.30	0.41	6.4E-06
Radium-228 (pCi/L)	2	1.3*	+/-1.3	-0.44*	+/-0.84	0.43	0.87	0.43	6.7E-06
Strontium-89/90 (pCi/L)	2	2.8	+/-1.5	1.9	+/-1.1	2.4	0.45	0.24	3.7E-05
Total Radium Alpha (pCi/L)	2	0.24	+/-0.14	0.079*	+/-0.16	0.16	0.080	e	2.5E-06
Technetium-99 (pCi/L)	2	-2.6*	+/-8.9	-7.4*	+/-8.7	-5.0	2.4	-0.005	-7.8E-05
Thorium-228 (pCi/L)	2	0.042*	+/-0.17	0.01*	+/-0.42	0.03	0.02	0.006	4.0E-07
Thorium-230 (pCi/L)	2	0.37*	+/-0.31	-0.25*	+/-0.68	0.06	0.3	0.02	9.E-07
Thorium-232 (pCi/L)	2	0.099*	+/-0.17	0.024*	+/-0.07	0.062	0.038	0.12	9.6E-07
Thorium-234 (pCi/L)	2	1.6	+/-0.47	1.3	+/-.42	1.4	0.15	0.014	2.3E-05
Uranium-234 (pCi/L)	2	2.2	+/-0.57	1.9	+/-0.61	2.0	0.15	0.41	3.2E-05
Uranium-235 (pCi/L)	2	0.12*	+/-0.16	0.11*	+/-0.13	0.12	0.005	0.019	1.8E-06
Uranium-236 (pCi/L)	2	0.029*	+/-0.067	0.0*	+/-0	0.014	0.014	0.0029	2.3E-07
Uranium-238 (pCi/L)	2	1.6	+/-0.47	1.3	+/-0.42	1.4	0.15	0.24	2.3E-05

(e) Not applicable
* Provisional Result

Table 4.30. Y-12 Plant Discharge Point 550, OUTFALL 550

From: 2006/05/01 To: 2006/12/31

Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, mgd	235	0.034	0.003	0.01	d	0
pH, Standard Unit	34	8.0	7.1	d	9/ 6(e)	0
Mercury	34	0.0017	<0.0002	<0.0004	0.004	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.31. Y-12 Plant Discharge Point 550, OUTFALL 550

From: 2006/01/01 To: 2006/04/30

Parameter	Number of Samples	Concentration Max	Concentration Min	Concentration Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, mgd	120	0.033	0.007	0.01	d	d
pH, Standard Unit	17	7.9	7.0	d	9/ 6(e)	0
Mercury	17	0.001	<0.0002	<0.0004	0.004	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.32. Y-12 Plant Discharge Point 551, CENTRAL MERCURY TREATMENT UNIT

From: 2006/01/01 To: 2006/12/31

Parameter	Number of Samples	Concentration Max	+/-	Min	+/-	Average	Standard Error	Percentage of DCG	Total Curies
Alpha activity (pCi/L)	10	8.6	+/-4.6	0.79*	+/-3.5	3.8	0.85	e	3.0E-05
Americium-241 (pCi/L)	9	0.1*	+/-0.31	-3.8*	+/-14	-0.8	0.6	-3	-6E-06
Beta activity (pCi/L)	10	6.6	+/-3.7	-2.5*	+/-2.9	3.6	0.89	e	2.8E-05
Cobalt-60 (pCi/L)	10	2.5*	+/-2.1	-0.86*	+/-2	0.92	0.29	0.018	7.1E-06
Cesium-137 (pCi/L)	10	1.2*	+/-2.4	-2.31*	+/-2.2	-0.22	0.28	-0.0074	-1.7E-06
Gamma Activity (pCi/L)	9	1.2*	+/-2.4	-2.31*	+/-2.2	-0.19	0.31	e	-1.4E-06
Neptunium-237 (pCi/L)	9	0.076*	+/-0.14	-0.094*	+/-0.44	-0.023	0.023	-0.075	-1.7E-07
Plutonium-238 (pCi/L)	9	0.3	+/-0.22	-0.25*	+/-0.28	-0.03	0.05	-0.07	-2E-07
Plutonium-239/240 (pCi/L)	9	0.069*	+/-0.15	-0.054*	+/-0.27	0.0035	0.013	0.012	2.7E-08
Radium-226 (pCi/L)	10	0.73	+/-0.70	-0.83*	+/-0.68	0.056	0.15	0.056	4.4E-07
Radium-228 (pCi/L)	10	1.1*	+/-1.0	-0.079*	+/-0.63	0.42	0.11	0.42	3.2E-06
Strontium-89/90 (pCi/L)	10	3.1	+/-2	-1.1*	+/-0.64	0.72	0.41	0.072	5.5E-06
Total Radium Alpha (pCi/L)	10	1.3	+/-0.40	0.33*	+/-0.29	0.71	0.094	e	5.5E-06
Technetium-99 (pCi/L)	10	0.19*	+/-8.6	-20.0*	+/-9.6	-6.5	1.9	-0.0065	-5.0E-05
Thorium-228 (pCi/L)	10	1.8	+/-0.58	-0.17*	+/-0.45	0.12	0.19	0.029	9.0E-07
Thorium-230 (pCi/L)	10	0.4*	+/-0.57	-5.2*	+/-18	-0.6	0.5	-0.2	-5E-06
Thorium-232 (pCi/L)	10	0.036*	+/-0.11	-0.11*	+/-0.19	-0.011	0.014	-0.022	-8.3E-08
Thorium-234 (pCi/L)	10	0.84	+/-0.36	0.19*	+/-0.21	0.58	0.065	0.0058	4.4E-06
Tritium (pCi/L)	9	330.0*	+/-530	-390.0*	+/-530	-67.66	83.61	-0.0034	-5.22E-04
Uranium-234 (pCi/L)	10	0.84	+/-0.29	0.08*	+/-0.2	0.5	0.08	0.1	4E-06
Uranium-235 (pCi/L)	10	0.14	+/-0.12	-0.084*	+/-0.049	-0.001	0.023	-0.0002	-7.7E-09
Uranium-236 (pCi/L)	10	0.026*	+/-0.063	-0.042*	+/-0.061	-0.0035	0.0063	-0.0007	-2.7E-08
Uranium-238 (pCi/L)	10	0.84	+/-0.36	0.19*	+/-0.21	0.58	0.065	0.096	4.4E-06

(e) Not applicable
* Provisional Result

Table 4.33. Y-12 Plant Discharge Point 551, CENTRAL MERCURY TREATMENT UNIT

From: 2006/05/01 To: 2006/12/31

Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, mgd	235	0.016	0.001	0.005	d	0
pH, Standard Unit	35	7.6	6.7	d	9/ 6(e)	0
Mercury	35	0.0004	<0.0002	<0.0002	0.004	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.34. Y-12 Plant Discharge Point 551, CENTRAL MERCURY TREATMENT UNIT

From: 2006/01/01 To: 2006/04/30

Parameter	Number of Samples	Concentration Max	Concentration Min	Concentration Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, mgd	35	0.036	0.004	0.007	d	d
pH, Std Unit	6	8.2	7.1	d	9/ 6(e)	0
Mercury	7	0.0023	0.0002	0.001	0.004	0
Uranium	2	0.0029	0.0028	0.0029	d	d

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value

Table 4.35. Y-12 Plant Category I Outfalls

From: 2006/05/01 To: 2006/12/31

Outfall	Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
003	Flow, mgd	1	0.0144	0.0144	0.0144	d	d
	pH, Standard Units	1	7.5	7.5	d	9/ 6(e)	0
006	Flow, mgd	1	00004	0.0004	0.0004	d	d
	pH, Standard Units	1	7.8	7.8	d	9/ 6(e)	0
007	Flow, mgd	1	0.0432	0.0432	0.0432	d	d
	pH, Standard Units	1	7.9	7.9	d	9/ 6(e)	0
033	Flow, mgd	1	0.0004	0.0004	0.0004	d	d
	pH, Standard Units	1	7.9	7.9	d	9/ 6(e)	0
041	Flow, mgd	1	0.0004	0.0004	0.0004	d	d
	pH, Standard Units	1	7.6	7.6	d	9/ 6(e)	0
044	Flow, mgd	1	0.0043	0.0043	0.0043	d	d
	pH, Standard Units	1	8.0	8.0	d	9/ 6(e)	0
045	Flow, mgd	1	0.0029	0.0029	0.0029	d	d
	pH, Standard Units	1	8.1	8.1	d	9/ 6(e)	0
046	Flow, mgd	1	0.0004	0.0004	0.0004	d	d
	pH, Standard Units	1	7.8	7.8	d	9/ 6(e)	0
057	Flow, mgd	1	0.0014	0.0014	0.0014	d	d
	pH, Standard Units	1	8.0	8.0	d	9/ 6(e)	0
058	Flow, mgd	1	0.0029	0.0029	0.0029	d	d
	pH, Standard Units	1	8.2	8.2	d	9/ 6(e)	0

Table 0.□. No Flow

Table 4.35 (continued)

Outfall	Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
063	Flow, mgd	1	0.0086	0.0086	0.0086	d	d
	pH, Standard Units	1	7.6	7.6	d	9/ 6(e)	0
064	Flow, mgd	1	0.0086	0.0086	0.0086	d	d
	pH, Standard Units	1	8.0	8.0	d	9/ 6(e)	0
086	Flow, mgd	1	0.0004	0.0004	0.0004	d	d
	pH, Standard Units	1	6.7	6.7	d	9/ 6(e)	0
087	Flow, mgd	1	0.0216	0.0216	0.0216	d	d
	pH, Standard Units	1	8.6	8.6	d	9/ 6(e)	0
102	Flow, mgd	1	0.0216	0.0216	0.0216	d	d
	pH, Standard Units	1	7.8	7.8	d	9/ 6(e)	0
110	Flow, mgd	1	0.0058	0.0058	0.0058	d	d
	pH, Standard Units	1	8.1	8.1	d	9/ 6(e)	0
134	Flow, mgd	1	0.0015	0.0015	0.0015	d	d
	pH, Standard Units	1	7.9	7.9	d	9/ 6(e)	0
S18	Flow, mgd	1	0.216	0.216	0.216	d	d
	pH, Standard Units	1	7.9	7.9	d	9/ 6(e)	0
S26	Flow, mgd	1	0.108	0.108	0.108	d	d
	pH, Standard Units	1	7.9	7.9	d	9/ 6(e)	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.36. Y-12 Plant Category I Outfalls

From: 2006/01/01 To: 2006/04/30

Outfall	Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
003	No measurements						
006	No measurements						
008	No measurements						
009	No measurements						
011	No measurements						
015	Outfall closed						
018	Outfall closed						
032	Outfall was eliminated						
033	No measurements						
045	No measurements						
046	No measurements						
058	No measurements						
062	No measurements						
086	No measurements						
087	No measurements						
098	Outfall eliminated						
Table 0.□.	No measurements						

Table 4.36 (continued)

Outfall	Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
Table 0.□.	No measurements						
213	This outfall has been eliminated.						
S01	No measurements						
S03	No measurements						
S04	No measurements						
S06	Flow, mgd	89	4.3913	0.0555	0.395	d	d
	pH, Standard Units	0					
S07	Flow, mgd	120	2.6672	0.039	0.41	d	d
	pH, Standard Units	0					
S09	No measurements						
S15	No measurements						
S16	No measurements						
S18	No measurements						

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.37. Y-12 Plant Category II Outfalls

From: 2006/05/01 To: 2005/12/31

Outfall	Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
002	Flow, mgd	2	0.0685	0.0144	0.0414	d	d
	pH, Standard Units	2	7.9	7.8	d	9/ 6(e)	0
	Total Residual Chlorine	2	<0.05	<0.05	<0.05	0.5	0
004	Flow, mgd	2	0.0288	0.0144	0.0216	d	d
	pH, Standard Units	2	8.0	7.9	d	9/ 6(e)	0
	Total Residual Chlorine	2	<0.05	<0.05	<0.05	0.5	0
014	Flow, mgd	2	0.0576	0.0114	0.0345	d	d
	pH, Standard Units	2	7.9	7.5	d	9/ 6(e)	0
	Total Residual Chlorine	2	<0.05	<0.05	<0.05	0.5	0
016	Flow, mgd	2	0.0288	0.02	0.02	d	d
	pH, Standard Units	2	7.9	7.7	d	9/ 6(e)	0
	Total Residual Chlorine	2	<0.05	<0.05	<0.05	0.5	0
019	Flow, mgd	2	0.144	0.0034	0.074	d	d
	pH, Standard Units	2	7.7	7.7	d	9/ 6(e)	0
	Total Residual Chlorine	2	<0.05	<0.05	<0.05	0.5	0
020	Flow, mgd	2	0.0432	0.0057	0.024	d	d
	pH, Standard Units	2	8.0	7.5	d	9/ 6(e)	0
	Total Residual Chlorine	2	<0.05	<0.05	<0.05	0.5	0
047	Flow, mgd	2	0.0432	0.0144	0.0288	d	d
	pH, Standard Units	2	8.0	7.7	d	9/ 6(e)	0
	Total Residual Chlorine	3	0.46	<0.05	<0.3	0.5	0
048	Flow, mgd	2	0.0072	0.0043	0.0058	d	d
	pH, Standard Units	2	8.0	7.4	d	9/64(e)	0
	Total Residual Chlorine	3	0.37	<0.05	<0.3	0.5	0

Table 4.37 (continued)

Outfall	Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
054	Flow, mgd	2	0.0008	0.0004	0.0006	d	d
	pH, Standard Units	2	7.8	7.5	d	9/ 6(e)	0
	Total Residual Chlorine	2	<0.05	<0.05	<0.05	0.5	0
067	Flow, mgd	2	0.0432	0.03	0.04	d	d
	pH, Standard Units	2	8.0	7.8	d	9/ 6(e)	0
	Total Residual Chlorine	2	<0.05	<0.05	<0.05	0.5	0
083	Flow, mgd	2	0.0043	0.0029	0.0036	d	d
	pH, Standard Units	2	7.9	7.8	d	9/ 6(e)	0
	Total Residual Chlorine	2	<0.05	<0.05	<0.05	0.5	0
088	Flow, mgd	2	0.0685	0.0022	0.035	d	d
	pH, Standard Units	2	8.0	6.5	d	9/ 6(e)	0
	Total Residual Chlorine	2	<0.05	<0.05	<0.05	0.5	0
099	Flow, mgd	2	0.0144	0.01	0.01	d	d
	pH, Standard Units	2	7.8	7.7	d	9/ 6(e)	0
	Total Residual Chlorine	2	<0.05	<0.05	<0.05	0.5	0
126	Flow, mgd	2	0.0202	0.0144	0.0173	d	d
	pH, Standard Units	2	8.1	8.0	d	9/ 6(e)	0
	Total Residual Chlorine	2	<0.05	<0.05	<0.05	0.5	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.38. Y-12 Plant Category II Outfalls

From: 2006/01/01 To: 2006/04/30

Outfall	Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
004	Flow, mgd	1	0.043	0.043	0.043	d	d
	pH, Standard Units	1	7.7	7.7	d	9/ 4(e)	0
	Total Residual Chlorine	1	<0.05	<0.05	<0.05	0.5	0
010	Flow, mgd	1	0.029	0.029	0.029	d	d
	pH, Standard Units	1	7.4	7.4	d	9/ 4(e)	0
	Total Residual Chlorine	1	<0.05	<0.05	<0.05	0.5	0
014	Flow, mgd	1	0.086	0.086	0.086	d	d
	pH, Standard Units	1	7.8	7.8	d	9/ 4(e)	0
	Total Residual Chlorine	1	<0.05	<0.05	<0.05	0.5	0
016	Flow, mgd	1	0.0144	0.0144	0.0144	d	d
	pH, Standard Units	1	7.6	7.6	d	9/ 4(e)	0
	Total Residual Chlorine	1	<0.05	<0.05	<0.05	0.5	0
019	Flow, mgd	1	0.0022	0.0022	0.0022	d	d
	pH, Standard Units	1	7.6	7.6	d	9/ 4(e)	0
	Total Residual Chlorine	1	<0.05	<0.05	<0.05	0.5	0
020	Flow, mgd	1	0.0004	0.0004	0.0004	d	d
	pH, Standard Units	1	7.9	7.9	d	9/ 4(e)	0
	Total Residual Chlorine	1	<0.05	<0.05	<0.05	0.5	0
041	Flow, mgd	1	0.0002	0.0002	0.0002	d	d
	pH, Standard Units	1	7.5	7.5	d	9/ 4(e)	0
	Total Residual Chlorine	1	<0.05	<0.05	<0.05	0.5	0
044	Flow, mgd	1	0.0004	0.0004	0.0004	d	d
	pH, Standard Units	1	7.8	7.8	d	9/ 4(e)	0
	Total Residual Chlorine	1	<0.05	<0.05	<0.05	0.5	0

Table 4.38 (continued)

Outfall	Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
057	Flow, mgd	1	0.0002	0.0002	0.0002	d	d
	pH, Standard Units	1	7.6	7.6	d	9/ 4(e)	0
	Total Residual Chlorine	1	<0.05	<0.05	<0.05	0.5	0
063	Flow, mgd	1	0.0001	0.0001	0.0001	d	d
	pH, Standard Units	1	8.1	8.1	d	9/ 4(e)	0
	Total Residual Chlorine	1	<0.05	<0.05	<0.05	0.5	0
064	Flow, mgd	1	0.00003	0.00003	0.00003	d	d
	pH, Standard Units	1	7.9	7.9	d	9/ 4(e)	0
	Total Residual Chlorine	1	<0.05	<0.05	<0.05	0.5	0
067	Flow, mgd	1	0.0038	0.0038	0.0038	d	d
	pH, Standard Units	1	7.8	7.8	d	9/ 4(e)	0
	Total Residual Chlorine	1	<0.05	<0.05	<0.05	0.5	0
083	Flow, mgd	1	0.0015	0.0015	0.0015	d	d
	pH, Standard Units	1	7.7	7.7	d	9/ 4(e)	0
	Total Residual Chlorine	1	<0.05	<0.05	<0.05	0.5	0
088	Flow, mgd	1	0.0008	0.0008	0.0008	d	d
	pH, Standard Units	1	7.4	7.4	d	9/ 4(e)	0
	Total Residual Chlorine	1	<0.05	<0.05	<0.05	0.5	0
099	Flow, mgd	1	0.0004	0.0004	0.0004	d	d
	pH, Standard Units	1	8.0	8.0	d	9/ 4(e)	0
	Total Residual Chlorine	1	<0.05	<0.05	<0.05	0.5	0
102	Flow, mgd	1	0.03	0.03	0.03	d	d
	pH, Standard Units	1	7.8	7.8	d	9/ 4(e)	0
	Total Residual Chlorine	1	<0.05	<0.05	<0.05	0.5	0
126	Flow, mgd	1	0.0004	0.0004	0.0004	d	d
	pH, Standard Units	1	7.6	7.6	d	9/ 4(e)	0
	Total Residual Chlorine	1	<0.05	<0.05	<0.05	0.5	0

Table 4.38 (continued)

Outfall	Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
S02	Flow, mgd	1	0.072	0.072	0.072	d	d
	pH, Standard Units	1	7.3	7.3	d	9/ 4(e)	0
	Total Residual Chlorine	1	<0.05	<0.05	<0.05	0.5	0
S08	Flow, mgd	121	2.4112	0.0032	0.16	d	d
	pH, Standard Units	1	7.5	7.5	d	9/ 4(e)	0
S10	Flow, mgd	1	0.2455	0.2455	0.2455	d	d
	pH, Standard Units	1	7.3	7.3	d	9/ 4(e)	0
S11	Flow, mgd	2	0.0898	0.0088	0.049	d	d
	pH, Standard Units	1	7.2	7.2	d	9/ 4(e)	0
S12	Flow, mgd	1	0.0008	0.0008	0.0008	d	d
	pH, Standard Units	1	7.3	7.3	d	9/ 4(e)	0
S13	Flow, mgd	1	0.1183	0.1183	0.1183	d	d
	pH, Standard Units	1	7.5	7.5	d	9/ 4(e)	0
S17	Flow, mgd	1	0.6146	0.6146	0.6146	d	d
	pH, Standard Units	1	7.6	7.6	d	9/ 4(e)	0
S20	Flow, mgd	1	0.058	0.058	0.058	d	d
	pH, Standard Units	1	7.9	7.9	d	9/ 4(e)	0
S21	Outfall eliminated						
S22	Flow, mgd	1	0.05	0.05	0.05	d	d
	pH, Standard Units	1	7.5	7.5	d	10/ 6(e)	0
S24	Flow, mgd	121	31.1425	0.185	2.26	d	d
	pH, Standard Units	1	7.5	7.5	d	9/ 4(e)	0
S25	Flow, mgd	1	0.08	0.08	0.08	d	d
	pH, Standard Units	1	7.7	7.7	d	10/ 6(e)	0

Table 4.38 (continued)

Outfall	Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
S26	Flow, mgd	1	0.025	0.025	0.025	d	d
	pH, Standard Units	1	7.4	7.4	d	10/ 6(e)	0
S27	Flow, mgd	1	0.2	0.2	0.2	d	d
	pH, Standard Units	1	7.8	7.8	d	10/ 6(e)	0
S28	Flow, mgd	1	0.4	0.4	0.4	d	d
	pH, Standard Units	1	8.0	8.0	d	10/ 6(e)	0
S29	Flow, mgd	1	0.07	0.07	0.07	d	d
	pH, Standard Units	1	7.7	7.7	d	10/ 6(e)	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.39. Y-12 Plant Category III Outfalls

From: 2006/05/01 To: 2006/12/31

Outfall	Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
034	Flow, mgd	2	0.1065	0.1065	0.1065	d	d
	pH, Standard Units	2	7.6	7.4	d	9/ 6(e)	0
	Total Residual Chlorine	2	<0.05	<0.05	<0.08	0.5	0
042	Flow, mgd	2	0.0365	0.0023	0.019	d	d
	pH, Standard Units	2	8.1	7.7	d	9/ 6(e)	0
	Total Residual Chlorine	2	<0.05	<0.05	<0.05	0.5	0
071	Flow, mgd	2	0.0091	0.0023	0.0057	d	d
	pH, Standard Units	2	7.8	7.5	d	9/ 6(e)	0
	Total Residual Chlorine	2	<0.05	<0.05	<0.05	0.5	0
113	Flow, mgd	2	0.0576	0.0072	0.032	d	d
	pH, Standard Units	2	7.3	7.1	d	9/ 6(e)	0
	Total Residual Chlorine	2	<0.05	<0.05	<0.05	0.5	0
114	Flow, mgd	2	0.0091	0.0068	0.008	d	d
	pH, Standard Units	2	8.1	7.8	d	9/ 6(e)	0
	Total Residual Chlorine	2	<0.05	<0.05	<0.05	0.5	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.40. Y-12 Plant Category III Outfalls

From: 2006/01/01 To: 2006/04/30

Outfall	Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
002	Flow, mgd	4	0.1598	0.0447	0.101	d	d
	pH, Standard Units	4	7.8	7.6	d	9/ 4(e)	0
	Total Residual Chlorine	4	<0.05	<0.05	<0.05	0.5	0
034	Flow, mgd	4	0.1065	0.0913	0.103	d	d
	pH, Standard Units	4	7.7	7.4	d	9/ 4(e)	0
	Total Residual Chlorine	4	<0.05	<0.05	<0.05	0.5	0
042	Flow, mgd	4	0.0266	0.0002	0.008	d	d
	pH, Standard Units	4	7.9	7.6	d	9/ 4(e)	0
	Total Residual Chlorine	4	<0.05	<0.05	<0.05	0.5	0
047	Flow, mgd	4	0.0137	0.0114	0.0131	d	d
	pH, Standard Units	4	7.8	7.5	d	9/ 4(e)	0
	Total Residual Chlorine	4	<0.05	<0.05	<0.05	0.5	0
048	Flow, mgd	4	0.0046	0.0023	0.0034	d	d
	pH, Standard Units	4	7.9	7.5	d	9/ 4(e)	0
	Total Residual Chlorine	4	<0.05	<0.05	<0.05	0.5	0
054	Flow, mgd	4	0.0023	0.000048	0.0007	d	d
	pH, Standard Units	4	8.1	6.1	d	9/ 4(e)	0
	Total Residual Chlorine	4	0.127	<0.05	<0.07	0.5	0
071	Flow, mgd	4	0.032	0.0046	0.014	d	d
	pH, Standard Units	4	7.8	7.6	d	9/ 4(e)	0
	Total Residual Chlorine	4	<0.05	<0.05	<0.05	0.5	0
109	Flow, mgd	4	0.1141	0.0913	0.105	d	d
	pH, Standard Units	4	8.0	7.8	d	9/ 4(e)	0
	Total Residual Chlorine	4	0.21	<0.05	<0.1	0.5	0
113	Flow, mgd	3	0.216	0.0004	0.07	d	d
	pH, Standard Units	3	7.7	7.4	d	9/ 4(e)	0
	Total Residual Chlorine	3	<0.05	<0.05	<0.05	0.5	0

Table 4.40 (continued)

Outfall	Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
114	Flow, mgd	4	0.0365	0.0091	0.019	d	d
	pH, Standard Units	4	8.1	7.7	d	9/ 4(e)	0
	Total Residual Chlorine	4	<0.05	<0.05	<0.05	0.5	0
S05	Flow, mgd	4	0.0609	0.0274	0.0449	d	d
	pH, Standard Units	4	6.8	6.3	d	9/ 4(e)	0
	Total Residual Chlorine	4	<0.05	<0.05	<0.05	0.5	0
S14	Flow, mgd	4	0.1338	0.0068	0.052	d	d
	pH, Standard Units	4	7.5	7.0	d	9/ 4(e)	0
	Total Residual Chlorine	4	<0.05	<0.05	<0.05	0.5	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.41. Y-12 Plant Discharge Point S06, INSTREAM BEAR CREEK, DOWNSTREAM OF TRIBUTARY

From: 2006/05/01 To: 2006/12/31

Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, mgd	125	0.4037	0.0023	0.0513		0
pH, Std Unit	1	7.6	7.6	b	9/ 6(e)	0
Silver	2	<0.0004	<0.0004	<0.0004		0
Aluminum	2	0.878	<0.2	<0.5		0
Arsenic	2	<0.002	<0.002	<0.002		0
Boron	2	0.115	<0.1	<0.1		0
Barium	2	0.349	0.221	0.285		0
Beryllium	2	<0.0002	<0.0002	<0.0002		0
Cadmium	2	0.0058	0.0055	0.0056		0
Cobalt	2	0.002	0.0011	0.002		0
Chromium	2	<0.004	<0.004	<0.004		0
Copper	2	0.0099	<0.002	<0.006		0
Lithium	2	0.0106	<0.01	<0.01		0
Magnesium	2	31.7	17.9	24.8		0
Molybdenum	2	0.0004	<0.0004	<0.0004		0
Nickel	2	0.0239	0.023	0.024		0
Nitrate/Nitrite as Nitrogen	35	149.0	11.4	67.2		0
Lead	2	0.001	<0.0002	<0.0006		0
Antimony	2	<0.001	<0.001	<0.001		0
Strontium	2	0.61	0.357	0.48		0
Thallium	2	<0.0002	<0.0002	<0.0002		0
Vanadium	2	<0.02	<0.02	<0.02		0
Zinc	2	0.026	0.004	0.02		0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.42. Y-12 Plant Discharge Point S17, UNNAMED TRIBUTARY TO THE CLINCH RIVER

From: 2006/01/01 To: 2006/12/31

Parameter	Number of Samples	Concentration Max	+/-	Min	+/-	Average	Standard Error	Percentage of DCG	Total Curies
Alpha activity (pCi/L)	8	7.4	+/-3.1	-0.68*	+/-2.4	2.3	0.88	e	1.2E-03
Americium-241 (pCi/L)	7	0.24*	+/-0.34	-0.073*	+/-0.37	0.079	0.044	0.26	3.9E-05
Beta activity (pCi/L)	8	3.6*	+/-3	-2.9*	+/-3.2	0.67	0.68	e	3.4E-04
Cobalt-60 (pCi/L)	8	2.0*	+/-2.1	-0.99*	+/-2.3	0.53	0.35	0.010	2.6E-04
Cesium-137 (pCi/L)	8	2.2*	+/-2.4	-1.3*	+/-2	0.60	0.39	0.020	3.0E-04
Gamma Activity (pCi/L)	6	2.2*	+/-2.4	-1.3*	+/-2	0.74	0.51	e	3.7E-04
Neptunium-237 (pCi/L)	7	0.048*	+/-0.15	-0.087*	+/-0.25	-0.015	0.020	-0.049	-7.3E-06
Plutonium-238 (pCi/L)	7	0.26*	+/-0.43	-0.13*	+/-0.23	0.032	0.052	0.079	1.6E-05
Plutonium-239/240 (pCi/L)	7	0.019*	+/-0.13	-0.065*	+/-0.12	-0.020	0.011	-0.067	-1.0E-05
Radium-226 (pCi/L)	8	0.59	+/-0.91	-0.69*	+/-2.0	0.048	0.14	0.048	2.4E-05
Radium-228 (pCi/L)	8	1.4*	+/-1.2	-0.37*	+/-0.91	0.46	0.20	0.46	2.3E-04
Strontium-89/90 (pCi/L)	8	3.2	+/-2	-1.1*	+/-1.2	0.41	0.49	0.041	2.0E-04
Total Radium Alpha (pCi/L)	8	0.92	+/-0.42	-0.01*	+/-0.11	0.3	0.1	e	2E-04
Technetium-99 (pCi/L)	8	2.7*	+/-8.7	-20.0*	+/-9.5	-7.6	3.2	-0.0076	-3.8E-03
Thorium-228 (pCi/L)	8	0.19*	+/-0.21	-0.22*	+/-0.32	0.00010	0.043	0.0	4.5E-08
Thorium-230 (pCi/L)	8	0.48*	+/-0.58	-0.36*	+/-2	-0.13	0.10	-0.043	-6.5E-05
Thorium-232 (pCi/L)	8	0.051*	+/-0.13	-0.076*	+/-0.12	-0.016	0.016	-0.032	-8.2E-06
Thorium-234 (pCi/L)	8	0.35	+/-0.22	-0.023*	+/-0.071	0.22	0.044	0.0022	1.1E-04
Tritium (pCi/L)	8	200.0*	+/-530	-750.0*	+/-580	-316.4	121.6	-0.0158	-1.58E-01
Uranium-234 (pCi/L)	8	2.9	+/-0.67	0.046*	+/-0.21	0.99	0.35	0.20	5.0E-04
Uranium-235 (pCi/L)	8	0.051*	+/-0.12	-0.035*	+/-0.13	0.011	0.012	0.0018	5.6E-06
Uranium-236 (pCi/L)	8	0.14	+/-0.13	-0.012*	+/-0.051	0.018	0.018	0.0036	9.1E-06
Uranium-238 (pCi/L)	8	0.35	+/-0.22	-0.023*	+/-0.071	0.22	0.044	0.036	1.1E-04

(e) Not applicable
* Provisional Result

Table 4.43. Y-12 Plant Discharge Point S19, S19, ROGER'S QUARRY

From: 2006/01/01 To: 2006/12/31

Parameter	Number of Samples	Concentration Max	+/-	Min	+/-	Average	Standard Error	Percentage of DCG	Total Curies
Alpha activity (pCi/L)	6	2.5	+/-3.2	0.26*	+/-3.3	1.3	0.36	e	5.0E-04
Americium-241 (pCi/L)	6	0.11*	+/-0.28	-0.083*	+/-0.36	0.018	0.030	0.061	7.0E-06
Beta activity (pCi/L)	6	5.0*	+/-3.9	-4.2*	+/-5	1.8	1.5	e	7.1E-04
Cobalt-60 (pCi/L)	6	1.7*	+/-2	-0.049*	+/-2.4	0.73	0.30	0.015	2.8E-04
Cesium-137 (pCi/L)	6	0.47*	+/-2.2	-1.4*	+/-2.3	-0.24	0.31	-0.008	-9.2E-05
Gamma Activity (pCi/L)	6	0.47*	+/-2.2	-1.4*	+/-2.3	-0.24	0.31	e	-9.2E-05
Neptunium-237 (pCi/L)	6	0.047*	+/-0.13	-0.2*	+/-0.25	-0.04	0.04	-0.1	-2E-05
Plutonium-238 (pCi/L)	6	0.0*	+/-0.24	-0.23*	+/-0.29	-0.075	0.034	-0.19	-2.9E-05
Plutonium-239/240 (pCi/L)	6	0.047*	+/-0.094	-0.042*	+/-0.13	0.0032	0.015	0.011	1.2E-06
Radium-226 (pCi/L)	6	0.43	+/-1.9	-0.29*	+/-0.44	0.078	0.098	0.078	3.0E-05
Radium-228 (pCi/L)	6	1.5*	+/-0.78	0.06*	+/-1.0	0.8	0.3	0.8	3E-04
Strontium-89/90 (pCi/L)	6	2.1*	+/-3.4	-1.4*	+/-1.8	0.76	0.48	0.076	2.9E-04
Total Radium Alpha (pCi/L)	6	0.34*	+/-0.26	0.017*	+/-0.20	0.21	0.059	e	8.0E-05
Technetium-99 (pCi/L)	6	1.7*	+/-8.9	-13.0*	+/-9.2	-5.6	2.5	-0.0056	-2.2E-03
Thorium-228 (pCi/L)	6	0.17*	+/-0.21	-0.18*	+/-0.2	0.0076	0.046	0.0019	2.9E-06
Thorium-230 (pCi/L)	6	0.32*	+/-0.61	-0.83*	+/-2	-0.23	0.18	-0.076	-8.8E-05
Thorium-232 (pCi/L)	6	0.057*	+/-0.13	-0.076*	+/-0.14	-0.018	0.019	-0.037	-7.1E-06
Thorium-234 (pCi/L)	6	0.29	+/-0.17	0.095*	+/-0.11	0.14	0.031	0.0014	5.3E-05
Tritium (pCi/L)	6	100.0*	+/-530	-470.0*	+/-590	-178.5	103.2	-0.0089	-6.88E-02
Uranium-234 (pCi/L)	6	0.21*	+/-0.18	0.067*	+/-0.22	0.15	0.022	0.030	5.8E-05
Uranium-235 (pCi/L)	6	0.011*	+/-0.084	-0.048*	+/-0.089	-0.0062	0.0088	-0.001	-2.4E-06
Uranium-236 (pCi/L)	6	0.0*	+/-0.056	-0.015*	+/-0.065	-0.0071	0.0027	-0.0014	-2.7E-06
Uranium-238 (pCi/L)	6	0.29	+/-0.17	0.095*	+/-0.11	0.14	0.031	0.023	5.3E-05

(e) Not applicable
* Provisional Result

Table 4.44. Y-12 Plant Discharge Point S19, S19, ROGER'S QUARRY

From: 2006/05/01 To: 2006/12/31

Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, mgd	1	0.086	0.086	0.086	d	0
pH, Std Unit	3	8.0	7.7	d	d	9/ 6(e) 0
Silver	3	<0.0004	<0.0004	<0.0004	d	0
Aluminum	3	<0.2	<0.2	<0.2	d	0
Arsenic	3	0.0068	<0.005	<0.006	d	0
Boron	3	<0.1	<0.1	<0.1	d	0
Barium	3	0.0537	0.0506	0.0522	d	0
Beryllium	3	<0.0002	<0.0002	<0.0002	d	0
Cadmium	3	<0.001	<0.001	<0.001	d	0
Cobalt	3	0.0002	<0.0002	<0.0002	d	0
Chromium	3	<0.004	<0.004	<0.004	d	0
Copper	3	<0.002	<0.002	<0.002	d	0
Dissolved Solids	1	155.0	155.0	155.0	d	0
Lithium	3	0.0148	0.0122	0.0138	d	0
Magnesium	3	11.4	10.5	11.0	d	0
Molybdenum	3	0.0015	0.0013	0.0014	d	0
Nickel	3	<0.002	<0.002	<0.002	d	0
Lead	3	<0.0002	<0.0002	<0.0002	d	0
Antimony	3	<0.001	<0.001	<0.001	d	0
Strontium	3	0.238	0.215	0.225	d	0
Suspended Solids	1	<1.0	<1.0	<1.0	d	0
Thorium	3	<0.0004	<0.0004	<0.0004	d	d
Thallium	3	<0.0002	<0.0002	<0.0002	d	0
Uranium	2	<0.001	<0.001	<0.001	d	d
Vanadium	3	<0.02	<0.02	<0.02	d	0
Zinc	3	0.0049	0.0023	0.0036	d	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.45. Y-12 Plant Discharge Point S19, S19, ROGER'S QUARRY

From: 2006/01/01 To: 2006/04/30

Parameter	Number of Samples	Concentration Max	Concentration Min	Concentration Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, mgd	120	0.945	0.145	0.280	d	d
pH, Standard Unit	4	7.8	7.6	d	9/ 6(e)	0
Silver	4	<0.0004	<0.0004	<0.0004	d	d
Aluminum	4	<0.2	<0.2	<0.2	d	d
Arsenic	4	0.0059	0.0054	0.0057	d	d
Boron	4	<0.1	<0.1	<0.1	d	d
Barium	4	0.0593	0.0528	0.0549	d	d
Beryllium	4	<0.0005	<0.0002	<0.0003	d	d
Calcium	4	41.7	37.6	40.2	d	d
Cadmium	4	<0.001	<0.001	<0.001	d	d
Cobalt	4	<0.02	<0.0002	<0.005	d	d
Chromium	4	<0.004	<0.004	<0.004	d	d
Copper	4	0.004	<0.002	<0.002	d	d
Iron	4	0.074	<0.05	<0.06	d	d
Potassium	4	2.13	<2.0	<2.0	d	d
Lithium	4	0.0139	0.0123	0.0131	d	d
Magnesium	4	11.6	10.6	11.2	d	d
Manganese	4	0.174	0.0373	0.0993	d	d
Molybdenum	4	<0.02	0.0013	<0.02	d	d
Sodium	4	2.03	1.65	1.89	d	d
Nickel	4	<0.002	<0.002	<0.002	d	d
Lead	4	<0.0002	<0.0002	<0.0002	d	d
Antimony	4	<0.2	<0.001	<0.05	d	d
Strontium	4	0.235	0.202	0.22	d	d
Thallium	4	<0.2	<0.0002	<0.2	d	d
Uranium	4	<0.001	<0.001	<0.001	d	d
Vanadium	4	<0.02	<0.02	<0.02	d	d
Zinc	4	0.0063	<0.002	<0.0038	d	d

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.46. Y-12 Plant Discharge Point SS6, SANITARY SEWER STATION 6

From: 2006/01/01 To: 2006/12/31

Parameter	Number of Samples	Concentration Max	+/-	Min	+/-	Average	Standard Error	Percentage of DCG	Total Curies
Alpha activity (pCi/L)	52	16.0	+/-6.1	0.84*	+/-4.9	6.5	0.50	e	5.4E-03
Beta activity (pCi/L)	52	27.0	+/-5.7	-2.6*	+/-10	10.	0.73	e	8.4E-03
Cobalt-60 (pCi/L)	1	0.13*	+/-2.2	0.13*	+/-2.2	0.13		0.0026	1.1E-04
Cesium-137 (pCi/L)	1	0.087*	+/-2.3	0.087*	+/-2.3	0.087		0.0029	7.2E-05
Radium-228 (pCi/L)	1	3.9*	+/-14	3.9*	+/-14	3.9		3.9	3.2E-03

(e) Not applicable
* Provisional Result

Table 4.47. Y-12 Plant Discharge Point SS6, SANITARY SEWER STATION 6

From: 2006/01/01 To: 2006/12/31

Parameter	Number of Samples	Concentration Max	Concentration Min	Concentration Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, gpd	365	1396000.0	328000.0	594761.6	d	d
pH, Std Unit	13	8.1	7.0	d	9/ 6(e)	0
Silver	16	0.0064	<0.0004	<0.002	0.1	0
Aluminum	4	1.27	0.338	0.771	d	d
Arsenic	16	0.0072	<0.002	<0.002	0.025	0
Boron	4	<0.1	<0.1	<0.1	d	d
Beryllium	16	0.0005	<0.0002	<0.0002	d	d
Benzene	4	<0.005	<0.005	<0.005	0.005	0
Biochemical Oxygen	14	69.0	21.4	41.4	300	0
Cadmium	16	<0.001	<0.001	<0.001	0.005	0
Cobalt	16	0.0056	0.0003	0.001	d	d
Chromium	16	0.0063	<0.004	<0.004	0.075	0
Copper	12	0.077	0.0191	0.0391	0.21	0
Cyanide	14	<0.025	<0.005	<0.009	0.062	0
Iron	4	8.69	0.59	3.3	30	0
Hexane Extractable	14	10.2	<5.7	<6.9	50	0
Mercury	14	0.0114	0.0008	0.004	0.035	0
Kjeldahl Nitrogen	14	34.9	8.46	14.8	90	0
Methylene chloride	4	<0.005	<0.005	<0.005	0.005	0
Manganese	11	0.108	0.0195	0.041	d	d
Molybdenum	13	0.0243	0.0031	0.0074	d	0
Nickel	16	0.0153	0.0029	0.0067	0.032	0
Lead	16	0.0017	0.0003	0.001	0.074	0
Phenols – Total Recoverable	14	0.0237	0.0052	<0.012	0.3	0
Selenium	16	<0.004	<0.004	<0.004	d	d
Suspended Solids	17	90.8	34.6	63.7	300	0

(a) Units in mg/L unless otherwise indicated.
(b) Sanitary sewer permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.48. Y-12 Plant Discharge Point SS6, SANITARY SEWER STATION 6

From: 2006/01/01 To: 2006/12/31

Parameter	Number of Samples	Concentration Max	Concentration Min	Concentration Avg	Reference Value(b)	Number of Values Exceeding Reference
Thorium	12	<0.0004	<0.0004	<0.0004	d	0
Toluene	4	<0.005	<0.005	<0.005	0.005	0
Trichloroethene	4	<0.005	<0.005	<0.005	0.005	0
Zinc	8	0.125	0.0398	0.0729	0.75	0

(a) Units in mg/L unless otherwise indicated.
(b) Sanitary sewer permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.49. Y-12 Complex Discharge Point SS6, Sanitary Sewer Station 6
January through December 2005

Effluent parameter	Number of samples	Daily average value (effluent limit)[a]	Daily maximum value (effluent limit)[b]	Percentage of compliance
pH, standard units	13	*c*	9/6[d]	100
Silver	16	0.05	0.1	100
Arsenic	16	0.01	0.015	100
Benzene	4	0.01	0.015	100
Biochemical oxygen demand	14	200	300	100
Cadmium	16	0.0033	0.005	100
Chromium	16	0.05	0.075	100
Copper	12	0.14	0.21	100
Cyanide	14	0.041	0.062	100
Iron	4	10	15	100
Mercury	14	0.023	0.035	100
Kjeldahl nitrogen	14	45	90	100
Methylene chloride	4	0.027	0.041	100
Nickel	16	0.021	0.032	100
Oil and grease	14	25	50	100
Lead	16	0.049	0.074	100
Phenols—total recoverable	14	0.3	0.5	100
Suspended solids	17	200	300	100
Toluene	4	0.01	0.02	100
Trichloroethene	4	0.018	0.027	100
Zinc	8	0.35	0.75	100

[a]Units in milligrams per liter unless otherwise indicated.
[b]Industrial and Commercial Users Wastewater Permit limits.
[c]Not applicable.
[d]Maximum value/minimum value.

Table 4.50. Y-12 Plant Discharge Point S24, BEAR CREEK KILOMETER 9.4

From: 2006/01/01 To: 2006/12/31

Parameter	Number of Samples	Concentration Max	+/-	Min	+/-	Average	Standard Error	Percentage of DCG	Total Curies
Alpha activity (pCi/L)	2	78.0	+/-8.9	47.0	+/-6.2	62.5	15.5	e	1.65E-01
Americium-241 (pCi/L)	2	0.078*	+/-0.21	-0.044*	+/-0.26	0.017	0.061	0.057	4.5E-05
Beta activity (pCi/L)	4	69.0	+/-8.1	48.0	+/-5.8	58.5	6.06	e	1.54E-01
Cobalt-60 (pCi/L)	2	0.19*	+/-2.4	-0.41*	+/-1.8	-0.11	0.30	-0.0022	-2.9E-04
Cesium-137 (pCi/L)	2	1.0*	+/-1.8	0.31*	+/-2.1	0.66	0.34	0.022	1.7E-03
Neptunium-237 (pCi/L)	2	0.085*	+/-0.14	0.027*	+/-0.2	0.056	0.029	0.19	1.5E-04
Plutonium-238 (pCi/L)	2	-0.014*	+/-0.19	-0.11*	+/-0.089	-0.062	0.048	-0.16	-1.6E-04
Plutonium-239/240 (pCi/L)	2	0.0093*	+/-0.069	-0.0048*	+/-0.04	0.0022	0.0071	0.0075	5.9E-06
Radium-226 (pCi/L)	2	0.18*	+/-0.17	0.12*	+/-0.15	0.15	0.030	0.15	4.0E-04
Radium-228 (pCi/L)	2	1.7	+/-0.80	1.2*	+/-1.9	1.4	0.25	1.4	3.8E-03
Strontium-89/90 (pCi/L)	2	-0.72*	+/-2.2	-0.84*	+/-0.93	-0.78	0.060	-0.078	-2.1E-03
Total Radium Alpha (pCi/L)	2	0.35	+/-0.21	0.18*	+/-0.17	0.26	0.085	e	7.0E-04
Technetium-99 (pCi/L)	4	50.0	+/-10	42.0	+/-9.8	46.0	2.31	0.0460	1.21E-01
Thorium-228 (pCi/L)	2	0.094*	+/-0.44	-0.088*	+/-0.34	0.0030	0.091	0.00070	7.9E-06
Thorium-230 (pCi/L)	2	-0.25*	+/-0.61	-5.2*	+/-19	-2.7	2.5	-0.91	-7.2E-03
Thorium-232 (pCi/L)	2	0.013*	+/-0.097	-0.059*	+/-0.095	-0.023	0.036	-0.046	-6.1E-05
Thorium-234 (pCi/L)	2	74.0	+/-7.9	40.0	+/-4.4	57.0	17.0	0.57	1.51E-01
Tritium (pCi/L)	2	240.0*	+/-530	-1600.0*	+/-430	-680.0	920.0	-0.034	-1.80E+00
Uranium-234 (pCi/L)	4	20.0	+/-2.5	14.0	+/-2.1	17.0	1.73	3.40	4.49E-02
Uranium-235 (pCi/L)	56	1.16	0.72	0.13	0.2	0.69	0.038	0.12	1.8E-03
Uranium-236 (pCi/L)	56	1.21	0.69	0.14	0.2	0.41	0.031	0.081	1.1E-03
Uranium-238 (pCi/L)	70	74.0	+/-7.9	12.3	2.47	22.2	1.19	3.70	5.86E-02

(e) Not applicable
* Provisional Result

Table 4.51. Y-12 Plant Discharge Point S24, BEAR CREEK KILOMETER 9.4

From: 2006/05/01 To: 2006/12/31

Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
pH, Standard Unit	3	8.0	7.5	d	9/ 6(e)	0
Silver	3	<0.0004	<0.0004	<0.0004	d	0
Aluminum	3	1.18	0.21	0.54	d	0
Arsenic	3	<0.005	<0.002	<0.003	d	0
Boron	3	1.32	0.285	0.712	d	0
Barium	3	0.107	0.0867	0.100	d	0
Beryllium	3	<0.0002	<0.0002	<0.0002	d	0
Cadmium	3	<0.001	<0.001	<0.001	d	0
Cobalt	3	0.0007	0.0004	0.0006	d	0
Chromium	3	<0.004	<0.004	<0.004	d	0
Copper	3	<0.002	<0.002	<0.002	d	0
Mercury	3	<0.0002	<0.0002	<0.0002	d	0
Lithium	3	0.165	0.0516	0.0928	d	0
Magnesium	3	16.0	7.29	12.2	d	0
Molybdenum	3	0.0008	0.0004	0.0005	d	0
Total Nitrogen	3	9.77	0.401	5.22	d	0
Nickel	3	0.0047	0.0032	0.0038	d	0
Nitrate/Nitrite as Nitrogen	4	11.4	0.401	6.77	d	0
Phosphorus	3	<0.5	<0.5	<0.5	d	0
Lead	3	0.0006	<0.0002	<0.0004	d	0
PCB, Total	3	<0.0005	<0.0005	<0.0005	d	0
Antimony	3	<0.001	<0.001	<0.001	d	0
Strontium	3	0.194	0.153	0.176	d	0
Suspended Solids	4	6.0	1.0	<4.1	d	0
Thallium	3	<0.0002	<0.0002	<0.0002	d	0
Uranium	4	0.241	0.0504	0.125	d	0
Vanadium	3	<0.02	<0.02	<0.02	d	0
Zinc	3	0.0037	0.0027	0.0033	d	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.52. Y-12 Plant Discharge Point Outfall EFP (Station 17), SWHISS STATION 9422-1

From: 2006/05/01 To: 2006/12/31

Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
Dissolved Oxygen	35	10.2	7.8	8.8	d	0
Flow, mgd	243	37.387	5.888	8.253	d	0
pH, Standard Unit	172	8.7	7.2	d	9/ 6(e)	0
Temperature, deg C	35	21.5	12.5	17.5	d	0
Silver	37	<0.0004	<0.0004	<0.0004	d	0
Aluminum	36	1.34	<0.2	<0.3	d	0
Arsenic	37	<0.002	<0.002	<0.002	d	0
Boron	36	<0.1	<0.1	<0.1	d	0
Barium	36	0.14	0.0381	0.046	d	0
Beryllium	37	<0.0002	<0.0002	<0.0002	d	0
Cadmium	37	<0.001	<0.001	<0.001	d	0
Cobalt	37	0.0005	<0.0002	<0.0003	d	0
Chromium	37	<0.004	<0.004	<0.004	d	0
Copper	37	0.0044	<0.002	<0.003	d	0
Mercury	36	0.0007	<0.0002	<0.0003	d	0
Lithium	36	0.111	<0.01	<0.02	d	0
Magnesium	36	13.1	8.51	11.7	d	0
Molybdenum	37	0.0151	0.0026	0.0062	d	0
Nickel	37	0.003	<0.002	<0.002	d	0
Nitrate/Nitrite as Nitrogen	36	1.2	<0.05	<0.5	d	0
Lead	37	0.0017	<0.0002	<0.0006	d	0
PCB, Total	1	<0.0005	<0.0005	<0.0005	d	0
Phosphate as Phosphorus	36	0.42	<0.31	<0.32	d	0
Antimony	37	<0.001	<0.001	<0.001	d	0
Strontium	36	0.137	0.101	0.127	d	0
Suspended Solids	36	18.0	1.0	6.3	d	0
Thorium	37	<0.2	<0.0004	<0.01	d	d

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.53. Y-12 Plant Discharge Point Outfall EFP (Station 17), SWHISS STATION 9422-1

From: 2006/05/01 To: 2006/12/31

Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
Thallium	37	<0.0002	<0.0002	<0.0002	d	0
Uranium	18	0.0202	0.002	0.006	d	d
Vanadium	36	<0.02	<0.02	<0.02	d	0
Zinc	37	0.0528	0.0031	0.014	d	0

(a) Units in mg/L unless otherwise indicated.
(b) NPDES permit limits.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.54. Y-12 Plant Discharge Point STA304, STATION 304, BEAR CREEK AT HIGHWAY 95.

From: 2006/01/01 To: 2006/12/31

Parameter	Number of Samples	Concentration Max	Concentration Min	Concentration Avg	Reference Value(b)	Number of Values Exceeding Reference
pH, Standard Unit	12	8.0	7.5	d	9/ 6(e)	0
Silver	5	<0.02	<0.02	<0.02	0.0033	0
Aluminum	5	0.999	<0.2	<0.6	d	d
Arsenic	5	<0.2	<0.2	<0.2	0.0010	0
Boron	5	<0.1	<0.1	<0.1	d	d
Barium	5	0.0623	0.045	0.055	d	d
Beryllium	5	<0.0005	<0.0005	<0.0005	d	d
Calcium	5	51.6	30.1	43.7	d	d
Cadmium	5	<0.01	<0.01	<0.01	0.002	0
Chloride	5	8.45	3.43	5.9	d	d
Cobalt	5	<0.02	<0.02	<0.02	d	d
Chromium	5	<0.02	<0.02	<0.02	0.016	0
Copper	5	<0.02	<0.02	<0.02	0.013	0
Iron	5	0.629	0.101	0.356	d	d
Mercury	6	<0.0002	<0.0002	<0.0002	0.00051	0
Potassium	5	<2.0	<2.0	<2.0	d	d
Lithium	5	<0.01	<0.01	<0.01	d	d
Magnesium	5	11.8	8.15	9.97	d	d
Manganese	5	0.101	0.0135	0.0373	d	d
Molybdenum	5	<0.05	<0.02	<0.02	d	d
Sodium	5	5.3	2.45	4.1	d	d
Nickel	5	<0.05	<0.05	<0.05	0.470	0
Nitrite as Nitrogen	5	<0.15	<0.015	<0.093	d	d
Nitrate as Nitrogen	5	4.17	0.908	2.46	d	d
Lead	5	<0.1	<0.1	<0.1	0.065	0
Phenols – Total Recoverable	6	<0.01	<0.005	<0.006	d	d

(a) Units in mg/L unless otherwise indicated.
(b) Tennessee Water Quality Criteria
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.55. Y-12 Plant Discharge Point STA304, STATION 304, BEAR CREEK AT HIGHWAY 95.

From: 2006/01/01 To: 2006/12/31

Parameter	Number of Samples	Concentration Max	Concentration Min	Concentration Avg	Reference Value(b)	Number of Values Exceeding Reference
Antimony	5	<0.2	<0.2	<0.2	0.0056	0
Selenium	5	<0.2	<0.2	<0.2	0.02	0
Strontium	5	0.0997	0.0515	0.0822	d	d
Sulfate	5	19.5	9.37	14.9	d	d
Suspended Solids	6	8.6	<1.0	<3.7	d	d
Thorium	5	<0.2	<0.2	<0.2	d	d
Titanium	5	<0.05	<0.05	<0.05	d	d
Thallium	5	<0.2	<0.2	<0.2	0.0017	0
Uranium	6	0.037	0.0145	0.030	d	d
Vanadium	5	<0.02	<0.02	<0.02	d	d
Zinc	5	<0.05	<0.05	<0.05	0.120	0
Zirconium	5	<0.2	<0.2	<0.2	d	d

(a) Units in mg/L unless otherwise indicated.
(b) Tennessee Water Quality Criteria
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.56. Y-12 Plant Discharge Point 94221, SWHISS STATION 9422-1

From: 2006/01/01 To: 2006/12/31

Parameter	Number of Samples	Concentration Max	+/-	Min	+/-	Average	Standard Error	Percentage of DCG	Total Curies
Alpha activity (pCi/L)	37	15.0	+/-4.3	-2.4*	+/-2.9	5.0	0.59	e	6.0E-02
Americium-241 (pCi/L)	35	0.31*	+/-0.44	-3.9*	+/-14	-0.22	0.15	-0.74	-2.7E-03
Beta activity (pCi/L)	37	10.0	+/-4.8	-1.2*	+/-5.4	4.9	0.45	e	5.9E-02
Cobalt-60 (pCi/L)	37	2.5*	+/-2.2	-1.8*	+/-2.3	0.45	0.18	0.0090	5.4E-03
Cesium-137 (pCi/L)	37	2.3*	+/-2.3	-2.2*	+/-3.3	-0.044	0.18	-0.0015	-5.3E-04
Gamma Activity (pCi/L)	28	2.3*	+/-2.3	-2.2*	+/-3.3	-0.12	0.21	e	-1.4E-03
Neptunium-237 (pCi/L)	35	0.1*	+/-0.18	-0.21*	+/-0.17	-0.03	0.01	-0.1	-4E-04
Plutonium-238 (pCi/L)	35	0.66*	+/-0.5	-0.56*	+/-0.18	-0.00020	0.034	-0.00040	-2.0E-06
Plutonium-239/240 (pCi/L)	35	0.12*	+/-0.14	-0.13*	+/-0.14	-0.0011	0.0071	-0.0037	-1.3E-05
Radium-226 (pCi/L)	37	1.5	+/-4.8	-1.1*	+/-2.1	0.19	0.092	0.19	2.3E-03
Radium-228 (pCi/L)	37	4.3	+/-1.9	-1.9*	+/-1.5	0.67	0.20	0.67	8.0E-03
Strontium-89/90 (pCi/L)	37	2.9	+/-2.1	-1.2*	+/-1.6	0.90	0.15	0.090	1.1E-02
Total Radium Alpha (pCi/L)	37	1.1	+/-0.36	-0.14*	+/-0.088	0.24	0.047	e	2.8E-03
Technetium-99 (pCi/L)	37	10.0*	+/-9.1	-19.0*	+/-9.4	-3.75	1.05	-0.0038	-4.49E-02
Thorium-228 (pCi/L)	37	0.19*	+/-0.48	-0.25*	+/-0.19	-0.033	0.017	-0.0082	-3.9E-04
Thorium-230 (pCi/L)	37	0.84*	+/-0.64	-5.1*	+/-18	-0.26	0.15	-0.085	-3.1E-03
Thorium-232 (pCi/L)	37	0.062*	+/-0.13	-0.089*	+/-0.12	-0.014	0.0067	-0.029	-1.7E-04
Thorium-234 (pCi/L)	36	7.7	+/-1.2	0.67	+/-0.35	2.9	0.33	0.029	3.4E-02
Tritium (pCi/L)	37	9800.0	+/-800	-470.0*	+/-590	294.1	268.2	0.0147	3.52E+00
Uranium-234 (pCi/L)	36	2.9	+/-1.2	0.34*	+/-0.55	1.3	0.096	0.25	1.5E-02
Uranium-235 (pCi/L)	37	0.43	+/-0.31	-0.018*	+/-0.083	0.065	0.014	0.011	7.8E-04
Uranium-236 (pCi/L)	37	0.093*	+/-0.11	-0.04*	+/-0.087	0.02	0.006	0.004	2E-04
Uranium-238 (pCi/L)	37	7.7	+/-1.2	0.67	+/-0.35	2.8	0.32	0.47	3.4E-02

(e) Not applicable
* Provisional Result

Table 4.57. Y-12 Plant Discharge Point 94221, SWHISS STATION 9422-1

From: 2006/01/01 To: 2006/04/30

Parameter	Number of Samples	Concentration(a) Max	Min	Avg	Reference Value(b)	Number of Values Exceeding Reference
Flow, mgd	120	40.8	4.4	9.5	d	d
pH, Standard Unit	102	8.6	7.3	d	9/ 6(e)	0
Temperature, deg C	51	19.1	9.7	13	30.5	0
Silver	17	<0.02	<0.02	<0.02	0.0032	0
Aluminum	17	2.03	<0.2	<0.6	d	d
Arsenic	17	<0.2	<0.2	<0.2	0.010	0
Boron	17	<0.1	<0.1	<0.1	d	d
Barium	17	0.0527	0.0379	0.0431	2	0
Beryllium	17	<0.0005	<0.0005	<0.0005	0.004	0
Cadmium	17	<0.01	<0.01	<0.01	0.002	0
Cobalt	17	<0.02	<0.02	<0.02	d	d
Chromium	17	<0.02	<0.02	<0.02	0.016	0
Copper	17	<0.02	<0.02	<0.02	0.013	0
Mercury	99	0.004	<0.0002	<0.0004	0.000051	75
Lithium	17	0.0217	<0.01	<0.01	d	d
Magnesium	17	13.1	5.59	11.1	d	d
Molybdenum	17	<0.02	<0.02	<0.02	d	d
Nickel	17	<0.05	<0.05	<0.05	0.47	0
Nitrate/Nitrite as Nitrogen	17	2.6	0.0835	0.760	10	0
Lead	17	<0.1	<0.1	<0.1	0.065	d
Antimony	17	<0.2	<0.2	<0.2	0.0056	0

(a) Units in mg/L unless otherwise indicated.
(b) Tennessee Water Quality Criteria
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.58. Y-12 Plant Discharge Point 94221, SWHISS STATION 9422-1

From: 2006/01/01 To: 2006/04/30

Parameter	Number of Samples	Concentration Max	Concentration Min	Concentration Avg	Reference Value(b)	Number of Values Exceeding Reference
Strontium	17	0.133	0.069	0.113	d	d
Suspended Solids	17	60.0	2.4	13	d	d
Thallium	17	<0.2	<0.2	<0.2	0.0017	0
Uranium	17	0.024	0.005	0.01	d	d
Vanadium	17	<0.02	<0.02	<0.02	d	d
Zinc	17	0.344	<0.05	<0.06	0.12	3

(a) Units in mg/L unless otherwise indicated.
(b) Tennessee Water Quality Criteria.
© Flow during operations and/or discharging.
(d) Not applicable.
(e) Maximum value/minimum value.

Table 4.59. Summary of Y-12 Complex radiological monitoring plan sample requirements

Outfall No.[a]	Location[a]	Sample frequency[a]	Sample type[a]	Sum of DCG percentage
	Y-12 Complex wastewater treatment facilities			
501	Central Pollution Control Facility	1/month	Composite during batch operation	No flow
502	West End Treatment Facility	1/batch	24-hour composite	No flow
503	Steam Plant Wastewater Treatment Facility	4/year	24-hour composite	No flow
512	Groundwater Treatment Facility	4/year	24-hour composite	2.5
520	Steam condensate	1/year	Grab	0.5
550	East End Mercury Treatment	4/year	24-hour composite	1.9
551	Central Mercury Treatment Facility	4/year	24-hour composite	-2.6
	Other Y-12 Complex point and area source discharges			
055	Outfall 055	4/year	24-hour composite	1.1
125	Outfall 125	4/year	24-hour composite	4.4
135	Outfall 135	4/year	24-hour composite	1.1
S17	Kerr Hollow Quarry	1/year	24-hour composite	0.95
S19	Rogers Quarry	1/year	24-hour composite	0.67
	Y-12 Complex instream locations			
BCK 4.55	Bear Creek, complex exit (west)	1/week[b]	7-day composite	4.4
S24	Outfall S24	4/year	7-day composite	8.5
Station 17	East Fork Poplar Creek, complex exit (east)	1/month	7-day composite	0.77
200	North/south pipes	1/month	24-hour composite	4.2
	Y-12 Complex Sanitary sewer			
SS6	East End Sanitary Sewer Monitoring Station	1/week	7-day composite	3.9

[a]Radiological Monitoring Plan was updated in June 2006
[b]Discontinued

Table 4.60. Release of uranium from the Y-12 Complex to the off-site environment as a liquid effluent, 1994-2006

Year	Quantity released	
	Ci[a]	kg
	Station 17	
1995	0.069	143
1996	0.135	215
1997	0.098	184
1998	0.076	127
1999	0.070	123
2000	0.063	126
2001	0.043	82
2002	0.062	140
2003	0.073	167
2004	0.067	161
2005	0.043	93
2006	0.050	131
	Outfall 304[b]	
1995	0.066	105
1996	0.149	259
1997	0.116	199
1998	0.091	148
1999	0.096	183
2000	0.093	168

Table 4.60 (continued)

Year	Quantity released	
	Ci[a]	kg
2001	0.065	136
2002	0.070	141
2003	0.078	179
2004	0.133	142
2005	0.034	76
2006	Not available	Not available

[a] 1 Ci = 3.7E+10 Bq.
[b] Station 304 is no longer configured for flow measurements.

Table 4.61. NPDES compliance monitoring requirements and record for the Y-12 Complex, January through April 2006

Discharge point	Effluent parameter	Effluent limits: Daily av (lb/d)	Daily max (lb/d)	Daily av (mg/L)	Daily max (mg/L)	Percentage of compliance	No. of samples
Outfall 066	pH, standard units			*a*	9.0	*b*	0
Outfall 068	pH, standard units			*a*	9.0	*b*	0
Outfall 117	pH, standard units			*a*	9.0	*b*	0
Outfall 073	pH, standard units			*a*	9.0	*b*	0
	Total residual chlorine				0.5	*b*	0
Outfall 077	pH, standard units			*a*	9.0	100	4
	Total residual chlorine				0.5	100	4
Outfall 122	pH, standard units			*a*	9.0	*b*	0
	Total residual chlorine				0.5	*b*	0
Outfall 133	pH, standard units			*a*	9.0	*b*	0
	Total residual chlorine				0.5	*b*	0
Outfall 125	pH, standard units			*a*	9.0	100	4
	Total residual chlorine				0.5	100	4
Category I outfalls (Storm water, steam condensate, cooling tower blowdown, and groundwater)	pH, standard units			*a*	9.0	b	0
Category I outfalls (Outfalls S15 and S16)	pH, standard units			*a*	10.0	b	0

Table 4.61 (continued)

Discharge point	Effluent parameter	Effluent limits: Daily av (lb/d)	Daily max (lb/d)	Daily av (mg/L)	Daily max (mg/L)	Percentage of compliance	No. of samples
Category II outfalls (cooling water, steam condensate, storm water, and groundwater)	pH, standard units			*a*	9.0	100	26
	Total residual chlorine				0.5	100	18
Category II outfalls (S21, S22, S25, S26, S27, S28, and S29)	pH, standard units			*a*	10.0	100	5
Outfall S19 (Rogers Quarry)	pH, standard units			*a*	9.0	100	4
Category III outfalls (storm water, cooling water, cooling tower blowdown, steam condensate, and groundwater)	pH, standard units			*a*	9.0	100	47
	Total residual chlorine				0.5	100	47
Outfall 201 (below the North/South pipes)	Total residual chlorine			0.011	0.019	98	58
	Temperature, degrees C			*a*	30.5	100	51
	pH, standard units		8.5	*a*		100	51
Outfall 200 (North/ South pipes)	Oil and grease Hexane Extractable Material			10	15	100	51

Table 4.61 (continued)

Discharge point	Effluent parameter	Effluent limits: Daily av (lb/d)	Daily max (lb/d)	Daily av (mg/L)	Daily max (mg/L)	Percentage of compliance	No. of samples
Outfall 021	Total residual chlorine			0.080	0.188	100	51
	Temperature, degrees C			*a*	30.5	100	51
	pH, standard units				9.0	100	51
Outfall 017	pH, standard units			*a*	9.0	100	17
	Ammonia as N			32.4	64.8	100	17
Outfall 055	pH, standard units			*a*	9.0	100	34
	Mercury				0.004	100	34
	Total residual chlorine				0.5	100	32
Outfall 55A	pH, standard units			*a*	9.0	*b*	0
	Mercury				0.004	*b*	0
Outfall 550	pH, standard units			*a*	9.0	100	17
	Mercury			0.002	0.004	100	17
Outfall 551	pH, standard units				9.0	100	6
	Mercury			0.002	0.004	100	7
Outfall 051	pH, standard units			*a*	9.0	100	34

Table 4.61 (continued)

Discharge point	Effluent parameter	Effluent limits: Daily av (lb/d)	Daily max (lb/d)	Daily av (mg/L)	Daily max (mg/L)	Percentage of compliance	No. of samples
Outfall 501 (Central Pollution Control Facility)	pH, standard units			*a*	9.0	b	0
	Total suspended solids			31.0	40.0	b	0
	Total toxic organics				2.13	b	0
	Oil and grease			10	15	b	0
	Cadmium	0.16	0.4	0.075	0.15	b	0
	Chromium	1.0	1.7	0.5	1.0	b	0
	Copper	1.2	2.0	0.5	1.0	b	0
	Lead	0.26	0.4	0.1	0.2	b	0
	Nickel	1.4	2.4	2.38	3.98	b	0
	Nitrate/Nitrite				100	b	0
	Silver	0.14	0.26	0.05	0.05	b	0
	Zinc	0.9	1.6	1.48	2.0	b	0
	Cyanide	0.4	0.72	0.65	1.20	b	0
	PCB				0.001	b	0
Outfall 502 (West End Treatment Facility)	pH, standard units			*a*	9.0	b	0
	Total suspended solids	18.6	36.0	31.0	40.0	b	0
	Total toxic organics				2.13	*b*	0
	Nitrate/nitrite			100	150	*b*	0
	HexaneExtractables			10	15	*b*	0
	Cadmium	0.16	0.4	0.075	0.15	*b*	0
	Chromium	1.0	1.7	0.5	1.0	*b*	0
	Copper	1.2	2.0	0.5	1.0	*b*	0
	Lead	0.26	0.4	0.10	0.20	*b*	0
	Nickel	1.4	2.4	2.38	3.98	*b*	0
	Silver	0.14	0.26	0.05	0.05	*b*	0
	Zinc	0.9	1.6	1.48	2.0	*b*	0
	Cyanide	0.4	0.72	0.65	1.20	*b*	0
	PCB				0.001	*b*	0

Table 4.61 (continued)

Discharge point	Effluent parameter	Effluent limits: Daily av (lb/d)	Daily max (lb/d)	Daily av (mg/L)	Daily max (mg/L)	Percentage of compliance	No. of samples
Outfall 503 (Steam Plant Wastewater Treatment Facility)	pH, standard units			*a*	9.0	*b*	0
	Total suspended solids	125	417	30.0	40.0	*b*	0
	Oil and grease	62.6	83.4	10	15	*b*	0
	Iron	4.17	4.17	1.0	1.0	*b*	0
	Cadmium			0.075	0.15	*b*	0
	Chromium	0.83	0.83	0.20	0.20	*b*	0
	Copper	4.17	4.17	0.20	0.40	*b*	0
	Lead			0.10	0.20	*b*	0
	Zinc	4.17	4.17	1.0	1.0	*b*	0
Outfall 512 (Groundwater Treatment Facility)	pH			*a*	9.0	100	45
	Iron				1.0	100	45
	PCB				0.001	100	4
Outfall 520	pH, standard units				9.0	b	0
Outfall 05A	pH				9.0	*b*	0

[a]Not applicable.
[b]No discharge.

Table 4.62. NPDES compliance monitoring requirements and record for the Y-12 Complex, May through December 2006

Discharge point	Effluent parameter	Effluent limits: Daily av (lb/d)	Daily max (lb/d)	Daily av (mg/L)	Daily max (mg/L)	Percentage of compliance	No. of samples
Outfall 501 (Central Pollution Control Facility)	pH, standard units			*a*	9.0	b	0
	Total suspended solids			31.0	40.0	b	0
	Total toxic organics				2.13	b	0
	Oil and grease			10	15	b	0
	Cadmium	0.16	0.4	0.075	0.15	b	0
	Chromium	1.0	1.7	0.5	1.0	b	0
	Copper	1.2	2.0	0.5	1.0	b	0
	Lead	0.26	0.4	0.1	0.2	b	0
	Nickel	1.4	2.4	2.38	3.98	b	0
	Nitrate/Nitrite				100	b	0
	Silver	0.14	0.26	0.05	0.05	b	0
	Zinc	0.9	1.6	1.48	2.0	b	0
	Cyanide	0.4	0.72	0.65	1.20	b	0
	PCB				0.001	b	0

Table 4.62 (continued

Discharge point	Effluent parameter	Effluent limits				Percentage of compliance	No. of samples
		Daily av (lb/d)	Daily max (lb/d)	Daily av (mg/L)	Daily max (mg/L)		
Outfall 502 (West End Treatment Facility)	pH, standard units			*a*	9.0	b	0
	Total suspended solids	19	36.0	31.0	40.0	b	0
	Total toxic organics				2.13	*b*	0
	Nitrate/nitrite				100	*b*	0
	HexaneExtractables			10	15	*b*	0
	Cadmium	0.16	0.4	0.075	0.15	*b*	0
	Chromium	1.0	1.7	0.5	1.0	*b*	0
	Copper	1.2	2.0	0.5	1.0	*b*	0
	Lead	0.26	0.4	0.10	0.20	*b*	0
	Nickel	1.4	2.4	2.38	3.98	*b*	0
	Silver	0.14	0.26	0.05	0.05	*b*	0
	Zinc	0.9	1.6	1.48	2.0	*b*	0
	Cyanide	0.4	0.72	0.65	1.20	*b*	0
	PCB				0.001	*b*	0
						B	
Outfall 503 (Steam Plant Wastewater Treatment Facility)	pH, standard units			*a*	9.0	*b*	0
	Total suspended solids	125	417	30.0	40.0	*b*	0
	Oil and grease	63	83.4	10	15	*b*	0
	Iron	20.8	20.8	5.0	5.0	*b*	0
	Cadmium	0.16		0.075	0.15	*b*	0
	Chromium	0.8	0.8	0.20	0.20	*b*	0
	Copper	4.17	4.17	0.20	0.40	*b*	0
	Lead			0.10	0.20	*b*	0
	Zinc	4.17	4.17	1.0	1.0	*b*	0

Table 4.62 (continued

Discharge point	Effluent parameter	Effluent limits				Percentage of compliance	No. of samples
		Daily av (lb/d)	Daily max (lb/d)	Daily av (mg/L)	Daily max (mg/L)		
Outfall 512 (Groundwater Treatment Facility)	pH			*a*	9.0	100	8
	PCB				0.001	100	4
Outfall 520	pH, standard units				9.0	0	14
Outfall 200 (North/ South pipes)	pH, standard units				9.0	100	36
	Hexane Extractable Material			10	15	100	36
	Cadmium			0.001	0.025	100	9
	Lead			0.041	1.190	100	9
	PCB			0.002	0.002	100	10
Outfall 550	pH, standard units			*a*	9.0	100	34
	Mercury			0.002	0.004	100	34
Outfall 551	pH, standard units				9.0	100	35
	Mercury			0.002	0.004	100	35
Outfall 051	pH, standard units			*a*	9.0	100	8
Outfall 135	pH, standard units			*a*	9.0	100	16
	Lead				0.5	100	8
	PCB			0.002	0.002	100	3
Outfall 125	pH, standard units			*a*	9.0	100	8
	Cadmium			0.001	0.025	100	8
	Lead			0.04	1.190	100	8
	PCB			0.002	0.002	100	3

Table 4.62 (continued

Discharge point	Effluent parameter	Effluent limits				Percentage of compliance	No. of samples
		Daily av (lb/d)	Daily max (lb/d)	Daily av (mg/L)	Daily max (mg/L)		
Outfall 055	pH, standard units			*a*	9.0	100	13
	Mercury				0.004	100	35
	Total residual chlorine				0.5	100	2
Outfall 109	pH, standard units			*a*	9.0	100	4
	Total residual chlorine				0.5	100	3
Outfall 021	pH, standard units			*a*	9.0	100	4
	Total residual chlorine				0.188	100	3
Outfall 077	pH, standard units			*a*	9.0	100	8
Outfall EFP	pH, standard units			*a*	9.0	100	172
Outfall C11	pH, standard units			*a*	9.0	100	18
	Total residual chlorine				0.019	100	16
	Temperature (degrees C)				30.5	100	18
Outfall S06	pH, standard units			*a*	9.0	100	1
Outfall S19	pH, standard units			*a*	9.0	100	3
Outfall S24	pH, standard units			*a*	9.0	100	3
Category I outfalls	pH, standard units			*a*	9.0	100	19
Category II outfalls	pH, standard units			*a*	9.0	100	28
	Total residual chlorine				0.5	100	28
Category III outfalls	pH, standard units			*a*	9.0	100	10
	Total residual chlorine				0.5	100	10

Table 4.63. Constituents detected in groundwater at the Y-12 National Security Complex, 2006
REGIME = BC AREA NAME = Bear Creek Burial Grounds WMA

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,1,1-Trichloroethane	µg/L	26	7	2100 D	8	548.8571	200	2
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	µg/L	18	6	980 D	33	351.1667	NR	NA
1,1,2-Trichloroethane	µg/L	26	3	11	2 J	6.3333	5	2
1,1-Dichloroethane	µg/L	26	14	5600 D	1 J	827.1429	NR	NA
1,1-Dichloroethene	µg/L	26	13	280 D	2 J	100.5385	7	12
1,2-Dichloroethane	µg/L	26	4	3 J	2 J	2.7500	5	0
1,2-Dichloroethene	µg/L	20	13	6600 D	2 J	933.7692	NR	NA
1,2-Dichloropropane	µg/L	26	1	3 J	3 J	3.0000	5	0
1,4-Dichloro-2-butene	µg/L	16	1	2 J	2 J	2.0000	NR	NA
2-Butanone	µg/L	28	2	15	5	10.0000	NR	NA
Acetone	µg/L	30	3	20	3 J	11.6667	NR	NA
Actinium-227	pCi/L	4	1	0.22 J	0.22 J	0.2200	0.4	0
Aluminum, ICAP	mg/L	20	2	10.6	0.25	5.4250	0.2	2
Arsenic, ICAP	mg/L	19	0				0.05	0
Arsenic, PMS	mg/L	16	4	0.0371	0.00585	0.0160	0.05	0
Barium, ICAP	mg/L	20	20	0.885	0.0351	0.2062	2[k]	0
Benzene	µg/L	30	11	2800 D	2 J	490.1818	5	8
Bicarbonate	mg/L	16	16	569	18.2	299.0750	NR	NA
Boron, ICAP	mg/L	20	13	13.4	0.48	1.9722	NR[k,w]	NA
Calcium, ICAP	mg/L	20	20	148	1.12	36.8270	NR[k]	NA
Carbon Disulfide	µg/L	28	1	5	5	5.0000	NR	NA
Carbon Tetrachloride	µg/L	30	2	390 D	0.1 J	195.0500	5	1
Carbonate	mg/L	16	3	340	88.8	256.2667	NR	NA
Chloride	mg/L	16	16	90.1	1	31.3700	250	0
Chloroethane	µg/L	26	10	22	2 J	8.4000	NR	NA
Chloroform	µg/L	30	3	76	2 J	33.6667	100	0
Chromium, ICAP	mg/L	20	0				0.1[z]	0
Chromium, PMS	mg/L	16	8	0.0332	0.0101	0.0183	0.1	0
cis-1,2-Dichloroethene	µg/L	26	15	6600 D	2 J	1330.8667	70	8
Copper, ICAP	mg/L	19	1	0.0026	0.0026	0.0026	1.3	0
Curium-245	pCi/L	2	0				1.2	0
Curium-246	pCi/L	2	0				1.2	0

Table 4.63 (continued)

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Curium-247	pCi/L	2	1	0.24 J	0.24 J	0.2400	1.2	0
Curium-248	pCi/L	4	2	0.36 J	0.15	0.2550	0.32	1
Dibromochloromethane	µg/L	26	1	7	7	7.0000	100	0
Dichlorodifluoromethane	µg/L	16	4	53	3 J	21.5000	NR	NA
Ethyl Benzene	µg/L	28	2	5 J	5 J	5.0000	700	0
Fluoride	mg/L	16	9	7.06	0.116	3.4354	4	5
Gross Alpha Activity	pCi/L	18	5	17	2.2	6.5800	15	1
Gross Beta Activity	pCi/L	18	5	17	4.32	10.7780	50	0
Iron, ICAP	mg/L	20	14	5.81	0.0603	0.5541	0.3	2
Lead, ICAP	mg/L	20	0				0.015	0
Lead, PMS	mg/L	16	9	0.0175	0.00063	0.0067	0.015	1
Lithium, ICAP	mg/L	20	17	0.164	0.014	0.0865	NR[w]	NA
Magnesium, ICAP	mg/L	20	18	30.9	0.231	6.4411	NR[k]	NA
Manganese, ICAP	mg/L	20	8	0.997	0.00556	0.2253	0.05[k]	4
Nickel, ICAP	mg/L	20	0				0.1[z]	0
Nickel, PMS	mg/L	16	7	0.0715	0.00611	0.0321	0.1	0
Nitrate as Nitrogen	mg/L	16	4	3.71	0.0384	1.0851	10	0
Np-237	pCi/L	4	1	0.12 J	0.12 J	0.1200	1.2	0
PCB-1254	µg/L	4	1	0.13 J	0.13 J	0.1300	0.5	0
Potassium, ICAP	mg/L	20	9	20	1.73	4.4678	NR	NA
Selenium, ICAP	mg/L	20	0	0.05	0			
Selenium, PMS	mg/L	16	1	0.18	0.18	0.1800	0.05	1
Sodium, ICAP	mg/L	20	20	369	2.12	128.0235	NR[k]	NA
Strontium, ICAP	mg/L	20	20	1.55	0.0183	0.2233	NR[w]	NA
Sulfate	mg/L	16	16	28.1	1.7	11.1831	250	0
Technetium-99	pCi/L	7	0				4000	0
Tetrachloroethene	µg/L	30	17	17000 D	0.2 J	1534.8941	5	14
Thallium, ICAP	mg/L	19	0				0.002	0
Thallium, PMS	mg/L	16	3	0.000595	0.00051	0.0006	0.002	0
Thorium-227	pCi/L	2	1	0.22 J	0.22 J	0.2200	160	0
Thorium-230	pCi/L	4	3	0.51	0.39	0.4400	12	0
Thorium-232	pCi/L	4	2	0.16 J	0.13 J	0.1450	2	0
Thorium-234	pCi/L	2	2	0.31	0.23	0.2700	400	0
Toluene	µg/L	30	6	55	0.1 J	19.5167	1000	0

Table 4.63 (continued)

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Total Dissolved Solids	mg/L	24	20	891	28	403.4000	500	6
Total Suspended Solids	mg/L	24	4	20	1	6.2500	NR	NA
Total Xylene	µg/L	30	6	19	0.1 J	8.0167	1000	0
trans-1,2-Dichloroethene	µg/L	26	11	65	2 J	14.6364	100	0
Trichloroethene	µg/L	30	14	3500 D	1 J	585.3571	5	13
Trichlorofluoromethane	µg/L	16	1	2 J	2 J	2.0000	NR	NA
Turbidity	NTU	16	16	128	0.117	8.8244	1	6
Uranium, ICAP	mg/L	19	0				0.03	0
Uranium, KPA	mg/L	10	0				0.03	0
Uranium, PMS	mg/L	16	3	0.0314	0.00151	0.0117	0.03	1
Uranium-233/234	pCi/L	6	5	1.83	0.44	0.8340	20	0
Uranium-234	pCi/L	1	1	6.4	6.4	6.4000	20	0
Uranium-235	pCi/L	3	1	0.36	0.36	0.3600	24	0
Uranium-235/236	pCi/L	4	2	0.35 J	0.18 J	0.2650	20	0
Uranium-236	pCi/L	2	1	0.47 J	0.47 J	0.4700	20	0
Uranium-238	pCi/L	7	5	9.1	0.15 J	2.0240	24	0
Vinyl Chloride	µg/L	26	13	1500 D	12	236.2308	2	13
Zinc, ICAP	mg/L	20	1	0.13	0.13	0.1300	5	0

Table 4.64. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = BC AREA NAME = EMWMF

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,2-Dimethylbenzene	µg/L	22	2	0.1 J	0.1 J	0.1000	NR	NA
Acetone	µg/L	47	5	5	2 J	3.4000	NR	NA
Actinium-227	pCi/L	47	15	0.38	0.18 J	0.2773	0.4	0
Aluminum, ICAP	mg/L	47	31	1.72	0.0322	0.3217	0.2	14
Americium-241	pCi/L	47	4	0.29 J	0.12 J	0.1850	1.2	0
Americium-243	pCi/L	23	5	0.47	0.27 J	0.3980	1.2	0
Arsenic, ICAP	mg/L	35	2	0.0034	0.0027	0.0031	0.05	0
Barium, ICAP	mg/L	47	47	0.728	0.0843	0.2222	2	0
Bis(2-ethylhexyl)phthalate	µg/L	23	6	0.9 J	0.5 J	0.7833	NR	NA
Boron, ICAP	mg/L	47	47	0.198	0.0062	0.0390	NR	NA
Calcium, ICAP	mg/L	47	47	72.3	2.48	43.4366	NR	NA
Carbazole	µg/L	47	1	0.7	0.7	0.7000	NR	NA
Carbon-14	pCi/L	47	2	20.8 J	20.8 J	20.8000	NR	NA
Cesium-137	pCi/L	47	1	4.87 J	4.87 J	4.8700	120	0
Chlorine-36	pCi/L	47	3	30.5	4.06 J	15.9200	2000	0
Chromium, ICAP	mg/L	47	2	0.0147	0.0094	0.0121	0.1	0
Copper, ICAP	mg/L	35	5	0.0094	0.0033	0.0071	1.3	0
Curium-245	pCi/L	23	6	0.79	0.29 J	0.5550	1.2	0
Curium-246	pCi/L	23	6	0.79	0.29 J	0.5550	1.2	0
Curium-247	pCi/L	23	5	0.24 J	0.17 J	0.2080	1.2	0
Curium-248	pCi/L	47	17	2.14	0.14	0.5153	0.32	7
Di-n-butyl phthalate	µg/L	47	5	3 J	0.5 J	1.3400	NR	NA
Di-n-octylphthalate	µg/L	23	1	0.6 J	0.6 J	0.6000	NR	NA
Iodine-129	pCi/L	47	3	4.07	3.44	3.6800	20	0
Iron, ICAP	mg/L	47	46	1.85	0.0325	0.3437	0.3	15
Lead, ICAP	mg/L	47	2	0.0027	0.0015	0.0021	0.015	0
Lithium, ICAP	mg/L	47	43	0.0732	0.0103	0.0232	NR	NA
Magnesium, ICAP	mg/L	47	47	12	1.07	7.3768	NR	NA
Manganese, ICAP	mg/L	47	47	0.891	0.0027	0.0566	0.05	10
Molybdenum, ICAP	mg/L	47	8	0.0034	0.00051 *	0.0018	NR	NA
Nickel, ICAP	mg/L	47	2	0.0125	0.0076	0.0101	0.1	0
Np-237	pCi/L	47	1	0.11 J	0.11 J	0.1100	1.2	0

Table 4.64 (continued)

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Phenol	µg/L	47	1	2 J	2 J	2.0000	NR	NA
Plutonium-236	pCi/L	23	1	0.2 J	0.2 J	0.2000	4	0
Plutonium-242	pCi/L	23	6	0.28 J	0.1 J	0.1650	1.2	0
Potassium, ICAP	mg/L	47	47	3.87	0.803	1.8919	NR	NA
Pu-239/240	pCi/L	47	3	0.27	0.22 J	0.2400	1.2	0
Radium-226	pCi/L	47	14	0.82 J	0.18 J	0.3386	4	0
Radium-228	pCi/L	47	7	2.68	0.48 J	1.1029	4	0
Sodium, ICAP	mg/L	47	47	143	4.07	20.0564	NR	NA
Strontium, ICAP	mg/L	47	47	1.24	0.0435	0.4089	NR	NA
Strontium-90	pCi/L	47	10	2.91	0.77 J	1.2930	8	0
Technetium-99	pCi/L	47	1	3.32 J	3.32 J	3.3200	4000	0
Thorium-227	pCi/L	23	11	0.38	0.18 J	0.2873	160	0
Thorium-228	pCi/L	47	7	0.33 J	0.16 J	0.2129	16	0
Thorium-229	pCi/L	23	3	1.53	0.2 J	0.6600	1.6	0
Thorium-230	pCi/L	47	43	0.82	0.24 J	0.5072	12	0
Thorium-232	pCi/L	47	9	0.43	0.11 J	0.2044	2	0
Thorium-234	pCi/L	23	6	0.49	0.08 J	0.2467	400	0
Titanium, ICAP	mg/L	12	7	0.0531	0.0026	0.0151	NR	NA
Toluene	µg/L	47	4	2 J	0.1 J	0.6250	1000	0
Total Xylene	µg/L	47	1	2 J	2 J	2.0000	1000	0
Uranium, ICAP	mg/L	35	5	0.007	0.0043	0.0055	0.03	0
Uranium-232	pCi/L	23	1	0.32 J	0.32 J	0.3200	4	0
Uranium-233/234	pCi/L	47	36	1.03	0.12 J	0.4019	20	0
Uranium-235/236	pCi/L	47	10	0.41 J	0.17 J	0.2510	20	0
Uranium-238	pCi/L	47	19	0.49	0.08 J	0.2347	24	0
Yttrium-90	pCi/L	47	10	2.91	0.77 J	1.2930	400	0
Zinc, ICAP	mg/L	47	6	0.0158	0.006	0.0092	5	0

Table 4.65. Constituents detected in groundwater at the Y-12 National Security Complex, 2006
REGIME = BC AREA NAME = Exit Pathway Traverse A

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Aluminum, ICAP	mg/L	4	1	0.584	0.584	0.5840	0.2	1
Barium, ICAP	mg/L	4	2	0.131	0.0943	0.1127	2	0
Bicarbonate	mg/L	4	2	225	211	218.0000	NR	NA
Boron, ICAP	mg/L	4	2	0.0258	0.0215	0.0237	NR	NA
Calcium, ICAP	mg/L	4	2	55.9	52.9	54.4000	NR	NA
Chloride	mg/L	4	2	14.2	7.5	10.8500	250	0
Chromium, ICAP	mg/L	4	1	0.0148	0.0148	0.0148	0.1	0
Copper, ICAP	mg/L	4	1	0.0074	0.0074	0.0074	1.3	0
Fluoride	mg/L	4	2	0.16	0.1	0.1300	4	0
Gross Alpha Activity	pCi/L	4	2	11.6	9.49	10.5450	15	0
Gross Beta Activity	pCi/L	4	2	22.3	19.3	20.8000	50	0
Iron, ICAP	mg/L	4	2	1.47	0.0604	0.7652	0.3	1
Lithium, ICAP	mg/L	4	1	0.035	0.035	0.0350	NR	NA
Magnesium, ICAP	mg/L	4	2	22.1	15.7	18.9000	NR	NA
Manganese, ICAP	mg/L	4	1	0.125	0.125	0.1250	0.05	1
Nickel, ICAP	mg/L	4	1	0.028	0.028	0.0280	0.1	0
NitrateNitrite	mg/L	4	2	3.2	1.9	2.5500	10	0
Potassium, ICAP	mg/L	4	2	4.89	1.17	3.0300	NR	NA
Sodium, ICAP	mg/L	4	2	5.07	4.15	4.6100	NR	NA
Strontium, ICAP	mg/L	4	2	0.153	0.137	0.1450	NR	NA
Sulfate	mg/L	4	2	21.2	12.1	16.6500	250	0
Technetium-99	pCi/L	4	2	18.4	12.9	15.6500	4000	0
Total Dissolved Solids	mg/L	4	2	332	315	323.5000	500	0
Total Suspended Solids	mg/L	4	1	24.1	24.1	24.1000	NR	NA
Uranium, KPA	mg/L	4	2	0.0177	0.0166	0.0172	0.03	0
Uranium-233/234	pCi/L	4	2	5.3	4.02	4.6600	20	0
Uranium-235	pCi/L	4	0				24	0
Uranium-236	pCi/L	4	0				20	0
Uranium-238	pCi/L	4	2	6.12	6.12	6.1200	24	0
Zinc, ICAP	mg/L	4	1	0.0313	0.0313	0.0313	5	0

Table 4.66. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = BC AREA NAME = Exit Pathway Traverse B

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,1-Dichloroethene	µg/L	7	1	1 J	1 J	1.0000	7	0
1,2-Dichloroethene	µg/L	5	2	5 J	4 J	4.5000	NR	NA
Acetone	µg/L	7	1	1 J	1 J	1.0000	NR	NA
Barium, ICAP	mg/L	7	5	0.147	0.0271	0.0788	2	0
Bicarbonate	mg/L	7	5	212	120	171.6000	NR	NA
Boron, ICAP	mg/L	7	2	0.0902	0.0423	0.0663	NR	NA
Calcium, ICAP	mg/L	7	5	85.2 E	11.8	57.9400	NR	NA
Chloride	mg/L	7	5	39.2	10.2	21.9600	250	0
Chromium, ICAP	mg/L	7	0				0.1	0
Chromium, PMS	mg/L	3	1	0.0115	0.0115	0.0115	0.1	0
cis-1,2-Dichloroethene	µg/L	7	4	15	2 J	6.5000	70	0
Fluoride	mg/L	7	5	0.23	0.107	0.1760	4	0
Gross Alpha Activity	pCi/L	7	4	25.8	1.61 J	12.7525	15	1
Gross Beta Activity	pCi/L	7	5	69.5	10.5	36.2000	50	1
Iron, ICAP	mg/L	7	4	1.3	0.262	0.6325	0.3	3
Lead, ICAP	mg/L	7	0				0.015	0
Lead, PMS	mg/L	3	1	0.00714	0.00714	0.0071	0.015	0
Lithium, ICAP	mg/L	7	3	0.0254	0.0204	0.0225	NR[w]	NA
Magnesium, ICAP	mg/L	7	5	30.2	13.7	22.8200	NR	NA
Manganese, ICAP	mg/L	7	3	0.0233	0.0052	0.0133	0.05	0
Nitrate as Nitrogen	mg/L	3	3	18	6.45	11.6500	10	2
NitrateNitrite	mg/L	4	2	21.2	2.2	11.7000	10	1
Potassium, ICAP	mg/L	7	4	9.34	2.2	6.3125	NR	NA
Selenium, ICAP	mg/L	7	0				0.05	0
Selenium, PMS	mg/L	3	2	0.0108	0.0106	0.0107	0.05	0
Sodium, ICAP	mg/L	7	5	15.6	6.69	10.7100	NR	NA
Strontium, ICAP	mg/L	7	5	0.366	0.0543	0.1811	NR[w]	NA
Sulfate	mg/L	7	5	27.9	13.9	20.6400	250	0
Total Dissolved Solids	mg/L	3	3	354	272	316.0000	500	0
Total Suspended Solids	mg/L	3	1	2	2	2.0000	NR	NA
Trichloroethene	µg/L	7	5	28	2 J	12.0000	5	4
Turbidity	NTU	3	3	3.59	0.168	2.2827	1	2

Table 4.66 (continued)

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Uranium, ICAP	mg/L	3	0				0.03	0
Uranium, KPA	mg/L	4	1	0.0629	0.0629	0.0629	0.03	1
Uranium, PMS	mg/L	3	3	0.0324	0.00906	0.0176	0.03	1
Uranium-233/234	pCi/L	4	2	11.9	1.48	6.6900	20	0
Uranium-235	pCi/L	4	1	1.67	1.67	1.6700	24	0
Uranium-236	pCi/L	4	2	0.76 J	0.4 J	0.5800	20	0
Uranium-238	pCi/L	4	2	23.8	1.47	12.6350	24	0
Zinc, ICAP	mg/L	7	1	0.015	0.015	0.0150	5	0

Table 4.67. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = BC AREA NAME = Exit Pathway Traverse C

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,2-Dichloroethene	µg/L	4	3	3 J	2 J	2.6667	NR	NA
Barium, ICAP	mg/L	4	4	0.195	0.0653	0.1200	2	0
Bicarbonate	mg/L	4	4	325	170	268.7500	NR	NA
Calcium, ICAP	mg/L	4	4	135	52.6	96.8000	NR	NA
Chloride	mg/L	4	4	76.1	6.99	38.6475	250	0
cis-1,2-Dichloroethene	µg/L	4	3	3 J	2 J	2.6667	70	0
Fluoride	mg/L	4	3	0.248	0.169	0.2023	4	0
Gross Alpha Activity	pCi/L	4	2	6.8	4	5.4000	15	0
Gross Beta Activity	pCi/L	4	3	48	7.4	25.8000	50	0
Iron, ICAP	mg/L	4	3	0.298	0.0661	0.1997	0.3	0
Lithium, ICAP	mg/L	4	2	0.02	0.0157	0.0179	NR[w]	NA
Magnesium, ICAP	mg/L	4	4	35.7	21.5	27.9500	NR	NA
Manganese, ICAP	mg/L	4	3	0.858	0.00894	0.2955	0.05	1
Nitrate as Nitrogen	mg/L	4	4	17.8	1.8	10.0900	10	2
Potassium, ICAP	mg/L	4	3	4.51	2.87	3.4367	NR	NA
Selenium, ICAP	mg/L	4	0				0.05	0
Selenium, PMS	mg/L	4	3	0.0116	0.01	0.0109	0.05	0
Sodium, ICAP	mg/L	4	4	29	2.04	15.9425	NR	NA
Strontium, ICAP	mg/L	4	4	0.758	0.0551	0.3245	NR[w]	NA
Sulfate	mg/L	4	4	38.7	12.2	27.8000	250	0
Tetrachloroethene	µg/L	4	3	7	1 J	3.6667	5	1
Total Dissolved Solids	mg/L	4	4	559	326	466.7500	500	2
Total Suspended Solids	mg/L	4	2	3	2	2.5000	NR	NA
Trichloroethene	µg/L	4	4	88	10	41.5000	5	4
Turbidity	NTU	4	4	3.93	0.164	1.5998	1	2
Uranium, ICAP	mg/L	4	0				0.03	0
Uranium, PMS	mg/L	4	2	0.0112	0.00202	0.0066	0.03	0

Table 4.68. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = BC AREA NAME = Exit Pathway Traverse W

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Barium, ICAP	mg/L	6	6	0.0827	0.0074	0.0464	2	0
Boron, ICAP	mg/L	6	6	0.0596	0.0396	0.0489	NR	NA
Calcium, ICAP	mg/L	6	6	61.7	10.4	49.2667	NR	NA
cis-1,2-Dichloroethene	µg/L	6	1	2 J	2 J	2.0000	70	0
Gross Alpha Activity	pCi/L	6	2	3.87	1.83 J	2.8500	15	0
Gross Beta Activity	pCi/L	6	5	6.63	3.55 J	5.2620	50	0
Iron, ICAP	mg/L	6	6	0.957	0.0899	0.3167	0.3	1
Lithium, ICAP	mg/L	6	4	0.0147	0.0103	0.0124	NR	NA
Magnesium, ICAP	mg/L	6	6	33.1	24.8	28.9000	NR	NA
Manganese, ICAP	mg/L	6	6	0.136	0.012	0.0762	0.05	3
NitrateNitrite	mg/L	6	2	0.52	0.42	0.4700	10	0
Potassium, ICAP	mg/L	6	6	2.88	1.36	2.0217	NR	NA
Sodium, ICAP	mg/L	6	6	10.9	5.17	7.6250	NR	NA
Strontium, ICAP	mg/L	6	6	1.18	0.142	0.5273	NR	NA
Tetrachloroethene	µg/L	6	1	14	14	14.0000	5	1
Toluene	µg/L	6	1	1 J	1 J	1.0000	1000	0
Trichloroethene	µg/L	6	1	3 J	3 J	3.0000	5	0
Uranium-233/234	pCi/L	6	5	1.57	0.55 J	1.0400	20	0
Uranium-235	pCi/L	6	3	0.35 J	0.19	0.2767	24	0
Uranium-236	pCi/L	6	2	0.34 J	0.17	0.2550	20	0
Uranium-238	pCi/L	6	3	1.08	0.4 J	0.7867	24	0

Table 4.69. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = BC AREA NAME = Exit Pathway Spring/Surface Water

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,2-Dichloroethene	µg/L	5	1	1 J	1 J	1.0000	NR	NA
Aluminum, ICAP	mg/L	12	3	0.55	0.0688	0.2476	0.2	1
Barium, ICAP	mg/L	12	8	0.126	0.0393	0.0712	2	0
Bicarbonate	mg/L	10	6	362	106	189.0000	NR	NA
Boron, ICAP	mg/L	12	4	0.0548	0.0109	0.0299	NR	NA
Calcium, ICAP	mg/L	12	8	170	29.8 N	67.1500	NR	NA
Chloride	mg/L	10	6	83.3	4.3	21.9800	250	0
cis-1,2-Dichloroethene	µg/L	8	1	1 J	1 J	1.0000	70	0
Fluoride	mg/L	10	4	0.29	0.134	0.1903	4	0
Gross Alpha Activity	pCi/L	6	5	34	4.26	13.9620	15	1
Gross Beta Activity	pCi/L	12	7	65	5.34	23.9986	50	1
Iron, ICAP	mg/L	12	8	0.574	0.0554	0.1696	0.3	1
Lead, ICAP	mg/L	12	0				0.015	0
Lead, PMS	mg/L	3	3	0.0397	0.00094	0.0139	0.015	1
Lithium, ICAP	mg/L	12	1	0.0123	0.0123	0.0123	NR[w]	NA
Magnesium, ICAP	mg/L	12	8	18.7	8.87	14.8713	NR	NA
Manganese, ICAP	mg/L	12	8	0.0473	0.0052	0.0215	0.05	0
Nitrate as Nitrogen	mg/L	3	3	16.8	3.37	9.5067	10	1
NitrateNitrite	mg/L	9	5	4.2	0.27	1.5160	10	0
Potassium, ICAP	mg/L	12	7	3.15	0.804	1.4821	NR	NA
Sodium, ICAP	mg/L	12	8	26.1	2.71	7.8225	NR	NA
Strontium, ICAP	mg/L	12	8	0.414	0.0319	0.1331	NR[w]	NA
Sulfate	mg/L	10	6	56	5	21.5167	250	0
Technetium-99	pCi/L	8	3	20.4	7.36 J	11.7233	4000	0
Total Dissolved Solids	mg/L	9	6	632	179	295.8333	500	1
Total Suspended Solids	mg/L	9	3	4	1	2.6667	NR	NA
Trichloroethene	µg/L	8	1	4 J	4 J	4.0000	5	0
Turbidity	NTU	3	3	2.93	0.593	1.9377	1	2
Uranium, ICAP	mg/L	3	0				0.03	0
Uranium, KPA	mg/L	9	3	0.025	0.00924	0.0151	0.03	0
Uranium, PMS	mg/L	3	3	0.0699	0.0264	0.0417	0.03	1
Uranium-233/234	pCi/L	10	6	13.4	0.52 J	4.5800	20	0

Table 4.69. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = BC AREA NAME = Exit Pathway Spring/Surface Water

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Uranium-235	pCi/L	10	2	1.34	0.43 J	0.8850	24	0
Uranium-236	pCi/L	10	2	0.74 J	0.39 J	0.5650	20	0
Uranium-238	pCi/L	10	6	22.4	0.33 J	7.4350	24	0
Zinc, ICAP	mg/L	12	1	0.0177	0.0177	0.0177	5	0

Table 4.70. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = BC AREA NAME = Maynardville exit pathway

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Aluminum, ICAP	mg/L	2	1	0.246	0.246	0.2460	0.2	1
Barium, ICAP	mg/L	2	1	0.0482	0.0482	0.0482	2	0
Bicarbonate	mg/L	2	1	188	188	188.0000	NR	NA
Boron, ICAP	mg/L	2	1	0.0162	0.0162	0.0162	NR	NA
Calcium, ICAP	mg/L	2	1	53 N	53 N	53.0000	NR	NA
Chloride	mg/L	2	1	8.5	8.5	8.5000	250	0
Gross Beta Activity	pCi/L	2	1	6.53	6.53	6.5300	50	0
Iron, ICAP	mg/L	2	1	0.393	0.393	0.3930	0.3	1
Magnesium, ICAP	mg/L	2	1	13	13	13.0000	NR	NA
Manganese, ICAP	mg/L	2	1	0.011	0.011	0.0110	0.05	0
Methylene chloride	µg/L	2	0				5	0
NitrateNitrite	mg/L	2	1	0.8	0.8	0.8000	10	0
Potassium, ICAP	mg/L	2	1	1.16	1.16	1.1600	NR	NA
Sodium, ICAP	mg/L	2	1	4.24	4.24	4.2400	NR	NA
Strontium, ICAP	mg/L	2	1	0.0705	0.0705	0.0705	NR	NA
Sulfate	mg/L	2	1	12.5	12.5	12.5000	250	0
Total Dissolved Solids	mg/L	2	1	258	258	258.0000	500	0
Total Suspended Solids	mg/L	2	1	8.7	8.7	8.7000	NR	NA
Uranium-233/234	pCi/L	2	1	2.08	2.08	2.0800	20	0
Uranium-238	pCi/L	2	1	1.82	1.82	1.8200	24	0
Zinc, ICAP	mg/L	2	0				5	0

Table 4.71. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = BC AREA NAME = Oil Landfarm WMA

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,1,1-Trichloroethane	µg/L	10	1	1 J	1 J	1.0000	200	0
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	µg/L	10	1	15	15	15.0000	NR	NA
1,1-Dichloroethane	µg/L	11	4	15	1 J	10.2500	NR	NA
1,1-Dichloroethene	µg/L	11	7	28	2 J	7.0000	7	1
1,2-Dichloroethene	µg/L	9	6	380 D	2 J	66.8333	NR	NA
1,2-Dichloropropane	µg/L	10	1	1 J	1 J	1.0000	5	0
1,2-Dimethylbenzene	µg/L	2	1	2	2	2.0000	NR	NA
1,4-Dichlorobenzene	µg/L	13	1	3 J	3 J	3.0000	75	0
2-Methylnaphthalene	µg/L	4	1	1 J	1 J	1.0000	NR	NA
Aluminum, ICAP	mg/L	15	3	0.209	0.0306	0.1039	0.2	1
Americium-243	pCi/L	2	1	0.55	0.55	0.5500	1.2	0
Arsenic, ICAP	mg/L	14	0				0.05	0
Arsenic, PMS	mg/L	9	1	0.00942	0.00942	0.0094	0.05	0
Barium, ICAP	mg/L	15	15	1.78	0.0599	0.3804	2	0
Benzene	µg/L	14	2	6	1 J	3.5000	5	1
Bicarbonate	mg/L	9	9	645	194	351.0000	NR	NA
Boron, ICAP	mg/L	15	10	3.13	0.12	0.5113	NR[w]	NA
Calcium, ICAP	mg/L	15	15	758	1.69	133.5967	NR[k]	NA
Carbon Tetrachloride	µg/L	15	3	6	4 J	5.0000	5	1
Cesium-137	pCi/L	4	1	6.51 J	6.51 J	6.5100	120	0
Chloride	mg/L	9	9	135	5.43	61.6689	250	0
Chlorobenzene	µg/L	14	2	11	1 J	6.0000	100	0
Chloroform	µg/L	14	4	2 J	2 J	2.0000	100	0
Chromium, ICAP	mg/L	15	1	0.0068	0.0068	0.0068	0.1	0
Chromium, PMS	mg/L	9	0				0.1	0
cis-1,2-Dichloroethene	µg/L	11	8	380 D	2 J	57.5000	70	1
Cobalt, ICAP	mg/L	14	2	0.032	0.019	0.0255	NR	NA
Curium-245	pCi/L	2	1	0.96	0.96	0.9600	1.2	0
Curium-246	pCi/L	2	1	0.96	0.96	0.9600	1.2	0
Curium-248	pCi/L	4	1	1.48	1.48	1.4800	0.32	1
Ethyl Benzene	µg/L	13	1	0.4 J	0.4 J	0.4000	700	0

Table 4.71 (continued)

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Fluoride	mg/L	9	3	0.511	0.128	0.3737	4	0
Gross Alpha Activity	pCi/L	11	4	75	2.46	22.3650	15	1
Gross Beta Activity	pCi/L	11	10	370	3.16 J	63.4550	50	4
Iron, ICAP	mg/L	15	14	19.7	0.0235	2.2908	0.3	6
Lead, ICAP	mg/L	15	0				0.015	0
Lead, PMS	mg/L	9	4	0.0039	0.000995	0.0021	0.015	0
Lithium, ICAP	mg/L	15	13	0.111	0.011	0.0371	NR[w]	NA
Magnesium, ICAP	mg/L	15	15	55.1	0.666	22.4051	NR[k]	NA
Manganese, ICAP	mg/L	15	9	4.6	0.00655	1.3695	0.05	6
Naphthalene	µg/L	4	1	2 J	2 J	2.0000	NR	NA
Nickel, ICAP	mg/L	15	2	0.0307	0.024	0.0274	0.1[z]	0
Nickel, PMS	mg/L	9	3	0.051	0.00615	0.0305	0.1	0
Nitrate as Nitrogen	mg/L	9	7	503	3.9	109.0714	10	6
Plutonium-242	pCi/L	2	1	0.14 J	0.14 J	0.1400	1.2	0
Potassium, ICAP	mg/L	15	13	12.2	1.16	3.1146	NR	NA
Radium-226	pCi/L	4	1	0.43 J	0.43 J	0.4300	4	0
Radium-228	pCi/L	4	1	0.68	0.68	0.6800	4	0
Sodium, ICAP	mg/L	15	15	107	2.94	44.8760	NR[k]	NA
Strontium, ICAP	mg/L	15	15	2.15	0.0395	0.6670	NR[w]	NA
Strontium-90	pCi/L	4	3	1.12 J	0.89 J	1.0267	8	0
Sulfate	mg/L	9	9	61.9	4.55	25.2378	250	0
Technetium-99	pCi/L	4	1	4.38 J	4.38 J	4.3800	4000	0
Tetrachloroethene	µg/L	15	5	65	1 J	24.4000	5	2
Thallium, ICAP	mg/L	14	0				0.002	0
Thallium, PMS	mg/L	9	1	0.0007	0.0007	0.0007	0.002	0
Thorium-230	pCi/L	4	4	0.83	0.31 J	0.4625	12	0
Thorium-232	pCi/L	4	1	0.2 J	0.2 J	0.2000	2	0
Thorium-234	pCi/L	2	2	0.28	0.09 J	0.1850	400	0
Toluene	µg/L	15	3	0.7 J	0.1 J	0.3333	1000	0
Total Dissolved Solids	mg/L	9	9	3340	562	968.0000	500	9
Total Suspended Solids	mg/L	9	5	22	1	6.0000	NR	NA
Total Xylene	µg/L	14	2	4	0.1 J	2.0500	1000	0
Trichloroethene	µg/L	15	8	260 D	8	105.6250	5	8

Table 4.71 (continued)

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Turbidity	NTU	9	9	133	0.345	21.4117	1	8
Uranium, ICAP	mg/L	12	0				0.03	0
Uranium, KPA	mg/L	2	0				0.03	0
Uranium, PMS	mg/L	9	7	0.172	0.0012	0.0281	0.03	1
Uranium-233/234	pCi/L	4	3	0.34 J	0.18 J	0.2800	20	0
Uranium-235/236	pCi/L	4	1	0.23 J	0.23 J	0.2300	20	0
Uranium-238	pCi/L	4	3	0.28	0.09 J	0.1867	24	0
Vinyl Chloride	µg/L	11	1	48	48	48.0000	2	1
Yttrium-90	pCi/L	4	3	1.12 J	0.89 J	1.0267	400	0

Table 4.72. Constituents detected in groundwater at the Y-12 National Security Complex, 2006
REGIME = BC AREA NAME = Rust Spoil Area

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Barium, ICAP	mg/L	2	2	0.0762	0.0194	0.0478	2	0
Bicarbonate	mg/L	2	2	304	225	264.5000	NR	NA
Calcium, ICAP	mg/L	2	2	152	83.6	117.8000	NR	NA
Chloride	mg/L	2	2	86.3	1.7	44.0000	250	0
Fluoride	mg/L	2	1	0.224	0.224	0.2240	4	0
Gross Alpha Activity	pCi/L	2	1	9.9	9.9	9.9000	15	0
Gross Beta Activity	pCi/L	2	1	21	21	21.0000	50	0
Magnesium, ICAP	mg/L	2	2	16.4	5.53	10.9650	NR	NA
Nitrate as Nitrogen	mg/L	2	2	10.3	0.355	5.3275	10	1
Potassium, ICAP	mg/L	2	1	3.66	3.66	3.6600	NR	NA
Selenium, ICAP	mg/L	2	0				0.05	0
Selenium, PMS	mg/L	2	2	0.0104	0.0103	0.0104	0.05	0
Sodium, ICAP	mg/L	2	2	25	3.53	14.2650	NR	NA
Strontium, ICAP	mg/L	2	2	0.388	0.0746	0.2313	NR[w]	NA
Sulfate	mg/L	2	2	46.9	2.82	24.8600	250	0
Tetrachloroethene	µg/L	2	1	3 J	3 J	3.0000	5	0
Total Dissolved Solids	mg/L	2	2	651	259	455.0000	500	1
Trichloroethene	µg/L	2	2	5 J	3 J	4.0000	5	0
Turbidity	NTU	2	2	0.371	0.2	0.2855	1	0
Uranium, ICAP	mg/L	2	0				0.03	0
Uranium, PMS	mg/L	2	1	0.00383	0.00383	0.0038	0.03	0

Table 4.73. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = BC AREA NAME = S-3 Site

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	µg/L	8	2	74	52	63.0000	NR	NA
1,1-Dichloroethene	µg/L	10	2	3 J	2 J	2.5000	7	0
1,2-Dichloroethene	µg/L	7	1	2 J	2 J	2.0000	NR	NA
Aluminum, ICAP	mg/L	10	4	98.4	1.84	37.4375	0.2	4
Arsenic, ICAP	mg/L	10	0				0.05	0
Arsenic, PMS	mg/L	6	1	0.00528	0.00528	0.0053	0.05	0
Barium, ICAP	mg/L	10	9	385	0.0848	45.4966	2[k]	5
Beryllium, ICAP	mg/L	10	4	0.0481	0.0025	0.0189	0.004	2
Bicarbonate	mg/L	8	7	375	43.3	166.2571	NR	NA
Boron, ICAP	mg/L	10	6	0.901	0.0261	0.3075	NR[w]	NA
Cadmium, ICAP	mg/L	10	2	0.0117	0.0115	0.0116	0.005[z]	2
Cadmium, PMS	mg/L	6	3	0.57	0.0215	0.3078	0.005	3
Calcium, ICAP	mg/L	10	9	9510	2.1	1765.0356	NR[k]	NA
Chloride	mg/L	8	7	322	2.08	124.5543	250	2
Chloroform	µg/L	10	2	40	30	35.0000	100	0
cis-1,2-Dichloroethene	µg/L	10	1	2 J	2 J	2.0000	70	0
Cobalt, ICAP	mg/L	10	4	0.701	0.055	0.3162	NR	NA
Copper, ICAP	mg/L	10	1	0.0056	0.0056	0.0056	1.3	0
Fluoride	mg/L	8	5	3.45	0.138	1.2846	4	0
Gross Alpha Activity	pCi/L	10	6	550	16	255.8333	15	6
Gross Beta Activity	pCi/L	10	6	18000	79.8	5729.3000	50	6
Iron, ICAP	mg/L	10	6	4.23	0.0161	0.7724	0.3	1
Lead, ICAP	mg/L	10	0				0.015	0
Lead, PMS	mg/L	6	3	0.0015	0.00078	0.0010	0.015	0
Lithium, ICAP	mg/L	10	9	1.36	0.0149	0.5095	NR[w]	NA
Magnesium, ICAP	mg/L	10	9	2380	0.74	421.3544	NR[k]	NA
Manganese, ICAP	mg/L	10	7	145	0.0262	39.7337	0.05	6
Mercury, CVAA	mg/L	8	2	0.00265	0.000318	0.0015	0.002	1
Methylene chloride	µg/L	10	2	17	14	15.5000	5	2
Nickel, ICAP	mg/L	10	2	0.152	0.147	0.1495	0.1[z]	2
Nickel, PMS	mg/L	6	4	7.79	0.00878	2.8849	0.1	3

Table 4.73 (continued)

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Nitrate as Nitrogen	mg/L	6	6	11300	11.4	2963.9000	10	6
NitrateNitrite	mg/L	4	3	1110	18.6	384.1333	10	3
Np-237	pCi/L	2	2	8.48	7.04	7.7600	1.2	2
Potassium, ICAP	mg/L	10	9	122	4.03	29.9256	NR	NA
Radioactive Strontium (Total)	pCi/L	2	2	2.82	0.99 J	1.9050	NR	NA
Selenium, ICAP	mg/L	10	0				0.05	0
Selenium, PMS	mg/L	6	1	0.0126	0.0126	0.0126	0.05	0
Sodium, ICAP	mg/L	10	9	2330	64.5	671.0111	NR[k]	NA
Strontium, ICAP	mg/L	10	9	288	0.105	38.3531	NR[k,w]	NA
Sulfate	mg/L	8	6	37.3	2.8	17.6850	250	0
Technetium-99	pCi/L	9	5	38000	34	12499.6000	4000	2
Tetrachloroethene	µg/L	10	4	160	6	67.5000	5	4
Thallium, ICAP	mg/L	10	0				0.002	0
Thallium, PMS	mg/L	6	3	0.000775	0.000595	0.0007	0.002	0
Total Dissolved Solids	mg/L	8	7	62000	329	15462.7143	500	6
Total Radium Alpha	pCi/L	2	1	1.71	1.71	1.7100	5	0
Total Suspended Solids	mg/L	8	3	4	1	2.6667	NR	NA
Trichloroethene	µg/L	10	2	2 J	2 J	2.0000	5	0
Turbidity	NTU	6	6	4.93	0.121	1.5770	1	2
Uranium, ICAP	mg/L	6	0				0.03	0
Uranium, KPA	mg/L	4	2	0.448	0.331	0.3895	0.03	2
Uranium, PMS	mg/L	6	5	1.42	0.00166	0.5757	0.03	3
Uranium-233/234	pCi/L	4	3	78.6	1.6	48.0333	20	2
Uranium-234	pCi/L	5	4	160	0.96	82.7400	20	3
Uranium-235	pCi/L	9	5	7.8	3.1	5.5940	24	0
Uranium-236	pCi/L	4	3	5.75	0.49 J	3.4467	20	0
Uranium-238	pCi/L	9	6	440	0.57	191.7617	24	5
Zinc, ICAP	mg/L	10	2	0.0393	0.0356	0.0375	5	0

Table 4.74. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = BC AREA NAME = Spoil Area I

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Barium, ICAP	mg/L	1	1	0.0606	0.0606	0.0606	2	0
Bicarbonate	mg/L	1	1	289	289	289.0000	NR	NA
Calcium, ICAP	mg/L	1	1	131	131	131.0000	NR	NA
Chloride	mg/L	1	1	12.5	12.5	12.5000	250	0
Gross Beta Activity	pCi/L	1	1	12	12	12.0000	50	0
Magnesium, ICAP	mg/L	1	1	14	14	14.0000	NR	NA
Manganese, ICAP	mg/L	1	1	0.0561	0.0561	0.0561	0.05	1
Nitrate as Nitrogen	mg/L	1	1	6.32	6.32	6.3200	10	0
Potassium, ICAP	mg/L	1	1	3.63	3.63	3.6300	NR	NA
Sodium, ICAP	mg/L	1	1	7.71	7.71	7.7100	NR	NA
Strontium, ICAP	mg/L	1	1	0.208	0.208	0.2080	NR[w]	NA
Sulfate	mg/L	1	1	88.5	88.5	88.5000	250	0
Tetrachloroethene	µg/L	1	1	6	6	6.0000	5	1
Total Dissolved Solids	mg/L	1	1	453	453	453.0000	500	0
Turbidity	NTU	1	1	0.681	0.681	0.6810	1	0
Uranium, ICAP	mg/L	1	0				0.03	0
Uranium, PMS	mg/L	1	1	0.00276	0.00276	0.0028	0.03	0

Table 4.75. Constituents detected in groundwater at the Y-12 National Security Complex, 2006
REGIME = CR AREA NAME = Chestnut Ridge Borrow Area Waste Pile

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Barium, ICAP	mg/L	2	2	0.022	0.0188	0.0204	2	0
Calcium, ICAP	mg/L	2	2	44.2	44	44.1000	NR	NA
Gross Alpha Activity	pCi/L	2	2	5.39 J	3.3	4.3450	15	0
Gross Beta Activity	pCi/L	2	2	1460	2.82 J	731.4100	50	1
Iron, ICAP	mg/L	2	1	0.0113	0.0113	0.0113	0.3	0
Magnesium, ICAP	mg/L	2	2	28.2	27.9	28.0500	NR	NA
Potassium, ICAP	mg/L	2	2	0.714	0.705	0.7095	NR	NA
Sodium, ICAP	mg/L	2	2	0.734	0.676	0.7050	NR	NA
Strontium, ICAP	mg/L	2	2	0.0235	0.0224	0.0230	NR	NA
Total Dissolved Solids	mg/L	2	2	239	216	227.5000	500	0

Table 4.76. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = CR AREA NAME = Chestnut Ridge Security Pits

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,1,1-Trichloroethane	µg/L	9	5	42	4 J	15.4000	200	0
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	µg/L	8	1	6	6	6.0000	NR	NA
1,1-Dichloroethane	µg/L	9	5	97	8	40.6000	NR	NA
1,1-Dichloroethene	µg/L	9	5	71	2 J	22.2000	7	2
1,2-Dichloroethane	µg/L	9	1	1 J	1 J	1.0000	5	0
1,4-Dioxane	µg/L	2	1	40	40	40.0000	NR	NA
Barium, ICAP	mg/L	9	9	0.046	0.0143	0.0197	2	0
Bicarbonate	mg/L	5	5	297	212	257.8000	NR	NA
Boron, ICAP	mg/L	9	1	0.246	0.246	0.2460	NR[W]	NA
Calcium, ICAP	mg/L	9	9	59.7	34.4	46.5444	NR	NA
Chloride	mg/L	5	5	2.13	1.44	1.8220	250	0
Chloroethane	µg/L	9	1	3 J	3 J	3.0000	NR	NA
Gross Alpha Activity	pCi/L	9	4	11.5	2.46	5.2075	15	0
Gross Beta Activity	pCi/L	9	4	2300	3.23 J	579.1300	50	1
Iron, ICAP	mg/L	9	6	2.1	0.0277	0.4137	0.3	1
Lead, ICAP	mg/L	9	0				0.015	0
Lead, PMS	mg/L	5	3	0.00691	0.000595	0.0036	0.015	0
Magnesium, ICAP	mg/L	9	9	36.6	25.4	29.3333	NR	NA
Manganese, ICAP	mg/L	9	5	0.075	0.0084	0.0361	0.05	2
Methylene chloride	µg/L	9	0				5	0
Nickel, ICAP	mg/L	9	0				0.1	0
Nickel, PMS	mg/L	5	1	0.00502	0.00502	0.0050	0.1	0
Nitrate as Nitrogen	mg/L	5	5	1.19	0.124	0.4680	10	0
Potassium, ICAP	mg/L	9	4	2.05	1.52	1.7800	NR	NA
Sodium, ICAP	mg/L	9	9	1.1	0.447	0.8001	NR	NA
Strontium, ICAP	mg/L	9	9	0.0294	0.0149	0.0208	NR[W]	NA
Sulfate	mg/L	5	5	2.42	0.81	1.6200	250	0
Tetrachloroethene	µg/L	9	3	10	3 J	6.6667	5	2
Thallium, ICAP	mg/L	9	0				0.002	0
Thallium, PMS	mg/L	5	1	0.000585	0.000585	0.0006	0.002	0
Total Dissolved Solids	mg/L	9	9	293	200	237.1111	500	0

Table 4.76 (continued)

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Total Suspended Solids	mg/L	9	2	3	1	2.0000	NR	NA
Trichlorofluoromethane	µg/L	5	2	36	6	21.0000	NR	NA
Turbidity	NTU	5	5	24	0.144	6.1956	1	3
Zinc, ICAP	mg/L	9	2	0.058	0.0503	0.0542	5	0

Table 4.77. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = CR AREA NAME = Chestnut Ridge Sediment Disposal Basin

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Aluminum, ICAP	mg/L	8	1	0.0561	0.0561	0.0561	0.2	0
Barium, ICAP	mg/L	8	8	0.0346	0.0084	0.0167	2	0
Calcium, ICAP	mg/L	8	8	66.2	25.9	41.9500	NR	NA
Iron, ICAP	mg/L	8	6	0.0542	0.0114	0.0249	0.3	0
Magnesium, ICAP	mg/L	8	8	41.6	15.4	25.9625	NR	NA
Potassium, ICAP	mg/L	8	8	21	1.05	5.8713	NR	NA
Sodium, ICAP	mg/L	8	8	5.71	0.473	1.7514	NR	NA
Strontium, ICAP	mg/L	8	8	0.0273	0.0151	0.0209	NR	NA
Total Dissolved Solids	mg/L	8	8	368	156	230.5000	500	0
Total Suspended Solids	mg/L	8	2	5.9	5.7	5.8000	NR	NA
Uranium, KPA	mg/L	4	0				0.03	0
Uranium, PMS	mg/L	4	4	0.0012	0.00023	0.0005	0.03	0
Zinc, ICAP	mg/L	8	1	0.036	0.036	0.0360	5	0

Table 4.78. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = CR AREA NAME = Construction/Demolition Landfill VI

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Acetone	µg/L	8	1	42	42	42.0000	NR	NA
Alkalinity	mg/L	8	8	260	120	197.5000	NR	NA
Alkalinity as HCO_3	mg/L	8	8	260	120	197.5000	NR	NA
Aluminum, ICAP	mg/L	8	1	0.17	0.17	0.1700	0.2	0
Barium, ICAP	mg/L	8	6	0.02	0.011	0.0153	2	0
Boron, ICAP	mg/L	8	2	0.58	0.34	0.4600	NR	NA
Calcium, ICAP	mg/L	8	8	88	27	50.3750	NR	NA
Chloride	mg/L	8	2	13	13	13.0000	250	0
Chloroform	µg/L	8	2	4.8	3.6	4.2000	100	0
Conductivity	µmho	8	8	730	220	421.2500	NR	NA
Gross Beta Activity	pCi/L	8	4	5.4	2.2 J	3.8750	50	0
Iron, ICAP	mg/L	8	2	0.13	0.13	0.1300	0.3	0
Magnesium, ICAP	mg/L	8	8	47	14	27.7500	NR	NA
pH	Std	8	0				6.5/8.5	0
Sodium, ICAP	mg/L	8	2	11	8.5	9.7500	NR	NA
Strontium, ICAP	mg/L	8	8	0.047	0.019	0.0296	NR	NA
Sulfate	mg/L	8	4	110	6.5	54.8750	250	0
Total Dissolved Solids	mg/L	8	8	480	110	238.7500	500	0
Turbidity	NTU	8	5	2.7	0.11	0.7120	1	1
Zinc, ICAP	mg/L	8	1	0.02	0.02	0.0200	5	0

Table 4.79. Constituents detected in groundwater at the Y-12 National Security Complex, 2006
REGIME = CR AREA NAME = Construction/Demolition Landfill VII

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,1,1-Trichloroethane	µg/L	8	2	1.1	0.75 J	0.9250	200	0
1,1-Dichloroethane	µg/L	8	2	1.6	0.94 J	1.2700	NR	NA
1,1-Dichloroethene	µg/L	8	2	1.2	0.48 J	0.8400	7	0
Acetone	µg/L	8	0				NR	NA
Alkalinity	mg/L	8	8	200	120	155.0000	NR	NA
Alkalinity as HCO_3	mg/L	8	8	200	120	155.0000	NR	NA
Aluminum, ICAP	mg/L	8	2	1.6	0.82	1.2100	0.2	2
Barium, ICAP	mg/L	8	8	0.25	0.01	0.0735	2	0
Calcium, ICAP	mg/L	8	8	45	28	37.8750	NR	NA
cis-1,2-Dichloroethene	µg/L	8	2	3.3	2.3	2.8000	70	0
Conductivity	µmho	8	8	370	250	297.5000	NR	NA
Gross Alpha Activity	pCi/L	8	1	1.47 J	1.47 J	1.4700	15	0
Gross Beta Activity	pCi/L	8	2	5.4	2.1 J	3.7500	50	0
Iron, ICAP	mg/L	8	2	2	1	1.5000	0.3	2
Magnesium, ICAP	mg/L	8	8	25	13	18.2500	NR	NA
Manganese, ICAP	mg/L	8	2	0.036	0.016	0.0260	0.05	0
Nitrate as Nitrogen	mg/L	8	3	0.72	0.57	0.6533	10	0
pH	Std	8	0				6.5/8.5	0
Strontium, ICAP	mg/L	8	8	0.049	0.016	0.0283	NR	NA
Sulfate	mg/L	8	2	11	6.8	8.9000	250	0
Tetrachloroethene	µg/L	8	2	4.4	3.2	3.8000	5	0
Total Dissolved Solids	mg/L	8	8	210	130	161.2500	500	0
Total Suspended Solids	mg/L	8	2	17	17	17.0000	NR	NA
Total Uranium	mg/L	2	1	0.000379 J	0.000379 J	0.0004	0.03	0
trans-1,2-Dichloroethene	µg/L	8	1	0.34 J	0.34 J	0.3400	100	0
Trichloroethene	µg/L	8	2	0.41 J	0.24 J	0.3250	5	0
Trichlorofluoromethane	µg/L	8	2	6.2	3.4	4.8000	NR	NA
Turbidity	NTU	8	6	30	0.19	8.5817	1	2
Zinc, ICAP	mg/L	8	2	0.024	0.021	0.0225	5	0

Table 4.80. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = CR AREA NAME = Exit Pathway Spring/Surface Water

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Acetone	µg/L	6	2	2 J	2 J	2.0000	NR	NA
Aluminum, ICAP	mg/L	6	0				0.2	0
Arsenic, ICAP	mg/L	6	0				0.05	0
Arsenic, PMS	mg/L	2	1	0.00816	0.00816	0.0082	0.05	0
Barium, ICAP	mg/L	6	4	0.0718	0.0305	0.0454	2	0
Bicarbonate	mg/L	6	4	180	114	153.0000	NR	NA
Boron, ICAP	mg/L	6	2	0.0653	0.0118	0.0386	NR	NA
Calcium, ICAP	mg/L	6	4	49.6	28.3	41.8750	NR	NA
Chloride	mg/L	6	4	2.6	1.68	2.0250	250	0
Fluoride	mg/L	6	1	0.14	0.14	0.1400	4	0
Gross Alpha Activity	pCi/L	6	2	3.4	1.33 J	2.3650	15	0
Gross Beta Activity	pCi/L	6	1	4.15	4.15	4.1500	50	0
Iron, ICAP	mg/L	6	3	0.143	0.0609	0.0923	0.3	0
Lead, ICAP	mg/L	6	0				0.015	0
Lead, PMS	mg/L	2	2	0.041	0.0103	0.0257	0.015	1
Lithium, ICAP	mg/L	6	1	0.0189	0.0189	0.0189	NR	NA
Magnesium, ICAP	mg/L	6	4	19.2	10.9	14.1000	NR	NA
Manganese, ICAP	mg/L	6	3	0.0266	0.0088	0.0158	0.05	0
Nitrate as Nitrogen	mg/L	2	2	0.865	0.303	0.5840	10	0
NitrateNitrite	mg/L	4	2	0.47	0.086	0.2780	10	0
Potassium, ICAP	mg/L	6	2	1.86	0.748	1.3040	NR	NA
Sodium, ICAP	mg/L	6	4	1.65	1.15	1.3475	NR	NA
Strontium, ICAP	mg/L	6	4	0.276	0.0369	0.1066	NR[w]	NA
Sulfate	mg/L	6	4	14.3	6.09	9.2925	250	0
Total Dissolved Solids	mg/L	6	4	214	143	178.2500	500	0
Total Suspended Solids	mg/L	6	3	8	5.4	6.5667	NR	NA
Turbidity	NTU	2	2	17.3	1.64	9.4700	1	2
Uranium, ICAP	mg/L	2	0				0.03	0
Uranium, KPA	mg/L	4	0				0.03	0
Uranium, PMS	mg/L	2	2	0.00236	0.000675	0.0015	0.03	0
Zinc, ICAP	mg/L	6	0				5	0

Table 4.81. Constituents detected in groundwater at the Y-12 National Security Complex, 2006
REGIME = CR AREA NAME = Filled Coal Ash Pond

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Barium, ICAP	mg/L	1	1	0.00742	0.00742	0.0074	2	0
Bicarbonate	mg/L	1	1	196	196	196.0000	NR	NA
Calcium, ICAP	mg/L	1	1	40.3	40.3	40.3000	NR[k]	NA
Chloride	mg/L	1	1	0.99	0.99	0.9900	250	0
Gross Alpha Activity	pCi/L	1	0				15	0
Gross Beta Activity	pCi/L	1	0				50	0
Iron, ICAP	mg/L	1	1	1.46	1.46	1.4600	0.3	1
Magnesium, ICAP	mg/L	1	1	23.9	23.9	23.9000	NR[k]	NA
Manganese, ICAP	mg/L	1	1	0.00913	0.00913	0.0091	0.05	0
Sodium, ICAP	mg/L	1	1	0.53	0.53	0.5300	NR	NA
Strontium, ICAP	mg/L	1	1	0.0246	0.0246	0.0246	NR[w]	NA
Sulfate	mg/L	1	1	2.99	2.99	2.9900	250	0
Total Dissolved Solids	mg/L	1	1	184	184	184.0000	500	0
Total Suspended Solids	mg/L	1	1	1	1	1.0000	NR	NA
Turbidity	NTU	1	1	14.4	14.4	14.4000	1	1

Table 4.82. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = CR AREA NAME = Industrial Landfill II

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Acetone	µg/L	6	0				NR	NA
Alkalinity	mg/L	6	6	240	110	180.0000	NR	NA
Alkalinity as CO_3	mg/L	6	2	71	70	70.5000	NR	NA
Alkalinity as HCO_3	mg/L	6	6	240	37	155.8333	NR	NA
Barium, ICAP	mg/L	6	6	0.61	0.012	0.2228	2	0
Calcium, ICAP	mg/L	6	6	46	2.3	26.9500	NR	NA
Conductivity	µmho	6	6	450	290	368.3333	NR	NA
Fluoride	mg/L	6	2	1.7	1.6	1.6500	4	0
Gross Alpha Activity	pCi/L	6	4	3.5	2 J	2.7000	15	0
Gross Beta Activity	pCi/L	6	5	15.9	2.4 J	7.4200	50	0
Iron, ICAP	mg/L	6	1	0.13	0.13	0.1300	0.3	0
Magnesium, ICAP	mg/L	6	6	31	1.6	20.7167	NR	NA
Molybdenum, ICAP	mg/L	6	1	0.024	0.024	0.0240	NR	NA
pH	Std	6	0				6.5/8.5	0
Potassium, ICAP	mg/L	6	2	20	18	19.0000	NR	NA
Sodium, ICAP	mg/L	6	4	45	11	28.7500	NR	NA
Strontium, ICAP	mg/L	6	6	0.11	0.033	0.0627	NR	NA
Sulfate	mg/L	6	4	17	8.4	12.9250	250	0
Total Dissolved Solids	mg/L	6	6	240	150	195.0000	500	0
Turbidity	NTU	6	5	0.41	0.17	0.3160	1	0
Uranium, PMS	mg/L	6	2	0.0011	0.001	0.0011	0.03	0
Vanadium, ICAP	mg/L	6	2	0.016	0.015	0.0155	NR	NA

Table 4.83. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = CR AREA NAME = Industrial Landfill IV

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,1,1-Trichloroethane	µg/L	12	4	17	13	15.5000	200	0
1,1-Dichloroethane	µg/L	12	4	24	20	21.5000	NR	NA
1,1-Dichloroethene	µg/L	12	4	6.6	3.2	5.3750	7	0
Acetone	µg/L	12	1	3.5 J	3.5 J	3.5000	NR	NA
Alkalinity	mg/L	12	12	220	160	179.1667	NR	NA
Alkalinity as HCO_3	mg/L	12	12	220	160	179.1667	NR	NA
Aluminum, ICAP	mg/L	12	1	0.19	0.19	0.1900	0.2	0
Barium, ICAP	mg/L	12	9	0.033	0.01	0.0166	2	0
Calcium, ICAP	mg/L	12	12	45	28	36.3333	NR	NA
Carbon Tetrachloride	µg/L	12	1	2.2 J	2.2 J	2.2000	5	0
Chloride	mg/L	12	4	5.8	3.2	4.7750	250	0
Chromium, ICAP	mg/L	12	1	0.013	0.013	0.0130	0.1	0
Conductivity	µmho	12	12	400	290	335.8333	NR	NA
Gross Alpha Activity	pCi/L	12	1	2 J	2 J	2.0000	15	0
Gross Beta Activity	pCi/L	12	3	23.3	1.9 J	9.4667	50	0
Iron, ICAP	mg/L	12	2	0.25	0.16	0.2050	0.3	0
Lead, ICAP	mg/L	12	1	0.0032	0.0032	0.0032	0.015	0
Magnesium, ICAP	mg/L	12	12	27	19	22.1667	NR	NA
Nickel, ICAP	mg/L	12	3	0.24	0.14	0.1933	0.1	3
Nitrate as Nitrogen	mg/L	12	3	1	0.51	0.6767	10	0
pH	Std	12	1	7.9	7.9	7.9000	6.5/8.5	0
Sodium, ICAP	mg/L	12	2	9.6	5.6	7.6000	NR	NA
Strontium, ICAP	mg/L	12	12	0.019	0.01	0.0162	NR	NA
Sulfate	mg/L	12	1	5.4	5.4	5.4000	250	0
Total Dissolved Solids	mg/L	12	12	210	110	173.3333	500	0
Total Suspended Solids	mg/L	12	1	10	10	10.0000	NR	NA
Total Uranium	mg/L	2	1	0.000364 J	0.000364 J	0.0004	0.03	0
Turbidity	NTU	12	11	5.2	0.12	1.1273	1	5
Zinc, ICAP	mg/L	12	1	0.032	0.032	0.0320	5	0

Table 4.84. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = CR AREA NAME = Industrial Landfill V

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,1,1-Trichloroethane	µg/L	12	2	0.5 J	0.4 J	0.4500	200	0
1,1-Dichloroethane	µg/L	12	1	0.28 J	0.28 J	0.2800	NR	NA
1,2-Dichloroethane	µg/L	12	2	2.8	1.5	2.1500	5	0
Acetone	µg/L	12	3	3.8 J	3 J	3.3667	NR	NA
Alkalinity	mg/L	12	12	190	120	151.6667	NR	NA
Alkalinity as CO_3	mg/L	12	1	7	7	7.0000	NR	NA
Alkalinity as HCO_3	mg/L	12	12	190	120	151.6667	NR	NA
Aluminum, ICAP	mg/L	12	5	0.91	0.13	0.4380	0.2	4
Barium, ICAP	mg/L	12	6	0.15	0.01	0.0523	2	0
Calcium, ICAP	mg/L	12	12	52	23	37.1667	NR	NA
Chloride	mg/L	12	4	7.3	3.5	5.7250	250	0
Chloromethane	µg/L	12	1	0.38 J	0.38 J	0.3800	NR	NA
Chromium, ICAP	mg/L	12	2	0.048	0.042	0.0450	0.1	0
Conductivity	µmho	12	12	480	220	313.3333	NR	NA
Ethyl methacrylate	µg/L	12	2	0.55 J	0.53 J	0.5400	NR	NA
Gross Alpha Activity	pCi/L	12	2	1.5 J	1.31 J	1.4050	15	0
Gross Beta Activity	pCi/L	12	4	5.2	2.1 J	3.1250	50	0
Iron, ICAP	mg/L	12	5	0.45	0.1	0.2680	0.3	2
Magnesium, ICAP	mg/L	12	12	30	12	19.1667	NR	NA
Nitrate as Nitrogen	mg/L	12	7	2.2	0.53	1.2271	10	0
pH	Std	12	0				6.5/8.5	0
Potassium, ICAP	mg/L	12	1	5.2	5.2	5.2000	NR	NA
Sodium, ICAP	mg/L	12	1	5.4	5.4	5.4000	NR	NA
Strontium, ICAP	mg/L	12	12	0.13	0.014	0.0364	NR	NA
Sulfate	mg/L	12	4	50	18	34.0000	250	0
Total Dissolved Solids	mg/L	12	12	300	110	174.1667	500	0
Total Suspended Solids	mg/L	12	3	8.8	4.4	6.4000	NR	NA
Total Uranium	mg/L	10	4	0.00118	0.000313 J	0.0008	0.03	0
Turbidity	NTU	12	12	18	0.14	3.5625	1	7

Table 4.85. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = CR AREA NAME = Kerr Hollow Quarry

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Acetone	µg/L	8	1	1 J	1 J	1.0000	NR	NA
Barium, ICAP	mg/L	8	8	0.0896	0.0417	0.0669	2	0
Boron, ICAP	mg/L	8	7	0.832	0.01	0.3085	NR	NA
Calcium, ICAP	mg/L	8	8	55.4	29.7	42.2375	NR	NA
Carbon Tetrachloride	µg/L	8	1	1 J	1 J	1.0000	5	0
Gross Alpha Activity	pCi/L	8	5	11.2	1.59 J	5.0100	15	0
Gross Beta Activity	pCi/L	8	5	20.7	3.72	14.3840	50	0
Iron, ICAP	mg/L	8	4	0.63	0.018	0.3052	0.3	2
Lithium, ICAP	mg/L	8	6	0.318	0.0221	0.1503	NR	NA
Magnesium, ICAP	mg/L	8	8	35.6	15.8	25.2750	NR	NA
Manganese, ICAP	mg/L	8	2	0.0099	0.009	0.0095	0.05	0
Potassium, ICAP	mg/L	8	8	17.8	1.06	7.8488	NR	NA
Sodium, ICAP	mg/L	8	8	19.3	0.641	6.2314	NR	NA
Strontium, ICAP	mg/L	8	8	6.85	0.0453	2.4789	NR	NA
Total Dissolved Solids	mg/L	8	8	498	235	304.8750	500	0
Total Suspended Solids	mg/L	8	1	7.5	7.5	7.5000	NR	NA
Uranium, KPA	mg/L	4	1	0.011	0.011	0.0110	0.03	0
Uranium, PMS	mg/L	4	4	0.011	0.00037	0.0032	0.03	0

Table 4.86. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = CR AREA NAME = United Nuclear Corporation Site

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Barium, ICAP	mg/L	8	7	0.0265	0.0032	0.0134	2	0
Bicarbonate	mg/L	8	8	276	80.6	151.3750	NR	NA
Calcium, ICAP	mg/L	8	8	53.8	1.19	28.3863	NR	NA
Carbonate	mg/L	8	2	80.6	35.7	58.1500	NR	NA
Chloride	mg/L	8	8	13.4	1.3	4.5875	250	0
Gross Alpha Activity	pCi/L	8	4	9.16	2.5 J	4.5500	15	0
Gross Beta Activity	pCi/L	8	8	143	5.28	30.4763	50	2
Iron, ICAP	mg/L	8	5	0.0524	0.0105	0.0221	0.3	0
Lithium, ICAP	mg/L	8	2	0.142	0.141	0.1415	NR	NA
Magnesium, ICAP	mg/L	8	8	32.2	11.4	20.3250	NR	NA
NitrateNitrite	mg/L	8	8	0.72	0.044	0.4131	10	0
Potassium, ICAP	mg/L	8	8	71.1	0.75	17.9928	NR	NA
Sodium, ICAP	mg/L	8	8	10.1	0.459	4.4049	NR	NA
Strontium, ICAP	mg/L	8	6	0.0251	0.0105	0.0157	NR	NA
Strontium-90	pCi/L	8	4	17.8	1.21 J	5.7950	8	1
Sulfate	mg/L	8	8	3.2	1.1	2.1500	250	0
Total Dissolved Solids	mg/L	8	8	828	168	302.3750	500	1
Uranium-233/234	pCi/L	8	7	1.09	0.48 J	0.6557	20	0
Uranium-238	pCi/L	8	1	0.45 J	0.45 J	0.4500	24	0

Table 4.87. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = Beta 4 Security Pits

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,1-Dichloroethane	µg/L	1	1	1 J	1 J	1.0000	NR	NA
1,2-Dichloroethene	µg/L	1	1	28	28	28.0000	NR	NA
Barium, ICAP	mg/L	1	1	0.147	0.147	0.1470	2	0
Bicarbonate	mg/L	1	1	261	261	261.0000	NR	NA
Calcium, ICAP	mg/L	1	1	96.3	96.3	96.3000	NR	NA
Chloride	mg/L	1	1	27.7	27.7	27.7000	250	0
cis-1,2-Dichloroethene	µg/L	1	1	28	28	28.0000	70	0
Fluoride	mg/L	1	1	0.138	0.138	0.1380	4	0
Gross Alpha Activity	pCi/L	1	1	3.9	3.9	3.9000	15	0
Gross Beta Activity	pCi/L	1	1	5.1	5.1	5.1000	50	0
Iron, ICAP	mg/L	1	1	4.55	4.55	4.5500	0.3	1
Lead, ICAP	mg/L	1	0				0.015	0
Lead, PMS	mg/L	1	1	0.0019	0.0019	0.0019	0.015	0
Lithium, ICAP	mg/L	1	1	0.017	0.017	0.0170	NR[w]	NA
Magnesium, ICAP	mg/L	1	1	8.53	8.53	8.5300	NR	NA
Manganese, ICAP	mg/L	1	1	1.98	1.98	1.9800	0.05	1
Sodium, ICAP	mg/L	1	1	8.64	8.64	8.6400	NR	NA
Strontium, ICAP	mg/L	1	1	0.155	0.155	0.1550	NR[w]	NA
Sulfate	mg/L	1	1	5.7	5.7	5.7000	250	0
Tetrachloroethene	µg/L	1	1	3 J	3 J	3.0000	5	0
Total Dissolved Solids	mg/L	1	1	334	334	334.0000	500	0
Total Suspended Solids	mg/L	1	1	4	4	4.0000	NR	NA
Trichloroethene	µg/L	1	1	5	5	5.0000	5	0
Turbidity	NTU	1	1	24	24	24.0000	1	1

Table 4.88. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = Building 8110

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	µg/L	3	3	23	2 J	11.0000	NR	NA
1,2-Dichloroethene	µg/L	3	3	43	16	32.6667	NR	NA
Alkalinity	mg/L	2	0				NR	NA
Aluminum, ICAP	mg/L	3	2	0.44	0.34	0.3900	0.2	2
Barium, ICAP	mg/L	3	3	0.241	0.0441	0.1570	2	0
Bicarbonate	mg/L	3	3	287	235	265.3333	NR	NA
Boron, ICAP	mg/L	3	1	0.102	0.102	0.1020	NR[w]	NA
Calcium, ICAP	mg/L	3	3	240	101	178.3333	NR	NA
Carbon Tetrachloride	µg/L	3	2	10	5 J	7.5000	5	1
Chloride	mg/L	3	3	21.5	11.5	16.8333	250	0
Chloroform	µg/L	3	2	22	13	17.5000	100	0
cis-1,2-Dichloroethene	µg/L	3	3	42	16	32.3333	70	0
Gross Alpha Activity	pCi/L	3	0				15	0
Gross Beta Activity	pCi/L	3	0				50	0
Iron, ICAP	mg/L	3	2	0.334	0.224	0.2790	0.3	1
Lead, ICAP	mg/L	3	0				0.015	0
Lead, PMS	mg/L	3	1	0.0026	0.0026	0.0026	0.015	0
Magnesium, ICAP	mg/L	3	3	71.1	8.73	47.7100	NR	NA
Manganese, ICAP	mg/L	3	3	0.56	0.0839	0.3070	0.05	3
Mercury, CVAA	mg/L	3	2	0.000888	0.000734	0.0008	0.002	0
Nitrate as Nitrogen	mg/L	3	3	173	0.233	98.4110	10	2
Potassium, ICAP	mg/L	3	2	3.59	3.22	3.4050	NR	NA
Sodium, ICAP	mg/L	3	3	26.4	12.6	20.0667	NR	NA
Strontium, ICAP	mg/L	3	3	0.742	0.146	0.4827	NR[w]	NA
Sulfate	mg/L	3	3	81.4	56.6	65.9000	250	0
Tetrachloroethene	µg/L	3	3	180	62	120.6667	5	3
Total Dissolved Solids	mg/L	3	3	1220	371	903.6667	500	2
Total Suspended Solids	mg/L	3	2	5	5	5.0000	NR	NA
trans-1,2-Dichloroethene	µg/L	3	1	1 J	1 J	1.0000	100	0
Trichloroethene	µg/L	3	3	550 D	9	286.3333	5	3

Table 4.88 (continued)

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Turbidity	NTU	3	3	7.09	0.395	4.6817	1	2
Uranium, ICAP	mg/L	3	0				0.03	0
Uranium, PMS	mg/L	3	3	0.00152	0.000625	0.0011	0.03	0

Table 4.89. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = Building 9201-2

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	µg/L	2	2	55	39	47.0000	NR	NA
1,1-Dichloroethene	µg/L	2	2	5 J	5 J	5.0000	7	0
1,2-Dichloroethene	µg/L	2	2	1100 D	920 D	1010.0000	NR	NA
1,4-Dichlorobenzene	µg/L	2	2	3 J	3 J	3.0000	75	0
Alkalinity	mg/L	1	0				NR	NA
Barium, ICAP	mg/L	2	2	0.213	0.2	0.2065	2	0
Bicarbonate	mg/L	2	2	186	178	182.0000	NR	NA
Calcium, ICAP	mg/L	2	2	72	67.8	69.9000	NR	NA
Chloride	mg/L	2	2	35	31.8	33.4000	250	0
Chlorobenzene	µg/L	2	2	1 J	1 J	1.0000	100	0
cis-1,2-Dichloroethene	µg/L	2	2	1100 D	920 D	1010.0000	70	2
Dichlorodifluoromethane	µg/L	2	2	2 J	2 J	2.0000	NR	NA
Fluoride	mg/L	2	2	0.216	0.206	0.2110	4	0
Gross Alpha Activity	pCi/L	2	0				15	0
Gross Beta Activity	pCi/L	2	1	5	5	5.0000	50	0
Iron, ICAP	mg/L	2	2	0.632	0.218	0.4250	0.3	1
Lead, ICAP	mg/L	2	0				0.015	0
Lead, PMS	mg/L	2	1	0.000545	0.000545	0.0005	0.015	0
Magnesium, ICAP	mg/L	2	2	12.3	12	12.1500	NR	NA
Manganese, ICAP	mg/L	2	2	0.736	0.659	0.6975	0.05	2
Potassium, ICAP	mg/L	2	2	2.82	2.52	2.6700	NR	NA
Sodium, ICAP	mg/L	2	2	21.6	19.4	20.5000	NR	NA
Strontium, ICAP	mg/L	2	2	0.295	0.29	0.2925	NR[w]	NA
Sulfate	mg/L	2	2	40.4	38.2	39.3000	250	0
Tetrachloroethene	µg/L	2	2	2600 D	2400 D	2500.0000	5	2
Thallium, ICAP	mg/L	2	0				0.002	0
Thallium, PMS	mg/L	2	1	0.00056	0.00056	0.0006	0.002	0
Total Dissolved Solids	mg/L	2	2	325	316	320.5000	500	0
trans-1,2-Dichloroethene	µg/L	2	2	7	7	7.0000	100	0
Trichloroethene	µg/L	2	2	600 D	530 D	565.0000	5	2
Turbidity	NTU	2	2	8.13	1.9	5.0150	1	2
Vinyl Chloride	µg/L	2	2	78	74	76.0000	2	2

Table 4.90. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = Coal Pile Trench

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,2-Dichloroethene	µg/L	5	5	35	6	18.4000	NR	NA
2-Hexanone	µg/L	5	1	1 J	1 J	1.0000	NR	NA
Alkalinity	mg/L	4	0				NR	NA
Aluminum, ICAP	mg/L	5	1	2.94	2.94	2.9400	0.2	1
Barium, ICAP	mg/L	5	5	0.0942	0.0158	0.0601	2	0
Bicarbonate	mg/L	5	5	354	195	274.0000	NR	NA
Boron, ICAP	mg/L	5	2	0.331	0.104	0.2175	NR[w]	NA
Cadmium, ICAP	mg/L	5	0				0.005	0
Cadmium, PMS	mg/L	5	2	0.00299	0.00264	0.0028	0.005	0
Calcium, ICAP	mg/L	5	5	366	128	215.0000	NR[k]	NA
Chloride	mg/L	5	5	58.9	11.8	22.3400	250	0
Chloroform	µg/L	5	1	16	16	16.0000	100	0
Chromium, ICAP	mg/L	5	0				0.1	0
Chromium, PMS	mg/L	5	3	0.0154	0.011	0.0125	0.1	0
cis-1,2-Dichloroethene	µg/L	5	5	35	6	18.4000	70	0
Dibromochloromethane	µg/L	5	1	5	5	5.0000	100	0
Fluoride	mg/L	5	2	0.751	0.111	0.4310	4	0
Gross Alpha Activity	pCi/L	5	1	4.3	4.3	4.3000	15	0
Gross Beta Activity	pCi/L	5	2	7.2	6	6.6000	50	0
Iron, ICAP	mg/L	5	4	4.09	0.0623	2.3431	0.3[k]	3
Lead, ICAP	mg/L	5	0				0.015	0
Lead, PMS	mg/L	5	3	0.00533	0.000995	0.0038	0.015	0
Lithium, ICAP	mg/L	5	2	0.0152	0.0113	0.0133	NR[w]	NA
Magnesium, ICAP	mg/L	5	5	60.4	24.3	33.6200	NR[k]	NA
Manganese, ICAP	mg/L	5	5	5.98	0.0117	1.9161	0.05	4
Mercury, CVAA	mg/L	5	1	0.00139	0.00139	0.0014	0.002	0
Nickel, ICAP	mg/L	5	0				0.1	0
Nickel, PMS	mg/L	5	3	0.0318	0.00655	0.0159	0.1	0
Nitrate as Nitrogen	mg/L	5	4	3.72	0.201	1.2503	10	0
Potassium, ICAP	mg/L	5	5	8.23	2.42	4.5720	NR	NA
Sodium, ICAP	mg/L	5	5	18.4	7.54	12.7880	NR[k]	NA
Strontium, ICAP	mg/L	5	5	0.706	0.324	0.4356	NR[w]	NA

Table 4.90 (continued)

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Sulfate	mg/L	5	5	947	186	423.0000	250	3
Tetrachloroethene	µg/L	5	3	1300 D	21	455.3333	5	3
Thallium, ICAP	mg/L	5	0				0.002	0
Thallium, PMS	mg/L	5	1	0.000515	0.000515	0.0005	0.002	0
Total Dissolved Solids	mg/L	5	5	1640	568	911.4000	500	5
Total Suspended Solids	mg/L	5	3	16	1	7.0000	NR	NA
Trichloroethene	µg/L	5	3	8	3 J	5.6667	5	2
Turbidity	NTU	5	5	58.7	0.341	14.5122	1	4
Uranium, ICAP	mg/L	5	0				0.03	0
Uranium, PMS	mg/L	5	4	0.00085	0.00077	0.0008	0.03	0
Vinyl Chloride	µg/L	5	1	5	5	5.0000	2	1
Zinc, ICAP	mg/L	5	1	0.0589	0.0589	0.0589	5	0

Table 4.91. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = Exit Pathway Traverse E

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
2-Butanone	µg/L	2	1	1 J	1 J	1.0000	NR	NA
Barium, ICAP	mg/L	2	2	0.0475	0.0346	0.0411	2	0
Bicarbonate	mg/L	2	2	320	66.5	193.2500	NR	NA
Boron, ICAP	mg/L	2	2	0.158	0.109	0.1335	NR[w]	NA
Calcium, ICAP	mg/L	2	2	99.7	27.3	63.5000	NR	NA
Chloride	mg/L	2	2	9.7	6.41	8.0550	250	0
cis-1,2-Dichloroethene	µg/L	2	1	11	11	11.0000	70	0
Fluoride	mg/L	2	1	0.28	0.28	0.2800	4	0
Gross Alpha Activity	pCi/L	2	0				15	0
Gross Beta Activity	pCi/L	2	1	5.75 J	5.75 J	5.7500	50	0
Iron, ICAP	mg/L	2	1	0.143	0.143	0.1430	0.3	0
Magnesium, ICAP	mg/L	2	2	8.86	5.82	7.3400	NR	NA
Manganese, ICAP	mg/L	2	2	0.935	0.0334	0.4842	0.05	1
Methane	µg/L	1	1	14	14	14.0000	NR	NA
Nitrate as Nitrogen	mg/L	1	1	2.76	2.76	2.7600	10	0
Potassium, ICAP	mg/L	2	1	3.92	3.92	3.9200	NR	NA
Sodium, ICAP	mg/L	2	2	13.9	7.85	10.8750	NR	NA
Strontium, ICAP	mg/L	2	2	0.209	0.0473	0.1282	NR[w]	NA
Sulfate	mg/L	2	2	27.9	16.7	22.3000	250	0
Tetrachloroethene	µg/L	2	1	1 J	1 J	1.0000	5	0
Total Dissolved Solids	mg/L	2	2	350	138	244.0000	500	0
Trichloroethene	µg/L	2	1	5	5	5.0000	5	0
Turbidity	NTU	1	1	0.332	0.332	0.3320	1	0

Table 4.92. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = Exit Pathway Traverse I

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,1-Dichloroethene	µg/L	4	1	2 J	2 J	2.0000	7	0
Barium, ICAP	mg/L	4	4	0.185	0.042	0.1154	2	0
Bicarbonate	mg/L	4	4	296	255	274.5000	NR	NA
Boron, ICAP	mg/L	4	4	0.0846	0.0196	0.0492	NR	NA
Bromomethane	µg/L	4	1	1 J	1 J	1.0000	NR	NA
Calcium, ICAP	mg/L	4	4	89.3	81	84.2500	NR	NA
Carbon Tetrachloride	µg/L	4	4	97	58	71.2500	5	4
Chloride	mg/L	4	4	28.1	19.5	23.9000	250	0
Chloroform	µg/L	4	4	120	14	66.5000	100	2
Chromium, ICAP	mg/L	4	1	0.01	0.01	0.0100	0.1	0
cis-1,2-Dichloroethene	µg/L	4	2	190 D	96	143.0000	70	2
Fluoride	mg/L	4	3	0.21	0.11	0.1533	4	0
Gross Alpha Activity	pCi/L	4	4	82	11	44.7000	15	3
Gross Beta Activity	pCi/L	4	3	36.5	8.79 J	21.8633	50	0
Iron, ICAP	mg/L	4	2	0.351	0.156	0.2535	0.3	1
Magnesium, ICAP	mg/L	4	4	42.1	19.7	31.2250	NR	NA
Manganese, ICAP	mg/L	4	4	0.352	0.0099	0.1563	0.05	2
Nickel, ICAP	mg/L	4	2	0.0203	0.0184	0.0194	0.1	0
NitrateNitrite	mg/L	4	4	12.9	0.15	5.6000	10	1
Potassium, ICAP	mg/L	4	4	3.4	2.4	2.9525	NR	NA
Sodium, ICAP	mg/L	4	4	16.3	6.1	10.7500	NR	NA
Strontium, ICAP	mg/L	4	4	0.542	0.156	0.3488	NR	NA
Sulfate	mg/L	4	4	57.9	28.4	42.6000	250	0
Tetrachloroethene	µg/L	4	4	110	5	46.5000	5	3
trans-1,2-Dichloroethene	µg/L	4	2	2 J	1 J	1.5000	100	0
Trichloroethene	µg/L	4	2	130	64	97.0000	5	2
Uranium, KPA	mg/L	4	4	0.0853	0.00459	0.0439	0.03	2
Vinyl Chloride	µg/L	4	1	2 J	2 J	2.0000	2	0

Table 4.93. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = Exit Pathway Traverse J

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
2-Butanone	µg/L	27	1	2 J	2 J	2.0000	NR	NA
Acetone	µg/L	27	5	70	4 J	23.4000	NR	NA
Aluminum, ICAP	mg/L	20	1	0.466	0.466	0.4660	0.2	1
Barium, ICAP	mg/L	20	20	0.224	0.0316	0.0879	2	0
Bicarbonate	mg/L	20	20	538	149	250.9500	NR	NA
Boron, ICAP	mg/L	20	14	0.709	0.096	0.1839	NR[w]	NA
Calcium, ICAP	mg/L	20	20	87.6	17	53.5000	NR	NA
Carbon Tetrachloride	µg/L	27	14	130	3 J	30.5714	5	13
Carbonate	mg/L	20	1	20.4	20.4	20.4000	NR	NA
Chloride	mg/L	20	20	93.2	2.51	19.0535	250	0
Chloroform	µg/L	27	14	15	2 J	6.0714	100	0
Chromium, ICAP	mg/L	20	0				0.1	0
Chromium, PMS	mg/L	10	4	0.0129	0.0101	0.0112	0.1	0
Copper, ICAP	mg/L	20	4	0.0386	0.0058	0.0140	1.3	0
Ethyl Benzene	µg/L	27	1	3 J	3 J	3.0000	700	0
Fluoride	mg/L	20	16	1.07	0.172	0.4858	4	0
Gross Alpha Activity	pCi/L	22	5	4.8	2.05	2.9520	15	0
Gross Beta Activity	pCi/L	22	6	14.9	3.61 J	8.6217	50	0
Iron, ICAP	mg/L	20	17	0.453	0.0152	0.1223	0.3	1
Lead, ICAP	mg/L	20	0				0.015	0
Lead, PMS	mg/L	10	4	0.00768	0.00056	0.0039	0.015	0
Lithium, ICAP	mg/L	20	14	0.119	0.015	0.0332	NR[w]	NA
Magnesium, ICAP	mg/L	20	20	29.3	11.9	22.3300	NR	NA
Manganese, ICAP	mg/L	20	3	0.088	0.00596	0.0348	0.05	1
Nickel, ICAP	mg/L	20	0				0.1	0
Nickel, PMS	mg/L	10	1	0.00525	0.00525	0.0053	0.1	0
Nitrate as Nitrogen	mg/L	10	7	0.919	0.0971	0.4577	10	0
NitrateNitrite	mg/L	10	5	0.8	0.028	0.3956	10	0
Potassium, ICAP	mg/L	20	15	4.82	1.44	2.2713	NR	NA

Table 4.93 (continued)

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Sodium, ICAP	mg/L	20	20	164	0.754	25.4202	NR	NA
Strontium, ICAP	mg/L	20	20	3.75	0.0607	0.9001	NR[w]	NA
Styrene	µg/L	27	1	2 J	2 J	2.0000	100	0
Sulfate	mg/L	20	20	53.9	0.46	20.6790	250	0
Tetrachloroethene	µg/L	27	13	14	1 J	4.7692	5	3
Toluene	µg/L	27	1	2 J	2 J	2.0000	1000	0
Total Dissolved Solids	mg/L	20	20	630	182	317.7500	500	1
Total Suspended Solids	mg/L	20	10	14.2	1	4.1200	NR	NA
Trichloroethene	µg/L	27	11	13	1 J	2.6364	5	1
Turbidity	NTU	10	10	12	0.381	3.5451	1	9
Uranium, ICAP	mg/L	10	0				0.03	0
Uranium, KPA	mg/L	10	0				0.03	0
Uranium, PMS	mg/L	10	1	0.00053	0.00053	0.0005	0.03	0
Zinc, ICAP	mg/L	20	15	0.406	0.0282	0.1412	5	0

Table 4.94. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = Exit Pathway Scarboro Road/Pine Ridge

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Barium, ICAP	mg/L	1	1	0.0974	0.0974	0.0974	2	0
Bicarbonate	mg/L	1	1	217	217	217.0000	NR	NA
Calcium, ICAP	mg/L	1	1	58.9	58.9	58.9000	NR	NA
Chloride	mg/L	1	1	24.4	24.4	24.4000	250	0
Fluoride	mg/L	1	1	0.123	0.123	0.1230	4	0
Iron, ICAP	mg/L	1	1	19.9	19.9	19.9000	0.3	1
Magnesium, ICAP	mg/L	1	1	17.4	17.4	17.4000	NR	NA
Manganese, ICAP	mg/L	1	1	2.28	2.28	2.2800	0.05	1
Potassium, ICAP	mg/L	1	1	4.41	4.41	4.4100	NR	NA
Sodium, ICAP	mg/L	1	1	8.87	8.87	8.8700	NR	NA
Strontium, ICAP	mg/L	1	1	0.0813	0.0813	0.0813	NR[w]	NA
Sulfate	mg/L	1	1	20.3	20.3	20.3000	250	0
Total Dissolved Solids	mg/L	1	1	263	263	263.0000	500	0
Total Suspended Solids	mg/L	1	1	29	29	29.0000	NR	NA
Turbidity	NTU	1	1	104	104	104.0000	1	1

Table 4.95. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = Exit Pathway Spring/Surface Water

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Total Dissolved Solids	mg/L	1	1	221	221	221.0000	500	0
Total Suspended Solids	mg/L	1	1	34.5	34.5	34.5000	NR	NA

Table 4.96. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = Fire Training Facility

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,2-Dichloroethene	µg/L	2	2	5 J	2 J	3.5000	NR	NA
Aluminum, ICAP	mg/L	2	2	1.97	0.989	1.4795	0.2	2
Barium, ICAP	mg/L	2	2	0.0241	0.00501	0.0146	2	0
Bicarbonate	mg/L	2	1	75.6	75.6	75.6000	NR	NA
Calcium, ICAP	mg/L	2	2	107	16.7	61.8500	NR	NA
Chloride	mg/L	2	2	2.85	2.81	2.8300	250	0
Chromium, ICAP	mg/L	2	0				0.1	0
Chromium, PMS	mg/L	2	1	0.0117	0.0117	0.0117	0.1	0
cis-1,2-Dichloroethene	µg/L	2	2	5 J	2 J	3.5000	70	0
Fluoride	mg/L	2	1	0.137	0.137	0.1370	4	0
Gross Alpha Activity	pCi/L	2	1	4.9	4.9	4.9000	15	0
Gross Beta Activity	pCi/L	2	2	14	14	14.0000	50	0
Lead, ICAP	mg/L	2	0				0.015	0
Lead, PMS	mg/L	2	1	0.00244	0.00244	0.0024	0.015	0
Lithium, ICAP	mg/L	2	1	0.0184	0.0184	0.0184	NR[w]	NA
Magnesium, ICAP	mg/L	2	1	3.87	3.87	3.8700	NR	NA
Nitrate as Nitrogen	mg/L	2	2	1.23	1.15	1.1900	10	0
Potassium, ICAP	mg/L	2	2	16.2	10.9	13.5500	NR	NA
Sodium, ICAP	mg/L	2	2	2.2	2.04	2.1200	NR	NA
Strontium, ICAP	mg/L	2	2	0.324	0.0908	0.2074	NR[w]	NA
Sulfate	mg/L	2	2	8.33	5.33	6.8300	250	0
Tetrachloroethene	µg/L	2	2	19	4 J	11.5000	5	1
Toluene	µg/L	2	1	1 J	1 J	1.0000	1000	0
Total Dissolved Solids	mg/L	2	2	293	106	199.5000	500	0
Total Suspended Solids	mg/L	2	1	5	5	5.0000	NR	NA
Trichloroethene	µg/L	2	2	5	1 J	3.0000	5	0
Turbidity	NTU	2	2	2.45	0.617	1.5335	1	1
Uranium, ICAP	mg/L	2	0				0.03	0
Uranium, PMS	mg/L	2	1	0.000515	0.000515	0.0005	0.03	0

Table 4.97. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = New Hope Pond

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,1-Dichloroethene	µg/L	19	4	3 J	2 J	2.5000	7	0
1,2-Dichloroethene	µg/L	13	6	200 D	6	86.8333	NR	NA
Alkalinity	mg/L	2	0				NR	NA
Aluminum, ICAP	mg/L	19	4	0.639	0.0636	0.2520	0.2	2
Barium, ICAP	mg/L	19	14	0.628	0.0293	0.2346	2	0
Bicarbonate	mg/L	17	13	339	162	233.0769	NR	NA
Boron, ICAP	mg/L	19	6	0.087	0.0187	0.0453	NR	NA
Cadmium, ICAP	mg/L	19	0				0.005	0
Cadmium, PMS	mg/L	8	0				0.005	0
Calcium, ICAP	mg/L	19	14	172	44.7	79.7000	NR	NA
Carbon Tetrachloride	µg/L	19	8	1300 D	4 J	483.6250	5	7
Chloride	mg/L	17	13	147	10.1	37.6231	250	0
Chloroform	µg/L	19	8	170	1 J	50.6250	100	1
Chromium, ICAP	mg/L	19	1	0.108	0.108	0.1080	0.1	1
Chromium, PMS	mg/L	8	0				0.1	0
cis-1,2-Dichloroethene	µg/L	19	9	200 D	6	75.8889	70	4
Cobalt, ICAP	mg/L	19	0				NR	NA
Copper, ICAP	mg/L	19	0				1.3	0
Fluoride	mg/L	17	7	0.25	0.12	0.1727	4	0
Gross Alpha Activity	pCi/L	19	7	528	1.9	81.5371	15	2
Gross Beta Activity	pCi/L	19	8	202	3.77	34.0813	50	1
Iron, ICAP	mg/L	19	10	11	0.113	1.8223	0.3	6
Lead, ICAP	mg/L	19	0				0.015	0
Lead, PMS	mg/L	8	2	0.00109	0.000675	0.0009	0.015	0
Lithium, ICAP	mg/L	19	3	0.0155	0.0106	0.0129	NR[w]	NA
Magnesium, ICAP	mg/L	19	14	26.9	11.5	18.8286	NR	NA
Manganese, ICAP	mg/L	19	10	0.564	0.00823	0.1877	0.05	6
Methane	µg/L	11	4	1000 D	100	347.5000	NR	NA
Methylene chloride	µg/L	19	0				5	0
Nickel, ICAP	mg/L	19	1	0.112	0.112	0.1120	0.1	1
Nickel, PMS	mg/L	8	0				0.1	0
Nitrate as Nitrogen	mg/L	8	4	1.4	0.601	0.9823	10	0

Table 4.97 (continued)

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
NitrateNitrite	mg/L	9	4	1.6	0.15	0.8750	10	0
Potassium, ICAP	mg/L	19	14	5.12	1.52	2.5521	NR	NA
Sodium, ICAP	mg/L	19	14	36	5.29	12.6879	NR	NA
Strontium, ICAP	mg/L	19	14	0.598	0.0488	0.3153	NR[w]	NA
Sulfate	mg/L	17	13	36.7	0.46	18.6046	250	0
Tetrachloroethene	µg/L	19	10	820 D	1 J	250.9000	5	8
Total Dissolved Solids	mg/L	19	14	619	220	349.1429	500	2
Total Suspended Solids	mg/L	19	5	59.7	2	16.5400	NR	NA
trans-1,2-Dichloroethene	µg/L	19	2	2 J	1 J	1.5000	100	0
Trichloroethene	µg/L	19	8	160	1 J	86.1250	5	6
Trichlorofluoromethane	µg/L	8	1	1 J	1 J	1.0000	NR	NA
Turbidity	NTU	8	8	179	0.403	26.6604	1	7
Uranium	mg/L	2	2	0.0036	0.0013	0.0025	0.03	0
Uranium, ICAP	mg/L	8	0				0.03	0
Uranium, KPA	mg/L	11	3	0.415	0.00553	0.1499	0.03	1
Uranium, PMS	mg/L	8	3	0.0038	0.00159	0.0025	0.03	0
Uranium-233/234	pCi/L	8	4	354	0.67	91.5675	20	1
Uranium-235	pCi/L	8	3	19.9	0.53 J	7.0067	24	0
Uranium-236	pCi/L	8	2	6.49 J	0.36 J	3.4250	20	0
Uranium-238	pCi/L	8	3	162	2.3	60.0667	24	1
Vinyl Chloride	µg/L	19	4	5	1 J	3.0000	2	3
Zinc, ICAP	mg/L	19	1	0.0261	0.0261	0.0261	5	0

Table 4.98. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = Rust Garage Area

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,1-Dichloroethene	µg/L	1	1	3 J	3 J	3.0000	7	0
1,2-Dichloroethene	µg/L	1	1	12	12	12.0000	NR	NA
Barium, ICAP	mg/L	1	1	5.57	5.57	5.5700	2	1
Benzene	µg/L	1	1	2000 D	2000 D	2000.0000	5	1
Bicarbonate	mg/L	1	1	306	306	306.0000	NR	NA
Bromoform	µg/L	1	1	3 J	3 J	3.0000	100	0
Calcium, ICAP	mg/L	1	1	1220	1220	1220.0000	NR	NA
Chloride	mg/L	1	1	42.7	42.7	42.7000	250	0
Chloroform	µg/L	1	1	16	16	16.0000	100	0
cis-1,2-Dichloroethene	µg/L	1	1	12	12	12.0000	70	0
Ethyl Benzene	µg/L	1	1	2 J	2 J	2.0000	700	0
Gross Alpha Activity	pCi/L	1	1	26	26	26.0000	15	1
Gross Beta Activity	pCi/L	1	1	3300	3300	3300.0000	50	1
Lead, ICAP	mg/L	1	0				0.015	0
Lead, PMS	mg/L	1	1	0.00108	0.00108	0.0011	0.015	0
Lithium, ICAP	mg/L	1	1	0.148	0.148	0.1480	NR[w]	NA
Magnesium, ICAP	mg/L	1	1	121	121	121.0000	NR	NA
Manganese, ICAP	mg/L	1	1	3.11	3.11	3.1100	0.05	1
Methylene chloride	µg/L	1	1	22	22	22.0000	5	1
Nickel, ICAP	mg/L	1	1	0.206	0.206	0.2060	0.1	1
Nickel, PMS	mg/L	1	1	0.232	0.232	0.2320	0.1	1
Nitrate as Nitrogen	mg/L	1	1	926	926	926.0000	10	1
Potassium, ICAP	mg/L	1	1	6.81	6.81	6.8100	NR	NA
Sodium, ICAP	mg/L	1	1	81	81	81.0000	NR	NA
Strontium, ICAP	mg/L	1	1	2.94	2.94	2.9400	NR[w]	NA
Technetium-99	pCi/L	1	1	4500	4500	4500.0000	4000	1
Tetrachloroethene	µg/L	1	1	260 D	260 D	260.0000	5	1
Total Dissolved Solids	mg/L	1	1	6150	6150	6150.0000	500	1
Total Xylene	µg/L	1	1	94	94	94.0000	1000	0

Table 4.98 (continued)

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Trichloroethene	µg/L	1	1	7	7	7.0000	5	1
Turbidity	NTU	1	1	0.515	0.515	0.5150	1	0
Uranium, ICAP	mg/L	1	0				0.03	0
Uranium, PMS	mg/L	1	1	0.00076	0.00076	0.0008	0.03	0
Uranium-234	pCi/L	1	0				20	0
Uranium-235	pCi/L	1	0				24	0
Uranium-238	pCi/L	1	1	0.23	0.23	0.2300	24	0

Table 4.99. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = S 2 Site

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,1,2-Trichloroethane	µg/L	2	1	1 J	1 J	1.0000	5	0
1,1-Dichloroethene	µg/L	2	1	5 J	5 J	5.0000	7	0
1,2-Dichloroethene	µg/L	1	1	17	17	17.0000	NR	NA
Aluminum, ICAP	mg/L	2	1	3.93	3.93	3.9300	0.2	1
Barium, ICAP	mg/L	2	2	0.312	0.109	0.2105	2	0
Beryllium, ICAP	mg/L	2	1	0.0134	0.0134	0.0134	0.004	1
Bicarbonate	mg/L	2	2	167	57	112.0000	NR	NA
Boron, ICAP	mg/L	2	1	0.359	0.359	0.3590	NR	NA
Cadmium, ICAP	mg/L	2	1	4.15	4.15	4.1500	0.005[z]	1
Cadmium, PMS	mg/L	1	1	0.112	0.112	0.1120	0.005	1
Calcium, ICAP	mg/L	2	2	522	105	313.5000	NR	NA
Carbon Tetrachloride	µg/L	2	2	34	6	20.0000	5	2
Chloride	mg/L	2	2	119	7.02	63.0100	250	0
Chloroform	µg/L	2	2	50	10	30.0000	100	0
cis-1,2-Dichloroethene	µg/L	2	2	290 D	17	153.5000	70	1
Cobalt, ICAP	mg/L	2	1	0.293	0.293	0.2930	NR	NA
Copper, ICAP	mg/L	2	2	66.8	0.249	33.5245	1.3	1
Ethane	µg/L	1	1	2.4 J	2.4 J	2.4000	NR	NA
Fluoride	mg/L	2	2	5.5	0.944	3.2220	4	1
Gross Alpha Activity	pCi/L	2	2	28.3 J	4.9	16.6000	15	1
Gross Beta Activity	pCi/L	2	1	26.2 J	26.2 J	26.2000	50	0
Iron, ICAP	mg/L	2	1	0.109	0.109	0.1090	0.3	0
Lead, ICAP	mg/L	2	1	0.0276	0.0276	0.0276	0.015	1
Lead, PMS	mg/L	1	0				0.015	0
Lithium, ICAP	mg/L	2	1	0.0753 N	0.0753 N	0.0753	NR	NA
Magnesium, ICAP	mg/L	2	2	135	12.7	73.8500	NR	NA
Manganese, ICAP	mg/L	2	2	47.8	3.8	25.8000	0.05	2
Methane	µg/L	1	1	15	15	15.0000	NR	NA
Nickel, ICAP	mg/L	2	1	2.53	2.53	2.5300	0.1	1
Nickel, PMS	mg/L	1	1	0.03	0.03	0.0300	0.1	0
Nitrate as Nitrogen	mg/L	1	1	56.3	56.3	56.3000	10	1
NitrateNitrite	mg/L	1	1	476	476	476.0000	10	1

Table 4.99 (continued)

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Potassium, ICAP	mg/L	2	2	9.04	3.12	6.0800	NR	NA
Sodium, ICAP	mg/L	2	2	139	13.3	76.1500	NR	NA
Strontium, ICAP	mg/L	2	2	1.09	0.185	0.6375	NR[w]	NA
Sulfate	mg/L	2	2	88.8	16.4	52.6000	250	0
Tetrachloroethene	µg/L	2	2	670 D	300 D	485.0000	5	2
Thallium, ICAP	mg/L	2	0				0.002	0
Thallium, PMS	mg/L	1	1	0.00172	0.00172	0.0017	0.002	0
Toluene	µg/L	2	1	1 J	1 J	1.0000	1000	0
Total Dissolved Solids	mg/L	2	2	4810	494	2652.0000	500	1
Trichloroethene	µg/L	2	2	590 D	150	370.0000	5	2
Turbidity	NTU	1	1	1.78	1.78	1.7800	1	1
Uranium, ICAP	mg/L	1	0				0.03	0
Uranium, KPA	mg/L	1	1	0.0154 J	0.0154 J	0.0154	0.03	0
Uranium, PMS	mg/L	1	1	0.00308	0.00308	0.0031	0.03	0
Vinyl Chloride	µg/L	2	2	83	1 J	42.0000	2	1
Zinc, ICAP	mg/L	2	2	6.36	0.055	3.2075	5	1

Table 4.100. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = S 3 Site

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	µg/L	5	1	3 J	3 J	3.0000	NR	NA
1,1-Dichloroethene	µg/L	5	1	1 J	1 J	1.0000	7	0
Acetone	µg/L	5	1	6 J	6 J	6.0000	NR	NA
Aluminum, ICAP	mg/L	5	2	0.56	0.157	0.3585	0.2	1
Arsenic, ICAP	mg/L	5	1	0.0057	0.0057	0.0057	0.05	0
Arsenic, PMS	mg/L	3	0				0.05	0
Barium, ICAP	mg/L	5	5	84.1	3.65	51.0980	2	5
Benzene	µg/L	5	1	1 J	1 J	1.0000	5	0
Bicarbonate	mg/L	5	5	741	129	455.0000	NR	NA
Boron, ICAP	mg/L	5	2	0.107	0.0298	0.0684	NR[w]	NA
Bromoform	µg/L	5	3	7	2 J	4.6667	100	0
Bromomethane	µg/L	5	2	47	12	29.5000	NR	NA
Cadmium, ICAP	mg/L	5	0				0.005[z]	0
Cadmium, PMS	mg/L	3	1	0.966	0.966	0.9660	0.005	1
Calcium, ICAP	mg/L	5	5	10500	762	6557.8000	NR	NA
Carbon Disulfide	µg/L	5	1	1 J	1 J	1.0000	NR	NA
Chloride	mg/L	5	5	185	12.5	96.3800	250	0
Chloroform	µg/L	5	3	38	9	26.6667	100	0
Chloromethane	µg/L	5	1	8 J	8 J	8.0000	NR	NA
Cobalt, ICAP	mg/L	5	2	0.139	0.126	0.1325	NR	NA
Copper, ICAP	mg/L	5	1	0.0351	0.0351	0.0351	1.3	0
Fluoride	mg/L	5	1	3.94	3.94	3.9400	4	0
Gross Alpha Activity	pCi/L	5	2	244 J	22	133.0000	15	2
Gross Beta Activity	pCi/L	5	4	16500	68	9017.0000	50	4
Iron, ICAP	mg/L	5	1	0.32	0.32	0.3200	0.3	1
Lead, ICAP	mg/L	5	1	0.0086	0.0086	0.0086	0.015	0
Lead, PMS	mg/L	3	2	0.00667	0.0027	0.0047	0.015	0
Lithium, ICAP	mg/L	5	3	0.693	0.034	0.2663	NR[w]	NA
Magnesium, ICAP	mg/L	5	5	1260	113	747.0000	NR	NA
Manganese, ICAP	mg/L	5	5	150	0.0902	74.9182	0.05	5
Mercury, CVAA	mg/L	5	1	0.0027	0.0027	0.0027	0.002	1
Methylene chloride	µg/L	5	1	14	14	14.0000	5	1

Table 4.100 (continued)

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Nickel, ICAP	mg/L	5	2	0.202	0.149	0.1755	0.1	2
Nickel, PMS	mg/L	3	3	1.99	0.0256	0.6835	0.1	1
Nitrate as Nitrogen	mg/L	3	3	9100	607	3466.6667	10	3
NitrateNitrite	mg/L	2	2	94600	7980	51290.0000	10	2
Potassium, ICAP	mg/L	5	4	26	8.92	18.3550	NR	NA
Sodium, ICAP	mg/L	5	5	471	19.5	269.9800	NR	NA
Strontium, ICAP	mg/L	5	5	64.8	2.09	29.8780	NR[w]	NA
Sulfate	mg/L	5	5	15.1	2.65	8.8660	250	0
Technetium-99	pCi/L	5	3	33900	9000	24566.6667	4000	3
Tetrachloroethene	µg/L	5	3	110	3 J	39.0000	5	1
Thallium, ICAP	mg/L	5	0				0.002	0
Thallium, PMS	mg/L	3	1	0.00154	0.00154	0.0015	0.002	0
Total Dissolved Solids	mg/L	3	3	50700	4080	19653.3333	500	3
Total Suspended Solids	mg/L	3	2	14	6	10.0000	NR	NA
Total Uranium	mg/L	2	2	0.018	0.0171	0.0176	0.03	0
Trichloroethene	µg/L	5	3	4 J	3 J	3.3333	5	0
Turbidity	NTU	3	3	8.05	0.47	3.1800	1	2
Uranium, ICAP	mg/L	3	0				0.03	0
Uranium, PMS	mg/L	3	3	0.0218	0.00128	0.0087	0.03	0
Uranium-234	pCi/L	3	2	4.8	1.7	3.2500	20	0
Uranium-235	pCi/L	3	0				24	0
Uranium-238	pCi/L	3	2	5.3	0.88	3.0900	24	0
Zinc, ICAP	mg/L	5	1	0.0126	0.0126	0.0126	5	0

Table 4.101. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = Union Valley Exit Pathway

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Aluminum, ICAP	mg/L	9	3	0.754	0.116	0.3767	0.2	2
Barium, ICAP	mg/L	9	6	0.112	0.0173	0.0520	2	0
Benzene	µg/L	13	1	2 J	2 J	2.0000	5	0
Bicarbonate	mg/L	9	4	320	171	236.2500	NR	NA
Boron, ICAP	mg/L	9	4	1.44	0.0188	0.7207	NR	NA
Calcium, ICAP	mg/L	9	6	106	1.35	56.0050	NR	NA
Carbon Tetrachloride	µg/L	13	2	6	4 J	5.0000	5	1
Carbonate	mg/L	9	4	268	76.8	167.4500	NR	NA
Chloride	mg/L	9	6	11.6	1.4	6.5833	250	0
Chlorobenzene	µg/L	13	1	1 J	1 J	1.0000	100	0
Chloroform	µg/L	13	2	3 J	2 J	2.5000	100	0
cis-1,2-Dichloroethene	µg/L	13	1	3 J	3 J	3.0000	70	0
Fluoride	mg/L	9	4	2.4	0.11	1.2300	4	0
Gross Alpha Activity	pCi/L	9	1	1.96	1.96	1.9600	15	0
Gross Beta Activity	pCi/L	9	5	7.71	2.67 J	5.0800	50	0
Iron, ICAP	mg/L	9	6	1.16	0.0309	0.3998	0.3	2
Lead, ICAP	mg/L	9	1	0.0034	0.0034	0.0034	0.015	0
Lithium, ICAP	mg/L	9	4	0.208	0.0241	0.1129	NR	NA
Magnesium, ICAP	mg/L	9	6	6.2	1.03	2.9000	NR	NA
Manganese, ICAP	mg/L	9	3	0.0092	0.0055	0.0070	0.05	0
NitrateNitrite	mg/L	9	5	0.77	0.26	0.4720	10	0
Potassium, ICAP	mg/L	9	6	7.82	2.42	4.2633	NR	NA
Sodium, ICAP	mg/L	9	6	221	1.14	74.5217	NR	NA
Strontium, ICAP	mg/L	9	6	0.483	0.0779	0.3173	NR	NA
Sulfate	mg/L	9	6	19.1	4.1	9.3500	250	0
Tetrachloroethene	µg/L	13	4	2 J	1 J	1.7500	5	0
Total Dissolved Solids	mg/L	13	10	605	178	354.5000	500	3
Total Suspended Solids	mg/L	13	4	27.1	5.8	11.4750	NR	NA
Trichloroethene	µg/L	13	2	2 J	2 J	2.0000	5	0
Zinc, ICAP	mg/L	9	1	0.0155	0.0155	0.0155	5	0

Table 4.102. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = Waste Coolant Processing Facility

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,1,1-Trichloroethane	µg/L	3	3	66	6	30.6667	200	0
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	µg/L	3	3	4600 D	1100 D	2333.3333	NR	NA
1,1-Dichloroethane	µg/L	3	3	50	33	41.3333	NR	NA
1,1-Dichloroethene	µg/L	3	3	63	37	53.0000	7	3
1,2-Dichloroethene	µg/L	3	3	1900 D	1200 D	1433.3333	NR	NA
1,4-Dioxane	µg/L	3	3	14	9	11.6667	NR	NA
2-Butanone	µg/L	3	1	16	16	16.0000	NR	NA
Barium, ICAP	mg/L	3	3	0.218	0.134	0.1790	2	0
Bicarbonate	mg/L	3	3	248	85.3	166.4333	NR	NA
Calcium, ICAP	mg/L	3	3	96.4	33.1	63.8000	NR	NA
Carbon Tetrachloride	µg/L	3	1	2 J	2 J	2.0000	5	0
Chloride	mg/L	3	3	16.7	10.8	13.1000	250	0
cis-1,2-Dichloroethene	µg/L	3	3	1900 D	1200 D	1433.3333	70	3
Dichlorodifluoromethane	µg/L	3	3	81	7	32.6667	NR	NA
Gross Alpha Activity	pCi/L	3	1	2.9	2.9	2.9000	15	0
Lead, ICAP	mg/L	3	0				0.015	0
Lead, PMS	mg/L	3	1	0.00098	0.00098	0.0010	0.015	0
Magnesium, ICAP	mg/L	3	3	8.91	4.6	6.5500	NR	NA
Manganese, ICAP	mg/L	3	1	0.00758	0.00758	0.0076	0.05	0
Nitrate as Nitrogen	mg/L	3	3	2.24	1.68	1.9533	10	0
Sodium, ICAP	mg/L	3	3	7.34	5.11	6.3133	NR	NA
Strontium, ICAP	mg/L	3	3	0.247	0.133	0.1827	NR[w]	NA
Sulfate	mg/L	3	3	13.4	9.34	11.4467	250	0
Tetrachloroethene	µg/L	3	3	940 D	240 D	556.6667	5	3
Total Dissolved Solids	mg/L	3	3	307	146	219.6667	500	0
trans-1,2-Dichloroethene	µg/L	3	3	19	13	15.6667	100	0
Trichloroethene	µg/L	3	3	480 D	250 D	330.0000	5	3
Trichlorofluoromethane	µg/L	3	1	17	17	17.0000	NR	NA
Turbidity	NTU	3	3	0.681	0.289	0.5130	1	0
Uranium, ICAP	mg/L	3	0				0.03	0
Uranium, PMS	mg/L	3	1	0.00134	0.00134	0.0013	0.03	0
Vinyl Chloride	µg/L	3	3	23	19	21.0000	2	3

Table 4.103. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = Y-12 Fuel Station

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,1,2-Trichloroethane	µg/L	3	1	2 J	2 J	2.0000	5	0
1,2-Dichloroethane	µg/L	3	1	690 DJ	690 DJ	690.0000	5	1
1,2-Dichloropropane	µg/L	3	1	13	13	13.0000	5	1
2-Hexanone	µg/L	3	1	110	110	110.0000	NR	NA
Benzene	µg/L	3	1	9500 D	9500 D	9500.0000	5	1
Ethyl Benzene	µg/L	3	1	1000 DJ	1000 DJ	1000.0000	700	1
Toluene	µg/L	3	1	3000 D	3000 D	3000.0000	1000	1
Total Xylene	µg/L	3	1	6100 D	6100 D	6100.0000	1000	0

Table 4.104. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = Y-12 Grid Well B2

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Barium, ICAP	mg/L	1	1	0.0878	0.0878	0.0878	2	0
Bicarbonate	mg/L	1	1	140	140	140.0000	NR	NA
Calcium, ICAP	mg/L	1	1	141	141	141.0000	NR	NA
Chloride	mg/L	1	1	167	167	167.0000	250	0
Chromium, ICAP	mg/L	1	0				0.1[z]	0
Chromium, PMS	mg/L	1	1	0.082	0.082	0.0820	0.1	0
Iron, ICAP	mg/L	1	1	0.533	0.533	0.5330	0.3	1
Lithium, ICAP	mg/L	1	1	0.0302	0.0302	0.0302	NR[w]	NA
Magnesium, ICAP	mg/L	1	1	17	17	17.0000	NR	NA
Manganese, ICAP	mg/L	1	1	0.0101	0.0101	0.0101	0.05	0
Nickel, ICAP	mg/L	1	0				0.1[z]	0
Nickel, PMS	mg/L	1	1	0.384	0.384	0.3840	0.1	1
Nitrate as Nitrogen	mg/L	1	1	7.26	7.26	7.2600	10	0
Potassium, ICAP	mg/L	1	1	2.24	2.24	2.2400	NR	NA
Sodium, ICAP	mg/L	1	1	26.3	26.3	26.3000	NR	NA
Strontium, ICAP	mg/L	1	1	0.27	0.27	0.2700	NR[w]	NA
Sulfate	mg/L	1	1	79.8	79.8	79.8000	250	0
Total Dissolved Solids	mg/L	1	1	789	789	789.0000	500	1
Total Suspended Solids	mg/L	1	1	2	2	2.0000	NR	NA
Turbidity	NTU	1	1	6.46	6.46	6.4600	1	1
Uranium, ICAP	mg/L	1	0				0.03	0
Uranium, PMS	mg/L	1	1	0.000685	0.000685	0.0007	0.03	0

Table 4.105. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = Y-12 Grid Well B3

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,1,1-Trichloroethane	ug/L	3	2	3 J	2 J	2.5000	200	0
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ug/L	3	3	360 D	290 D	326.6667	NR	NA
1,1-Dichloroethane	ug/L	3	3	21	15	17.0000	NR	NA
1,1-Dichloroethene	ug/L	3	3	22	17	19.3333	7	3
1,2-Dichloroethene	ug/L	3	3	740 D	660 D	703.3333	NR	NA
Antimony, ICAP	mg/L	3	0				0.006	0
Antimony, PMS	mg/L	3	1	0.00592	0.00592	0.0059	0.006	0
Barium, ICAP	mg/L	3	3	1.43	0.948	1.1360	2	0
Bicarbonate	mg/L	3	3	224	140	170.3333	NR	NA
Calcium, ICAP	mg/L	3	3	371	265	330.6667	NR	NA
Chloride	mg/L	3	3	14.4	13.4	14.0000	250	0
cis-1,2-Dichloroethene	µg/L	3	3	740 D	660 D	703.3333	70	3
Dichlorodifluoromethane	µg/L	3	3	14	10	12.0000	NR	NA
Gross Alpha Activity	pCi/L	3	0				15	0
Gross Beta Activity	pCi/L	3	3	38	19	28.3333	50	0
Iron, ICAP	mg/L	3	1	0.071	0.071	0.0710	0.3	0
Lead, ICAP	mg/L	3	0				0.015	0
Lead, PMS	mg/L	3	1	0.00132	0.00132	0.0013	0.015	0
Lithium, ICAP	mg/L	3	3	0.0522	0.0196	0.0308	NR[w]	NA
Magnesium, ICAP	mg/L	3	3	47.5	30.6	37.0000	NR	NA
Manganese, ICAP	mg/L	3	3	0.765	0.554	0.6437	0.05	3
Nickel, ICAP	mg/L	3	0				0.1	0
Nickel, PMS	mg/L	3	3	0.0131	0.00742	0.0106	0.1	0
Nitrate as Nitrogen	mg/L	3	3	256	228	245.6667	10	3
Potassium, ICAP	mg/L	3	3	14.3	3.14	6.9933	NR	NA
Sodium, ICAP	mg/L	3	3	83.8	10.9	35.4667	NR	NA
Strontium, ICAP	mg/L	3	3	5.55	1.16	2.6467	NR[w]	NA
Sulfate	mg/L	3	3	20.8	18.4	19.7333	250	0
Tetrachloroethene	µg/L	3	3	580 D	460 D	536.6667	5	3
Total Dissolved Solids	mg/L	3	3	1930	1500	1670.0000	500	3
Total Suspended Solids	mg/L	3	2	2	1	1.5000	NR	NA
trans-1,2-Dichloroethene	µg/L	3	3	10	8	9.0000	100	0
Trichloroethene	µg/L	3	3	220 D	190 D	203.3333	5	3
Trichlorofluoromethane	µg/L	3	2	2 J	2 J	2.0000	NR	NA
Turbidity	NTU	3	3	1.3	0.468	0.9593	1	2
Uranium, ICAP	mg/L	3	0				0.03	0
Uranium, PMS	mg/L	3	1	0.000525	0.000525	0.0005	0.03	0
Vinyl Chloride	µg/L	3	3	18	16	17.0000	2	3

Table 4.106. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = Y-12 Grid Well C3

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,1-Dichloroethene	µg/L	3	2	14	1 J	7.5000	7	1
1,2-Dichloroethene	µg/L	3	3	730 D	7	267.0000	NR	NA
Barium, ICAP	mg/L	3	3	0.15	0.0659	0.1106	2	0
Bicarbonate	mg/L	3	3	224	191	206.0000	NR	NA
Boron, ICAP	mg/L	3	3	0.853	0.116	0.3677	NR[w]	NA
Calcium, ICAP	mg/L	3	3	104	7.09	67.9967	NR	NA
Chloride	mg/L	3	3	30.2	13.9	22.3333	250	0
Chromium, ICAP	mg/L	3	0				0.1	0
Chromium, PMS	mg/L	3	2	0.0159	0.0106	0.0133	0.1	0
cis-1,2-Dichloroethene	µg/L	3	3	720 D	7	263.6667	70	1
Fluoride	mg/L	3	1	0.438	0.438	0.4380	4	0
Iron, ICAP	mg/L	3	1	0.214	0.214	0.2140	0.3	0
Lithium, ICAP	mg/L	3	3	0.0799	0.0138	0.0372	NR[w]	NA
Magnesium, ICAP	mg/L	3	3	14.2	2.34	8.2767	NR	NA
Manganese, ICAP	mg/L	3	1	0.0106	0.0106	0.0106	0.05	0
Nickel, ICAP	mg/L	3	0				0.1[z]	0
Nickel, PMS	mg/L	3	1	0.061	0.061	0.0610	0.1	0
Nitrate as Nitrogen	mg/L	3	3	1.7	0.165	0.7783	10	0
Potassium, ICAP	mg/L	3	3	4.96	2.65	3.5267	NR	NA
Sodium, ICAP	mg/L	3	3	129	10.2	50.5000	NR	NA
Strontium, ICAP	mg/L	3	3	0.402	0.257	0.3303	NR[w]	NA
Sulfate	mg/L	3	3	103	40.3	73.2000	250	0
Tetrachloroethene	µg/L	3	3	970 D	23	584.3333	5	3
Total Dissolved Solids	mg/L	3	3	374	322	348.3333	500	0
trans-1,2-Dichloroethene	µg/L	3	1	9	9	9.0000	100	0
Trichloroethene	µg/L	3	3	560 D	6	204.3333	5	3
Turbidity	NTU	3	3	2.5	0.185	1.0757	1	1
Uranium, ICAP	mg/L	3	0				0.03	0
Uranium, PMS	mg/L	3	1	0.000525	0.000525	0.0005	0.03	0
Vinyl Chloride	µg/L	3	1	11	11	11.0000	2	1

Table 4.107. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = Y-12 Grid Well D2

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Barium, ICAP	mg/L	2	2	0.248	0.147	0.1975	2	0
Bicarbonate	mg/L	2	2	213	82.8	147.9000	NR	NA
Calcium, ICAP	mg/L	2	2	69.6	57.3	63.4500	NR	NA
Chloride	mg/L	2	2	46.1	10.1	28.1000	250	0
Chromium, ICAP	mg/L	2	0				0.1[z]	0
Chromium, PMS	mg/L	2	1	0.563	0.563	0.5630	0.1	1
Gross Alpha Activity	pCi/L	2	1	4.5	4.5	4.5000	15	0
Gross Beta Activity	pCi/L	2	0				50	0
Iron, ICAP	mg/L	2	1	4.96	4.96	4.9600	0.3	1
Lithium, ICAP	mg/L	2	1	0.0133	0.0133	0.0133	NR[w]	NA
Magnesium, ICAP	mg/L	2	2	14.3	5.81	10.0550	NR	NA
Manganese, ICAP	mg/L	2	2	0.09	0.0152	0.0526	0.05	1
Nickel, ICAP	mg/L	2	0				0.1[z]	0
Nickel, PMS	mg/L	2	1	0.222	0.222	0.2220	0.1	1
Nitrate as Nitrogen	mg/L	2	1	4.41	4.41	4.4100	10	0
Sodium, ICAP	mg/L	2	2	11	7.26	9.1300	NR	NA
Strontium, ICAP	mg/L	2	2	0.41	0.11	0.2600	NR[w]	NA
Sulfate	mg/L	2	2	32.2	13	22.6000	250	0
Tetrachloroethene	µg/L	2	2	530 D	4 J	267.0000	5	1
Total Dissolved Solids	mg/L	2	2	303	302	302.5000	500	0
Total Suspended Solids	mg/L	2	1	9	9	9.0000	NR	NA
Trichloroethene	µg/L	2	1	4 J	4 J	4.0000	5	0
Turbidity	NTU	2	2	41.5	0.247	20.8735	1	1

Table 4.108. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = Y-12 Grid Well E3

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,1,1-Trichloroethane	µg/L	3	1	1 J	1 J	1.0000	200	0
1,1-Dichloroethane	µg/L	3	2	59	10	34.5000	NR	NA
1,1-Dichloroethene	µg/L	3	2	17	3 J	10.0000	7	1
1,2-Dichloroethene	µg/L	3	2	13	5 J	9.0000	NR	NA
1,4-Dioxane	µg/L	1	1	7 J	7 J	7.0000	NR	NA
Alkalinity	mg/L	3	0				NR	NA
Barium, ICAP	mg/L	3	3	0.527	0.13	0.3063	2	0
Bicarbonate	mg/L	3	3	241	207	219.0000	NR	NA
Boron, ICAP	mg/L	3	2	0.549	0.132	0.3405	NR[w]	NA
Calcium, ICAP	mg/L	3	3	73.5	8.59	51.2300	NR	NA
Chloride	mg/L	3	3	15.9	7	12.4667	250	0
Chromium, ICAP	mg/L	3	0				0.1[z]	0
Chromium, PMS	mg/L	3	2	0.429	0.0241	0.2266	0.1	1
cis-1,2-Dichloroethene	µg/L	3	2	12	4 J	8.0000	70	0
Gross Alpha Activity	pCi/L	3	2	23	3.7	13.3500	15	1
Gross Beta Activity	pCi/L	3	1	5.7	5.7	5.7000	50	0
Iron, ICAP	mg/L	3	3	3.19	0.0625	1.1498	0.3	1
Lead, ICAP	mg/L	3	0				0.015	0
Lead, PMS	mg/L	3	1	0.00104	0.00104	0.0010	0.015	0
Lithium, ICAP	mg/L	3	2	0.064	0.0212	0.0426	NR[w]	NA
Magnesium, ICAP	mg/L	3	3	15	3.02	8.1333	NR	NA
Manganese, ICAP	mg/L	3	3	0.0443	0.00664	0.0262	0.05	0
Nickel, ICAP	mg/L	3	0				0.1[z]	0
Nickel, PMS	mg/L	3	2	0.158	0.0142	0.0861	0.1	1
Nitrate as Nitrogen	mg/L	3	3	0.919	0.12	0.4970	10	0
Potassium, ICAP	mg/L	3	3	5.31	2.11	4.2100	NR	NA
Sodium, ICAP	mg/L	3	3	82.5	10.4	36.0667	NR	NA
Strontium, ICAP	mg/L	3	3	1.05	0.253	0.5997	NR[w]	NA
Sulfate	mg/L	3	3	24.7	8.97	16.7900	250	0
Tetrachloroethene	µg/L	3	3	96	2 J	35.6667	5	2
Total Dissolved Solids	mg/L	3	3	298	248	274.6667	500	0
Total Suspended Solids	mg/L	3	1	6	6	6.0000	NR	NA
trans-1,2-Dichloroethene	µg/L	3	2	2 J	1 J	1.5000	100	0

Table 4.108 (continued)

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Trichloroethene	µg/L	3	2	43	4 J	23.5000	5	1
Turbidity	NTU	3	3	14.1	0.547	5.1343	1	1
Uranium, ICAP	mg/L	3	0				0.03	0
Uranium, PMS	mg/L	3	2	0.00115	0.00088	0.0010	0.03	0

Table 4.109. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = Y-12 Grid Well G3

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,1,1-Trichloroethane	µg/L	4	1	1 J	1 J	1.0000	200	0
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	µg/L	4	2	4 J	2 J	3.0000	NR	NA
1,1-Dichloroethene	µg/L	4	2	2 J	1 J	1.5000	7	0
1,2-Dichloroethene	µg/L	4	2	4 J	3 J	3.5000	NR	NA
Alkalinity	mg/L	2	0				NR	NA
Barium, ICAP	mg/L	4	4	0.373	0.058	0.2161	2	0
Bicarbonate	mg/L	4	4	224	153	186.5000	NR	NA
Calcium, ICAP	mg/L	4	4	83	53.2	69.0250	NR	NA
Carbon Tetrachloride	µg/L	4	4	130	14	64.0000	5	4
Chloride	mg/L	4	4	17.5	1.99	9.5975	250	0
Chloroform	µg/L	4	4	5	2 J	3.2500	100	0
cis-1,2-Dichloroethene	µg/L	4	2	4 J	3 J	3.5000	70	0
Fluoride	mg/L	4	2	0.245	0.203	0.2240	4	0
Gross Alpha Activity	pCi/L	4	2	2.8	1.7	2.2500	15	0
Gross Beta Activity	pCi/L	4	1	5.7	5.7	5.7000	50	0
Iron, ICAP	mg/L	4	1	0.122	0.122	0.1220	0.3	0
Lead, ICAP	mg/L	4	0				0.015	0
Lead, PMS	mg/L	4	1	0.00114	0.00114	0.0011	0.015	0
Lithium, ICAP	mg/L	4	2	0.0161	0.0147	0.0154	NR[w]	NA
Magnesium, ICAP	mg/L	4	4	9.77	4.5	7.2650	NR	NA
Manganese, ICAP	mg/L	4	2	0.00766	0.00726	0.0075	0.05	0
Nitrate as Nitrogen	mg/L	4	4	1.11	0.233	0.6838	10	0
Potassium, ICAP	mg/L	4	4	2.75	2.12	2.5600	NR	NA
Sodium, ICAP	mg/L	4	4	7.03	6.46	6.7550	NR	NA
Strontium, ICAP	mg/L	4	4	0.37	0.0752	0.2245	NR[w]	NA
Sulfate	mg/L	4	4	20.7	18.7	19.5250	250	0
Tetrachloroethene	µg/L	4	3	19	1 J	10.6667	5	2
Total Dissolved Solids	mg/L	4	4	303	206	245.5000	500	0
Trichloroethene	µg/L	4	2	5 J	3 J	4.0000	5	0
Turbidity	NTU	4	4	1.18	0.197	0.5255	1	1
Uranium, ICAP	mg/L	4	0				0.03	0
Uranium, PMS	mg/L	4	2	0.00183	0.000835	0.0013	0.03	0

Table 4.110. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = Y-12 Grid Well J Primary

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,1,1-Trichloroethane	µg/L	3	1	4 J	4 J	4.0000	200	0
1,1-Dichloroethane	µg/L	3	1	16	16	16.0000	NR	NA
1,1-Dichloroethene	µg/L	3	1	64	64	64.0000	7	1
Acetone	µg/L	3	1	25	25	25.0000	NR	NA
Barium, ICAP	mg/L	3	2	0.49	0.0601	0.2751	2	0
Bicarbonate	mg/L	3	2	272	260	266.0000	NR	NA
Boron, ICAP	mg/L	3	1	0.0684	0.0684	0.0684	NR	NA
Calcium, ICAP	mg/L	3	2	109	71.3	90.1500	NR	NA
Chloride	mg/L	3	2	90.6	33.1	61.8500	250	0
cis-1,2-Dichloroethene	µg/L	3	1	67	67	67.0000	70	0
Fluoride	mg/L	3	1	0.233	0.233	0.2330	4	0
Gross Alpha Activity	pCi/L	3	0				15	0
Gross Beta Activity	pCi/L	3	2	6.97	6	6.4850	50	0
Iron, ICAP	mg/L	3	2	26.8	0.0216	13.4108	0.3	1
Lithium, ICAP	mg/L	3	1	0.0138	0.0138	0.0138	NR	NA
Magnesium, ICAP	mg/L	3	2	22.5	15.2	18.8500	NR	NA
Manganese, ICAP	mg/L	3	2	0.732	0.0412	0.3866	0.05	1
Methane	µg/L	2	1	22	22	22.0000	NR	NA
Methylene chloride	µg/L	3	0				5	0
NitrateNitrite	mg/L	2	0				10	0
Potassium, ICAP	mg/L	3	1	3.22	3.22	3.2200	NR	NA
Sodium, ICAP	mg/L	3	2	22	10.3	16.1500	NR	NA
Strontium, ICAP	mg/L	3	2	0.686	0.23	0.4580	NR[w]	NA
Sulfate	mg/L	3	1	14.9	14.9	14.9000	250	0
Tetrachloroethene	µg/L	3	1	2500 D	2500 D	2500.0000	5	1
Total Dissolved Solids	mg/L	3	2	420	355	387.5000	500	0
Total Suspended Solids	mg/L	3	1	26	26	26.0000	NR	NA
trans-1,2-Dichloroethene	µg/L	3	1	4 J	4 J	4.0000	100	0
Trichloroethene	µg/L	3	1	170	170	170.0000	5	1
Turbidity	NTU	1	1	327	327	327.0000	1	1
Vinyl Chloride	µg/L	3	1	5	5	5.0000	2	1

Table 4.111. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = Y-12 Grid Well K1

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Barium, ICAP	mg/L	1	1	0.279	0.279	0.2790	2	0
Bicarbonate	mg/L	1	1	215	215	215.0000	NR	NA
Calcium, ICAP	mg/L	1	1	41.4	41.4	41.4000	NR	NA
Chloride	mg/L	1	1	9.77	9.77	9.7700	250	0
Gross Beta Activity	pCi/L	1	1	7.8	7.8	7.8000	50	0
Lithium, ICAP	mg/L	1	1	0.0272	0.0272	0.0272	NR[w]	NA
Magnesium, ICAP	mg/L	1	1	11.2	11.2	11.2000	NR	NA
Manganese, ICAP	mg/L	1	1	0.0205	0.0205	0.0205	0.05	0
Potassium, ICAP	mg/L	1	1	3.59	3.59	3.5900	NR	NA
Sodium, ICAP	mg/L	1	1	35.2	35.2	35.2000	NR	NA
Strontium, ICAP	mg/L	1	1	1.29	1.29	1.2900	NR[w]	NA
Sulfate	mg/L	1	1	8.52	8.52	8.5200	250	0
Thallium, ICAP	mg/L	1	0				0.002	0
Thallium, PMS	mg/L	1	1	0.000525	0.000525	0.0005	0.002	0
Total Dissolved Solids	mg/L	1	1	256	256	256.0000	500	0
Turbidity	NTU	1	1	0.349	0.349	0.3490	1	0

Table 4.112. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = Y-12 Grid Well K2

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Barium, ICAP	mg/L	3	3	0.179	0.0887	0.1462	2	0
Bicarbonate	mg/L	3	3	226	143	193.3333	NR	NA
Calcium, ICAP	mg/L	3	3	80.8	46	61.4333	NR	NA
Chloride	mg/L	3	3	13.6	1.79	8.9300	250	0
Chromium, ICAP	mg/L	3	0				0.1	0
Chromium, PMS	mg/L	3	1	0.0111	0.0111	0.0111	0.1	0
Fluoride	mg/L	3	1	0.158	0.158	0.1580	4	0
Gross Alpha Activity	pCi/L	3	2	3.6	3	3.3000	15	0
Gross Beta Activity	pCi/L	3	1	6.6	6.6	6.6000	50	0
Iron, ICAP	mg/L	3	3	2.1	0.0718	0.7616	0.3	1
Lithium, ICAP	mg/L	3	1	0.0146	0.0146	0.0146	NR[w]	NA
Magnesium, ICAP	mg/L	3	3	10.2	4.61	8.0200	NR	NA
Manganese, ICAP	mg/L	3	3	0.677	0.0215	0.2444	0.05	1
Nitrate as Nitrogen	mg/L	3	1	0.0542	0.0542	0.0542	10	0
Potassium, ICAP	mg/L	3	2	2.57	2.01	2.2900	NR	NA
Sodium, ICAP	mg/L	3	3	27.6	6.89	14.9967	NR	NA
Strontium, ICAP	mg/L	3	3	0.568	0.118	0.3067	NR[w]	NA
Sulfate	mg/L	3	3	26.7	13.1	21.6667	250	0
Total Dissolved Solids	mg/L	3	3	299	221	253.0000	500	0
Total Suspended Solids	mg/L	3	1	2	2	2.0000	NR	NA
Turbidity	NTU	3	3	23.2	0.326	8.3853	1	2
Uranium, ICAP	mg/L	3	0				0.03	0
Uranium, PMS	mg/L	3	1	0.00318	0.00318	0.0032	0.03	0

Table 4.113. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = Y-12 Plant

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,1,1-Trichloroethane	µg/L	43	4	3 J	1 J	1.7500	200	0
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	µg/L	43	7	210 D	2 J	63.0000	NR	NA
1,1-Dichloroethane	µg/L	43	12	56	1 J	13.2500	NR	NA
1,1-Dichloroethene	µg/L	43	11	190 D	2 J	51.0909	7	9
1,2-Dichloroethene	µg/L	43	19	2100 D	8	507.8421	NR	NA
1,2-Dichloropropane	µg/L	43	2	4 J	2 J	3.0000	5	0
1,4-Dichlorobenzene	µg/L	43	2	3 J	2 J	2.5000	75	0
Alkalinity	mg/L	13	0				NR	NA
Aluminum, ICAP	mg/L	43	16	4.69	0.201	1.0646	0.2	16
Antimony, ICAP	mg/L	43	0				0.006	0
Antimony, PMS	mg/L	43	1	0.00284	0.00284	0.0028	0.006	0
Arsenic, ICAP	mg/L	43	0				0.05	0
Arsenic, PMS	mg/L	43	1	0.00539	0.00539	0.0054	0.05	0
Barium, ICAP	mg/L	43	43	0.412	0.0333	0.1484	2	0
Benzene	µg/L	43	2	2 J	1 J	1.5000	5	0
Bicarbonate	mg/L	43	43	358	88.5	217.5209	NR	NA
Boron, ICAP	mg/L	43	17	0.771	0.1	0.2454	NR[w]	NA
Cadmium, ICAP	mg/L	43	0				0.005	0
Cadmium, PMS	mg/L	43	1	0.00302	0.00302	0.0030	0.005	0
Calcium, ICAP	mg/L	43	43	346	1.63	74.8433	NR[k]	NA
Chloride	mg/L	43	43	37.2	0.26	15.2519	250	0
Chloroethane	µg/L	43	1	2 J	2 J	2.0000	NR	NA
Chloroform	µg/L	43	2	9	2 J	5.5000	100	0
Chromium, ICAP	mg/L	43	1	0.081	0.081	0.0810	0.1[z]	0
Chromium, PMS	mg/L	43	9	0.085	0.0102	0.0324	0.1	0
cis-1,2-Dichloroethene	µg/L	43	19	2100 D	8	503.1053	70	9
Dichlorodifluoromethane	µg/L	43	4	5	2 J	3.5000	NR	NA
Fluoride	mg/L	43	21	2.21	0.109	0.4852	4	0
Gross Alpha Activity	pCi/L	43	15	30	2.1	7.6067	15	2
Gross Beta Activity	pCi/L	43	11	20	4.3	9.3545	50	0
Iron, ICAP	mg/L	43	30	2.41	0.0507	0.4636	0.3	14
Lead, ICAP	mg/L	43	0				0.015	0
Lead, PMS	mg/L	43	21	0.0126	0.00058	0.0033	0.015	0
Lithium, ICAP	mg/L	43	25	1.5	0.0102	0.1434	NR[w]	NA
Magnesium, ICAP	mg/L	43	43	52.8	0.9	12.7253	NR[k]	NA
Manganese, ICAP	mg/L	43	38	2.22	0.00503	0.2455	0.05[k]	15

Table 4.113 (continued)

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Mercury, CVAA	mg/L	43	2	0.0013	0.000248	0.0008	0.002	0
Nickel, ICAP	mg/L	43	2	0.212	0.052	0.1320	0.1	1
Nickel, PMS	mg/L	43	15	0.219	0.00693	0.0341	0.1	1
Nitrate as Nitrogen	mg/L	43	27	212	0.0294	14.4851	10	2
Potassium, ICAP	mg/L	43	30	8.14	2.02	3.5620	NR	NA
Selenium, ICAP	mg/L	43	0				0.05	0
Selenium, PMS	mg/L	43	3	0.0233	0.0121	0.0173	0.05	0
Sodium, ICAP	mg/L	43	43	183	1.08	32.9044	NR[k]	NA
Strontium, ICAP	mg/L	43	43	1.9	0.0326	0.4430	NR[w]	NA
Sulfate	mg/L	43	43	162	2.58	46.0309	250	0
Tetrachloroethene	µg/L	43	21	72000 D	1 J	9672.9524	5	16
Thallium, ICAP	mg/L	43	0				0.002	0
Thallium, PMS	mg/L	43	3	0.000995	0.00076	0.0009	0.002	0
Toluene	µg/L	43	2	9	3 J	6.0000	1000	0
Total Dissolved Solids	mg/L	43	43	1410	119	385.4186	500	3
Total Suspended Solids	mg/L	43	19	28	1	7.5263	NR	NA
Total Xylene	µg/L	43	1	8	8	8.0000	1000	0
trans-1,2-Dichloroethene	µg/L	43	9	70	5 J	27.7778	100	0
Trichloroethene	µg/L	43	17	5700 D	2 J	1053.6471	5	13
Turbidity	NTU	43	43	79	0.144	6.0989	1	29
Uranium, ICAP	mg/L	43	0				0.03	0
Uranium, PMS	mg/L	43	16	0.0355	0.000595	0.0038	0.03	1
Vinyl Chloride	µg/L	43	10	320 D	5	93.6000	2	10

Table 4.114. Constituents detected in groundwater at the Y-12 National Security Complex, 2006

REGIME = EF AREA NAME = Y-12 Salvage Yard

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
1,1,1,2-Tetrachloroethane	µg/L	6	1	2 J	2 J	2.0000	NR	NA
1,1,1-Trichloroethane	µg/L	6	2	18	4 J	11.0000	200	0
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	µg/L	6	2	43	38	40.5000	NR	NA
1,1-Dichloroethane	µg/L	6	2	5	2 J	3.5000	NR	NA
1,1-Dichloroethene	µg/L	6	2	160	64	112.0000	7	2
1,2-Dichloroethene	µg/L	6	5	59	1 J	22.2000	NR	NA
1,4-Dioxane	µg/L	1	1	47	47	47.0000	NR	NA
Alkalinity	mg/L	2	0				NR	NA
Barium, ICAP	mg/L	6	6	139	0.0463	26.1349	2	2
Benzene	µg/L	6	1	180	180	180.0000	5	1
Bicarbonate	mg/L	6	6	686	47.3	184.8667	NR	NA
Bromoform	µg/L	6	1	9	9	9.0000	100	0
Calcium, ICAP	mg/L	6	6	9470	11.3	2065.9833	NR	NA
Carbon Tetrachloride	µg/L	6	1	3 J	3 J	3.0000	5	0
Chloride	mg/L	6	6	62.3	3.66	27.5400	250	0
Chloroform	µg/L	6	3	21	1 J	8.6667	100	0
cis-1,2-Dichloroethene	µg/L	6	5	59	1 J	22.2000	70	0
Fluoride	mg/L	6	2	0.112	0.101	0.1065	4	0
Gross Alpha Activity	pCi/L	6	2	2.8	1.4	2.1000	15	0
Gross Beta Activity	pCi/L	6	2	6000	7.5	3003.7500	50	1
Iron, ICAP	mg/L	6	1	0.0907	0.0907	0.0907	0.3	0
Lead, ICAP	mg/L	6	0				0.015	0
Lead, PMS	mg/L	6	3	0.00096	0.00056	0.0008	0.015	0
Lithium, ICAP	mg/L	6	1	0.368	0.368	0.3680	NR[w]	NA
Magnesium, ICAP	mg/L	6	6	1320	1.83	293.6083	NR	NA
Manganese, ICAP	mg/L	6	4	71.2	0.0105	18.2406	0.05	2
Methylene chloride	µg/L	6	1	34	34	34.0000	5	1
Nickel, ICAP	mg/L	6	0				0.1	0
Nickel, PMS	mg/L	6	2	0.179	0.168	0.1735	0.1	2
Nitrate as Nitrogen	mg/L	6	6	8004	0.0971	1715.9075	10	2
Potassium, ICAP	mg/L	6	1	30.8	30.8	30.8000	NR	NA
Sodium, ICAP	mg/L	6	6	266	8.6	70.7117	NR	NA
Strontium, ICAP	mg/L	6	6	70.1	0.0302	13.1546	NR[w]	NA
Sulfate	mg/L	6	4	19.2	6.01	12.6075	250	0
Technetium-99	pCi/L	2	2	13000	17	6508.5000	4000	1
Tetrachloroethene	µg/L	6	6	1400 D	2 J	249.5000	5	5

Table 4.114 (continued)

Compound	Units	Number of samples	Number detected	Maximum detected result	Minimum detected result	Average detected result	Ref. value	Number of results > Ref.
Total Dissolved Solids	mg/L	6	6	41600	98	9317.0000	500	2
Total Suspended Solids	mg/L	6	1	4	4	4.0000	NR	NA
Trichloroethene	µg/L	6	5	11	2 J	5.2000	5	1
Turbidity	NTU	6	6	3.18	0.148	0.9565	1	2
Uranium, ICAP	mg/L	6	0				0.03	0
Uranium, PMS	mg/L	6	2	0.0141	0.00148	0.0078	0.03	0
Uranium-234	pCi/L	2	2	6.8	0.87	3.8350	20	0
Uranium-235	pCi/L	2	1	0.28	0.28	0.2800	24	0
Uranium-238	pCi/L	2	2	3.8	0.33	2.0650	24	0
Vinyl Chloride	µg/L	6	1	1 J	1 J	1.0000	2	0

Definitions

Terminology

BC	Bear Creek
CO_3	Carbonate
CR	Chestnut Ridge
CVAA	Cold Vapor Atomic Absorption
EF	East Fork
HCO_3	Bicarbonate
ICAP	Inductively Coupled Argon Plasma Spectroscopy
KPA	Kinetic Phosphorescence Analysis
mg/L	milligrams per liter
NA	Not Applicable
NR	No Reference
NTU	Nephelemetric Turbidity Units
pCi/L	picocuries per liter
PMS	Plasma Mass Spectroscopy
PR	Pine Ridge
REF	Reference (Safe Drinking Water Act Maximum Contaminant Level)
µg/L	microgram per liter
µmhos/cm	micromhos per centimeter

Footnotes

[k] Sample concentration is greater than 4 times the spike level for this sample batch.
[w] Not a recommended analyte by the preparation method used.
[z] Analyte reported, but not required or requested; use for qualitative purposes only.

Qualifiers

*	- Duplicate analysis not within control limits.
D	- Compounds identified in an analysis at a secondary dilution factor.
E	- Result estimated due to interferences.
J	- Indicates an estimated value (VOA)
J	- Chemical tracer recovery is less than 50% or exceeds 125% (RAD)
N	- Sample spike recovery not within control limits.