ES/ESH-71

LOCKHEED MARTIN

Environmental Monitoring and Surveillance on the Oak Ridge Reservation: 1995 Data

MANAGED BY
LOCKHEED MARTIN ENERGY SYSTEMS, INC.
FOR THE UNITED STATES
DEPARTMENT OF ENERGY

UCN-13675 (6 6-95)

ES/ESH-71

ENVIRONMENTAL MONITORING AND SURVEILLANCE ON THE OAK RIDGE RESERVATION: 1995 DATA

Project director
L. V. Hamilton

Project coordinator
D. C. West

Technical coordinators

L. W. McMahon
Oak Ridge Y-12 Plant

L. V. Hamilton
Oak Ridge National Laboratory

L. G. Shipe
Oak Ridge K-25 Site

Environmental compliance
J. G. Rogers

Coordinating editor
W. S. Koncinski

Date Published: October 1996

Prepared by
Oak Ridge National Laboratory
P.O. Box 2008, Oak Ridge, TN 37831-6285
Managed by Lockheed Martin Energy Research Corp.
for the U.S. Department of Energy under Contract No. DE-AC05-96OR22464
and by
the Oak Ridge Y-12 Plant and the Oak Ridge K-25 Site
P.O. Box 2008, Oak Ridge, Tennessee 37831-6285
Managed by Lockheed Martin Energy Systems, Inc.

Contents

List of Figures

List of Tables

Introduction

Environmental monitoring and surveillance are conducted on the Oak Ridge Reservation and its environs throughout the year. Environmental monitoring ensures that (1) the reservation is a safe place to work, (2) activities on the reservation do not adversely affect the neighboring communities, and (3) compliance is made with federal and state regulations.

This document is a compilation of the monitoring and surveillance data for calendar year 1995. It is a tool for analysts in the fields of environmental monitoring and environmental restoration. The summary information found in the annual site environmental report was drawn from the contents of this document.

1. Site and Operations Overview

Table 1.1. Administrative units on the Oak Ridge Reservation

Administering body	Area	
	Hectares	Acres
Oak Ridge Y-12 Plant	1,769	4,370
Oak Ridge National Laboratory	9,879	24,400
Oak Ridge K-25 Site	1,954	4,825
Oak Ridge Institute for Science and Education	274	680
Johnson Controls World Services, Inc.	93	230
Total	13,969	34,505

2. Effluent Monitoring

Table 2.1. Y-12 Plant Discharge Point 94223, SWHISS Station 9422-3, Station 8 (nonrad)
From: 1995/01/01 To: 1995/12/31

Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Avg		
Flow,[c] mgd	364	16.8038	1.8096	2.8336	*d*	*d*
Mercury	257	0.015	0.0007	0.0013	0.00015	257[f]

[a]Units in mg/L unless otherwise.
[b]Tennesse water quality for fish and aquatic life.
[c]Flow during operations and/or discharging.
[d]Not applicable.
[e]Maximum value/minimum value.

Table 2.2. Y-12 Plant Discharge Point 301, Kerr Hollow Quarry (nonrad)
From: 1995/01/01 To: 1995/06/30

Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Avg		
Flow,[c] gpd	13	983808.1	516.96	227397.7	*d*	*d*
pH, standard units	13	8.0	7.4	*d*	8.5/6.5[e]	0
Temperature, °C	13	25.5	7.1	13	30.5	0
Arsenic	12	<0.04	<0.04	<0.04	*d*	*d*
Cadmium	12	<0.004	<0.004	<0.004	*d*	*d*
Chromium	12	<0.006	<0.006	<0.006	*d*	*d*
Copper	12	<0.006	<0.006	<0.006	*d*	*d*
Iron	12	0.12	<0.06	<0.06	*d*	*d*
Mercury	12	<0.0002	<0.0002	<0.0002	*d*	*d*
Potassium	12	1.1	0.9	1	*d*	*d*
Lithium	12	<0.02	<0.02	<0.02	5	0
Sodium	12	0.71	0.6	0.7	*d*	*d*
Nickel	12	<0.008	<0.008	<0.008	*d*	*d*
Lead	12	<0.02	<0.02	<0.02	*d*	*d*
Selenium	12	<0.1	<0.1	<0.1	*d*	*d*
Total suspended solids	12	<5.0	<5.0	<5.0	50	0
Zinc	12	0.02	<0.01	<0.01	*d*	*d*
Zirconium	12	<0.004	<0.004	<0.004	3	0

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

Table 2.3. Y-12 Plant Discharge Point 301, Kerr Hollow Quarry (rad)
From: 1995/01/01 To: 1995/06/30

Parameter	Number of samples	Concentration						Standard error	Percentage of DCG	Total curies
		Max	±	Min	±	Median	±			
Alpha activity (pC/L)	6	7.7[a]	9.0	0.0[a]	0.43	2.2	*b*	1.3	*b*	5.1E–04
^{241}Am (pC/L)	6	0.28[a]	0.36	–0.035[a]	0.10	0.066	*b*	0.051	0.22	1.6E–05
Beta activity (pC/L)	6	11.0[a]	10	–4.3[a]	0.11	0.68	*b*	2.4	*b*	3.9E–04
^{237}Np (pC/L)	6	0.03[a]	0.059	–0.028[a]	0.056	0.003	*b*	0.009	0.01	–2.0E–07
^{238}Pu (pC/L)	6	0.11[a]	0.19	–0.056[a]	0.11	0.012	*b*	0.028	0.029	2.7E–06
$^{239/240}$Pu (pC/L)	6	0.08[a]	0.16	–0.017[a]	0.12	–0.006	*b*	0.02	–0.02	8.0E–07
^{228}Ra (pC/L)	6	2.2[a]	3.0	–11.0[a]	8.2	0.37	*b*	2.0	0.37	–1.7E–04
$^{89/90}$Sr activities (pC/L)	6	17.0	6.2	–0.74[a]	14	–0.075	*b*	2.8	*b*	4.9E–04
^{99}Tc (pC/L)	6	0.0[a]	0	–11.0[a]	1.3	–8.5	*b*	1.7	–0.0085	–1.1E–03
^{228}Th (pC/L)	6	0.32	0.23	0.11[a]	0.16	0.18	*b*	0.030	0.044	3.0E–05
^{230}Th (pC/L)	6	0.63	0.32	0.11[a]	0.15	0.34	*b*	0.072	0.11	5.2E–05
^{232}Th (pC/L)	6	0.057[a]	0.12	–0.38[a]	0.63	0.0	*b*	0.067	0.0	–7.7E–06
^{234}Th (pC/L)	6	1.0	0.46	0.18[a]	0.18	0.34	*b*	0.13	0.0033	7.5E–05
Tritium (pC/L)	6	200[a]	140	–96[a]	140	30	*b*	40	0.002	5.0E–03
^{234}U (pC/L)	6	2.1	0.72	0.25[a]	0.21	0.72	*b*	0.27	0.14	1.3E–04
^{235}U (pC/L)	6	0.12[a]	0.16	0.025[a]	0.20	0.043	*b*	0.014	0.0072	9.0E–06
^{236}U (pC/L)	6	0.032[a]	0.065	0.0[a]	0	0.0	*b*	0.0066	0.0	1.6E–06
^{238}U (pC/L)	6	1.0	0.46	0.18[a]	0.18	0.34	*b*	0.13	0.056	7.4E–05

[a]Provisional result
[b]Not applicable

Table 2.4. Y-12 Plant Discharge Point 302, Rogers Quarry (nonrad)
From: 1995/01/01 To: 1995/06/30

Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Avg		
Flow,[c] mgd	181	2.459	0.0000	0.4816	*d*	*d*
pH, standard units	28	8.1	7.3	*d*	8.5/6.5[e]	0
Temperature, °C	27	11.5	7.4	8.9	30.5	0
Arsenic	26	<0.04	<0.04	<0.04	0.0014	26[f]
Cadmium	26	<0.004	<0.004	<0.004	0.0039	26[f]
Chemical oxygen demand	26	<20.0	<20.0	<20.0	*d*	*d*
Chromium	26	<0.006	<0.006	<0.006	0.016[g]	0
Copper	26	<0.006	<0.006	<0.006	0.018	0
Iron	26	<0.06	<0.06	<0.06	*d*	*d*
Mercury	26	<0.0002	<0.0002	<0.0002	*d*	*d*
Nickel	26	<0.008	<0.008	<0.008	1.4	0
Oil and grease	26	2.6	<2.0	<2.0	15	0
Lead	26	<0.02	<0.02	<0.02	0.082	0
Settlable solids, mL/L	26	<0.1	<0.1	<0.1	0.5	0
Selenium	26	<0.1	<0.1	<0.1	0.02	26[f]
Sulfate	26	16.0	<10.0	<14.4	*d*	*d*
Total suspended solids	26	<5.0	<5.0	<5.0	50	0
Turbidity, NTUS	26	1.5	0.15	0.44	*d*	*d*
Zinc	26	<0.01	<0.01	<0.01	0.063	26[f]

[a]Units in mg/L unless otherwise indicated.
[b]NPDES permit limits and/or Tennessee water quality for fish and aquatic life.
[c]Flow during operations and/or discharging.
[d]Not applicable.
[e]Maximum value/minimum value.
[f]Reference is below the detection limit.
[g]Reference value is for hexavalent chromium only.

Table 2.5. Y-12 Plant Discharge Point 302, Rogers Quarry (rad)
From: 1995/01/01 To: 1995/06/30

Parameter	Number of samples	Concentration						Standard error	Percentage of DCG	Total curies
		Max	+/–	Min	+/–	Median	+/–			
Alpha activity (pCi/L)	6	7.8[a]	9.0	−3.0[a]	0.36	−0.27	*b*	1.9	*b*	9.5E−04
^{241}Am (pCi/L)	6	0.14[a]	0.55	−0.091[a]	0.13	0.060		0.042	0.20	2.5E−05
Beta activity (pCi/L)	6	11.0[a]	10	−7.3[a]	58	5.1	*b*	2.7	*b*	2.8E−03
^{237}Np (pCi/L)	6	0.15	0.18	−0.05[a]	0.097	0.0071	*b*	0.028	0.024	1.7E−05
^{238}Pu (pCi/L)	6	0.15	0.18	−0.66[a]	0.55	−0.010	*b*	0.12	−0.025	−5.7E−05
$^{239/240}$Pu (pCi/L)	6	0.016[a]	0.13	−0.28[a]	0.54	−0.0060	*b*	0.047	−0.020	−3.1E−05
^{228}Ra (pCi/L)	6	0.048[a]	0.12	−3.9[a]	4.2	−1.1	*b*	0.55	−1.1	−9.5E−04
$^{89/90}$Sr activities (pCi/L)	6	6.5[a]	6.1	−0.53[a]	3.2	3.1	*b*	1.4	*b*	2.0E−03
^{99}Tc (pCi/L)	6	8.0[a]	0.95	−10.0[a]	1.2	−1.5	*b*	3.0	−0.0015	−1.0E−05
^{228}Th (pCi/L)	6	0.22	0.20	−0.0074[a]	0.48	0.082	*b*	0.038	0.020	6.1E−05
^{230}Th (pCi/L)	6	0.6	0.44	0.021[a]	0.16	0.2	*b*	0.08	0.08	2.0E−04
^{232}Th (pCi/L)	6	0.088[a]	0.21	−0.49[a]	0.62	0.018	*b*	0.090	0.037	−3.4E−05
^{234}Th (pCi/L)	6	0.31	0.24	0.092[a]	0.12	0.19	*b*	0.038	0.0019	1.3E−04
Tritium (pCi/L)	6	510	510	−64[a]	130	56	*b*	85	0.0028	8.0E−02
^{234}U (pCi/L)	6	0.4	0.27	0.18	0.15	0.2	*b*	0.03	0.05	2.0E−04
^{235}U (pCi/L)	6	0.063[a]	0.13	−0.052[a]	0.074	−0.012	*b*	0.018	−0.0020	−1.4E−06
^{236}U (pCi/L)	6	0.045[a]	0.090	−0.019[a]	0.038	0.0075	*b*	0.0096	0.0015	8.1E−06
^{238}U (pCi/L)	6	0.31	0.24	0.092[a]	0.12	0.19	*b*	0.038	0.032	1.3E−04

[a]Provisional result.
[b]Not applicable.

Table 2.6. Y-12 Plant Discharge Point 304, Bear Creek at Highway 95 (nonrad)
From: 1995/01/01 To: 1995/06/30

Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Avg		
Conductivity, µmho/cm	26	369.6	125.05	260.1	*d*	*d*
Dissolved oxygen	26	10.9	7.3	9.4	*d*	*d*
Flow,[c] mgd	181	72.489	0.545	6.05	*d*	*d*
pH, standard units	27	8.0	7.1	*d*	6.5/8.5[e]	0
Biochemic oxygen demand	26	<5.0	<5.0	<5.0	*d*	*d*
Chemical oxygen demand	26	<20.0	<20.0	<20.0	*d*	*d*
Nitrate/nitrite as nitrogen	26	11.2	0.57	2.6	*d*	*d*
Oil and grease	26	3.1	<2.0	<2.0	15	0
Total dissolved solids	26	260.0	55.0	169	*d*	*d*
Total suspended solids	26	120.0	<5.0	<11	*d*	*d*
Turbidity, NTUS	26	50.0	1.1	6.6	*d*	*d*

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

Table 2.7. Y-12 Plant Discharge Point 304, Bear Creek at Highway 95 (nonrad)
From: 1995/07/01 To: 1995/12/31

Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Avg		
Flow,[c] mgd	184	51.0577	0.3102	2.131	*d*	*d*
Silver	6	<0.006	<0.006	<0.006	0.004	6[f]
Arsenic	6	<0.04	<0.04	<0.04	0.0014	6[f]
Beryllium	6	<0.0004	<0.0004	<0.0004	0.0013	0
Cadmium	6	<0.004	<0.004	<0.004	0.0039	6[f]
Chromium	6	<0.006	<0.006	<0.006	0.016(g)	0
Copper	6	<0.006	<0.006	<0.006	0.018	0
Mercury	6	<0.0002	<0.0002	<0.0002	0.00015	6[f]
Nickel	6	<0.008	<0.008	<0.008	1.4	0
Lead	6	<0.02	<0.02	<0.02	0.082	0
Phenols	6	0.0099	<0.005	<0.006	*d*	*d*
Antimony	4	<0.04	<0.04	<0.04	4.3	0
Selenium	6	<0.1	<0.1	<0.1	0.02	6[f]
Thallium	6	<0.03	<0.03	<0.03	*d*	*d*
Zinc	6	<0.01	<0.01	<0.01	0.0063	6[f]

[a]Units in mg/L unless otherwise indicated.
[b]Tennessee water quality for fish and aquatic life.
[c]Flow during operations and/or discharging.
[d]Not applicable.
[e]Maximum value/minimum value.
[f]Reference value is below the detection limit.
[g]This reference value is for hexavalent chromium only.

Table 2.8. Y-12 Plant Discharge Point 304, Bear Creek at Highway 95 (rad)
From: 1995/01/01 To: 1995/06/30

Parameter	Number of samples	Concentration						Standard error	Percentage of DCG	Total curies
		Max	+/–	Min	+/–	Median	+/–			
Alpha activity (pCi/L)	26	23.0	11	−0.39[a]	0.40	9.8	*b*	1.0	*b*	4.4E−02
^{241}Am (pCi/L)	26	2.8	0.71	−0.31[a]	0.60	0.028	*b*	0.11	0.093	5.7E−04
Beta activity (pCi/L)	26	27.0	11	−4.5[a]	0.10	12	*b*	1.7	*b*	4.4E−02
^{237}Np (pCi/L)	26	0.19	0.19	−0.1[a]	0.13	0.06	*b*	0.01	0.19	2.1E−04
^{238}Pu (pCi/L)	26	0.2[a]	0.35	−0.094[a]	0.094	−0.009	*b*	0.02	−0.02	6.0E−05
$^{239/240}$Pu (pCi/L)	26	0.52[a]	0.47	−0.17[a]	0.17	0.0	*b*	0.024	0.0	1.1E−04
^{228}Ra (pCi/L)	26	5	5	−15.0[a]	9.2	−0.48	*b*	−0.47	0.71	−9.4E−3
$^{89/90}$Sr activities (pCi/L)	26	7.5	6.0	−7.4[a]	4.8	−3.2	*b*	0.75	*b*	−8.8E−03
^{99}Tc (pCi/L)	26	270.0	32	−13.0[a]	1.5	7.5	*b*	14	0.0075	1.3E−01
^{228}Th (pCi/L)	26	1.1	0.58	−0.021[a]	0.15	0.16	*b*	0.051	0.039	1.0E−03
^{230}Th (pCi/L)	26	0.8	0.38	−0.02[a]	0.15	0.2	*b*	0.04	0.08	1.0E−03
^{232}Th (pCi/L)	26	0.14	0.14	−0.75[a]	0.79	0.062	*b*	0.033	0.12	7.3E−05
^{234}Th (pCi/L)	26	21.0	3.3	1.4	0.49	7.4	*b*	0.77	0.074	3.1E−02
Tritium (pCi/L)	26	120[a]	230	−120[a]	170	34	*b*	12	0.0017	1.30−01
^{234}U (pCi/L)	26	10.0	1.8	0.82	0.37	3.7	*b*	0.36	0.74	1.53−02
^{235}U (pCi/L)	26	0.56	0.33	0.011[a]	0.091	0.22	*b*	0.032	0.038	1.0E−05
^{236}U (pCi/L)	26	0.24	0.18	−0.021[a]	0.041	0.054	*b*	0.013	0.011	2.8E−04
^{238}U (pCi/L)	26	21.0	3.3	1.4	0.49	7.4	*b*	0.77	1.2	3.1E−02

[a]Provisional result.
[b]Not applicable.

Table 2.9. Y-12 Plant Discharge Point 304, Bear Creek at Highway 95 (rad)
From: 1995/07/01 To: 1995/12/31

Parameter	Number of samples	Concentration						Standard error	Percentage of DCG	Total curies
		Max	+/–	Min	+/–	Median	+/–			
Alpha activity (pCi/L)	6	27.0	12	–7.8[a]	0.34	7.4	[b]	5.4	[b]	1.6E–02
^{241}Am (pCi/L)	6	0.16	0.16	–0.13[a]	0.15	0.036	[b]	0.040	0.12	2.6E–05
Beta activity (pCi/L)	6	27.0	11	–1.0[a]	0.10	8.3	[b]	4.0	[b]	1.5E–02
^{237}Np (pCi/L)	6	0.18[a]	0.18	–0.029[a]	0.15	0.074	[b]	0.031	0.24	1.1E–04
^{238}Pu (pCi/L)	6	0.36	0.36	–0.069[a]	0.080	0.086	[b]	0.064	0.22	1.9E–04
$^{239/240}$Pu (pCi/L)	6	0.038[a]	0.076	–0.19[a]	0.22	–0.012	[b]	0.036	–0.038	–5.3E–05
^{228}Ra (pCi/L)	6	2.9	3.6	–4.2[a]	2.4	–2.0	[b]	1.1	–2.0	–1.9E–03
$^{89/90}$Sr activities (pCi/L)	6	11.0	5.8	–6.3[a]	8.8	–2.6	[b]	2.5	[b]	–8.2E–04
^{99}Tc (pCi/L)	6	40.0	18	–8.0[a]	12	8.5	[b]	8.1	0.0085	2.1E–02
^{228}Th (pCi/L)	6	0.78	0.47	0.046[a]	0.11	0.31	[b]	0.11	0.078	5.0E–04
^{230}Th (pCi/L)	6	0.53	0.28	0.19	0.17	0.40	[b]	0.047	0.13	5.7E–04
^{232}Th (pCi/L)	6	0.2	0.20	0.0[a]	0.0	0.090	[b]	0.030	0.18	1.2E–04
^{234}Th (pCi/L)	6	18.0	3.2	1.0	0.59	7.0	[b]	3.1	0.070	1.3E–02
Tritium (pCi/L)	6	240[a]	210	–46[a]	240	58	[b]	38	0.0029	1.1E–01
^{234}U (pCi/L)	6	9.1	1.9	1.1	0.46	3.7	[b]	1.5	0.74	6.7E–03
^{235}U (pCi/L)	6	0.55	0.36	0.092[a]	0.19	0.20	[b]	0.071	0.033	3.5E–04
^{236}U (pCi/L)	6	0.18	0.19	–0.033[a]	0.066	0.064	[b]	0.033	0.013	9.8E–05
^{238}U (pCi/L)	6	18.0	3.2	1.0	0.59	7.0	[b]	3.1	1.2	1.3E–02

[a]Provisional result.
[b]Not applicable.

Table 2.10. Y-12 Plant Discharge Point 501, Central Pollution Control Facility (nonrad)
From: 1995/01/01 To: 1995/06/30

Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Avg		
Flow,[c] gpd	16	13010.0	6685.0	9173.8	*d*	*d*
pH, standard units	16	7.8	6.2	*d*	9/6[e]	0
Temperature, °C	16	26.8	13.5	21.2	30.5	0
Silver	16	<0.03	<0.03	<0.03	0.43	0
Aluminum	16	0.6	<0.2	<0.3	*d*	*d*
Arsenic	16	<0.2	<0.2	<0.2	0.2	0
Beryllium	16	<0.002	<0.002	<0.002	*d*	*d*
Cadmium	16	<0.02	<0.02	<0.02	0.69	0
Chloride	16	490.0	16.0	110	*d*	*d*
Cyanide	16	<0.01	<0.01	<0.01	1.2	0
Color, ACU	16	125.0	<5.0	<17	*d*	*d*
Chromium	16	<0.03	<0.03	<0.03	2.77	0
Copper	16	<0.03	<0.03	<0.03	3.38	0
Iron	16	0.7	<0.3	<0.4	*d*	*d*
Fluoride	16	1.3	0.28	0.62	*d*	*d*
Mercury	16	<0.0002	<0.0002	<0.0002	*d*	*d*
Sodium	16	185.0	19.8	54.3	*d*	*d*
Nickel	16	0.17	<0.04	<0.09	3.98	0
Nitrate/nitrite as nitrogen	16	1.8	<0.1	<0.5	*d*	*d*
Oil and grease	16	9.0	<2.0	<2.9	52	0
Phosphorus	16	0.2	<0.1	<0.1	*d*	*d*
Lead	16	<0.1	<0.1	<0.1	0.69	0
Phenols	16	0.0099	<0.005	<0.005	*d*	*d*
Selenium	16	<0.5	<0.5	<0.5	0.5	0
Sulfate	16	1900.0	1200.0	1506.2	*d*	*d*
Surfactants	16	0.14	<0.05	<0.06	*d*	*d*
Thallium	16	<0.2	<0.2	<0.2	0.2	0
Total suspended solids	16	<5.0	<5.0	<5.0	60	0
Total toxic organics	16	0.0	0.0	0.0	2.13	0
Zinc	16	<0.05	<0.05	<0.05	2.61	0

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

Table 2.11. Y-12 Plant Discharge Point 501, Central Pollution Control Facility (nonrad)
From: 1995/07/01 To: 1995/12/31

Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Avg		
48 hour toxicity test with *Ceriodaphnia*	2	>100.0	>100.0	>100.0	*d*	*d*
48 hour toxicity test with fathead minnows	1	>100.0	>100.0	>100.0	*d*	*d*
Flow,[c] mgd	8	0.01	0.0054	0.0075	*d*	*d*
pH, standard units	8	8.1	6.2	*d*	9/6[e]	0
Temperature, °C	8	28.8	11.7	23.1	*d*	*d*
Silver	8	<0.03	<0.03	<0.03	0.05	0
Boron	8	38.8	0.45	14	*d*	*d*
Beryllium	8	<0.002	<0.002	<0.002	*d*	*d*
Calcium	8	659.0	22.1	354	*d*	*d*
Cadmium	8	<0.02	<0.02	<0.02	0.15	0
Chloride	8	260.0	2.6	110	*d*	*d*
Cyanide	8	<0.01	<0.01	<0.01	1.2	0
Chromium	8	<0.03	<0.03	<0.03	1	0
Copper	8	<0.03	<0.03	<0.03	1	0
Iron	8	3.9	0.5	2	*d*	*d*
Fluoride	8	2.4	0.2	0.7	*d*	*d*
Mercury	8	<0.0002	<0.0002	<0.0002	*d*	*d*
Potassium	8	51.0	<3.0	<28	*d*	*d*
Lithium	8	3.94	<0.08	<2	*d*	*d*
Magnesium	8	10.8	<0.2	<5	*d*	*d*
Sodium	8	521.0	42.7	211	*d*	*d*
Nickel	8	0.39	0.05	0.2	3.98	0
Nitrate/nitrite as nitrogen	8	100.0	<0.1	<20	100	0
Oil and grease	8	<2.0	<2.0	<2.0	15	0
Lead	8	<0.1	<0.1	<0.1	0.2	0
PCB	1	<0.0005	<0.0005	<0.0005	0.001	0
Phosphate as phosphorus	8	7.8	0.2	2	*d*	*d*
Sulfate	8	1900.0	8.4	1100	*d*	*d*
Surfactants	1	<0.05	<0.05	<0.05	*d*	*d*
Total suspended solids	8	8.0	<5.0	<5.8	40	0
Total toxic organics	1	0.0	0.0	0.0	2.13	0
Zinc	8	<0.05	<0.05	<0.05	2	0

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

Table 2.12. Y-12 Plant Discharge Point 501, Central Pollution Control Facility (rad)
From: 1995/01/01 To: 1995/06/30

Parameter	Number of samples	Concentration						Standard error	Percentage of DCG	Total curies
		Max	+/–	Min	+/–	Median	+/–			
Alpha activity (pCi/L)	14	7.2[a]	13	−17.0[a]	0.93	−2.3	[b]	1.7	[b]	−2.0E−05
^{241}Am (pCi/L)	14	1.3	0.57	−0.22[a]	0.18	0.034	[b]	0.12	0.11	1.3E−06
Beta activity (pCi/L)	14	100.0	23	−15.0[a]	0.22	35.0	[b]	9.99	[b]	2.62E−04
^{60}Co (pCi/L)	6	5.9[a]	2.5	0.85	2.8	2.8	[b]	0.83	0.056	2.0E−05
^{137}Cs (pCi/L)	6	7.1	5.4	−2.2	3.4	1.6	[b]	1.3	0.053	1.3E−05
^{237}Np (pCi/L)	14	0.091	0.11	−0.069[a]	0.080	0.0077	[b]	0.012	0.026	1.2E−07
^{238}Pu (pCi/L)	14	0.26[a]	0.35	−0.08[a]	0.093	0.05	[b]	0.02	0.1	4.0E−07
$^{239/240}$Pu (pCi/L)	14	0.13[a]	0.14	−0.28[a]	0.32	−0.011	[b]	0.027	−0.036	−1.2E−07
^{228}Ra (pCi/L)	14	10.0	3.0	−2.4[a]	13	0.56	[b]	0.97	0.56	9.5E−06
$^{89/90}$Sr activities (pCi/L)	14	19.0	5.5	−3.7[a]	4.7	3.8	[b]	1.7	[b]	2.8E−05
^{99}Tc (pCi/L)	14	250.0	29	−12.0[a]	1.4	−4.00	[b]	23.9	−0.00400	1.87E−04
^{228}Th (pCi/L)	14	0.78	0.50	0.02[a]	0.16	0.2	[b]	0.05	0.05	1.0E−06
^{230}Th (pCi/L)	14	0.76	0.36	0.1[a]	0.17	0.30	[b]	0.060	0.10	2.4E−06
^{232}Th (pCi/L)	14	0.23	0.27	−0.054[a]	0.077	0.051	[b]	0.020	0.10	3.3E−07
^{234}Th (pCi/L)	14	1.3	0.50	−0.014[a]	0.098	0.28	[b]	0.13	0.0027	3.0E−06
Tritium (pCi/L)	14	350[a]	150	−110[a]	120	61	[b]	35	0.0030	4.2E−04
^{234}U (pCi/L)	14	1.1	0.44	0.023[a]	0.13	0.20	[b]	0.10	0.040	2.5E−06
^{235}U (pCi/L)	14	0.099[a]	0.14	−0.11[a]	0.17	0.0075	[b]	0.013	0.0012	1.1E−07
^{236}U (pCi/L)	14	0.08[a]	0.11	0.0[a]	0	0.01	[b]	0.009	0.003	2.0E−07
^{238}U (pCi/L)	14	1.3	0.50	−0.014[a]	0.098	0.28	[b]	0.13	0.046	3.0E−06

[a]Provisional result.
[b]Not applicable.

Table 2.13. Y-12 Plant Discharge Point 501, Central Pollution Control Facility (rad)
From: 1995/07/01 To: 1995/12/31

Parameter	Number of samples	Concentration						Standard error	Percentage of DCG	Total curies
		Max	+/–	Min	+/–	Median	+/–			
Alpha activity (pCi/L)	7	4.8[a]	8.5	−13.0[a]	1.1	−2.6[a]	0.68	2.1	*b*	−1.8E−05
^{241}Am (pCi/L)	7	0.2[a]	0.49	−0.072[a]	0.084	0.007[a]	0.14	0.03	0.02	2.0E−07
Beta activity (pCi/L)	7	47.0	28	2.3[a]	11	15.0[a]	14	6.5	*b*	1.2E−04
Gross gamma (pCi/L)	7	290.0	69	9.0[a]	61	47.0[a]	30	36	*b*	4.3E−04
^{237}Np (pCi/L)	7	0.14[a]	0.20	−0.24[a]	0.33	0.0[a]	0	0.051	0.0	1.5E−09
^{238}Pu (pCi/L)	7	0.16	0.18	−0.089[a]	0.15	−0.029[a]	0.15	0.031	−0.072	−4.5E−08
$^{239/240}$Pu (pCi/L)	7	0.053[a]	0.11	−0.14[a]	0.20	−0.043[a]	0.12	0.025	−0.14	−1.5E−07
^{228}Ra (pCi/L)	7	4.8	3.0	−2.7[a]	4.9	−1.9[a]	8.4	1.0	−1.9	−2.1E−06
$^{89/90}$Sr activities (pCi/L)	7	9.5	5.3	−4.2[a]	5.3	1.4[a]	1.4	2.0	*b*	8.6E−06
^{99}Tc (pCi/L)	7	24.0	70	−8.0[a]	9.3	1.0[a]	8.4	3.9	0.0010	1.3E−05
^{228}Th (pCi/L)	7	0.77[a]	0.85	0.19[a]	0.20	0.23[a]	0.20	0.088	0.058	1.9E−06
^{230}Th (pCi/L)	7	2.1	1.2	0.22	0.18	0.48	0.26	0.24	0.16	3.6E−06
^{232}Th (pCi/L)	7	0.19[a]	0.20	−0.045[a]	0.063	0.011[a]	0.087	0.031	0.022	2.6E−07
^{234}Th (pCi/L)	7	4.2	0.09	−0.05[a]	0.15	0.3	0.24	0.6	0.003	4.0E−06
Tritium (pCi/L)	7	620	160	−130[a]	130	−35[a]	230	98	−0.0018	2.1E−04
^{234}U (pCi/L)	7	2.8	0.70	0.11	0.13	0.23[a]	0.22	0.36	0.046	3.6E−06
^{235}U (pCi/L)	7	0.12	0.13	0.0[a]	0	0.0[a]	0	0.018	0.0	1.3E−07
^{236}U (pCi/L)	7	0.15	0.14	0.0[a]	0	0.0[a]	0	0.021	0.0	1.9E−07
^{238}U (pCi/L)	7	4.2	0.90	0.056[a]	0.13	0.37	0.23	0.55	0.062	5.0E−06

[a]Provisional result.
[b]Not applicable.

Table 2.14. Y-12 Plant Discharge Point 502, West End Treatment Facility (nonrad)
From: 1995/07/01 To: 1995/12/31

Parameter	Number of sample	Concentration[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Avg		
48 hour toxicity test with *Ceriodaphnia*	2	42.4	24.2	33.3	*d*	*d*
48 hour toxicity test with fathead minnows	1	82.9	82.9	82.9	*d*	*d*
Flow,[c] mgd	46	0.035	0.0	0.016	*d*	*d*
pH, standard units	39	8.7	6.2	*d*	9/6[e]	0
Temperature, °C	39	29.5	10.7	22.0	*d*	*d*
Silver	39	<0.03	<0.03	<0.03	0.05	0
Arsenic	39	<0.2	<0.2	<0.2	*d*	*d*
Boron	39	9.5	1.73	6.4	*d*	*d*
Beryllium	39	<0.002	<0.002	<0.002	*d*	*d*
Calcium	39	43.3	16.3	25.6	*d*	*d*
Cadmium	39	<0.02	<0.02	<0.02	0.15	0
Chloride	39	850.0	350.0	609.5	*d*	*d*
Cyanide	39	<0.01	<0.01	<0.01	1.2	0
Chromium	39	<0.03	<0.03	<0.03	1	0
Copper	39	0.36	<0.03	<0.09	1	0
Iron	39	1.12	<0.3	<0.3	*d*	*d*
Fluoride	16	20.0	0.51	10	*d*	*d*
Mercury	39	<0.002	<0.0002	<0.0002	*d*	*d*
Potassium	39	139.0	90.0	121	*d*	*d*
Lithium	39	8.53	2.47	4.37	*d*	*d*
Magnesium	39	16.6	11.9	14.3	*d*	*d*
Manganese	39	0.156	<0.009	<0.04	*d*	*d*
Sodium	39	4590.0	2690.0	3462.6	*d*	*d*
Nickel	39	1.68	<0.04	<0.4	3.98	0
Nitrate/nitrite as nitrogen	39	24.0	0.13	4.7	150	0
Oil and grease	39	8.4	<2.0	<2.2	15	0
Lead	39	<0.05	<0.05	<0.05	0.2	0
PCB	6	<0.0005	<0.0005	<0.0005	0.001	0
Phosphate as phosphorus	39	120.0	15.0	70.1	*d*	*d*
Selenium	39	<0.5	<0.5	<0.5	*d*	*d*
Sulfate	39	8800.0	5000.0	6928.2	*d*	*d*
Total suspended solids	39	25.0	<5.0	<10	40	0
Sum of TTO analysis	6	0.0	0.0	0.0	2.13	0
Zinc	39	0.99	<0.05	<0.3	2	0

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

Table 2.15. Y-12 Plant Discharge Point 502, West End Treatment Facility (rad)
From: 1995/07/01 To: 1995/12/31

Parameter	Number of samples	Concentration						Standard error	Percentage of DCG	Total curies
		Max	+/-	Min	+/-	Median	+/-			
Alpha activity (pCi/L)	16	170[a]	230	−130[a]	4.2	26.5	*b*	16.85	*b*	2.20E−04
^{241}Am (pCi/L)	16	0.19[a]	0.19	−0.088[a]	0.089	0.052	*b*	0.022	0.17	6.0E−07
Beta activity (pCi/L)	16	420.0	260	41.0[a]	110	95.5	*b*	24.2	*b*	1.5 E−03
Gross gamma (pCi/L)	16	210.0	38	16.0[a]	30	60.5	*b*	10.6	*b*	8.14E−04
^{237}Np (pCi/L)	16	0.24[a]	0.31	−0.12[a]	0.17	0.0425	*b*	0.024	0.14	6.6E−07
^{238}Pu (pCi/L)	16	0.63	0.36	−0.19[a]	0.27	0.003	*b*	0.046	0.0075	4.4E−07
$^{239/240}$Pu (pCi/L)	16	0.17	0.19	−0.19[a]	0.27	−0.0075	*b*	0.018	−0.025	−1.7E−07
^{228}Ra (pCi/L)	16	1.3[a]	2.9	−3.8[a]	2.7	−0.71	*b*	0.36	−0.71	−1.2E−05
$^{89/90}$Sr activities (pCi/L)	16	5.0[a]	7.1	−11.0[a]	2.5	−0.595	*b*	1.1	*b*	−3.8E−06
^{99}Tc (pCi/L)	16	40.0	8.0	−7.0[a]	7.6	2.0	*b*	2.7	0.0020	4.5E−05
^{228}Th (pCi/L)	16	0.7	0.36	−0.11[a]	0.15	0.28	*b*	0.05	0.07	3.4E−6
^{230}Th (pCi/L)	16	0.68	0.32	0.12[a]	0.21	0.365	*b*	0.050	0.12	4.2E−06
^{232}Th (pCi/L)	16	0.1	0.12	−0.042[a]	0.084	0.0275	*b*	0.01	0.06	3.0E−7
^{234}Th (pCi/L)	16	3.2	0.95	0.31	0.26	1.3	*b*	0.22	0.013	1.6E−05
Tritium (pCi/L)	16	1900	260	200[a]	140	475	*b*	100	0.02	8.0E−03
^{234}U (pCi/L)	16	2.3	0.78	0.098[a]	0.24	0.885	*b*	0.16	0.18	1.1E−05
^{235}U (pCi/L)	16	0.25	0.25	−0.078[a]	0.11	0.052	*b*	0.020	0.0087	6.1E−07
^{236}U (pCi/L)	16	0.3	0.25	0.0[a]	0	0.0295	*b*	0.019	0.0059	5.5E−07
^{238}U (pCi/L)	16	3.2	0.95	0.31	0.26	1.3	*b*	0.22	0.22	1.6E−05

[a]Provisional result.
[b]Not applicable.

Table 2.16. Y-12 Plant Discharge Point 504, Plating Rinsewater Treatment Facility (nonrad)
From: 1995/01/01 To: 1995/06/30

Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Avg		
Flow,[c] gpd	4	12696.0	7425.0	10138	*d*	*d*
pH, standard units	4	8.0	7.1	*d*	9/6[e]	0
Temperature, °C	4	23.6	16.6	20.8	30.5	0
Silver	4	<0.03	<0.03	<0.03	0.43	0
Aluminum	4	0.5	<0.2	<0.3	*d*	*d*
Beryllium	4	<0.002	<0.002	<0.002	*d*	*d*
Cadmium	4	<0.02	<0.02	<0.02	0.69	0
Chloride	4	130.0	9.0	44	*d*	*d*
Cyanide	4	0.052	<0.01	<0.02	1.2	0
Chromium	4	<0.03	<0.03	<0.03	1.71	0
Copper	4	<0.03	<0.03	<0.03	2.07	0
Iron	4	1.5	0.8	1.2	*d*	*d*
Fluoride	4	1.2	0.5	0.7	*d*	*d*
Mercury	4	<0.0002	<0.0002	<0.0002	*d*	*d*
Potassium	4	15.0	5.0	9.8	*d*	*d*
Sodium	4	287.0	28.1	102	*d*	*d*
Nickel	4	0.39	0.13	0.27	3.98	0
Nitrate/nitrite as nitrogen	4	0.57	<0.1	<0.2	*d*	*d*
Oil and grease	4	5.7	<2.0	<2.9	52	0
Phosphorus	4	0.11	<0.1	<0.1	*d*	*d*
Lead	4	<0.1	<0.1	<0.1	0.69	0
Sulfate	4	950.0	150.0	430.0	*d*	*d*
Total suspended solids	4	<5.0	<5.0	<5.0	60	0
Total toxic organics	4	0.0	0.0	0.0	2.13	0
Zinc	4	<0.05	<0.05	<0.05	2.61	0

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

Table 2.17. Y-12 Plant Discharge Point 504, Plating Rinsewater Treatment Facility (rad)
From: 1995/01/01 To: 1995/06/30

Parameter	Number of samples	Concentration						Standard error	Percentage of DCG	Total curies
		Max	+/–	Min	+/–	Median	+/–			
Alpha activity (pCi/L)	4	6.4[a]	11	0.0[a]	0.59	2.0	[b]	1.38	[b]	1.8E–05
^{241}Am (pCi/L)	4	0.31	0.36	0.0088[a]	0.070	0.18	[b]	0.077	0.60	1.2E–06
Beta activity (pCi/L)	4	55.0	17	17.0[a]	13	32.5	[b]	8.92	[b]	2.4E–04
^{237}Np (pCi/L)	4	0.038[a]	0.092	–0.019[a]	0.038	0.0098	[b]	0.012	0.033	6.7E–08
^{238}Pu (pCi/L)	4	0.18[a]	0.44	–0.085[a]	0.098	0.044	[b]	0.060	0.11	3.2E–07
$^{239/240}$Pu (pCi/L)	4	0.042[a]	0.34	–0.0046[a]	0.21	0.014	[b]	0.011	0.047	1.1E–07
^{228}Ra (pCi/L)	4	2.6[a]	2.0	–2.7[a]	6.1	0.20	[b]	1.3	0.20	5.2E–07
$^{89/90}$Sr activities (pCi/L)	4	4.3[a]	4.4	–1.7[a]	72	0.88	[b]	1.2	[b]	7.6E–06
^{99}Tc (pCi/L)	4	–4.0[a]	9.0	–13.0[a]	1.5	–4.5	[b]	2.2	–0.0045	–4.5E–05
^{228}Th (pCi/L)	4	0.31[a]	0.40	–0.0031[a]	0.14	0.15	[b]	0.064	0.038	1.1E–06
^{230}Th (pCi/L)	4	0.93	0.61	0.078[a]	0.13	0.28	[b]	0.19	0.095	2.7E–06
^{232}Th (pCi/L)	4	0.28	0.32	–0.026[a]	0.052	0.033	[b]	0.068	0.066	5.6E–07
^{234}Th (pCi/L)	4	1.4	0.42	0.062[a]	0.15	0.48	[b]	0.30	0.0049	4.2E–06
Tritium (pCi/L)	4	630[a]	190	–120[a]	150	–37	[b]	44	–0.0016	–2.3E–04
^{234}U (pCi/L)	4	1.6	0.46	0.073[a]	0.18	0.28	[b]	0.36	0.057	3.9E–06
^{235}U (pCi/L)	4	0.07[a]	0.14	–0.022[a]	0.045	0.02	[b]	0.02	0.003	1.0E–7
^{236}U (pCi/L)	4	0.026[a]	0.052	–0.066[a]	0.095	0.0	[b]	0.020	0.0	–7.0E–08
^{238}U (pCi/L)	4	1.4	0.42	0.062[a]	0.15	0.48	[b]	0.30	0.081	4.2E–06

[a]Provisional result.
[b]Not applicable.

Table 2.18. Y-12 Plant Discharge Point 512, Groundwater Treatment Facility (rad)
From: 1995/01/01 To: 1995/06/30

Parameter	Number of samples	Concentration						Standard error	Percentage of DCG	Total curies
		Max	+/-	Min	+/-	Median	+/-			
Alpha activity (pCi/L)	50	17.0	9.6	-8.2[a]	0.35	6.45	[b]	0.7818	[b]	6.87E-05
^{241}Am (pCi/L)	50	1.1	0.41	-0.26[a]	0.31	0.088	[b]	0.0324	0.2933	1.48E-06
Beta activity (pCi/L)	50	21.0	13	-7.4[a]	0.11	7.8	[b]	1.0519	[b]	8.84E-05
^{237}Np (pCi/L)	50	3.0	3.0	-0.084[a]	0.084	0.027	[b]	0.06	0.09	1.03E-06
^{238}Pu (pCi/L)	50	0.42[a]	0.73	-0.13[a]	0.12	0.0124	[b]	0.0144	0.031	3.14E-07
$^{239/240}$Pu (pCi/L)	50	0.25	0.18	-0.1[a]	0.12	0.0	[b]	0.0096	0.0	2.72E-07
^{228}Ra (pCi/L)	50	8.9	6.1	-16.0[a]	72	-0.37	[b]	0.5464	-0.37	-3.92E-06
^{99}Tc (pCi/L)	50	8.0[a]	0.97	-22.0[a]	2.6	-2.0	[b]	0.9203	-0.002	-4.57E-05
^{228}Th (pCi/L)	50	1.6	0.49	-0.11[a]	0.17	0.14	[b]	0.0402	0.035	2.65E-06
^{230}Th (pCi/L)	50	1.3	0.79	-0.15[a]	0.40	0.31	[b]	0.031	0.1033	3.94E-06
^{232}Th (pCi/L)	50	0.86	0.73	-0.2[a]	0.58	0.029	[b]	0.0205	0.058	7.32E-07
^{234}Th (pCi/L)	50	17.0	3.1	2.2	0.59	5.7	[b]	0.4587	0.057	8.03E-05
Tritium (pCi/L)	50	2300.0	320	-92.0[a]	150	765.0	[b]	102.5322	0.0382	1.13E-02
^{234}U (pCi/L)	50	4.5	1.2	0.54	0.27	1.7	[b]	0.1368	0.34	2.39E-05
^{235}U (pCi/L)	50	0.4	0.29	-0.032[a]	0.064	0.1	[b]	0.0142	0.0167	1.59E-06
^{236}U (pCi/L)	50	0.24	0.22	-0.034[a]	0.069	0.041	[b]	0.0071	0.0082	5.19E-07
^{238}U (pCi/L)	50	17.0	3.1	2.2	0.59	5.7	[b]	0.4617	0.95	8.07E-05

[a]Provisional result.
[b]Not applicable.

Table 2.19. Y-12 Plant Discharge Point 517, Unnamed Tributary to the Clinch River (rad)
From: 1995/07/01 To: 1995/12/31

Parameter	Number of samples	Concentration						Standard error	Percentage of DCG	Total curies
		Max	+/–	Min	+/–	Median	+/–			
Alpha activity (pCi/L)	6	11.0[a]	8.4	–0.8[a]	0.43	1.0	*b*	1.8	*b*	2.8E–04
^{241}Am (pCi/L)	6	0.055[a]	0.20	–0.036[a]	0.19	0.030	*b*	0.016	0.10	2.2E–06
Beta activity (pCi/L)	6	5.2[a]	9.7	–6.2[a]	0.10	3.2	*b*	2.1	*b*	5.6E–05
^{237}Np (pCi/L)	6	0.047[a]	0.11	–0.039[a]	0.078	0.012	*b*	0.012	0.038	1.5E–06
^{238}Pu (pCi/L)	6	0.19[a]	0.23	–0.013[a]	0.092	0.018	*b*	0.031	0.046	4.8E–06
$^{239/240}$Pu (pCi/L)	6	0.095[a]	0.13	–0.024[a]	0.048	0.014	*b*	0.017	0.048	2.7E–06
^{228}Ra (pCi/L)	6	–0.42[a]	2.6	–28.0[a]	32	–4.5	*b*	4.2	–4.5	–9.8E–04
$^{89/90}$Sr activities (pCi/L)	6	0.17[a]	0.44	–5.4[a]	1.4	–3.0	*b*	0.96	*b*	–3.4E–04
^{99}Tc (pCi/L)	6	6.0[a]	8.3	–5.0[a]	7.4	3.5	*b*	1.7	0.0035	3.1E–04
^{228}Th (pCi/L)	6	1.0	0.47	0.031[a]	0.18	0.22	*b*	0.14	0.054	4.0E–05
^{230}Th (pCi/L)	6	1.0	0.42	0.16[a]	0.22	0.34	*b*	0.12	0.11	5.5E–05
^{232}Th (pCi/L)	6	0.17	0.18	0.0[a]	0.0	0.090	*b*	0.025	0.18	1.2E–05
^{234}Th (pCi/L)	6	1.0	0.43	0.65	0.36	0.74	*b*	0.057	0.0074	9.7E–05
Tritium (pCi/L)	6	–11[a]	230	–97[a]	140	–28	*b*	14	–0.0014	–5.2E–03
^{234}U (pCi/L)	6	2.5	0.63	0.87	0.48	1.6	*b*	0.26	0.31	2.0E–04
^{235}U (pCi/L)	6	0.18[a]	0.22	0.0[a]	0	0.064	*b*	0.028	0.011	1.1E–05
^{236}U (pCi/L)	6	0.093[a]	0.13	–0.027[a]	0.053	0.0	*b*	0.019	0.0	1.9E–06
^{238}U (pCi/L)	6	1.0	0.43	0.65	0.36	0.74	*b*	0.057	0.12	9.7E–05

[a]Provisional result.
[b]Not applicable.

Table 2.20. Y-12 Plant Discharge Point 94221, SWHISS Station 9422-1, Station 17 (rad)
From: 1995/01/01 To: 1995/12/31

Parameter	Number of samples	Concentration						Standard error	Percentage of DCG	Total curies
		Max	+/–	Min	+/–	Median	+/–			
Alpha activity (pCi/L)	52	27.0	12	−4.0[a]	0.38	12	*b*	1.0	*b*	6.3E–02
^{241}Am (pCi/L)	52	0.77	0.56	−0.16[a]	0.27	0.058	*b*	0.021	0.19	4.9E–04
Beta activity (pCi/L)	52	31.0	12	−5.6[a]	0.09	5.9	*b*	1.2	*b*	5.2E–02
^{137}Cs (pCi/L)	25	8.9	3	−0.64[a]	1	1.9[a]	0	0.48	0.063	1.5E–02
^{60}Co (pCi/L)	25	10	5	−4.4[a]	4	1.7[a]	3	0.70	0.034	1.1E–02
^{237}Np (pCi/L)	52	1.4	0.57	−0.097[a]	0.097	0.028	*b*	0.027	0.093	3.1E–04
^{238}Pu (pCi/L)	52	0.59	0.26	−0.093[a]	0.093	0.0098	*b*	0.014	0.024	1.5E–04
$^{239/240}$Pu (pCi/L)	52	1.7	0.64	−0.18[a]	0.16	0.009	*b*	0.033	0.030	2.8E–04
^{228}Ra (pCi/L)	52	11.0	18	−7.1[a]	7.4	−0.098	*b*	0.40	−0.098	−4.3E–04
$^{89/90}$Sr activities (pCi/L)	52	8.0[a]	11	−18.0[a]	110	−2.55	*b*	0.61	*b*	−1.5E–02
^{99}Tc (pCi/L)	52	510.0	54	−27.0[a]	3.2	8.0	*b*	9.8	0.0080	9.7E–02
^{228}Th (pCi/L)	52	1.0	0.41	−0.032[a]	0.16	0.17	*b*	0.034	0.042	1.5E–03
^{230}Th (pCi/L)	52	1.1	0.59	0.021[a]	0.17	0.35	*b*	0.029	0.12	2.2E–03
^{232}Th (pCi/L)	52	0.23	0.27	−0.049[a]	0.098	0.047	*b*	0.0098	0.094	3.4E–04
^{234}Th (pCi/L)	52	24.0	3.8	2.2	0.76	6.65	*b*	0.64	0.066	4.6E–02
Tritium (pCi/L)	52	450	150	−21[a]	240	130	*b*	15	0.0065	7.8E–01
^{234}U (pCi/L)	52	7.3	1.4	1.7	0.60	3.45	*b*	0.18	0.69	2.2E–02
^{235}U (pCi/L)	52	0.59	0.34	0.0[a]	0	0.23	*b*	0.019	0.038	1.4E–03
^{238}U (pCi/L)	52	24.0	3.8	2.2	0.76	6.65	*b*	0.64	1.1	4.6E–02

[a]Provisional result.
[b]Not applicable.

Table 2.21. Y-12 Plant Discharge Point 94221, SWHISS Station 9422-1 or Station 17 (nonrad)
From: 1995/01/01 To: 1995/12/31

Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Avg		
Flow,[c] mgd	365	47.8262	2.1328	4.1533	*d*	*d*
1,2-Dichloroethane	243	<0.01	<0.01	<0.01	0.99	0
1,1-Dichloroethene	243	<0.01	<0.01	<0.01	0.032	0
1,1,2-Trichloroethane	243	<0.01	<0.01	<0.01	0.42	0
Silver	246	<0.02	<0.006	<0.006	0.004	246[e]
Arsenic	246	<0.04	<0.04	<0.04	0.0014	246[e]
Beryllium	246	<0.0004	<0.0004	<0.0004	0.0013	0
Benzene	243	<0.01	<0.01	<0.01	0.71	0
Bromoform	243	<0.01	<0.01	<0.01	3.6	0
Carbon tetrachloride	243	<0.01	0.001	<0.01	0.044	0
Cadmium	246	<0.004	<0.004	<0.004	0.0039	246[e]
cis-1,3-Dichloropropene	243	<0.01	<0.01	<0.01	1.7	0
Chloroform	243	<0.01	0.001	<0.01	4.7	0
Chromium	246	0.013	<0.006	<0.006	0.016[f]	0
Copper	246	0.031	<0.006	<0.008	0.018	11
Dibromochloromethane	243	<0.01	<0.01	<0.01	0.34	0
Ethylbenzene	243	<0.01	<0.01	<0.01	29	0
Mercury	493	0.0100	0.0001	0.001	0.00015	492
Methylene chloride	243	<0.01	0.001	<0.006	16	0
Nickel	246	0.013	<0.008	<0.008	1.4	0
Lead	246	<0.02	<0.02	<0.02	0.082	0
Tetrachloroethene	243	<0.01	0.001	<0.008	0.0885	0
Antimony	79	<0.04	<0.04	<0.04	4.3	0
Selenium	246	<0.1	<0.1	<0.1	0.02	246[e]
Trichloroethene	242	<0.01	<0.01	<0.01	0.810	0
trans-1,3-Dichloropropene	243	<0.01	<0.01	<0.01	1.7	0
Thallium	246	<0.03	<0.03	<0.03	*d*	*d*
Toluene	243	<0.01	<0.01	<0.01	200	0
Zinc	246	0.33	0.03	0.07	0.0063	246[e]

[a]Units in mg/L unless otherwise indicated.
[b]Tennessee water quality for fish and aquatic life.
[c]Flow during operations and/or discharging.
[d]Not applicable.
[e]The references value is below the detection limit.
[f]The reference value is for hexavalent chromium only.

Table 2.22. Y-12 Plant Discharge Point 11.97, Upper Bear Creek near km 11.97 (nonrad)
From: 1995/01/01 To: 1995/12/31

Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Avg		
Flow,[c] mgd	365	4.1363	0.0	0.25	*d*	*d*
Silver	49	<0.03	<0.03	<0.03	0.004	49[f]
Arsenic	49	<0.2	<0.2	<0.2	0.0014	49[f]
Beryllium	49	<0.002	<0.002	<0.002	0.0013	49[f]
Cadmium	49	<0.02	<0.02	<0.02	0.0039	49[f]
Cyanide	49	<0.01	<0.01	<0.01	*g*	0
Chromium	49	<0.03	<0.03	<0.03	0.016[g]	49[f]
Copper	49	<0.03	<0.03	<0.03	0.018	49[f]
Mercury	49	<0.0002	<0.0002	<0.0002	0.00015	49[f]
Nickel	49	0.08	<0.04	<0.04	1.4	0
Lead	49	<0.1	<0.1	<0.1	0.082	49[f]
Phenols	49	0.013	<0.005	<0.006	*d*	*d*
Antimony	16	<0.2	<0.2	<0.2	4.3	0
Selenium	49	<0.5	<0.5	<0.5	0.02	49[f]
Thallium	49	<0.2	<0.2	<0.2	*d*	*d*
Zinc	49	<0.05	<0.05	<0.05	0.0063	49[f]

[a]Units in mg/L unless otherwise indicated.
[b]Tennesse water quality for fish and aquatic life.
[c]Flow during operations and/or discharging.
[d]Not applicable.
[e]Maximum value/minimum value.
[f]Reference value is below the detection limit.
[g]Reference value is for hexavalent chromium only.

Table 2.23. Y-12 Plant Discharge Point 11.97, Upper Bear Creek near km 11.97 (rad)
From: 1995/01/01 To: 1995/12/31

Parameter	Number of samples	Concentration						Standard error	Percentage of DCG	Total curies
		Max	+/–	Min	+/–	Median	+/–			
Alpha activity (pCi/L)	49	250.0	41	0.0[a]	0.44	67	19	6.1	*b*	2.6E–02
^{241}Am (pCi/L)	49	0.54	0.32	–0.23[a]	0.21	0.040[a]	0.096	0.023	0.13	2.5E–05
Beta activity (pCi/L)	49	470.0	66	13.0[a]	12	210	34	15	*b*	7.2E–02
^{237}Np (pCi/L)	49	2.8	0.59	0.095[a]	0.16	1.1	0.37	0.084	3.7	3.9E–04
^{238}Pu (pCi/L)	49	0.31	0.23	–0.14[a]	0.12	0.029[a]	0.16	0.012	0.072	1.2E–05
^{228}Ra (pCi/L)	23	3.5[a]	2.6	–7.8[a]	7.2	–1.5[a]	12	0.53	–1.5	–5.0E–04
$^{89/90}$Sr activities (pCi/L)	23	5.4[a]	1.6	–12.0[a]	2.4	0.84[a]	1.3	0.80	*b*	–2.6E–05
^{99}Tc pC/L)	49	970.0	120	–4.0[a]	6.6	320	38	31	0.32	1.2E–01
^{228}Th (pCi/L)	23	1.0	0.44	–0.12[a]	0.25	0.25[a]	0.26	0.046	0.062	9.8E–05
^{230}Th (pCi/L)	23	0.88	0.39	0.16	0.19	0.41	0.29	0.046	0.14	1.6E–04
^{232}Th (pCi/L)	23	0.24[a]	0.21	0.0[a]	0.0	0.059[a]	0.12	0.012	0.12	2.2E–05
^{234}Th (pCi/L)	23	95.0	15	1.5	0.55	68	10	5.2	0.68	2.2E–02
Tritium (pCi/L)	23	510	150	–98[a]	140	41[a]	230	28	0.0020	2.2E–02
^{234}U (pCi/L)	23	48.0	7.7	2.1	0.67	35	5.7	2.6	7.0	1.1E–02
^{235}U (pCi/L)	23	3.1	0.91	0.21	0.21	1.7	0.64	0.16	0.28	6.0E–04
^{236}U (pCi/L)	23	1.5	0.56	0.013[a]	0.10	0.80	0.44	0.079	0.16	2.7E–04
^{238}U (pCi/L)	23	95.0	15	1.5	0.55	68	10	5.2	11	2.2E–02

[a]Provisional result.
[b]Not applicable.

Table 2.24. Surface water analytical results of polychlorinated biphenyls monitoring plan for the Oak Ridge Y-12 Plant, CY 1995

Site number	Location	Date sampled	PCB concentration (mg/L)
PCB-1	Outfall 301, Kerr Hollow Quarry	1/19/95	<0.0005
		6/14/95	<0.0005
PCB-2	Outfall 302, Rogers Quarry	1/19/95	<0.0005
		6/14/95	<0.0005
PCB-3	Outfall 303, New Hope Pond	*a*	
PCB-5	New Hope Pond Inlet	*b*	
PCB-6	Upstream of Outfall 135	1/19/95	<0.0005
		6/14/95	<0.0005
PCB-7	Outfall 304, Bear Creek	1/19/95	<0.0005
		6/14/95	<0.0005

[a]This outlet was closed in April 1989.
[b]This inlet was closed in November 1988.

Table 2.25. CY 1995 NPDES Permit Number TN 0002968
Y-12 Plant Cooling Towers
January–June 1995

Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Av		
Discharge point 602 (on ozone)						
Temperature, °C	*c*					
pH, standard units	*c*					
Free chlorine	*c*					
Flow, gpd[d]	*c*					
Discharge point 604						
Temperature, °C	1	16.1	16.1	16.1	38	0
pH, standard units	1	7.4	7.4	*e*	6.5/8.5[f]	0
Free chlorine	1	0.04	0.04	0.04	0.5	0
Flow, gpd[d]	1	122,622	71,530	97,076	*e*	*e*
Discharge point 606 (out of service)						
Temperature, °C	*c*					
pH, standard units	*c*					
Free chlorine	*c*					
Flow, gpd[d]	*c*					
Discharge point 610						
Temperature, °C	2	27.8	27.0	27.4	38	0
pH, standard units	2	7.8	7.7	*e*	6.5/8.5[f]	0
Free chlorine	2	0.04	0.03	0.04	0.5	0
Flow, gpd[d]	2	32,684	19,406	21,645	*e*	*e*
Discharge point 612 (not in operation CY95)						
Temperature, °C	*c*					
pH, standard units	*c*					
Free chlorine	*c*					
Flow, gpd[d]	*c*					
Discharge point 613						
Temperature, °C	2	26.6	22.9	24.8	38	0
pH, standard units	2	8.0	7.8	*e*	6.5/8.5[f]	0
Free chlorine	2	0.04	0.00	0.02	0.5	0
Flow, gpd[d]	2	42,461	22,080	22,937	*e*	*e*

Table 2.25 (continued)

Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Av		
		Discharge point 615				
Temperature, °C	2	22.7	22.6	22.7	38	0
pH, standard units	2	7.7	7.5	*e*	6.5/8.5[f]	0
Free chlorine	2	0.02	0.00	0.01	0.5	0
Flow, gpd[d]	2	1,770	579	839	*e*	*e*
		Discharge point 616 (torn down)				
Temperature, °C	*c*					
pH, standard units	*c*					
Free chlorine	*c*					
Flow, gpd[d]	*c*					
		Discharge point 617				
Temperature, °C	*c*					
pH, standard units	*c*					
Free chlorine	*c*					
Flow, gpd[d]	*c*					
		Discharge point 618				
Temperature, °C	1	22.7	22.7	22.7	38	0
pH, standard units	1	7.8	7.8	*e*	6.5/8.5[f]	0
Free chlorine	1	0.00	0.00	0.00	0.5	0
Flow, gpd[d]	1	27,329	16,592	21,961	*e*	*e*
		Discharge point 619 (not in operation CY95)				
Temperature, °C	*c*					
pH, standard units	*c*					
Free chlorine	*c*					
Flow, gpd[d]	*c*					
		Discharge point 620				
Temperature, °C	2	26.6	21.8	24.2	38	0
pH, standard units	2	7.4	6.8	*e*	6.5/8.5[f]	0
Free chlorine	2	0.04	0.01	0.03	0.5	0
Flow, gpd[d]	2	17,250	1,014	2,663	*e*	*e*

Table 2.25 (continued)

Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Av		
		Discharge point 622				
Temperature, °C	2	29.6	28.3	29.0	38	0
pH, standard units	2	7.8	7.8	*e*	6.5/8.5[f]	0
Free chlorine	2	0.03	0.02	0.03	0.5	0
Flow, gpd[d]	2	124,200	15,054	19,027	*e*	*e*
		Discharge point 624 (combined with 622)				
Temperature, °C	2	29.6	28.3	29.0	38	0
pH, standard units	2	7.8	7.8	*e*	6.5/8.5[f]	0
Free chlorine	2	0.03	0.02	0.03	0.5	0
Flow, gpd[d]	2	124,200	15,054	19,027	*e*	*e*
		Discharge point 626				
Temperature, °C	2	21.8	17.7	19.8	38	0
pH, standard units	2	7.7	7.6	*e*	6.5/8.5[f]	0
Free chlorine	2	0.03	0.03	0.03	0.5	0
Flow, gpd[d]	2	2,812	690	1,460	*e*	*e*
		Discharge point 628				
Temperature, °C	1	28.3	28.3	28.3	38	0
pH, standard units	1	7.8	7.8	*e*	6.5/8.5[f]	0
Free chlorine	1	0.00	0.00	0.00	0.5	0
Flow, gpd[d]	1	28,980	14,490	21,735	*e*	*e*
		Discharge point 630				
Temperature, °C	*c*					
pH, standard units	*c*					
Free chlorine	*c*					
Flow, gpd[d]	*c*					
		Discharge point 632				
Temperature, °C	2	26.7	21.8	24.3	38	0
pH, standard units	2	7.8	7.6	*e*	6.5/8.5[f]	0
Free chlorine	2	0.01	0.00	0.01	0.5	0
Flow, gpd[d]	2	20,125	9,462	9,762	*e*	*e*

Table 2.25 (continued)

Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Av		
Discharge point 633 (out of service)						
Temperature, °C	*c*					
pH, standard units	*c*					
Free chlorine	*c*					
Flow, gpd[d]	*c*					
Discharge point 634						
Temperature, °C	2	28.2	25.4	26.8	38	0
pH, standard units	2	7.7	7.2	*e*	6.5/8.5[f]	0
Free chlorine	2	0.01	0.00	0.01	0.5	0
Flow, gpd[d]	2	25,300	1,946	9,406	*e*	*e*

[a]Units in mg/L unless otherwise indicated.
[b]NPDES permit limits.
[c]No flow.
[d]Flow during operation and/or discharging.
[e]Not applicable.
[f]Minimum value/maximum value.

Table 2.26. Y-12 Plant Discharge Points, Category I Outfalls
From: 1995/07/01 To: 1995/12/31

Outfall	Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
			Max	Min	Avg		
003	Flow,[c] mgd	1	0.0011	0.0011	0.0011	*d*	*d*
	pH, standard units	1	7.4	7.4	*d*	9/4[e]	0
006	Flow,[c] mgd	1	0.0342	0.0342	0.0342	*d*	*d*
	pH, standard units	1	7.9	7.9	*d*	9/4[e]	0
007	Flow,[c] mgd	1	0.0571	0.0571	0.0571	*d*	*d*
	pH, standard units	1	7.8	7.8	*d*	9/4[e]	0
008	Flow,[c] mgd	1	0.0008	0.0008	0.0008	*d*	*d*
	pH, standard units	1	7.4	7.4	*d*	9/4[e]	0
009	Flow,[c] mgd	1	0.0114	0.0114	0.0114	*d*	*d*
	pH, standard units	1	7.5	7.5	*d*	9/4[e]	0
011	Flow,[c] mgd	1	0.0008	0.0008	0.0008	*d*	*d*
	pH, standard units	1	8.1	8.1	*d*	9/4[e]	0
015	Flow,[c] mgd	1	0.0057	0.0057	0.0057	*d*	*d*
	pH, standard units	1	7.9	7.9	*d*	9/4[e]	0
018	Flow,[c] mgd	1	0.0057	0.0057	0.0057	*d*	*d*
	pH, standard units	1	7.5	7.5	*d*	9/4[e]	0
032	Did not discharge						
033	Flow,[c] mgd	2	0.0004	0.0004	0.0004	*d*	*d*
	pH, standard units	1	7.7	7.7	*d*	9/4[e]	0
045	Flow,[c] mgd	1	0.003	0.003	0.003	*d*	*d*
	pH, standard units	1	7.5	7.5	*d*	9/4[e]	0
046	Flow,[c] mgd	1	0.0041	0.0041	0.0041	*d*	*d*
	pH, standard units	1	7.4	7.4	*d*	9/4[e]	0
058	Flow,[c] mgd	1	0.019	0.019	0.019	*d*	*d*
	pH, standard unit	1	8.0	8.0	*d*	9/4[e]	0
062	Flow,[c] mgd	1	0.0031	0.0031	0.0031	*d*	*d*
	pH, standard units	1	7.0	7.0	*d*	9/4[e]	0
086	Flow,[c] mgd	1	0.0057	0.0057	0.0057	*d*	*d*
	pH, standard units	1	7.6	7.6	*d*	9/4[e]	0
087	Flow,[c] mgd	1	0.0002	0.0002	0.0002	*d*	*d*
	pH, standard units	1	7.1	7.1	*d*	9/4[e]	0
098	Flow,[c] mgd	1	0.0004	0.0004	0.0004	*d*	*d*
	pH, standard units	1	8.1	8.1	*d*	9/4[e]	0
110	Flow,[c] mgd	1	0.0001	0.0001	0.0001	*d*	*d*
	pH, standard units	1	7.8	7.8	*d*	9/4[e]	0
134	Flow,[c] mgd	1	0.0038	0.0038	0.0038	*d*	*d*
	pH, standard units	1	7.4	7.4	*d*	9/4[e]	0

Table 2.26 (continued)

Outfall	Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
			Max	Min	Avg		
213	Flow,[c] mgd	1	0.0015	0.0015	0.0015	*d*	*d*
	pH, standard units	1	7.2	7.2	*d*	9/4[e]	0
S01	Flow,[c] mgd	1	0.0004	0.0004	0.0004	*d*	*d*
	pH, standard units	1	7.3	7.3	*d*	9/4[e]	0
S03	Flow,[c] mgd	1	0.0004	0.0004	0.0004	*d*	*d*
	pH, standard units	1	8.1	8.1	*d*	9/4[e]	0
S04	Flow,[c] mgd	1	0.003	0.003	0.003	*d*	*d*
	pH, standard units	1	7.7	7.7	*d*	9/4[e]	0
S06	Flow,[c] mgd	1	0.0382	0.0382	0.0382	*d*	*d*
	pH, standard units	1	7.3	7.3	*d*	9/4[e]	0
S07	Flow,[c] mgd	1	0.0382	0.0382	0.0382	*d*	*d*
	pH, standard units	1	7.3	7.3	*d*	9/4[e]	0
S09	Flow,[c] mgd	1	0.0011	0.0011	0.0011	*d*	*d*
	pH, standard units	1	7.6	7.6	*d*	9/4[e]	0
S18	Flow,[c] mgd	1	0.432	0.432	0.432	*d*	*d*
	pH, standard units	1	8.2	8.2	*d*	9/4[e]	0
S15	Flow,[c] mgd	1	0.0761	0.0761	0.0761	*d*	*d*
	pH, standard units	1	7.8	7.8	*d*	10/6[e]	0
S16	Flow,[c] mgd	1	0.0951	0.0951	0.0951	*d*	*d*
	pH, standard units	1	7.4	7.4	*d*	10/6[e]	0

[a]Units in mg/L unless otherwise.
[b]NPDES permit limits
[c]Flow during operations and/or discharging.
[d]Not applicable
[e]Maximum value/minimum value.

Table 2.27. Y-12 Plant Category I Outfalls

Outfall	Number of samples	pH (standard units)			Min ref. value[a]	No. of values exceeding reference	Max ref. value[a]	No. of values exceeding reference	Flow (gpd)[b]		
		Max	Min	Av					Max	Min	Av
001	2	7.9	7.4	*c*	6.5	0	8.5	0	45,609	6,909	26,259
003	2	7.9	7.6	*c*	6.5	0	8.5	0	6,100	1,141	3,621
006	1	8.0	8.0	*c*	6.5	0	8.5	0	950	950	950
007	2	7.9	7.8	*c*	6.5	0	8.5	0	380	95	238
009	1	8.1	8.1	*c*	6.5	0	8.5	0	380	380	380
011	0	*d*	*d*	*c*	6.5	0	8.5	0	*d*	*d*	*d*
015	1	7.7	7.7	*c*	6.5	0	8.5	0	380	380	380
017	2	7.4	6.7	*c*	6.5	0	8.5	0	159,789	73,200	116,495
018	2	7.9	7.7	*c*	6.5	0	8.5	0	1,902	380	1,141
019	2	8.3	8.0	*c*	6.5	0	8.5	0	22,827	19,022	20,925
031	1	7.5	7.5	*c*	6.5	0	8.5	0	5,000	5,000	5,000
032	1	7.1	7.1	*c*	6.5	0	8.5	0	1,141	1,141	1,141
041	1	7.0	7.0	*c*	6.5	0	8.5	0	22,827	22,827	22,827
044	2	7.6	7.5	*c*	6.5	0	8.5	0	3,044	380	1,712
045	2	7.9	7.8	*c*	6.5	0	8.5	0	57,066	22,827	39,947
057	2	7.8	7.7	*c*	6.5	0	8.5	0	1,141	780	961
062	1	7.3	7.3	*c*	6.5	0	8.5	0	2,282	2,282	2,282
086	1	7.2	7.2	*c*	6.5	0	8.5	0	190	190	190
108	0	*d*	*d*	*c*	6.5	0	8.5	0	*d*	*d*	*d*
134	1	7.3	7.3	*c*	6.5	0	8.5	0	6,846	6,846	6,846
156	1	7.9	7.9	*c*	6.5	0	8.5	0	3,044	3,044	3,044
159	1	8.1	8.1	*c*	6.5	0	8.5	0	761	761	761
161	1	7.8	7.8	*c*	6.5	0	8.5	0	13,316	13,316	13,316

Table 2.27 (continued)

Outfall	Number of samples	pH (standard units)			Min ref. value[a]	No. of values exceeding reference	Max ref. value[a]	No. of values exceeding reference	Flow (gpd)[b]		
		Max	Min	Av					Max	Min	Av
170	1	7.1	7.1	*c*	6.5	0	8.5	0	228,270	228,270	228,270
178	1	7.2	7.2	*c*	6.5	0	8.5	0	7,609	7,609	7,609
180	2	7.5	7.4	*c*	6.5	0	8.5	0	1,522	1,141	1,332
183	1	7.3	7.3	*c*	6.5	0	8.5	0	380	380	380
184	1	7.5	7.5	*c*	6.5	0	8.5	0	1,522	1,522	1,522
186	1	7.0	7.0	*c*	6.5	0	8.5	0	228,270	228,270	228,270
193	1	7.9	7.9	*c*	6.5	0	8.5	0	1,522	1,522	1,522
194	1	7.6	7.6	*c*	6.5	0	8.5	0	902	902	902
195	1	7.7	7.7	*c*	6.5	0	8.5	0	1,141	1,141	1,141
196	1	7.7	7.7	*c*	6.5	0	8.5	0	2,282	2,282	2,282
197	0	*d*	*d*	*c*	6.5	0	8.5	0	*d*	*d*	*d*
198	1	7.6	7.6	*c*	6.5	0	8.5	0	1,522	1,522	1,522
202	1	7.5	7.5	*c*	6.5	0	8.5	0	1,141	1,141	1,141
205	1	7.1	7.1	*c*	6.5	0	8.5	0	13,316	13,316	13,316
206	1	7.6	7.6	*c*	6.5	0	8.5	0	1,141	1,141	1,141
207	1	7.7	7.7	*c*	6.5	0	8.5	0	1,522	1,522	1,522
208	1	7.1	7.1	*c*	6.5	0	8.5	0	1,141	1,141	1,141
215	1	7.6	7.6	*c*	6.5	0	8.5	0	1,141	1,141	1,141
221	1	7.7	7.7	*c*	6.5	0	8.5	0	11,413	11,413	11,413
223	1	7.8	7.8	*c*	6.5	0	8.5	0	760	760	760

Table 2.27 (continued)

Outfall	Number of samples	pH (standard units)			Min ref. value[a]	No. of values exceeding reference	Max ref. value[a]	No. of values exceeding reference	Flow (gpd)[b]		
		Max	Min	Av					Max	Min	Av
224	1	7.3	7.3	*c*	6.5	0	8.5	0	6,980	6,980	6,980
232	1	7.8	7.8	*c*	6.5	0	8.5	0	13,316	13,316	13,316
233	1	7.6	7.6	*c*	6.5	0	8.5	0	1,522	1,522	1,522
234	1	7.5	7.5	*c*	6.5	0	8.5	0	3,044	3,044	3,044
235	1	7.5	7.5	*c*	6.5	0	8.5	0	380	380	380
236	1	7.7	7.7	*c*	6.5	0	8.5	0	1,522	1,522	1,522

[a]NPDES permit limits.
[b]Flow during operations and/or discharging. No reference value for flow rate.
[c]Not applicable.
[d]No flow.

Table 2.28. Y-12 Plant Discharge Points, Category II Outfalls
From: 1995/07/01 To: 1995/12/31

Outfall	Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
			Max	Min	Avg		
004	Residual chlorine	2	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	2	0.0571	0.0004	0.03	*d*	*d*
	pH, standard units	2	7.9	7.4	*d*	9/4[e]	0
010	Residual chlorine	2	0.08	<0.05	<0.06	0.5	0
	Flow,[c] mgd	2	0.0228	0.0076	0.015	*d*	*d*
	pH, standard units	2	7.8	7.4	*d*	9/4[e]	0
014	Residual chlorine	2	0.15	<0.05	<0.1	0.5	0
	Flow,[c] mgd	3	0.0457	0.0046	0.019	*d*	*d*
	pH, standard units	2	8.2	7.7	*d*	9/4[e]	0
016	Residual chlorine	2	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	2	0.0004	0.0004	0.0004	*d*	*d*
	pH, standard units	2	7.5	7.4	*d*	9/4[e]	0
019	Residual chlorine	2	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	2	0.3412	0.0027	0.17	*d*	*d*
	pH, standard units	2	8.3	8.0	*d*	9/4[e]	0
020	Residual chlorine	2	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	2	0.0046	0.0011	0.0028	*d*	*d*
	pH, standard units	2	7.8	7.6	*d*	9/4[e]	0
041	Residual chlorine	1	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	1	0.0011	0.0011	0.0011	*d*	*d*
	pH, standard units	1	7.5	7.5	*d*	9/4[e]	0
044	Residual chlorine	2	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	2	0.0152	0.0023	0.0087	*d*	*d*
	pH, standard units	2	7.7	7.5	*d*	9/4[e]	0
057	Residual chlorine	2	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	2	0.0114	0.0008	0.006	*d*	*d*
	pH, standard units	2	7.8	7.5	*d*	9/4[e]	0
063	Residual chlorine	2	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	2	0.0008	0.0004	0.0006	*d*	*d*
	pH, standard units	2	7.8	7.5	*d*	9/4[e]	0
064	Residual chlorine	2	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	2	0.0068	0.0023	0.0046	*d*	*d*
	pH, standard units	2	7.8	7.4	*d*	9/4[e]	0
067	Residual chlorine	2	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	2	0.0342	0.0133	0.0238	*d*	*d*
	pH, standard units	2	8.1	7.4	*d*	9/4[e]	0

Table 2.28 (continued)

Outfall	Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
			Max	Min	Avg		
083	Residual chlorine	2	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	2	0.0114	0.0008	0.006	*d*	*d*
	pH, standard units	2	8.1	7.8	*d*	9/4[e]	0
088	Residual chlorine	2	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	2	0.0057	0.0011	0.0034	*d*	*d*
	pH, standard units	2	7.7	7.3	*d*	9/4[e]	0
099	Residual chlorine	3	0.71	<0.05	<0.3	0.5	1
	Flow,[c] mgd	2	0.0076	0.0023	0.0049	*d*	*d*
	pH, standard units	2	8.2	7.4	*d*	9/4[e]	0
126	Residual chlorine	1	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	1	0.0533	0.0533	0.0533	*d*	*d*
	pH, standard units	1	8.1	8.1	*d*	9/4[e]	0
S02	Residual chlorine	2	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	2	0.432	0.0023	0.22	*d*	*d*
	pH, standard units	2	8.3	7.5	*d*	9/4[e]	0
S08	Residual chlorine	1	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	1	0.324	0.324	0.324	*d*	*d*
	pH, standard units	1	8.1	8.1	*d*	9/4[e]	0
S10	Residual chlorine	1	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	2	0.0571	0.0432	0.0501	*d*	*d*
	pH, standard units	2	7.7	7.2	*d*	9/4[e]	0
S11	Residual chlorine	1	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	2	0.0317	0.0304	0.0311	*d*	*d*
	pH, standard units	2	7.7	7.4	*d*	9/4[e]	0
S12	Residual chlorine	1	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	1	0.0076	0.0076	0.0076	*d*	*d*
	pH, standard units	1	7.5	7.5	*d*	9/4[e]	0
S13	Residual chlorine	1	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	2	0.36	0.0342	0.197	*d*	*d*
	pH, standard units	2	7.5	7.4	*d*	9/4[e]	0
S17	Residual chlorine	2	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	2	0.216	0.144	0.180	*d*	*d*
	pH, standard units	2	7.8	7.6	*d*	9/4[e]	0
S20	Residual chlorine	2	0.07	<0.05	<0.06	0.5	0
	Flow,[c] mgd	2	0.288	0.0001	0.1	*d*	*d*
	pH, standard units	2	8.1	7.8	*d*	9/4[e]	0
S21	Flow,[c] mgd	2	0.216	0.0027	0.11	*d*	*d*
	pH, standard units	2	8.0	7.9	*d*	10/6[e]	0

Table 2.28 (continued)

Outfall	Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
			Max	Min	Avg		
S22	Flow,[c] mgd	2	0.0076	0.0011	0.0044	*d*	*d*
	pH, Standard Unit	2	8.3	8.0	*d*	10/6[e]	0
S24	Residual chlorine	2	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	168	22.6205	0.0	0.83	*d*	*d*
	pH, standard units	2	8.3	7.9	*d*	9/4[e]	0
S25	Flow,[c] mgd	2	0.0076	0.0011	0.0044	*d*	*d*
	pH, standard units	2	8.3	8.0	*d*	10/6[e]	0
S26	Flow,[c] mgd	2	0.324	0.0076	0.17	*d*	*d*
	pH, standard units	2	8.2	8.0	*d*	10/6[e]	0
S27	Flow,[c] mgd	2	0.0951	0.0864	0.0908	*d*	*d*
	pH, standard units	2	8.4	7.7	*d*	10/6[e]	0
S28	Flow,[c] mgd	2	0.0761	0.0576	0.0668	*d*	*d*
	pH, standard units	2	7.7	7.6	*d*	10/6[e]	0
S29	No discharge						

[a]Units in mg/L unless otherwise.
[b]NPDES permit limits.
[c]Flow during operations and/or discharging.
[d]Not applicable.
[e]Maximum value/minimum value.

Table 2.29. Y-12 Plant Category II Outfalls

Outfall	Number of samples	pH (standard units)			Min ref. value[a]	No. of values exceeding reference	Max ref. value[a]	No. of values exceeding reference	Temperature (°C)[b]			Flow (gpd)[c]		
		Max	Min	Av					Max	Min	Av	Max	Min	Av
013	1	8.1	8.1	*d*	6.5	0	8.5	0	15.9	15.9	15.9	2,500	2,500	2,500
016	2	7.9	7.7	*d*	6.5	0	8.5	0	15.9	11.5	13.7	30,436	9,511	19,974
020	2	7.9	7.4	*d*	6.5	0	8.5	0	15.1	10.2	12.7	24,729	11,413	18,071
023	1	7.6	7.6	*d*	6.5	0	8.5	0	38.5	38.5	38.5	380	380	380
027	0	*e*	*e*	*d*	6.5	0	8.5	0	*e*	*e*	*e*	*e*	*e*	*e*
035	0	*e*	*e*	*d*	6.5	0	8.5	0	*e*	*e*	*e*	*e*	*e*	*e*
046	2	7.9	7.1	*d*	6.5	0	8.5	0	46.4	28.9	37.7	1,522	190	856
053	0	*e*	*e*	*d*	6.5	0	8.5	0	*e*	*e*	*e*	*e*	*e*	*e*
054	2	8.3	8.0	*d*	6.5	0	8.5	0	13.3	12.5	12.9	12,173	3,044	7,609
058	2	8.4	7.6	*d*	6.5	0	8.5	0	23.2	14.6	18.9	53,528	6,950	30,239
066	2	8.2	7.5	*d*	6.5	0	8.5	0	21.4	16.3	18.9	190	127	159
068	2	7.8	7.1	*d*	6.5	0	8.5	0	25.9	14.1	20.0	190	95	143
073	1	8.5	8.5	*d*	6.5	0	8.5	0	20.1	20.1	20.1	3,044	3,044	3,044
077	2	7.7	7.5	*d*	6.5	0	8.5	0	17.2	13.3	15.3	24,800	22,827	23,814
087	2	7.6	7.4	*d*	6.5	0	8.5	0	15.6	11.2	13.4	1,902	95	999
098	2	8.1	8.0	*d*	6.5	0	8.5	0	16.1	12.1	14.1	1,522	761	1,142
111	0	*e*	*e*	*d*	6.5	0	8.5	0	*e*	*e*	*e*	*e*	*e*	*e*
117	2	7.6	7.5	*d*	6.5	0	8.5	0	36.8	31.3	34.1	380	258	319
133	0	*e*	*e*	*d*	6.5	0	8.5	0	*e*	*e*	*e*	*e*	*e*	*e*
137	0	*e*	*e*	*d*	6.5	0	8.5	0	*e*	*e*	*e*	*e*	*e*	*e*
172	2	8.1	7.9	*d*	6.5	0	8.5	0	12.7	1.7	7.2	1,522	380	951
185	2	8.0	7.8	*d*	6.5	0	8.5	0	26.4	18.5	22.5	1,141	190	666

Table 2.29 (continued)

Outfall	Number of samples	pH (standard units)			Min ref. value[a]	No. of values exceeding reference	Max ref. value[a]	No. of values exceeding reference	Temperature (°C)[b]			Flow (gpd)[c]		
		Max	Min	Av					Max	Min	Av	Max	Min	Av
201	2	8.2	7.6	*d*	6.5	0	8.5	0	18.4	13.8	16.1	28,523	3,044	15,784
203	2	7.9	7.4	*d*	6.5	0	8.5	0	18.2	11.2	14.7	1,141	780	961
204	2	8.0	7.0	*d*	6.5	0	8.5	0	19.1	14.6	16.9	780	780	780
213	2	7.8	7.6	*d*	6.5	0	8.5	0	14.9	11.3	13.1	1,522	780	1,151
240	2	8.2	8.0	*d*	6.5	0	8.5	0	13.2	2.2	7.7	1,141	380	761

[a]NPDES permit limits.
[b]No reference value.
[c]Flow during operations and/or discharging. No reference value for flow rate.
[d]Not applicable.
[e]No flow.

Table 2.30. Y-12 Plant Discharge Points, Category III Outfalls
From: 1995/07/01 To: 1995/12/31

Outfall	Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
			Max	Min	Avg		
002	Residual chlorine	6	0.06	<0.05	<0.05	0.5	0
	Flow,[c] mgd	6	0.1075	0.0046	0.036	*d*	*d*
	pH, standard units	6	8.3	7.5	*d*	9/4[e]	0
034	Residual chlorine	6	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	6	0.1598	0.0655	0.118	*d*	*d*
	pH, standard units	6	7.9	7.0	*d*	9/4[e]	0
042	Residual chlorine	6	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	6	0.0266	0.0046	0.017	*d*	*d*
	pH, standard units	6	8.1	7.4	*d*	9/4[e]	0
047	Residual chlorine	7	0.26	<0.05	<0.1	0.5	0
	Flow,[c] mgd	14	0.0685	0.0152	0.0382	*d*	*d*
	pH, standard unit	10	8.2	7.3	*d*	9/4[e]	0
048	Residual chlorine	6	0.32	<0.05	<0.1	0.5	0
	Flow,[c] mgd	6	0.0571	0.0004	0.01	*d*	*d*
	pH, standard units	6	8.4	7.5	*d*	9/4[e]	0
054	Residual chlorine	6	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	6	0.0038	0.0027	0.0031	*d*	*d*
	pH, standard units	6	8.4	7.8	*d*	9/4[e]	0
071	Residual chlorine	6	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	6	0.0114	0.0038	0.0058	*d*	*d*
	pH, standard units	6	8.0	7.2	*d*	9/4[e]	0
109	Residual chlorine	6	0.07	<0.05	<0.05	0.5	0
	Flow,[c] mgd	6	0.081	0.0456	0.062	*d*	*d*
	pH, standard units	6	8.1	7.3	*d*	9/4[e]	0
113	Residual chlorine	6	0.1	<0.05	<0.06	0.5	0
	Flow,[c] mgd	12	0.0037	0.0001	0.002	*d*	*d*
	pH, standard units	10	8.2	7.5	*d*	9/4[e]	0
114	Residual chlorine	6	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	6	0.0023	0.0011	0.0015	*d*	*d*
	pH, standard units	6	7.7	7.6	*d*	9/4[e]	0
S05	Residual chlorine	3	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	6	0.2283	0.0004	0.04	*d*	*d*
	pH, standard units	6	8.1	5.9	*d*	9/4[e]	0
S14	Residual chlorine	4	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	6	0.0266	0.003	0.01	*d*	*d*
	pH, standard units	6	8.0	7.4	*d*	9/4[e]	0

[a]Units in mg/L unless otherwise.
[b]NPDES permit limits.
[c]Flow during operations and/or discharging.
[d]Not applicable.
[e]Maximum value/minimum value.

Table 2.31. Y-12 Plant Category III Outfalls

Outfall	Number of samples	pH (standard units)			Min ref. value[a]	No. of values exceeding reference	Max ref. value[a]	No. of values exceeding reference	Temperature (°C)[b]			Ref. value[b]	No. of values exceeding reference	Flow (gpd)[b]		
		Max	Min	Av					Max	Min	Av			Max	Min	Av
002	2	8.1	8.0	*c*	6.5	0	8.5	0	9.3	8.9	9.1	30.5	0	194,000	57,066	125,533
071	2	7.6	7.6	*c*	6.5	0	8.5	0	18.0	17.9	18.0	30.5	0	18,320	3,504	10,912
135	5	8.0	7.7	*c*	6.5	0	8.5	0	19.7	15.5	17.6	30.5	0	570,312	156,960	289,794
147	2	7.8	7.6	*c*	6.5	0	8.5	0	15.8	8.1	12.0	30.5	0	9,511	1,902	5,707
150	4	8.2	8.1	*c*	6.5	0	8.5	0	30.0	30.0	30.0	30.5	0	603,360	460,000	505,365
157	2	8.3	8.1	*c*	6.5	0	8.5	0	19.2	18.5	18.9	30.5	0	380	95	238
160	4	8.0	7.5	*c*	6.5	0	8.5	0	21.7	11.1	16.4	30.5	0	130,796	72,000	97,417
163	3	7.9	7.6	*c*	6.5	0	8.5	0	21.3	19.8	20.6	30.5	0	194,229	129,600	158,430
169	4	8.0	7.6	*c*	6.5	0	8.5	0	18.9	13.1	16.0	30.5	0	302,400	37,304	210,302
181	0	*d*	*d*	*c*	6.5	0	8.5	0	*d*	*d*	*d*	30.5	0	*d*	*d*	*d*
192	2	7.5	7.4	*c*	6.5	0	8.5	0	18.1	13.4	15.8	30.5	0	22,827	2,282	12,555

[a]NPDES permit limits.
[b]Flow during operations and/or discharging. No reference value for flow rate.
[c]Not applicable.
[d]No flow.

Table 2.32. Category IV January–June 1995

Outfall	Number of samples	pH (standard units)			Minimum reference value[a]	Number of values below reference	Maximum reference value	Number of values exceeding reference
		Max	Min	Av				
401	*b*				6.5	*c*	8.5	*c*
402	*b*				6.5	0	8.5	0
403	*b*				6.5	0	8.5	0
404	*b*				6.5	*c*	8.5	*c*
405	9	8.2	6.6	*c*	6.5	0	8.5	0
406	*b*				6.5	*c*	8.5	*c*
407	*b*				6.5	*c*	8.5	*c*
408	26	7.7	7.4	*c*	6.5	0	8.5	*0*
409	*b*				6.5	*c*	8.5	*c*
410	*b*				6.5	*c*	8.5	*c*
411	*b*				6.5	*c*	8.5	*c*
412	*b*				6.5	*c*	8.5	*c*
413	*b*				6.5	*c*	8.5	*c*
414	*b*				6.5	*c*	8.5	*c*
415	*b*				6.5	*c*	8.5	*c*
416	*b*				6.5	*c*	8.5	*c*
417	*b*				6.5	*c*	8.5	*c*
418	*b*				6.5	*c*	8.5	*c*
419	*b*				6.5	*c*	8.5	*c*
420	*b*				6.5	*c*	8.5	*c*
421	*b*				6.5	*c*	8.5	*c*
422	*b*				6.5	*c*	8.5	*c*

[a]NPDES permit limits.
[b]No flow.
[c]Not applicable.

Table 2.33. Y-12 Plant Discharge Point SS6, Sanitary Sewer Station 6
From: 1995/01/01 To: 1995/12/31

Parameter	Number of samples	Concentration[a]			Reference value	Number of values exceeding reference
		Max	Min	Avg		
Flow,[c] gpd	363	1884810.0	466617.0	817958.1	*d*	*d*
pH, standard unit	54	8.0	6.9	*d*	9/6[e]	0
Silver	54	0.041	<0.006	<0.008	0.1	0
Boron	54	0.06	0.02	0.03	*d*	*d*
Cadmium	54	<0.004	<0.004	<0.004	0.004	0
Cyanide	54	0.048	<0.01	<0.01	0.01	3
Chemical oxygen demand	54	140.0	<20.0	<60.8	*d*	*d*
Chromium	54	0.007	<0.006	<0.006	0.44	0
Ion chromium (Cr+6)	54	<0.01	<0.01	<0.01	0.01	0
Copper	54	0.045	0.007	0.02	0.04	1
Iron	54	1.69	0.22	0.61	1.5	2
Mercury	63	0.42	0.0002	0.02	0.1	3
Manganese	54	0.07	0.026	0.048	1	0
Nitrogen as ammonia	54	13.0	3.9	7.5	*d*	*d*
Nickel	54	0.015	<0.008	<0.008	0.1	0
Oil and grease	54	130.0	<2.0	<5.9	50	1
Lead	54	0.04	<0.02	<0.02	0.02	1
Phenols	54	0.22	<0.005	<0.02	5	0
Selenium	54	<0.1	<0.1	<0.1	*d*	*d*
Total Kjeldahl nitrogen	54	24.0	6.5	12	90	0
Total suspended solids	54	94.0	<5.0	<50	300	0
Zinc	54	0.24	0.08	0.1	2	0

[a]Units in mg/L unless otherwise noted.
[b]Sanitary Sewer Industrial Users Permit.
[c]Flow during operations and/or discharging.
[d]Not applicable
[e]Maximum value/minimum value.

Table 2.34. Y-12 Plant Discharge Point SS6, Sanitary Sewer Station 6
From: 1995/01/01 To: 1995/12/31

Parameter	Number of samples	Concentration						Standard error	Percentage of DCG	Total curies
		Max	+/–	Min	+/–	Median	+/–			
Alpha activity (pCi/L)	54	26.0	14	−11.0[a]	0.80	3.3	*b*	0.90	*b*	2.50E−03
Beta activity (pCi/L)	54	21.0	11	−7.8[a]	65	7.6	*b*	0.95	*b*	4.23E−03
Gross Gamma (pCi/L)	52	230.0	13	−19.0[a]	30	28.5	*b*	7.36	*b*	2.44E−02
^{238}Pu (pCi/L)	54	0.34[a]	0.27	−0.37[a]	0.29	0.0023	*b*	0.015	0.0058	−4.78E−07
$^{239/240}$Pu (pCi/L)	54	0.31	0.26	−0.18[a]	0.18	0.0	*b*	0.011	0.0	7.85E−06
^{234}U (pCi/L)	54	55.0	10	0.83	0.32	2.8	*b*	1.1	0.56	2.91E−03
^{235}U (pCi/L)	54	2.9	1.0	−0.055[a]	0.11	0.10	*b*	0.059	0.017	1.26E−04
^{236}U (pCi/L)	54	1.3	0.62	−0.034[a]	0.068	0.053	*b*	0.025	0.011	5.38E−05
^{238}U (pCi/L)	54	100.0	18	0.43	0.31	1.5	*b*	1.8	0.25	2.06E−03

[a]Provisional result.
[b]Not applicable.

Table 2.35. Y-12 Plant Discharge Point S19, Rogers Quarry
From: 1995/07/01 To: 1995/12/31

Parameter	Number of samples	Concentration						Standard error	Percentage of DCG	Total curies
		Max	±	Min	±	Median	±			
Alpha activity (pC/L)	6	3.9[a]	8.6	–4.7[a]	0.40	0.36	[b]	1.4	[b]	–5.5E–06
^{241}Am (pC/L)	6	0.066[a]	0.19	–0.029[a]	0.084	0.035	[b]	0.02	0.10	3.0E–06
Beta activity (pC/L)	6	3.9[a]	9.6	–4.8[a]	0.10	–0.52	[b]	1.4	[b]	–2.6E–05
^{237}Np (pC/L)	6	0.11	0.13	–0.04[a]	0.081	0.01	[b]	0.02	0.05	2.0E–06
^{238}Pu (pC/L)	6	0.21[a]	0.36	–0.093[a]	0.14	–0.030	[b]	0.045	–0.074	–7.1E–07
$^{239/240}$Pu (pC/L)	6	0.081[a]	0.16	–0.081[a]	0.094	0.0	[b]	0.021	0.0	–4.5E–08
^{228}Ra (pC/L)	6	1.3[a]	1.5	–4.4[a]	2.3	–0.64	[b]	0.84	–0.64	–7.4E–05
$^{89/90}$Sr activities (pC/L)	6	1.2[a]	6.3	–5.6[a]	1.5	–0.46	[b]	1.3	[b]	–1.4E–04
^{99}Tc (pC/L)	6	6.0[a]	8.6	–9.0[a]	8.6	–1.0	[b]	2.3	–0.0010	–7.4E–05
^{228}Th (pC/L)	6	0.77	0.38	–0.02[a]	0.14	0.2	[b]	0.1	0.05	2.0E–05
^{230}Th (pC/L)	6	1.2	0.62	0.067[a]	0.13	0.51	[b]	0.16	0.17	5.0E–05
^{232}Th (pC/L)	6	0.14	0.21	0.012[a]	0.10	0.062	[b]	0.020	0.12	5.8E–06
^{234}Th (pC/L)	6	0.75	0.37	0.065[a]	0.092	0.18	[b]	0.10	0.0018	2.2E–05
Tritium (pC/L)	6	92[a]	110	–35[a]	110	45	[b]	0.019	0.00022	3.7E–03
^{234}U (pC/L)	6	0.61	0.37	0.14[a]	0.13	0.38	[b]	0.078	0.076	3.4E–05
^{235}U (pC/L)	6	0.14[a]	0.23	–0.051[a]	0.10	0.0	[b]	0.026	0.0	1.9E–06
^{236}U (pC/L)	6	0.064[a]	0.092	–0.025[a]	0.051	0.0	[b]	0.012	0.0	7.7E–07
^{238}U (pC/L)	6	0.75	0.37	0.065[a]	0.092	0.18	[b]	0.10	0.029	2.2E–05

[a]Provisional result.
[b]Not applicable.

Table 2.36. Y-12 Plant Discharge Point S19, Rogers Quarry
From: 1995/07/01 To: 1995/12/31

Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Av		
Flow,[c] mgd	141	0.625	0.054	0.13	*d*	*d*
pH, standard units	6	7.9	7.1	*d*	9/6[e]	0
Silver	6	<0.006	<0.006	<0.006	0.004	6[f]
Aluminum	6	<0.04	<0.04	<0.04		*d*
Arsenic	6	<0.04	<0.04	<0.04	0.0014	6[f]
Boron	6	0.08	0.07	0.08	*d*	*d*
Barium	6	0.0502	0.0457	0.0472	*d*	*d*
Beryllium	6	<0.0004	<0.0004	<0.0004	0.0013	0
Calcium	6	38.0	36.0	37.2	*d*	*d*
Cadmium	6	<0.004	<0.004	<0.004	0.0039	6[f]
Cobalt	6	<0.002	<0.002	<0.002	*d*	*d*
Chromium	6	<0.006	<0.006	<0.006	0.016[g]	0
Copper	6	<0.006	<0.006	<0.006	0.018	0
Iron	6	<0.06	<0.06	<0.06	*d*	*d*
Potassium	6	1.9	1.7	1.8	*d*	*d*
Lithium	6	<0.02	<0.02	<0.02	*d*	*d*
Magnesium	6	10.1	9.28	9.56	*d*	*d*
Manganese	6	0.038	0.013	0.023	*d*	*d*
Molybdenum	6	<0.006	<0.006	<0.006	*d*	*d*
Sodium	6	2.12	1.68	1.94	*d*	*d*
Nickel	6	<0.008	<0.008	<0.008	1.4	0
Lead	6	<0.02	<0.02	<0.02	0.082	0
Antimony	6	<0.2	<0.04	<0.07	4.30	0
Selenium	6	<0.1	<0.1	<0.1	0.02	6[f]
Strontium	6	0.221	0.212	0.217	*d*	*d*
Thallium	6	<0.03	<0.03	<0.03	*d*	*d*
Vanadium	6	<0.004	<0.004	<0.004	*d*	*d*
Zinc	6	<0.01	<0.01	<0.01	0.0063	6[f]

[a]Units in mg/L unless otherwise indicated.
[b]NPDES permit limits or Tennessee water quality for fish and aquatic life.
[c]Flow during operations and/or discharging.
[d]Not applicable.
[e]Maximum value/minimum value.
[f]Reference value is below the detection limit.
[g]Reference value is for hexavalent chromium only.

Table 2.37. Y-12 Plant Discharge Point 512, Groundwater Treatment Facility
From: 1995/01/01 To: 1995/06/30

Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Avg		
Flow,[c] gpd	125	26070.0	4409.0	17730	*d*	*d*
pH, standard units	546	8.29	7.15	*d*	9/6[e]	0
Iron	296	<0.3	<0.3	<0.3	1	0
Methylene chloride	296	0.01	0.001	0.005	*d*	*d*
Oil and grease	296	11.0	<2.0	<2.1	15	0
PCB	296	0.0013	<0.0005	<0.0005	*d*	*d*
Tetrachloroethene	296	<0.01	0.001	<0.01	*d*	*d*
Trichloroethene	295	<0.01	<0.01	<0.01	*d*	*d*

[a]Units in mg/L unless otherwise noted.
[b]NPDES permit limits.
[c]Flow during operations and/or discharging.
[d]Not applicable.
[e]Maximum value/minimum value.

Table 2.38. Y-12 Plant Discharge Point 017, Outfall 017
From: 1995/07/01 To: 1995/12/31

Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Avg		
Flow,[c] mgd	165	0.2018	0.002	0.025	*d*	*d*
pH, standard unit	26	7.7	6.9	*d*	9/6[e]	0
Nitrogen as ammonia	26	20.0	1.6	9.1	64.8	0
Total Kjeldahl nitrogen	26	22.0	0.54	9.1	*d*	*d*

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

Table 2.39. Y-12 Plant Discharge Point 021, Outfall 021
From: 1995/07/01 To: 1995/12/31

Parameter	Number of samples	Concentration[a]			Reference value[b] exceeding reference	Number of values exceeding reference
		Max	Min	Avg		
Residual chlorine	78	<0.05	<0.05	<0.05	0.188	0
Flow,[c] mgd	85	0.8597	0.2434	0.3033	*d*	*d*
pH, standard unit	82	8.0	6.8	*d*	9/6[e]	0
Temperature, °C	85	26.8	14.3	23.7	30.5	0

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

Table 2.40. Y-12 Plant Discharge Point 051, Outfall 051
From: 1995/07/01 To: 1995/12/31

Parameter	Number of samples	Concentration[a]			Reference value[b] exceeding reference	Number of values exceeding reference
		Max	Min	Avg		
Flow,[c] mgd	164	1.928	0.073	0.25	*d*	*d*
pH, standard unit	52	7.5	6.7	*d*	9/6[e]	0
Mercury	27	0.0078	0.0025	0.0058	*d*	*d*

[a]Units in mg/L unless otherwise discharging.
[b]NPDES permit limits.
[c]Flow during operations and/or discharging.
[d]Not applicable.
[e]Maximum value/minimum value.

Table 2.41. Y-12 Plant Discharge Point 055, Outfall 055
From: 1995/07/01 To: 1995/12/31

Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Avg		
Residual chlorine	52	0.47	<0.05	<0.07	0.5	0
Flow,[c] mgd	179	0.13	0.0563	0.077	*d*	*d*
pH, standard units	52	8.0	7.0	*d*	9/6[e]	0
Mercury	53	<0.0002	<0.0002	<0.0002	0.004	0

[a]Units in mg/L unless otherwise noted.
[b]NPDES permit limits.
[c]Flow during operations and/or discharging.
[d]Not applicable.
[e]Maximum value/minimum value.

Table 2.42. Y-12 Plant Discharge Point 55A, Outfall 55A
From: 1995/07/01 To: 1995/12/31

Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Avg		
Flow,[c] mgd	180	0.0282	0.0	0.0114	*d*	*d*
pH, standard unit	52	8.1	6.7	*d*	9/6[e]	0
Mercury	52	<0.0002	<0.0002	<0.0002	0.004	0

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

Table 2.43. Y-12 Plant Steam Condensate Outfalls
From: 1995/07/01 To: 1995/12/31

Outfall	Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
			Max	Min	Avg		
066	Flow,[c] mgd	2	0.0001	0.0001	0.0001	*d*	*d*
066	pH, standard unit	2	8.4	7.7	*d*	9/6[e]	0
068	Flow,[c] mgd	6	0.0002	0.0001	0.0001	*d*	*d*
068	pH, standard unit	6	8.4	7.0	*d*	9/6[e]	0
117	Flow,[c] mgd	3	0.0002	0.0001	0.0001	*d*	*d*
117	pH, standard unit	3	8.3	7.8	*d*	9/6[e]	0

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

Table 2.44. Y-12 Plant Discharge Point 073, Outfalls 073, 077, 122, and 133
From: 1995/07/01 To: 1995/12/31

Outfall	Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
			Max	Min	Avg		
073	Residual chlorine	6	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	6	0.0002	0.0001	0.0001	*d*	*d*
	pH, standard units	6	8.2	7.6	*d*	9/6[e]	0
077	Residual chlorine	6	<0.05	<0.05	<0.05	0.5	0
	Flow,[c] mgd	6	0.432	0.0001	0.1	*d*	*d*
	pH, standard units	6	7.8	7.0	*d*	9/6[e]	0
122	did not discharge						
133	did not discharge						

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

Table 2.45. Y-12 Plant Discharge Point 125, Outfall 125
From: 1995/07/01 To: 1995/12/31

Parameter	Number of samples	Concentration[a]			Reference vaue[b]	Number of values exceeding reference
		Max	Min	Av		
Residual chlorine	6	<0.05	<0.05	<0.05	0.5	0
Flow,[c] mgd	6	0.4104	0.2736	0.3295	*d*	*d*
pH, standard unit	6	7.5	7.1	*d*	9/6[e]	0
Mercury	2	<0.0002	<0.0002	<0.0002	*d*	*d*
Lead	2	<0.05	<0.05	<0.05	*d*	*d*

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

Table 2.46. Y-12 Plant Discharge Point 135, Outfall 135
From: 1995/07/01 To: 1995/12/31

Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Avg		
Flow,[c] mgd	78	0.636	0.149	0.212	*d*	*d*

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

Table 2.47. Y-12 Plant Discharge Point 200, North/South Pipes
From: 1995/07/01 To: 1995/12/31

Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Avg		
Flow,[c] mgd	78	14.264	0.4002	1.484	*d*	*d*
Beryllium	6	<0.002	<0.0004	<0.0007	*d*	*d*
Cadmium	6	<0.02	<0.004	<0.007	*d*	*d*
Copper	6	0.04	<0.006	<0.01	*d*	*d*
Iron	6	0.8	<0.06	<0.2	*d*	*d*
Fluoride	6	1.3	0.53	1.0	*d*	*d*
Mercury	26	0.003	0.0008	0.001	*d*	*d*
Nitrate/nitrite as nitrogen	6	10.0	6.7	7.9	*d*	*d*
Oil and grease	78	2.4	<2.0	<2.0	15	0
Lead	6	<0.1	<0.02	<0.03	*d*	*d*
Phosphate as phosphorus	6	4.3	0.77	2.0	*d*	*d*
Sulfate	26	220.0	28.0	80.4	*d*	*d*
Zinc	6	0.42	0.06	0.1	*d*	*d*

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

Table 2.48. Y-12 Plant Discharge Point 200, North/South Pipes
From: 1995/07/01 To: 1995/12/31

Parameter	Number of samples	Concentration						Standard error	Percentage of DCG	Total curies
		Max	±	Min	±	Median	±			
Alpha activity (pC/L)	26	68.0	17	–0.00[a]	0.37	13	*b*	3.7	*b*	1.7E–02
^{241}Am (pC/L)	26	0.4[a]	0.35	–0.098[a]	0.11	0.03	*b*	0.02	0.09	5.0E–05
Beta activity (pC/L)	26	44.0	14	–20.0[a]	0.09	14.0	*b*	2.51	*b*	1.47E–02
Gross gamma (pC/L)	26	110.0	32	–9.9[a]	29	34	*b*	5.6	*b*	4.0E–02
^{237}Np (pC/L)	26	0.29	0.22	–0.037[a]	0.26	0.064	*b*	0.016	0.22	8.0E–05
^{238}Pu (pC/L)	26	0.41[a]	0.47	–0.093[a]	0.094	0.030	*b*	0.022	0.074	5.7E–05
$^{239/240}$Pu (pC/L)	26	0.094[a]	0.12	–0.15[a]	0.13	–0.0015	*b*	0.0088	–0.0050	–1.2E–05
^{228}Ra (pC/L)	26	2.9	2.4	–21.0[a]	19	–1.2	*b*	0.86	–1.2	–2.1E–03
$^{89/90}$Sr activities (pC/L)	26	7.3[a]	4.9	–8.1[a]	7.2	–3.0	*b*	0.81	*b*	–2.3E–03
^{99}Tc (pC/L)	26	30.0	9.4	–2.0[a]	8.8	14	*b*	1.6	0.014	1.6E–02
^{228}Th (pC/L)	26	0.57	0.36	–0.042[a]	0.12	0.22	*b*	0.032	0.056	2.4E–04
^{230}Th (pC/L)	26	0.93	0.39	0.058[a]	0.26	0.40	*b*	0.041	0.13	4.5E–04
^{232}Th (pC/L)	26	0.38	0.26	–0.064[a]	0.091	0.032	*b*	0.017	0.063	4.2E–05
^{234}Th (pC/L)	26	87.0	14	0.83	0.37	7.7	*b*	4.2	0.077	1.8E–02
Tritium (pC/L)	26	530	210	140[a]	130	290	*b*	20	0.014	3.0E–01
^{234}U (pC/L)	26	23.0	4.9	0.47	0.28	2.9	*b*	1.1	0.58	5.8E–03
^{235}U (pC/L)	26	1.5	0.60	0.0[a]	0.0	0.20	*b*	0.085	0.034	3.6E–04
^{238}U (pC/L)	26	87.0	14	0.83	0.37	7.7	*b*	4.2	1.3	1.8E–02

[a]Provisional result.
[b]Not applicable.

Table 2.49. Y-12 Plant Discharge Point 201, Outfall 201
From: 1995/07/01 To: 1995/12/31

Parameter	Number of samples	Concentration[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Avg		
96 hour toxicity test with *Ceriodaphnia*	2	>100.0	>100.0	>100.0	*d*/100[e]	0
96 hour toxicity test with fathead minnows	2	>100.0	>100.0	>100.0	*d*/100[e]	0
Residual chlorine	92	0.13	<0.05	<0.051	0.019	1
NOEC, reproduction and growth in 100% effluent with *Ceriodaphnia*	2	100.0	100.0	100.0	*d*/100[e]	0
NOEC, reproduction and growth in 100% effluent with fathead minnows	2	100.0	100.0	100.0	*d*/100[e]	0
pH, standard units	79	8.0	6.6	*d*	8.5/6.5[e]	0
Temperature, °C	78	27.0	11.6	23.2	30.5	0
Total suspended solids	28	10.0	<5.0	<5.5	*d*	*d*

[a]Units in mg/L unless otherwise indicated.
[b]NPDES permit limits.
[c]Flow during operations and/or discharging.
[d]Not applicable.
[e]Maximum value/minimum value (Toxicity limits are under appeal).

Table 2.50. 1995 measured radioactivity at ORNL category outfalls

Parameter	N det/ N total	Concentration (pCi/L)				DCG[d]	Percent of DCG[e]
		Max[a]	Min[a]	Av[b]	Standard error[c]		
Category I outfalls							
Gross beta	18/22	170*	2.2	25*	10	*f*	*f*
Category II outfalls							
Gross beta	104/156	3,200*	−16	45*	21	*f*	*f*
Total rad Sr[g]	1/1	1,500*	1,500*	1,500	*f*	1,000	*f*

[a]Individual concentrations significantly greater than zero are identified by an *.
[b]Average concentrations significantly greater than zero are identified by an *.
[c]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 the average concentration is significantly greater than zero.
[f]Not applicable
[g]Total rad Sr analyzed when Gross beta is greater than 810 pCi/L.

Table 2.51. ORNL NPDES radiological sampling and analysis plan for the category outfalls, 1995

Parameter	Collection frequency	Sample type	Analysis frequency
Category I outfalls			
Gross beta[a]	Yearly	Grab	Yearly
Category II outfalls			
Gross beta[a]	Quarterly	Grab	Quarterly

[a]If gross beta > 810 pCi/L, analyze for total rad Sr.

Table 2.52. ORNL NPDES sampling and analysis plan for the facility and ambient locations, 1995

Analysis	Collection frequency	Sample type	Analysis frequency
X01 (Sewage Treatment Plant)[a]			
Field Measurements			
Chlorine, total residual	3/week	Grab, instant read	3/week
Dissolved oxygen	5/week	Grab, instant read	5/week
Downstream pH	Weekly	Grab, instant read	Weekly
Downstream temperature	Weekly	Grab, instant read	Weekly
Flow	Daily	Continuous	Daily
pH	Weekly	Grab, instant read	Weekly
Temperature	Daily	Grab, instant read	Daily
Metals	Monthly	24-h composite	Monthly
Others			
Ammonia, as N	3/week	24-h composite	3/week
Biochemical oxygen demand	3/week	24-h composite	3/week
Cyanide, total	Monthly	Grab	Monthly
Fecal coliform	3/week	Grab	3/week
Oil and grease	3/week	Grab	3/week
Phenolics, total recoverable	Monthly	Grab	Monthly
Total suspended solids	3/week	24-h composite	3/week
Volatile Organics	Monthly	Grab	Monthly
X02 (Coal Yard Runoff Treatment Facility)[b]			
Anions	Monthly	24-h composite	Monthly
Field Measurements			
Downstream pH	Weekly	Grab, instant read	Weekly
Downstream temperature	Weekly	Grab, instant read	Weekly
Flow	Daily	Continuous	Daily
pH	Weekly	Grab, instant read	Weekly
Temperature	Weekly	Grab, instant read	Weekly
Metals	Weekly	24-h composite	Weekly
Others			
Oil and grease	Weekly	Grab	Weekly
Total suspended solids	Weekly	24-h composite	Weekly
X12 (Nonradiological Wastewater Treatment Facility)[c]			
Anions	Weekly	24-h composite	Weekly
Field Measurements			
Downstream pH	Daily	Grab, instant read	Daily
Downstream temperature	Daily	Grab, instant read	Daily
Flow	Daily	Continuous	Daily
pH	Continuous	Continuous	Continuous
Temperature	Daily	Grab, instant read	Daily

Table 2.52 (continued)

Analysis	Collection frequency	Sample type	Analysis frequency
Metals	Weekly	24-h composite	Weekly
Others			
Biochemical oxygen demand	Weekly	24-h composite	Weekly
Cyanide, total	Weekly	Grab	Weekly
Oil and grease	Weekly	Grab	Weekly
Phenolics, total recoverable	Weekly	Grab	Weekly
Total suspended solids	Weekly	24-h composite	Weekly
Total toxic organics	Weekly	Grab	Weekly
Volatile Organics	Weekly	Grab	Weekly
X13 (Melton Branch), X14 (White Oak Creek), X15 (White Oak Dam)[d]			
Anions	Monthly	24-h composite	Monthly
Field Measurements			
Chlorine, total residual	Weekly	Grab, instant read	Weekly
Conductivity	Monthly	Grab, instant read	Monthly
Dissolved oxygen	Weekly	Grab, instant read	Weekly
Flow	Daily	Continuous	Daily
pH	Monthly	Grab, instant read	Monthly
Temperature	Monthly	Grab, instant read	Monthly
Turbidity	Monthly	Grab, instant read	Monthly
Metals	Monthly	24-h composite	Monthly
Others			
Ammonia, as N	Monthly	24-h composite	Monthly
Biochemical oxygen demand	Monthly	24-h composite	Monthly
Oil and grease	Weekly	Grab	Weekly
Phenolics, total recoverable[e]	Monthly	Grab	Monthly
Total dissolved solids	Monthly	Grab	Monthly
Total organic carbon	Monthly	Grab	Monthly
Total suspended solids	Monthly	24-h composite	Monthly
PCBs	Monthly	24-h composite	Monthly
Volatile Organics	Monthly	Grab	Monthly

[a]Temperature and downstream temperature are not required by the NPDES permit.

[b]Downstream temperature is not required by the NPDES permit. Frequency for downstream pH, downstream temperature, pH, and temperature changed from daily to weekly to reflect batch mode operation.

[c]Downstream temperature is not required by the NPDES permit. Downstream pH, pH, and temperature are taken daily; permit requirement is weekly.

[d]Temperature is measured weekly in addition to the monthly requirement by the NPDES permit.

[e]Total recoverable phenolics not required at X15 (White Oak Dam).

Table 2.53. NPDES Permit Number TN 0002941, 1995 ORNL ambient and facility discharge points

Parameter	N det/ N total	Concentration (mg/L)			
		Max[a]	Min[a]	Av[b]	Standard error[c]
Sewage Treatment Plant (X01) *Flow rates (10^6 L/d) – Max: 1.8, Min: 0.42, Avg: 0.93*					
Field Measurements					
Chlorine, total residual	158/158	2.0	0.020	0.23	0.013
Dissolved oxygen	249/249	11	6.7	8.7	0.063
Downstream pH (SU)	52/52	8.0	7.1	7.6	0.026
pH (SU)	52/52	7.7	7.0	7.3	0.021
Metals[d]					
Copper, total	2/13	<0.0070	0.0029	–0.0065	0.00036
Mercury, total	6/12	0.00010	<0.000050	–0.000065	0.0000059
Silver, total	0/13	<0.0050	<0.0010	–0.0044	0.00042
Zinc, total	13/13	0.078	0.0061	0.057	0.0051
Others					
Ammonia, as N	154/156	5.7	<0.030	–0.72	0.082
Biochemical oxygen demand	2/156	6.3	<5.0	–5.0	0.0084
Cyanide, total	3/12	0.0050	<0.0020	–0.0026	0.00034
Fecal coliform (col/100 mL)[e]	116/156	>6,000	<1.0	–5.1	1.1
Oil and grease	3/156	5.4	<5.0	–5.0	0.0029
Phenolics, total recoverable	2/12	0.0060	<0.0010	–0.0015	0.00042
Total suspended solids	12/156	17	<5.0	–5.2	0.10
Volatile Organics					
Bromodichloromethane	2/13	U0.0050	J0.0010	–0.0045	0.00033
Trichloroethene	0/13	U0.0050	U0.0050	–0.0050	0
Coal Yard Runoff Treatment Facility (X02) *Flow rates (10^6 L/d) – Max: 1.9, Min: 0, Avg: 0.14*					
Anions					
Sulfate, as SO_4	13/13	2,800	1,500	2,000	90
Field Measurements					
Downstream pH (SU)	109/109	8.2	7.0	7.7	0.020
pH (SU)	109/109	7.8	6.5	7.2	0.023
Temperature (°C)	109/109	29	3.0	14	0.62
Metals[d]					
Arsenic, total	9/52	0.19	<0.0010	–0.051	0.0046
Cadmium, total	4/52	0.0054	<0.0010	–0.0044	0.00020
Chromium, total	13/52	0.056	<0.0010	–0.0081	0.0016
Copper, total	8/52	0.082	0.0014	–0.0089	0.0015
Iron, total	52/52	0.60	0.10	0.29	0.013
Lead, total	3/52	0.056	<0.0010	–0.043	0.0025
Manganese, total	48/52	0.064	<0.0010	–0.015	0.001
Nickel, total	3/52	0.017	<0.010	–0.010	0.00014

Table 2.53 (continued)

Parameter	N det/ N total	Concentration (mg/L)			
		Max[a]	Min[a]	Av[b]	Standard error[c]
Selenium, total	5/52	<0.050	<0.0020	~0.043	0.0024
Silver, total	2/52	0.0073	<0.0010	~0.0044	0.00021
Zinc, total	48/52	0.26	<0.0050	~0.020	0.0051
Others					
Oil and grease	2/52	45	<5.0	~5.8	0.77
Total suspended solids	6/52	120	<5.0	~8.1	2.2
Nonradiological Wastewater Treatment Facility (X12) *Flow rates (10^6 L/d) – Max: 3.0, Min: 1.2, Avg: 2.0*					
Anions					
Fluoride	52/52	1.6	0.85	1.2	0.019
Nitrate, as N	52/52	14	0.89	4.5	0.51
Sulfate, as SO_4	52/52	170	90	120	2.7
Field Measurements					
Downstream pH (SU)	249/249	8.2	6.9	7.6	0.015
pH (SU)	249/249	7.7	7.1	7.5	0.0064
Temperature (°C)	249/249	26	7.7	19	0.26
Metals[d]					
Arsenic, total	1/52	<0.050	<0.0010	~0.042	0.0025
Cadmium, total	0/52	<0.0050	<0.0010	~0.0044	0.00020
Chromium, total	13/52	0.017	<0.0010	~0.0046	0.00037
Copper, total	18/52	0.024	<0.0010	~0.0074	0.00040
Iron, total	3/52	0.15	<0.0050	~0.052	0.0023
Lead, total	2/52	<0.050	<0.0010	~0.043	0.0025
Mercury, total	14/52	0.00016	<0.000050	~0.000063	0.0000038
Nickel, total	1/52	0.016	<0.010	~0.010	0.00012
Phosphorus, total	44/52	0.43	<0.20	~0.29	0.010
Selenium, total	2/52	<0.050	<0.0020	~0.043	0.0024
Silver, total	1/52	0.0052	<0.0010	~0.0044	0.00020
Zinc, total	51/52	0.19	0.021	~0.040	0.0032
Others					
Biochemical oxygen demand	0/52	<5.0	<5.0	~5.0	0
Cyanide, total	3/52	0.0080	<0.0020	~0.0022	0.00013
Oil and grease	1/52	6.4	<5.0	~5.0	0.027
Phenolics, total recoverable	4/52	0.0070	<0.0010	~0.0012	0.00012
Total suspended solids	0/52	<5.0	<5.0	~5.0	0
Total toxic organics	0/52	<0.010	<0.010	~0.010	0
Volatile Organics					
1,1-Dichloroethane	0/52	U0.0050	U0.0050	~0.0050	0
Benzene	0/52	U0.0050	U0.0050	~0.0050	0
Bromodichloromethane	0/52	U0.0050	U0.0050	~0.0050	0

Table 2.53 (continued)

Parameter	N det/ N total	Concentration (mg/L)			
		Max[a]	Min[a]	Av[b]	Standard error[c]
Chlorobenzene	0/52	U0.0050	U0.0050	–0.0050	0
Chloroform	1/52	U0.0050	J0.0010	–0.0049	0.000077
Methylene chloride	1/52	U0.0050	J0.0020	–0.0049	0.000058
Tetrachloroethene	0/52	U0.0050	U0.0050	–0.0050	0
Trichloroethene	0/52	U0.0050	U0.0050	–0.0050	0
		Melton Branch (X13)			
		Flow rates (10^6 L/d) – Max: 110, Min: 0.79, Avg: 6.2			
Anions					
Fluoride	12/12	2.1	0.18	1.2	0.21
Nitrate, as N	12/12	5.2	0.11	0.96	0.40
Sulfate, as SO_4	12/12	170	25	96	15
Field Measurements					
Chlorine, total residual	22/53	0.14	<0.010	–0.030	0.0040
Conductivity (mS/cm)	12/12	0.75	0.24	0.47	0.040
Dissolved oxygen	52/52	13	6.5	9.2	0.21
pH (SU)	12/12	8.0	7.0	7.7	0.091
Temperature (°C)	64/64	26	2.1	15	0.83
Turbidity (NTU)	12/12	420	5.0	46	34
Metals[d]					
Aluminum, total	11/12	8.4	0.045	–1.3	0.69
Arsenic, total	0/12	<0.050	<0.0010	–0.046	0.0041
Cadmium, total	0/12	<0.0050	<0.0010	–0.0047	0.00033
Chromium, total	2/12	0.018	<0.0010	–0.0058	0.0014
Copper, total	5/12	0.016	<0.0070	–0.0089	0.00086
Iron, total	12/12	11	0.072	1.4	0.89
Lead, total	0/12	<0.050	<0.0010	–0.046	0.0041
Manganese, total	12/12	0.76	0.019	0.13	0.058
Mercury, total	3/12	0.000087	<0.000050	–0.000057	0.0000041
Nickel, total	1/12	0.014	<0.010	–0.010	0.00033
Phosphorus, total	12/12	0.91	0.21	0.58	0.071
Silver, total	0/12	<0.0050	<0.0010	–0.0047	0.00033
Zinc, total	12/12	0.19	0.013	0.066	0.014
Others					
Ammonia, as N	9/12	0.052	<0.030	–0.036	0.0020
Biochemical oxygen demand	0/12	<5.0	<5.0	–5.0	0
Oil and grease	0/52	<5.0	<5.0	–5.0	0
Phenolics, total recoverable	2/12	0.0090	<0.0010	–0.0018	0.00066
Total dissolved solids	12/12	520	220	340	25
Total organic carbon	12/12	6.4	1.7	3.0	0.36
Total suspended solids	5/12	280	<5.0	–32	23

Table 2.53 (continued)

Parameter	N det/ N total	Concentration (mg/L)			
		Max[a]	Min[a]	Av[b]	Standard error[c]
PCBs					
Total aroclors	1/12	U0.0020	JB0.00010	–0.0018	0.00016
Volatile Organics					
Chloroform	0/12	U0.0050	U0.0050	–0.0050	0
Trichloroethene	2/12	0.0080	J0.0010	–0.0049	0.00043
White Oak Creek (X14)					
Flow rates (10^6 L/d) – Max: 130, Min: 5.3, Avg: 21					
Anions					
Fluoride	12/12	1.1	0.30	0.76	0.086
Nitrate, as N	12/12	3.5	0.68	1.4	0.22
Sulfate, as SO_4	12/12	67	27	45	3.8
Field Measurements					
Chlorine, total residual	20/52	0.070	<0.010	–0.023	0.0015
Conductivity (mS/cm)	12/12	0.49	0.18	0.35	0.025
Dissolved oxygen	52/52	11	6.9	9.0	0.15
pH (SU)	12/12	8.1	7.1	7.7	0.091
Temperature (°C)	64/64	24	8.2	16	0.63
Turbidity (NTU)	12/12	310	5.0	36	25
Metals[d]					
Aluminum, total	12/12	2.0	0.011	0.38	0.15
Arsenic, total	0/12	<0.050	<0.0010	–0.042	0.0053
Cadmium, total	0/12	<0.0050	<0.0010	–0.0047	0.00033
Chromium, total	2/12	0.062	<0.0010	–0.0089	0.0048
Copper, total	3/12	0.016	0.0033	–0.0079	0.00095
Iron, total	12/12	2.2	0.13	0.43	0.17
Lead, total	0/12	<0.050	<0.0010	–0.046	0.0041
Manganese, total	12/12	0.089	0.014	0.037	0.0067
Mercury, total	4/12	0.00012	<0.000050	–0.000064	0.0000067
Nickel, total	1/12	0.072	<0.010	–0.015	0.0052
Phosphorus, total	10/12	0.49	<0.20	–0.28	0.028
Silver, total	0/12	<0.0050	<0.0010	–0.0047	0.00033
Zinc, total	12/12	0.061	0.016	0.034	0.0038
Others					
Ammonia, as N	9/12	0.19	<0.030	–0.051	0.013
Biochemical oxygen demand	0/12	<5.0	<5.0	–5.0	0
Oil and grease	0/52	<5.0	<5.0	–5.0	0
Phenolics, total recoverable	1/12	0.0060	<0.0010	–0.0014	0.00042
Total dissolved solids	12/12	320	150	210	17
Total organic carbon	12/12	5.6	1.3	2.0	0.35
Total suspended solids	5/12	28	<5.0	–9.5	2.2

Table 2.53 (continued)

Parameter	N det/ N total	Concentration (mg/L)			
		Max[a]	Min[a]	Av[b]	Standard error[c]
PCBs					
Total aroclors	2/12	U0.0020	JB0.00010	–0.0017	0.00021
Volatile Organics					
Chloroform	11/12	U0.0050	J0.0010	–0.0023	0.00028
Trichloroethene	0/12	U0.0050	U0.0050	–0.0050	0
White Oak Dam (X15)					
Flow rates (10^6 L/d) – Max: 230, Min: 11, Avg: 29					
Anions					
Fluoride	12/12	1.0	0.23	0.76	0.081
Nitrate, as N	11/12	12	<0.10	–1.5	0.96
Sulfate, as SO_4	12/12	140	27	64	8.5
Field Measurements					
Chlorine, total residual	25/52	0.27	<0.010	–0.050	0.0082
Conductivity (mS/cm)	12/12	0.42	0.31	0.36	0.010
Dissolved oxygen	53/53	19	5.7	9.1	0.34
pH (SU)	12/12	8.7	7.5	8.0	0.12
Temperature (°C)	64/64	30	3.2	17	0.98
Turbidity (NTU)	12/12	88	3.0	30	7.6
Metals[d]					
Aluminum, total	11/12	4.9	<0.050	–1.6	0.47
Arsenic, total	0/12	<0.050	<0.0010	–0.046	0.0041
Cadmium, total	0/12	<0.0050	<0.0010	–0.0047	0.00033
Chromium, total	9/12	0.39	<0.0040	–0.045	0.032
Copper, total	6/12	0.011	0.0047	–0.0075	0.00044
Iron, total	12/12	3.5	0.098	1.3	0.28
Lead, total	0/12	<0.050	<0.0010	–0.046	0.0041
Manganese, total	12/12	0.34	0.032	0.14	0.022
Mercury, total	7/12	0.00019	<0.000050	–0.000079	0.000012
Nickel, total	0/12	<0.010	<0.010	–0.010	0
Phosphorus, total	11/12	0.50	<0.20	–0.30	0.027
Silver, total	0/12	<0.0050	<0.0010	–0.0047	0.00033
Zinc, total	12/12	0.15	0.0096	0.044	0.011
Others					
Ammonia, as N	12/12	0.17	0.037	0.073	0.010
Biochemical oxygen demand	2/12	8.6	<5.0	–5.4	0.31
Oil and grease	1/52	7.5	<5.0	–5.0	0.048
Total dissolved solids	12/12	270	170	230	8.8
Total organic carbon	12/12	4.1	1.6	2.7	0.20
Total suspended solids	10/12	270	<5.0	–59	22

Table 2.53 (continued)

Parameter	N det/ N total	Concentration (mg/L)			
		Max[a]	Min[a]	Av[b]	Standard error[c]
PCBs					
Total aroclors	1/12	U0.0020	JB0.00010	~0.0018	0.00016
Volatile Organics					
Chloroform	1/12	U0.0050	J0.0010	~0.0047	0.00033
Trichloroethene	0/12	U0.0050	U0.0050	~0.0050	0

[a]Prefix "<" indicates the value for a parameter (excluding organics) was not quantifiable at the analytical detection limit; "U" indicates the value for an organic parameter was undetected at the analytical detection limit; "J" indicates the value was estimated at or below the analytical detection limit by the laboratory; and "JB" indicates the value was estimated at or below the analytical detection limit and was found in the laboratory blank; ">" indicates that the actual value was above the given value.

[b]A tilde (~) indicates that estimated values and/or detection limits were used in the calculation.

[c]Standard error of the mean.

[d]Note that detection levels for metals have been lowered through a change in analytical method, from ICP (EPA 200.7) to ICP/MS (EPA 200.8).

[e]The geometric mean is computed rather than the average.

Table 2.54. ORNL NPDES sampling and analysis plan for the category outfalls and cooling systems, 1995

Analysis	Collection frequency	Sample type	Analysis frequency
	Category I outfalls[a]		
Field Measurements			
Downstream pH	Yearly	Grab, instant read	Yearly
Downstream temperature	Yearly	Grab, instant read	Yearly
Flow	Yearly	Instantaneous	Yearly
pH	Yearly	Grab, instant read	Yearly
Temperature	Yearly	Grab, instant read	Yearly
Others			
Oil and grease	Yearly	Grab	Yearly
Total suspended solids	Yearly	Grab	Yearly
	Category II outfalls		
Field Measurements			
Downstream pH	Quarterly	Grab, instant read	Quarterly
Downstream temperature	Quarterly	Grab, instant read	Quarterly
Flow	Quarterly	Instantaneous	Quarterly
pH	Quarterly	Grab, instant read	Quarterly
Temperature	Quarterly	Grab, instant read	Quarterly
Others			
Oil and grease	Quarterly	Grab	Quarterly
Total suspended solids	Quarterly	Grab	Quarterly
	Category III outfalls[b]		
Field Measurements			
Flow	Quarterly	Instantaneous	Quarterly
pH	Quarterly	Grab, instant read	Quarterly
Temperature	Quarterly	Grab, instant read	Quarterly
	Cooling Systems[a]		
Field Measurements			
Chlorine, total residual	Quarterly	Grab, instant read	Quarterly
Downstream pH	Quarterly	Grab, instant read	Quarterly
Downstream temperature	Quarterly	Grab, instant read	Quarterly
Flow	Quarterly	*c*	Quarterly
pH	Quarterly	Grab, instant read	Quarterly
Temperature	Quarterly	Grab, instant read	Quarterly
Metals	Quarterly	Grab	Quarterly

[a]Downstream temperature is not required by the NPDES permit.
[b]Temperature is not required by the NPDES permit.
[c]Not applicable.

Table 2.55. NPDES Permit Number TN 0002941, 1995 ORNL categories and cooling systems

Parameter	N det/ N total	Concentration (mg/L)			
		Max[a]	Min[a]	Av[b]	Standard error[c]
Category I outfalls					
Field Measurements					
Downstream pH (SU)	22/22	8.8	7.0	7.7	0.081
Flow (MGD)	22/22	0.052	0.000072	0.0067	0.0028
pH (SU)	22/22	8.7	7.2	7.8	0.078
Temperature (°C)	22/22	12	6.5	9.5	0.34
Others					
Oil and grease	0/22	<5.0	<5.0	~5.0	0
Total suspended solids	18/22	280	<5.0	~44	15
Category II outfalls					
Field Measurements					
Downstream pH (SU)	156/156	8.6	7.0	7.7	0.018
Downstream temperature (°C)	40/40	24	9.0	18	0.75
Flow (MGD)	156/156	0.13	0.00036	0.019	0.0020
pH (SU)	156/156	8.5	7.0	7.6	0.022
Temperature (°C)	156/156	60	7.2	19	0.50
Others					
Oil and grease	11/156	46	<5.0	~5.4	0.28
Total suspended solids	78/156	580	<5.0	~23	4.6
Category III outfalls					
Field Measurements					
Flow (MGD)	51/51	0.17	0.00036	0.018	0.0050
pH (SU)	51/51	8.9	6.9	7.7	0.050
Cooling Systems					
Field Measurements					
Chlorine, total residual	29/33	0.19	<0.020	~0.073	0.0097
Downstream pH (SU)	33/33	8.6	7.2	7.9	0.062
Flow (MGD)	33/33	0.19	0.0016	0.046	0.013
pH (SU)	33/33	8.8	7.2	8.4	0.069
Temperature (°C)	33/33	34	11	22	0.91
Metals					
Chromium, total	16/33	0.090	<0.0040	~0.014	0.0031
Copper, total	22/33	0.18	<0.0070	~0.045	0.0088
Zinc, total	33/33	0.92	0.030	0.23	0.031

[a]Prefix "<" indicates the value for a parameter (excluding organics) was not quantifiable at the analytical detection limit.

[b]A tilde (~) indicates that estimated values and/or detection limits were used in the calculation.

[c]Standard error of the mean.

Table 2.56. 1995 mercury concentrations in ORNL surface water

Location	N det/ N total	Concentration (µg/L)				Percent of TWQ[d]
		Max[a]	Min[a]	Av[b]	Standard error[c]	
		First Creek				
Outfall 341	1/6	0.053	<0.050	~0.051	0.00050	2.2
		Fifth Creek				
Outfall 261	0/6	<0.050	<0.050	~0.050	0	2.1
Outfall 363	0/6	<0.050	<0.050	~0.050	0	2.1
Outfall 367	0/6	<0.050	<0.050	~0.050	0	2.1
		White Oak Creek				
Outfall 106	5/6	1.0	<0.050	~0.50	0.20	42
Outfall 202	5/6	0.090	<0.050	~0.069	0.0065	3.8
Outfall 207	6/6	0.44	0.081	0.25	0.075	18
Outfall 222	0/6	<0.050	<0.050	~0.050	0	2.1
Outfall 301	4/6	0.17	<0.050	~0.11	0.024	7.1
Outfall 302	6/6	0.17	0.052	0.11	0.021	7.1
Outfall 304	6/6	0.24	0.086	0.16	0.029	10
Headwaters	2/6	0.083	<0.050	~0.056	0.0054	3.5
Sewage Treatment Plant	1/6	0.053	<0.050	~0.051	0.00050	2.2

[a]Prefix "<" indicates the value for a parameter (excluding organics) was not quantifiable at the analytical detection limit.

[b]A tilde (~) indicates that estimated values and/or detection limits were used in the calculation.

[c]Standard error of the mean.

[d]Maximum concentration as a percentage of the Tennessee General Water Quality (TWQ) standard, 2.4 µg/L, for the protection of fish and aquatic life.

Table 2.57. 1995 monthly stream flows, ORNL

Month	Flow (10^9 L)				Average Ratio[d]
	Melton Branch 1	White Oak Creek[a]	White Oak Dam[b]	Clinch River[c]	
January	0.46	1.2	1.6	390	0.0068
February	0.26	0.82	1.1	380	0.0037
March	0.31	0.81	1.1	320	0.0048
April	0.075	0.38	0.57	58	0.0097
May	0.31	0.89	1.4	60	0.023
June	0.062	0.31	0.48	240	0.0025
July	0.054	0.31	0.44	270	0.0018
August	0.063	0.35	0.50	260	0.0026
September	0.068	0.34	0.50	350	0.0020
October	0.078	0.44	0.58	400	0.0016
November	0.18	0.74	1.0	330	0.0034
December	0.23	0.76	1.1	320	0.0032

[a]White Oak Creek above its confluence with Melton Branch.
[b]White Oak Creek at White Oak Dam.
[c]Clinch River at Melton Hill Dam.
[d]Flow ratios (White Oak Creek at White Oak Dam: Clinch River at Melton Hill Dam) are calculated daily and averaged for the month.

Table 2.58. 1995 measured radioactivity in surface waters around ORNL

Parameter	N det/ N total	Concentration (pCi/L)				DCG[d]	Percent of DCG[e]
		Max[a]	Min[a]	Av[b]	Standard error[c]		
			Melton Hill Dam				
Co-60	0/12	38	−19	6.4	4.3	5,000	*f*
Cs-137	0/12	24	−27	−0.68	4.4	3,000	*f*
Gross alpha	5/12	2.1*	−0.70	0.88*	0.22	*f*	*f*
Gross beta	8/12	6.2*	−2.4	3.0*	0.73	*f*	*f*
			White Oak Creek Headwaters				
Co-60	0/12	32	−76	−0.99	8.4	5,000	*f*
Cs-137	0/12	35	−22	9.2*	4.6	3,000	0.31
Gross alpha	6/12	4.1*	−0.73	1.5*	0.43	*f*	*f*
Gross beta	8/12	7.8*	−0.27	3.5*	0.67	*f*	*f*
			7500 Road Bridge				
Co-60	0/12	22	−38	−3.4	5.1	5,000	*f*
Cs-137	2/12	100*	−2.7	30*	8.2	3,000	1.0
H-3	12/12	12,000*	3,000*	7,200*	860	2,000,000	0.36
Total rad Sr	12/12	92*	24*	50*	6.3	1,000	5.0
			First Creek				
Co-60	1/12	32*	−27	−2.5	5.1	5,000	*f*
Cs-137	0/12	14	−19	−2.5	2.9	3,000	*f*
Total rad Sr	12/12	230*	10*	86*	21	1,000	8.6
			Fifth Creek				
Co-60	0/12	24	−46	−2.6	5.6	5,000	*f*
Cs-137	0/12	24	−24	5.0	4.5	3,000	*f*
Total rad Sr	12/12	38*	10*	22*	2.5	1,000	2.2
			Melton Branch 2				
Co-60	2/10	38*	−5.4	14*	4.9	5,000	0.28
Cs-137	0/10	24	−19	4.9	4.9	3,000	*f*
H-3	10/10	10,000*	2,700*	6,300*	820	2,000,000	0.31
Total rad Sr	2/10	3.2*	−1.4	0.96*	0.40	1,000	0.096
			Northwest Tributary				
Co-60	0/9	24	−78	−3.9	9.9	5,000	*f*
Cs-137	0/9	30	−35	1.8	6.3	3,000	*f*
Total rad Sr	9/9	86*	2.7*	56*	9.1	1,000	5.6
			Raccoon Creek				
Co-60	1/12	41*	−27	3.3	5.6	5,000	*f*
Cs-137	0/12	19	−19	−2.0	3.2	3,000	*f*
Total rad Sr	12/12	65*	4.9*	24*	6.3	1,000	2.4

[a]Individual concentrations significantly greater than zero are identified by an *.

[b]Average concentrations significantly greater than zero are identified by an *.

[c]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 the average concentration is significantly greater than zero.

[f]Not applicable.

Table 2.59. 1995 measured radioactivity at ORNL NPDES locations

Parameter	N det/ N total	Concentration (pCi/L)				DCG[d]	Percent of DCG[e]
		Max[a]	Min[a]	Av[b]	Standard error[c]		
Sewage Treatment Plant (X01)							
Co-60	1/12	24*	−65	−2.4	6.8	5,000	*f*
Cs-137	0/12	22	−27	3.6	4.1	3,000	*f*
Gross beta	12/12	680*	130*	370*	55	*f*	*f*
H-3	2/12	920*	−680	220	140	2,000,000	*f*
Total rad Sr	12/12	270*	54*	160*	21	1,000	16
Nonradiological Wastewater Treatment Facility (X12)							
Co-60	1/12	24	−38	4.0	5.7	5,000	*f*
Cs-137	12/12	540*	250*	400*	27	3,000	13
Gross alpha	12/12	27*	4.9*	20*	2.0	*f*	*f*
Gross beta	12/12	1,100*	270*	580*	75	*f*	*f*
H-3	12/12	110,000*	30,000*	64,000*	7,000	2,000,000	3.2
Total rad Sr	12/12	510*	11*	180*	43	1,000	18
Melton Branch 1 (X13)							
Co-60	0/12	22	−30	1.3	4.4	5,000	*f*
Cs-137	1/12	38*	−35	0.27	5.3	3,000	*f*
H-3	12/12	970,000*	73,000*	410,000*	80,000	2,000,000	21
Total rad Sr	12/12	270*	92*	200*	17	1,000	20
White Oak Creek (X14)							
Co-60	1/12	30*	−27	−0.99	4.9	5,000	*f*
Cs-137	7/12	180*	11	47*	13	3,000	1.6
H-3	12/12	81,000*	8,100*	34,000*	7,200	2,000,000	1.7
Total rad Sr	12/12	140*	25*	85*	13	1,000	8.5
White Oak Dam (X15)							
Co-60	33/53	21*	−3.2	5.5*	0.57	5,000	0.11
Cs-137	53/53	59*	4.9*	29*	1.9	3,000	0.95
Gross alpha	52/53	22*	0.78	8.5*	0.61	*f*	*f*
Gross beta	53/53	460*	130*	300*	12	*f*	*f*
H-3	12/12	190,000*	20,000*	110,000*	18,000	2,000,000	5.5
Total rad Sr	12/12	190*	54*	120*	11	1,000	12

[a]Individual concentrations significantly greater than zero are identified by an *.

[b]Average concentrations significantly greater than zero are identified by an *.

[c]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 the average concentration is significantly greater than zero.

[f]Not applicable.

Table 2.60. 1995 radiological sampling and analysis plan for ORNL surface waters receiving effluents

Station	Analysis	Collection frequency	Sample type	Analysis frequency
STP	Gamma scan, Gross beta, H-3, Total rad Sr	Weekly	Flow proportional composite	Monthly
7500 Road Bridge, MB1, MB2, WOC	Gamma scan, H-3, Total rad Sr	Weekly	Flow proportional composite	Monthly
First Creek, Fifth Creek, Raccoon Creek	Gamma scan, Total rad Sr	Weekly	Grab	Monthly
MH DAM	Gamma scan, Gross alpha,[a] Gross beta[b]	Weekly	Flow proportional composite	Monthly
NRWTF	Gamma scan, Gross alpha, Gross beta, H-3, Total rad Sr	Weekly	Flow proportional composite	Monthly
NWT	Gamma scan, Total rad Sr	Weekly	Flow proportional composite	Monthly
WOC Headwaters	Gamma scan, Gross alpha,[a] Gross beta[b]	Weekly	Flow proportional composite	Monthly
WOD	Gamma scan, Gross alpha,[a] Gross beta[b]	Weekly	Flow proportional composite	Weekly
WOD	H-3, Total rad Sr	Weekly	Flow proportional composite	Monthly

[a]If gross alpha > 27 pCi/L, analyze for U-234, U-235, U-238, Th-228, Th-230, Th-232, Pu-238, Pu-239, Am-241, and Cm-244 as needed to account for the activity.

[b]If gross beta > 810 pCi/L, analyze for total rad Sr.

Table 2.61. 1995 NPDES Permit Number TN 0002950
Discharge Point K-1407-J, Central Neutralization Facility to Poplar Creek

Parameter	Number of samples	Concentration			Reference value[a]	Number of values exceeding reference
		Max	Min	Av		
1,1,1-Trichloroethane, mg/L	13	<0.01	<0.001	<0.009	*b*	*b*
Acetone, mg/L	5	<0.02	<0.02	<0.02	*b*	*b*
Acetonitrile, mg/L	5	<0.025	<0.01	<0.014	*b*	*b*
Benzene	15	<0.01	<0.005	<0.009	*b*	*b*
Bromoform, mg/L	13	<0.01	<0.01	<0.01	*b*	*b*
Cadmium, mg/L	4	0.0020	0.0009	0.0017	0.69	0
Carbontetrachloride, mg/L	13	<0.01	<0.01	<0.01	0.5	0
Chemical oxygen demand (COD), mg/L	52	44	5	14	*b*	*b*
Chloride, mg/L	205	4600	59	659	39,479	0
Chlorine, total residual, mg/L	104	<0.05	<0.002	<0.05	0.14	0
Chlorodibromomethane	13	<0.01	<0.01	<0.01	*b*	*b*
Chloroform, mg/L	13	<0.01	<0.001	<0.0043	0.5	0
Chromium, mg/L	4	0.008	0.0034	0.0051	2.77	0
Copper, mg/L	4	0.02	0.0076	0.0121	2.15	0
Dichlorobromomethane, mg/L	13	<0.01	<0.01	<0.01	*b*	*b*
Ethylbenzene, mg/L	15	<0.01	<0.01	<0.01	*b*	*b*
Flow, MGD	continuous	0.1704	0	0.0620	*b*	*b*
Lead	4	0.013	0.0039	0.0062	0.69	0
Methyl ethyl ketone, mg/L	5	<0.01	<0.01	<0.01	*b*	*b*
Methylene chloride, mg/L	15	<0.01	<0.001	<0.007	*b*	*b*
Naphthalene	12	<0.0009	<0.0009	<0.0009	*b*	*b*
Nickel, mg/L	4	0.23	0.011	0.08	3.98	0
Oil and grease, mg/L	103	<7.4	<2.0	<3.1	30	0
PCB, mg/L	12	<0.0005	<0.0005	<0.0005	0.00014	0
pH continuous, standard units	352	8.2	6.2	*b*	6.0–9.0	0
Silver, mg/L	4	<0.0033	<0.0005	<0.0015	0.43	0
Total suspended solids, mg/L	205	7	<1	<2.2	40	0
Temperature, °C	353	38	7	24.5	c	0
Tetrachloroethylene, mg/L	13	<0.01	<0.01	<0.01	0.7	0
Toluene, mg/L	15	<0.01	<0.01	<0.01	*b*	*b*
Total toxic organics, mg/L	4	<0.01	<0.0005	<0.004	2.13	0
Trichloroethylene, mg/L	12	<0.01	<0.001	<0.008	0.5	0
Vinyl chloride, mg/L	13	<0.01	<0.01	<0.01	0.2	0
Zinc, mg/L	4	0.063	0.02	0.036	2.61	0
96-h toxicity test with *Ceriodaphnia*						
NOEL	2	100%	25%	63%	*b*	*b*
LC_{50}	2	>100%	>100%	>100%	*b*	*b*
96-h toxicity test with fathead minnow						
NOEL	1	75%	75%	75%	*b*	*b*
LC_{50}	1	75%	75%	75%	*b*	*b*

[a]NPDES permit limit.
[b]Not applicable.
[c]Effluent must not cause the temperature of receiving stream to exceed 30.5°C.

Table 2.62. 1995 NPDES Permit Number TN 0002950
Discharge Point K-1407-Q,[a] Central Neutralization Facility to Clinch River

Parameter	Number of samples	Concentration			Reference value[b]	Number of values exceeding reference
		Max	Min	Av		
1,1,1-Trichloroethane, mg/L	2	<0.001	<0.001	<0.001	c	c
Acetone, mg/L	1	<0.02	<0.002	<0.02	c	c
Acetonitrile, mg/L	1	<0.01	<0.01	<0.01	c	c
Benzene	4	<0.01	<0.005	<0.006	0.005	0
Bromoform, mg/L	2	<0.01	<0.01	<0.01	c	c
Cadmium, mg/L	1	0.0009	0.0009	0.0009	0.69	0
Carbon tetrachloride, mg/L	2	<0.01	<0.01	<0.01	0.5	0
Chemical oxygen demand (COD), mg/L	9	32	5	18	c	c
Chloride, mg/L	33	1960	187	570	70,000	0
Chlorine, total residual, mg/L	18	<0.05	<0.05	0.05	1.0	0
Chlorodibromomethane	2	<0.01	<0.01	<0.01	c	c
Chloroform, mg/L	2	<0.006	<0.003	<0.005	0.5	0
Chromium, mg/L	1	0.0034	0.0034	0.0034	2.77	0
Copper, mg/L	1	0.0011	0.0011	0.0011	2.15	0
Dichlorobromomethane, mg/L	2	<0.01	<0.01	<0.01	c	c
Ethylbenzene, mg/L	4	<0.01	<0.01	<0.01	0.01	0
Flow, MGD	continuous	0.1838	0	0.0693	c	c
Lead	1	0.0039	0.0039	0.0039	0.69	0
Methyl ethyl ketone, mg/L	1	<0.01	<0.01	<0.01	c	c
Methylene chloride, mg/L	4	<0.01	<0.01	<0.01	c	c
Naphthalene	2	<0.001	<0.0009	<0.001	c	c
Nickel, mg/L	1	0.043	0.043	0.043	3.98	0
Oil and grease, mg/L	17	<7.4	<5.4	<6.0	30	0
PCB, mg/L	2	<0.0005	<0.0005	<0.0005	0.00045	0
pH continuous, standard units	56	8.2	6.8	c	6.0–9.0	0
Silver, mg/L	1	<0.0005	<0.0005	<0.0005	0.43	0
Total suspended solids, mg/L	33	7	<1.2	<3.3	40	0
Tetrachloroethylene, mg/L	2	<0.01	<0.01	<0.01	0.7	0
Toluene, mg/L	4	<0.01	<0.01	<0.01	0.01	0
Total petroleum hydrocarbons, mg/L	2	<1.0	<1.0	<1.0	0.1	0
Total toxic organics, mg/L	1	<0.01	<0.0005	<0.0041	2.13	0
Trichloroethylene, mg/L	2	<0.01	<0.0002	<0.006	0.5	0
Vinyl chloride, mg/L	2	<0.01	<0.01	<0.01	0.2	0
Zinc, mg/L	1	0.063	0.063	0.063	2.61	0

[a]Discharges from K-1407-Q to the Clinch River began November 1, 1995, in accordance with permit compliance schedule.
[b]NPDES permit limit.
[c]Not applicable.

Table 2.63. 1995 NPDES Permit Number TN 0002950
Discharge Point K-1515-C,[a] Holding Pond, K-25 Site

Parameter	Number of samples	Concentration			Reference value[b]	Number of values exceeding reference
		Max	Min	Av		
Aluminum, mg/L	26	1.4	0.16	0.82	2.0	0
Chlorine, total residual, mg/L	26	0.26	<0.05	<0.06	1.0	0
Flow, MGD	163	3.3223	0.06043	0.3451	c	c
pH, standard units	26	8.4	6.6	c	6.0–9.0	0
Setteable solids, ml/L	26	0.1	<0.1	<0.1	0.5	0
Suspended solids, mg/L	26	14	1	6.4	40	0

[a]Water treatment plant discharge to K-1515-C lagoon ceased June 1995 in accordance with NPDES permit requirements.
[b]NPDES permit limit.
[c]Not applicable.

Table 2.64. 1995 NPDES Permit Number TN 0002950
Discharge Point K-1515-F,[a] Holding Pond, K-25 Site

Parameter	Number of samples	Concentration			Reference value[b]	Number of values exceeding reference
		Max	Min	Av		
Aluminum, mg/L	31	1.6	0.21	0.56	2.0	0
Chlorine, total residual, mg/L	26	0.5	<0.05	<0.1	1.0	0
Flow, MGD	202	0.8941	0	0.0648	c	c
pH, standard units	32	8.5	7.3	c	6.0–9.0	0
Setteable solids, ml/L	26	0.3	<0.1	<0.1	0.5	0
Suspended solids, mg/L	26	5.4	<1.0	<1.5	40	0

[a]Water treatment plant discharge to K-1515-F began June 1995 in accordance with NPDES permit requirements.
[b]NPDES permit limit.
[c]Not applicable.

Table 2.65. 1995 NPDES Permit Number TN 0002950
Discharge Point K-1203, Sewage Treatment Plant, K-25 Site

Parameter	Number of samples	Concentration			Reference value[a]	Number of values exceeding reference
		Max	Min	Av		
Ammonia nitrogen, mg/L	159	1.25	<0.2	<0.21	7	0
Biological oxygen demand, mg/L	158	31.9	<5	<5.2	20	1
Chlorine, total residual, mg/L	293	0.53	<0.05	<0.05	0.24	1
Dissolved oxygen, mg/L	367	13.5	5.2	8.9	5[b]	0
Fecal coliform, Col./100 ml	159	88	<1	<2.8[c]	1000	0
Flow, MGD	continuous	1.1376	0.0946	0.2784	*d*	*d*
pH, standard units	365	8.0	6.9	*d*	6.0–9.0	0
Settleable solids, ml/L	263	0.5	<0.1	<0.1	0.5	0
Suspended solids, mg/L	158	10	<1	<2	45	0
96-h test with *Ceriodaphnia*						
NOEL	4	100%	100%	100%	*b*	*b*
LC_{50}	4	>100%	>100%	>100%	*b*	*b*
96-h test with fathead minnows						
NOEL	4	100%	100%	100%	*b*	*b*
LC_{50}	4	>100%	>100%	>100%	*b*	*b*

[a]NPDES permit limit.
[b]Daily minimum.
[c]Geometric average.
[d]Not applicable.

Table 2.66. 1995 NPDES Permit Number TN 0002950

Parameter	Number of samples	Concentration			Reference value[a]	Number of values exceeding reference
		Max	Min	Av		
		Discharge Point SD 05A				
Flow, MGD	12	1.2350	0.0060	0.2603	*b*	*b*
Oil and grease, mg/L	12	5.8	<2.0	<3.1	*b*	*b*
Total suspended solids, mg/L	12	11	<1	<3.3	*b*	*b*
pH, standard units	12	8.4	6.9	*b*	4.0–9.0	0
		Discharge Point SD 100				
Chlorine, total residual, mg/L	52	0.43	<0.05	<0.06	0.14	1
Flow, MGD	52	2.6903	0.1077	0.6662	*b*	*b*
Oil and grease, mg/L	52	9.8	<2.0	<3.2	*b*	*b*
Total suspended solids, mg/L	52	88	<1	<4.9	*b*	*b*
pH, standard units	52	7.8	6.8	*b*	6.0–9.0	0
		Discharge Point SD 100[c]				
Flow, MGD	1	0.2592	0.2592	0.2592	*b*	*b*
Total suspended solids, mg/L	1	111	111	111	*b*	*b*
pH, standard units	1	7.5	7.5	*b*	4.0–6.0	0
		Discharge Point SD 120				
Flow, MGD	9	0.7540	0.0171	0.3141	*b*	*b*
Oil and grease, mg/L	9	<6.2	<2.0	<3.5	*b*	*b*
Total suspended solids, mg/L	9	32	<1	<8.3	*b*	*b*
pH, standard units	9	7.4	6.7	*b*	4.0–9.0	0
		Discharge Point SD 124				
Chlorine, total residual, mg/L	46	<0.05	<0.05	<0.05	0.14	0
Flow, GPD	46	757700	95	25900	*b*	*b*
Oil and grease, mg/L	46	<7.9	<2.0	<3.5	*b*	*b*
Total suspended solids, mg/L	46	8	<1	<1.8	*b*	*b*
pH, standard units	46	8.2	6.8	*b*	6.0–9.0	0
		Discharge Point SD 130				
Chlorine, total residual, mg/L	52	<0.05	<0.05	<0.05	0.14	0
Flow, MGD	52	1.379	0.04583	0.3972	*b*	*b*
Oil and grease, mg/L	52	13.0	<2.0	<3.4	*b*	*b*
Total suspended solids, mg/L	52	104	<1	<10	*b*	*b*
pH, standard units	52	7.6	6.7	*b*	6.0–9.0	0
		Discharge Point SD 140				
Flow, GPD	4	8640	285	4582	*b*	*b*
Total suspended solids, mg/L	4	5	<1	<2	*b*	*b*
pH, standard units	4	8.2	6.9	*b*	4.0–9.0	0

Table 2.66 (continued)

Parameter	Number of samples	Concentration			Reference value[a]	Number of values exceeding reference
		Max	Min	Av		
		Discharge Point SD 132				
Flow, MGD	12	0.2753	0.0004	0.0298	*b*	*b*
Oil and grease, mg/L	12	<6.0	<2.0	<3.0	*b*	*b*
Total suspended solids, mg/L	12	60	<1	<6.2	*b*	*b*
pH, standard units	12	8.2	6.4	*b*	4.0–9.0	0
		Discharge Point SD 144				
Flow, GPD	12	451700	114	89097	*b*	*b*
Oil and grease, mg/L	12	<6.4	<2.0	<3.0	*b*	*b*
Total suspended solids, mg/L	12	29	<1	<5.3	*b*	*b*
pH, standard units	12	8.3	6.6	*b*	4.0–9.0	0
		Discharge Point SD 146				
Flow, GPD	11	17846	190	4006	*b*	*b*
Oil and grease, mg/L	11	<6.7	<2.0	<3.3	*b*	*b*
Total suspended solids, mg/L	11	5	<1	<1.8	*b*	*b*
pH, standard units	11	7.9	6.6	*b*	4.0–9.0	0
		Discharge Point SD 148				
Flow, GPD	12	4565	114	841	*b*	*b*
Oil and grease, mg/L	12	<6.2	<2.0	<3.0	*b*	*b*
Total suspended solids, mg/L	12	2	<1	<1.3	*b*	*b*
pH, standard units	12	8.1	7.1	*b*	4.0–9.0	0
		Discharge Point SD 150				
Flow, MGD	12	0.2412	0.02585	0.0653	*b*	*b*
Oil and grease, mg/L	12	<6.0	<2.0	<3.0	*b*	*b*
Total suspended solids, mg/L	12	18	<1	<2.6	*b*	*b*
pH, standard units	12	7.8	6.8	*b*	4.0–9.0	0
		Discharge Point SD 154				
Flow, MGD	11	0.1804	0.0008	0.0986	*b*	*b*
Oil and grease, mg/L	11	<6.3	<2.0	<2.8	*b*	*b*
Total suspended solids, mg/L	11	11	<1	<2.4	*b*	*b*
pH, standard units	11	8	6.8	*b*	4.0–9.0	0
		Discharge Point SD 156				
Flow, GPD	2	323200	754	161977	*b*	*b*
pH, standard units	2	7.3	6.9	*b*	4.0–9.0	0

Table 2.66 (continued)

Parameter	Number of samples	Concentration			Reference value[a]	Number of values exceeding reference
		Max	Min	Av		
		Discharge Point SD 158				
Flow, GPD	3	4565	76	2181	*b*	*b*
Total suspended solids, mg/L	3	1.2	<1	<1.1	*b*	*b*
pH, standard units	3	7.4	6.9	*b*	4.0–9.0	0
		Discharge Point SD 160				
Flow, GPD	4	11413	380	5231	*b*	*b*
Total suspended solids, mg/L	4	2.4	<1	<1.4	*b*	*b*
pH, standard units	4	7.6	6.8	*b*	4.0–9.0	0
		Discharge Point SD 162				
Flow, MGD	8	0.1701	0.03446	0.0946	*b*	*b*
Oil and grease, mg/L	8	<7.6	<2.0	<3.3	*b*	*b*
Total suspended solids, mg/L	8	6	<1	<2.5	*b*	*b*
pH, standard units	8	7.7	6.8	*b*	4.0–9.0	0
		Discharge Point SD 168				
Flow, GPD	2	380	190	285	*b*	*b*
Total suspended solids, mg/L	2	1	<1	<1	*b*	*b*
pH, standard units	2	7.0	6.5	*b*	4.0–9.0	0
		Discharge Point SD 170				
Chlorine, total residual, mg/L[d]	32	<0.05	<0.05	<0.05	0.019	0
Flow, MGD	52	0.2880	0.1008	0.1596	*b*	*b*
Oil and grease, mg/L	52	<6.1	<2.0	<3.0	*b*	*b*
Total suspended solids, mg/L	52	17	<1	<1.5	*b*	*b*
pH, standard units	52	8.3	7.2	*b*	6.0–9.0	0
		Discharge Point SD 180				
Chlorine, total residual, mg/L[d]	32	<0.05	<0.05	<0.05	0.019	0
Flow, MGD	52	0.7554	0.0014	0.1087	*b*	*b*
Oil and grease, mg/L	52	<6.9	<2.0	<3.2	*b*	*b*
Total suspended solids, mg/L	52	48	<1	<5	*b*	*b*
pH, standard units	52	8.1	6.7	*b*	6.0–9.0	0
		Discharge Point SD 190				
Chlorine, total residual, mg/L[d]	32	<0.05	<0.05	<0.05	0.019	0
Flow, MGD	52	2.844	0.04309	0.2686	*b*	*b*
Oil and grease, mg/L	52	<7.8	<2.0	<3.0	*b*	*b*
Total suspended solids, mg/L	52	9	<1	<2	*b*	*b*
pH, standard units	52	8	6.8	*b*	6.0–9.0	0

Table 2.66 (continued)

Parameter	Number of samples	Concentration			Reference value[a]	Number of values exceeding reference
		Max	Min	Av		
		Discharge Point SD 192				
Flow, GPD	2	1153	761	957	*b*	*b*
pH, standard units	2	7.9	7.5	*b*	4.0–9.0	0
		Discharge Point SD 194				
Flow, GPD	2	2283	2283	2283	*b*	*b*
pH, standard units	2	7.9	7.3	*b*	4.0–9.0	0
		Discharge Point SD 195				
Flow, GPD	2	10099	10099	10099	*b*	*b*
pH, standard units	2	7.9	6.9	*b*	4.0–9.0	0
		Discharge Point SD 196				
Flow, GPD	2	73608	6732	40170	*b*	*b*
pH, standard units	2	7.9	6.9	*b*	4.0–9.0	0
		Discharge Point SD 197				
Flow, GPD	11	437600	126	74788	*b*	*b*
Oil and grease, mg/L	11	<6.2	<2.0	<3.3	*b*	*b*
Total suspended solids, mg/L	11	19	<1	<6	*b*	*b*
pH, standard units	11	8.1	6.5	*b*	4.0–9.0	0
		Discharge Point SD 198				
Flow, GPD	4	5760	761	2914	*b*	*b*
Total suspended solids, mg/L	4	1	<1	<1	*b*	*b*
pH, standard units	4	8.2	7.4	*b*	4.0–9.0	0
		Discharge Point SD 200				
Flow, GPD	12	2648800	761	423870	*b*	*b*
Oil and grease, mg/L	12	<6.7	<2.0	<3.3	*b*	*b*
Total suspended solids, mg/L	12	42	<1	<7.5	*b*	*b*
pH, standard units	12	7.9	6.9	*b*	4.0–9.0	0
		Discharge Point SD 210				
Flow, GPD	4	1701700	50153	700788	*b*	*b*
Total suspended solids, mg/L	4	31	2	10.4	*b*	*b*
pH, standard units	4	7.8	6.9	*b*	4.0–9.0	0

Table 2.66 (continued)

Parameter	Number of samples	Concentration			Reference value[a]	Number of values exceeding reference
		Max	Min	Av		
		Discharge Point SD 220				
Flow, GPD	10	60727	761	16865	*b*	*b*
Oil and grease, mg/L	10	<6.2	<2.0	<3.3	*b*	*b*
Total suspended solids, mg/L	10	33	2.8	13	*b*	*b*
pH, standard units	10	8.0	7.2	*b*	4.0–9.0	0
		Discharge Point SD 230				
Flow, MGD	12	0.4863	0.00761	0.06604	*b*	*b*
Oil and grease, mg/L	12	<6.3	<2.0	<3.1	*b*	*b*
Total suspended solids, mg/L	12	2	<1	<1.1	*b*	*b*
pH, standard units	12	8.4	6.5	*b*	4.0–9.0	0
		Discharge Point SD 238				
Flow, GPD	2	1522	95	808	*b*	*b*
pH, standard units	2	7.9	7.1	*b*	4.0–9.0	0
		Discharge Point SD 240				
Flow, GPD	12	258900	190	63917	*b*	*b*
Oil and grease, mg/L	12	<6.5	<2.0	<3.0	*b*	*b*
Total suspended solids, mg/L	12	40	<1	<6	*b*	*b*
pH, standard units	12	7.6	6.8	*b*	4.0–9.0	0
		Discharge Point SD 242				
Flow, GPD	1	19	19	19	*b*	*b*
pH, standard units	1	6.9	6.9	*b*	4.0–9.0	0
		Discharge Point SD 250				
Flow, GPD	1	40947	40947	40947	*b*	*b*
Total suspended solids, mg/L	1	16	16	16	*b*	*b*
pH, standard units	1	7.4	7.4	*b*	4.0–9.0	0
		Discharge Point SD 280				
Flow, GPD	1	127	127	127	*b*	*b*
pH, standard units	1	7.9	7.9	*b*	4.0–9.0	0
		Discharge Point SD 292				
Flow, GPD	2	2356	1122	1739	*b*	*b*
pH, standard units	2	7.7	7.1	*b*	4.0–9.0	0

Table 2.66 (continued)

Parameter	Number of samples	Concentration			Reference value[a]	Number of values exceeding reference
		Max	Min	Av		
		Discharge Point SD 300				
Flow, GPD	2	95	48	71	*b*	*b*
pH, standard units	2	7.7	7.3	*b*	4.0–9.0	0
		Discharge Point SD 330				
Flow, GPD	4	48672	1234	17601	*b*	*b*
Total suspended solids, mg/L	4	17	<1	<5.25	*b*	*b*
pH, standard units	4	7.5	7.1	*b*	4.0–9.0	0
		Discharge Point SD 340				
Flow, GPD	2	34071	9224	21648	*b*	*b*
pH, standard units	2	7.7	7.1	*b*	4.0–9.0	0
		Discharge Point SD 350				
Flow, GPD	2	14195	2605	8400	*b*	*b*
pH, standard units	2	7.3	7.2	*b*	4.0–9.0	0
		Discharge Point SD 352				
Flow, GPD	3	380	48	269	*b*	*b*
Total suspended solids, mg/L	3	35	<1	<12.3	*b*	*b*
pH, standard units	3	7.4	6.8	*b*	4.0–9.0	0
		Discharge Point SD 362				
Flow, GPD	2	4490	1721	3105	*b*	*b*
pH, standard units	2	7.3	6.9	*b*	4.0–9.0	0
		Discharge Point SD 374				
Flow, GPD	2	411	231	321	*b*	*b*
pH, standard units	2	7.7	7.4	*b*	4.0–9.0	0
		Discharge Point SD 380				
Flow, MGD	12	1.6235	0.000951	0.2827	*b*	*b*
Oil and grease, mg/L	12	<5.6	<2.0	<2.9	*b*	*b*
Total suspended solids, mg/L	12	11	<1	<2.3	*b*	*b*
pH, standard units	12	8.5	6.8	*b*	4.0–9.0	0
		Discharge Point SD 382				
Flow, GPD	1	190	190	190	*b*	*b*
pH, standard units	1	7.7	7.7	*b*	4.0–9.0	0

Table 2.66 (continued)

Parameter	Number of samples	Concentration			Reference value[a]	Number of values exceeding reference
		Max	Min	Av		
		Dischrge Point SD 390				
Flow, GPD	7	276900	37485	118261	*b*	*b*
Oil and grease, mg/L	7	<6.3	<2.0	<3.8	*b*	*b*
Total suspended solids, mg/L	7	7	<1	<3.6	*b*	*b*
pH, standard units	7	7.0	6.6	*b*	4.0–9.0	0
		Discharge Point SD 400				
Flow, GPD	1	36121	36121	36121	*b*	*b*
pH, standard units	1	7.4	7.4	*b*	4.0–9.0	0
		Discharge Point SD 410				
Flow, GPD	2	7306	3815	5561	*b*	*b*
pH, standard units	2	7.4	7.1	*b*	4.0–9.0	0
		Discharge Point SD 420				
Flow, GPD	1	7833	7833	7833	*b*	*b*
pH, standard units	1	7.6	7.6	*b*	4.0–9.0	0
		Discharge Point SD 430				
Flow, GPD	12	356800	761	94474	*b*	*b*
Oil and grease, mg/L	12	<8.8	<2.0	<3.3	*b*	*b*
Total suspended solids, mg/L	12	11	<1	<2.4	*b*	*b*
pH, standard units	12	7.8	6.8	*b*	4.0–9.0	0
		Discharge Point SD 440				
Flow, MGD	12	0.5192	0.002663	0.1832	*b*	*b*
Oil and grease, mg/L	12	<6.8	<2.0	<3.5	*b*	*b*
Total suspended solids, mg/L	12	6.6	<1	<2.8	*b*	*b*
pH, standard units	12	7.6	6.7	*b*	4.0–9.0	0
		Discharge Point SD 450				
Flow, GPD	1	2528	2528	2528	*b*	*b*
pH, standard units	1	7.4	7.4	*b*	4.0–9.0	0
		Discharge Point SD 460				
Flow, GPD	1	4984	4984	4984	*b*	*b*
pH, standard units	1	7.1	7.1	*b*	4.0–9.0	0
		Discharge Point SD 470				
Flow, MGD	1	0.0166	0.0166	0.0166	*b*	*b*
pH, standard units	1	7.4	7.4	*b*	4.0–9.0	0

Table 2.66 (continued)

Parameter	Number of samples	Concentration			Reference value[a]	Number of values exceeding reference
		Max	Min	Av		
		Discharge Point SD 480				
Flow, MGD	13	4.6535	0.02305	1.2514	*b*	*b*
Oil and grease, mg/L	12	<6.3	<2.0	<3.2	*b*	*b*
Total suspended solids, mg/L	12	20	<1	<4.2	*b*	*b*
pH, standard units	12	7.3	6.6	*b*	4.0–9.0	0
		Discharge Point SD 490				
Flow, MGD	13	4.6535	0.02305	1.2514	*b*	*b*
Oil and grease, mg/L	12	<6.3	<2.0	<3.2	*b*	*b*
Total suspended solids, mg/L	12	20	<1	<4.2	*b*	*b*
pH, standard units	12	7.3	6.6	*b*	4.0–9.0	0
		Discharge Point SD 500				
Flow, GPD	2	31418	1896	16657	*b*	*b*
pH, standard units	2	7.4	7.3	*b*	4.0–9.0	0
		Discharge Point SD 510				
Flow, GPD	12	887200	380	181305	*b*	*b*
Oil and grease, mg/L	12	<6.3	<2.0	<3.0	*b*	*b*
Total suspended solids, mg/L	12	29	<1	<4.2	*b*	*b*
pH, standard units	12	7.6	6.7	*b*	4.0–9.0	0
		Discharge Point SD 520				
Flow, GPD	1	406	406	406	*b*	*b*
pH, standard units	1	7.1	7.1	*b*	4.0–9.0	0
		Discharge Point SD 522				
Flow, GPD	1	44191	44191	44191	*b*	*b*
pH, standard units	1	7.1	7.1	*b*	4.0–9.0	0
		Discharge Point SD 530				
Flow, GPD	2	2542	1590	2066	*b*	*b*
Oil and grease, mg/L	2	<5.9	<2	<3.95		
Total suspended solids, mg/L	2	15	1.8	8.4		
pH, standard units	2	6.9	6.3	*b*	4.0–9.0	0
		Discharge Point SD 532				
Flow, GPD	1	2084	2084	2084	*b*	*b*
pH, standard units	1	7.7	7.7	*b*	4.0–9.0	0

Table 2.66 (continued)

Parameter	Number of samples	Concentration			Reference value[a]	Number of values exceeding reference
		Max	Min	Av		
		Discharge Point SD 540				
Flow, GPD	1	1304	1304	1304	*b*	*b*
pH, standard units	1	7.2	7.2	*b*	4.0–9.0	0
		Discharge Point SD 550				
Flow, GPD	1	743	743	743	*b*	*b*
pH, standard units	1	7.0	7.0	*b*	4.0–9.0	0
		Discharge Point SD 560				
Flow, GPD	11	2358100	1622	369691	*b*	*b*
Oil and grease, mg/L	11	<6.1	<2.0	<3.1	*b*	*b*
Total suspended solids, mg/L	11	102	<1	<11.8	*b*	*b*
pH, standard units	11	7.7	6.8	*b*	4.0–9.0	0
		Discharge Point SD 570				
Flow, GPD	1	34947	34947	34947	*b*	*b*
pH, standard units	1	7.1	7.1	*b*	4.0–9.0	0
		Discharge Point SD 580				
Flow, MGD	1	0.1291	0.1291	0.1291	*b*	*b*
pH, standard units	1	6.9	6.9	*b*	4.0–9.0	0
		Discharge Point SD 600				
Flow, GPD	1	1177	1177	1177	*b*	*b*
Oil and grease, mg/L	1	<5.6	<5.6	<5.6	*b*	*b*
Total suspended solids, mg/L	1	2	2	2	*b*	*b*
pH, standard units	1	7	7	*b*	4.0–9.0	0
		Dischrage Point SD 610				
Flow, GPD	11	6143100	22585	823147	*b*	*b*
Oil and grease, mg/L	11	<5.7	<2.0	<3.1	*b*	*b*
Total suspended solids, mg/L	11	90	<1	<20.5	*b*	*b*
pH, standard units	11	7.6	6.5	*b*	4.0–9.0	0
		Discharge Point SD 620				
Flow, GPD	1	8169	8169	8169	*b*	*b*
pH, standard units	1	7.1	7.1	*b*	4.0–9.0	0
		Dischrage Point SD 640				
Flow, GPD	2	18262	1313	9788	*b*	*b*
Total suspended solids, mg/L	2	8	4.8	6.4	*b*	*b*
pH, standard units	2	7.7	7.4	*b*	4.0–9.0	0

Table 2.66 (continued)

Parameter	Number of samples	Concentration			Reference value[a]	Number of values exceeding reference
		Max	Min	Av		
		Discharge Point SD 650				
Flow, GPD	1	2283	2283	2283	*b*	*b*
pH, standard units	1	7.1	7.1	*b*	4.0–9.0	0
		Discharge Point SD 660				
Flow, GPD	4	2283	95	1016	*b*	*b*
Total suspended solids, mg/L	4	191	<1	<56.1	*b*	*b*
pH, standard units	4	7.8	7.5	*b*	4.0–9.0	0
		Discharge Point SD 670				
Flow, GPD	4	4488	556	1782	*b*	*b*
Total suspended solids, mg/L	4	137	7.8	68.2	*b*	*b*
pH, standard units	4	8.1	7.7	*b*	4.0–9.0	0
		Discharge Point SD 680				
Flow, GPD	4	4006	380	1525	*b*	*b*
Total suspended solids, mg/L	4	4.8	<1	<2.15	*b*	*b*
pH, standard units	4	8.0	7.5	*b*	4.0–9.0	0
		Discharge Point SD 690				
Flow, GPD	11	1656200	761	290765	*b*	*b*
Oil and grease, mg/L	11	<6	<2.0	<3.0	*b*	*b*
Total suspended solids, mg/L	11	5.2	<1	<2	*b*	*b*
pH, standard units	11	7.6	6.6	*b*	4.0–9.0	0
		Discharge Point SD 692				
Flow, GPD	2	16577	190	8384	*b*	*b*
pH, standard units	2	7.6	7.1	*b*	4.0–9.0	0
		Discharge Point SD 694				
Flow, GPD	1	438	438	438	*b*	*b*
pH, standard units	1	7.1	7.1	*b*	4.0–9.0	0
		Discharge Point SD 696				
Flow, GPD	1	57	57	57	*b*	*b*
pH, standard units	1	7.4	7.4	*b*	4.0–9.0	0
		Discharge Point SD 700				
Flow, GPD	12	4282300	18312	593293	*b*	*b*
Oil and grease, mg/L	12	<6.2	<2.0	<3.1	*b*	*b*
Total suspended solids, mg/L	12	9.4	<1	<3.2	*b*	*b*
pH, standard units	12	7.8	6.7	*b*	4.0–9.0	0

Table 2.66 (continued)

Parameter	Number of samples	Concentration			Reference value[a]	Number of values exceeding reference
		Max	Min	Av		
		Discharge Point SD 710				
Flow, GPD	12	1430600	3387	249117	*b*	*b*
Oil and grease, mg/L	12	<6.1	<2.0	<3.1	*b*	*b*
Total suspended solids, mg/L	12	8	<1	<2.1	*b*	*b*
pH, standard units	12	7.9	7.0	*b*	4.0–9.0	0
		Discharge Point SD 712				
Flow, GPD	6	17280	76	4097	*b*	*b*
Oil and grease, mg/L	6	<2.4	<2.0	<2.1	*b*	*b*
Total suspended solids, mg/L	6	<2	<1	<1.3	*b*	*b*
pH, standard units	6	8.0	7.2	*b*	4.0–9.0	0
		Discharge Point SD 720				
Flow, GPD	5	814000	34774	24580	*b*	*b*
Oil and grease, mg/L	5	<6.1	<2.0	<4.3	*b*	*b*
Total suspended solids, mg/L	5	7.2	1.6	3.8	*b*	*b*
pH, standard units	5	7.8	6.9	*b*	4.0–9.0	0
		Discharge Point SD 724				
Flow, GPD	2	982700	2372	492536	*b*	*b*
pH, standard units	2	7.7	7.4	*b*	4.0–9.0	0
		Discharge Point SD 730				
Flow, GPD	2	2283	1141	1712	*b*	*b*
pH, standard units	2	7.6	7.0	*b*	4.0–9.0	0
		Discharge Point SD 740				
Flow, GPD	3	6087	1141	2409	*b*	*b*
pH, standard units	3	7.8	6.9	*b*	4.0–9.0	0
		Discharge Point SD 750				
Flow, GPD	6	11413	761	4696	*b*	*b*
Oil and grease, mg/L	6	<6.2	<2.0	<3.6	*b*	*b*
Total suspended solids, mg/L	6	3	<1	<1.6	*b*	*b*
pH, standard units	6	7.2	7.0	*b*	4.0–9.0	0
		Discharge Point SD 760				
Flow, GPD	6	25920	380	14383	*b*	*b*
Oil and grease, mg/L	6	<6.0	<2.0	<4.0	*b*	*b*
Total suspended solids, mg/L	6	12.4	<1	<3.5	*b*	*b*
pH, standard units	6	7.6	7.1	*b*	4.0–9.0	0

Table 2.66 (continued)

Parameter	Number of samples	Concentration			Reference value[a]	Number of values exceeding reference
		Max	Min	Av		
		Discharge Point SD 770				
Flow, GPD	3	1141	761	888	*b*	*b*
Oil and grease, mg/L	3	<6.0	<2.0	<4.6	*b*	*b*
Total suspended solids, mg/L	3	<1	<1	<1	*b*	*b*
pH, standard units	3	7.3	7.1	*b*	4.0–9.0	0
		Discharge Point SD 780				
Flow, GPD	3	115200	2	39841	*b*	*b*
Total suspended solids, mg/L	3	6	1.2	4.3	*b*	*b*
pH, standard units	3	8.0	7.0	*b*	4.0–9.0	0
		Discharge Point SD 800				
Flow, GPD	2	6480	4565	5523	*b*	*b*
Total suspended solids, mg/L	2	6	1	3.5	*b*	*b*
pH, standard units	2	7.3	7.0	*b*	4.0–9.0	0
		Discharge Point SD 810				
Flow, GPD	3	17120	95	5865	*b*	*b*
Total suspended solids, mg/L	3	34	2	13.4	*b*	*b*
pH, standard units	3	7.4	6.7	*b*	4.0–9.0	0
		Discharge Point SD 820				
Flow, GPD	2	11413	2283	6848	*b*	*b*
Total suspended solids, mg/L	2	23	8	15.5	*b*	*b*
pH, standard units	2	7.7	7.4	*b*	4.0–9.0	0
		Discharge Point SD 830				
Flow, MGD	2	0.2748	0.0144	0.01446	*b*	*b*
Total suspended solids, mg/L	2	12	2	7	*b*	*b*
pH, standard units	2	7.4	7.1	*b*	4.0–9.0	0
		Discharge Point SD 850				
Flow, GPD	3	4565	48	2498	*b*	*b*
Total suspended solids, mg/L	3	42	3.2	16	*b*	*b*
pH, standard units	3	9.0	7.1	*b*	4.0–9.0	0
		Discharge Point SD 860				
Flow, GPD	1	76	76	76	*b*	*b*
Total suspended solids, mg/L	1	4	4	4	*b*	*b*
pH, standard units	1	7.8	7.8	*b*	4.0–9.0	0

Table 2.66 (continued)

Parameter	Number of samples	Concentration			Reference value[a]	Number of values exceeding reference
		Max	Min	Av		
		Discharge Point SD 870				
Flow, GPD	1	761	761	761	*b*	*b*
Total suspended solids, mg/L	1	<1	<1	<1	*b*	*b*
pH, standard units	1	7.8	7.8	*b*	4.0–9.0	0
		Discharge Point SD 880				
Flow, GPD	3	17280	2283	8043	*b*	*b*
Total suspended solids, mg/L	3	6.6	<1	<1	*b*	*b*
pH, standard units	3	7.9	6.9	*b*	4.0–9.0	0
		Discharge Point SD 890				
Flow, GPD	2	184900	3804	94352	*b*	*b*
Total suspended solids, mg/L	2	32	<1	<16.5	*b*	*b*
pH, standard unit	2	7.3	7.2	*b*	4.0–9.0	0
		Discharge Point SD 900				
Flow, GPD	3	11520	7200	9271	*b*	*b*
Total suspended solids, mg/L	3	21	<1	<9.3	*b*	*b*
pH, standard units	3	7.7	7.4	*b*	4.0–9.0	0
		Discharge Point SD 910				
Flow, MGD	2	0.1224	0.0216	0.072	*b*	*b*
pH, standard units	2	7.2	7.1	*b*	4.0–9.0	0
		Discharge Point SD 920				
Flow, GPD	2	11413	190	5802	*b*	*b*
pH, standard units	2	7.6	7.0	*b*	4.0–9.0	0
		Discharge Point SD 929				
Flow, GPD	2	8640	2283	5462	*b*	*b*
pH, standard units	2	7.2	6.9	*b*	4.0–9.0	0
		Discharge Point SD 930				
Flow, GPD	2	14400	95	7248	*b*	*b*
pH, standard units	2	7.7	7.5	*b*	4.0–9.0	0
		Discharge Point SD 934				
Flow, GPD	1	8640	8640	8640	*b*	*b*
pH, standard units	1	7.6	7.6	*b*	4.0–9.0	0
		Discharge Point SD 950				
Flow, GPD	2	2283	2283	2283	*b*	*b*
pH, standard units	2	7.4	7.1	*b*	4.0–9.0	0

Table 2.66 (continued)

Parameter	Number of samples	Concentration			Reference value[a]	Number of values exceeding reference
		Max	Min	Av		
		Discharge Point SD 960				
Flow, GPD	2	14400	38	7219	*b*	*b*
pH, standard units	2	7.2	7.1	*b*	4.0–9.0	0
		Discharge Point SD 970				
Flow, GPD	1	28128	28128	28128	*b*	*b*
pH, standard units	1	7.1	7.1	*b*	4.0–9.0	0
		Discharge Point SD 980				
Flow, GPD	1	29980	29980	29980	*b*	*b*
pH, standard units	1	7.3	7.3	*b*	4.0–9.0	0
		Discharge Point SD 982				
Flow, GPD	1	12684	12684	12684	*b*	*b*
pH, standard units	1	7.3	7.3	*b*	4.0–9.0	0
		Discharge Point SD 990				
Flow, GPD	1	1957	1957	1957	*b*	*b*
pH, standard units	1	7.4	7.4	*b*	4.0–9.0	0
		Discharge Point SD 992				
Flow, MGD	7	0.6212	0.2901	0.4062	*b*	*b*
Oil and grease, mg/L	7	<6.1	<2.0	<3.2	*b*	*b*
Total suspended solids, mg/L	7	354	14	72.1	*b*	*b*
pH, standard units	7	7.1	4.6	*b*	4.0–9.0	0
		Discharge Point SD 996				
Flow, GPD	2	2880	1447	2164	*b*	*b*
pH, standard units	2	7.4	7.1	*b*	4.0–9.0	0

[a]NPDES permit limit.
[b]Not applicable.
[c]Removed from NPDES Permit.
[d]Changed as allowed by NPDES permit.

Table 2.67. Radionuclide concentrations at K-25 Site discharges and surface water monitoring locations

Radionuclide	Number of samples	Concentration (pCi/L)				DCG	Percent of DCG	Activity ratio
		Max	Min	Median	Average			
K-1407-J (treated effluents from Central Neutralization Facility and TSCA Incinerator)								
^{234}U	12	6.64E+02	3.51E+01	6.52E+01	1.62E+02	5.00E+02	3.23E+01	3.23E–01
^{235}U	12	2.87E+01	–4.67E+00	9.47E+00	9.82E+00	6.00E+02	1.64E+00	1.64E–02
^{236}U	12	1.93E+01	1.56E–01	1.29E+00	3.08E+00	5.00E+02	6.15E–01	6.15E–03
^{238}U	12	7.66E+02	4.00E+01	8.33E+01	1.93E+02	6.00E+02	3.22E+01	3.22E–01
^{137}Cs	12	7.81E+00	–1.25E+01	–3.62E+00	–3.31E+00	3.00E+03	–1.10E–01	–1.10E–03
^{99}Tc	12	6.91E+02	5.20E+01	1.83E+02	2.55E+02	1.00E+05	2.55E–01	2.55E–03
^{237}Np	12	2.28E–01	–7.02E–02	5.37E–02	5.94E–02	3.00E+01	1.98E–01	1.98E–03
^{238}Pu	12	6.98E–01	0.00E+00	1.26E–01	2.13E–01	4.00E+01	5.33E–01	5.33E–03
^{239}Pu	12	3.30E–01	–1.42E–01	3.85E–02	6.22E–02	3.00E+01	2.07E–01	2.07E–03
^{40}K	9	4.69E+01	0.00E+00	0.00E+00	5.23E+00	7.00E+03	7.47E–02	7.47E–04
^{234}Th	11	3.99E+02	0.00E+00	1.24E+02	1.19E+02	1.00E+04	1.19E+00	1.19E–02
^{234m}Pa	3	1.25E+03	6.13E+02	1.00E+03	9.54E+02	7.00E+04	1.36E+00	1.36E–02
Gross alpha	12	1.00E+03	5.73E+01	1.09E+02	2.62E+02	*a*	*a*	
Gross beta	12	7.59E+02	7.13E+01	1.44E+02	2.70E+02	*a*	*a*	
Sum of the fractions								7.10E–01[b]

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

Table 2.68. 1995 mercury concentrations in ORNL sediment

Location	N det/ N total	Concentration (μg/g)			
		Max[a]	Min[a]	Av[b]	Standard error[c]
Northwest Tributary					
Upstream First Creek	6/6	0.048	0.0060	0.028	0.0081
Fifth Creek					
Outfall 261	6/6	880	2.8	160	140
Outfall 362	6/6	37	2.9	16	4.9
Melton Branch					
Headwaters	3/6	0.072	<0.0050	~0.020	0.011
Upstream White Oak Creek	4/6	0.035	<0.0050	~0.019	0.0057
White Oak Creek					
Upstream Fifth Creek	6/6	9.6	2.2	4.5	1.1
Downstream First Creek	6/6	4.2	1.2	2.3	0.59
Headwaters	6/6	0.11	0.044	0.066	0.010
Downstream White Oak Dam	6/6	0.16	0.072	0.11	0.015

[a]Prefix "<" indicates the value for a parameter (excluding organics) was not quantifiable at the analytical detection limit.

[b]A tilde (~) indicates that estimated values and/or detection limits were used in the calculation.

[c]Standard error of the mean.

Table 2.69. 1995 PCB concentrations in ORNL sediment

Parameter	N det/ N total	Concentration (µg/kg)			
		Max[a]	Min[a]	Av[b]	Standard error[c]
Site 04-Confluence of Fifth Creek and White Oak Creek					
Aroclor-1016	0/4	U1,000	U110	~560	260
Aroclor-1221	0/4	U1,000	U110	~560	260
Aroclor-1232	0/4	U1,000	U110	~560	260
Aroclor-1242	0/4	U1,000	U110	~560	260
Aroclor-1248	0/4	U1,000	U110	~560	260
Aroclor-1254	4/4	J1,600	220	~790	320
Aroclor-1260	4/4	J410	J120	~260	63
Site 06-Upstream of Weir at 7500 Road Bridge					
Aroclor-1016	0/4	U1,200	U80	~650	330
Aroclor-1221	0/4	U1,200	U80	~650	330
Aroclor-1232	0/4	U1,200	U80	~650	330
Aroclor-1242	0/4	U1,200	U80	~650	330
Aroclor-1248	0/4	U1,200	U80	~650	330
Aroclor-1254	4/4	J1,300	J17	~590	330
Aroclor-1260	4/4	J920	J30	~440	230
Site 07-Upstream of Weir at Melton Branch					
Aroclor-1016	0/4	U110	U80	~97	9.8
Aroclor-1221	0/4	U110	U80	~97	9.8
Aroclor-1232	0/4	U110	U80	~97	9.8
Aroclor-1242	0/4	U110	U80	~97	9.8
Aroclor-1248	0/4	U110	U80	~97	9.8
Aroclor-1254	4/4	J14	J5.0	~8.4	2.2
Aroclor-1260	0/4	U230	U160	~190	20
Site 08-Melton Hill Lake southeast of 7600					
Aroclor-1016	0/4	U130	U94	~110	10
Aroclor-1221	0/4	U130	U94	~110	10
Aroclor-1232	0/4	U130	U94	~110	10
Aroclor-1242	0/4	U130	U94	~110	10
Aroclor-1248	0/4	U130	U94	~110	10
Aroclor-1254	0/4	U270	U190	~230	21
Aroclor-1260	0/4	U270	U190	~230	21

Table 2.69 (continued)

Parameter	N det/ N total	Concentration (µg/kg)			
		Max[a]	Min[a]	Av[b]	Standard error[c]
Site 09-Melton Hill Lake west of PCB Storage Areas 7652 and 7656					
Aroclor-1016	0/4	U110	U100	~110	1.3
Aroclor-1221	0/4	U110	U100	~110	1.3
Aroclor-1232	0/4	U110	U100	~110	1.3
Aroclor-1242	0/4	U110	U100	~110	1.3
Aroclor-1248	0/4	U110	U100	~110	1.3
Aroclor-1254	0/4	U220	U200	~210	2.6
Aroclor-1260	0/4	U220	U200	~210	2.6
Site 10-White Oak Lake at mouth of White Oak Creek					
Aroclor-1016	0/4	U400	U120	~260	80
Aroclor-1221	0/4	U400	U120	~260	80
Aroclor-1232	0/4	U400	U120	~260	80
Aroclor-1242	0/4	U400	U120	~260	80
Aroclor-1248	0/4	U400	U120	~260	80
Aroclor-1254	3/4	U240	J95	~130	35
Aroclor-1260	4/4	J170	J90	~120	18
Site 11-Melton Hill Lake east of 7600 and south of 7709					
Aroclor-1016	0/4	U130	U100	~110	6.3
Aroclor-1221	0/4	U130	U100	~110	6.3
Aroclor-1232	0/4	U130	U100	~110	6.3
Aroclor-1242	0/4	U130	U100	~110	6.3
Aroclor-1248	0/4	U130	U100	~110	6.3
Aroclor-1254	0/4	U260	U200	~230	13
Aroclor-1260	0/4	U260	U200	~230	13
Site 12-Watts Bar Lake south of 7700, Tower Shielding Facility					
Aroclor-1016	0/4	U99	U96	~98	0.59
Aroclor-1221	0/4	U99	U96	~98	0.59
Aroclor-1232	0/4	U99	U96	~98	0.59
Aroclor-1242	0/4	U99	U96	~98	0.59
Aroclor-1248	0/4	U99	U96	~98	0.59
Aroclor-1254	0/4	U200	U190	~200	1.2
Aroclor-1260	0/4	U200	U190	~200	1.2

Table 2.69 (continued)

Parameter	N det/ N total	Concentration (µg/kg)			
		Max[a]	Min[a]	Av[b]	Standard error[c]
		Site 13-White Oak Dam			
Aroclor-1016	0/4	U120	U110	~110	2.2
Aroclor-1221	0/4	U120	U110	~110	2.2
Aroclor-1232	0/4	U120	U110	~110	2.2
Aroclor-1242	0/4	U120	U110	~110	2.2
Aroclor-1248	0/4	U120	U110	~110	2.2
Aroclor-1254	2/4	U220	J9.3	~110	59
Aroclor-1260	2/4	U230	J2.1	~120	65
		Site 14-Headwaters of White Oak Creek			
Aroclor-1016	0/4	U150	U100	~120	12
Aroclor-1221	0/4	U150	U100	~120	12
Aroclor-1232	0/4	U150	U100	~120	12
Aroclor-1242	0/4	U150	U100	~120	12
Aroclor-1248	0/4	U150	U100	~120	12
Aroclor-1254	0/4	U290	U200	~240	23
Aroclor-1260	0/4	U290	U200	~240	23

[a]Prefix "U" indicates the value for an organic parameter was undetected at the analytical detection limit and "J" indicates the value was estimated at or below the analytical detection limit by the laboratory.

[b]A tilde (~) indicates that estimated values and/or detection limits were used in the calculation.

[c]Standard error of the mean.

3. Environmental Surveillance

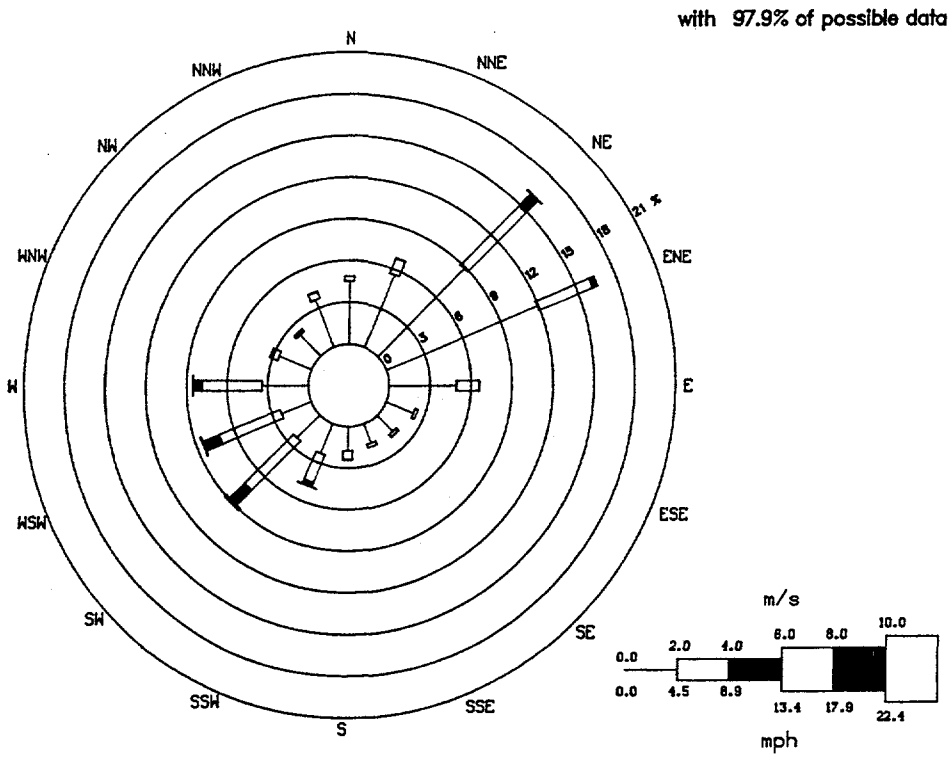


Fig. 3.1. Wind rose for Y-12 tower MTE (@10 m) for 1995.

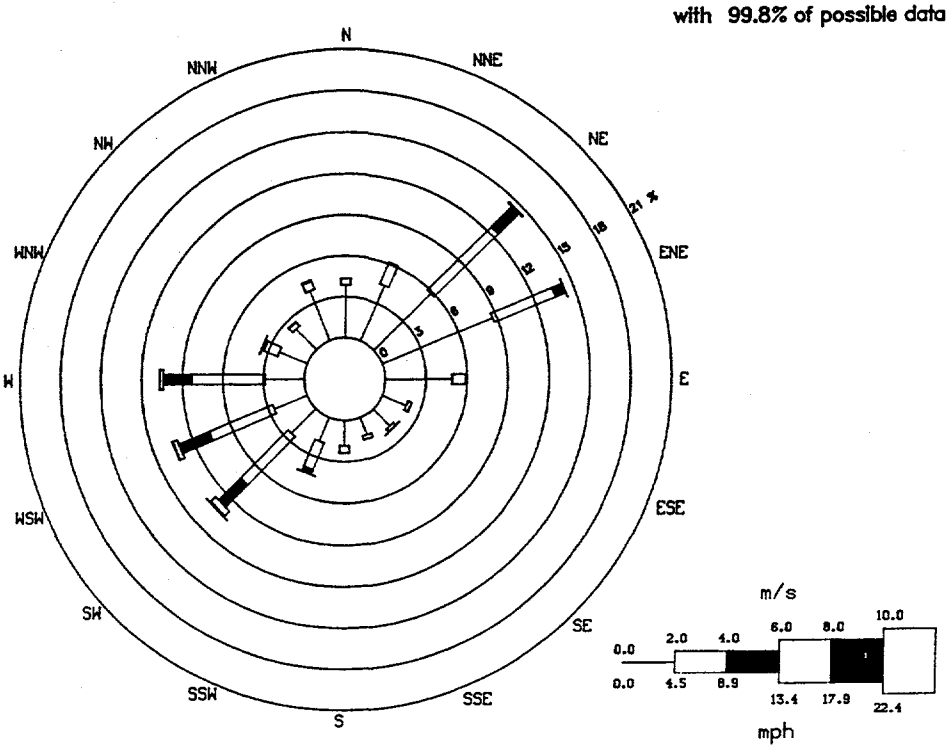


Fig. 3.2. Wind rose for Y-12 tower MTE (@30 m) for 1995.

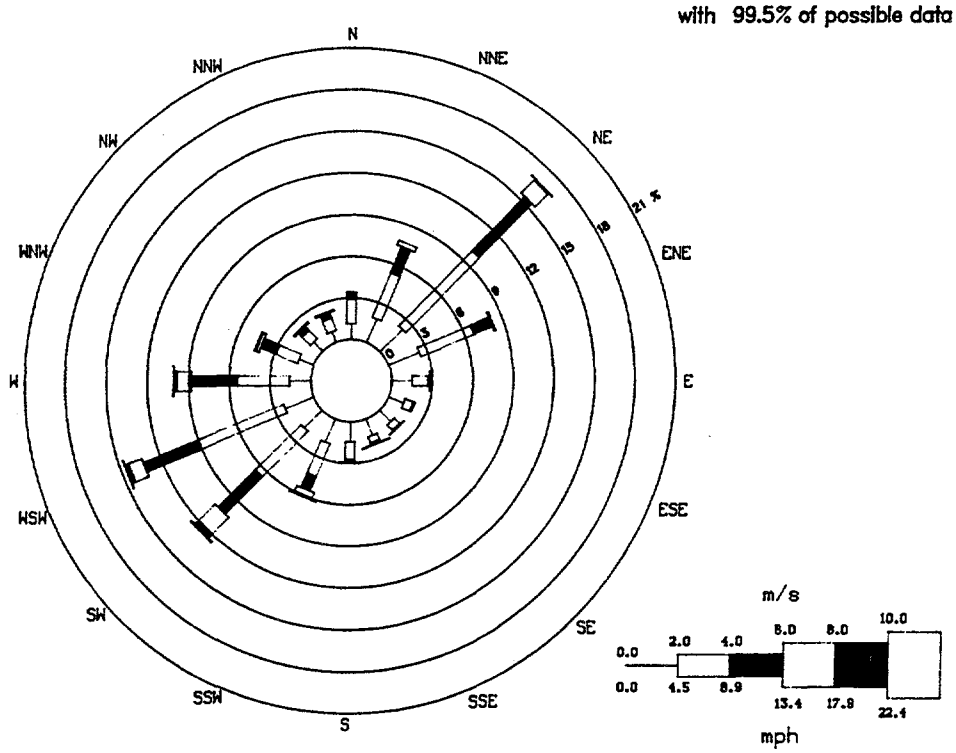


Fig. 3.3. Wind rose for Y-12 tower MTE (@100 m) for 1995.

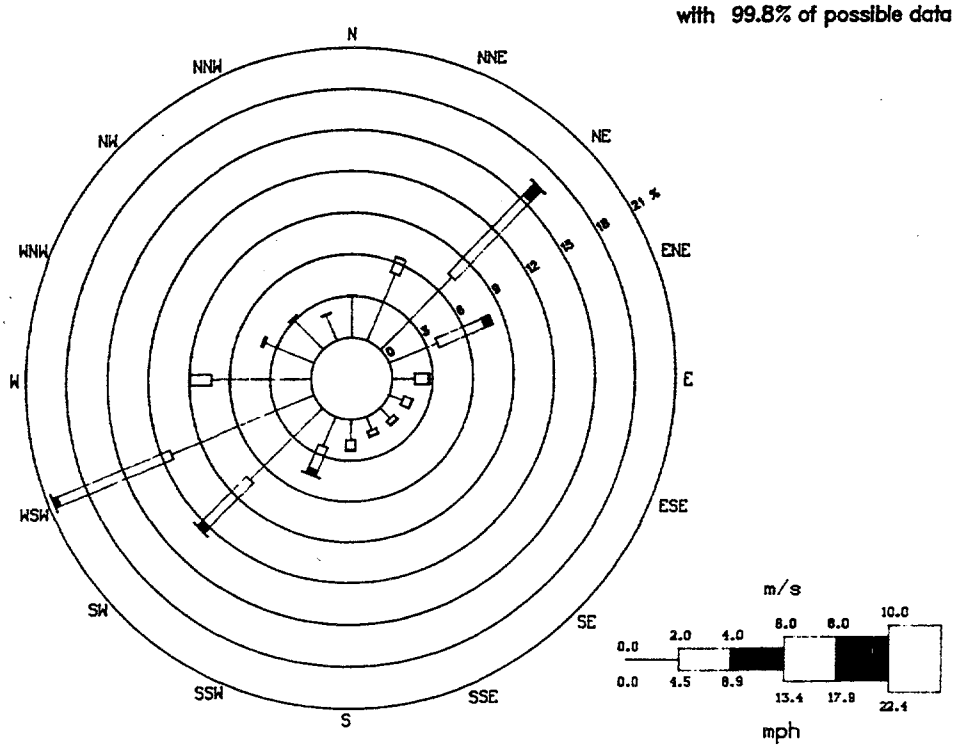


Fig. 3.4. Wind rose for Y-12 tower MTW (@10 m) for 1995.

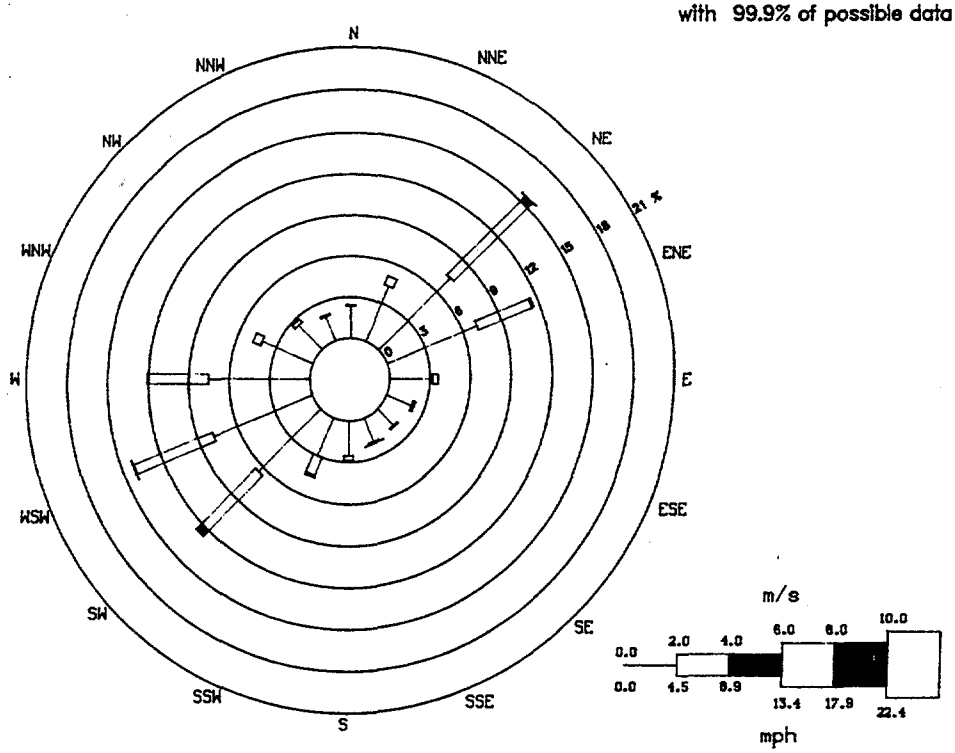


Fig. 3.5. Wind rose for Y-12 tower MTW (@60 m) for 1995.

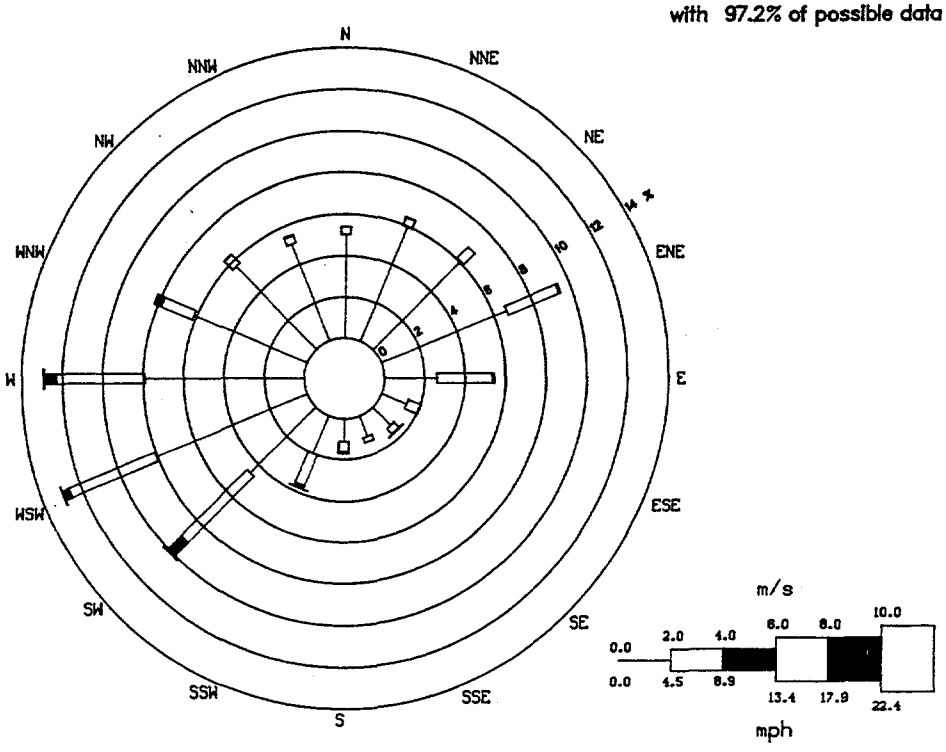


Fig. 3.6. Wind rose for ORNL tower MT2 (@10 m) for 1995.

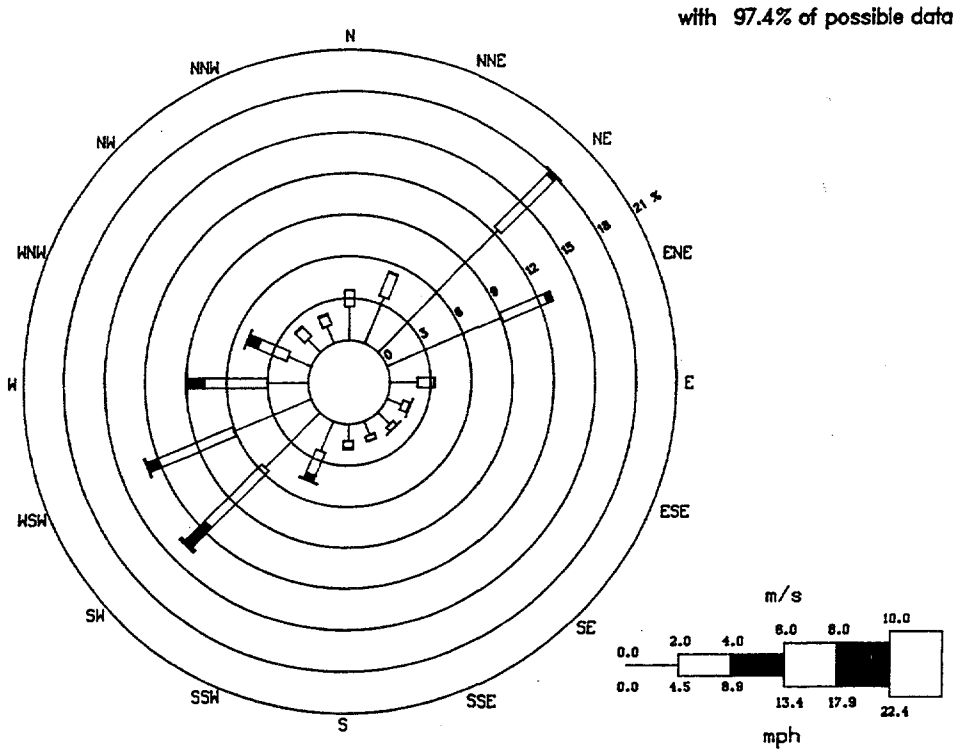


Fig. 3.7. Wind rose for ORNL tower MT2 (@30 m) for 1995.

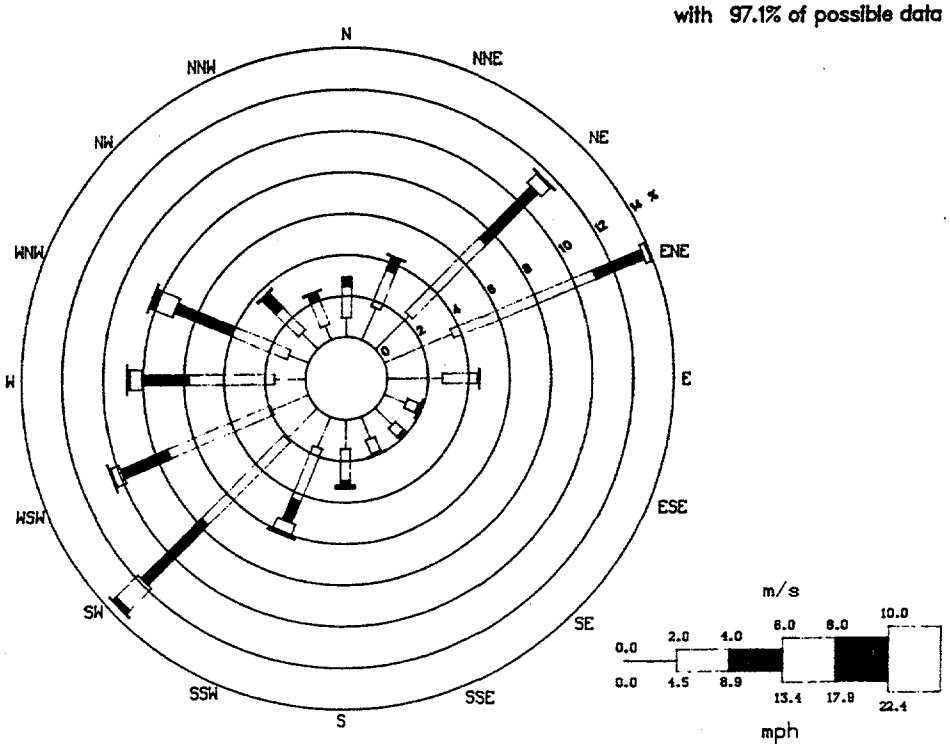


Fig. 3.8. Wind rose for ORNL tower MT2 (@100 m) for 1995.

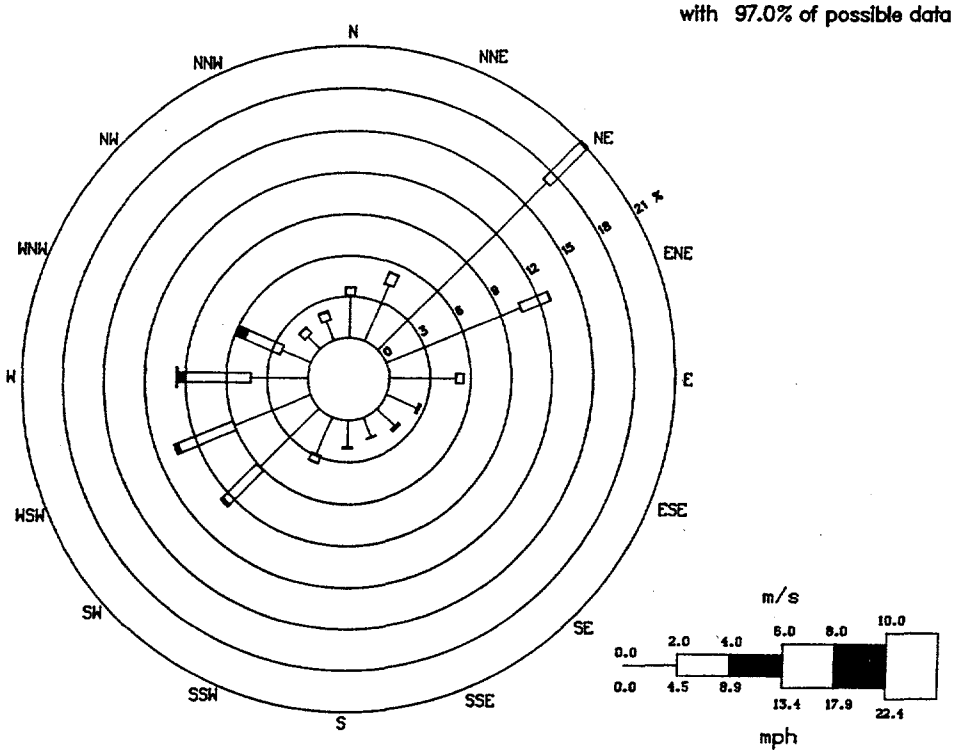


Fig. 3.9. Wind rose for ORNL tower MT3 (@10 m) for 1995.

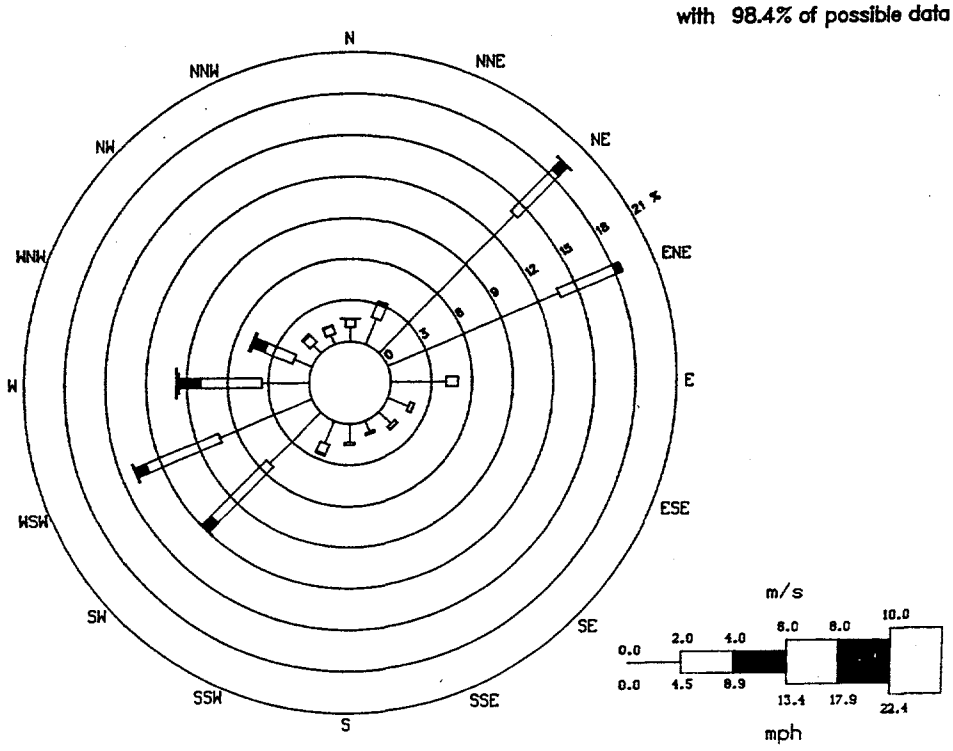


Fig. 3.10. Wind rose for ORNL tower MT3 (@30 m) for 1995.

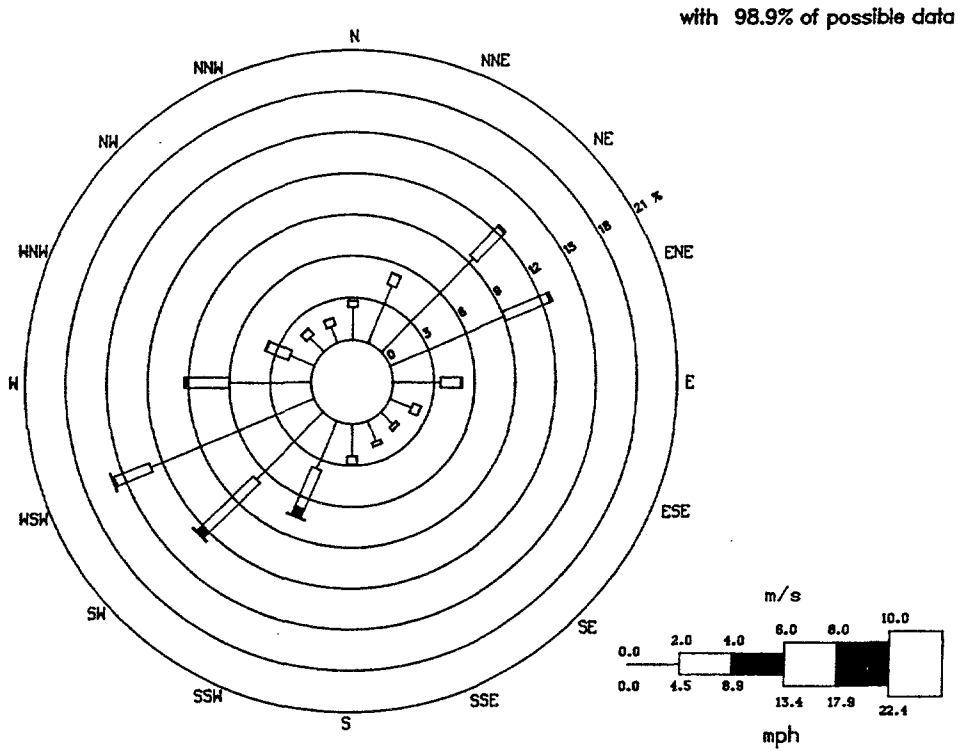


Fig. 3.11. Wind rose for ORNL tower MT4 (@10 m) for 1995.

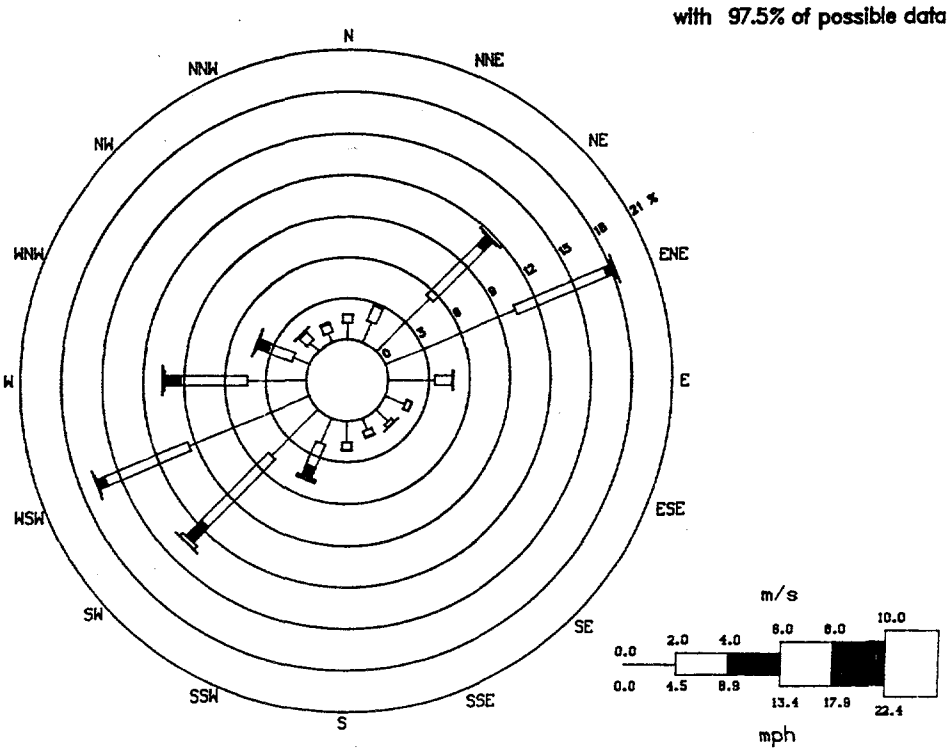


Fig. 3.12. Wind rose for ORNL tower MT4 (@30 m) for 1995.

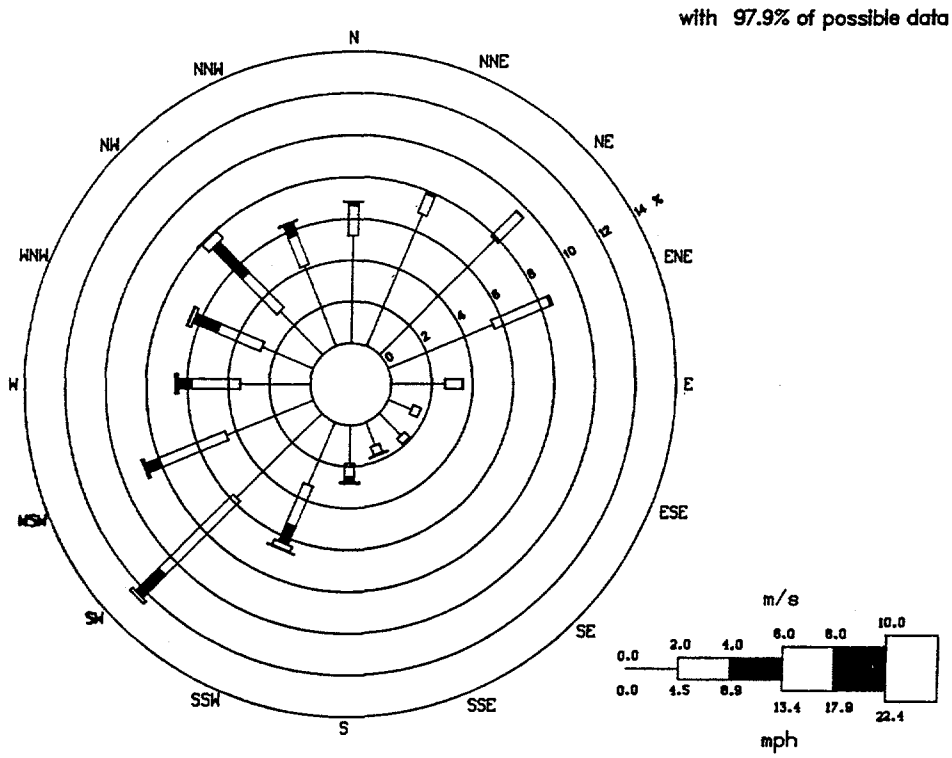


Fig. 3.13. Wind rose for K-25 tower MT1 (@10 m) for 1995.

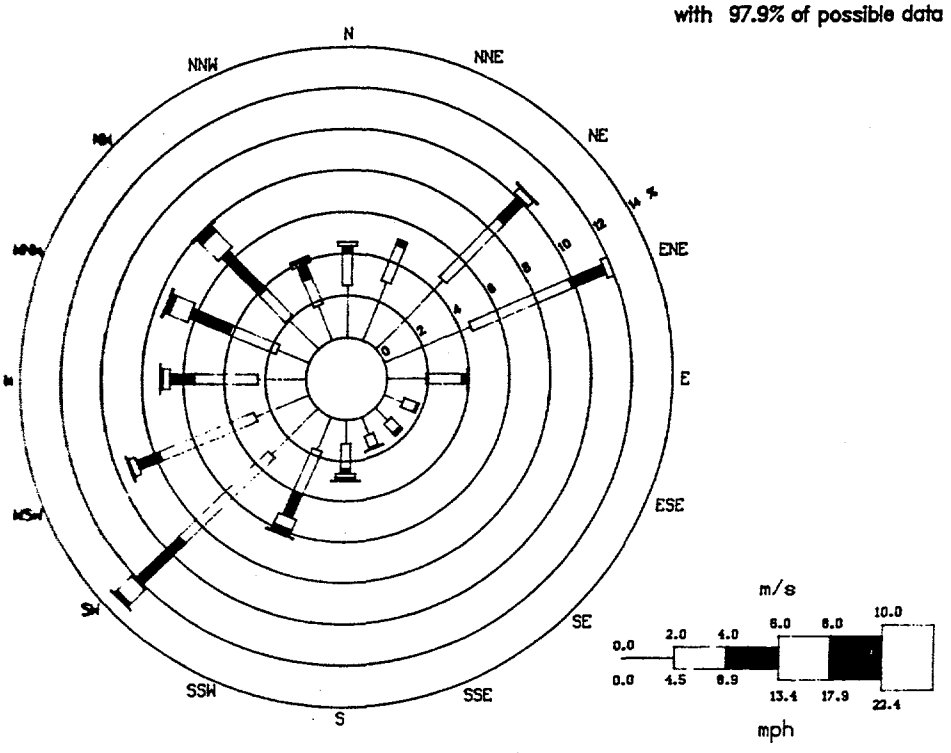


Fig. 3.14. Wind rose for K-25 tower MT1 (@60 m) for 1995.

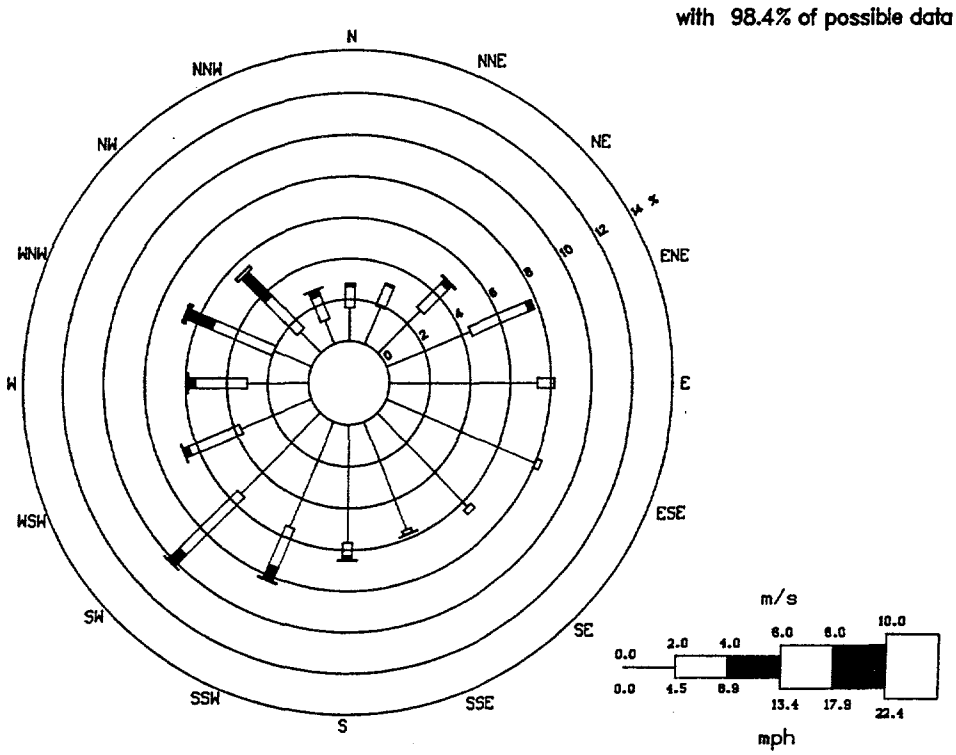


Fig. 3.15. Wind rose for K-25 tower MT7 (@10 m) for 1995.

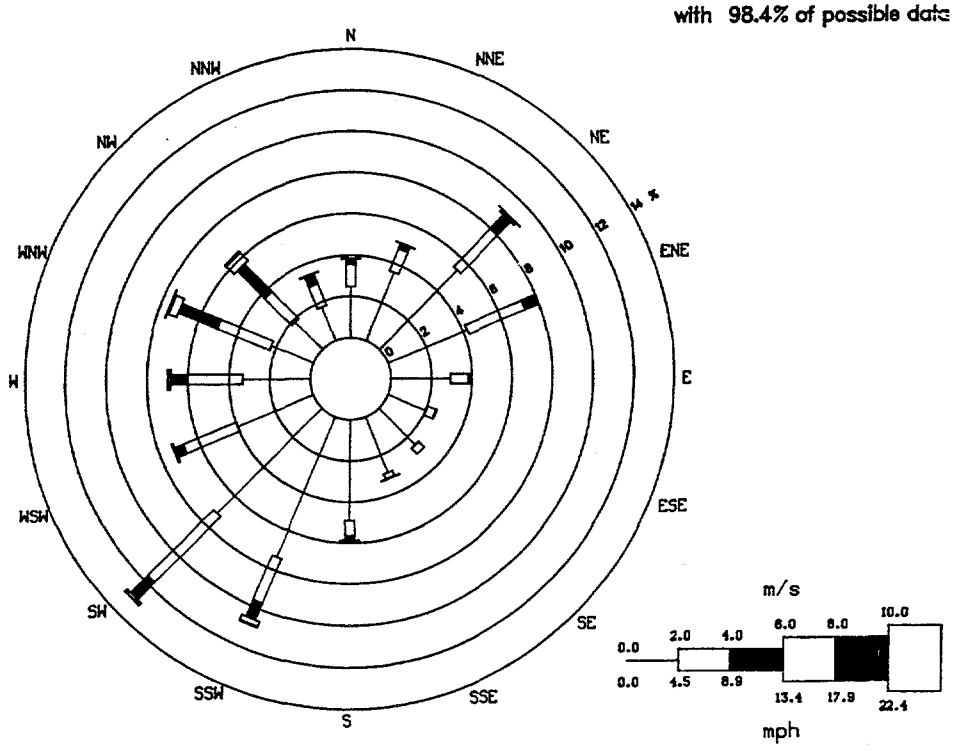


Fig. 3.16. Wind rose for K-25 tower MT7 (@30 m) for 1995.

Table 3.1. 1995 sampling and analysis plan for ORNL reference surface waters: Melton Hill Dam and White Oak Creek headwaters

Parameter	Collection frequency	Sample type	Analysis frequency
Anions			
Fluoride	Monthly	Flow proportional composite	Monthly
Nitrate, as N	Monthly	Flow proportional composite	Monthly
Sulfate, as SO_4	Monthly	Flow proportional composite	Monthly
Field Measurements			
Conductivity	Monthly	Grab, instant read	Monthly
Dissolved oxygen	Monthly	Grab, instant read	Monthly
pH	Monthly	Grab, instant read	Monthly
Temperature	Monthly	Grab, instant read	Monthly
Turbidity	Monthly	Grab, instant read	Monthly
Metals			
Aluminum	Monthly	Flow proportional composite	Monthly
Arsenic	Monthly	Flow proportional composite	Monthly
Cadmium	Monthly	Flow proportional composite	Monthly
Chromium	Monthly	Flow proportional composite	Monthly
Copper	Monthly	Flow proportional composite	Monthly
Iron	Monthly	Flow proportional composite	Monthly
Lead	Monthly	Flow proportional composite	Monthly
Manganese	Monthly	Flow proportional composite	Monthly
Nickel	Monthly	Flow proportional composite	Monthly
Phosphorus	Monthly	Flow proportional composite	Monthly
Silver	Monthly	Flow proportional composite	Monthly
Zinc	Monthly	Flow proportional composite	Monthly
Others			
Oil and grease	Monthly	Grab	Monthly
Total dissolved solids	Monthly	Grab	Monthly
Total organic carbon	Monthly	Grab	Monthly
Total suspended solids	Monthly	Flow proportional composite	Monthly

Table 3.2. 1995 analyses for ORNL reference surface waters

Parameter	N det/ N total	Concentration (mg/L)				Ref. value[d]	Percent of ref. value[e]
		Max[a]	Min[a]	Av[b]	Standard error[c]		
		Melton Hill Dam					
Anions							
Fluoride	6/12	0.19	<0.10	~0.12	0.0097	*f*	*f*
Nitrate, as N	12/12	1.2	0.27	0.61	0.068	*f*	*f*
Sulfate, as SO_4	12/12	25	19	21	0.58	*f*	*f*
Field Measurements							
Conductivity (mS/cm)	12/12	0.29	0.25	0.27	0.0035	*f*	*f*
Dissolved oxygen (ppm)	12/12	9.8	6.0	8.4	0.35	*f*	*f*
pH (SU)	12/12	8.3	7.6	7.9	0.069	*f*	*f*
Temperature (°C)	12/12	20	8.1	15	1.2	*f*	*f*
Turbidity (NTU)	12/12	19	3.0	12	1.3	*f*	*f*
Metals							
Aluminum, total	11/12	0.99	<0.050	~0.33	0.096	*f*	*f*
Arsenic, total	0/12	<0.050	<0.050	~0.050	0	0.05	*f*
Cadmium, total	0/12	<0.0050	<0.0050	~0.0050	0	0.005	*f*
Chromium, total	2/12	0.011	<0.0040	~0.0047	0.00058	0.1	4.7
Copper, total	0/12	<0.0070	<0.0070	~0.0070	0	*f*	*f*
Iron, total	12/12	1.0	0.053	0.32	0.093	*f*	*f*
Lead, total	0/12	<0.050	<0.050	~0.050	0	0.005	*f*
Manganese, total	12/12	0.27	0.0064	0.076	0.025	*f*	*f*
Nickel, total	0/12	<0.010	<0.010	~0.010	0	0.1	*f*
Phosphorus, total	5/12	0.30	<0.20	~0.24	0.013	*f*	*f*
Silver, total	0/12	<0.0050	<0.0050	~0.0050	0	*f*	*f*
Zinc, total	10/12	0.031	<0.0050	~0.012	0.0024	*f*	*f*
Others							
Oil and grease	0/12	<5.0	<5.0	~5.0	0	*f*	*f*
Total dissolved solids	12/12	180	100	150	6.7	*f*	*f*
Total organic carbon	12/12	2.1	1.5	1.8	0.047	*f*	*f*
Total suspended solids	9/12	22	<5.0	~8.6	1.7	*f*	*f*
		White Oak Creek Headwaters					
Anions							
Fluoride	3/12	0.16	<0.10	~0.11	0.0054	*f*	*f*
Nitrate, as N	11/12	0.49	<0.10	~0.20	0.032	*f*	*f*
Sulfate, as SO_4	12/12	5.2	1.6	3.3	0.29	*f*	*f*
Field Measurements							
Conductivity (mS/cm)	12/12	0.29	0.12	0.22	0.018	*f*	*f*
Dissolved oxygen (ppm)	12/12	11	7.0	9.4	0.46	*f*	*f*
pH (SU)	12/12	8.0	7.0	7.6	0.10	*f*	*f*
Temperature (°C)	12/12	18	6.6	13	1.1	*f*	*f*
Turbidity (NTU)	12/12	25	3.0	9.4	1.6	*f*	*f*

Table 3.2 (continued)

Parameter	N det/ N total	Concentration (mg/L)				Ref. value[d]	Percent of ref. value[e]
		Max[a]	Min[a]	Av[b]	Standard error[c]		
Metals							
Aluminum, total	7/12	3.8	<0.050	~0.70	0.34	*f*	*f*
Arsenic, total	0/12	<0.050	<0.050	~0.050	0	0.36	*f*
Cadmium, total	0/12	<0.0050	<0.0050	~0.0050	0	0.0039	*f*
Chromium, total	3/12	0.017	<0.0040	~0.0054	0.0011	*f*	*f*
Copper, total	0/12	<0.0070	<0.0070	~0.0070	0	0.0177	*f*
Iron, total	10/12	3.8	<0.050	~0.83	0.35	*f*	*f*
Lead, total	0/12	<0.050	<0.050	~0.050	0	*f*	*f*
Manganese, total	12/12	0.46	0.0062	0.10	0.042	*f*	*f*
Nickel, total	1/12	0.014	<0.010	~0.010	0.00033	1.418	0.73
Phosphorus, total	6/12	0.44	<0.20	~0.24	0.021	*f*	*f*
Silver, total	0/12	<0.0050	<0.0050	~0.0050	0	0.0041	*f*
Zinc, total	8/12	0.043	<0.0050	~0.014	0.0034	0.117	12
Others							
Oil and grease	0/12	<5.0	<5.0	~5.0	0	*f*	*f*
Total dissolved solids	12/12	160	42	120	11	*f*	*f*
Total organic carbon	11/12	2.2	<0.50	~0.86	0.14	*f*	*f*
Total suspended solids	4/12	170	<5.0	~23	14	*f*	*f*

[a]Prefix "<" indicates the value of a parameter (excluding organics) was not quantifiable at the analytical detection limit.

[b]A tilde (~) indicates that estimated values and/or detection limits were used in the calculation.

[c]Standard error of the mean.

[d]Tennessee General Water Quality Criteria for Domestic Water Supply is used as a reference value for Melton Hill Dam; 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 when a reference exists, the parameter is a contaminant, and the parameter is detected.

[f]Not applicable.

Table 3.3. 1995 EMP surface water sampling locations

BCK 0.6	Bear Creek downstream from all DOE inputs
BCK 9.4	Bear Creek downstream from the Y–12 Plant burial grounds
CRK 16	Clinch River downstream from all DOE inputs
CRK 23	Water supply intake for the K–25 Site
CRK 32	Clinch River downstream from ORNL
CRK 58	Water supply intake for Knox County
CRK 66	Melton Hill Reservoir above City of Oak Ridge water intake
CRK 80	Melton Hill Reservoir—Oak Ridge Marina
CRK 84	Melton Hill Reservoir above all DOE inputs—Anderson County Filtration Plant
EFK 5.4	East Fork Poplar Creek downstream from floodplain
EFK 23.4	East Fork Poplar Creek downstream from the Y–12 Plant
HC	Hinds Creek (reference site for East Fork Poplar Creek)
MEK 0.2	Melton Branch downstream from ORNL
MEK 2.1	Melton Branch upstream from ORNL
MIK 0.1	Mitchell Branch downstream from the K–25 Site
MIK 1.4	Mitchell Branch upstream from the K–25 Site
PCK 2.2	Poplar Creek downstream from the K–25 Site
PCK 22	Poplar Creek upstream from the K–25 Site and East Fork Poplar Creek
TRK 915	Water supply intake for City of Kingston
WCK 1.0	White Oak Lake at White Oak Dam
WCK 2.6	White Oak Creek downstream from ORNL
WCK 6.8	White Oak Creek upstream from ORNL

Table 3.4. 1995 sampling and analysis plan parameters for EMP surface water locations[a]

Anions	*Others*	*Volatile organics*
Chloride	Alkalinity	1,1,1-Trichloroethane
Fluoride	Ammonia, as N	1,1,2,2-Tetrachloroethane
Nitrate	Biochemical oxygen demand	1,1,2-Trichloroethane
Sulfate, as SO_4	Chemical oxygen demand	1,1-Dichloroethane
	Color	1,1-Dichloroethene
Metals	Cyanide, total	1,2-Dichloroethane
Aluminum	Total dissolved solids	1,2-Dichloroethene, total
Antimony	Total hardness	1,2-Dichloropropane
Arsenic	Total suspended solids	2-Butanone
Barium		2-Hexanone
Beryllium	*Radionuclides*	4-Methyl-2-pentanone
Cadmium	^{60}Co	Acetone
Calcium	^{137}Cs	Benzene
Chromium	Gross alpha[b]	Bromodichloromethane
Cobalt	Gross beta	Bromoform
Copper	^{3}H	Bromomethane
Iron	^{99}Tc	Carbon disulfide
Lead	Total uranium	Carbon tetrachloride
Magnesium	Total rad Sr	Chlorobenzene
Manganese		Chloroethane
Mercury	*Field measurements*	Chloroform
Nickel	Chlorine, total residual	Chloromethane
Phosphorus	Conductivity	cis-1,3-Dichloropropene
Potassium	Dissolved oxygen	Dibromochloromethane
Selenium	pH	Ethylbenzene
Silver	Temperature	Methylene chloride
Sodium		Styrene
Thallium		Tetrachloroethene
Uranium		Toluene
Vanadium		trans-1,3-Dichloropropene
Zinc		Trichloroethene
		Vinyl chloride
		Xylene, total

[a]Sample type: Field Measurements—Grab, instant read: anions, metals, radionuclides, others, and volatile organics. Collection frequency: bimonthly. Analysis frequency: bimonthly.

[b]If Gross alpha > 3 pCi/L (20% of EPA drinking water limit), report ^{234}U, ^{235}U, and ^{238}U from the Total Uranium sample results and do isotopic analysis for ^{228}Th, ^{230}Th, ^{232}Th, ^{238}Pu, ^{239}Pu, ^{237}Np, ^{241}Am, and ^{244}Cm, as needed to identify cause.

Table 3.5. 1995 EMP radionuclide concentrations at ORNL category outfalls

Radionuclide	N det/ N total	Concentration (pCi/L)					
		Max[a]	Min[a]	Av[b]	Standard error[c]	DCG[d]	Percent of DCG[e]
		Category I outfalls					
Co-60	4/26	6.5*	−4.9	1.2*	0.50	5,000	0.023
Cs-137	0/26	3.2	−2.7	0.36	0.30	3,000	*f*
Total rad Sr[g]	6/26	70*	−1.7	7.0*	3.7	1,000	0.70
H-3	11/26	9,700*	−490	930*	370	2,000,000	0.047
		Category II outfalls					
Co-60	27/156	6.5*	−5.4	0.99*	0.20	5,000	0.020
Cs-137	10/156	120*	−5.4	1.8*	0.91	3,000	0.061
Total rad Sr[g]	70/156	1,700*	−27	27*	12	1,000	2.7
H-3	77/156	140,000*	−860	1,900*	910	2,000,000	0.097

[a]Individual radionuclide concentrations significantly greater than zero are indentified by an *.

[b]Average radionuclide concentrations significantly greater than zero are indentified by an *.

[c]Standard error of the mean.

[d]Derived concentration guide (DCG) for ingestion of water. From DOE Order 5400.5.

[e]Average concentration as a percentage of the DCG, calculated only when a DCG exists and the average concentration is significantly greater than zero.

[f]Not applicable.

[g]Total rad Sr analyzed when gross beta is greater than 810 pCi/L.

Table 3.6. 1995 surface water analyses at EMP surface water locations[a]

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
Bear Creek downstream from all possible DOE inputs (BCK 0.6)						
Anions (mg/L)						
Chloride	6/6	8.0	3.5	5.9	0.73	*f*
Fluoride	4/6	0.18	<0.10	–0.14	0.015	*f*
Nitrate	6/6	14	1.6	7.8	2.0	*f*
Sulfate, as SO_4	6/6	54	14	30	6.2	*f*
Field Measurements						
Conductivity (mS/cm)	6/6	0.40	0.12	0.30	0.045	*f*
Dissolved oxygen (ppm)	6/6	12	6.9	9.4	0.87	*f*
pH (SU)	6/6	8.0	7.4	7.8	0.12	*f*
Temperature (°C)	6/6	19	5.9	13	2.1	*f*
Metals (mg/L)						
Aluminum, total	6/6	1.0	0.051	0.30	0.15	*f*
Barium, total	6/6	0.064	0.047	0.057	0.0028	*f*
Calcium, total	6/6	47	27	40	3.2	*f*
Chromium, total	1/6	0.011	<0.0040	–0.0052	0.0012	*f*
Iron, total	6/6	0.82	0.079	0.33	0.11	*f*
Magnesium, total	6/6	17	6.6	12	1.6	*f*
Manganese, total	6/6	0.063	0.016	0.031	0.0068	*f*
Mercury, total	2/6	0.00013	<0.000050	–0.000071	0.000014	0.0024
Phosphorus, total	5/6	0.34	<0.20	–0.26	0.023	*f*
Potassium, total	3/6	2.3	<2.0	–2.1	0.054	*f*
Sodium, total	6/6	5.1	3.3	3.9	0.28	*f*
Uranium, total	5/6	0.030	<0.00010	–0.012	0.0044	*f*
Vanadium, total	3/6	0.0028	<0.0020	–0.0022	0.00013	*f*
Zinc, total	4/6	0.014	<0.0050	–0.0076	0.0014	*f*
Others						
Alkalinity (mg/L)	6/6	170	88	130	13	*f*
Ammonia (mg/L)	2/6	0.046	<0.030	–0.035	0.0031	*f*
Chemical oxygen demand (mg/L)	1/6	12	<5.0	–6.2	1.2	*f*
Color (CPU)	2/6	9.0	<2.0	–3.3	1.1	*f*
Total dissolved solids (mg/L)	6/6	260	130	200	24	*f*
Total hardness (mg/L)	6/6	200	89	160	18	*f*
Total suspended solids (mg/L)	2/6	7.0	<5.0	–5.3	0.33	*f*
Radionuclides (pCi/L)[g]						
Co-60	1/6	5.9*	–0.54	1.6	0.94	*f*
Cs-137	1/6	5.1*	–1.9	0.27	1.1	*f*
Gross alpha	6/6	12*	4.1*	7.2*	1.1	*f*
Gross beta	6/6	14*	5.1*	8.5*	1.3	*f*
H-3	1/6	2,700*	–460	570	440	*f*

Table 3.6 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
Tc-99	5/6	11*	−0.54	5.1*	1.5	*f*
Total rad Sr	3/6	3.0*	0.59	1.5*	0.36	*f*
Total uranium	6/6	18*	5.9*	10*	1.8	*f*
U-234	6/6	6.2*	2.4*	3.7*	0.58	*f*
U-235	5/6	0.46*	0.21*	0.32*	0.042	*f*
U-238	6/6	11*	3.2*	6.0*	1.1	*f*
Volatile Organics (µg/L)						
2-Butanone	6/6	JB6.0	JB3.0	−4.2	0.48	*f*
Acetone	1/6	U10	J1.0	−8.5	1.5	*f*
Bear Creek downstream from the Y-12 Plant burial grounds (BCK 9.4)						
Anions (mg/L)						
Chloride	6/6	37	15	24	3.2	*f*
Fluoride	6/6	0.57	0.25	0.41	0.053	*f*
Nitrate	6/6	140	30	69	17	*f*
Sulfate, as SO_4	6/6	51	20	30	4.6	*f*
Field Measurements						
Conductivity (mS/cm)	6/6	0.72	0.21	0.47	0.092	*f*
Dissolved oxygen (ppm)	6/6	12	6.0	9.6	0.89	*f*
pH (SU)	6/6	8.0	7.5	7.8	0.073	*f*
Temperature (°C)	6/6	20	6.0	13	2.2	*f*
Metals (mg/L)						
Aluminum, total	3/6	0.73	<0.050	−0.24	0.12	*f*
Barium, total	6/6	0.15	0.071	0.12	0.012	*f*
Calcium, total	6/6	100	43	84	9.3	*f*
Iron, total	6/6	0.66	0.062	0.29	0.11	*f*
Magnesium, total	6/6	24	7.6	17	2.4	*f*
Manganese, total	6/6	0.10	0.0041	0.040	0.016	*f*
Mercury, total	2/6	0.00014	<0.000050	−0.000072	0.000015	0.0024
Phosphorus, total	5/6	0.35	<0.20	−0.26	0.027	*f*
Potassium, total	5/6	5.5	<2.0	−3.5	0.50	*f*
Sodium, total	6/6	16	8.7	12	1.2	*f*
Uranium, total	6/6	0.24	0.0013	0.12	0.033	*f*
Vanadium, total	3/6	0.0031	<0.0020	−0.0023	0.00018	*f*
Zinc, total	2/6	0.014	<0.0050	−0.0066	0.0015	*f*
Others						
Alkalinity (mg/L)	6/6	270	110	200	25	*f*
Ammonia (mg/L)	5/6	0.20	<0.030	−0.064	0.027	*f*
Chemical oxygen demand (mg/L)	2/6	20	<5.0	−9.2	2.7	*f*
Color (CPU)	3/6	23	<2.0	−6.7	3.5	*f*

Table 3.6 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
Total dissolved solids (mg/L)	6/6	480	180	390	47	*f*
Total hardness (mg/L)	6/6	340	130	270	31	*f*
Total suspended solids (mg/L)	1/6	7.0	<5.0	~5.3	0.33	*f*
Radionuclides (pCi/L)[g]						
Gross alpha	6/6	100*	27*	51*	12	*f*
Gross beta	6/6	70*	20*	49*	8.0	*f*
H-3	3/6	3,200*	−54	920	490	*f*
Tc-99	6/6	70*	20*	43*	7.7	*f*
Total rad Sr	1/6	2.4*	0.32	1.0*	0.29	*f*
Total uranium	6/6	140*	23*	73*	16	*f*
U-234	6/6	46*	8.4*	24*	5.2	*f*
U-235	6/6	3.5*	1.1*	2.0*	0.35	*f*
U-238	6/6	89*	12*	46*	10	*f*
Volatile Organics (µg/L)						
1,1,1-Trichloroethane	1/6	U5.0	J2.0	~4.5	0.50	*f*
1,2-Dichloroethene, total	4/6	12	J1.0	~5.3	1.5	*f*
2-Butanone	6/6	JB5.0	JB3.0	~3.8	0.31	*f*
Acetone	1/6	U10	J4.0	~9.0	1.0	*f*
Benzene	1/6	U5.0	J2.0	~4.5	0.50	*f*
Carbon disulfide	1/6	U5.0	J2.0	~4.5	0.50	*f*
Chlorobenzene	1/6	U5.0	J1.0	~4.3	0.67	*f*
Tetrachloroethene	3/6	U5.0	J1.0	~3.0	0.89	*f*
Trichloroethene	4/6	46	J1.0	~10	7.2	*f*
Clinch River downstream from all DOE inputs (CRK 16)						
Anions (mg/L)						
Chloride	6/6	4.5	3.4	4.0	0.18	*f*
Nitrate	6/6	2.4	1.5	2.0	0.14	*f*
Sulfate, as SO_4	6/6	26	12	20	1.8	*f*
Field Measurements						
Chlorine, total residual (ppm)	1/6	0.030	<0.010	~0.013	0.0033	*f*
Conductivity (mS/cm)	6/6	0.27	0.23	0.25	0.0058	*f*
Dissolved oxygen (ppm)	6/6	12	6.0	8.6	0.94	*f*
pH (SU)	6/6	8.2	7.7	7.9	0.083	*f*
Temperature (°C)	6/6	22	9.5	16	2.1	*f*
Metals (mg/L)						
Aluminum, total	6/6	0.77	0.13	0.36	0.098	*f*
Barium, total	6/6	0.050	0.031	0.036	0.0029	*f*
Calcium, total	6/6	35	30	32	0.71	*f*
Chromium, total	1/6	0.0074	<0.0040	~0.0046	0.00057	*f*

Table 3.6 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
Iron, total	6/6	1.1	0.16	0.46	0.14	*f*
Magnesium, total	6/6	10	8.0	8.9	0.29	*f*
Manganese, total	6/6	0.13	0.034	0.065	0.015	*f*
Mercury, total	1/6	0.000056	<0.000050	~0.000051	0.0000010	0.00014
Phosphorus, total	3/6	0.37	<0.20	~0.26	0.028	*f*
Sodium, total	6/6	5.7	2.6	4.3	0.42	*f*
Uranium, total	5/6	0.00029	<0.00010	~0.00021	0.000030	*f*
Vanadium, total	2/6	0.0035	<0.0020	~0.0023	0.00025	*f*
Zinc, total	4/6	0.025	<0.0050	~0.0097	0.0032	*f*
Others						
Alkalinity (mg/L)	6/6	120	95	110	3.8	*f*
Ammonia (mg/L)	4/6	0.21	<0.030	~0.063	0.029	*f*
Color (CPU)	6/6	7.0	3.0	4.5	0.67	*f*
Total dissolved solids (mg/L)	6/6	170	120	150	8.0	*f*
Total hardness (mg/L)	6/6	130	110	120	3.7	*f*
Total suspended solids (mg/L)	3/6	26	<5.0	~11	3.6	*f*
Radionuclides (pCi/L)[g]						
Co-60	1/6	6.2*	−3.0	1.2	1.3	*f*
Gross alpha	1/6	1.2*	−0.12	0.26	0.19	*f*
Gross beta	4/6	3.2*	1.2	2.2*	0.37	*f*
Total rad Sr	4/6	2.3*	0.027	1.4*	0.42	*f*
Total uranium	4/6	0.97*	0.38	0.57*	0.090	*f*
Volatile Organics (µg/L)						
2-Butanone	6/6	J7.0	JB2.0	~4.7	0.67	*f*
		Water supply intake for the K-25 Site (CRK 23)				
Anions (mg/L)						
Chloride	6/6	4.4	3.7	4.1	0.10	*f*
Fluoride	1/6	0.11	<0.10	~0.10	0.0017	*f*
Nitrate	6/6	12	1.8	3.9	1.6	*f*
Sulfate, as SO_4	6/6	24	19	21	0.88	*f*
Field Measurements						
Chlorine, total residual (ppm)	1/6	0.020	<0.010	~0.012	0.0017	*f*
Conductivity (mS/cm)	6/6	0.27	0.23	0.26	0.0063	*f*
Dissolved oxygen (ppm)	6/6	11	7.4	8.8	0.65	*f*
pH (SU)	6/6	7.9	7.7	7.8	0.026	*f*
Temperature (°C)	6/6	20	7.7	15	2.1	*f*
Metals (mg/L)						
Aluminum, total	6/6	0.38	0.069	0.16	0.046	*f*
Barium, total	6/6	0.033	0.029	0.032	0.00072	2

Table 3.6 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
Calcium, total	6/6	34	32	33	0.37	*f*
Iron, total	6/6	0.41	0.13	0.21	0.041	*f*
Magnesium, total	6/6	11	8.7	9.4	0.38	*f*
Manganese, total	6/6	0.056	0.023	0.041	0.0049	*f*
Phosphorus, total	2/6	0.36	<0.20	~0.24	0.027	*f*
Sodium, total	6/6	6.1	4.3	4.9	0.27	*f*
Uranium, total	5/6	0.00087	<0.00010	~0.00032	0.00012	*f*
Vanadium, total	1/6	0.0028	<0.0020	~0.0021	0.00013	*f*
Zinc, total	1/6	0.010	<0.0050	~0.0058	0.00083	*f*
Others						
Alkalinity (mg/L)	6/6	120	110	110	1.9	*f*
Ammonia (mg/L)	3/6	0.042	<0.030	~0.034	0.0023	*f*
Chemical oxygen demand (mg/L)	1/6	10	<5.0	~5.8	0.83	*f*
Color (CPU)	5/6	3.0	<2.0	~2.3	0.21	*f*
Total dissolved solids (mg/L)	6/6	180	130	150	6.1	*f*
Total hardness (mg/L)	6/6	140	120	130	3.0	*f*
Total suspended solids (mg/L)	1/6	8.7	<5.0	~5.6	0.62	*f*
Radionuclides (pCi/L)[g]						
Co-60	1/6	4.1*	−1.6	0.36	0.86	*f*
Gross alpha	1/6	1.9*	−0.59	0.38	0.34	*f*
Gross beta	5/6	5.1*	0.27	2.9*	0.67	*f*
H-3	1/6	590*	−320	100	150	*f*
Tc-99	1/6	7.8*	−0.54	2.0	1.2	*f*
Total rad Sr	2/6	1.8*	0.65	1.3*	0.20	*f*
Total uranium	6/6	2.2*	0.43*	1.1*	0.28	*f*
Volatile Organics (µg/L)						
2-Butanone	5/6	U10	J3.0	~5.0	1.0	*f*
Acetone	1/6	U10	J3.0	~8.8	1.2	*f*
Benzene	1/6	U5.0	J2.0	~4.5	0.50	5
Carbon disulfide	2/6	J5.0	J3.0	~4.7	0.33	*f*
		Clinch River downstream from ORNL (CRK 32)				
Anions (mg/L)						
Chloride	6/6	4.6	3.6	4.0	0.15	*f*
Fluoride	1/6	0.10	<0.10	~0.10	0	*f*
Nitrate	6/6	5.3	1.4	2.6	0.56	*f*
Sulfate, as SO_4	6/6	27	20	23	1.3	*f*
Field Measurements						
Conductivity (mS/cm)	6/6	0.28	0.25	0.26	0.0050	*f*
Dissolved oxygen (ppm)	6/6	12	6.4	8.9	0.86	*f*

Table 3.6 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
pH (SU)	6/6	8.2	7.6	7.8	0.091	*f*
Temperature (°C)	6/6	23	8.2	16	2.2	*f*
Metals (mg/L)						
Aluminum, total	6/6	1.6	0.089	0.45	0.23	*f*
Barium, total	6/6	0.041	0.031	0.034	0.0015	*f*
Calcium, total	6/6	35	31	33	0.56	*f*
Iron, total	6/6	2.1	0.22	0.61	0.30	*f*
Magnesium, total	6/6	11	8.6	9.5	0.36	*f*
Manganese, total	6/6	0.18	0.041	0.070	0.022	*f*
Phosphorus, total	3/6	0.35	<0.20	~0.23	0.025	*f*
Potassium, total	1/6	2.2	<2.0	~2.0	0.033	*f*
Sodium, total	6/6	6.1	4.2	4.9	0.27	*f*
Uranium, total	5/6	0.0034	<0.00010	~0.00072	0.00054	*f*
Zinc, total	4/6	0.013	<0.0050	~0.0098	0.0016	*f*
Others						
Alkalinity (mg/L)	6/6	120	100	110	3.1	*f*
Ammonia (mg/L)	5/6	0.050	<0.030	~0.039	0.0030	*f*
Chemical oxygen demand (mg/L)	3/6	7.0	<5.0	~5.5	0.34	*f*
Color (CPU)	6/6	6.0	2.0	3.7	0.56	*f*
Cyanide, total (mg/L)	1/6	0.0020	<0.0020	~0.0020	0	*f*
Total dissolved solids (mg/L)	6/6	190	130	160	8.8	*f*
Total hardness (mg/L)	6/6	130	120	130	2.1	*f*
Total suspended solids (mg/L)	4/6	99	<5.0	~22	15	*f*
Radionuclides (pCi/L)[g]						
Co-60	1/6	4.1*	−3.0	−0.18	1.0	*f*
Gross alpha	2/6	0.81*	−0.19	0.19	0.19	*f*
Gross beta	5/6	5.9*	0.51	3.2*	0.75	*f*
H-3	1/6	860*	−540	−4.5	210	*f*
Total rad Sr	3/6	2.3*	1.4	1.7*	0.14	*f*
Total uranium	3/6	1.5*	0.10	0.60*	0.22	*f*
Volatile Organics (µg/L)						
2-Butanone	5/6	U10	JB2.0	~5.3	1.1	*f*
Acetone	1/6	U10	JB1.0	~8.5	1.5	*f*
Water supply intake for Knox County (CRK 58)						
Anions (mg/L)						
Chloride	6/6	4.6	3.7	4.2	0.15	*f*
Fluoride	1/6	0.10	<0.10	~0.10	0	*f*
Nitrate	6/6	2.0	0.81	1.7	0.20	*f*
Sulfate, as SO_4	6/6	25	18	21	1.0	*f*

Table 3.6 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
Field Measurements						
Conductivity (mS/cm)	6/6	0.30	0.22	0.26	0.012	*f*
Dissolved oxygen (ppm)	6/6	11	6.2	9.3	0.76	*f*
pH (SU)	6/6	8.9	7.7	8.1	0.20	*f*
Temperature (°C)	6/6	30	6.8	17	3.7	*f*
Metals (mg/L)						
Aluminum, total	6/6	0.66	0.095	0.21	0.090	*f*
Arsenic, total	1/6	0.054	<0.050	~0.051	0.00067	0.00018
Barium, total	6/6	0.034	0.027	0.031	0.0010	*f*
Calcium, total	6/6	35	27	32	1.3	*f*
Chromium, total	1/6	0.015	<0.0040	~0.0058	0.0018	*f*
Iron, total	6/6	0.75	0.11	0.26	0.10	*f*
Magnesium, total	6/6	11	8.1	9.3	0.41	*f*
Manganese, total	6/6	0.067	0.013	0.042	0.0072	*f*
Mercury, total	1/6	0.000099	<0.000050	~0.000058	0.0000082	0.00014
Phosphorus, total	4/6	0.30	<0.20	~0.24	0.019	*f*
Sodium, total	6/6	16	4.8	6.9	1.8	*f*
Uranium, total	5/6	0.00022	<0.00010	~0.00016	0.000017	*f*
Vanadium, total	2/6	0.0043	<0.0020	~0.0026	0.00040	*f*
Zinc, total	3/6	0.0070	<0.0050	~0.0055	0.00033	*f*
Others						
Alkalinity (mg/L)	6/6	120	85	110	5.8	*f*
Ammonia (mg/L)	3/6	0.054	<0.030	~0.039	0.0045	*f*
Chemical oxygen demand (mg/L)	1/6	13	<5.0	~6.3	1.3	*f*
Color (CPU)	6/6	6.0	2.0	3.2	0.60	*f*
Total dissolved solids (mg/L)	6/6	170	120	140	6.0	*f*
Total hardness (mg/L)	6/6	130	110	120	3.7	*f*
Total suspended solids (mg/L)	2/6	25	<5.0	~8.8	3.3	*f*
Radionuclides (pCi/L)[g]						
Co-60	1/6	4.6*	−1.6	0.34	1.0	*f*
Gross alpha	1/6	1.1*	−0.59	0.21	0.23	*f*
Gross beta	4/6	3.0*	−0.59	1.6*	0.53	*f*
H-3	2/6	2,500*	−700	310	520	*f*
Tc-99	2/6	4.3*	−0.27	2.0*	0.66	*f*
Total rad Sr	3/6	1.9*	1.1	1.5*	0.14	*f*
Total uranium	4/6	1.3*	0.24	0.58*	0.16	*f*
Volatile Organics (µg/L)						
2-Butanone	5/6	U10	JB2.0	~5.8	1.2	*f*
Acetone	1/6	U10	JB1.0	~8.5	1.5	*f*

Table 3.6 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
Melton Hill Reservoir above City of Oak Ridge water intake (CRK 66)						
Anions (mg/L)						
Chloride	6/6	4.5	3.7	4.2	0.11	*f*
Fluoride	2/6	0.20	<0.10	–0.13	0.018	*f*
Nitrate	6/6	15	1.3	3.9	2.2	*f*
Sulfate, as SO_4	6/6	24	20	22	0.76	*f*
Field Measurements						
Chlorine, total residual (ppm)	1/6	0.020	<0.010	–0.012	0.0017	*f*
Conductivity (mS/cm)	6/6	0.31	0.25	0.27	0.0098	*f*
Dissolved oxygen (ppm)	6/6	14	6.4	9.9	1.1	*f*
pH (SU)	6/6	8.7	7.7	8.1	0.16	*f*
Temperature (°C)	6/6	29	6.8	17	3.6	*f*
Metals (mg/L)						
Aluminum, total	6/6	1.0	0.097	0.31	0.14	*f*
Barium, total	6/6	0.037	0.030	0.033	0.0012	*f*
Calcium, total	6/6	34	31	33	0.49	*f*
Copper, total	1/6	0.0093	<0.0070	–0.0074	0.00038	*f*
Iron, total	6/6	1.4	0.15	0.43	0.20	*f*
Magnesium, total	6/6	10	8.6	9.2	0.27	*f*
Manganese, total	6/6	0.075	0.022	0.050	0.0073	*f*
Mercury, total	1/6	0.000051	<0.000050	–0.000050	0.00000017	0.00014
Phosphorus, total	5/6	0.34	<0.20	–0.25	0.023	*f*
Potassium, total	1/6	2.3	<2.0	–2.1	0.050	*f*
Sodium, total	6/6	5.8	4.2	4.8	0.24	*f*
Uranium, total	5/6	0.00028	<0.00010	–0.00018	0.000025	*f*
Vanadium, total	1/6	0.0027	<0.0020	–0.0021	0.00012	*f*
Zinc, total	3/6	0.015	<0.0050	–0.0073	0.0016	*f*
Others						
Alkalinity (mg/L)	6/6	120	95	100	4.0	*f*
Ammonia (mg/L)	4/6	0.066	<0.030	–0.041	0.0065	*f*
Chemical oxygen demand (mg/L)	2/6	35	<5.0	–10	5.0	*f*
Color (CPU)	5/6	12	<2.0	–4.3	1.5	*f*
Total dissolved solids (mg/L)	6/6	180	140	160	5.3	*f*
Total hardness (mg/L)	6/6	130	120	120	2.3	*f*
Total suspended solids (mg/L)	4/6	75	<5.0	–19	11	*f*
Radionuclides (pCi/L)[g]						
Co-60	1/6	3.8*	–0.54	1.2	0.66	*f*
Gross alpha	1/6	1.1*	–0.54	0.28	0.22	*f*

Table 3.6 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
Gross beta	4/6	2.6*	0.19	1.3*	0.38	*f*
H-3	1/6	1,300*	−590	54	270	*f*
Tc-99	2/6	4.9*	−0.54	2.4*	0.81	*f*
Total rad Sr	1/6	2.4*	0.32	0.93*	0.30	*f*
Total uranium	5/6	1.4*	−0.027	0.66*	0.18	*f*
Volatile Organics (µg/L)						
2-Butanone	4/6	U10	JB3.0	~6.3	1.3	*f*
Acetone	1/6	U10	JB1.0	~8.5	1.5	*f*
Carbon disulfide	1/6	U5.0	JB2.0	~4.5	0.50	*f*
		Melton Hill Reservoir—Oak Ridge Marina (CRK 80)				
Anions (mg/L)						
Chloride	6/6	4.6	4.0	4.2	0.086	*f*
Fluoride	4/6	0.51	<0.10	~0.18	0.066	*f*
Nitrate	6/6	2.9	1.2	2.0	0.25	*f*
Sulfate, as SO_4	6/6	23	19	20	0.61	*f*
Field Measurements						
Conductivity (mS/cm)	6/6	0.27	0.18	0.25	0.014	*f*
Dissolved oxygen (ppm)	6/6	12	6.1	9.2	1.0	*f*
pH (SU)	6/6	8.7	7.4	7.8	0.20	*f*
Temperature (°C)	6/6	20	6.5	12	2.0	*f*
Metals (mg/L)						
Aluminum, total	6/6	1.3	0.062	0.34	0.20	*f*
Arsenic, total	1/6	0.069	<0.050	~0.053	0.0032	0.00018
Barium, total	6/6	0.039	0.030	0.034	0.0015	*f*
Calcium, total	6/6	36	31	33	0.76	*f*
Iron, total	6/6	1.5	0.12	0.43	0.22	*f*
Magnesium, total	6/6	10	8.1	8.8	0.27	*f*
Manganese, total	6/6	0.13	0.047	0.076	0.013	*f*
Mercury, total	2/6	0.00016	<0.000050	~0.000071	0.000018	0.00014
Phosphorus, total	4/6	0.32	<0.20	~0.25	0.024	*f*
Potassium, total	1/6	2.1	<2.0	~2.0	0.017	*f*
Sodium, total	6/6	5.6	4.2	4.6	0.22	*f*
Uranium, total	6/6	0.00041	0.00013	0.00026	0.000044	*f*
Vanadium, total	1/6	0.0029	<0.0020	~0.0022	0.00015	*f*
Zinc, total	3/6	0.0071	<0.0050	~0.0056	0.00036	*f*
Others						
Alkalinity (mg/L)	6/6	120	90	110	3.6	*f*
Ammonia (mg/L)	5/6	0.30	<0.030	~0.089	0.042	*f*
Chemical oxygen demand (mg/L)	3/6	10	<5.0	~6.3	0.88	*f*

Table 3.6 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
Color (CPU)	3/6	9.0	<2.0	~3.5	1.1	*f*
Total dissolved solids (mg/L)	6/6	170	140	160	4.0	*f*
Total hardness (mg/L)	6/6	130	120	120	1.9	*f*
Total suspended solids (mg/L)	3/6	17	<5.0	~7.3	2.0	*f*
Radionuclides (pCi/L)[g]						
Co-60	2/6	4.6*	−1.6	1.7	1.0	*f*
Cs-137	1/6	3.5*	−1.4	0.86	0.82	*f*
Gross alpha	3/6	0.86*	−0.30	0.35	0.22	*f*
Gross beta	5/6	3.5*	−2.2	1.6	0.83	*f*
H-3	2/6	3,000*	−240	740	470	*f*
Total rad Sr	2/6	4.1*	−0.30	1.1	0.72	*f*
Total uranium	3/6	2.7*	0.19*	1.1*	0.50	*f*
Volatile Organics (µg/L)						
2-Butanone	6/6	JB5.0	JB3.0	~4.0	0.37	*f*
Trichloroethene	1/6	U5.0	J1.0	~4.3	0.67	27
Melton Hill Reservoir above all DOE inputs (CRK 84)						
Anions (mg/L)						
Chloride	6/6	7.2	4.2	4.9	0.48	*f*
Fluoride	4/6	0.15	<0.10	~0.12	0.0092	*f*
Nitrate	6/6	2.9	1.0	2.2	0.28	*f*
Sulfate, as SO_4	6/6	21	19	20	0.31	*f*
Field Measurements						
Conductivity (mS/cm)	6/6	0.28	0.15	0.25	0.019	*f*
Dissolved oxygen (ppm)	6/6	12	6.5	8.8	0.78	*f*
pH (SU)	6/6	8.4	7.6	7.8	0.13	*f*
Temperature (°C)	6/6	17	4.5	12	2.0	*f*
Metals (mg/L)						
Aluminum, total	6/6	1.0	0.069	0.47	0.17	*f*
Barium, total	6/6	0.038	0.031	0.035	0.0012	*f*
Calcium, total	6/6	33	29	32	0.63	*f*
Copper, total	1/6	0.0079	<0.0070	~0.0072	0.00015	*f*
Iron, total	6/6	1.1	0.15	0.56	0.15	*f*
Magnesium, total	6/6	9.1	7.6	8.6	0.23	*f*
Manganese, total	6/6	0.20	0.041	0.10	0.023	*f*
Mercury, total	2/6	0.00014	<0.000050	~0.000073	0.000015	0.00014
Phosphorus, total	4/6	0.33	<0.20	~0.26	0.026	*f*
Potassium, total	1/6	2.3	<2.0	~2.1	0.050	*f*
Selenium, total	1/6	0.054	<0.050	~0.051	0.00067	*f*
Sodium, total	6/6	5.8	4.3	4.9	0.27	*f*

Table 3.6 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
Uranium, total	6/6	0.00023	0.00011	0.00015	0.000019	*f*
Vanadium, total	3/6	0.0028	<0.0020	~0.0024	0.00016	*f*
Zinc, total	5/6	0.058	<0.0050	~0.017	0.0083	*f*
Others						
Alkalinity (mg/L)	6/6	110	95	100	2.5	*f*
Ammonia (mg/L)	5/6	0.076	<0.030	~0.049	0.0063	*f*
Chemical oxygen demand (mg/L)	3/6	18	<5.0	~8.2	2.2	*f*
Color (CPU)	4/6	9.0	<2.0	~3.5	1.1	*f*
Total dissolved solids (mg/L)	6/6	170	150	160	3.6	*f*
Total hardness (mg/L)	6/6	130	110	120	3.0	*f*
Total suspended solids (mg/L)	4/6	19	<5.0	~13	2.5	*f*
Radionuclides (pCi/L)[g]						
Co-60	1/6	4.9*	~5.4	~1.1	1.5	*f*
Gross alpha	2/6	0.97*	~0.73	0.23	0.26	*f*
Gross beta	5/6	3.2*	0.68	2.1*	0.37	*f*
H-3	2/6	3,000*	0	660	470	*f*
Tc-99	1/6	4.9	~7.0	~0.23	1.7	*f*
Total uranium	4/6	1.5*	0.24*	0.55*	0.19	*f*
Volatile Organics (µg/L)						
2-Butanone	6/6	JB6.0	JB3.0	~4.3	0.42	*f*
Acetone	2/6	U10	J4.0	~8.0	1.3	*f*
Carbon disulfide	1/6	U5.0	J1.0	~4.3	0.67	*f*
East Fork Poplar Creek downstream from the Y-12 Plant (EFK 23.4)						
Anions (mg/L)						
Chloride	6/6	26	14	19	2.0	*f*
Fluoride	6/6	1.3	0.48	0.85	0.11	*f*
Nitrate	6/6	23	16	20	0.99	*f*
Sulfate, as SO_4	6/6	59	25	38	4.7	*f*
Field Measurements						
Chlorine, total residual (ppm)	1/6	0.080	<0.010	~0.022	0.012	19
Conductivity (mS/cm)	6/6	0.43	0.22	0.34	0.037	*f*
Dissolved oxygen (ppm)	6/6	11	8.0	9.6	0.45	*f*
pH (SU)	6/6	8.4	7.6	8.0	0.11	*f*
Temperature (°C)	6/6	23	11	17	1.9	*f*
Metals (mg/L)						
Aluminum, total	6/6	0.22	0.061	0.14	0.031	*f*
Barium, total	6/6	0.058	0.049	0.053	0.0014	*f*
Calcium, total	6/6	49	45	46	0.63	*f*

Table 3.6 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
Copper, total	1/6	0.0080	<0.0070	~0.0072	0.00017	*f*
Iron, total	6/6	0.33	0.12	0.22	0.039	*f*
Magnesium, total	6/6	11	9.2	10	0.35	*f*
Manganese, total	6/6	0.058	0.035	0.051	0.0037	*f*
Mercury, total	6/6	0.00044	0.00022	0.00032	0.000030	0.0024
Phosphorus, total	6/6	0.40	0.23	0.33	0.026	*f*
Potassium, total	4/6	2.7	<2.0	~2.2	0.11	*f*
Sodium, total	6/6	14	8.8	11	0.92	*f*
Uranium, total	6/6	0.040	0.010	0.022	0.0052	*f*
Vanadium, total	2/6	0.0023	<0.0020	~0.0021	0.000049	*f*
Zinc, total	6/6	0.055	0.026	0.041	0.0039	*f*
Others						
Alkalinity (mg/L)	6/6	130	95	120	4.8	*f*
Ammonia (mg/L)	6/6	0.61	0.049	0.17	0.088	*f*
Biochemical oxygen demand (mg/L)	1/6	5.8	<5.0	~5.1	0.13	*f*
Chemical oxygen demand (mg/L)	3/6	10	<5.0	~6.5	0.96	*f*
Color (CPU)	4/6	10	<2.0	~4.2	1.3	*f*
Total dissolved solids (mg/L)	6/6	260	200	230	7.9	*f*
Total hardness (mg/L)	6/6	170	140	170	4.5	*f*
Total suspended solids (mg/L)	2/6	14	<5.0	~7.0	1.5	*f*
Radionuclides (pCi/L)[g]						
Co-60	1/6	4.6*	−1.6	0.77	0.91	*f*
Cs-137	1/6	2.7*	−1.1	1.8*	0.59	*f*
Gross alpha	6/6	14*	3.5*	8.3*	1.6	*f*
Gross beta	6/6	16*	4.3*	9.9*	1.7	*f*
H-3	5/6	3,000*	350	1,100*	390	*f*
Tc-99	6/6	24*	5.7*	10*	2.9	*f*
Total rad Sr	1/6	1.9	−0.24	0.87*	0.34	*f*
Total uranium	6/6	21*	5.9*	12*	2.5	*f*
U-234	6/6	7.0*	2.1*	4.3*	0.79	*f*
U-235	4/6	0.65*	0.059	0.35*	0.087	*f*
U-238	6/6	14*	3.2*	7.7*	1.8	*f*
Volatile Organics (µg/L)						
2-Butanone	6/6	JB6.0	JB3.0	~4.5	0.43	*f*
Acetone	3/6	11	J2.0	~7.5	1.7	*f*
Benzene	1/6	U5.0	J1.0	~4.3	0.67	*f*
Chloroform	1/6	U5.0	J1.0	~4.3	0.67	*f*
Tetrachloroethene	1/6	U5.0	J1.0	~4.3	0.67	*f*

Table 3.6 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
East Fork Poplar Creek downstream from floodplain (EFK 5.4)						
Anions (mg/L)						
Chloride	6/6	20	13	18	1.2	*f*
Fluoride	6/6	0.84	0.26	0.63	0.089	*f*
Nitrate	6/6	24	12	17	1.8	*f*
Sulfate, as SO_4	6/6	44	31	37	2.0	*f*
Field Measurements						
Conductivity (mS/cm)	6/6	0.43	0.36	0.39	0.010	*f*
Dissolved oxygen (ppm)	6/6	11	6.2	8.4	0.76	*f*
pH (SU)	6/6	7.8	7.4	7.6	0.067	*f*
Temperature (°C)	6/6	24	5.0	15	3.1	*f*
Metals (mg/L)						
Aluminum, total	6/6	1.5	0.11	0.53	0.21	*f*
Barium, total	6/6	0.042	0.031	0.034	0.0017	*f*
Calcium, total	6/6	55	40	47	2.1	*f*
Iron, total	6/6	1.6	0.16	0.60	0.21	*f*
Magnesium, total	6/6	10	8.1	9.2	0.32	*f*
Manganese, total	6/6	0.090	0.021	0.036	0.011	*f*
Mercury, total	4/6	0.0018	<0.000050	–0.00036	0.00029	0.0024
Phosphorus, total	6/6	0.67	0.26	0.47	0.071	*f*
Potassium, total	6/6	4.2	2.8	3.7	0.22	*f*
Sodium, total	6/6	17	11	15	1.1	*f*
Uranium, total	6/6	0.0089	0.0020	0.0063	0.00095	*f*
Vanadium, total	3/6	0.0031	<0.0020	–0.0022	0.00018	*f*
Zinc, total	6/6	0.022	0.0063	0.014	0.0023	*f*
Others						
Alkalinity (mg/L)	6/6	140	100	130	5.9	*f*
Ammonia (mg/L)	5/6	0.13	<0.030	–0.076	0.017	*f*
Chemical oxygen demand (mg/L)	1/6	8.0	<5.0	–5.5	0.50	*f*
Color (CPU)	5/6	8.0	<2.0	–4.3	0.84	*f*
Total dissolved solids (mg/L)	6/6	290	210	250	14	*f*
Total hardness (mg/L)	6/6	180	68	150	17	*f*
Total suspended solids (mg/L)	5/7	56	<5.0	–22	8.9	*f*
Radionuclides (pCi/L)[g]						
Co-60	2/6	5.1*	–1.1	2.0	1.0	*f*
Gross alpha	6/6	4.3*	2.2*	3.0*	0.30	*f*
Gross beta	6/6	6.2*	4.1*	4.8*	0.33	*f*
Total uranium	6/6	5.4*	2.4*	4.2*	0.42	*f*

Table 3.6 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
U-234	3/3	2.0*	1.6*	1.7*	0.13	*f*
U-235	1/3	0.32*	0.054	0.20	0.079	*f*
U-238	3/3	2.7*	2.2*	2.4*	0.16	*f*
Volatile Organics (µg/L)						
2-Butanone	4/6	U10	JB2.0	~5.7	1.4	*f*
Chloromethane	1/6	U10	J2.0	~8.7	1.3	*f*
Hinds Creek (reference site for East Fork Poplar Creek) (HC)						
Anions (mg/L)						
Chloride	6/6	8.0	3.0	4.6	0.75	*f*
Fluoride	5/6	0.21	<0.10	~0.15	0.019	*f*
Nitrate	6/6	5.2	1.2	2.7	0.61	*f*
Sulfate, as SO_4	6/6	20	10	14	1.4	*f*
Field Measurements						
Conductivity (mS/cm)	6/6	0.38	0.17	0.30	0.037	*f*
Dissolved oxygen (ppm)	6/6	13	6.4	9.2	1.1	*f*
pH (SU)	6/6	8.4	7.5	7.8	0.13	*f*
Temperature (°C)	6/6	21	4.9	13	2.9	*f*
Metals (mg/L)						
Aluminum, total	6/6	2.5	0.16	0.74	0.36	*f*
Barium, total	6/6	0.051	0.035	0.045	0.0027	*f*
Calcium, total	6/6	55	28	43	3.5	*f*
Iron, total	6/6	2.7	0.27	0.91	0.37	*f*
Magnesium, total	6/6	17	5.7	11	1.7	*f*
Manganese, total	6/6	0.13	0.018	0.056	0.017	*f*
Mercury, total	2/6	0.00014	<0.000050	~0.000072	0.000015	0.0024
Phosphorus, total	4/6	0.31	<0.20	~0.25	0.020	*f*
Potassium, total	2/6	2.6	<2.0	~2.2	0.12	*f*
Sodium, total	6/6	3.1	1.7	2.6	0.21	*f*
Uranium, total	3/6	0.00038	<0.00010	~0.00021	0.000056	*f*
Vanadium, total	3/6	0.0049	<0.0020	~0.0029	0.00048	*f*
Zinc, total	4/6	0.011	<0.0050	~0.0073	0.0011	*f*
Others						
Alkalinity (mg/L)	6/6	180	83	140	14	*f*
Ammonia (mg/L)	6/6	0.059	0.036	0.044	0.0036	*f*
Chemical oxygen demand (mg/L)	2/6	16	<5.0	~7.0	1.8	*f*
Color (CPU)	4/6	16	<2.0	~6.2	2.1	*f*
Total dissolved solids (mg/L)	6/6	230	130	190	15	*f*
Total hardness (mg/L)	6/6	190	87	160	16	*f*
Total suspended solids (mg/L)	4/6	61	<5.0	~19	8.6	*f*

Table 3.6 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
Radionuclides (pCi/L)[g]						
Co-60	1/6	5.4*	−1.9	1.1	1.2	*f*
Gross alpha	1/6	1.2*	−0.16	0.22	0.21	*f*
Gross beta	5/6	3.5*	1.6	2.6*	0.28	*f*
H-3	3/6	3,000*	27	770	460	*f*
Tc-99	1/6	11*	−3.2	0.18	2.3	*f*
Total uranium	6/6	5.1*	0.46*	1.4	0.75	*f*
Volatile Organics (µg/L)						
2-Butanone	6/6	JB6.0	JB3.0	−4.3	0.42	*f*
Acetone	1/6	U10	J1.0	−8.5	1.5	*f*
		Melton Branch downstream from ORNL (MEK 0.2)				
Anions (mg/L)						
Chloride	6/6	16	3.0	10	2.2	*f*
Fluoride	6/6	2.2	0.19	1.1	0.34	*f*
Nitrate	6/6	4.8	0.49	2.8	0.75	*f*
Sulfate, as SO_4	6/6	140	24	89	21	*f*
Field Measurements						
Conductivity (mS/cm)	6/6	0.62	0.21	0.36	0.059	*f*
Dissolved oxygen (ppm)	6/6	12	6.9	9.3	0.74	*f*
pH (SU)	6/6	7.8	7.3	7.6	0.093	*f*
Temperature (°C)	6/6	25	7.5	14	2.7	*f*
Metals (mg/L)						
Aluminum, total	6/6	4.9	0.57	1.4	0.70	*f*
Barium, total	6/6	0.072	0.045	0.057	0.0039	*f*
Calcium, total	6/6	72	36	57	6.4	*f*
Chromium, total	1/6	0.0048	<0.0040	−0.0041	0.00013	*f*
Cobalt, total	2/6	0.0051	<0.0040	−0.0042	0.00018	*f*
Copper, total	3/6	0.021	<0.0070	−0.0098	0.0023	*f*
Iron, total	6/6	2.9	0.53	1.1	0.37	*f*
Magnesium, total	6/6	15	5.4	11	1.8	*f*
Manganese, total	6/6	0.15	0.074	0.12	0.012	*f*
Mercury, total	2/6	0.00012	<0.000050	−0.000066	0.000012	0.0024
Phosphorus, total	5/6	1.1	<0.20	−0.58	0.13	*f*
Potassium, total	5/6	3.6	<2.0	−2.8	0.32	*f*
Sodium, total	6/6	12	4.2	7.7	1.3	*f*
Uranium, total	6/6	0.0035	0.00022	0.0012	0.00049	*f*
Vanadium, total	4/6	0.0038	<0.0020	−0.0027	0.00032	*f*
Zinc, total	6/6	0.12	0.0076	0.066	0.020	*f*
Others						
Alkalinity (mg/L)	6/6	120	68	96	6.9	*f*
Ammonia (mg/L)	4/6	0.052	<0.030	−0.037	0.0036	*f*

Table 3.6 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
Chemical oxygen demand (mg/L)	3/6	19	<5.0	~9.0	2.3	*f*
Color (CPU)	5/6	26	<2.0	~7.8	3.8	*f*
Total dissolved solids (mg/L)	6/6	340	140	260	35	*f*
Total hardness (mg/L)	6/6	240	100	190	23	*f*
Total suspended solids (mg/L)	6/6	46	8.0	22	5.6	*f*
Radionuclides (pCi/L)[g]						
Co-60	3/6	4.3*	−0.54	2.7*	0.81	*f*
Cs-137	2/6	4.9*	−1.1	2.1*	1.0	*f*
Gross alpha	4/6	2.1*	0.49	1.1*	0.25	*f*
Gross beta	6/6	2,000*	100*	1,000*	290	*f*
H-3	6/6	920,000*	38,000*	540,000*	120,000	*f*
Tc-99	2/6	25*	−1.1	5.4	4.2	*f*
Total rad Sr	6/6	730*	73*	430*	100	*f*
Total uranium	3/6	1.9*	0.35	0.83*	0.23	*f*
Volatile Organics (µg/L)						
2-Butanone	6/6	JB5.0	JB3.0	~4.2	0.40	*f*
Acetone	2/6	U10	J1.0	~7.2	1.8	*f*
Benzene	1/6	U5.0	J1.0	~4.3	0.67	*f*
Carbon disulfide	2/6	U5.0	J2.0	~4.3	0.49	*f*
Chloroform	1/6	U5.0	J1.0	~4.3	0.67	*f*
Melton Branch upstream from ORNL (MEK 2.1)						
Anions (mg/L)						
Chloride	5/5	4.8	0.28	2.9	0.76	*f*
Fluoride	1/5	0.23	<0.10	~0.13	0.026	*f*
Nitrate	5/5	0.69	0.41	0.57	0.055	*f*
Sulfate, as SO_4	5/5	18	2.6	11	2.7	*f*
Field Measurements						
Conductivity (mS/cm)	5/5	0.46	0.090	0.24	0.064	*f*
Dissolved oxygen (ppm)	5/5	11	8.4	9.6	0.44	*f*
pH (SU)	5/5	8.1	7.2	7.6	0.18	*f*
Temperature (°C)	5/5	21	4.8	12	2.8	*f*
Metals (mg/L)						
Aluminum, total	5/5	2.5	0.78	1.7	0.35	*f*
Barium, total	5/5	0.078	0.032	0.046	0.0081	*f*
Calcium, total	5/5	76	23	43	8.9	*f*
Chromium, total	1/5	0.0052	<0.0040	~0.0042	0.00024	*f*
Iron, total	5/5	2.3	0.57	1.3	0.29	*f*
Magnesium, total	5/5	7.7	2.8	5.0	0.78	*f*

Table 3.6 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
Manganese, total	5/5	0.27	0.021	0.079	0.048	*f*
Mercury, total	2/5	0.00016	<0.000050	~0.000072	0.000022	0.0024
Phosphorus, total	4/5	0.33	<0.20	~0.29	0.024	*f*
Potassium, total	1/5	2.9	<2.0	~2.2	0.18	*f*
Sodium, total	5/5	4.2	1.6	3.0	0.41	*f*
Uranium, total	2/5	0.00045	<0.00010	~0.00017	0.000070	*f*
Vanadium, total	3/5	0.0042	<0.0020	~0.0027	0.00041	*f*
Zinc, total	1/5	0.011	<0.0050	~0.0062	0.0012	*f*
Others						
Alkalinity (mg/L)	5/5	220	50	120	28	*f*
Ammonia (mg/L)	1/5	0.073	<0.030	~0.039	0.0086	*f*
Chemical oxygen demand (mg/L)	2/5	27	<5.0	~12	4.7	*f*
Color (CPU)	4/5	24	<2.0	~9.0	3.9	*f*
Total dissolved solids (mg/L)	5/5	220	130	160	16	*f*
Total hardness (mg/L)	5/5	220	77	130	25	*f*
Total suspended solids (mg/L)	5/5	110	7.0	30	19	*f*
Radionuclides (pCi/L)[g]						
Co-60	2/5	4.3*	−0.081	1.8	1.0	*f*
Cs-137	1/5	2.4*	−1.1	0.64	0.57	*f*
Gross beta	3/5	4.3*	0.51	2.4*	0.82	*f*
H-3	4/5	3,000*	−380	1,200*	540	*f*
Tc-99	1/5	6.8*	−1.1	1.7	1.4	*f*
Total rad Sr	1/5	2.2*	−1.1	0.84	0.53	*f*
Total uranium	3/5	1.2*	0.11	0.52*	0.18	*f*
Volatile Organics (µg/L)						
2-Butanone	5/5	JB5.0	JB3.0	~4.0	0.45	*f*
Acetone	1/5	U10	J3.0	~8.6	1.4	*f*
Carbon disulfide	1/5	U5.0	J4.0	~4.8	0.20	*f*
Mitchell Branch downstream from the K-25 Site (MIK 0.1)						
Anions (mg/L)						
Chloride	6/6	29	7.6	16	3.5	*f*
Fluoride	6/6	0.29	0.12	0.19	0.024	*f*
Nitrate	6/6	2.5	1.0	1.7	0.21	*f*
Sulfate, as SO_4	6/6	38	17	31	3.2	*f*
Field Measurements						
Chlorine, total residual (ppm)	1/6	0.020	<0.010	~0.012	0.0017	*f*
Conductivity (mS/cm)	6/6	0.47	0.23	0.37	0.033	*f*
Dissolved oxygen (ppm)	6/6	11	6.2	8.1	0.74	*f*

Table 3.6 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
pH (SU)	6/6	7.8	7.2	7.4	0.095	*f*
Temperature (°C)	6/6	24	7.3	15	2.8	*f*
Metals (mg/L)						
Aluminum, total	4/6	0.27	<0.050	~0.10	0.035	*f*
Barium, total	6/6	0.050	0.031	0.042	0.0025	*f*
Calcium, total	6/6	64	32	53	4.9	*f*
Chromium, total	3/6	0.0094	<0.0040	~0.0060	0.00099	*f*
Copper, total	1/6	0.011	<0.0070	~0.0077	0.00067	*f*
Iron, total	6/6	0.44	0.16	0.28	0.041	*f*
Magnesium, total	6/6	12	6.2	10	0.84	*f*
Manganese, total	6/6	0.27	0.10	0.18	0.025	*f*
Mercury, total	1/6	0.000077	<0.000050	~0.000055	0.0000045	*f*
Nickel, total	3/6	0.013	<0.010	~0.011	0.00050	*f*
Phosphorus, total	5/6	0.36	<0.20	~0.27	0.030	*f*
Potassium, total	3/6	2.7	<2.0	~2.2	0.11	*f*
Sodium, total	6/6	10	3.6	7.2	0.93	*f*
Uranium, total	5/6	0.015	<0.00010	~0.0085	0.0020	*f*
Zinc, total	4/6	0.018	<0.0050	~0.010	0.0024	*f*
Others						
Alkalinity (mg/L)	6/6	170	93	140	11	*f*
Ammonia (mg/L)	6/6	0.064	0.040	0.053	0.0043	*f*
Chemical oxygen demand (mg/L)	1/6	22	<5.0	~7.8	2.8	*f*
Color (CPU)	4/6	15	<2.0	~4.8	2.1	*f*
Total dissolved solids (mg/L)	6/6	290	130	230	24	*f*
Total hardness (mg/L)	6/6	200	110	170	14	*f*
Total suspended solids (mg/L)	1/6	6.7	<5.0	~5.3	0.28	*f*
Radionuclides (pCi/L)[g]						
Co-60	1/6	5.4*	−1.1	0.90	0.96	*f*
Cs-137	1/6	5.7*	−1.9	0.68	1.1	*f*
Gross alpha	6/6	12*	4.9*	7.8*	1.1	*f*
Gross beta	6/6	17*	9.5*	13*	1.3	*f*
H-3	1/6	700*	−590	72	190	*f*
Tc-99	5/6	17*	−4.6	9.9*	3.3	*f*
Total uranium	6/6	17*	7.3*	11*	1.5	*f*
U-234	6/6	11*	4.1*	6.7*	0.91	*f*
U-235	5/6	0.76	0.24*	0.45*	0.070	*f*
U-238	6/6	5.9*	2.5*	3.8*	0.54	*f*
Volatile Organics (µg/L)						
1,1,1-Trichloroethane	1/6	U5.0	J1.0	~4.3	0.67	*f*
1,1-Dichloroethane	1/6	U5.0	J1.0	~4.3	0.67	*f*

Table 3.6 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
1,2-Dichloroethene, total	5/6	42	U5.0	~24	5.1	*f*
2-Butanone	5/6	U10	JB2.4	~5.4	1.2	*f*
Trichloroethene	6/6	71	31	48	6.5	*f*
Vinyl chloride	5/6	U10	J2.0	~4.0	1.2	*f*
Mitchell Branch upstream from the K-25 Site (MIK 1.4)						
Anions (mg/L)						
Chloride	6/6	2.1	1.7	1.9	0.065	*f*
Fluoride	4/6	0.26	<0.10	~0.16	0.026	*f*
Nitrate	3/6	0.88	<0.10	~0.36	0.13	*f*
Sulfate, as SO_4	6/6	58	15	27	6.4	*f*
Field Measurements						
Conductivity (mS/cm)	6/6	0.74	0.16	0.30	0.091	*f*
Dissolved oxygen (ppm)	6/6	11	6.5	8.8	0.79	*f*
pH (SU)	6/6	8.2	6.6	7.2	0.27	*f*
Temperature (°C)	6/6	22	2.2	12	3.2	*f*
Metals (mg/L)						
Aluminum, total	6/6	3.3	0.15	1.2	0.48	*f*
Barium, total	6/6	0.077	0.040	0.052	0.0055	*f*
Calcium, total	6/6	34	18	24	2.7	*f*
Copper, total	1/6	0.0080	<0.0070	~0.0072	0.00017	*f*
Iron, total	6/6	5.1	0.17	1.8	0.75	*f*
Magnesium, total	6/6	10	5.5	7.3	0.70	*f*
Manganese, total	6/6	1.0	0.080	0.38	0.13	*f*
Mercury, total	1/6	0.000075	<0.000050	~0.000054	0.0000042	*f*
Nickel, total	1/6	0.015	<0.010	~0.011	0.00083	*f*
Phosphorus, total	4/6	0.39	<0.20	~0.24	0.031	*f*
Potassium, total	3/6	3.4	<2.0	~2.5	0.25	*f*
Sodium, total	6/6	9.8	3.6	5.7	1.0	*f*
Uranium, total	2/6	0.00038	<0.00010	~0.00016	0.000046	*f*
Vanadium, total	4/6	0.0056	<0.0020	~0.0029	0.00056	*f*
Zinc, total	4/6	0.080	<0.0050	~0.029	0.013	*f*
Others						
Alkalinity (mg/L)	6/6	110	58	78	8.3	*f*
Ammonia (mg/L)	2/6	0.048	<0.030	~0.033	0.0030	*f*
Chemical oxygen demand (mg/L)	1/6	12	<5.0	~6.2	1.2	*f*
Color (CPU)	5/6	17	<2.0	~6.3	2.3	*f*
Total dissolved solids (mg/L)	6/6	190	81	130	16	*f*
Total hardness (mg/L)	6/6	160	70	110	14	*f*
Total suspended solids (mg/L)	6/6	96	11	27	14	*f*

Table 3.6 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
Radionuclides (pCi/L)[g]						
Co-60	1/6	4.3*	−3.0	0.68	1.1	*f*
Cs-137	1/6	3.8*	−0.54	0.99	0.66	*f*
Gross alpha	2/6	1.6*	0.027	0.59*	0.24	*f*
Gross beta	5/6	5.1*	−1.0	3.4*	0.91	*f*
Tc-99	2/6	21*	−3.0	6.8	3.6	*f*
Total rad Sr	3/6	2.2*	0.62	1.4*	0.23	*f*
Total uranium	2/6	2.2*	0.11	0.64*	0.32	*f*
Volatile Organics (µg/L)						
2-Butanone	5/6	U10	JB2.0	−5.0	1.2	*f*
Chloromethane	1/6	U10	J2.0	−8.7	1.3	*f*
Poplar Creek downstream from the K-25 Site (PCK 2.2)						
Anions (mg/L)						
Chloride	6/6	11	3.8	7.4	1.2	*f*
Fluoride	6/6	0.35	0.14	0.22	0.035	*f*
Nitrate	6/6	7.9	2.7	4.7	0.75	*f*
Sulfate, as SO_4	6/6	35	26	31	1.2	*f*
Field Measurements						
Conductivity (mS/cm)	6/6	0.33	0.18	0.27	0.021	*f*
Dissolved oxygen (ppm)	6/6	12	6.1	8.7	0.94	*f*
pH (SU)	6/6	7.9	7.1	7.5	0.13	*f*
Temperature (°C)	6/6	24	5.7	16	3.3	*f*
Metals (mg/L)						
Aluminum, total	6/6	0.59	0.30	0.40	0.043	*f*
Barium, total	6/6	0.043	0.030	0.038	0.0019	*f*
Calcium, total	6/6	38	23	33	2.3	*f*
Iron, total	6/6	0.85	0.45	0.55	0.064	*f*
Magnesium, total	6/6	10	5.7	8.4	0.62	*f*
Manganese, total	6/6	0.13	0.067	0.095	0.010	*f*
Mercury, total	1/6	0.000095	<0.000050	~0.000058	0.0000075	0.0024
Phosphorus, total	4/6	0.29	<0.20	~0.22	0.015	*f*
Potassium, total	3/6	3.3	<2.0	~2.3	0.21	*f*
Sodium, total	6/6	10	3.3	6.8	1.1	*f*
Thallium, total	1/6	0.0063	<0.0050	~0.0052	0.00022	*f*
Uranium, total	5/6	0.0033	<0.00010	~0.0018	0.00055	*f*
Vanadium, total	3/6	0.0028	<0.0020	~0.0023	0.00015	*f*
Zinc, total	4/6	0.012	<0.0050	~0.0076	0.0012	*f*
Others						
Alkalinity (mg/L)	6/6	120	53	97	10	*f*
Ammonia (mg/L)	4/6	0.056	<0.030	~0.039	0.0049	*f*
Chemical oxygen demand (mg/L)	1/6	7.0	<5.0	~5.3	0.33	*f*

Table 3.6 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
Color (CPU)	6/6	7.0	2.0	5.0	0.86	*f*
Total dissolved solids (mg/L)	6/6	190	95	160	15	*f*
Total hardness (mg/L)	6/6	140	79	120	9.4	*f*
Total suspended solids (mg/L)	6/6	14	5.0	9.6	1.2	*f*
Radionuclides (pCi/L)[g]						
Gross alpha	4/6	2.0*	−0.22	0.99*	0.35	*f*
Gross beta	6/6	7.0*	1.8*	3.8*	0.79	*f*
Tc-99	1/6	4.1*	−3.0	0.54	1.0	*f*
Total rad Sr	2/6	2.7*	−0.30	0.91	0.49	*f*
Total uranium	6/6	3.0*	1.9*	2.4*	0.15	*f*
Volatile Organics (µg/L)						
2-Butanone	5/6	U10	JB3.0	~5.2	1.0	*f*
Acetone	2/6	U10	JB1.0	~7.0	1.9	*f*
Poplar Creek upstream from the K-25 Site and East Fork Poplar Creek (PCK 22)						
Anions (mg/L)						
Chloride	6/6	6.3	2.5	3.8	0.58	*f*
Fluoride	2/6	0.19	<0.10	~0.12	0.015	*f*
Nitrate	6/6	3.2	0.68	1.7	0.38	*f*
Sulfate, as SO_4	6/6	52	22	37	4.5	*f*
Field Measurements						
Chlorine, total residual (ppm)	1/6	0.10	<0.010	~0.025	0.015	19
Conductivity (mS/cm)	6/6	0.37	0.20	0.26	0.031	*f*
Dissolved oxygen (ppm)	6/6	9.6	6.3	8.1	0.51	*f*
pH (SU)	6/6	7.9	7.1	7.4	0.12	*f*
Temperature (°C)	6/6	25	2.2	15	3.6	*f*
Metals (mg/L)						
Aluminum, total	6/6	1.1	0.16	0.43	0.14	*f*
Barium, total	6/6	0.061	0.033	0.046	0.0043	*f*
Calcium, total	6/6	38	23	29	2.5	*f*
Iron, total	6/6	1.4	0.38	0.65	0.16	*f*
Magnesium, total	6/6	12	7.5	9.7	0.77	*f*
Manganese, total	6/6	0.28	0.092	0.16	0.028	*f*
Phosphorus, total	4/6	0.32	<0.20	~0.25	0.021	*f*
Potassium, total	3/6	2.2	<2.0	~2.1	0.045	*f*
Sodium, total	6/6	8.8	3.3	5.0	0.83	*f*
Uranium, total	2/6	0.00026	<0.00010	~0.00013	0.000026	*f*
Zinc, total	5/6	0.066	<0.0050	~0.028	0.011	*f*
Others						
Alkalinity (mg/L)	6/6	140	53	90	13	*f*
Ammonia (mg/L)	4/6	0.25	<0.030	~0.078	0.035	*f*

Table 3.6 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
Chemical oxygen demand (mg/L)	2/6	12	<5.0	~6.3	1.1	*f*
Color (CPU)	5/6	9.0	<2.0	~5.0	1.0	*f*
Total dissolved solids (mg/L)	6/6	210	100	150	15	*f*
Total hardness (mg/L)	6/6	160	76	120	13	*f*
Total suspended solids (mg/L)	5/6	28	<5.0	~12	3.9	*f*
Radionuclides (pCi/L)[g]						
Gross alpha	2/6	0.86*	−0.16	0.40*	0.17	*f*
Gross beta	5/6	4.3*	0.81	2.6*	0.60	*f*
Tc-99	2/6	12*	−6.5	2.3	2.6	*f*
Total rad Sr	2/6	4.1*	−0.84	1.2	0.68	*f*
Total uranium	5/6	1.8*	0.27	0.79*	0.23	*f*
Volatile Organics (µg/L)						
2-Butanone	4/6	U10	JB3.0	~6.0	1.3	*f*
	Water supply intake for City of Kingston (TRK 915)					
Anions (mg/L)						
Chloride	6/6	7.7	4.2	6.0	0.57	*f*
Fluoride	2/6	0.13	<0.10	~0.11	0.0049	*f*
Nitrate	6/6	2.5	0.84	1.6	0.24	*f*
Sulfate, as SO_4	6/6	14	9.4	12	0.77	*f*
Field Measurements						
Chlorine, total residual (ppm)	1/6	0.010	<0.010	~0.010	0	*f*
Conductivity (mS/cm)	6/6	0.19	0.10	0.15	0.013	*f*
Dissolved oxygen (ppm)	6/6	19	6.2	9.8	1.9	*f*
pH (SU)	6/6	8.2	7.3	7.7	0.15	*f*
Temperature (°C)	6/6	27	8.0	18	3.3	*f*
Metals (mg/L)						
Aluminum, total	6/6	1.2	0.14	0.63	0.17	*f*
Barium, total	6/6	0.028	0.023	0.026	0.00076	*f*
Calcium, total	6/6	22	12	17	1.4	*f*
Iron, total	6/6	1.3	0.13	0.66	0.17	*f*
Magnesium, total	6/6	5.7	3.1	4.4	0.37	*f*
Manganese, total	6/6	0.10	0.027	0.068	0.011	*f*
Phosphorus, total	4/6	0.31	<0.20	~0.24	0.021	*f*
Potassium, total	3/6	2.2	<2.0	~2.1	0.042	*f*
Sodium, total	6/6	8.3	4.3	5.9	0.64	*f*
Uranium, total	2/6	0.00019	<0.00010	~0.00012	0.000015	*f*
Vanadium, total	2/6	0.0036	<0.0020	~0.0024	0.00027	*f*
Zinc, total	6/6	0.021	0.0061	0.011	0.0023	*f*

Table 3.6 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
Others						
Alkalinity (mg/L)	6/6	92	38	64	7.6	*f*
Ammonia (mg/L)	3/6	0.33	<0.030	–0.084	0.050	*f*
Chemical oxygen demand (mg/L)	1/6	6.0	<5.0	–5.2	0.17	*f*
Color (CPU)	6/6	13	3.0	6.0	1.6	*f*
Total dissolved solids (mg/L)	6/6	130	79	95	7.4	*f*
Total hardness (mg/L)	6/6	85	42	64	6.2	*f*
Total suspended solids (mg/L)	4/6	15	<5.0	–9.6	1.9	*f*
Radionuclides (pCi/L)[g]						
Co-60	1/6	4.3*	–4.3	0.72	1.3	*f*
Gross alpha	1/6	1.0*	–0.41	0.23	0.19	*f*
Gross beta	3/6	3.0*	–0.081	1.3*	0.53	*f*
Tc-99	1/6	4.9*	–8.6	–0.81	2.0	*f*
Total uranium	2/6	0.89*	–0.32	0.29	0.16	*f*
Volatile Organics (µg/L)						
2-Butanone	5/6	U10	JB2.0	–4.7	1.1	*f*
Acetone	1/6	U10	J1.0	–8.5	1.5	*f*
White Oak Lake at White Oak Dam (WCK 1.0)						
Anions (mg/L)						
Chloride	6/6	12	4.7	8.9	1.1	*f*
Fluoride	6/6	1.1	0.15	0.56	0.16	*f*
Nitrate	6/6	2.8	1.1	1.9	0.27	*f*
Sulfate, as SO_4	6/6	60	12	39	6.7	*f*
Field Measurements						
Conductivity (mS/cm)	6/6	0.41	0.16	0.28	0.041	*f*
Dissolved oxygen (ppm)	6/6	12	6.9	8.7	0.71	*f*
pH (SU)	6/6	8.9	7.3	7.9	0.30	*f*
Temperature (°C)	6/6	29	9.9	17	3.2	*f*
Metals (mg/L)						
Aluminum, total	6/6	3.4	1.0	1.9	0.43	*f*
Barium, total	6/6	0.062	0.040	0.048	0.0033	*f*
Calcium, total	6/6	44	31	40	2.0	*f*
Chromium, total	4/6	0.042	<0.0040	–0.016	0.0060	*f*
Copper, total	3/6	0.013	<0.0070	–0.0084	0.00099	*f*
Iron, total	6/6	3.7	0.83	2.0	0.53	*f*
Magnesium, total	6/6	10	5.1	8.1	0.78	*f*
Manganese, total	6/6	0.32	0.067	0.17	0.034	*f*
Mercury, total	3/6	0.00014	<0.000050	–0.000079	0.000016	0.0024
Phosphorus, total	5/6	0.40	<0.20	–0.29	0.034	*f*

Table 3.6 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
Potassium, total	6/6	3.2	2.2	2.7	0.18	*f*
Sodium, total	6/6	16	6.0	12	1.6	*f*
Uranium, total	6/6	0.0024	0.00016	0.0016	0.00034	*f*
Vanadium, total	5/6	0.0059	<0.0020	~0.0034	0.00075	*f*
Zinc, total	6/6	0.066	0.023	0.037	0.0065	*f*
Others						
Alkalinity (mg/L)	6/6	120	70	97	7.5	*f*
Ammonia (mg/L)	6/6	0.14	0.036	0.064	0.016	*f*
Biochemical oxygen demand (mg/L)	2/6	6.6	<5.0	~5.5	0.29	*f*
Chemical oxygen demand (mg/L)	4/6	24	<5.0	~13	3.1	*f*
Color (CPU)	6/6	30	8.0	20	3.2	*f*
Total dissolved solids (mg/L)	6/6	230	130	180	13	*f*
Total hardness (mg/L)	6/6	160	71	120	12	*f*
Total suspended solids (mg/L)	6/6	87	14	36	11	*f*
Radionuclides (pCi/L)[g]						
Co-60	4/6	6.8*	3.8	5.0*	0.51	*f*
Cs-137	6/6	220*	13*	81*	34	*f*
Gross alpha	6/6	6.5*	3.0*	4.6*	0.55	*f*
Gross beta	6/6	380*	170*	290*	33	*f*
H-3	6/6	180,000*	22,000*	110,000*	26,000	*f*
Tc-99	5/6	30*	2.4	15*	5.0	*f*
Total rad Sr	6/6	180*	62*	120*	17	*f*
Total uranium	6/6	5.4*	2.7*	4.4*	0.38	*f*
U-234	5/5	4.3*	2.2*	3.5*	0.36	*f*
U-238	5/5	1.1*	0.35*	0.71*	0.14	*f*
Volatile Organics (µg/L)						
2-Butanone	6/6	JB5.0	JB4.0	~4.5	0.22	*f*
Acetone	4/6	U10	J1.0	~5.3	1.7	*f*
Carbon disulfide	1/6	U5.0	J2.0	~4.5	0.50	*f*
		White Oak Creek downstream from ORNL (WCK 2.6)				
Anions (mg/L)						
Chloride	6/6	14	4.2	8.4	1.4	*f*
Fluoride	6/6	1.1	0.16	0.59	0.17	*f*
Nitrate	6/6	6.8	1.7	4.5	0.80	*f*
Sulfate, as SO_4	6/6	52	14	34	5.6	*f*
Field Measurements						
Conductivity (mS/cm)	6/6	0.37	0.12	0.25	0.039	*f*
Dissolved oxygen (ppm)	6/6	10	8.2	9.4	0.37	*f*
pH (SU)	6/6	7.8	7.2	7.6	0.11	*f*
Temperature (°C)	6/6	24	9.8	16	2.2	*f*

Table 3.6 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
Metals (mg/L)						
Aluminum, total	5/6	1.5	<0.050	–0.71	0.25	*f*
Barium, total	6/6	0.040	0.031	0.036	0.0014	*f*
Calcium, total	6/6	42	34	38	1.3	*f*
Copper, total	1/6	0.0093	<0.0070	–0.0074	0.00038	*f*
Iron, total	6/6	1.2	0.099	0.70	0.20	*f*
Magnesium, total	6/6	9.2	5.5	7.6	0.55	*f*
Manganese, total	6/6	0.064	0.019	0.041	0.0076	*f*
Mercury, total	2/6	0.00013	<0.000050	–0.000070	0.000014	0.0024
Phosphorus, total	5/6	0.41	<0.20	–0.30	0.033	*f*
Potassium, total	3/6	2.7	<2.0	–2.2	0.12	*f*
Sodium, total	6/6	19	5.1	12	2.1	*f*
Uranium, total	6/6	0.0059	0.00021	0.0028	0.00094	*f*
Vanadium, total	4/6	0.0034	<0.0020	–0.0026	0.00023	*f*
Zinc, total	6/6	0.044	0.032	0.036	0.0018	*f*
Others						
Alkalinity (mg/L)	6/6	120	68	100	7.9	*f*
Ammonia (mg/L)	5/6	0.25	<0.030	–0.11	0.036	*f*
Chemical oxygen demand (mg/L)	3/6	30	<5.0	–12	4.3	*f*
Color (CPU)	4/6	25	<2.0	–9.7	4.8	*f*
Total dissolved solids (mg/L)	6/6	230	140	190	15	*f*
Total hardness (mg/L)	6/6	160	76	130	11	*f*
Total suspended solids (mg/L)	2/6	41	<5.0	–13	6.0	*f*
Radionuclides (pCi/L)[g]						
Co-60	2/6	5.9*	0.27	2.5*	0.87	*f*
Cs-137	6/6	46*	19*	30*	4.1	*f*
Gross alpha	6/6	5.1*	1.9*	2.7*	0.50	*f*
Gross beta	6/6	350*	65*	180*	45	*f*
H-3	6/6	100,000*	16,000*	45,000*	13,000	*f*
Total rad Sr	6/6	170*	23*	70*	21	*f*
Total uranium	5/6	5.4*	–0.054	2.7*	0.71	*f*
U-234	1/1	3.0*	3.0*	3.0	*f*	*f*
U-238	1/1	2.3*	2.3*	2.3	*f*	*f*
Volatile Organics (µg/L)						
2-Butanone	6/6	JB5.0	JB4.0	–4.3	0.21	*f*
Acetone	1/6	U10	J2.0	–8.7	1.3	*f*
Carbon disulfide	1/6	9.0	U5.0	–5.7	0.67	*f*
Chloroform	4/6	U5.0	J2.0	–3.0	0.63	*f*
Trichloroethene	1/6	6.0	U5.0	–5.2	0.17	*f*

Table 3.6 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
White Oak Creek upstream from ORNL (WCK 6.8)						
Anions (mg/L)						
Chloride	6/6	1.3	0.78	0.99	0.085	*f*
Fluoride	1/6	0.12	<0.10	~0.10	0.0033	*f*
Nitrate	6/6	0.75	0.54	0.64	0.032	*f*
Sulfate, as SO_4	6/6	7.5	1.6	3.8	0.91	*f*
Field Measurements						
Conductivity (mS/cm)	6/6	0.32	0.087	0.18	0.039	*f*
Dissolved oxygen (ppm)	6/6	11	7.3	9.2	0.54	*f*
pH (SU)	6/6	8.0	6.9	7.4	0.20	*f*
Temperature (°C)	6/6	17	11	13	1.1	*f*
Metals (mg/L)						
Aluminum, total	4/6	2.0	<0.050	~0.63	0.29	*f*
Barium, total	6/6	0.098	0.043	0.067	0.0093	*f*
Calcium, total	6/6	30	16	23	2.4	*f*
Iron, total	6/6	1.3	0.053	0.49	0.19	*f*
Magnesium, total	6/6	16	6.9	11	1.6	*f*
Manganese, total	6/6	0.11	0.0092	0.038	0.016	*f*
Mercury, total	2/6	0.00015	<0.000050	~0.000073	0.000017	0.0024
Phosphorus, total	3/6	0.28	<0.20	~0.22	0.014	*f*
Sodium, total	6/6	0.47	0.42	0.44	0.0079	*f*
Uranium, total	4/6	0.00050	<0.00010	~0.00021	0.000063	*f*
Vanadium, total	3/6	0.0028	<0.0020	~0.0023	0.00015	*f*
Zinc, total	4/6	0.011	<0.0050	~0.0070	0.00098	*f*
Others						
Alkalinity (mg/L)	6/6	150	48	88	14	*f*
Ammonia (mg/L)	1/6	0.033	<0.030	~0.031	0.00050	*f*
Chemical oxygen demand (mg/L)	3/6	14	<5.0	~7.7	1.7	*f*
Color (CPU)	4/6	24	<2.0	~7.2	3.5	*f*
Total dissolved solids (mg/L)	6/6	150	63	110	15	*f*
Total hardness (mg/L)	6/6	150	46	97	17	*f*
Total suspended solids (mg/L)	2/6	27	<5.0	~9.8	3.6	*f*
Radionuclides (pCi/L)[g]						
Co-60	1/6	5.4*	−1.9	0.54	1.1	*f*
Cs-137	1/6	2.2*	0.54	1.0*	0.25	*f*
Gross alpha	1/6	0.76*	−0.22	0.45*	0.15	*f*
Gross beta	4/6	3.0*	0.19	1.5*	0.40	*f*
H-3	2/6	3,500*	−490	760	570	*f*

Table 3.6 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]	TWQC[e]
		Max[b]	Min[b]	Av[c]		
Tc-99	2/6	11*	−2.4	2.9	2.0	*f*
Total rad Sr	1/6	3.0*	−1.6	0.45	0.63	*f*
Total uranium	3/6	1.4*	0.22	0.62*	0.19	*f*
Volatile Organics (µg/L)						
2-Butanone	6/6	JB5.0	JB4.0	~4.5	0.22	*f*
Acetone	2/6	J10	J2.0	~8.7	1.3	*f*

[a]All values were included in the calculations. Only parameters that have one or more samples detected are listed in the table. The sampling and analysis plan contains a complete list of analyses performed.

[b]Prefix "<" indicates the value for a parameter (excluding organics) was not quantifiable at the analytical detection limit; "U" indicates the the value for an organic parameter was undetected at the analytical detection limit; "JB" indicates that the value was estimated at or below the analytical detection limit by the laboratory and that the compound was found in the laboratory blank; and "J" indicates the value was estimated at or below the analytical detection limit by the laboratory.

[c]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 Domestic Water Supplies, as amended (CRK 23); Tennessee General Water Quality Criteria for Freshwater Fish and Aquatic Life, as amended (BCK 0.6, BCK 9.4, EFK 23.4, EFK 5.4, HC, MEK 0.2, MEK 2.1, PCK 2.2, PCK 22, WCK 1.0, WCK 2.5, WCK 6.8); and Tennessee Water Quality Criteria for Recreation Water and Organisms, as amended (CRK 16, CRK 32, CRK 58, CRK 66, CRK 80, CRK 84, and TRK 915).

[f]Not applicable.

[g]Individual and average radionuclide concentrations significantly greater than zero are identified by an *.

Table 3.7. 1995 K-25 Site parameters detected at K-1710

Parameter	Number detected/ number of samples	Detected results[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Avg		
Alkalinity	4/4	100.0	48	72	c	
Ammonia nitrogen	1/4	0.24	0.2	0.21	c	
Aroclor-1254	1/5	0.5U	0.061J	0.41J	c	
Calcium hardness	4/4	79	52	67	c	
Chemical oxygen demand	3/4	12.0	5	9.1	c	
Chloride	4/4	5.0	2.9	4	c	
Color (nm)	4/4	580	500	530	c	
Conductivity (µmho/cm)	4/4	270	140	210	c	
Dissolved oxygen	4/4	11	5.5	8.3	5.0 min	0
Dissolved solids	4/4	200	0	100	c	
Iron	4/4	1.3	0.33	0.7	c	
Lead	5/6	0.0031	0.0005	0.0016	0.082	0
Manganese	6/6	0.15	0.058	0.099000	c	
Mercury	1/4	0.00028	0.0002	0.0002	c	
Nickel	1/6	0.010	0.005	0.0059	1.4	0
Nitrate	4/4	4.8	2	3.3	c	
Potassium	4/4	3.0	1.5	2.1	c	
Sodium	4/4	6.1	2.8	4.1	c	
Sulfate	4/4	32	14	25	c	
Suspended solids	4/4	21.0	6.8	13	c	
Temperature (°C)	4/4	28	8	16	c	
Total phosphate as phosphorus	1/4	1.0	0.05	0.76	c	
Uranium	3/12	0.015	0.0014	0.012	c	
Vanadium	2/6	0.048	0.005	0.013	c	
Zinc	6/6	0.043	0.0087	0.02	c	
pH (standard units)	4/4	7.5	6.8	7.2	6.5–8.5	0

[a]Units in mg/L unless otherwise noted.
[b]All Reference values are Tennessee Water Quality Standards for fish and aquatic life.
[c]Not applicable.

Table 3.8. 1995 K-25 Site parameters detected at K-716

Parameter	Number detected/ number of samples	Detected results[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Avg		
Alkalinity	4/4	120	34	85	*c*	
Calcium hardness	4/4	100	34	81	*c*	
Chemical oxygen demand	3/4	15	5	11	*c*	
Chloride	4/4	10	2	5.9	*c*	
Color (nm)	4/4	580	500	530	*c*	
Conductivity (μmho/cm)	4/4	310	110	230	*c*	
Dissolved oxygen	4/4	12	6.7	8.9	5.0 min	0
Dissolved solids	4/4	200	98	140	*c*	
Iron	4/4	0.75	0.21	0.37	*c*	
Lead	4/6	0.0019	0.0005	0.001	0.082	0
Manganese	6/6	0.130	0.041	0.074	*c*	
Nickel	1/6	0.018	0.005	0.008	1.4	0
Nitrate	4/4	5.8	1.3	4.2	*c*	
Potassium	4/4	2.6	1.5	2	*c*	
Sodium	4/4	10	1.6	5.2	*c*	
Sulfate	4/4	31	14	22	*c*	
Suspended solids	4/4	42	1	13	*c*	
Temperature (°C)	4/4	25	5.4	15	*c*	
Total phosphate as phosphorus	1/4	1	0.08	0.77	*c*	
Uranium	3/12	0.032	0.0007	0.013	*c*	
Vanadium	1/6	0.032	0.005	0.01	*c*	
Zinc	6/6	0.043	0.018	0.026	0.120	0
pH (standard units)	4/4	7.8	7.2	7.4	6.5–8.5	0

[a]Units in mg/L unless otherwise noted.
[b]All reference values are Tennessee Water Quality Criteria for fish and aquatic life.
[c]Not applicable.

Table 3.9. 1995 K-25 Site parameters detected at K-1007-B

Parameter	Number detected/ number of samples	Detected results[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Avg		
Alkalinity	4/4	110	78	99	c	
Aroclor-1254	4/12	0.5U	0.057J	0.37J	c	
Biological oxygen demand	2/4	8.0	5.0	6.0	c	
Calcium hardness	4/4	120	60	91	c	
Chemical oxygen demand	4/4	41	13	25	c	
Chloride	4/4	8	3.6	5.0	c	
Chloromethane	1/4	10	10	10	c	
Color (nm)	4/4	580	500	520	c	
Conductivity (μmho/cm)	4/4	280	200	240	c	
Dissolved oxygen	4/4	13	8.7	11	5.0 min	0
Dissolved solids	4/4	170	120	150	c	
Iron	4/4	0.82	0.24	0.5	c	
Lead	5/6	0.003	0.0005	0.0013	0.082	0
Manganese	6/6	0.18	0.036	0.098	c	
Nickel	3/6	0.01	0.005	0.0067	1.4	0
Nitrate	2/4	2.9	1.0	1.9	c	
Potassium	4/4	2.7	2.2	2.5	c	
Sodium	4/4	4.6	2.4	3.4	c	
Sulfate	4/4	27	17	20	c	
Suspended solids	4/4	22	7.0	13	c	
Temperature (°C)	4/4	28	3.3	16	c	
Thallium	1/6	0.001	0.0005	0.0006	c	
Total phosphate as phosphorus	1/4	1.0	0.06	0.77	c	
Uranium	3/12	0.16	0.001	0.024	c	
Vanadium	2/6	0.021	0.005	0.0087	c	
Zinc	6/6	0.04	0.012	0.022	0.12	0
pH (standard units)	4/4	9.3	7.8	8.6	6.5–8.5	2

[a]Units in mg/L unless otherwise noted.
[b]All Reference values are Tennessee Water Quality Standards for fish and aquatic life.
[c]Not applicable.

Table 3.10. 1995 K-25 Site parameters detected at K-1700

Parameter	Number detected/ number of samples	Detected results[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Avg		
1,2Dichloroethene (µg/L)	4/4	45	20	27	c	
Alkalinity	4/4	150	130	140	c	
Aroclor-1254	2/5	0.5	0.039	0.33	c	
Calcium hardness	4/4	160	100	130	c	
Chemical oxygen demand	4/4	21	7	11	c	
Chloride	4/4	17	7.3	12	c	
Color (nm)	4/4	580	500	520	c	
Conductivity (µmho/cm)	4/4	390	310	350	c	
Dissolved oxygen	4/4	14	5.6	9.2	5.0 min	0
Dissolved solids	4/4	260	54	180	c	
Fluoride	1/4	0.55	0.1	0.44	c	
Iron	4/4	1.6	0.28	0.93	c	
Lead	4/6	0.003	0	0.001	0.082	0
Manganese	6/6	0.2	0.14	0.17	c	
Nickel	5/6	0.021	0.005	0.013	1.4	0
Nitrate	4/4	3.6	2.4	2.9	c	
Phosphate	2/4	3.3	0.17	1.4	c	
Potassium	4/4	2.4	1.9	2.2	c	
Sodium	4/4	10	5.3	7	c	
Sulfate	4/4	33	21	28	c	
Suspended solids	4/4	15	1.4	5.4	c	
Temperature (°C)	4/4	23	6.5	15	c	
Trichloroethene	4/4	80	30	42	c	
Uranium	2/5	0.15	0.015	0.029	c	
Vinyl chloride (µg/L)	1/4	10	2	8	c	
Zinc	6/6	0.049	0.009	0.031	0.12	0
pH (standard units)	4/4	7.9	7.2	7.5	6.5–8.5	0

[a]Units in mg/L unless otherwise noted.
[b]All Reference values are Tennessee Water Quality Standards for fish and aquatic life.
[c]Not applicable.

Table 3.11. 1995 K-25 Site parameters detected at K-901-A

Parameter	Number detected/ number of samples	Detected results[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Avg		
Alkalinity	4/4	130	99	120	c	
Calcium hardness	4/4	130	84	100	c	
Chemical oxygen demand	3/4	24	5.0	12	c	
Chloride	4/4	3.0	1.7	22	c	
Color (nm)	4/4	610	500	530	c	
Conductivity (µmho/cm)	4/4	260	220	240	c	
Dissolved oxygen	4/4	11	3.3	7.4	5.0 min	1
Dissolved solids	4/4	200	50	140	c	
Iron	4/4	1.2	0.6	0.85	c	
Lead	5/6	0.0021	0.0005	0.0014	0.082	0
Manganese	6/6	0.097	0.038	0.59	c	
Nitrate	2/4	2.8	1.0	1.5	c	
pH (standard units)	4/4	7.9	7.0	7.3	6.5–8.5	0
Potassium	4/4	2.2	1.3	1.7	c	
Sodium	4/4	1.2	0.73	0.9	c	
Sulfate	4/4	14	4.5	9.1	c	
Suspended solids	4/4	35	12	24	c	
Temperature (°C)	4/4	28	4.4	15	c	
Total phosphate as phosphorus	1/4	1.0	0.1	0.78	c	
Uranium	4/12	0.15	0.0018	0.023	c	
Vanadium	1/6	0.02	0.005	0.0083	c	
Zinc	6/6	0.042	0.0089	0.026	0.12	0

[a]Units in mg/L unless otherwise noted.
[b]All Reference values are Tennessee Water Quality Standards for fish and aquatic life.
[c]Not applicable.

Table 3.12. 1995 K-25 Site parameters detected at WFPC

Parameter	Number detected/ number of samples	Detected results[a]			Reference value[b]	Number of values exceeding reference
		Max	Min	Avg		
Alkalinity	4/4	68	38	59	c	
Aroclor-1260	1/5	19	0.5U	5.1	c	
Calcium hardness	4/4	80	39	60	c	
Chemical oxygen demand	3/4	12	5	8.8	c	
Chloride	4/4	4	1.9	3.1	c	
Color	4/4	580	500	520	c	
Conductivity	4/4	240	130	190	c	
Dissolved oxygen	4/4	11	3.8	8.0	5.0 min	0
Dissolved solids	4/4	200	0	110	c	
Iron	4/4	1.7	0.28	0.9	c	
Lead	4/6	0.0018	0.0005	0.0011	0.082	0
Manganese	6/6	0.24	0.076	0.14	c	
Nickel	1/6	0.01	0.005	0.006	1.4	0
Nitrate	4/4	4	1.2	2.6	c	
Potassium	4/4	3	1.6	2	c	
Sodium	4/4	5.6	1.9	3.7	c	
Sulfate	4/4	47	18	31	c	
Suspended solids	4/4	39	1.8	21	c	
Temperature (°C)	4/4	25	7.3	16	c	
Total phosphate as phosphorus	1/4	1.00	0.03	0.76	c	
Uranuim	1/12	0.015	0.0005	0.011	c	
Vanadium	2/6	0.02	0.005	0.0082	c	
Zinc	6/6	0.034	0.012	0.023	0.12	0
pH	4/4	7.4	6.5	6.9	6.5–8.5	0

[a]Units are in mg/L unless otherwise noted.
[b]All reference values are Tennessee Water Quality Standards for fish and aquatic life.
[c]Not applicable.

Table 3.13. Radionuclide concentrations at K-25 Site discharges and surface water monitoring locations

Radionuclide	Number of samples	Concentration (pCi/L)				DCG	Percent of DCG	Activity ratio
		Max	Min	Median	Average			
West Fork Poplar Creek (upstream of the K-25 Site)								
^{234}U	12	7.73E–01	–6.30E–02	2.12E–01	2.53E–01	5.00E+02	5.06E–02	5.06E–04
^{235}U	12	1.21E+01	–5.33E+00	7.80E–03	5.07E–01	6.00E+02	8.46E–02	8.46E–04
^{236}U	12	2.97E–01	0.00E+00	0.00E+00	3.06E–02	5.00E+02	6.11E–03	6.11E–05
^{238}U	12	5.35E–01	–2.33E–01	1.47E–01	1.62E–01	6.00E+02	2.70E–02	2.70E–04
^{137}Cs	9	3.72E+00	–2.35E+01	1.89E–01	–2.26E+00	3.00E+03	–5.65E–02	–5.65E–04
^{99}Tc	12	7.79E+01	–2.15E+01	7.99E+00	1.46E+01	1.00E+05	1.46E–02	1.46E–04
^{237}Np	9	2.13E–01	–3.47E–01	1.13E–01	5.71E–02	3.00E+01	1.43E–01	1.43E–03
^{238}Pu	9	9.09E–01	–1.33E–01	0.00E+00	6.05E–01	4.00E+01	3.33E–01	3.33E–03
^{239}Pu	9	8.58E–02	0.00E+00	0.00E+00	1.74E–02	3.00E+01	4.49E–02	4.49E–04
^{234}Th	9	1.06E+02	0.00E+00	0.00E+00	1.18E+01	1.00E+04	8.83E–02	8.83E–04
Gross alpha	12	4.02E+00	–6.07E–01	3.96E–01	5.57E–01	*a*	*a*	*a*
Gross beta	12	4.33E+00	–8.19E–01	2.08E+00	2.06E+00	*a*	*a*	*a*
Sum of the ratios								7.35E–03[b]

Table 3.13 (continued)

Radionuclide	Number of samples	Concentration (pCi/L)				DCG	Percent of DCG	Activity ratio
		Max	Min	Median	Average			
				K-716 (Poplar Creek)				
^{234}U	12	2.14E+00	0.00E+00	6.71E–01	7.55E–01	5.00E+02	1.51E–01	1.51E–03
^{235}U	12	1.20E+01	–6.94E+00	9.01E–01	1.29E+00	6.00E+02	2.15E–01	2.15E–03
^{236}U	12	1.35E–01	0.00E+00	4.75E–02	5.64E–02	5.00E+02	1.13E–02	1.13E–04
^{238}U	12	2.08E+00	2.30E–01	7.22E–01	7.79E–01	6.00E+02	1.30E–01	1.30E–03
^{137}Cs	9	2.32E+00	–7.45E+00	2.93E–01	1.30E–01	3.00E+03	–3.31E–02	–3.31E-04
^{99}Tc	12	5.34E+01	–2.09E+01	8.63E+00	1.22E+01	1.00E+05	1.22E–02	1.22E–04
^{237}Np	9	3.01E–01	–7.08E–02	8.18E–02	1.00E–01	3.00E+01	2.51E–01	2.51E–03
^{238}Pu	9	9.26E–01	–1.38E–01	6.74E–02	2.60E–01	4.00E+01	4.93E–01	4.93E–03
^{239}Pu	9	6.31E–01	0.00E+00	2.85E–02	1.00E–01	3.00E+01	2.57E–01	2.57E–03
Gross alpha	12	3.73E+00	1.49E–01	1.54E+00	1.66E+00	*a*	*a*	*a*
Gross beta	12	6.24E+00	1.03E+00	3.57E+00	3.54E+00	*a*	*a*	*a*
Sum of the ratios								1.49E–02[b]

Table 3.13 (continued)

Radionuclide	Number of samples	Concentration (pCi/L)				DCG	Percent of DCG	Activity ratio
		Max	Min	Median	Average			
K-1203 (sewage treatment plant)								
^{234}U	12	1.16E+01	4.37E–01	2.72E+00	4.07E+00	5.00E+02	8.14E-01	8.14E–03
^{235}U	12	6.87E+00	–2.77E+00	6.03E–01	8.58E–01	6.00E+02	1.43E-01	1.43E–03
^{236}U	12	6.18E–01	0.00E+00	8.66E–02	1.37E–01	5.00E+02	2.74E-02	2.74E–04
^{238}U	12	1.20E+00	1.61E–01	5.00E–01	6.15E–01	6.00E+02	1.03E-01	1.03E–03
^{137}Cs	9	2.56E+00	–1.11E+01	0.00E+00	–1.50E+00	3.00E+03	-3.77E-02	–3.77E–04
^{99}Tc	12	6.39E+01	–6.38E+00	7.10E+00	1.34E+01	1.00E+05	1.34E-02	1.34E–04
^{237}Np	9	5.22E–01	0.00E+00	0.00E+00	8.22E–02	3.00E+01	2.74E-01	2.74E–03
^{238}Pu	9	1.27E+00	0.00E+00	5.31E–02	2.08E–01	4.00E+01	5.21E-01	5.21E–03
^{239}Pu	9	2.55E–01	–7.92E–02	0.00E+00	2.39E–02	3.00E+01	7.96E-02	7.96E–04
^{234}Th	9	6.43E+01	0.00E+00	0.00E+00	5.36E+00	1.00E+04	5.36E-02	5.36E–04
^{234m}Pa	9	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.00E+04	0.00E+00	0.00E+00
^{40}K	9	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.00E+03	0.00E+00	0.00E+00
Gross alpha	12	1.67E+01	1.28E+00	6.36E+00	6.20E+00	*a*	*a*	*a*
Gross beta	12	1.26E+01	7.32E+00	1.00E+01	9.75E+00	*a*	*a*	*a*
Sum of the ratios								1.99E–02[b]

Table 3.13 (continued)

Radionuclide	Number of samples	Concentration (pCi/L)				DCG	Percent of DCG	Activity ratio
		Max	Min	Median	Average			
K-901-A (settling basin for surface water runoff)								
^{234}U	12	1.30E+00	5.62E–1	9.04E–01	8.95E–01	5.00E+02	1.79E–01	1.79E–03
^{235}U	12	3.99E+00	–3.61E+00	5.70E–02	2.19E–01	6.00E+02	3.65E–02	3.65E–04
^{236}U	12	1.18E–01	0.00E+00	3.31E–02	3.25E–02	5.00E+02	6.50E–03	6.50E–05
^{238}U	12	1.03E+00	6.02E–02	7.12E–01	7.20E–01	6.00E+02	1.20E–01	1.20E–03
^{137}Cs	9	2.05E+00	–1.30E+01	–7.01E–01	–3.38E+00	3.00E+03	–1.13E–01	–1.13E–03
^{99}Tc	12	7.30E+01	–9.86E+00	7.95E+00	1.60E+01	1.00E+05	1.60E–02	1.60E–04
^{237}Np	9	2.13E–01	–7.17E–02	0.00E+00	5.10E–02	3.00E+01	1.70E–01	1.70E–03
^{238}Pu	9	5.72E–01	–1.41E–01	9.63E–02	1.97E–01	4.00E+01	4.92E–01	4.92E–03
^{239}Pu	9	1.61E–01	0.00E+00	0.00E+00	4.30E–02	3.00E+01	1.43E–01	1.43E–03
^{40}K	9	1.04E+02	0.00E+00	0.00E+00	1.16E+01	7.00E+03	1.65E–01	1.65E–03
^{234}Th	9	8.31E+01	0.00E+00	0.00E+00	1.78E+01	1.00E+04	1.78E–01	1.78E–03
Gross alpha	12	3.11E+00	3.05E–01	1.42E+00	1.42E+00	*a*	*a*	*a*
Gross beta	12	2.19E+01	2.56E+00	6.85E+00	8.46E+00	*a*	*a*	*a*
Sum of the ratios								1.40E–02[b]

Table 3.13 (continued)

Radionuclide	Number of samples	Concentration (pCi/L)				DCG	Percent of DCG	Activity ratio
		Max	Min	Median	Average			
K-1007-B (settling basin for surface water runoff)								
^{234}U	12	1.91E+00	1.95E–01	6.49E–01	7.09E–01	5.00E+02	1.42E–01	1.42E–03
^{235}U	12	3.23E+00	–1.41E+01	1.58E–02	–2.09E+00	6.00E+02	–3.49E–01	–3.49E–03
^{236}U	12	1.41E–01	0.00E+00	0.00E+00	2.11E–02	5.00E+02	4.22E–03	4.22E–05
^{238}U	12	5.70E–01	2.10E–01	3.30E–01	3.43E–01	6.00E+02	5.71E–02	5.71E–04
^{137}Cs	9	2.43E+00	–1.24E+01	2.00E+00	–2.94E+00	3.00E+03	–9.80E–02	–9.80E–04
^{99}Tc	12	7.00E+01	–1.24E+00	7.07E+00	1.51E+01	1.00E+05	1.51E–02	1.51E–04
^{237}Np	9	1.40E–01	0.00E+00	0.00E+00	2.67E–02	3.00E+01	8.90E–02	8.90E–04
^{238}Pu	9	4.82E–01	–1.33E–01	9.57E–02	1.68E–01	4.00E+01	4.19E–01	4.19E–03
^{239}Pu	9	1.91E–01	–8.58E–02	0.00E+00	2.26E–02	3.00E+01	7.52E–02	7.52E–04
^{40}K	9	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.00E+03	0.00E+00	0.00E+00
^{234}Th	9	1.00E+02	0.00E+00	0.00E+00	3.67E+01	1.00E+04	3.67E–01	3.67E–03
Gross alpha	12	2.11E+00	–7.57E–02	1.22E+00	1.07E+00	*a*	*a*	*a*
Gross beta	12	8.50E+00	4.13E+00	6.95E+00	6.58E+00	*a*	*a*	*a*
Sum of the ratios								7.22E–03[b]

Table 3.13 (continued)

Radionuclide	Number of samples	Concentration (pCi/L)				DCG	Percent of DCG	Activity ratio
		Max	Min	Median	Average			
K-1515-F (filter backwash from the Sanitary Water Treatment Facility)								
^{234}U	12	4.11E–01	0.00E+00	1.65E–01	2.12E–01	5.00E+02	4.23E–02	4.23E–04
^{234}U	12	5.51E+00	–2.91E+00	2.66E–01	1.16E+00	6.00E+02	1.93E–01	1.93E–03
^{236}U	12	1.31E–01	0.00E+00	0.00E+00	2.34E–02	5.00E+02	4.68E–03	4.68E–05
^{238}U	12	3.56E–01	0.00E+00	1.52E–01	1.38E–01	6.00E+02	2.29E–02	2.29E–04
^{137}Cs	9	3.13E+00	–1.17E+01	–3.24E–01	–1.77E+00	3.00E+03	–5.90E–02	–5.90E–04
^{99}Tc	12	5.20E+01	–1.38E+01	4.79E+00	5.79E+00	1.00E+05	5.79E–03	5.79E–05
^{237}Np	9	1.35E–01	–7.08E–02	0.00E+00	2.35E–02	3.00E+01	7.83E–02	7.83E–04
^{238}Pu	9	6.70E–01	–6.68E–02	9.21E–02	1.95E–01	4.00E+01	4.89E–01	4.89E–03
^{239}Pu	9	3.02E–01	0.00E+00	0.00E+00	5.36E–02	3.00E+01	1.79E–01	1.79E–03
^{234}Th	9	5.67E+01	0.00E+00	0.00E+00	6.30E+00	1.00E+04	6.30E–02	6.30E–04
Gross alpha	12	8.23E–01	–8.80E–02	–4.40E–02	1.43E–01	*a*	*a*	*a*
Gross beta	12	4.02E+00	8.06E–01	2.85E+00	2.72E+00	*a*	*a*	*a*
Sum of the ratios								1.02E-02[b]

Table 3.13 (continued)

Radionuclide	Number of samples	Concentration (pCi/L)				DCG	Percent of DCG	Activity ratio
		Max	Min	Median	Average			
				K-1700 (Mitchell Branch)				
^{234}U	12	8.95E+00	4.37E+00	6.47E+00	6.41E+00	5.00E+02	1.28E+00	1.28E–02
^{235}U	12	6.06E+00	–8.52E+00	5.02E–01	3.62E–01	6.00E+02	6.03E–02	6.03E–04
^{236}U	12	2.26E–01	0.00E+00	9.28E–02	9.53E–02	5.00E+02	1.91E–02	1.91E–04
^{238}U	12	5.63E+00	2.54E+00	3.64E+00	3.87E+00	6.00E+02	6.45E–01	6.45E–03
^{137}Cs	9	2.21E+00	–1.49E+01	–1.50E+00	–4.04E+00	3.00E+03	–1.35E–01	–1.35E–03
^{99}Tc	12	6.46E+01	9.10E–01	1.75E+01	2.12E+01	1.00E+05	2.12E–02	2.12E–04
^{237}Np	9	2.13E–01	–1.05E–01	2.93E–02	4.69E–02	3.00E+01	1.56E–01	1.56E–03
^{238}Pu	9	5.64E–01	–1.52E–01	0.00E+00	7.11E–02	4.00E+01	1.78E–01	1.78E–03
^{239}Pu	9	5.64E–02	–7.45E–02	0.00E+00	–2.01E–03	3.00E+01	–6.70E–03	–6.07E–05
^{234}Th	9	7.04E+01	0.00E+00	0.00E+00	7.82E+00	1.00E+04	7.82E–02	7.82E–04
^{143}Ce	9	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.00E+04	0.00E+00	0.00E+00
^{40}K	9	5.33E+01	0.00E+00	0.00E+00	5.92E+00	7.00E+03	8.46E–02	8.46E–04
Gross alpha	12	1.60E+01	6.37E+00	9.34E+00	1.01E+01	*a*	*a*	*a*
Gross beta	12	1.99E+01	1.25E+01	1.57E+01	1.55E+01	*a*	*a*	*a*
Sum of the ratios								2.38E-02[b]

Table 3.13 (continued)

Radionuclide	Number of samples	Concentration (pCi/L)				DCG	Percent of DCG	Activity ratios
		Max	Min	Median	Average			
		K-1710 (Poplar Creek upstream of the K-25 Site)						
^{234}U	12	1.66E+00	5.73E–02	3.71E–01	5.11E–01	5.00E+02	1.02E–01	1.02E–03
^{235}U	12	4.51E+00	–3.95E+00	9.00E–02	8.00E–01	6.00E+02	1.33E–01	1.33E–03
^{236}U	12	1.77E–01	0.00E+00	0.00E+00	2.60E–02	5.00E+02	5.20E–03	5.20E–05
^{238}U	12	1.77E+00	5.73E–02	3.17E–01	4.96E–01	6.00E+02	8.26E–02	8.26E–04
^{137}Cs	9	3.64E+00	–1.07E+01	–3.78E–01	–2.21E+00	3.00E+03	–7.36E–02	–7.36E–04
^{99}Tc	12	7.60E+01	–1.69E+01	4.98E+00	1.01E+01	1.00E+05	1.01E–02	1.01E–04
^{237}Np	9	2.30E–01	–2.13E–01	0.00E+00	1.21E–02	3.00E+01	4.04E–02	4.04E–04
^{238}Pu	9	7.77E–01	0.00E+00	1.23E–01	2.71E–01	4.00E+01	6.78E–01	6.78E–03
^{239}Pu	9	1.23E–01	0.00E+00	0.00E+00	2.77E–02	3.00E+01	9.25E–02	9.25E–04
^{234}Th	9	3.50E+02	0.00E+00	0.00E+00	5.37E+01	1.00E+04	5.37E–01	5.37E–03
^{40}K	9	7.23E+01	0.00E+00	0.00E+00	2.03E+01	7.00E+03	2.90E–01	2.90E–03
Gross alpha	12	2.45E+00	–4.32E–01	8.17E–01	8.74E–01	*a*	*a*	*a*
Gross beta	12	7.37E+00	–1.97E+00	3.27E+00	3.46E+00	*a*	*a*	*a*
Sum of the ratios								1.90E-02[b]

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

Table 3.14. 1995 sampling and analysis plan for ORNL off-site treated water monitoring

Station	Analysis	Collection frequency	Sample type	Analysis frequency
Gallaher	Gamma scan, Gross alpha, Gross beta, H-3, Pu-238, Pu-239, Total rad Sr, Total U	Monthly	Time proportional composite	Quarterly
Kingston	Gamma scan, Gross alpha, Gross beta, H-3, Pu-238, Pu-239, Total rad Sr, Total U	Monthly	Composite of daily grabs	Quarterly

Table 3.15. 1995 analyses for ORNL off-site treated water monitoring

Parameter	N det/ N total	Concentration (pCi/L)				DWS[d]	Percent of DWS[e]
		Max[a]	Min[a]	Av[b]	Standard error[c]		
			Gallaher				
Metals							
Uranium, total[f]	2/4	0.00018	0.00010	0.00013*	0.000019	*g*	*g*
Radionuclides							
Co-60	0/4	1.6	–11	–2.2	2.9	200	*g*
Cs-137	0/4	2.7	–0.81	0.20	0.84	120	*g*
Gross alpha	2/4	2.1*	0.19	1.3*	0.43	15	8.8
Gross beta	3/4	4.9*	2.2	3.9*	0.61	50	7.8
H-3	2/4	1,200	–190	700	340	20,000	*g*
Pu-238	0/4	0.054	–0.13	–0.0024	0.043	1.6	*g*
Pu-239	0/4	0.14	–0.16	–0.0024	0.062	1.2	*g*
Total rad Sr	2/4	2.4*	0.30	1.3*	0.43	8	16
Total U[h]	2/4	0.12	0.066	0.083*	0.013	20	0.41
			Kingston				
Metals							
Uranium, total	2/4	0.00014	0.00010	0.00011*	0.0000095	*g*	*g*
Radionuclides							
Co-60	0/4	2.0	–2.7	0.77	1.2	200	*g*
Cs-137	0/4	5.4	0.27	2.3	1.2	120	*g*
Gross alpha	3/4	1.6*	0.35	1.1*	0.28	15	7.1
Gross beta	3/4	4.9*	1.1	3.0*	0.78	50	6.1
H-3	1/4	620	–350	88	210	20,000	*g*
Pu-238	0/4	–0.0073	–0.21	–0.11	0.044	1.6	*g*
Pu-239	0/4	0.027	–0.22	–0.076	0.057	1.2	*g*
Total rad Sr	1/4	2.2*	0.027	1.2*	0.44	8	15
Total U[h]	2/4	0.093	0.066	0.075*	0.0063	20	0.37

[a]Individual radionuclide concentrations significantly greater than zero are identified by an *.

[b]Average radionuclide concentrations significantly greater than zero are identified by an *.

[c]Standard error of the mean.

[d]Drinking Water Standards (from 40 CFR Parts 141 and 143, and the Tennessee General Water Quality Criteria for Domestic Water Supply. For radionuclides that do not have a drinking water standard, 4% of DCG for ingestion of water (from DOE Order 5400.5) is used.

[e]Average concentration as a percentage of the drinking water standards, calculated when a reference exists and the parameter is a contaminant. For radionuclides, percentage of DWS is calculated only when a reference exits and the average concentration is significantly greater than zero.

[f]Laboratory method does not permit a test of significance for the maximum and minimum values.

[g]Not applicable.

[h]Activity derived from mass assuming natural abundance of U-234, U-235, and U-238.

Table 3.16. Summary of constituents detected in off-site residential groundwater during 1995

Parameter	N det/ N total	Detected values			Reference value	Number of values exceeding reference [ref][a]
		Max	Min	Av		
Anions, unfiltered (mg/L)						
Chloride	34/34	63	0.95	7.5	250	0[3]
Fluoride	8/34	8.5	0.27	2.6	4	2[2]
Nitrate	33/34	12	0.42	2.5	10	1[2]
Sulfate, as SO_4	34/34	46	1.2	12	250	0[3]
Field measurements, unfiltered						
Conductivity (mS/cm)	34/34	1.8	0.10	0.48	*b*	[*b*]
Temperature (°C)	34/34	23	5.7	15	30.5	0[1]
pH (SU)	34/34	8.6	6.9	7.5	(6.0, 9.0)	0[1]
Metals, unfiltered (mg/L)						
Barium, total	34/34	0.15	0.0036	0.077	2	0[1]
Calcium, total	34/34	110	1.9	48	*b*	[*b*]
Chromium, total	1/34	0.0043	0.0043	0.0043	0.1	0[1]
Copper, total	19/34	0.11	0.0070	0.021	1.3	0[2]
Iron, total	10/34	0.73	0.092	0.34	0.3	5[3]
Lead, total	2/34	0.012	0.0098	0.011	0.005	2[1]
Magnesium, total	34/34	30	0.75	14	*b*	[*b*]
Manganese, total	14/34	0.51	0.0021	0.079	0.05	2[3]
Mercury, total	3/34	0.000076	0.000057	0.000065	0.002	0[1]
Sodium, total	34/34	460	0.49	44	*b*	[*b*]
Total uranium	26/34	0.0019	0.00011	0.00040	*b*	[*b*]
Vanadium, total	5/34	0.0026	0.0021	0.0023	*b*	[*b*]
Zinc, total	32/34	0.82	0.0052	0.12	5	0[3]
Radionuclides, unfiltered (pCi/L)[c]						
Co-60	4/34	4.1*	3.0*	3.4	200	0[4]
Cs-137	1/34	3.0*	3.0*	3.0	120	0[4]
Gross alpha	6/34	3.0*	1.1*	2.0	15	0[2]
Gross beta	6/34	4.6*	2.2*	3.7	50	0[2]
Tc-99	4/34	1.7*	0.73*	1.0	4,000	0[4]
Volatile organics, unfiltered (µg/L)						
Carbon disulfide	2/34	18	9.0	14	*b*	[*b*]

[a]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.

[b]Not applicable.

[c]Individual and average radionuclide concentrations significantly greater than zero are identified by an *.

Table 3.17. 1995 EMP sediment sampling locations

BCK 0.6	Bear Creek downstream from all DOE inputs
BCK 9.4	Bear Creek downstream from Y-12 Plant burial grounds
CRK 16	Clinch River downstream from all DOE inputs
CRK 32	Clinch River downstream from ORNL
CRK 80	Melton Hill Reservoir—Oak Ridge Marina
CRK 84	Melton Hill Reservoir above all DOE inputs—Anderson County Filtration Plant
EFK 5.4	East Fork Poplar Creek downstream from floodplain
EFK 23.4	East Fork Poplar Creek downstream from the Y-12 Plant
HC	Hinds Creek (reference site for East Fork Poplar Creek)
MEK 2.1	Melton Branch upstream from ORNL
MIK 0.1	Mitchell Branch downstream from the K-25 Site
MIK 1.4	Mitchell Branch upstream from the K-25 Site
PCK 2.2	Poplar Creek downstream from the K-25 Site
PCK 22	Poplar Creek upstream from the K-25 Site and East Fork Poplar Creek
WCK 1.0	White Oak Lake at White Oak Dam
WCK 6.8	White Oak Creek upstream from ORNL

Table 3.18. 1995 sampling and analysis plan parameters for EMP sediment locations[a]

Metals/inorganics	*Pesticides/PCBs*	*Radionuclides*
Aluminum	Aldrin	^{241}Am
Antimony	Alpha-BHC	^{244}Cm
Arsenic	Beta-BHC	Gross alpha
Barium	Delta-BHC	Gross beta
Beryllium	Gamma-BHC (Lindane)	^{60}Co
Cadmium	Chlordane (technical)	^{137}Cs
Calcium	4,4′-DDD	^{237}Np
Chromium	4,4′-DDE	^{238}Pu
Cobalt	4,4′-DDT	^{239}Pu
Copper	Dieldrin	^{90}Sr
Iron	Endosulfan I	^{99}Tc
Lead	Endosulfan II	^{230}Th
Magnesium	Endosulfan sulfate	^{232}Th
Manganese	Endrin	^{234}U
Mercury	Endrin aldehyde	^{235}U
Nickel	Heptachlor	^{238}U
Potassium	Heptachlor epoxide	
Selenium	Methoxychlor	
Silver	Toxaphene	
Sodium	PCB-1016	
Thallium	PCB-1221	
Uranium	PCB-1232	
Vanadium	PCB-1242	
Zinc	PCB-1248	
	PCB-1254	
	PCB-1260	
	2,4-D	
	2,4,5-TP (Silvex)	

Semivolatile organics

1,2-Dichlorobenzene	4-Methylphenol	Dibenzofuran
1,2,4-Trichlorobenzene	4-Nitroaniline	Diethylphthalate
1,3-Dichlorobenzene	4-Nitrophenol	Dimethylphthalate
1,4-Dichlorobenzene	4-Chloro-3-methylphenol	Fluoranthene
2-Chloronaphthalene	4,6-Dinitro-2-methylphenol	Fluorene
2-Chlorophenol	Acenaphthene	Hexachlorobenzene
2-Methylnaphthalene	Acenaphthylene	Hexachlorobutadiene
2-Methylphenol	Anthracene	Hexachlorocyclopentadiene
2-Nitroaniline	Benzo(a)anthracene	Hexachloroethane
2-Nitrophenol	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene
2,4-Dimethyphenol	Benzo(b)fluoranthene	Isoporone
2,4-Dinitrophenol	Benzo(g,h,i)perylene	N-nitroso-di-n-propylamine
2,4-Dinitrotoluene	Benzo(k)fluoranthene	N-Nitrosodiphenylamine
2,4,5-Trichlorophenol	bis(2-Chloroethyl)ether	Naphthalene
2,4,6-Trichlorophenol	bis(2-Chloroisopropyl)ether	Nitrobenzene
2,6-Dinitrotoluene	bis(2-Ethylhexyl)phthalate	Pentachlorophenol
3-Nitroaniline	Butylbenzylphthalate	Phenanthrene
3,3′-Dichlorobenzidine	Carbazole	Phenol
4-Bromophenyl-phenylether	Chrysene	Pyrene
4-Chloroaniline	Di-n-octylphthalate	
4-Chlorophenyl-phenylether	Dibenz(a,h)anthracene	

[a]Collection frequency: annually. Sample type: grab. Analysis frequency: annually.

Table 3.19. 1995 concentrations in sediment at EMP sediment locations[a]

Parameter	Concentration[b]
Bear Creek downstream from all DOE inputs (BCK 0.6)	
Metals (g/kg)	
Aluminum, total	3.9
Arsenic, total	0.0043
Barium, total	0.043
Beryllium, total	0.00046
Cadmium, total	0.00080
Calcium, total	2.0
Chromium, total	0.014
Cobalt, total	0.0076
Copper, total	0.0047
Iron, total	17
Lead, total	0.0082
Magnesium, total	1.1
Manganese, total	0.46
Mercury, total	0.000022
Nickel, total	0.010
Potassium, total	0.56
Sodium, total	0.0099
Uranium, total	0.0038
Vanadium, total	0.014
Zinc, total	0.022
Radionuclides (pCi/g)[c]	
Gross alpha	3.2*
Gross beta	3.5*
K-40	9.5*
Np-237	0.025*
Tc-99	1.1*
Th-228	0.22*
Th-230	0.11*
Th-232	0.19*
U-234	0.54*
U-235	0.046*
U-238	0.92*
Semi-Volatile Organics (µg/kg)	
Bis(2-ethylhexyl) phthalate	J44
Di-n-butylphthalate	J53

Table 3.19 (continued)

Parameter	Concentration[b]
Bear Creek downstream from Y-12 Plant burial grounds (BCK 9.4)	
Metals (g/kg)	
Aluminum, total	10
Arsenic, total	0.0021
Barium, total	0.10
Beryllium, total	0.00085
Cadmium, total	0.00075
Calcium, total	1.5
Chromium, total	0.023
Cobalt, total	0.012
Copper, total	0.014
Iron, total	19
Lead, total	0.015
Magnesium, total	1.3
Manganese, total	0.86
Mercury, total	0.000023
Nickel, total	0.016
Potassium, total	1.3
Sodium, total	0.026
Uranium, total	0.0066
Vanadium, total	0.016
Zinc, total	0.022
PCBs (µg/kg)	
Aroclor-1260	J25
Radionuclides (pCi/g)[c]	
Am-241	0.027*
Gross alpha	4.3*
Gross beta	5.1*
K-40	9.2*
Np-237	0.015*
Th-228	0.26*
Th-230	0.19*
Th-232	0.21*
U-234	1.7*
U-235	0.084*
U-238	3.0*

Table 3.19 (continued)

Parameter	Concentration[b]
Semi-Volatile Organics (µg/kg)	
Diethyl phthalate	JB540
Clinch River downstream from all DOE inputs (CRK 16)	
Metals (g/kg)	
Aluminum, total	13
Arsenic, total	0.0022
Barium, total	0.086
Beryllium, total	0.00051
Cadmium, total	0.00070
Calcium, total	3.0
Chromium, total	0.012
Cobalt, total	0.011
Copper, total	0.0082
Iron, total	14
Lead, total	0.013
Magnesium, total	1.3
Manganese, total	1.2
Mercury, total	0.000075
Nickel, total	0.0099
Potassium, total	0.75
Sodium, total	0.025
Uranium, total	0.0014
Vanadium, total	0.019
Zinc, total	0.036
Radionuclides (pCi/g)[c]	
Am-241	0.23*
Gross alpha	3.2*
Gross beta	2.4*
K-40	6.2*
Np-237	0.0051*
Pu-238	0.010*
Tc-99	0.65*
Th-228	0.35*
Th-230	0.22*
Th-232	0.30*
U-234	0.24*
U-238	0.19*

Table 3.19 (continued)

Parameter	Concentration[b]
Semi-Volatile Organics (µg/kg)	
Diethyl phthalate	JB900
Clinch River downstream from ORNL (CRK 32)	
Herbicides (µg/kg)	
2,4-D	JB10
Metals (g/kg)	
Aluminum, total	12
Arsenic, total	0.0022
Barium, total	0.099
Beryllium, total	0.00080
Cadmium, total	0.00082
Calcium, total	4.4
Chromium, total	0.013
Cobalt, total	0.010
Copper, total	0.0099
Iron, total	17
Lead, total	0.014
Magnesium, total	1.8
Manganese, total	1.0
Mercury, total	0.000042
Nickel, total	0.014
Potassium, total	1.2
Sodium, total	0.025
Vanadium, total	0.016
Zinc, total	0.050
Radionuclides (pCi/g)[c]	
Am-241	0.095*
Cs-137	0.23*
Gross alpha	3.0*
Gross beta	2.7*
K-40	12*
Th-228	0.35*
Th-230	0.22*
Th-232	0.27*
U-234	0.22*
U-235	0.022*
U-238	0.13*

Table 3.19 (continued)

Parameter	Concentration[b]
Semi-Volatile Organics (µg/kg)	
Diethyl phthalate	JB820
Melton Hill Reservoir—Oak Ridge Marina (CRK 80)	
Metals (g/kg)	
Aluminum, total	13
Arsenic, total	0.0032
Barium, total	0.086
Beryllium, total	0.00075
Cadmium, total	0.00081
Calcium, total	1.8
Chromium, total	0.015
Cobalt, total	0.011
Copper, total	0.012
Iron, total	21
Lead, total	0.020
Magnesium, total	2.0
Manganese, total	0.81
Mercury, total	0.000035
Nickel, total	0.016
Potassium, total	1.4
Silver, total	0.00068
Sodium, total	0.035
Vanadium, total	0.019
Zinc, total	0.047
Radionuclides (pCi/g)[c]	
Cm-244	0.057*
Cs-137	0.054*
Gross alpha	3.2*
Gross beta	2.6*
K-40	11*
Pu-239	0.0073*
Tc-99	0.27*
Th-228	0.13*
Th-230	0.38*
Th-232	0.22*
U-234	0.21*
U-235	0.0068*
U-238	0.13*

Table 3.19 (continued)

Parameter	Concentration[b]
Melton Hill Reservoir above all DOE inputs (CRK 84)	
Metals (g/kg)	
Aluminum, total	12
Arsenic, total	0.0012
Barium, total	0.11
Beryllium, total	0.00091
Cadmium, total	0.00099
Calcium, total	2.4
Chromium, total	0.015
Cobalt, total	0.0093
Copper, total	0.010
Iron, total	18
Lead, total	0.012
Magnesium, total	1.9
Manganese, total	0.69
Mercury, total	0.000027
Nickel, total	0.017
Potassium, total	1.1
Sodium, total	0.029
Vanadium, total	0.015
Zinc, total	0.049
Radionuclides (pCi/g)[c]	
Gross alpha	2.2*
Gross beta	2.1*
K-40	12*
Pu-239	0.024*
Th-228	0.26*
Th-230	0.18*
Th-232	0.21*
U-234	0.16*
U-238	0.14*
East Fork Poplar Creek downstream from the Y-12 Plant (EFK 23.4)	
Metals (g/kg)	
Aluminum, total	7.3
Arsenic, total	0.0018

Table 3.19 (continued)

Parameter	Concentration[b]
Barium, total	0.063
Beryllium, total	0.00030
Cadmium, total	0.0031
Calcium, total	8.9
Chromium, total	0.020
Cobalt, total	0.0075
Copper, total	0.043
Iron, total	13
Lead, total	0.022
Magnesium, total	2.7
Manganese, total	0.51
Mercury, total	0.068
Nickel, total	0.023
Potassium, total	1.2
Silver, total	0.0019
Sodium, total	0.035
Uranium, total	0.0012
Vanadium, total	0.0093
Zinc, total	0.11
PCBs (µg/kg)	
Aroclor-1242	J130
Aroclor-1254	790
Aroclor-1260	250
Radionuclides (pCi/g)[c]	
Cm-244	0.086*
Cs-137	0.30*
Gross alpha	7.8*
Gross beta	6.5*
K-40	8.9*
Np-237	0.011*
Pu-239	0.012*
Tc-99	0.84*
Th-228	0.23*
Th-230	1.9*
Th-232	0.22*
U-234	3.0*
U-235	0.12*
U-238	3.2*

Table 3.19 (continued)

Parameter	Concentration[b]
Semi-Volatile Organics (µg/kg)	
Diethyl phthalate	JB2,900
Fluoranthene	JD4,000
Pyrene	JD2,600
East Fork Poplar Creek downstream from floodplain (EFK 5.4)	
Metals (g/kg)	
Aluminum, total	2.7
Arsenic, total	0.0013
Barium, total	0.034
Beryllium, total	0.00030
Cadmium, total	0.00072
Calcium, total	110
Chromium, total	0.021
Cobalt, total	0.0032
Copper, total	0.0071
Iron, total	8.7
Lead, total	0.0077
Magnesium, total	0.25
Manganese, total	0.23
Mercury, total	0.018
Nickel, total	0.0074
Potassium, total	0.25
Sodium, total	0.53
Uranium, total	0.0053
Vanadium, total	0.010
Zinc, total	0.033
PCBs (µg/kg)	
Aroclor-1254	J52
Pesticides (µg/kg)	
Alpha-Chlordane	J3.6
Gamma-Chlordane	J3.6
Radionuclides (pCi/g)[c]	
Cm-244	0.049*
Co-60	0.065*
Cs-137	1.8*
Gross alpha	5.4*

Table 3.19 (continued)

Parameter	Concentration[b]
Gross beta	6.5*
K-40	3.2*
Np-237	0.017*
Pu-238	0.027*
Pu-239	0.017*
Th-228	0.16*
Th-230	0.30*
Th-232	0.13*
U-234	3.5*
U-235	0.16*
U-238	2.4*
Hinds Creek (reference site for East Fork Poplar Creek)	
Metals (g/kg)	
Aluminum, total	4.3
Arsenic, total	0.0042
Barium, total	0.037
Beryllium, total	0.00058
Cadmium, total	0.00053
Calcium, total	1.9
Chromium, total	0.020
Cobalt, total	0.0081
Copper, total	0.0038
Iron, total	22
Lead, total	0.013
Magnesium, total	0.80
Manganese, total	0.72
Mercury, total	0.0000059
Nickel, total	0.0056
Potassium, total	0.42
Sodium, total	0.017
Vanadium, total	0.019
Zinc, total	0.020
Radionuclides (pCi/g)[c]	
Am-241	0.027*
Gross alpha	2.0*
Gross beta	1.7*

Table 3.19 (continued)

Parameter	Concentration[b]
K-40	5.9*
Np-237	0.0049*
Pu-239	0.081*
Th-228	0.22*
Th-230	0.14*
Th-232	0.19*
U-234	0.078*
U-235	0.0089*
U-238	0.070*
Melton Branch upstream from ORNL (MEK 2.1)	
Metals (g/kg)	
Aluminum, total	12
Arsenic, total	0.0032
Barium, total	0.13
Beryllium, total	0.00090
Cadmium, total	0.0010
Calcium, total	2.5
Chromium, total	0.027
Cobalt, total	0.018
Copper, total	0.0098
Iron, total	28
Lead, total	0.018
Magnesium, total	2.9
Manganese, total	1.4
Mercury, total	0.000017
Nickel, total	0.021
Potassium, total	1.6
Silver, total	0.00083
Sodium, total	0.025
Vanadium, total	0.020
Zinc, total	0.039
Radionuclides (pCi/g)[c]	
Cs-137	0.095*
Gross alpha	4.3*
Gross beta	9.5*
K-40	12*
Th-228	0.46*

Table 3.19 (continued)

Parameter	Concentration[b]
Th-230	0.13*
Th-232	0.20*
U-234	0.18*
U-235	0.015*
U-238	0.11*
Mitchell Branch downstream from the K-25 Site (MIK 0.1)	
Metals (g/kg)	
Aluminum, total	12
Arsenic, total	0.018
Barium, total	0.053
Beryllium, total	0.00074
Cadmium, total	0.0017
Calcium, total	2.7
Chromium, total	0.035
Cobalt, total	0.010
Copper, total	0.17
Iron, total	27
Lead, total	0.028
Magnesium, total	1.5
Manganese, total	0.20
Mercury, total	0.00081
Nickel, total	0.37
Potassium, total	1.2
Silver, total	0.0012
Sodium, total	0.033
Uranium, total	0.20
Vanadium, total	0.016
Zinc, total	0.13
PCBs (µg/kg)	
Aroclor-1242	J13
Aroclor-1254	J170
Radionuclides (pCi/g)[c]	
Am-241	0.049*
Cs-137	0.17*
Gross alpha	30*
Gross beta	86*

Table 3.19 (continued)

Parameter	Concentration[b]
K-40	5.9*
Np-237	0.14*
Pu-238	0.017*
Pu-239	0.30*
Tc-99	140*
Th-228	0.19*
Th-230	0.95*
Th-232	0.17*
U-234	26*
U-235	1.8*
U-238	14*
Mitchell Branch upstream from the K-25 Site (MIK 1.4)	
Metals (g/kg)	
Aluminum, total	16
Arsenic, total	0.0023
Barium, total	0.044
Beryllium, total	0.00063
Cadmium, total	0.0010
Calcium, total	1.6
Chromium, total	0.029
Cobalt, total	0.010
Copper, total	0.017
Iron, total	32
Lead, total	0.0052
Magnesium, total	3.6
Manganese, total	0.65
Mercury, total	0.000019
Nickel, total	0.035
Potassium, total	2.5
Silver, total	0.00085
Sodium, total	0.046
Vanadium, total	0.018
Zinc, total	0.044
Radionuclides (pCi/g)[c]	
Gross alpha	5.1*
Gross beta	4.1*
K-40	16*

Table 3.19 (continued)

Parameter	Concentration[b]
Th-228	0.59*
Th-230	0.32*
Th-232	0.51*
U-234	0.30*
U-235	0.0097*
U-238	0.23*
Semi-Volatile Organics (µg/kg)	
Diethyl phthalate	JB730
Poplar Creek downstream from the K-25 Site (PCK 2.2)	
Metals (g/kg)	
Aluminum, total	13
Arsenic, total	0.0030
Barium, total	0.078
Beryllium, total	0.00053
Cadmium, total	0.00091
Calcium, total	1.1
Chromium, total	0.019
Cobalt, total	0.013
Copper, total	0.038
Iron, total	19
Lead, total	0.017
Magnesium, total	0.97
Manganese, total	1.0
Mercury, total	0.0017
Nickel, total	0.013
Potassium, total	0.86
Sodium, total	0.030
Uranium, total	0.0031
Vanadium, total	0.020
Zinc, total	0.041
PCBs (µg/kg)	
Aroclor-1254	J66
Aroclor-1260	J22
Radionuclides (pCi/g)[c]	
Am-241	0.059*
Gross alpha	5.1*
Gross beta	5.1*

Table 3.19 (continued)

Parameter	Concentration[b]
K-40	8.1*
Tc-99	1.6*
Th-228	0.35*
Th-230	0.24*
Th-232	0.26*
U-234	2.7*
U-235	0.086*
U-238	1.9*
Semi-Volatile Organics (µg/kg)	
Diethyl phthalate	JB1,500
Poplar Creek upstream from the K-25 Site and East Fork (PCK 22)	
Metals (g/kg)	
Aluminum, total	10
Arsenic, total	0.0024
Barium, total	0.072
Beryllium, total	0.00072
Cadmium, total	0.00073
Calcium, total	1.1
Chromium, total	0.012
Cobalt, total	0.012
Copper, total	0.010
Iron, total	15
Lead, total	0.013
Magnesium, total	1.2
Manganese, total	0.71
Mercury, total	0.000038
Nickel, total	0.018
Potassium, total	0.91
Sodium, total	0.035
Vanadium, total	0.014
Zinc, total	0.060
Radionuclides (pCi/g)[c]	
Cs-137	0.057*
Gross alpha	2.3*
Gross beta	2.5*
K-40	8.4*

Table 3.19 (continued)

Parameter	Concentration[b]
Tc-99	0.86*
Th-228	0.20*
Th-230	0.14*
Th-232	0.22*
U-234	0.19*
U-235	0.059*
U-238	0.16*
White Oak Lake at White Oak Dam (WCK 1.0)	
Metals (g/kg)	
Aluminum, total	11
Arsenic, total	0.0029
Barium, total	0.046
Beryllium, total	0.00040
Cadmium, total	0.00065
Calcium, total	1.4
Chromium, total	0.020
Cobalt, total	0.014
Copper, total	0.0092
Iron, total	20
Lead, total	0.0088
Magnesium, total	1.5
Manganese, total	0.73
Mercury, total	0.000021
Nickel, total	0.010
Potassium, total	1.4
Sodium, total	0.032
Vanadium, total	0.016
Zinc, total	0.025
Radionuclides (pCi/g)[c]	
Am-241	0.032*
Cm-244	0.032*
Co-60	0.059*
Cs-137	3.8*
Gross alpha	2.7*
Gross beta	15*
K-40	8.4*
Pu-238	0.025*

Table 3.19 (continued)

Parameter	Concentration[b]
Pu-239	0.051*
Tc-99	0.92*
Th-228	0.30*
Th-230	0.14*
Th-232	0.22*
U-234	0.23*
U-235	0.023*
U-238	0.10*
Semi-Volatile Organics (µg/kg)	
Diethyl phthalate	JB1,200
White Oak Creek upstream from ORNL (WCK 6.8)	
Metals (g/kg)	
Aluminum, total	2.1
Arsenic, total	0.0022
Barium, total	0.041
Beryllium, total	0.00020
Calcium, total	7.1
Chromium, total	0.0042
Cobalt, total	0.0050
Copper, total	0.0025
Iron, total	3.9
Lead, total	0.0064
Magnesium, total	1.9
Manganese, total	0.15
Mercury, total	0.000054
Nickel, total	0.0042
Potassium, total	0.20
Sodium, total	0.0056
Vanadium, total	0.0082
Zinc, total	0.019
Radionuclides (pCi/g)[c]	
Cs-137	0.11*
Gross alpha	1.2*
Gross beta	1.9*
K-40	1.6*
Pu-238	0.021*
Tc-99	0.19*

Table 3.19 (continued)

Parameter	Concentration[b]
Th-228	0.11*
Th-230	0.092*
Th-232	0.095*
U-234	0.25*
U-238	0.16*

[a]All values were included in the calculations. Only parameters that have one or more samples detected are listed in the table. The sampling and analysis plan contains a complete list of analyses preformed.

[b]Prefix "J" indicates the value was estimated at or below the analytical detection limit by the laboratory; "JB" indicates the value was estimated at or below the analytical detection limit and was found in the laboratory blank; and "JD" indicates the samples was diluted and the compound was estimated at or below the analytical detection limit.

[c]Individual radionuclide concentrations significantly greater that zero are identified by an *.

Table 3.20. Parameters detected in sunfish from Poplar Creek and Clinch River locations, 1995

	PCK 2.2	CRK 16	CRK 32	CRK 66	CRK 80	CRK 84
			Metals			
Arsenic	✓	✓	✓		✓	
Chromium	✓	✓	✓	✓	✓	✓
Copper	✓	✓	✓	✓	✓	✓
Lead		✓				
Mercury	✓	✓	✓	✓	✓	✓
Nickel					✓	
Selenium	✓	✓	✓		✓	
Silver	✓	✓				
Thallium	✓	✓	✓			
Uranium	✓					
Zinc	✓	✓	✓	✓	✓	✓
			Pesticides			
4,4'-DDE	✓	✓				
Dieldrin		✓	✓			
			PCBs			
Aroclor-1254	✓	✓	✓	✓	✓	
Aroclor-1260	✓	✓	✓		✓	✓
			Radionuclides			
Cs-137	✓	✓	✓	✓	✓	✓
Total rad Sr	✓	✓	✓			✓

Table 3.21. Parameters detected in catfish from two Clinch River locations, 1995

	CRK 16	CRK 32
	Metals	
Arsenic		✓
Chromium	✓	✓
Copper	✓	✓
Mercury	✓	✓
Selenium	✓	
Thallium	✓	✓
Zinc	✓	✓
	PCBs	
Aroclor-1260	✓	✓
	Radionuclides	
Cs-137	✓	✓

Table 3.22. 1995 tissue concentrations in sunfish[a]

Parameter	N det/ N total	Concentration			Standard error[d]
		Max[b]	Min[b]	Av[c]	
Poplar Creek downstream from the K-25 Site (PCK 2.2)					
Metals (mg/kg wet wt)					
Arsenic, total	4/6	0.65	<0.49	~0.57	0.027
Chromium, total	6/6	0.13	0.067	0.095	0.0094
Copper, total	6/6	0.31	0.23	0.27	0.011
Mercury, total	6/6	0.37	0.12	0.26	0.040
Selenium, total	6/6	0.66	0.51	0.57	0.023
Silver, total	1/6	0.12	<0.048	~0.061	0.012
Thallium, total	6/6	0.014	0.0090	0.012	0.00071
Uranium, total	1/6	0.0013	<0.0010	~0.0011	0.000050
Zinc, total	6/6	14	11	12	0.48
Pesticides (µg/kg wet wt)					
4,4'-DDE	5/6	U51	J1.3	~11	8.0
PCBs (µg/kg wet wt)					
Aroclor-1254	4/6	U660	J13	~240	130
Aroclor-1260	5/6	U510	J11	~120	79
Radionuclides (pCi/g ash wt)[e]					
Cs-137	3/3	0.78*	0.46*	0.65*	0.097
Total rad Sr	3/3	1.6*	0.65*	1.0*	0.27
Radionuclides (pCi/g wet wt)[e]					
Cs-137	3/3	0.013*	0.0078*	0.011*	0.0017
Total rad Sr	3/3	0.028*	0.011*	0.018*	0.0050
Clinch River downstream from all DOE inputs (CRK 16)					
Metals (mg/kg wet wt)					
Arsenic, total	3/6	0.83	<0.50	~0.58	0.052
Chromium, total	6/6	0.16	0.12	0.14	0.0067
Copper, total	6/6	0.35	0.22	0.27	0.021
Lead, total	3/6	0.60	<0.49	~0.54	0.017
Mercury, total	6/6	0.27	0.075	0.16	0.034
Selenium, total	5/6	0.71	0.50	~0.59	0.038
Silver, total	1/6	0.11	<0.050	~0.062	0.0097
Thallium, total	6/6	0.0061	0.0045	0.0053	0.00026
Zinc, total	6/6	19	9.7	14	1.2
Pesticides (µg/kg wet wt)					
4,4'-DDE	3/6	U70	J2.2	~34	14
Dieldrin	1/6	U79	J1.5	~59	12
PCBs (µg/kg wet wt)					
Aroclor-1254	6/6	J32	J11	~22	3.5
Aroclor-1260	6/6	J62	J7.5	~27	9.3
Radionuclides (pCi/g ash wt)[e]					
Cs-137	3/3	1.1*	0.68*	0.82*	0.13
Total rad Sr	3/3	2.4*	0.38*	1.1	0.64

Table 3.22 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]
		Max[b]	Min[b]	Av[c]	
Radionuclides (pCi/g wet wt)[e]					
Cs-137	3/3	0.021*	0.012*	0.015*	0.0027
Total rad Sr	3/3	0.043*	0.0069*	0.020	0.011
Clinch River downstream from ORNL (CRK 32)					
Metals (mg/kg wet wt)					
Arsenic, total	2/6	<0.99	<0.47	~0.66	0.10
Chromium, total	6/6	0.14	0.079	0.11	0.011
Copper, total	6/6	0.42	0.26	0.31	0.024
Mercury, total	6/6	0.33	0.051	0.15	0.042
Selenium, total	4/6	1.1	<0.50	~0.75	0.10
Thallium, total	6/6	0.0075	0.0051	0.0063	0.00035
Zinc, total	6/6	14	10	11	0.60
Pesticides (µg/kg wet wt)					
Dieldrin	1/6	U75	J1.0	~54	11
PCBs (µg/kg wet wt)					
Aroclor-1254	6/6	J32	J20	~24	1.8
Aroclor-1260	4/6	U750	J13	~250	140
Radionuclides (pCi/g ash wt)[e]					
Cs-137	3/3	2.4*	1.3*	1.7*	0.35
Total rad Sr	3/3	2.1*	1.4*	1.8*	0.21
Radionuclides (pCi/g wet wt)[e]					
Cs-137	3/3	0.042*	0.022*	0.029*	0.0067
Total rad Sr	3/3	0.037*	0.022*	0.030*	0.0044
Melton Hill Reservoir above City of Oak Ridge water intake (CRK 66)					
Metals (mg/kg wet wt)					
Chromium, total	6/6	0.21	0.073	0.12	0.020
Copper, total	6/6	0.18	0.12	0.15	0.0087
Mercury, total	6/6	0.13	0.038	0.060	0.014
Zinc, total	6/6	22	12	16	1.8
PCBs (µg/kg wet wt)					
Aroclor-1254	4/6	U700	J6.0	~230	140
Radionuclides (pCi/g ash wt)[e]					
Cs-137	1/3	0.32	0.027	0.15	0.089
Radionuclides (pCi/g wet wt)[e]					
Cs-137	1/3	0.0051	0.00045	0.0024	0.0014
Melton Hill Reservoir – Oak Ridge Marina (CRK 80)					
Metals (mg/kg wet wt)					
Arsenic, total	1/6	<0.62	<0.52	~0.56	0.016
Chromium, total	6/6	0.11	0.076	0.10	0.0056
Copper, total	6/6	0.23	0.15	0.19	0.012

Table 3.22 (continued)

Parameter	N det/ N total	Concentration			Standard error[d]
		Max[b]	Min[b]	Av[c]	
Mercury, total	6/6	0.10	0.058	0.074	0.0071
Nickel, total	1/6	0.12	<0.11	~0.12	0.0022
Selenium, total	2/6	0.65	<0.52	~0.58	0.021
Zinc, total	6/6	16	12	15	0.72
PCBs (µg/kg wet wt)					
Aroclor-1254	4/6	U680	J5.0	~220	130
Aroclor-1260	2/6	U710	J28	~460	140
Radionuclides (pCi/g ash wt)[e]					
Cs-137	3/3	3.0*	0.78*	1.6	0.70
Radionuclides (pCi/g wet wt)[e]					
Cs-137	3/3	0.044*	0.012*	0.023	0.011
Melton Hill Reservoir above all DOE inputs (CRK 84)					
Metals (mg/kg wet wt)					
Chromium, total	6/6	0.13	0.090	0.11	0.0070
Copper, total	6/6	0.47	0.16	0.25	0.046
Mercury, total	6/6	0.072	0.045	0.061	0.0041
Zinc, total	6/6	18	11	14	1.0
PCBs (µg/kg wet wt)					
Aroclor-1260	2/6	U720	J16	~460	140
Radionuclides (pCi/g ash wt)[e]					
Cs-137	1/3	0.43*	0.14	0.32*	0.091
Total rad Sr	3/3	0.57*	0.38*	0.49*	0.056
Radionuclides (pCi/g wet wt)[e]					
Cs-137	1/3	0.0081*	0.0025	0.0059*	0.0017
Total rad Sr	3/3	0.011*	0.0069*	0.0091*	0.0011

[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 "<" indicates the value for a parameter (excluding organics) was not quantifiable at the analytical detection limit; "U" indicates the value for an organic parameter was undetected at the analytical detection limit; and "J" indicates the value was estimated at or below the analytical detection limit by the laboratory.

[c]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 *.

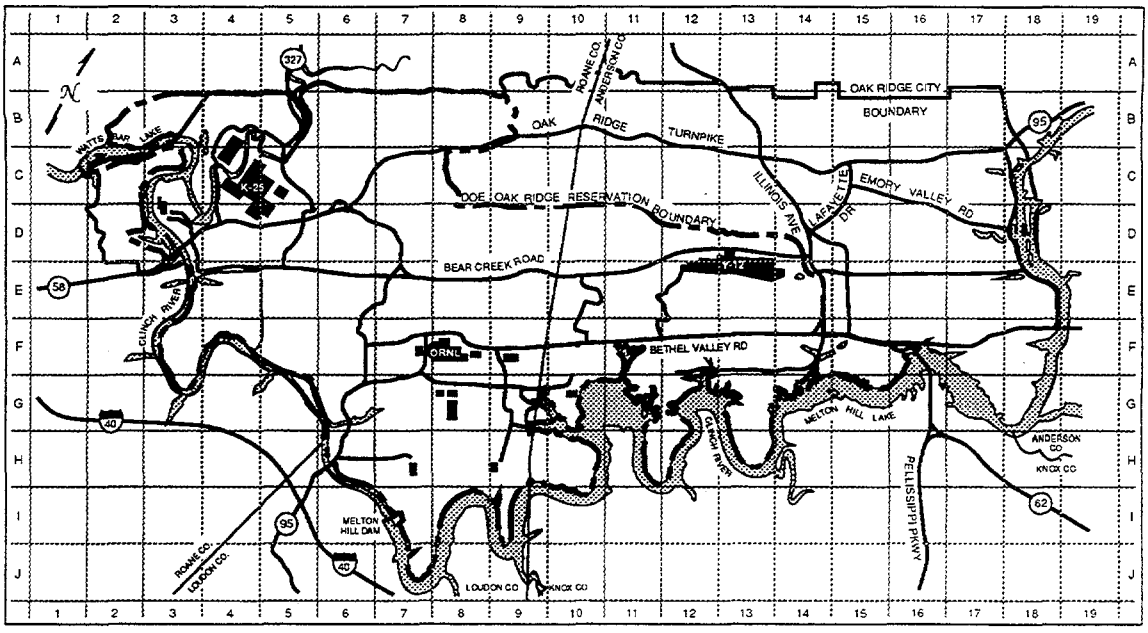
Table 3.24. 1995 tissue concentrations in catfish[a]

Parameter	Concentration
Clinch River downstream from all DOE inputs (CRK 16)	
Metals (mg/kg wet wt)	
Chromium, total	0.043
Copper, total	0.47
Mercury, total	0.081
Selenium, total	0.81
Thallium, total	0.0025
Zinc, total	7.0
PCBs (μg/kg wet wt)	
Aroclor-1260	500
Radionuclides (pCi/g ash wt)[b]	
Cs-137	2.1*
Radionuclides (pCi/g wet wt)[b]	
Cs-137	0.019*
Clinch River downstream from ORNL (CRK 32)	
Metals (mg/kg wet wt)	
Arsenic, total	0.64
Chromium, total	0.12
Copper, total	0.27
Mercury, total	0.16
Thallium, total	0.0025
Zinc, total	6.7
PCBs (μg/kg wet wt)	
Aroclor-1260	390
Radionuclides (pCi/g ash wt)[b]	
Cs-137	1.9*
Radionuclides (pCi/g wet wt)[b]	
Cs-137	0.041*

[a]Only parameters that are detected are listed in the table. The sampling and analysis plan contains a complete list of analyses performed.

[b]Individual and average radionuclide concentrations significantly greater than zero are identified by an *.

ORNL-DWG 94M-6167R



NOTE: Grid shown is Oak Ridge administrative grid.

0 3 KM

0 1 2 MILES

Fig. 3.17. Grid map used to locate sites where deer were taken during the 1995 ORR hunts.

4. Groundwater

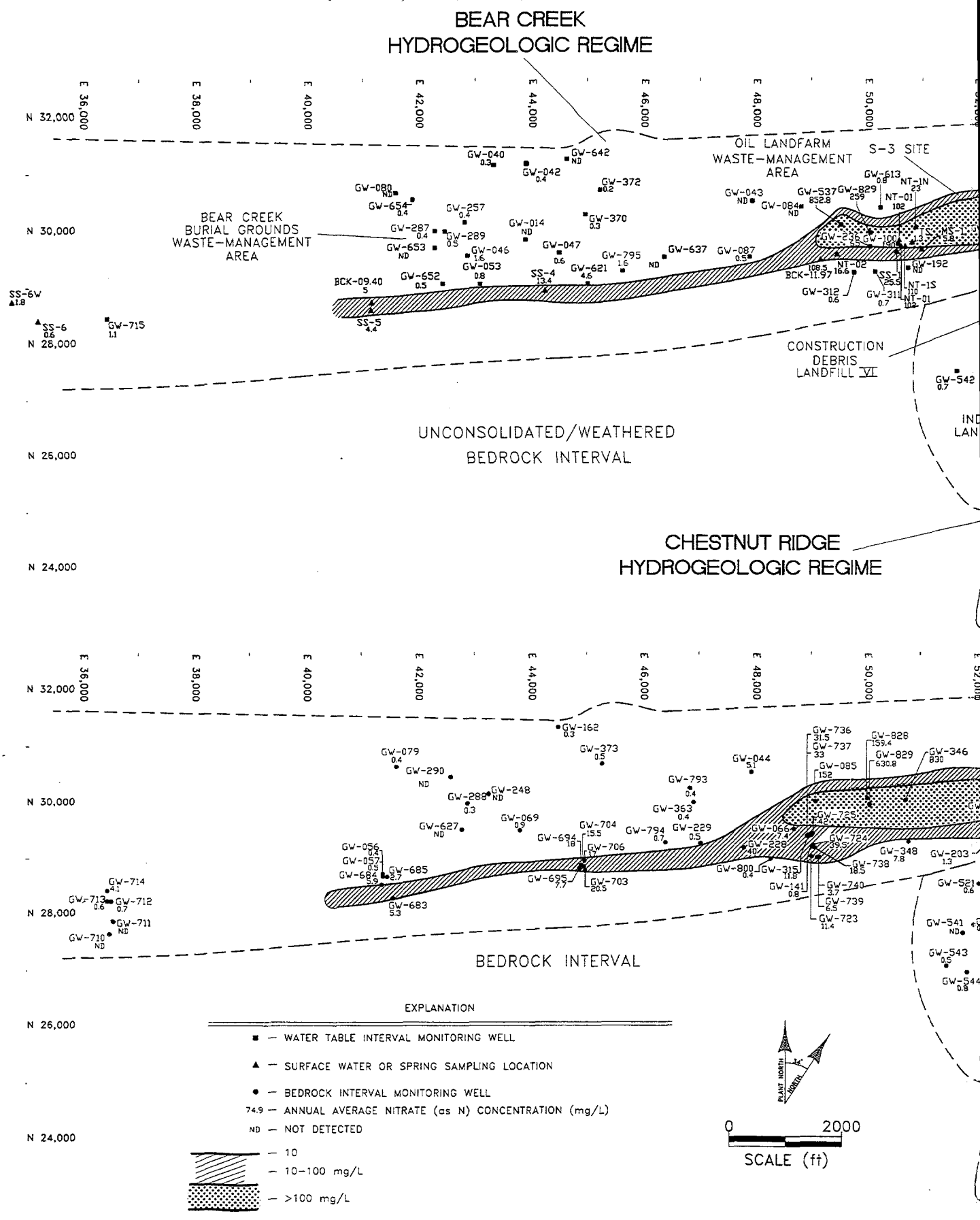
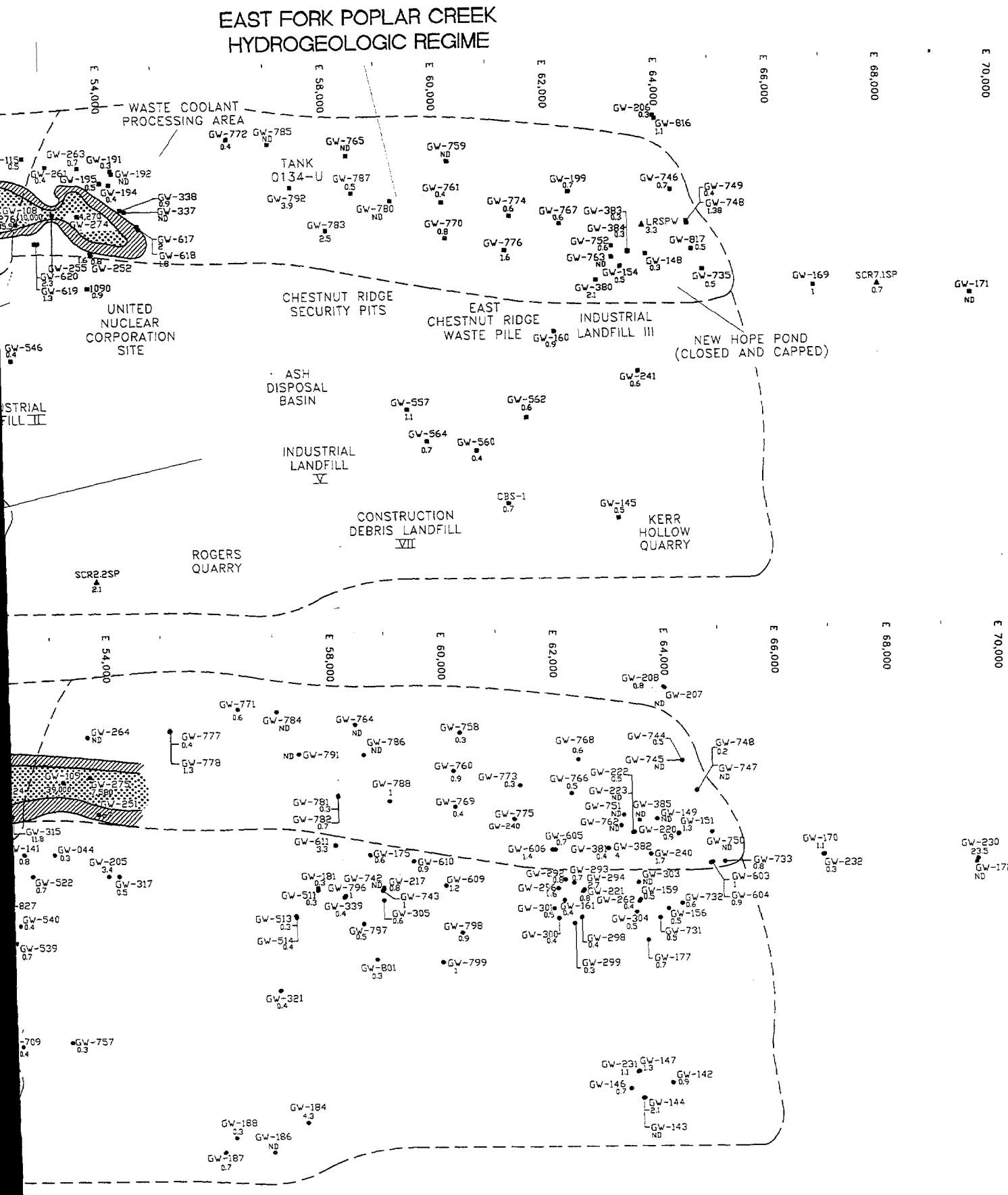


Fig. 4.1. Nitrate (as N) observ



d in groundwater at the Y-12 Plant.

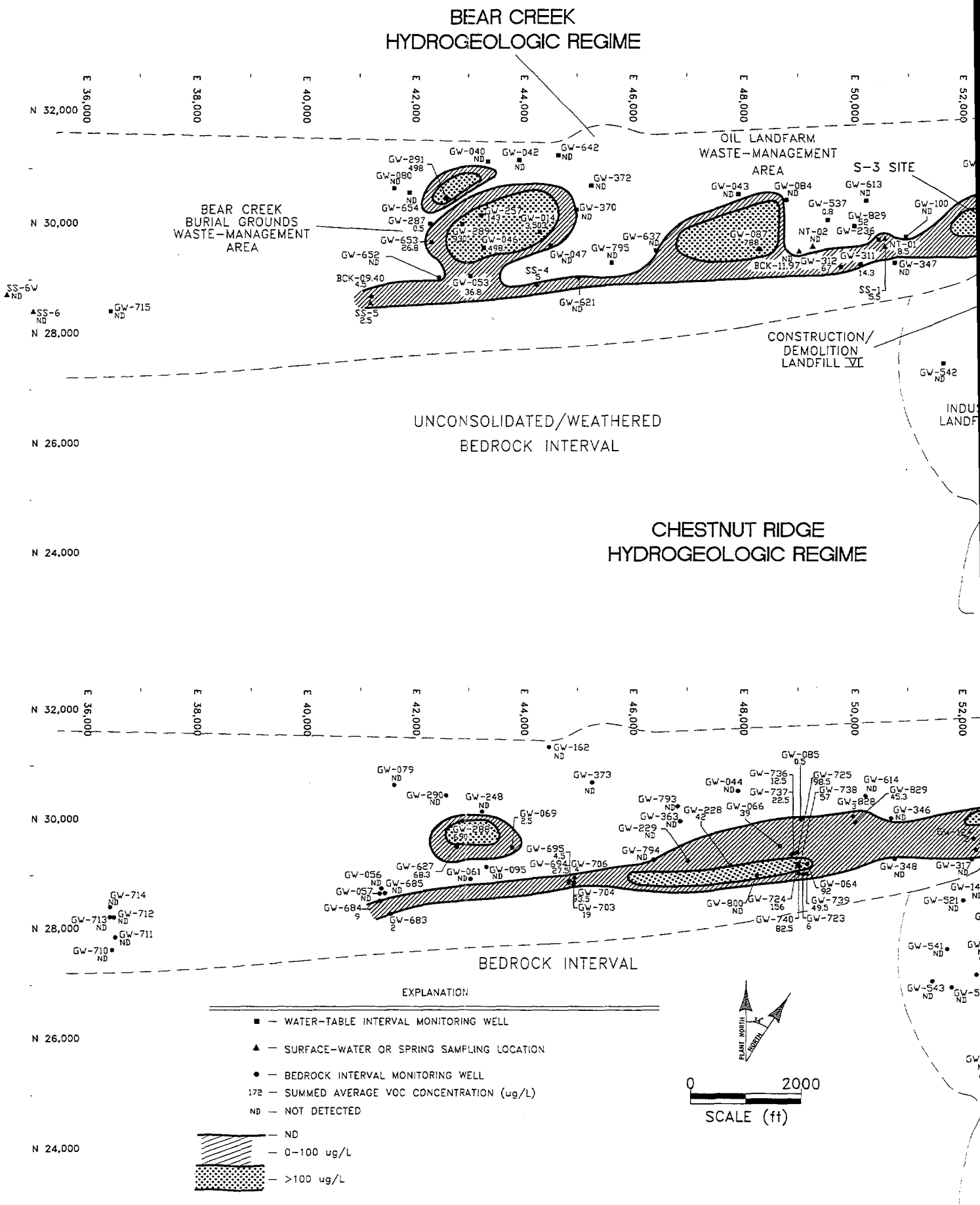
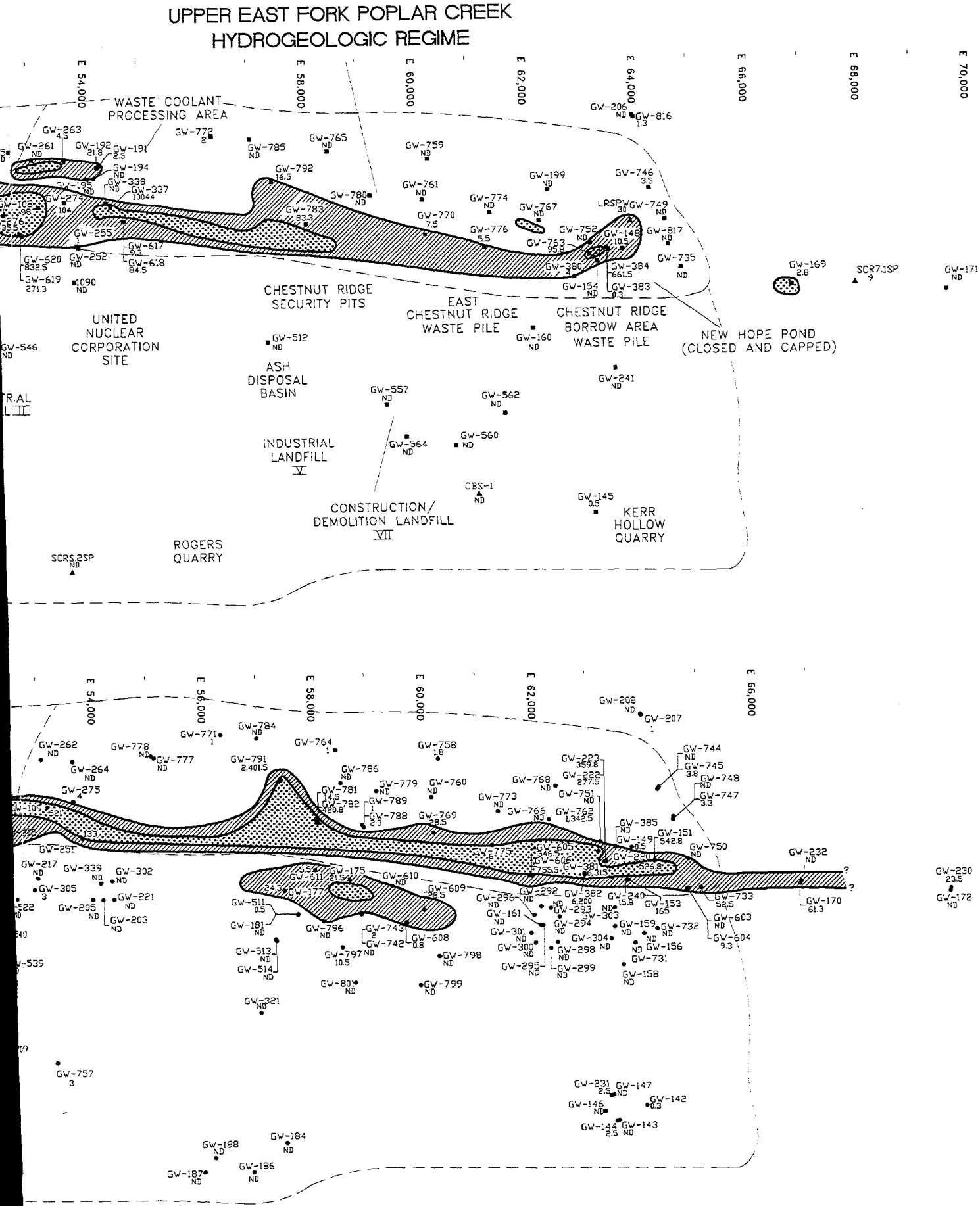


Fig. 4.2. Summed volatile organic compounds



bserved in groundwater at the Y-12 Plant.

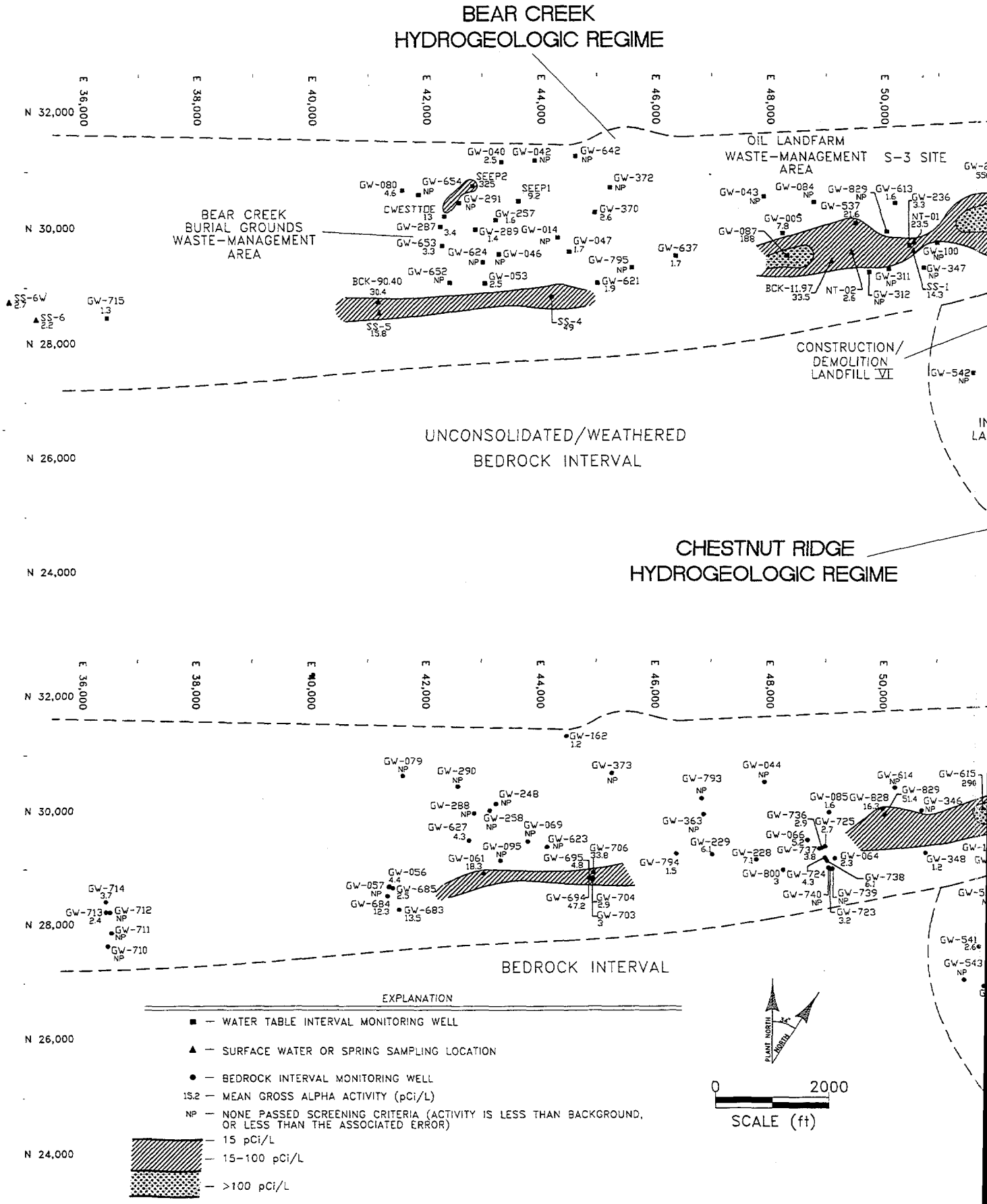
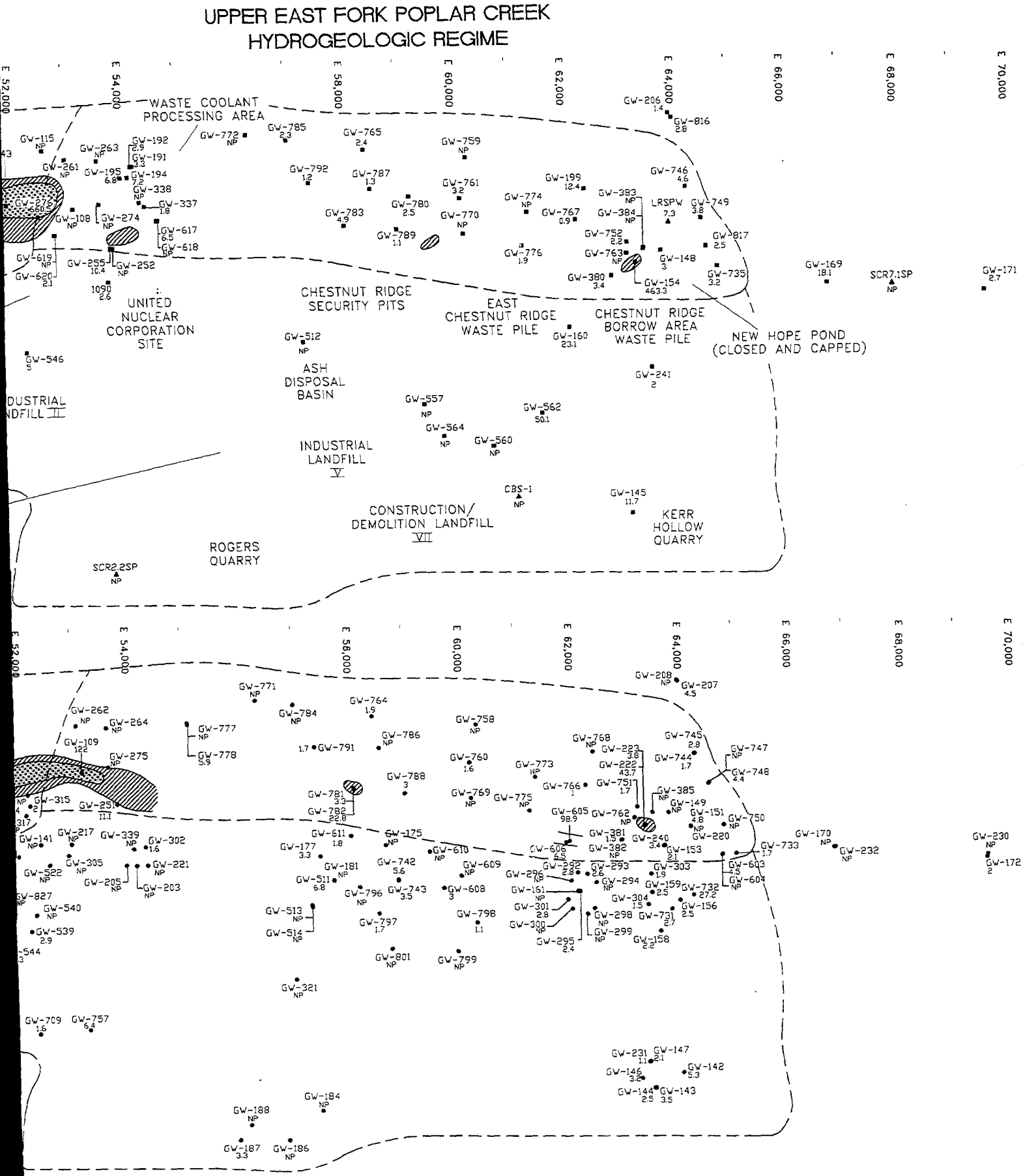


Fig. 4.3. Gross alpha activity ob



rved in groundwater at the Y-12 Plant.

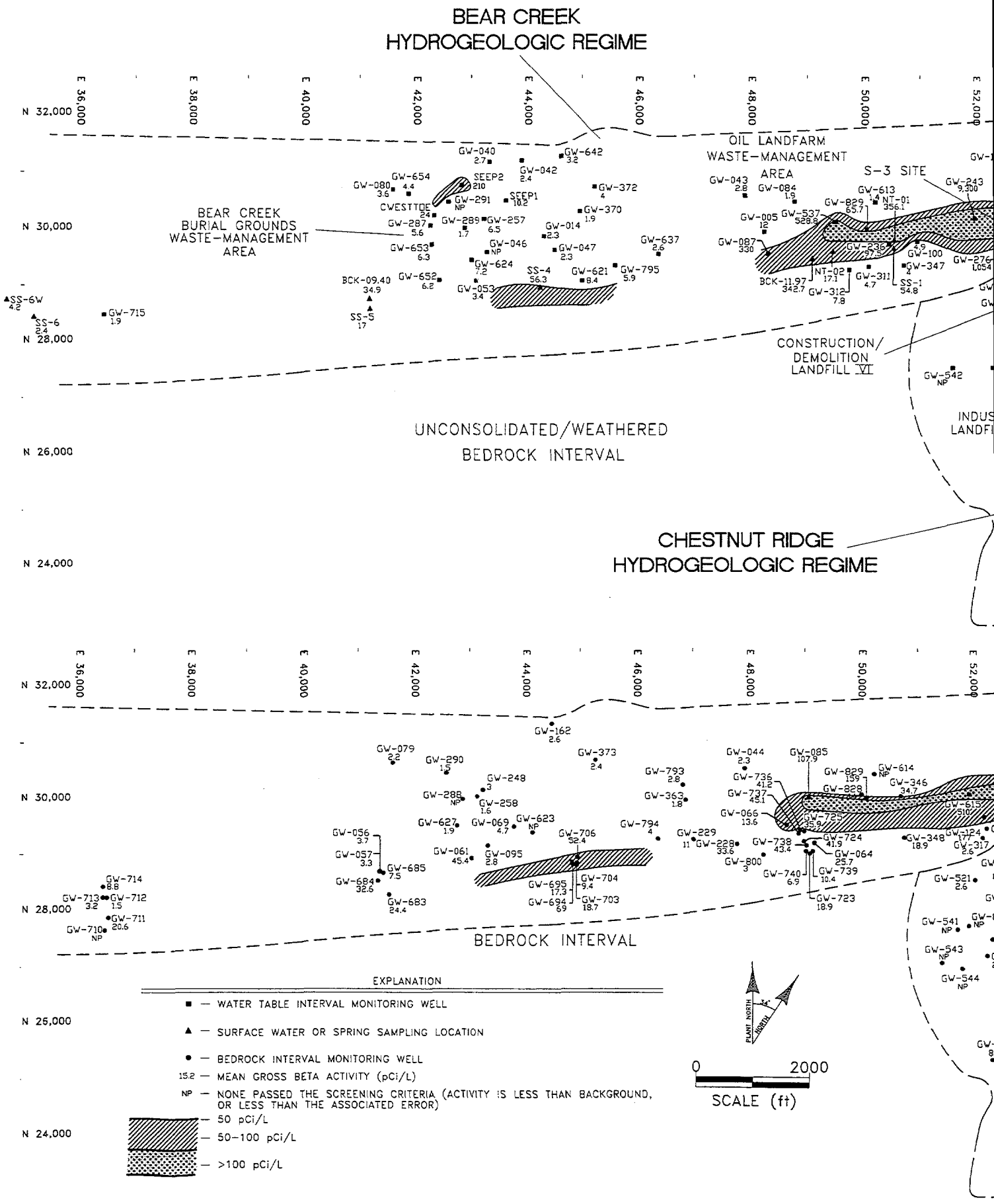
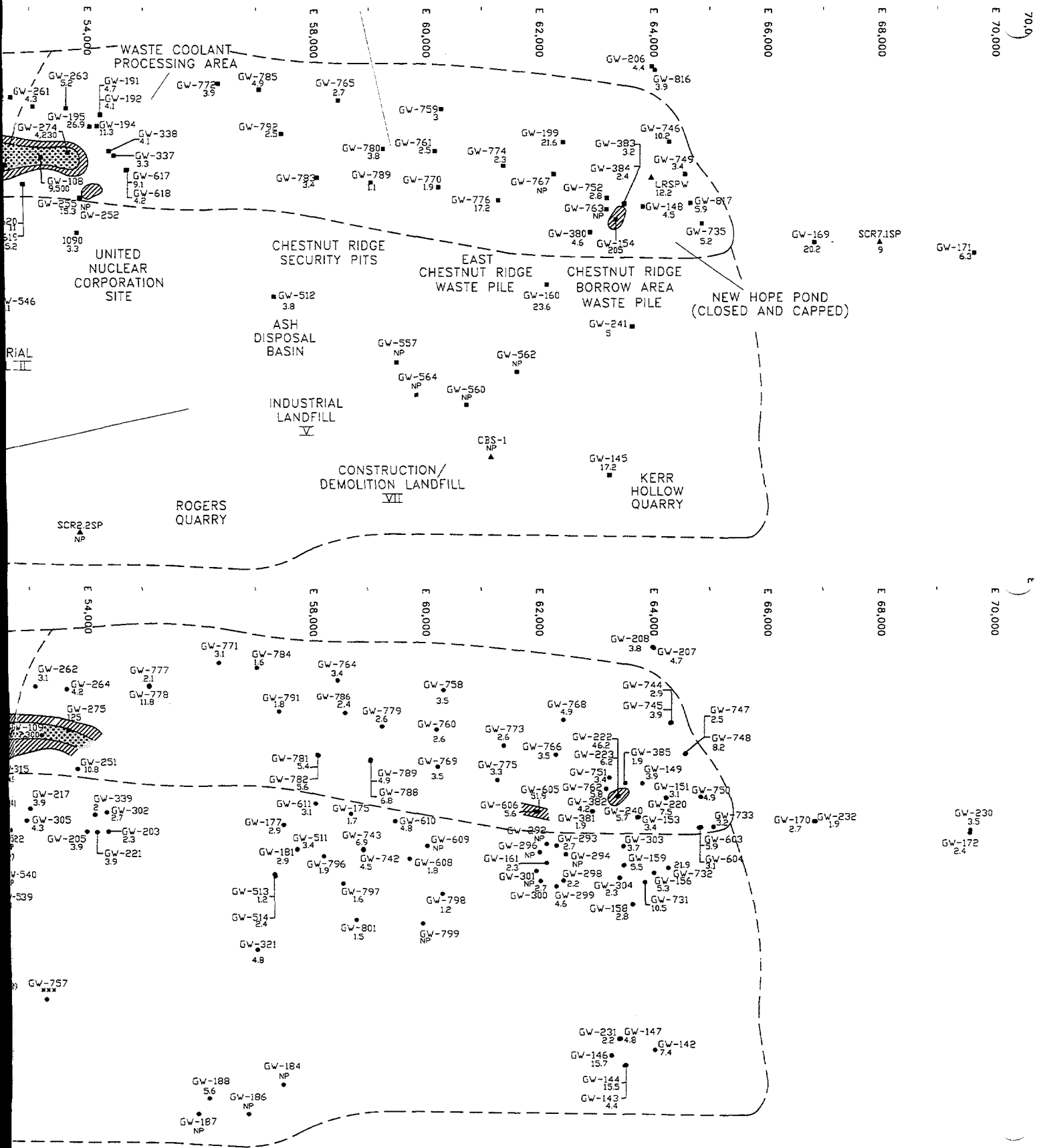


Fig. 4.4. Gross beta activity observe

UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME



in groundwater at the Y-12 Plant.

Groundwater Reference Standards Footnotes

Default Lab Number

Default Lab	Lab Description
01 & 02	FIELD MMTS (Sample Custodian and Reporting Laboratory)
07	AAS (Atomic Absorption Spectroscopy)
13	HG (Mercury)
12	WET (WET Chemistry Laboratory)
12	TOX (WET Chemistry Laboratory)
03	VOA (Organic Mass Spectroscopy Laboratory)
03	BNA (
08	ICP (Inductively Coupled Plasma Laboratory)
09	RAD CHEM (Radiochemistry Laboratory)

Qualifiers

Qualifier Symbol	Default Lab	Qualifier Description
*	01	Duplicate analysis outside control limits.
*	02	Duplicate analysis outside control limits.
*	03	Duplicate analysis outside control limits.
*	04	Duplicate analysis outside control limits.
*	05	Duplicate analysis outside control limits.
*	07	Duplicate analysis outside control limits.
*	08	Duplicate analysis outside control limits.
*	09	Duplicate analysis outside control limits.
*	10	Duplicate analysis outside control limits.
*	12	Duplicate analysis outside control limits.
*	13	Duplicate analysis outside control limits.
*	14	Duplicate analysis outside control limits.
+	01	Correlation coefficient for MSA <0.995.
+	02	Correlation coefficient for MSA <0.995.
+	05	Correlation coefficient for MSA <0.995.
+	07	Correlation coefficient for MSA <0.995.
+	08	Correlation coefficient for MSA <0.995.
+	09	Duplicate control limits do not apply, duplicate and sample are near the MDA.
+	10	Correlation coefficient for MSA <0.995.
+	12	Correlation coefficient for MSA <0.995.
+	13	Correlation coefficient for MSA <0.995.
+	14	Correlation coefficient for MSA <0.995.
+	32	This sample was POSITIVE for asbestos fibers.
-	32	This sample was NEGATIVE for asbestos fibers.

Qualifiers (continued)

Qualifier Symbol	Default Lab	Qualifier Description
1	03	Can not be separated from Diphenylamine.
2	03	Cannot be separated from 3-Methylphenol.
A	03	TIC is a suspected aldol-condensation product.
A	09	Possible detector contamination.
B	03	Analyte found in blank as well as sample.
B	04	Analyte found in blank as well as sample.
B	07	Reported value was less than the CRDL but greater than or equal to IDL.
B	09	Blank analysis outside of control limits.
B	13	Reported value was less than the CRDL but greater than or equal to IDL.
B	25	Analyte found in blank as well as sample.
C	03	Identification has been confirmed by GC/MS.
C	04	Identification has been confirmed by GC/MS.
C	09	Control analysis outside of control limits.
D	03	Compounds identified in an analysis at a secondary dilution factor.
D	07	Sample contained matrix interferences which caused an adjustment in the normal reporting limit.
D	09	Spike control limits do not apply, sample activity exceeds the activity of the spike.
E	03	Concentrations exceed calibration range of the GC/MS instrument.
E	04	Concentrations exceed calibration range of the GC instrument.
E	07	Estimated value, interferences.
E	08	Estimated value, interferences.
E	09	Result of analysis is less than the MDA, confidence level is less than 95%.
E	10	Estimated value, interferences.
E	12	Estimated value, interferences.
E	13	Estimated value, interferences.
E	14	Estimated value, interferences.
E	25	Indicates an estimated value. Used in cases where a target analyte is detected at a level greater than the upper quantification limit of instrument calibration.
F	09	Result less than background.
G	09	Gamma photopeak near MDA, resulting in a poor curve fit.
H	09	Daughter of Uranium Isotopes. Reported for comparison purposes only.
H	25	Peak height (instead of peak area) was used to calculate the isotopic or confirmation/quantitation ion ratio and to quantitate the analyte. Peak must meet all other identification criteria.
I	09	Insufficient amount of sample to meet customer's MDA requirements.
I	19	The sample has been analyzed by ICP-MS and was found to have an insufficient amount of Uranium to allow for an accurate isotopic determination.
J	03	Indicates an estimated value.
J	04	Indicates an estimated value.
J	09	Chemical tracer recovery is outside of control limits.
J	25	Indicates an estimated value.
L	01	Sample received by ACD with expired holding time.
L	02	Sample received by ACD with expired holding time.
L	03	Sample received by ACD with expired holding time.
L	04	Sample received by ACD with expired holding time.
L	05	Sample received by ACD with expired holding time.
L	06	Sample received by ACD with expired holding time.

Qualifiers (continued)

Qualifier Symbol	Default Lab	Qualifier Description
L	07	Sample received by ACD with expired holding time.
L	08	Sample received by ACD with expired holding time.
L	09	Sample received by ACD with expired holding time.
L	10	Sample received by ACD with expired holding time.
L	11	Sample received by ACD with expired holding time.
L	12	Sample received by ACD with expired holding time.
L	13	Sample received by ACD with expired holding time.
L	14	Sample received by ACD with expired holding time.
L	19	Sample received by ACD with expired holding time.
L	21	Sample received by ACD with expired holding time.
L	22	Sample received by ACD with expired holding time.
L	25	Sample received by ACD with expired holding time.
M	07	Duplicate injection precision not met.
M	08	Laboratory Control Sample recovery not within limits.
M	09	Duplicate injection precision not met.
M	10	Duplicate injection precision not met.
M	12	Duplicate injection precision not met.
M	13	Duplicate injection precision not met.
M	14	Duplicate injection precision not met.
N	03	Presumptive evidence of a compound.
N	04	Confirmed by second column, quantative results differed by >50% between columns.
N	07	Spiked sample recovery not within limits.
N	08	Spiked sample recovery not within limits.
N	10	Spiked sample recovery not within limits.
N	12	Spiked sample recovery not within limits.
N	13	Spiked sample recovery not within limits.
N	14	Spiked sample recovery not within limits.
N	25	Spiked sample recovery not within control limits.
P	08	This sample was found to have a pH above 2.
P	19	This sample was found to have a pH above 2.
R	01	Result was Revised after Approved.
R	02	Result was Revised after Approved.
R	03	Result was Revised after Approved.
R	04	Result was Revised after Approved.
R	05	Result was Revised after Approved.
R	07	Result was Revised after Approved.
R	08	Result was Revised after Approved.
R	09	Result was Revised after Approved.
R	10	Result was Revised after Approved.
R	12	Result was Revised after Approved.
R	13	Result was Revised after Approved.
R	14	Result was revised after Approval.
R	32	Result was Revised after Approved.
S	07	Value determined by Method of Standard Additions.
U	01	Compound was analyzed for but not detected.
U	02	Compound was analyzed for but not detected.
U	03	Compound was analyzed for but not detected.
U	04	Compound was analyzed for but not detected.
U	05	Compound was analyzed for but not detected.
U	07	Compound was analyzed for but not detected.

Qualifiers (continued)

Qualifier Symbol	Default Lab	Qualifier Description
U	08	Compound was analyzed for but not detected.
U	09	Compound was analyzed for but not detected.
U	10	(INSUFF U) The sample has been analyzed by TIMS and was found to have an insufficient amount of Uranium to allow for an accurate isotopic determination.
U	12	Compound was analyzed for but not detected.
U	13	Compound was analyzed for but not detected.
U	14	Compound was analyzed for but not detected.
U	19	Compound was analyzed for but not detected.
U	25	Compound was analyzed for but not detected.
W	07	Post digestion spike for furnace AA out of control limits.
Y	03	Undistinguishable isomer components.
a	09	Acceptable duplicate difference for non-aqueous matrices is ±35%.
b	03	Method blank failed surrogate recovery acceptance limits.
b	04	Method blank failed Surrogate Recovery acceptance limits.
c	01	Possible contamination.
c	02	Possible contamination.
c	03	Possible contamination.
c	04	Possible contamination.
c	05	Possible contamination.
c	06	Possible contamination.
c	07	Possible contamination.
c	08	Possible contamination.
c	09	Possible contamination.
c	10	Possible contamination.
c	11	Possible contamination.
c	12	Possible contamination.
c	13	Possible contamination.
c	14	Possible contamination.
c	25	Possible contamination.
c	32	Possible contamination.
d	08	Dilution required for accurate determination of all analytes; reporting limits raised accordingly.
d	09	Acceptable duplicate difference for non-aqueous matrices is ±35%.
d	25	Dilution required for accurate determination of all analytes; reporting limits raised accordingly.
d	26	Dilution required for accurate determination of all analytes; reporting limits raised accordingly.
e	09	Results are considered estimated.
f	09	Tentatively Identified Isotope (TII)
g	25	Isotope ratio criteria are not met using either peak height or peak area.
h	01	Procedure Performed past regulatory holding time.
h	02	Procedure Performed past regulatory holding time.
h	03	Procedure Performed past regulatory holding time.
h	04	Procedure Performed past regulatory holding time.
h	05	Procedure Performed past regulatory holding time.
h	06	Procedure Performed past regulatory holding time.
h	07	Procedure Performed past regulatory holding time.
h	08	Procedure Performed past regulatory holding time.
h	09	Procedure Performed past regulatory holding time.
h	10	Procedure Performed past regulatory holding time.

Qualifiers (continued)

Qualifier Symbol	Default Lab	Qualifier Description
h	11	Procedure Performed past regulatory holding time.
h	12	Procedure Performed past regulatory holding time.
h	13	Procedure Performed past regulatory holding time.
h	14	Procedure performed past regulatory holding time.
h	25	Procedure performed past regulatory holding time.
i	03	Internal standard areas failed acceptance criteria.
i	09	Tentatively Identified Isotope (TII)
i	25	Isotope ratio criteria are not met using either peak height or peak area.
j	10	(LOW U) Not enough Uranium in the sample to warrant isotopic analysis.
k	12	Matrix spiked component.
k	14	Spike recovery not within limits.
m	03	Anlytical method/requested method discrepancy.
n	01	Analyte not analyzed.
n	02	Analyte not analyzed.
n	03	Analyte not analyzed.
n	04	Analyte not analyzed.
n	05	Analyte not analyzed.
n	07	Analyte not analyzed.
n	08	Analyte not analyzed.
n	09	Analyte not analyzed.
n	10	(LOW U) Not enough Uranium in the sample to warrant isotopic analysis.
n	12	Analyte not analyzed.
n	13	Analyte not analyzed.
n	14	Analyte not analyzed.
n	32	Analyte not analyzed.
p	01	Sample known to be unpreserved.
p	02	Sample known to be unpreserved.
p	03	Sample known to be unpreserved.
p	04	Sample known to be unpreserved.
p	05	Sample known to be unpreserved.
p	06	Sample known to be unpreserved.
p	07	Sample known to be unpreserved.
p	08	Sample known to be unpreserved.
p	09	Sample known to be unpreserved.
p	10	Sample known to be unpreserved.
p	11	Sample known to be unpreserved.
p	12	Sample known to be unpreserved.
p	13	Sample known to be unpreserved.
p	14	Sample known to be unpreserved.
p	19	Sample known to be unpreserved.
p	25	Sample known to be unpreserved.
q	04	Sample fell between subsequent standards, one or both of which did not meet applicable QC acceptance criteria.
r	03	Surrogate standards failed recovery criteria.
r	04	Surrogate Standards failed recovery criteria.
s	01	Spike recovery not within limits.
s	02	Spike recovery not within limits.
s	03	Matrix spiked component.
s	04	Spike recovery not within limits.
s	05	Spike recovery not within limits.
s	07	Spike recovery not within limits.

Qualifiers (continued)

Qualifier Symbol	Default Lab	Qualifier Description
s	08	Spike recovery not within limits.
s	09	Spike recovery not within limits.
s	10	Spike recovery not within limits.
s	12	Matrix spiked component.
s	13	Spike recovery not within limits.
s	25	Signal-to-noise ratio of the confirmation ion does not meet 2.5 S/N requirement, but peak was determined to be positive in the judgement of the GC/MS analyst.
t	09	Acceptable spike recovery limits for non-aqueous matrices are 50% to 150%.
u	03	Insufficient Sample
u	04	Insufficient Sample
u	07	Insufficient Sample
u	08	Insufficient Sample
u	09	Insufficient Sample
u	12	Insufficient Sample
u	13	Insufficient Sample
u	14	Insufficient sample.
u	25	Insufficient Uranium.
v	25	Signal-to-noise ratio of the confirmation ion does not meet 2.5 S/N requirement, but peak was determined to be positive in the judgement of the GC/MS analyst.
z	08	Not a recommended analyte by the preparation procedure used.

1995 Reference Standards for Radionuclides in Water (pCi/L) Footnotes

a = Only the radionuclides sought on the Oak Ridge Reservation are listed.

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

c = U.S. DOE Order 5400.5, Chapter III, Derived Concentration Guides for Air and Water.

d = Four percent of the DCG represents the DOE criterion of 4 mrem effective dose equivalent from ingestion of drinking water.

g = Regulatory guide for assessing compliance without further analysis.

f = Minimum of uranium isotopes.

1995 Reference Standards for Chemicals and Metals in Water Footnotes

a = 40 CFR Part 141 - National Primary Drinking Water Regulations, Subparts B and G, as amended.

b = 40 CFR Part 143 - National Secondary Drinking Water Regulations, as amended.

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

d = These criteria, for the protection of public health, pertain to the consumption of water and organisms. They are applied only to waters designated for both recreation and domestic water supply.

e = JTU an NTU are roughly equivalent in the range of 25 to 1000 JTU.

f = The standard is a function of total hardness. The values in this table correspond to a total-hardness value of 100 mg/L.

g = Action level, which is applicable to community water systems and non-transient, non-community water systems.

h = EPA has deleted the MCL for nickel from the *Code Federal Regulations.* The state of Tennessee retains a nickel MCL of 100 µg/L in its currently effective drinking water regulations.

i = See *cis*-Dichloroethene and *trans*-Dichloroethene.

j = Limit for total trihalomethanes (bromodichloromethane+bromoform+chloroform+dibromochloromethane).

1995 Groundwater Reference Standards Footnotes

a = Concentration limits listed in 40 CFR 264.94 incorporated by reference at the Rules of the Tennessee Department of Environment and Conservation (TDEC) 1200-1-11.06(6)(a), effective February 13, 1994.

b = TDEC 1200-1-7, Appendix I, effective February 21, 1994.

c = National Primary Drinking Water Regulation MCLs enforceable health-based maximum concentration levels for public water supply systems (40 CFR 141); TDEC 1200-5-1.06, effective July 16, 1994.

d = National Secondary Drinking Water SMCLs nonenforceable taste, odor, or appearance guidelines (40 CFR 143); TDEC 1200-5-1-.12, effective July 16, 1994.

e = Four percent of Derived Concentration Guide (DCG) values calculation based on comparison with the DOE drinking water systems criterion of 4 mrem/year [DOE Order 5400.5 *Radiation Protection of the Public and the Environment*, effective July 7, 1993, Chapter III (2)].

f = The DCG values for internal exposure based on a committed effective dose equivalent of 100 mrem/year [DOE Order 5400.5 Chapter III (2)].

g = TDEC 1200-4-3, effective August 30, 1991.

h = Water hardness dependent criteria (50 mg/L as $CaCO_3$).

i = Number in parenthesis is an "action level" which, if measured in the 90th percentile at the water tap, triggers initiation of corrosion control studies and treatment requirements. TT_=_Treatment Technology

j = Applies to fibers longer than 10 microns.

k = The MCL is based on the presence or absence (P/A) of total coliforms in a sample; if no more than 50% of the 40 or greater water samples collected per month are positive, the system is in compliance with the MCL.

l = The State of Tennessee sets a MCL of 1 TU (TDEC 1200-5-1-11).

m = TDEC 1200-1-15-.06(e), Underground Storage Tank Program.

n = Gross alpha particle activity includes radium-226, but excludes radon and uranium.

o = If two or more radionuclides are present, the sum of their annual dose equivalent to the total body or any organ shall not exceed 4 mrem/year; if the activity exceeds 50 pCi/L, an analysis of the sample must be performed to identify the major radioactive constituents present.

p = These values are not MCLs, but concentrations that result in the effective dose equivalent of 4 mrem/year, the MCL for gross beta activity.

q = MCL applies to combined radium-226 and radium-228 concentrations.

r = Proposed MCL, 56 FR 33050, July 18, 1991; final rule expected April 1995.

s = Number is approximately equal to uranium MCL of 20 μg/L.

t = Total trihalomethanes (THM) includes the sum of the concentrations of bromodichloromethane, dibromochloromethane, tribromomethane (bromoform), and trichloromethane (chloroform).

u = According to Mr. Glen Pugh, TDEC Office of Solid Waste, in Rule 1200-1-7 this standard was incorrectly promulgated, and instead should have replicated the Federal MCL of 400 μg/L (personal communication to A.M. Vance, January 31, 1995).

v = Criteria is based on a pH of 7.8.

w = Final ruling 57 FR 22178, May 27, 1992, effective date postponed indefinitely.

Table 4.1. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=BC Location Description=Above Grade Low-Level Storage Facility

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		6	3	0.0087	0.0061	0.007533	NR	NA
Lithium, ICAP (mg/L)	Filtered	6	3	0.0087	0.0059	0.007633	NR	NA
Chloride, (mg/L)		12	12	10	1.42	5.0725	250.000	0
Fluoride, (mg/L)		12	5	0.2	0.1	0.13	4.000	0
Nitrate nitrogen, (mg/L)		12	7	2.54	0.32	0.928571	10.000	0
Sulfate, (mg/L)		12	12	25	4.22	15.09333	250.000	0
Aluminum, ICAP (mg/L)		12	11	2	0.021	0.371909	0.2	5
Aluminum, ICAP (mg/L)	Filtered	12	4	0.49	0.031	0.15	0.2	1
Barium, ICAP (mg/L)		12	12	0.15	0.056	0.112	2.000	0
Barium, ICAP (mg/L)	Filtered	2	12	0.16	0.057	0.108	2.000	0
Boron, ICAP (mg/L)		12	12	0.079	0.022	0.048667	NR	NA
Boron, ICAP (mg/L)	Filtered	12	12	0.12	0.016	0.057083	NR	NA
Calcium, ICAP (mg/L)		12	12	110	50	79.83333	NR	NA
Calcium, ICAP (mg/L)	Filtered	12	12	110	51	75.66667	NR	NA
Copper, ICAP (mg/L)		12	2	0.032	0.0071	0.01955	1.3 g	0
Copper, ICAP (mg/L)	Filtered	12	2	0.0072	0.0043	0.00575	1.3 g	0
Iron, ICAP (mg/L)		12	10	3.4	0.021	0.5713	0.300	4
Iron, ICAP (mg/L)	Filtered	12	4	0.02	0.0077	0.013925	0.300	0
Lead, ICAP (mg/L)		12	1	0.051	0.051	0.051	0.015 g	1
Magnesium, ICAP (mg/L)		12	12	13	3.3	6.25	NR	NA
Magnesium, ICAP (mg/L)	Filtered	12	12	12	3.5	6.608333	NR	NA
Manganese, ICAP (mg/L)		12	12	0.13	0.0082	0.047517	0.050	4

Table 4.1 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Manganese, ICAP (mg/L)	Filtered	12	12	0.085	0.003	0.034183	0.050	3
Potassium, ICAP (mg/L)		12	12	3.7	0.75	1.724167	NR	NA
Potassium, ICAP (mg/L)	Filtered	12	12	3.8	0.81	1.7775	NR	NA
Sodium, ICAP (mg/L)		12	12	4.1	1.9	3.041667	NR	NA
Sodium, ICAP (mg/L)	Filtered	12	12	4	2	2.966667	NR	NA
Strontium, ICAP (mg/L)		12	12	0.21	0.089	0.144167	NR	NA
Strontium, ICAP (mg/L)	Filtered	12	12	0.19	0.09	0.141833	NR	NA
Uranium, (mg/L)		12	5	0.004	0.00066	0.001412	0.020	0
Uranium, (mg/L)	Filtered	12	6	0.0041	0.00055	0.00132	0.020	0
Zinc, ICAP (mg/L)		12	9	0.032	0.0028	0.012389	5.000	0
Zinc, ICAP (mg/L)	Filtered	12	10	0.0089	0.0022	0.00517	5.000	0
Conductivity, field measurement (μmhos/cm)		12	NA	522	263	382	NR	NA
Dissolved oxygen, field measurement (ppm)		12	NA	8.9	0.5	2.866667	NR	NA
pH, field measurement (pH units)		12	NA	7.7	4.5	7.116667	6.5/8.5	1
Redox, field measurement (MV)		12	NA	224	128	176.0833	NR	NA
Static water level (ft-TOC)		12	12	–4.28	–21.2	–11.8717	NR	NA
Water temperature, field measurement (°C)		12	NA	16.6	11.4	14.83333	NR	NA
Alkalinity-HCO_3 (mg/L)		12	12	237	25	182.5833	NR	NA

Table 4.1 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Conductivity (μmhos/cm)		12	12	523	288	406.3333	NR	NA
Dissolved solids (mg/L)		12	12	348	146	253.5	500.000	0
pH (pH units)		12	12	7.8	7.2	7.516667	NR	NA
Total suspended solids (mg/L)		12	4	458	1	122.625	NR	NA
Turbidity (NTU)		12	12	360	0.25	34.87917	1.0	7
^{234}U (pCi/L)		1	1	0.0295	0.0295	0.0295	20.000	0
^{235}U (pCi/L)		1	1	0 F	0 F	0	24.000	0
^{237}Np (pCi/L)		1	1	0.201	0.201	0.201	1.200	0
^{238}Pu (pCi/L)		1	1	0.216	0.216	0.216	1.600	0
^{238}U (pCi/L)		1	1	0.118	0.118	0.118	24.000	0
^{239}Pu (pCi/L)		1	1	0	0	0	1.200	0
^{241}Am (pCi/L)		1	1	0.0665	0.0665	0.0665	1.20	0
^{99}Tc (pCi/L)		1	1	–2.01	–2.01	–2.01	4000.000	0
Gross alpha (pCi/L)		12	12	1.47	–1.07	0.186667	15 n	0
Gross beta (pCi/L)		12	12	13.3	–0.564	3.413833	50 g	0
Strontium (pCi/L)		1	1	33	33	33	8 p	1

Table 4.2. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=BC Location Description=Bear Creek Valley Operable Unit

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
		42	42	5.3	0.1	1.47619	NR	NA
		42	42	480	23	176.7857	NR	NA
^{137}Cs (pCi/L)		43	43	11	–1.3	4.092698	120.000	0
^{228}Ra (pCi/L)		42	42	7.8	–3.1	0.098524	4.000	1
^{228}Th (pCi/L)		46	46	3.2	0	0.305804	16.000	0
^{230}Th (pCi/L)		46	46	0.78	0.018	0.364783	12.000	0
^{232}Th (pCi/L)		46	46	0.38	–0.04	0.048891	2.000	0
^{234}U (pCi/L)		46	46	130	0.011	14.96615	20.000	9
^{235}U (pCi/L)		44	44	8.4	–0.088	0.944341	24.000	0
^{237}Np (pCi/L)		46	46	40	–0.078	1.737804	1.200	4
^{238}Pu (pCi/L)		42	42	0.41	–0.083	0.045071	1.600	0
^{238}U (pCi/L)		46	46	400	–0.051	48.95122	24.000	11
^{239}Pu (pCi/L)		43	43	0.082	–0.16	–0.00153	1.200	0
^{241}Am (pCi/L)		45	45	0.38	–0.21	0.034489	1.20	0
^{99}Tc (pCi/L)		45	45	23108	–46	561.4889	4000.000	1
Gross alpha (pCi/L)		46	46	550	–12	47.68283	15 n	14
Gross beta (pCi/L)		46	46	9300	–2.8	252.7863	50 g	7
Radium Y-12-lab (pCi/L)		43	43	5.4	–0.38	0.620837	0.15	34
Strontium (pCi/L)		43	43	7.4	–6.1	–0.38767	8 p	0
Tritium Y-12-lab (pCi/L)		42	42	4200	–160	417.6667	20000 p	0

Table 4.3. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=BC Location Description=Bear Creek Burial Grounds WMA

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		42	40	0.54	0.004	0.060992	NR	NA
Lithium, ICAP (mg/L)	Filtered	42	39	0.54	0.0045	0.060341	NR	NA
Chloride (mg/L)		80	80	54	1.55	8.95325	250.000	0
Fluoride (mg/L)		80	54	5.5	0.1	0.695741	4.000	4
Nitrate nitrogen (mg/L)		80	29	18	0.24	1.976552	10.000	3
Sulfate (mg/L)		80	80	42	1.1	14.0555	250.000	0
Aluminum, ICAP (mg/L)		80	64	20	0.021	2.890672	0.2	43
Aluminum, ICAP (mg/L)	Filtered	80	30	1.4	0.02	0.107333	0.2	2
Arsenic, ICAP (mg/L)		80	2	0.061	0.053	0.057	0.050	2
Arsenic, ICAP (mg/L)	Filtered	80	1	0.053	0.053	0.053	0.050	1
Barium, ICAP (mg/L)		80	80	0.87	0.026	0.152713	2.000	0
Barium, ICAP (mg/L)	Filtered	80	80	0.86	0.015	0.126325	2.000	0
Beryllium, ICAP (mg/L)		80	12	0.0018	0.00036	0.000693	0.004	0
Boron, ICAP (mg/L)		80	80	4.8	0.012	0.228638	NR	NA
Boron, ICAP (mg/L)	Filtered	80	80	4.8	0.0092	0.237385	NR	NA
Cadmium, AAS (mg/L)		41	5	0.046	0.0035	0.01466	0.005	4
Cadmium, AAS (mg/L)	Filtered	41	4	0.034	0.0082	0.0188	0.005	4
Cadmium, ICAP (mg/L)		80	9	0.038	0.003	0.008889	0.005	4
Cadmium, ICAP (mg/L)	Filtered	80	8	0.033	0.0032	0.010012	0.005	4
Calcium, ICAP (mg/L)		80	80	120	0.83	29.60738	NR	NA
Calcium, ICAP (mg/L)	Filtered	80	80	120	0.83	29.45488	NR	NA
Chromium, AAS (mg/L)		41	7	0.11	0.011	0.052857	0.1	1
Chromium, ICAP (mg/L)		80	13	0.19	0.012	0.035538	0.1	1

Table 4.3 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Chromium, ICAP (mg/L)	Filtered	80	1	0.01	0.01	0.01	0.1	0
Cobalt, ICAP (mg/L)		80	10	0.022	0.0057	0.01071	NR	NA
Cobalt, ICAP (mg/L)	Filtered	80	5	0.0064	0.0052	0.0057	NR	NA
Copper, ICAP (mg/L)		80	33	0.11	0.0043	0.016161	1.3 g	0
Copper, ICAP (mg/L)	Filtered	80	16	0.057	0.0043	0.011306	1.3 g	0
Iron, ICAP (mg/L)		80	80	33	0.0067	3.045396	0.300	58
Iron, ICAP (mg/L)	Filtered	80	63	3.3	0.0053	0.321573	0.300	13
Lead, AAS (mg/L)		41	10	0.042	0.0048	0.01536	0.015 g	4
Lead, AAS (mg/L)	Filtered	41	1	0.0064	0.0064	0.0064	0.015 g	0
LEAD, ICAP (mg/L)		80	1	0.056	0.056	0.056	0.015 g	1
Magnesium, ICAP (mg/L)		80	80	19	0.14	5.99425	NR	NA
Magnesium, ICAP (mg/L)	Filtered	80	80	19	0.11	5.575125	NR	NA
Manganese, ICAP (mg/L)		80	76	2.5	0.002	0.354192	0.050	44
Manganese, ICAP (mg/L)	Filtered	80	75	2.5	0.0011	0.249136	0.050	32
Mercury, CVAA (mg/L)		80	1	0.00051	0.00051	0.00051	0.002	0
Nickel, ICAP (mg/L)		80	25	0.11	0.011	0.02868	0.100 h	1
Nickel, ICAP (mg/L)	Filtered	80	16	0.11	0.011	0.025938	0.100 h	1
Potassium, ICAP (mg/L)		80	78	7.6	0.8	2.628333	NR	NA
Potassium, ICAP (mg/L)	Filtered	80	78	5.7	0.72	2.018974	NR	NA
Selenium, ICAP (mg/L)		80	5	0.11	0.058	0.0804	0.05	5
Selenium, ICAP (mg/L)	Filtered	80	3	0.091	0.071	0.078	0.05	3
Silver, ICAP (mg/L)		80	7	0.044	0.0065	0.012514	0.10	0

Table 4.3 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Silver, ICAP (mg/L)	Filtered	80	7	0.0086	0.006	0.0069	0.10	0
Sodium, ICAP (mg/L)		80	80	310	0.99	36.49363	NR	NA
Sodium, ICAP (mg/L)	Filtered	80	80	310	1	37.0225	NR	NA
Strontium, ICAP (mg/L)		80	80	1	0.015	0.1898	NR	NA
Strontium, ICAP (mg/L)	Filtered	80	80	0.96	0.013	0.181188	NR	NA
Uranium (mg/L)		80	14	0.057	0.00063	0.011054	0.020	3
Uranium (mg/L)	Filtered	80	11	0.051	0.00054	0.012795	0.020	3
Vanadium, ICAP (mg/L)		80	12	0.037	0.0054	0.014908	NR	NA
Zinc, ICAP (mg/L)		80	75	0.098	0.0022	0.019645	5.000	0
Zinc, ICAP (mg/L)	Filtered	80	67	0.11	0.0022	0.014051	5.000	0
Conductivity, field measurement (µmhos/cm)		80	NA	1232	31	341.45	NR	NA
Dissolved oxygen, field measurement (ppm)		80	NA	11.8	0.2	2.95625	NR	NA
pH, field measurement (pH units)		80	NA	9.6	5.1	7.28125	6.5/8.5	41
Redox, field measurement (MV)		80	NA	283	9.8	121.7091	NR	NA
Static water level (ft-TOC)		80	80	–4.36	–30.26	–16.5983	NR	NA
Water temperature, field measurement (°C)		80	NA	21.6	4.1	15.41875	NR	NA
Alkalinity-CO_3 (mg/L)		80	14	72	4	35.42857	NR	NA
Alkalinity-HCO_3 (mg/L)		80	80	498	12	144.05	NR	NA

Table 4.3 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Conductivity (μmhos/cm)		80	80	1191	4.4	332.755	NR	NA
Dissolved solids (mg/L)		80	79	728	20	237.9494	500.000	5
pH (pH units)		80	80	9.2	5.56	7.424375	NR	NA
Total suspended solids (mg/L)		80	52	2150	1	96.48077	NR	NA
Turbidity (NTU)		80	80	1440	0.15	69.97437	1.0	65
^{129}I, X-10 lab (Bq/L)		33	33	0.4	–0.4	0.076667	NR	NA
^{137}Cs (pCi/L)		1	1	18	18	18	120.000	0
$^{231+234}$Th (pCi/L)		3	3	88 H	53.9 H	73.56667	400.000	0
^{234}U (pCi/L)		33	33	0.898	–0.111	0.236564	20.000	0
^{235}U (pCi/L)		33	33	27.7 E	–3.25 F	3.58283	24.000	1
^{237}Np (pCi/L)		33	33	0.555	–0.146	0.067558	1.200	0
^{238}Pu (pCi/L)		33	33	1.2	–0.341	0.250524	1.600	0
^{238}U (pCi/L)		33	33	1.42	–0.121	0.132642	24.000	0
^{239}Pu (pCi/L)		33	33	0.46 J	–0.139	0.053009	1.200	0
^{241}Am (pCi/L)		33	33	2.83	–0.0896	0.414303	1.20	5
^{99}Tc (pCi/L)		36	36	62.7	–27.2	6.893861	4000.000	0
Gross alpha (pCi/L)		80	80	20.6	–4.46	1.377069	15 n	3
Gross beta (pCi/L)		80	80	56.2	–10.4	3.593613	50 g	1
Radium, X-10 lab (Bq/L)		33	33	0.22	–0.013	0.033758	0.15	1
Strontium (pCi/L)		36	36	51.7	–51.1	–1.08534	8 p	5
Tritium, X-10 lab (Bq/L)		36	36	30	–23	3.580556	20000 p	0
1,1,1-Trichloroethane (μg/L)		82	1	1 J	1 J	1	200.000	0

Table 4.3 (continued)

Variable	Filtered status	No samples	No detected	Max	Min	Av	Reference value	No. of measurements
1,1-Dichloroethane (µg/L)		82	11	450	1 J	45.90909	NR	NA
1,1-Dichloroethene (µg/L)		82	4	100 J	1 J	51	7.000	3
1,2-Dichloroethane (µg/L)		82	3	73 JB	38	49.66667	5.000	3
1,2-Dichloroethene (µg/L)		73	9	2300	15	272.4444	70.	1
2-Butanone (µg/L)		82	5	10	8 J	9	NR	NA
Acetone (µg/L)		82	3	5 JB	4 JB	4.333333	NR	NA
Benzene (µg/L)		82	2	48 s	47 s	47.5	5.000	2
Chlorobenzene (µg/L)		82	2	48 s	48 s	48	100.000	0
Methylene chloride (µg/L)		82	3	3 JB	3 JB	3	5.000	0
Tetrachloroethene (µg/L)		82	16	930	1 J	182.375	5.000	9
Toluene (µg/L)		82	2	50 s	48 s	49	1000.00	0
Trichloroethene (µg/L)		82	15	410	1 J	36.93333	5.000	7
Vinyl chloride (µg/L)		82	6	170 J	2 J	34	2.000	5

Table 4.4. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=BC Location Description=Bear Creek Exit Pathway

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		39	30	0.75	0.004	0.045047	NR	NA
Lithium, ICAP (mg/L)	Filtered	39	28	0.74	0.0041	0.047914	NR	NA
Chloride (mg/L)		79	78	1769	1.4	77.41051	250.000	4
Fluoride (mg/L)		79	53	1.7	0.1	0.380755	4.000	0
Nitrate nitrogen (mg/L)		79	71	190	0.22	16.12096	10.000	27
Sulfate (mg/L)		79	79	2000	1.8	121.6195	250.000	4
Aluminum, ICAP (mg/L)		79	55	4.9	0.022	0.434709	0.2	19
Aluminum, ICAP (mg/L)	Filtered	79	43	1.1	0.02	0.180093	0.2	10
Antimony, ICAP (mg/L)		79	1	0.054	0.054	0.054	0.006	1
Antimony, ICAP (mg/L)	Filtered	79	2	0.072	0.065	0.0685	0.006	2
Arsenic, ICAP (mg/L)		79	6	0.088	0.054	0.062167	0.050	6
Arsenic, ICAP (mg/L)	Filtered	79	3	0.064	0.051	0.058667	0.050	3
Barium, ICAP (mg/L)		79	79	0.76	0.0067	0.101867	2.000	0
Barium, ICAP (mg/L)	Filtered	79	79	0.81	0.007	0.099652	2.000	0
Beryllium, ICAP (mg/L)		79	2	0.0016	0.00032	0.00096	0.004	0
Boron, ICAP (mg/L)		79	79	1.3	0.0084	0.097835	NR	NA
Boron, ICAP (mg/L)	Filtered	79	79	1.3	0.0076	0.100933	NR	NA
Cadmium, AAS (mg/L)		24	4	0.031	0.002	0.01015	0.005	1
Cadmium, AAS (mg/L)	Filtered	24	2	0.031	0.0038	0.0174	0.005	1
Cadmium, ICAP (mg/L)		79	2	0.026	0.0046	0.0153	0.005	1
Cadmium, ICAP (mg/L)	Filtered	79	4	0.031	0.0032	0.011175	0.005	2
Calcium, ICAP (mg/L)		79	79	560	18	101.8354	NR	NA

Table 4.4 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Calcium, ICAP (mg/L)	Filtered	79	79	540	19	100.7342	NR	NA
Chromium, AAS (mg/L)		24	4	0.23	0.031	0.09575	0.1	1
Chromium, ICAP (mg/L)		79	8	0.16	0.01	0.051375	0.1	1
Chromium, ICAP (mg/L)	Filtered	79	1	0.025	0.025	0.025	0.1	0
Cobalt, ICAP (mg/L)		79	1	0.0062	0.0062	0.0062	NR	NA
Cobalt, ICAP (mg/L)	Filtered	79	2	0.0094	0.0066	0.008	NR	NA
Copper, ICAP (mg/L)		79	25	0.65	0.004	0.033812	1.3 g	0
Copper, ICAP (mg/L)	Filtered	79	18	0.012	0.0041	0.006272	1.3 g	0
Iron, ICAP (mg/L)		79	73	13	0.0057	1.462727	0.300	45
Iron, ICAP (mg/L)	Filtered	79	56	12	0.0056	0.833829	0.300	21
Lead, AAS (mg/L)		24	2	0.0056	0.0041	0.00485	0.015 g	0
Lead, ICAP (mg/L)	Filtered	79	1	0.065	0.065	0.065	0.015 g	1
Magnesium, ICAP (mg/L)		79	79	230	2.8	30.47722	NR	NA
Magnesium, ICAP (mg/L)	Filtered	79	79	230	2.9	30.33418	NR	NA
Manganese, ICAP (mg/L)		79	78	5.4	0.0013	0.214454	0.050	31
Manganese, ICAP (mg/L)	Filtered	79	70	5.9	0.0011	0.226739	0.050	25
Molybdenum, ICAP (mg/L)	Filtered	79	1	0.011	0.011	0.011	NR	NA
Nickel, ICAP (mg/L)		79	11	0.12	0.011	0.043545	0.100 h	2
Nickel, ICAP (mg/L)	Filtered	79	8	0.14	0.01	0.04325	0.100 h	2
Potassium, ICAP (mg/L)		79	73	24	0.69	3.647808	NR	NA
Potassium, ICAP (mg/L)	Filtered	79	74	25	0.64	3.597838	NR	NA

Table 4.4 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Selenium, ICAP (mg/L)		79	6	0.11	0.055	0.092667	0.05	6
Selenium, ICAP (mg/L)	Filtered	79	10	0.12	0.057	0.0727	0.05	10
Silver, ICAP (mg/L)	Filtered	79	1	0.0073	0.0073	0.0073	0.10	0
Sodium, ICAP (mg/L)		79	79	1200	0.47	49.73709	NR	NA
Sodium, ICAP (mg/L)	Filtered	79	79	1200	0.46	49.96038	NR	NA
Strontium, ICAP (mg/L)		79	79	14	0.017	0.842595	NR	NA
Strontium, ICAP (mg/L)	Filtered	79	79	13	0.016	0.833797	NR	NA
Uranium (mg/L)		79	59	0.14	0.00067	0.026197	0.020	18
Uranium (mg/L)	Filtered	79	59	0.14	0.00051	0.026103	0.020	18
Vanadium, ICAP (mg/L)		79	2	0.012	0.011	0.0115	NR	NA
Zinc, ICAP (mg/L)		79	69	0.19	0.002	0.013855	5.000	0
Zinc, ICAP (mg/L)	Filtered	79	56	0.036	0.0021	0.009007	5.000	0
Conductivity, field measurement (µmhos/cm)		77	NA	6900	1.5	717.5253	NR	NA
Dissolved oxygen, field measurement (ppm)		77	NA	21.5	0.2	5.322208	NR	NA
pH, field measurement (pH units)		77	NA	8.7	6.4	7.385714	6.5/8.5	2
Redox, field measurement (MV)		54	NA	272	19	133.0927	NR	NA
Static water level (ft-TOC)		50	50	–4.81	–88.98	–35.1246	NR	NA
Water temperature, field measurement (°C)		77	NA	23.5	6.4	14.22597	NR	NA

Table 4.4 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Alkalinity-HCO_3 (mg/L)		79	79	337	20	201.6835	NR	NA
Conductivity (µmhos/cm)		79	79	8290	136	898.1519	NR	NA
Conductivity, Rep. 2 (µmhos/cm)		8	8	1920	279	812.875	NR	NA
Dissolved solids (mg/L)		79	79	6208	76	647.0127	500.000	25
pH (pH units)		79	79	8.3	7.1	7.632911	NR	NA
pH, Rep. 2 (pH units)		8	8	8.2	7.4	7.7875	NR	NA
Total suspended solids (mg/L)		79	48	126	1	13.25	NR	NA
Turbidity (NTU)		79	79	95	0.1	11.65506	1.0	66
^{129}I, X-10 lab (Bq/L)		12	12	0.1	0.01	0.0925	NR	NA
^{137}Cs (pCi/L)		1	1	13 i	13 i	13	120.000	0
^{234}U (pCi/L)		12	12	1.01	0	0.580025	20.000	0
^{235}U (pCi/L)		12	12	74.2 E	–19.2 F	10.22125	24.000	2
^{237}Np (pCi/L)		12	12	0.7	0	0.138833	1.200	0
^{238}Pu (pCi/L)		12	12	0.396 J	0	0.1406	1.600	0
^{238}U (pCi/L)		12	12	1.28	0	0.2275	24.000	0
^{239}Pu (pCi/L)		12	12	0.445 J	0	0.125917	1.200	0
^{241}Am (pCi/L)		12	12	2.12	0	0.533975	1.20	2
^{99}Tc (pCi/L)		26	26	994	–63.3	106.4308	4000.000	0
Gross alpha (pCi/L)		79	79	51.2	–24.4	8.056149	15 n	16
Gross beta (pCi/L)		79	79	694	–2.37	36.19656	50 g	8

Table 4.4 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Radium, X-10 lab (Bq/L)		12	12	0.22	–0.019	0.078833	0.15	2
Strontium (pCi/L)		26	26	60.3	–16.2	3.192346	8 p	5
Tritium, X-10 lab (Bq/L)		26	26	21	–20	–3.07692	20000 p	0
1,1,1-Trichloroethane (µg/L)		81	3	2 J	1 J	1.333333	200.000	0
1,1-Dichloroethene (µg/L)		81	5	49 s	1 J	21	7.000	2
1,2-Dichloroethane (µg/L)		81	1	4 JB	4 JB	4	5.000	0
1,2-Dichloroethene (µg/L)		75	24	23	2 J	4.125	70.	0
2-Butanone (µg/L)		81	6	15	8 JB	10.33333	NR	NA
Acetone (µg/L)		81	3	11	2 JB	6.666667	NR	NA
Benzene (µg/L)		81	2	49 s	49 s	49	5.000	2
Carbon tetrachloride (µg/L)		81	9	4 J	1 J	1.777778	5.000	0
Chlorobenzene (µg/L)		81	2	51 s	51 s	51	100.000	0
Chloroform (µg/L)		81	10	1 J	1 J	1	100.000	0
Ethylbenzene (µg/L)		81	1	1 J	1 J	1	700.000	0
Methylene chloride (µg/L)		81	2	2 J	1 JB	1.5	5.000	0
Tetrachloroethene (µg/L)		81	15	6 J	1 J	3	5.000	1
Toluene (µg/L)		81	6	51 s	1 JB	18.33333	1000.00	0
Trichloroethene (µg/L)		81	34	150	1 J	37.02941	5.000	24
Xylenes (µg/L)		81	2	3 JB	1 J	2	10000.0	0

Table 4.5. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=BC Location Description=Oil Landfarm WMA

Variable	Filtered samples	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		23	22	0.11	0.0058	0.028209	NR	NA
Lithium, ICAP (mg/L)	Filtered	23	20	0.061	0.0042	0.024365	NR	NA
Chloride (mg/L)		45	45	121	1.17	13.82644	250.000	0
Fluoride (mg/L)		43	17	1.8	0.1	0.467647	4.000	0
Nitrate nitrogen (mg/L)		47	28	2210	0.341	269.5317	10.000	17
Sulfate (mg/L)		45	45	120	3.5	13.50222	250.000	0
Aluminum, ICAP (mg/L)		43	41	48	0.026	5.454561	0.2	32
Aluminum, ICAP (mg/L)	Filtered	43	20	0.83	0.022	0.10635	0.2	2
Antimony, ICAP (mg/L)		43	1	0.062	0.062	0.062	0.006	1
Antimony, ICAP (mg/L)	Filtered	43	1	0.064	0.064	0.064	0.006	1
Arsenic, ICAP (mg/L)		43	2	0.063	0.052	0.0575	0.050	2
Arsenic, ICAP (mg/L)	Filtered	43	1	0.052	0.052	0.052	0.050	1
Barium, ICAP (mg/L)		43	43	3	0.021	0.558023	2.000	5
Barium, ICAP (mg/L)	Filtered	43	43	2.4	0.015	0.448977	2.000	4
Beryllium, ICAP (mg/L)		43	10	0.0063	0.00044	0.002283	0.004	2
Boron, ICAP (mg/L)		43	42	2.1	0.0061	0.156464	NR	NA
Boron, ICAP (mg/L)	Filtered	43	41	2.1	0.004	0.153017	NR	NA
Cadmium, AAS (mg/L)		23	1	0.0027	0.0027	0.0027	0.005	0
Cadmium, AAS (mg/L)	Filtered	23	1	0.014	0.014	0.014	0.005	1
Cadmium, ICAP (mg/L)		43	2	0.0032	0.0032	0.0032	0.005	0
Cadmium, ICAP (mg/L)	Filtered	43	1	0.014	0.014	0.014	0.005	1
Calcium, ICAP (mg/L)		43	43	1200	1.6	171.7744	NR	NA

Table 4.5 (continued)

Variable	Filtered samples	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Calcium, ICAP (mg/L)	Filtered	43	43	1100	1.4	161.5488	NR	NA
Chromium, AAS (mg/L)		23	5	0.13	0.022	0.0682	0.1	2
Chromium, ICAP (mg/L)		43	13	1.3	0.01	0.124846	0.1	1
Chromium, ICAP (mg/L)	Filtered	43	2	0.046	0.024	0.035	0.1	0
Cobalt, ICAP (mg/L)		43	8	0.026	0.0085	0.016963	NR	NA
Cobalt, ICAP (mg/L)	Filtered	43	3	0.014	0.0055	0.008533	NR	NA
Copper, ICAP (mg/L)		43	21	0.21	0.0041	0.024695	1.3 g	0
Copper, ICAP (mg/L)	Filtered	43	13	0.022	0.0047	0.0091	1.3 g	0
Iron, ICAP (mg/L)		43	42	40	0.0076	6.038333	0.300	34
Iron, ICAP (mg/L)	Filtered	43	27	10	0.0058	0.486704	0.300	3
Lead, AAS (mg/L)		23	11	0.059	0.0049	0.017955	0.015 g	3
Lead, ICAP (mg/L)		43	3	0.1	0.051	0.075667	0.015 g	3
Magnesium, ICAP (mg/L)		43	43	78	0.57	17.45651	NR	NA
Magnesium, ICAP (mg/L)	Filtered	43	43	74	0.32	15.59558	NR	NA
Manganese, ICAP (mg/L)		43	43	6	0.0018	0.331184	0.050	21
Manganese, ICAP (mg/L)	Filtered	43	31	6.1	0.0013	0.229323	0.050	3
Mercury, CVAA (mg/L)		43	1	0.0002	0.0002	0.0002	0.002	0
Molybdenum, ICAP (mg/L)		43	2	0.027	0.013	0.02	NR	NA
Molybdenum, ICAP (mg/L)	Filtered	43	1	0.017	0.017	0.017	NR	NA
Nickel, ICAP (mg/L)		43	11	0.71	0.012	0.094182	0.100 h	1
Nickel, ICAP (mg/L)	Filtered	43	3	0.048	0.01	0.032333	0.100 h	0

Table 4.5 (continued)

Variable	Filtered samples	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Potassium, ICAP (mg/L)		43	43	15	0.71	3.453721	NR	NA
Potassium, ICAP (mg/L)	Filtered	43	42	10	0.63	2.418095	NR	NA
Selenium, ICAP (mg/L)		43	4	0.15	0.06	0.09875	0.05	4
Selenium, ICAP (mg/L)	Filtered	43	1	0.066	0.066	0.066	0.05	1
Silver, ICAP (mg/L)		43	2	0.0074	0.0061	0.00675	0.10	0
Silver, ICAP (mg/L)	Filtered	43	1	0.0065	0.0065	0.0065	0.10	0
Sodium, ICAP (mg/L)		43	43	210	0.83	41.18047	NR	NA
Sodium, ICAP (mg/L)	Filtered	43	43	180	0.72	40.38744	NR	NA
Strontium, ICAP (mg/L)		43	43	4.2	0.03	0.628349	NR	NA
Strontium, ICAP (mg/L)	Filtered	43	43	2.8	0.03	0.53114	NR	NA
Uranium (mg/L)		43	21	0.87	0.00062	0.045337	0.020	1
Uranium (mg/L)	Filtered	43	17	0.5	0.0006	0.032355	0.020	1
Vanadium, ICAP (mg/L)		43	12	0.053	0.0064	0.0212	NR	NA
Vanadium, ICAP (mg/L)	Filtered	43	3	0.013	0.006	0.008967	NR	NA
Zinc, ICAP (mg/L)		43	39	0.17	0.003	0.033559	5.000	0
Zinc, ICAP (mg/L)	Filtered	43	31	0.15	0.0022	0.014226	5.000	0
Conductivity, field measurement (µmhos/cm)		47	NA	13300	6.5	1323.543	NR	NA
Dissolved oxygen, field measurement (ppm)		47	NA	8.9	0.5	3.361702	NR	NA
pH, field measurement (pH units)		47	NA	9.7	6.4	7.523404	6.5/8.5	10

Table 4.5 (continued)

Variable	Filtered samples	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Redox, field measurement (MV)		47	NA	268	35	165.6591	NR	NA
Static water level (ft-TOC)		46	46	–3.6	–33.81	–15.8767	NR	NA
Water temperature, field measurement (°C)		47	NA	20.9	10.1	15.80426	NR	NA
Alkalinity-CO_3 (mg/L)		43	8	78	10	40	NR	NA
Alkalinity-HCO_3 (mg/L)		43	43	453	54	202.8837	NR	NA
Conductivity (µmhos/cm)		43	43	6130	133	1122.302	NR	NA
Dissolved solids (mg/L)		43	43	7468	114	985.3721	500.000	15
pH (pH units)		43	43	9.3	6.79	7.74	NR	NA
Total suspended solids (mg/L)		43	36	5550	1.5	303.7361	NR	NA
Turbidity (NTU)		43	43	1350	0.3	153.8209	1.0	40
^{129}I, X-10 lab (Bq/L)		13	13	0.4	–0.5	0.001538	NR	NA
^{137}Cs (pCi/L)		2	2	106	6.22	56.11	120.000	0
$^{231+234}Th$ (pCi/L)		5	5	103	61.1 H	83.28	400.000	0
^{234}U (pCi/L)		27	27	371	0	22.6573	20.000	2
^{235}U (pCi/L)		27	27	10.2	–6.96 F	1.680741	24.000	0
^{237}Np (pCi/L)		13	13	0.284	0	0.084823	1.200	0
^{238}Pu (pCi/L)		13	13	0.527	0*	0.257215	1.600	0
^{238}U (pCi/L)		27	27	65.6	0	4.079719	24.000	2
^{239}Pu (pCi/L)		13	13	0.203	0	0.030285	1.200	0
^{241}Am (pCi/L)		13	13	2.11	0	0.484677	1.20	2
^{40}K (pCi/L)		3	3	93.8	42.7 i	75.5	NR	NA
^{99}Tc (pCi/L)		27	27	1160	–19.5	192.2944	4000.000	0

Table 4.5 (continued)

Variable	Filtered samples	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Gross alpha (pCi/L)		45	45	188	–3.51	11.5051	15 n	6
Gross beta (pCi/L)		45	45	619	–3.78	81.5002	50 g	11
Radium, X-10 lab (Bq/L)		13	13	0.046	–0.028	0.009385	0.15	0
Strontium (pCi/L)		27	27	14	–48.7	0.596074	8 p	6
Tritium, X-10 lab (Bq/L)		27	27	38	–22	7.674074	20000 p	0
1,1,1-Trichloroethane (µg/L)		48	2	1 J	1 J	1	200.000	0
1,1-Dichloroethane (µg/L)		48	3	4 JD	1 J	3	NR	NA
1,1-Dichloroethene (µg/L)		48	3	5 JD	2 J	3.666667	7.000	0
1,2-Dichloroethane (µg/L)		48	4	7 J	3 JB	4.5	5.000	1
1,2-Dichloroethene (µg/L)		41	7	130 D	3 J	41.57143	70.	2
2-Butanone (µg/L)		48	1	10 J	10 J	10	NR	NA
Acetone (µg/L)		48	3	173	24	82	NR	NA
Benzene (µg/L)		48	2	11 JD	5 J	8	5.000	1
Carbon tetrachloride (µg/L)		48	2	3 J	1 J	2	5.000	0
Chloroform (µg/L)		48	12	18 JD	1 J	4.666667	100.000	0
Methylene chloride (µg/L)		48	3	4 J	3 JB	3.666667	5.000	0
Tetrachloroethene (µg/L)		48	5	220 D	1 J	90.6	5.000	3
Trichloroethene (µg/L)		48	7	410 D	12	152.8571	5.000	7

Table 4.6. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=BC Location Description=Rust Spoil Area

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		2	1	0.014	0.014	0.014	NR	NA
Lithium, ICAP (mg/L)	Filtered	2	1	0.013	0.013	0.013	NR	NA
Chloride (mg/L)		6	6	3.1	1.9	2.575	250.000	0
Fluoride (mg/L)		6	4	0.3	0.1	0.1975	4.000	0
Nitrate nitrogen (mg/L)		6	6	0.78	0.497	0.6345	10.000	0
Sulfate (mg/L)		6	6	6.3	3.6	4.35	250.000	0
Aluminum, ICAP (mg/L)		6	5	5	0.056	2.8512	0.2	4
Aluminum, ICAP (mg/L)	Filtered	6	3	2.5	2.1	2.333333	0.2	3
Antimony, ICAP (mg/L)	Filtered	6	1	0.056	0.056	0.056	0.006	1
Barium, ICAP (mg/L)		6	6	0.037	0.014	0.0245	2.000	0
Barium, ICAP (mg/L)	Filtered	6	6	0.028	0.011	0.0205	2.000	0
Boron, ICAP (mg/L)		6	4	0.018	0.0079	0.011625	NR	NA
Boron, ICAP (mg/L)	Filtered	6	5	0.044	0.0072	0.02224	NR	NA
Calcium, ICAP (mg/L)		6	6	160	75	107.3333	NR	NA
Calcium, ICAP (mg/L)	Filtered	6	6	130	71	92	NR	NA
Chromium, ICAP (mg/L)		6	3	0.084	0.02	0.042667	0.1	0
Chromium, ICAP (mg/L)	Filtered	6	2	0.074	0.014	0.044	0.1	0
Copper, ICAP (mg/L)		6	4	0.023	0.0044	0.0136	1.3 g	0
Copper, ICAP (mg/L)	Filtered	6	5	0.021	0.004	0.00984	1.3 g	0
Iron, ICAP (mg/L)		6	6	5.5	0.013	1.7305	0.300	3
Iron, ICAP (mg/L)	Filtered	6	1	0.0058	0.0058	0.0058	0.300	0
Magnesium, ICAP (mg/L)		6	6	6.3	0.049	3.274833	NR	NA

Table 4.6 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Magnesium, ICAP (mg/L)	Filtered	6	6	6	0.032	2.7525	NR	NA
Manganese, ICAP (mg/L)		6	4	0.11	0.0044	0.0451	0.050	1
Manganese, ICAP (mg/L)	Filtered	6	3	0.0074	0.0044	0.0059	0.050	0
Molybdenum, ICAP (mg/L)		6	1	0.013	0.013	0.013	NR	NA
Potassium, ICAP (mg/L)		6	6	7.9	1.7	4.883333	NR	NA
Potassium, ICAP (mg/L)	Filtered	6	6	7.6	1.4	4.466667	NR	NA
Selenium, ICAP (mg/L)		6	1	0.057	0.057	0.057	0.05	1
Sodium, ICAP (mg/L)		6	6	12	2.2	5.65	NR	NA
Sodium, ICAP (mg/L)	Filtered	6	6	12	2.2	5.716667	NR	NA
Strontium, ICAP (mg/L)		6	6	0.37	0.069	0.200833	NR	NA
Strontium, ICAP (mg/L)	Filtered	6	6	0.32	0.068	0.176167	NR	NA
Uranium (mg/L)		6	1	0.0007	0.0007	0.0007	0.020	0
Uranium (mg/L)	Filtered	6	1	0.0006	0.0006	0.0006	0.020	0
Vanadium, ICAP (mg/L)		6	4	0.017	0.011	0.01275	NR	NA
Vanadium, ICAP (mg/L)	Filtered	6	3	0.012	0.006	0.009333	NR	NA
Zinc, ICAP (mg/L)		6	5	0.038	0.0092	0.02644	5.000	0
Zinc, ICAP (mg/L)	Filtered	6	6	0.08	0.0032	0.01775	5.000	0
Conductivity, field measurement (µmhos/cm)		6	NA	1723	424	968.6667	NR	NA
Dissolved oxygen, field measurement (ppm)		6	NA	7.7	2.8	5.333333	NR	NA
pH, field measurement (pH units)		6	NA	12.1	7	8.816667	6.5/8.5	2

Table 4.6 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Redox, field measurement (MV)		6	NA	181	143	163.6667	NR	NA
Static water level (ft-TOC)		6	6	–33.12	–39.95	–36.5867	NR	NA
Water temperature, field measurement (°C)		6	NA	19.8	12.9	16.26667	NR	NA
Alkalinity-CO_3 (mg/L)		6	3	62	46	54	NR	NA
Alkalinity-HCO_3 (mg/L)		6	3	230	223	227	NR	NA
Conductivity (µmhos/cm)		6	6	2150	422	991.5	NR	NA
Dissolved solids (mg/L)		6	6	440	108	277	500.000	0
pH (pH units)		6	6	12	7.53	9.805	NR	NA
Total suspended solids (mg/L)		6	3	89	2	43.66667	NR	NA
Turbidity (NTU)		6	6	36	0.45	8.658333	1.0	3
Gross alpha (pCi/L)		6	6	2.05	–0.824	0.636	15 n	0
Gross beta (pCi/L)		6	6	8.82	0.379	5.534833	50 g	0
1,1-Dichloroethene (µg/L)		6	1	1 J	1 J	1	7.000	0
1,2-Dichloroethene (µg/L)		6	1	1 J	1 J	1	70	0
2-Butanone (µg/L)		6	1	10 JB	10 JB	10	NR	NA
Carbon tetrachloride (µg/L)		6	1	1 J	1 J	1	5.000	0
Chloroform (µg/L)		6	2	2 J	2 J	2	100.000	0
Trichloroethene (µg/L)		6	6	74	11	39.5	5.000	6

Table 4.7. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=BC Location Description=S-3 Site

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		10	6	0.15	0.007	0.0425	NR	NA
Lithium, ICAP (mg/L)	Filtered	10	6	0.14	0.0057	0.038783	NR	NA
Chloride (mg/L)		18	18	300	1.4	47.90556	250.000	1
Fluoride (mg/L)		18	10	6.7	0.1	1.327	4.000	2
Nitrate nitrogen (mg/L)		22	19	830	0.25	88.08316	10.000	8
Sulfate (mg/L)		18	17	45	1.2	15.47647	250.000	0
Aluminum, ICAP (mg/L)		18	16	18	0.029	2.547625	0.2	7
Aluminum, ICAP (mg/L)	Filtered	18	11	16	0.021	3.154818	0.2	4
Arsenic, ICAP (mg/L)		18	1	0.18	0.18	0.18	0.050	1
Arsenic, ICAP (mg/L)	Filtered	18	2	0.18	0.065	0.1225	0.050	2
Barium, ICAP (mg/L)		18	18	1.1	0.01	0.295778	2.000	0
Barium, ICAP (mg/L)	Filtered	18	18	1.5	0.0091	0.301894	2.000	0
Beryllium, ICAP (mg/L)		18	4	0.012	0.00031	0.006728	0.004	2
Beryllium, ICAP (mg/L)	Filtered	18	3	0.012	0.0035	0.008833	0.004	2
Boron, ICAP (mg/L)		18	18	0.13	0.0068	0.038711	NR	NA
Boron, ICAP (mg/L)	Filtered	18	18	0.17	0.008	0.041311	NR	NA
Cadmium, AAS (mg/L)		12	3	0.058	0.005	0.038667	0.005	2
Cadmium, AAS (mg/L)	Filtered	12	3	0.061	0.0049	0.0383	0.005	2
Cadmium, ICAP (mg/L)		18	3	0.058	0.0045	0.0395	0.005	2
Cadmium, ICAP (mg/L)	Filtered	18	3	0.059	0.0036	0.038533	0.005	2
Calcium, ICAP (mg/L)		18	18	780	21	129.0556	NR	NA
Calcium, ICAP (mg/L)	Filtered	18	18	740	21	127.5	NR	NA

Table 4.7 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Chromium, AAS (mg/L)		12	1	0.022	0.022	0.022	0.1	0
Chromium, ICAP (mg/L)		18	1	0.013	0.013	0.013	0.1	0
Cobalt, ICAP (mg/L)		18	3	0.23	0.029	0.156333	NR	NA
Cobalt, ICAP (mg/L)	Filtered	18	3	0.22	0.032	0.154	NR	NA
Copper, ICAP (mg/L)		18	10	0.4	0.0047	0.05294	1.3 g	0
Copper, ICAP (mg/L)	Filtered	18	11	0.037	0.0043	0.012464	1.3 g	0
Iron, ICAP (mg/L)		18	18	2.4	0.024	0.531444	0.300	10
Iron, ICAP (mg/L)	Filtered	18	14	0.49	0.0056	0.092643	0.300	1
Lead, AAS (mg/L)		12	1	0.011	0.011	0.011	0.015 g	0
Magnesium, ICAP (mg/L)		18	18	190	1.7	23.21667	NR	NA
Magnesium, ICAP (mg/L)	Filtered	18	18	190	1.7	23.09444	NR	NA
Manganese, ICAP (mg/L)		18	17	11	0.0014	1.504924	0.050	6
Manganese, ICAP (mg/L)	Filtered	18	15	11	0.0016	1.69974	0.050	6
Mercury CVAA (mg/L)		18	1	0.00042	0.00042	0.00042	0.002	0
Nickel, ICAP (mg/L)		18	3	0.64	0.071	0.440333	0.100 h	2
Nickel, ICAP (mg/L)	Filtered	18	3	0.64	0.063	0.437667	0.100 h	2
Potassium, ICAP (mg/L)		18	18	17	0.71	4.578333	NR	NA
Potassium, ICAP (mg/L)	Filtered	18	17	17	0.78	4.782353	NR	NA
Selenium, ICAP (mg/L)		18	7	0.15	0.053	0.090286	0.05	7
Selenium, ICAP (mg/L)	Filtered	18	2	0.077	0.062	0.0695	0.05	2
Silver, ICAP (mg/L)	Filtered	18	1	0.007	0.007	0.007	0.10	0
Sodium, ICAP (mg/L)		18	18	94	0.71	21.69278	NR	NA

Table 4.7 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Sodium, ICAP (mg/L)	Filtered	18	18	100	0.68	22.12222	NR	NA
Strontium, ICAP (mg/L)		18	18	16	0.018	1.102222	NR	NA
Strontium, ICAP (mg/L)	Filtered	18	18	17	0.018	1.160611	NR	NA
Uranium (mg/L)		18	10	2	0.00072	0.36246	0.020	2
Uranium (mg/L)	Filtered	18	9	2	0.00072	0.424359	0.020	2
Zinc, ICAP (mg/L)		18	16	0.21	0.0022	0.041763	5.000	0
Zinc, ICAP (mg/L)	Filtered	18	18	0.2	0.002	0.033811	5.000	0
Conductivity, field measurement (µmhos/cm)		18	NA	5690	126	950.9444	NR	NA
Dissolved oxygen, field measurement (ppm)		18	NA	9	0.8	3.488889	NR	NA
pH, field measurement (pH units)		18	NA	7.6	4.1	6.761111	6.5/8.5	3
Redox, field measurement (MV)		18	NA	298	139	189.875	NR	NA
Static water level (ft-TOC)		18	18	–6.1	–26.15	–15.0517	NR	NA
Water temperature, field measurement (°C)		18	NA	22.4	11.8	16.48889	NR	NA
Alkalinity-HCO_3 (mg/L)		17	16	252	8	159.0625	NR	NA
Conductivity (µmhos/cm)		18	18	5800	132	994.6111	NR	NA
Conductivity, rep. 2 (µmhos/cm)		1	1	329	329	329	NR	NA
Dissolved solids (mg/L)		18	18	5316	84	802.6667	500.000	6
pH (pH units)		18	18	8.1	4.3	7.072222	NR	NA
pH, rep. 2 (pH units)		1	1	7.7	7.7	7.7	NR	NA

Table 4.7 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Total suspended solids (mg/L)		18	11	234	1	28.40909	NR	NA
Turbidity (NTU)		18	18	1400	0.3	84.55611	1.0	13
^{129}I, X-10 lab (Bq/L)		8	8	0.1	0.01	0.08875	NR	NA
^{137}Cs (pCi/L)		1	1	14.8	14.8	14.8	120.000	0
$^{231+234}$Th (pCi/L)		1	1	490 H	490 H	490	400.000	1
^{234}U (pCi/L)		8	8	271 D	–0.227	66.48041	20.000	2
^{235}U (pCi/L)		8	8	23.9	–10.6 F	5.52	24.000	0
^{237}Np (pCi/L)		8	8	20.2	0	3.943575	1.200	3
^{238}Pu (pCi/L)		8	8	0.243	0	0.1475	1.600	0
^{238}U (pCi/L)		8	8	603 D	–0.118	144.6673	24.000	2
^{239}Pu (pCi/L)		8	8	0.637 J	0	0.119225	1.200	0
^{241}Am (pCi/L)		8	8	1.78	0 J	0.71975	1.20	2
^{40}K (pCi/L)		1	1	76.1	76.1	76.1	NR	NA
^{99}Tc (pCi/L)		8	8	1350	–15.8	330.2613	4000.000	0
Gross alpha (pCi/L)		18	18	852	–0.639	74.0016	15 n	2
Gross beta (pCi/L)		18	18	1130	–3.07	138.443	50 g	4
Radium, X-10 lab (Bq/L)		8	8	0.34	–0.018	0.080875	0.15	2
Strontium (pCi/L)		8	8	9.72	–14.1	1.0645	8 p	2
Tritium , X-10 lab (Bq/L)		8	8	21	–1	10.5	20000 p	0
1,1,1-Trichloroethane (µg/L)		24	3	3 J	2 J	2.666667	200.000	0
1,1-Dichloroethane (µg/L)		24	3	5 J	5 J	5	NR	NA
1,1-Dichloroethene (µg/L)		24	6	50 s	47 s	49	7.000	6

Table 4.7 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
2-Butanone (µg/L)		24	2	15	13	14	NR	NA
Acetone (µg/L)		24	1	7 J	7 J	7	NR	NA
Benzene (µg/L)		24	6	49 s	47 s	48.16667	5.000	6
Chlorobenzene (µg/L)		24	6	51 s	48 s	49.66667	100.000	0
Chloroform (µg/L)		24	3	1 J	1 J	1	100.000	0
Tetrachloroethene (µg/L)		24	6	37	1 J	12.66667	5.000	2
Toluene (µg/L)		24	6	50 s	48 s	48.83333	1000.00	0
Trichloroethene (µg/L)		24	6	50 s	48 s	49.33333	5.000	6

Table 4.8. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=BC Location Description=Spoil Area I

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Chloride (mg/L)		7	7	15.4	1.7	6.442857	250.000	0
Fluoride (mg/L)		7	1	0.11	0.11	0.11	4.000	0
Nitrate nitrogen (mg/L)		7	7	16.8	0.3	6.958571	10.000	3
Sulfate (mg/L)		7	7	66.4	4.4	21.31429	250.000	0
Aluminum, ICAP (mg/L)		7	5	0.14	0.025	0.0646	0.2	0
Aluminum, ICAP (mg/L)	Filtered	7	3	0.053	0.03	0.039	0.2	0
Antimony, ICAP (mg/L)		7	1	0.084	0.084	0.084	0.006	1
Barium, ICAP (mg/L)		7	7	0.061	0.02	0.038143	2.000	0
Barium, ICAP (mg/L)	Filtered	7	7	0.048	0.019	0.033714	2.000	0
Boron, ICAP (mg/L)		7	7	0.11	0.0076	0.034686	NR	NA
Boron, ICAP (mg/L)	Filtered	7	7	0.075	0.01	0.036714	NR	NA
Cadmium, ICAP (mg/L)		7	1	0.0032	0.0032	0.0032	0.005	0
Calcium, ICAP (mg/L)		7	7	120	49	80.85714	NR	NA
Calcium, ICAP (mg/L)	Filtered	7	7	100	48	74	NR	NA
Copper, ICAP (mg/L)		7	3	0.014	0.0063	0.009533	1.3 g	0
Copper, ICAP (mg/L)	Filtered	7	4	0.024	0.0048	0.01075	1.3 g	0
Iron, ICAP (mg/L)		7	5	1.7	0.0054	0.48048	0.300	2
Iron, ICAP (mg/L)	Filtered	7	2	0.33	0.15	0.24	0.300	1
Magnesium, ICAP (mg/L)		7	7	25	11	17.14286	NR	NA
Magnesium, ICAP (mg/L)	Filtered	7	7	23	8	16	NR	NA
Manganese, ICAP (mg/L)		7	6	0.016	0.0013	0.00555	0.050	0
Manganese, ICAP (mg/L)	Filtered	7	6	0.01	0.0013	0.003133	0.050	0

Table 4.8 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Nickel, ICAP (mg/L)	Filtered	7	1	0.036	0.036	0.036	0.100 h	0
Potassium, ICAP (mg/L)		7	7	4.3	0.7	2.457143	NR	NA
Potassium, ICAP (mg/L)	Filtered	7	7	3.5	0.81	1.972857	NR	NA
Selenium, ICAP (mg/L)		7	1	0.08	0.08	0.08	0.05	1
Selenium, ICAP (mg/L)	Filtered	7	1	0.08	0.08	0.08	0.05	1
Silver, ICAP (mg/L)	Filtered	7	1	0.0069	0.0069	0.0069	0.10	0
Sodium, ICAP (mg/L)		7	7	9.7	2.4	5.157143	NR	NA
Sodium, ICAP (mg/L)	Filtered	7	7	6.5	2.4	4.471429	NR	NA
Strontium, ICAP (mg/L)		7	7	0.21	0.036	0.111857	NR	NA
Strontium, ICAP (mg/L)	Filtered	7	7	0.15	0.034	0.097571	NR	NA
Uranium (mg/L)		7	5	0.0024	0.00071	0.001482	0.020	0
Uranium (mg/L)	Filtered	7	5	0.0022	0.00068	0.001476	0.020	0
Zinc, ICAP (mg/L)		7	6	0.017	0.005	0.012167	5.000	0
Zinc, ICAP (mg/L)	Filtered	7	5	0.031	0.005	0.01758	5.000	0
Conductivity, field measurement (µmhos/cm)		7	NA	798	389	535.5714	NR	NA
Dissolved oxygen, field measurement (ppm)		7	NA	8.5	2.4	5.228571	NR	NA
pH, field measurement (pH units)		7	NA	7.9	6.9	7.414286	6.5/8.5	0
Redox, field measurement (MV)		7	NA	202	149	172.8571	NR	NA
Static water level (ft-TOC)		7	7	–53.4	–79.23	–65.6143	NR	NA

Table 4.8 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Water temperature, field measurement (°C)		7	NA	17.8	13.4	16.12857	NR	NA
Alkalinity-HCO_3 (mg/L)		7	7	261	203	231.1429	NR	NA
Conductivity (µmhos/cm)		7	7	745	392	529.2857	NR	NA
Dissolved solids (mg/L)		7	7	448	204	313.4286	500.000	0
pH (pH units)		7	7	8.1	6.82	7.531429	NR	NA
Turbidity (NTU)		7	7	1.7	0.05	0.572857	1.0	1
Gross alpha (pCi/L)		7	7	2.16	0.478	1.265857	15 n	0
Gross beta (pCi/L)		7	7	70	0.464	20.73914	50 g	1
1,2-Dichloroethene (µg/L)		7	4	15	7 J	11.5	70	0
2-Butanone (µg/L)		7	2	10 J	9 J	9.5	NR	NA
Chloroform (µg/L)		7	4	2 J	1 J	1.75	100.000	0
Tetrachloroethene (µg/L)		7	4	27	14	20.5	5.000	4
Trichloroethene (µg/L)		7	4	12	6 J	9.25	5.000	4

Table 4.9. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=CR Location Description=Ash Disposal Basin

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Silicon, ICAP (mg/L)		1	1	4	4	4	NR	NA
Silicon, ICAP (mg/L)	Filtered	1	1	4	4	4	NR	NA
Chloride (mg/L)		9	9	2.2	1.33	1.738889	250.000	0
Nitrate nitrogen (mg/L)		8	5	0.45	0.26	0.3748	10.000	0
Sulfate (mg/L)		9	9	4.4	1.6	2.855556	250.000	0
Aluminum, ICAP (mg/L)		9	4	0.32	0.022	0.1365	0.2	1
Aluminum, ICAP (mg/L)	Filtered	9	3	0.098	0.032	0.073667	0.2	0
Barium, ICAP (mg/L)		9	9	0.054	0.0068	0.026167	2.000	0
Barium, ICAP (mg/L)	Filtered	9	9	0.053	0.0064	0.025456	2.000	0
Boron, ICAP (mg/L)		9	9	0.11	0.0044	0.034433	NR	NA
Boron, ICAP (mg/L)	Filtered	9	9	0.072	0.0062	0.020389	NR	NA
Calcium, ICAP (mg/L)		9	9	37	25	31.55556	NR	NA
Calcium, ICAP (mg/L)	Filtered	9	9	36	25	31.33333	NR	NA
Iron, ICAP (mg/L)		9	9	1.3	0.0088	0.2982	0.300	3
Iron, ICAP (mg/L)	Filtered	9	8	0.067	0.0056	0.018913	0.300	0
Magnesium, ICAP (mg/L)		9	9	23	14	18.55556	NR	NA
Magnesium, ICAP (mg/L)	Filtered	9	9	22	14	18.44444	NR	NA
Manganese, ICAP (mg/L)		9	9	0.017	0.0013	0.0057	0.050	0
Manganese, ICAP (mg/L)	Filtered	9	6	0.015	0.0019	0.00555	0.050	0
Potassium, ICAP (mg/L)		9	8	4.6	0.71	1.99875	NR	NA
Potassium, ICAP (mg/L)	Filtered	9	9	4.2	0.65	1.977778	NR	NA
Sodium, ICAP (mg/L)		9	9	1.2	0.37	0.705556	NR	NA
Sodium, ICAP (mg/L)	Filtered	9	9	1.1	0.38	0.698889	NR	NA

Table 4.9 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Strontium, ICAP (mg/L)		9	9	0.021	0.017	0.019333	NR	NA
Strontium, ICAP (mg/L)	Filtered	9	9	0.021	0.017	0.019333	NR	NA
Zinc, ICAP (mg/L)		9	7	0.015	0.0034	0.008486	5.000	0
Zinc, ICAP (mg/L)	Filtered	9	8	0.013	0.003	0.006925	5.000	0
Conductivity, field measurement (µmhos/cm)		9	NA	438	162	297.2222	NR	NA
Dissolved oxygen, field measurement (ppm)		9	NA	8.9	3.6	5.777778	NR	NA
pH, field measurement (pH units)		9	NA	8.5	7.2	7.777778	6.5/8.5	0
Redox, field measurement (MV)		9	NA	220	89	157.8889	NR	NA
Static water level (ft-TOC)		9	9	–18.15	–31.92	–24.4144	NR	NA
Water temperature, field measurement (°C)		9	NA	16	9.5	14.38889	NR	NA
Alkalinity-HCO^3 (mg/L)		8	8	183	126	161.875	NR	NA
Conductivity (µmhos/cm)		8	8	334	232	298	NR	NA
Dissolved solids (mg/L)		8	8	214	140	177	500.000	0
pH (pH units)		8	8	8.1	7.5	7.86	NR	NA
Total organic carbon (mg/L)		8	8	4.7	1	2.55	NR	NA
Total suspended solids (mg/L)		8	3	5	2	3.5	NR	NA
Turbidity (NTU)		8	8	8.6	0.1	3.53125	1.0	6
Gross alpha (pCi/L)		9	9	1.55	–0.604	0.425778	15 n	0
Gross beta (pCi/L)		9	9	4.81	–1.99	1.758556	50 g	0

Table 4.10. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=CR Location Description=C. Ridge Security Pits

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		18	2	0.0042	0.0041	0.00415	NR	NA
Chloride (mg/L)		41	41	4.5	1.4	2.333659	250.000	0
Nitrate nitrogen (mg/L)		41	35	3.44	0.22	1.059714	10.000	0
Sulfate (mg/L)		41	36	13	1.2	4.325	250.000	0
Aluminum, ICAP (mg/L)		41	31	0.22	0.021	0.071935	0.2	2
Aluminum, ICAP (mg/L)	Filtered	41	17	0.1	0.02	0.041941	0.2	0
Antimony, ICAP (mg/L)		41	1	0.064	0.064	0.064	0.006	1
Arsenic, ICAP (mg/L)		41	1	0.069	0.069	0.069	0.050	1
Arsenic, ICAP (mg/L)	Filtered	41	1	0.083	0.083	0.083	0.050	1
Barium, ICAP (mg/L)		41	41	0.12	0.0068	0.034959	2.000	0
Barium, ICAP (mg/L)	Filtered	41	41	0.12	0.007	0.033768	2.000	0
Boron, ICAP (mg/L)		41	37	0.078	0.0044	0.017516	NR	NA
Boron, ICAP (mg/L)	Filtered	41	33	0.05	0.0046	0.01367	NR	NA
Calcium, ICAP (mg/L)		41	41	57	28	39.82927	NR	NA
Calcium, ICAP (mg/L)	Filtered	41	41	57	26	39.46341	NR	NA
Cobalt, ICAP (mg/L)	Filtered	41	1	0.0053	0.0053	0.0053	NR	NA
Copper, ICAP (mg/L)		41	9	0.012	0.0042	0.007289	1.3 g	0
Copper, ICAP (mg/L)	Filtered	41	9	0.045	0.004	0.010267	1.3 g	0
Iron, ICAP (mg/L)		41	41	6.1	0.016	0.684976	0.300	15
Iron, ICAP (mg/L)	Filtered	41	27	0.093	0.0052	0.024011	0.300	0
Lead, ICAP (mg/L)	Filtered	41	1	0.072	0.072	0.072	0.015 g	1
Magnesium, ICAP (mg/L)		41	41	34	6.9	23.3878	NR	NA

Table 4.10 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Magnesium, ICAP (mg/L)	Filtered	41	41	34	7	23.2439	NR	NA
Manganese, ICAP (mg/L)		41	36	0.085	0.0011	0.013211	0.050	3
Manganese, ICAP (mg/L)	Filtered	41	27	0.079	0.001	0.011393	0.050	2
Molybdenum, ICAP (mg/L)	Filtered	41	1	0.012	0.012	0.012	NR	NA
Nickel, ICAP (mg/L)		41	2	0.013	0.013	0.013	0.100 h	0
Potassium, ICAP (mg/L)		41	38	4.5	0.65	1.611053	NR	NA
Potassium, ICAP (mg/L)	Filtered	41	38	4.4	0.62	1.625526	NR	NA
Selenium, ICAP (mg/L)		41	3	0.097	0.064	0.077333	0.05	3
Selenium, ICAP (mg/L)	Filtered	41	4	0.089	0.054	0.069	0.05	4
Silver, ICAP (mg/L)		41	1	0.007	0.007	0.007	0.10	0
Sodium, ICAP (mg/L)		41	41	5.9	0.63	1.212683	NR	NA
Sodium, ICAP (mg/L)	Filtered	41	41	6.2	0.62	1.259512	NR	NA
Strontium, ICAP (mg/L)		41	41	0.058	0.013	0.019756	NR	NA
Strontium, ICAP (mg/L)	Filtered	41	41	0.061	0.013	0.019683	NR	NA
Uranium (mg/L)		41	10	0.0022	0.00054	0.001135	0.020	0
Uranium (mg/L)	Filtered	41	8	0.0022	0.00053	0.001215	0.020	0
Vanadium, ICAP (mg/L)		41	1	0.0056	0.0056	0.0056	NR	NA
Vanadium, ICAP (mg/L)	Filtered	41	1	0.0057	0.0057	0.0057	NR	NA
Zinc, ICAP (mg/L)		41	31	0.093	0.002	0.017052	5.000	0
Zinc, ICAP (mg/L)	Filtered	41	17	0.092	0.0023	0.018806	5.000	0

Table 4.10 (continued)

Variable	Filtered status	No samples	No detected	Max	Min	Av	Reference value	No. of measurements
Conductivity, field measurement (µmhos/cm)		41	NA	570	178	354.2683	NR	NA
Dissolved oxygen, field measurement (ppm)		41	NA	19.8	1.2	7.553659	NR	NA
pH, field measurement (pH units)		41	NA	8.5	6.5	7.790244	6.5/8.5	0
Redox, field measurement (MV)		40	NA	297	89	153.2105	NR	NA
Static water level (ft-TOC)		40	40	–78.9	–172.32	–120.825	NR	NA
Water temperature, field measurement (°C)		41	NA	19	10.1	14.43415	NR	NA
Alkalinity-HCO_3 (mg/L)		41	41	282	135	191.0488	NR	NA
Conductivity (µmhos/cm)		41	41	540	263	360.4878	NR	NA
Dissolved solids (mg/L)		41	41	332	92	197.3659	500.000	0
pH (pH units)		41	41	8.3	7.53	7.903902	NR	NA
Total suspended solids (mg/L)		41	21	24	1	3.952381	NR	NA
Turbidity (NTU)		41	41	15	0.1	3.813415	1.0	28
^{99}Tc (pCi/L)		1	1	12.5	12.5	12.5	4000.000	0
Gross alpha (pCi/L)		41	41	6.81 N	–0.51	1.638744	15 n	0
Gross beta (pCi/L)		41	41	13.4 *	–1.86	1.860527	50 g	0
Strontium (pCi/L)		1	1	–5.89	–5.89	–5.89	8 p	0
Tritium, X-10 lab (Bq/L)		1	1	7	7	7	20000 p	0
1,1,1-Trichloroethane (µg/L)		41	15	20	1 J	7.466667	200.000	0
1,1-Dichloroethane (µg/L)		41	7	17	1	7.571429	NR	NA

Table 4.10 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
1,1-Dichloroethene (µg/L)		41	8	3 J	1 J	1.875	7.000	0
1,2-Dichloroethene (µg/L)		41	4	13	9 J	12	70	0
2-Butanone (µg/L)		41	4	10 B	8 JB	9.5	NR	NA
Acetone (µg/L)		41	6	10	2 J	6.666667	NR	NA
Carbon tetrachloride (µg/L)		41	2	2 J	1 J	1.5	5.000	0
Tetrachloroethene (µg/L)		41	10	21	1 J	13.4	5.000	8
Toluene (µg/L)		41	2	8 JB	7 JB	7.5	1000.00	0
Trichloroethene (µg/L)		41	5	2 J	1 J	1.2	5.000	0

Table 4.11. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=CR Location Description=C. Ridge Sediment Disposal Basin

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		25	10	0.062	0.009	0.0249	NR	NA
Lithium, ICAP (mg/L)	Filtered	25	9	0.062	0.0084	0.0266	NR	NA
Chloride (mg/L)		41	41	3.2	1.14	1.860976	250.000	0
Fluoride (mg/L)		41	4	1	0.15	0.7475	4.000	0
Nitrate Nitrogen (mg/L)		41	34	1	0.34	0.528794	10.000	0
Sulfate (mg/L)		41	41	172	1.1	18.19927	250.000	0
Aluminum, ICAP (mg/L)		41	37	14	0.025	1.023973	0.2	14
Aluminum, ICAP (mg/L)	Filtered	41	27	0.55	0.021	0.07463	0.2	2
Barium, ICAP (mg/L)		41	41	0.14	0.0026	0.030541	2.000	0
Barium, ICAP (mg/L)	Filtered	41	41	0.087	0.0035	0.02181	2.000	0
Beryllium, ICAP (mg/L)		41	3	0.0014	0.00032	0.000697	0.004	0
Boron, ICAP (mg/L)		41	40	0.09	0.0049	0.027138	NR	NA
Boron, ICAP (mg/L)	Filtered	41	41	0.075	0.0044	0.026934	NR	NA
Calcium, ICAP (mg/L)		41	41	330	15	48.19512	NR	NA
Calcium, ICAP (mg/L)	Filtered	41	41	80	7	38.00488	NR	NA
Chromium, AAS (mg/L)		16	5	0.05	0.019	0.0298	0.1	0
Chromium, AAS (mg/L)	Filtered	16	3	0.015	0.015	0.015	0.1	0
Chromium, ICAP (mg/L)		41	6	0.034	0.013	0.023833	0.1	0
Chromium, ICAP (mg/L)	Filtered	41	3	0.021	0.017	0.018667	0.1	0
Cobalt, ICAP (mg/L)		41	1	0.012	0.012	0.012	NR	NA
Copper, ICAP (mg/L)		41	14	0.099	0.0044	0.021636	1.3 g	0
Copper, ICAP (mg/L)	Filtered	41	9	0.019	0.0041	0.008078	1.3 g	0

Table 4.11 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Iron, ICAP (mg/L)		41	38	23	0.058	1.664868	0.300	25
Iron, ICAP (mg/L)	Filtered	41	15	0.46	0.0052	0.13872	0.300	4
Lead, AAS (mg/L)		16	4	0.12	0.0051	0.036075	0.015 g	1
Lead, ICAP (mg/L)		41	1	0.16	0.16	0.16	0.015 g	1
Magnesium, ICAP (mg/L)		41	41	180	3	28.57073	NR	NA
Magnesium, ICAP (mg/L)	Filtered	41	41	43	1.2	23.64146	NR	NA
Manganese, ICAP (mg/L)		41	40	0.87	0.0011	0.04047	0.050	5
Manganese, ICAP (mg/L)	Filtered	41	20	0.015	0.0014	0.005485	0.050	0
Mercury, CVAA (mg/L)		41	1	0.00021	0.00021	0.00021	0.002	0
Molybdenum, ICAP (mg/L)		41	1	0.012	0.012	0.012	NR	NA
Nickel, ICAP (mg/L)		41	2	0.021	0.021	0.021	0.100 h	0
Potassium, ICAP (mg/L)		41	41	32	0.68	6.888049	NR	NA
Potassium, ICAP (mg/L)	Filtered	41	41	33	0.68	7.058293	NR	NA
Silver, ICAP (mg/L)	Filtered	41	2	0.0084	0.0069	0.00765	0.10	0
Sodium, ICAP (mg/L)		41	41	10	0.54	3.115854	NR	NA
Sodium, ICAP (mg/L)	Filtered	41	41	12	0.56	3.236341	NR	NA
Strontium, ICAP (mg/L)		41	41	3.4	0.012	0.287	NR	NA
Strontium, ICAP (mg/L)	Filtered	41	41	3.5	0.011	0.274683	NR	NA
Uranium (mg/L)		41	21	0.016	0.00082	0.002887	0.020	0
Uranium (mg/L)	Filtered	41	19	0.0037	0.0007	0.001472	0.020	0
Vanadium, ICAP (mg/L)		41	2	0.036	0.0061	0.02105	NR	NA
Zinc, ICAP (mg/L)		41	38	0.16	0.0032	0.024108	5.000	0

Table 4.11 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Zinc, ICAP (mg/L)	Filtered	41	35	0.22	0.002	0.013586	5.000	0
Conductivity, field measurement (µmhos/cm)		41	NA	744	215	388.4634	NR	NA
Dissolved oxygen, field measurement (ppm)		41	NA	11.4	0.5	5.397561	NR	NA
pH, field measurement (pH units)		41	NA	11.4	7.3	8.287805	6.5/8.5	11
Redox, field measurement (MV)		41	NA	307	39	158.3514	NR	NA
Static water level (ft-TOC)		41	41	–45	–157.8	–119.862	NR	NA
Water temperature, field measurement (°C)		41	NA	18.8	12.4	14.98049	NR	NA
Alkalinity-CO_3 (mg/L)		41	13	148	1	47	NR	NA
Alkalinity-HCO_3 (mg/L)		41	38	353	29	186.6053	NR	NA
Conductivity (µmhos/cm)		41	41	648	205	386.1951	NR	NA
Conductivity, Rep. 2 (µmhos/cm)		25	25	649 L	232	391.84	NR	NA
Conductivity, Rep. 3 (µmhos/cm)		25	25	648 L	234	392.2	NR	NA
Conductivity, Rep. 4 (µmhos/cm)		25	25	650 L	230	392.48	NR	NA
Dissolved solids (mg/L)		41	41	470	98	227.0732	500.000	0
pH (pH units)		41	41	11.5	7.4	8.325122	NR	NA
pH, Rep. 2 (pH units)		25	25	10	7.4	8.128	NR	NA

Table 4.11 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
pH, Rep. 3 (pH units)		25	25	10	7.5	8.128	NR	NA
pH, Rep. 4 (pH units)		25	25	10	7.4	8.132	NR	NA
Phenols (mg/L)		24	2	0.05	0.05	0.05	NR	NA
Total organic carbon (mg/L)		24	19	14	1.2	3.673684	NR	NA
Total organic carbon, Rep. 2 (mg/L)		24	20	21	1.1	5.09	NR	NA
Total organic carbon, Rep. 3 (mg/L)		24	23	19	1.1	4.013043	NR	NA
Total organic carbon, Rep. 4 (mg/L)		24	23	22	1	3.530435	NR	NA
Total suspended solids (mg/L)		41	33	1696	1	153.1061	NR	NA
Turbidity (NTU)		41	41	300	0.35	27.99146	1.0	38
Gross alpha (pCi/L)		41	41	91	−1.18	4.532651	15 n	2
Gross beta (pCi/L)		41	41	59.8	0.201	8.441659	50 g	1

Table 4.12. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=CR Location Description=Const./Debris Landfill VI

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference Value	No. of measurements
Lithium, ICAP (mg/L)		7	1	0.0046	0.0046	0.0046	NR	NA
Chloride (mg/L)		14	14	10	1.37	3.172143	250	0
Nitrate nitrogen (mg/L)		14	12	0.84	0.33	0.518333	10.000	0
Sulfate (mg/L)		14	14	12	1.92	5.427857	250.000	0
Aluminum, ICAP (mg/L)		14	13	4.5	0.026	0.626692	0.2	2
Aluminum, ICAP (mg/L)	Filtered	14	8	0.057	0.021	0.032625	0.2	0
Arsenic, ICAP (mg/L)		14	1	0.066	0.066	0.066	0.050	1
Barium, ICAP (mg/L)		14	14	0.016	0.0074	0.010707	2.000	0
Barium, ICAP (mg/L)	Filtered	14	14	0.018	0.0042	0.009336	2.000	0
Beryllium, ICAP (mg/L)		14	1	0.00044	0.00044	0.00044	0.004	0
Boron, ICAP (mg/L)		14	14	0.029	0.0087	0.017621	NR	NA
Boron, ICAP (mg/L)	Filtered	14	14	0.036	0.0092	0.0191	NR	NA
Calcium, ICAP (mg/L)		14	14	50	27	39.28571	NR	NA
Calcium, ICAP (mg/L)	Filtered	14	14	51	28	38.14286	NR	NA
Chromium, AAS (mg/L)		14	2	0.013	0.012	0.0125	0.1	0
Chromium, ICAP (mg/L)		14	2	0.013	0.011	0.012	0.1	0
Copper, ICAP (mg/L)		14	4	0.012	0.0045	0.008825	1.3 g	0
Copper, ICAP (mg/L)	Filtered	14	2	0.0067	0.0056	0.00615	1.3 g	0
Iron, ICAP (mg/L)		14	14	4.4	0.018	0.600357	0.3	2
Iron, ICAP (mg/L)	Filtered	14	4	0.037	0.01	0.02325	0.3	0
Lead, AAS (mg/L)		14	2	0.0086	0.0044	0.0065	0.015 g	0
Magnesium, ICAP (mg/L)		14	14	30	13	22.78571	NR	NA

Table 4.12 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference Value	No. of measurements
Magnesium, ICAP (mg/L)	Filtered	14	14	29	16	22.21429	NR	NA
Manganese, ICAP (mg/L)		14	11	0.18	0.0011	0.035545	0.050	2
Manganese, ICAP (mg/L)	Filtered	14	9	0.0093	0.0014	0.003567	0.050	0
Molybdenum, ICAP (mg/L)		14	2	0.03	0.026	0.028	NR	NA
Molybdenum, ICAP (mg/L)	Filtered	14	2	0.038	0.021	0.0295	NR	NA
Nickel, ICAP (mg/L)		14	1	0.012	0.012	0.012	0.100 h	0
Potassium, ICAP (mg/L)		14	13	3	0.61	1.478462	NR	NA
Potassium, ICAP (mg/L)	Filtered	14	14	1.9	0.73	1.253571	NR	NA
Selenium, ICAP (mg/L)		14	2	0.09	0.072	0.081	0.050	2
Selenium, ICAP (mg/L)	Filtered	14	3	0.091	0.054	0.078333	0.050	3
Sodium, ICAP (mg/L)		14	14	5	0.58	1.86	NR	NA
Sodium, ICAP (mg/L)	Filtered	14	14	5.1	0.53	1.877143	NR	NA
Strontium, ICAP (mg/L)		14	14	0.031	0.016	0.024429	NR	NA
Strontium, ICAP (mg/L)	Filtered	14	14	0.03	0.016	0.023357	NR	NA
Uranium (mg/L)		14	7	0.0024	0.00051	0.001317	0.020	0
Uranium (mg/L)	Filtered	14	5	0.0025	0.00051	0.001582	0.020	0
Vanadium, ICAP (mg/L)		14	2	0.0098	0.0084	0.0091	NR	NA
Zinc, ICAP (mg/L)		14	14	0.032	0.0031	0.016593	5.000	0
Zinc, ICAP (mg/L)	Filtered	14	13	0.023	0.0028	0.007292	5.000	0
Conductivity, field measurement (µmhos/cm)		14	NA	501	208	333.5714	NR	NA
Dissolved oxygen, field measurement (ppm		14	NA	5.8	0.6	3.971429	NR	NA

Table 4.12 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference Value	No. of measurements
pH, field measurement (pH units)		14	NA	8.4	6.8	7.707143	6.5/8.5	0
Redox, field measurement (MV)		14	NA	204	90	139.2857	NR	NA
Static water level (ft-TOC)		21	21	–39.85	–84.9	–66.7538	NR	NA
Water temperature, field measurement (°C)		14	NA	18.4	12	14.98571	NR	NA
Alkalinity-HCO_3 (mg/L)		14	14	240	125	181.4286	NR	NA
Chemical oxygen demand (mg/L)		14	1	6.1	6.1	6.1	NR	NA
Conductivity (µmhos/cm)		14	14	444	252	346.9286	NR	NA
Dissolved solids (mg/L)		14	14	262	36	196.8571	500.000	0
pH (pH units)		14	14	8.4	7.19	7.851429	NR	NA
Total organic carbon (mg/L)		14	9	3.4	2.2	2.544444	NR	NA
Total suspended solids (mg/L)		14	7	194	1	38.07143	NR	NA
Turbidity (NTU)		14	14	160	0.15	23.46071	1.0	9
^{137}Cs (pCi/L)		14	14	16.5	–9.02 F	1.213571	120.00	0
$^{231+234}Th$ (pCi/L)		14	14	156 H	–142 HG	18.91714	400.000	0
^{234}U (pCi/L)		14	14	0.658	0	0.257921	20.000	0
^{235}U (pCi/L)		14	14	9.69 E	–20.5 G	-0.52786	24.000	0
^{238}U (pCi/L)		14	14	0.607	0	0.178157	24.000	0
^{40}K (pCi/L)		2	2	117	69 i	93	NR	NA

Table 4.12 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference Value	No. of measurements
Gross alpha (pCi/L)		14	14	6.22	–3.83	0.964929	15 n	0
Gross beta (pCi/L)		14	14	11.1	–13	–2.34599	50 g	0
Protactinium (pCi/L)		14	14	2280 Hi	–1170 HF	574.1786	NR	NA
Methylene chloride (μg/L)		14	3	3 JB	3 JB	3	5.000	0

Table 4.13. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=CR Location Description=Const./Debris Landfill VII

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Chloride (mg/L)		8	8	3.1	1.3	2.0375	250	0
Nitrate nitrogen (mg/L)		8	8	1	0.32	0.6375	10.000	0
Sulfate (mg/L)		8	8	4.7	1.6	2.4125	250.000	0
Aluminum, ICAP (mg/L)		8	8	0.39	0.023	0.123375	0.2	2
Aluminum, ICAP (mg/L)	Filtered	8	5	0.062	0.025	0.0372	0.2	0
Antimony, ICAP (mg/L)		8	1	0.11	0.11	0.11	0.006	1
Arsenic, ICAP (mg/L)		8	2	0.084	0.059	0.0715	0.050	2
Arsenic, ICAP (mg/L)	Filtered	8	1	0.08	0.08	0.08	0.050	1
Barium, ICAP (mg/L)		8	8	0.25	0.009	0.0692	2.000	0
Barium, ICAP (mg/L)	Filtered	8	8	0.24	0.009	0.067875	2.000	0
Boron, ICAP (mg/L)		8	8	0.039	0.0058	0.01895	NR	NA
Boron, ICAP (mg/L)	Filtered	8	7	0.041	0.0053	0.024471	NR	NA
Calcium, ICAP (mg/L)		8	8	39	26	33.375	NR	NA
Calcium, ICAP (mg/L)	Filtered	8	8	40	27	33.25	NR	NA
Iron, ICAP (mg/L)		8	7	0.4	0.028	0.151714	0.3	2
Iron, ICAP (mg/L)	Filtered	8	1	0.01	0.01	0.01	0.3	0
Magnesium, ICAP (mg/L)		8	8	22	12	16.75	NR	NA
Magnesium, ICAP (mg/L)	Filtered	8	8	24	12	16.875	NR	NA
Manganese, ICAP (mg/L)		8	7	0.011	0.0016	0.0044	0.050	0
Manganese, ICAP (mg/L)	Filtered	8	2	0.0038	0.0016	0.0027	0.050	0
Potassium, ICAP (mg/L)		8	7	1.9	0.78	1.258571	NR	NA
Potassium, ICAP (mg/L)	Filtered	8	7	1.7	0.99	1.398571	NR	NA

Table 4.13 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Selenium, ICAP (mg/L)		8	1	0.08	0.08	0.08	0.050	1
Selenium, ICAP (mg/L)	Filtered	8	1	0.08	0.08	0.08	0.050	1
Sodium, ICAP (mg/L)		8	8	1.2	0.57	0.755	NR	NA
Sodium, ICAP (mg/L)	Filtered	8	8	1.2	0.55	0.7775	NR	NA
Strontium, ICAP (mg/L)		8	8	0.029	0.015	0.021	NR	NA
Strontium, ICAP (mg/L)	Filtered	8	8	0.03	0.015	0.021125	NR	NA
Zinc, ICAP (mg/L)		8	7	0.045	0.0054	0.018071	5.000	0
Zinc, ICAP (mg/L)	Filtered	8	7	0.023	0.0034	0.012086	5.000	0
Conductivity, field measurement (µmhos/cm)		8	NA	339	239	275	NR	NA
Dissolved oxygen, field measurement (ppm)		8	NA	12	3.8	7.2	NR	NA
pH, field measurement (pH units)		8	NA	8.1	6.7	7.575	6.5/8.5	0
Redox, field measurement (MV)		8	NA	378	152	208.75	NR	NA
Static water level (ft-TOC)		16	16	–3.46	–83.91	–30.79	NR	NA
Water temperature, field measurement (°C)		8	NA	15.4	13.2	14.65	NR	NA
Alkalinity-HCO_3 (mg/L)		8	8	184	116	147.375	NR	NA
Chemical oxygen demand (mg/L)		8	3	14	7	9.433333	NR	NA
Conductivity (µmhos/cm)		8	8	340	237	280.375	NR	NA
Dissolved solids (mg/L)		8	8	194	124	158.75	500.000	0

Table 4.13 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
pH (pH units)		8	8	8.1	7.2	7.8	NR	NA
Total petroleum hydrocarbons (mg/L)		8	8	0.1	0.0081	0.068975	0.10 m	0
Total organic carbon (mg/L)		8	6	3.2	1.3	1.916667	NR	NA
Total suspended solids (mg/L)		8	3	5	1.5	3.5	NR	NA
Turbidity (NTU)		8	8	9.5	0.3	2.98125	1.0	4
^{137}Cs (pCi/L)		8	8	13.6 E	–11.1 F	1.525625	120.00	0
$^{231+234}$Th (pCi/L)		8	8	151 H	–49.5 HF	52.7125	400.000	0
^{234}U (pCi/L)		8	8	0.397	0	0.197	20.000	0
^{235}U (pCi/L)		8	8	7.11 E	–4.64 F	1.605625	24.000	0
^{238}U (pCi/L)		8	8	0.116	–0.231	0.024138	24.000	0
Gross alpha (pCi/L)		8	8	1.13	–0.152	0.561375	15 n	0
Gross beta (pCi/L)		8	8	1.17	–1.32	0.12025	50 g	0
Protactinium (pCi/L)		8	8	553 HE	–598 HF	–29.625	NR	NA
2-Butanone (µg/L)		16	3	8 JB	8 JB	8	NR	NA
Ethanol (µg/L)		8	3	700 JB	360 JB	540	NR	NA
Methylene chloride (µg/L)		16	2	3 JB	1 JB	2	5.000	0

Table 4.14. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=CR Location Description=C. Ridge Borrow Area Waste Pile

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		6	1	0.068	0.068	0.068	NR	NA
Chloride (mg/L)		12	12	7.1	1.19	2.560833	250.000	0
Fluoride (mg/L)		12	1	0.1	0.1	0.1	4.000	0
Nitrate nitrogen (mg/L)		12	11	1	0.227	0.499091	10.000	0
Sulfate (mg/L)		12	12	8.37	1.36	3.805833	250.000	0
Aluminum, ICAP (mg/L)		12	6	74	0.037	15.13533	0.2	4
Aluminum, ICAP (mg/L)	Filtered	12	2	0.084	0.021	0.0525	0.2	0
Arsenic, ICAP (mg/L)		12	2	0.45	0.052	0.251	0.050	2
Arsenic, ICAP (mg/L)	Filtered	12	1	0.064	0.064	0.064	0.050	1
Barium, ICAP (mg/L)		12	12	0.22	0.0082	0.033067	2.000	0
Barium, ICAP (mg/L)	Filtered	12	12	0.02	0.0075	0.0131	2.000	0
Beryllium, ICAP (mg/L)		12	2	0.027	0.0014	0.0142	0.004	1
Boron, ICAP (mg/L)		12	11	0.029	0.0072	0.0161	NR	NA
Boron, ICAP (mg/L)	Filtered	12	12	0.091	0.0049	0.029183	NR	NA
Cadmium, ICAP (mg/L)		12	1	0.0082	0.0082	0.0082	0.005	1
Calcium, ICAP (mg/L)		12	12	92	26	39.66667	NR	NA
Calcium, ICAP (mg/L)	Filtered	12	12	48	26	34.41667	NR	NA
Chromium, AAS (mg/L)		12	3	0.31	0.011	0.111667	0.1	1
Chromium, ICAP (mg/L)		12	1	0.14	0.14	0.14	0.1	1
Cobalt, ICAP (mg/L)		12	1	0.054	0.054	0.054	NR	NA
Copper, ICAP (mg/L)		12	3	0.28	0.0051	0.100367	1.3 g	0
Copper, ICAP (mg/L)	Filtered	12	1	0.005	0.005	0.005	1.3 g	0

Table 4.14 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Iron, ICAP (mg/L)		12	12	220	0.014	20.00217	0.300	7
Iron, ICAP (mg/L)	Filtered	12	7	0.18	0.0051	0.036371	0.300	0
Lead, AAS (mg/L)		12	3	0.55	0.0062	0.195733	0.015 g	2
Lead, ICAP (mg/L)		12	1	0.52	0.52	0.52	0.015 g	1
Magnesium, ICAP (mg/L)		12	12	59	16	24.83333	NR	NA
Magnesium, ICAP (mg/L)	Filtered	12	12	29	16	21.66667	NR	NA
Manganese, ICAP (mg/L)		12	11	4.6	0.0024	0.453491	0.050	3
Manganese, ICAP (mg/L)	Filtered	12	5	0.013	0.0042	0.00632	0.050	0
Mercury, CVAA (mg/L)		12	1	0.0016	0.0016	0.0016	0.002	0
Molybdenum, ICAP (mg/L)		12	1	0.048	0.048	0.048	NR	NA
Nickel, ICAP (mg/L)		12	2	0.25	0.019	0.1345	0.100 h	1
Potassium, ICAP (mg/L)		12	9	7.2	0.75	1.865556	NR	NA
Potassium, ICAP (mg/L)	Filtered	12	9	1.3	0.76	1.006667	NR	NA
Selenium, ICAP (mg/L)		12	1	0.07	0.07	0.07	0.05	1
Sodium, ICAP (mg/L)		12	12	3.1	0.54	1.29	NR	NA
Sodium, ICAP (mg/L)	Filtered	12	12	3.1	0.6	1.311667	NR	NA
Strontium, ICAP (mg/L)		12	12	0.04	0.011	0.0205	NR	NA
Strontium, ICAP (mg/L)	Filtered	12	12	0.026	0.011	0.018583	NR	NA
Uranium (mg/L)		13	5	0.0048	0.00058	0.001916	0.020	0
Uranium (mg/L)	Filtered	13	3	0.0018	0.00075	0.001383	0.020	0
Vanadium, ICAP (mg/L)		12	2	0.5	0.036	0.268	NR	NA
Zinc, ICAP (mg/L)		12	11	1.6	0.0036	0.1604	5.000	0

Table 4.14 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Zinc, ICAP (mg/L)	Filtered	12	9	0.0088	0.0026	0.005711	5.000	0
Conductivity, field measurement (μmhos/cm)		13	NA	836	238	367.0769	NR	NA
Dissolved oxygen, field measurement (ppm)		13	NA	9.5	2.7	5.161538	NR	NA
pH, field measurement (pH units)		13	NA	8.4	7.3	7.769231	6.5/8.5	0
Redox, field measurement (MV)		13	NA	233	67	149.1667	NR	NA
Static water level (ft-TOC)		20	20	–97.15	–62.7	–128.912	NR	NA
Water temperature, field measurement (°C)		13	NA	17.9	12.8	14.54615	NR	NA
Alkalinity-HCO_3 (mg/L)		12	12	232	125	173.6667	NR	NA
Chemical oxygen demand (mg/L)		12	2	8.9	6.4	7.65	NR	NA
Conductivity (μmhos/cm)		12	12	437	245	324.4167	NR	NA
Dissolved solids (mg/L)		12	12	730	86	244.5	500.000	1
pH (pH units)		12	12	8.2	7.46	7.890833	NR	NA
Total organic carbon (mg/L)		12	9	4.6	1.7	2.866667	NR	NA
Total suspended solids (mg/L)		12	6	5365	7	924	NR	NA
Turbidity (NTU)		12	12	7600	0.6	667.95	1.0	9
Gross alpha (pCi/L)		12	12	39.4	–0.816	4.456088	15 n	1
Gross beta (pCi/L)		12	12	34.2	0.482	5.522083	50 g	0
Acetone (μg/L)		26	2	16	15 B	15.5	NR	NA
Ethanol (μg/L)		13	7	840 JB	520 JB	670	NR	NA

Table 4.15. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=CR Location Description=East Chestnut Ridge Waste

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Chloride (mg/L)		8	8	10.9	2.69	7.91875	250.000	0
Nitrate nitrogen (mg/L)		8	8	2.7	0.47	1.21	10.000	0
Sulfate (mg/L)		8	8	3.5	1.2	2.76625	250.000	0
Aluminum, ICAP (mg/L)		8	5	0.078	0.026	0.0458	0.2	0
Aluminum, ICAP (mg/L)	Filtered	8	2	0.029	0.027	0.028	0.2	0
Barium, ICAP (mg/L)		8	8	0.2	0.01	0.0815	2.000	0
Barium, ICAP (mg/L)	Filtered	8	8	0.19	0.01	0.082625	2.000	0
Boron, ICAP (mg/L)		8	8	0.045	0.02	0.03075	NR	NA
Boron, ICAP (mg/L)	Filtered	8	8	0.055	0.0062	0.029775	NR	NA
Calcium, ICAP (mg/L)		8	8	54	44	48.5	NR	NA
Calcium, ICAP (mg/L)	Filtered	8	8	56	43	48.875	NR	NA
Iron, ICAP (mg/L)		8	7	1.6	0.013	0.379571	0.300	2
Iron, ICAP (mg/L)	Filtered	8	1	0.16	0.16	0.16	0.300	0
Magnesium, ICAP (mg/L)		8	8	33	27	29.875	NR	NA
Magnesium, ICAP (mg/L)	Filtered	8	8	34	26	30.125	NR	NA
Manganese, ICAP (mg/L)		8	6	0.026	0.0012	0.00825	0.050	0
Manganese, ICAP (mg/L)	Filtered	8	3	0.026	0.0013	0.0141	0.050	0
Potassium, ICAP (mg/L)		8	8	2.4	0.62	1.26125	NR	NA
Potassium, ICAP (mg/L)	Filtered	8	8	2.1	0.67	1.2	NR	NA
Sodium, ICAP (mg/L)		8	8	5.5	1.3	3.7875	NR	NA
Sodium, ICAP (mg/L)	Filtered	8	8	5.7	1.3	3.775	NR	NA
Strontium, ICAP (mg/L)		8	8	0.023	0.016	0.018625	NR	NA

Table 4.15 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Strontium, ICAP (mg/L)	Filtered	8	8	0.023	0.015	0.018625	NR	NA
Zinc, ICAP (mg/L)		8	7	0.021	0.0022	0.009143	5.000	0
Zinc, ICAP (mg/L)	Filtered	8	4	0.013	0.0056	0.009125	5.000	0
Conductivity, field measurement (μmhos/cm)		8	NA	530	280	426.875	NR	NA
Dissolved oxygen, field measurement (ppm)		8	NA	8.4	3.9	6.85	NR	NA
pH, field measurement (pH units)		8	NA	7.9	7.4	7.6125	6.5/8.5	0
Redox, field measurement (MV)		8	NA	242	150	209.25	NR	NA
Static water level (ft-TOC)		8	8	–97.75	–119.35	–112.3	NR	NA
Water temperature, field measurement (°C)		8	NA	16	11.2	13.4375	NR	NA
Alkalinity-HCO_3 (mg/L)		8	8	257	220	236.875	NR	NA
Conductivity (μmhos/cm)		8	8	496	404	458.25	NR	NA
Dissolved solids (mg/L)		8	8	276	166	232	500.000	0
pH (pH units)		8	8	7.92	7.52	7.70875	NR	NA
Total suspended solids (mg/L)		8	3	3.5	1	1.833333	NR	NA
Turbidity (NTU)		8	8	8.8	0.2	2.7	1.0	3
Gross alpha (pCi/L)		8	8	2.82	–0.306	1.300375	15 n	0
Gross beta (pCi/L)		8	8	2.66	–1.57	0.3875	50 g	0
Acetone (μg/L)		8	1	15 B	15 B	15	NR	NA

Table 4.16. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=CR Location Description=Industrial Landfill II

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		6	1	0.0048	0.0048	0.0048	NR	NA
Lithium, ICAP (mg/L)	Filtered	6	1	0.0047	0.0047	0.0047	NR	NA
Chloride (mg/L)		9	9	21	1.8	8.044444	250	0
Fluoride (mg/L)		9	3	2.1	1.48	1.793333	4.000	0
Nitrate nitrogen (mg/L)		9	8	1	0.24	0.50125	10.000	0
Sulfate (mg/L)		9	9	11	1.6	6.877778	250.000	0
Aluminum, ICAP (mg/L)		9	7	0.25	0.053	0.157	0.2	3
Aluminum, ICAP (mg/L)	Filtered	9	4	0.1	0.021	0.0455	0.2	0
Arsenic, ICAP (mg/L)		9	1	0.055	0.055	0.055	0.050	1
Arsenic, ICAP (mg/L)	Filtered	9	2	0.083	0.055	0.069	0.050	2
Barium, ICAP (mg/L)		9	9	0.32	0.0086	0.175622	2.000	0
Barium, ICAP (mg/L)	Filtered	9	9	0.4	0.0086	0.180978	2.000	0
Boron, ICAP (mg/L)		9	9	0.028	0.0071	0.0185	NR	NA
Boron, ICAP (mg/L)	Filtered	9	9	0.032	0.012	0.021222	NR	NA
Cadmium, ICAP (mg/L)	Filtered	9	1	0.0033	0.0033	0.0033	0.005	0
Calcium, ICAP (mg/L)		9	9	40	31	35.22222	NR	NA
Calcium, ICAP (mg/L)	Filtered	9	9	38	29	34.22222	NR	NA
Chromium, AAS (mg/L)		9	6	0.19	0.025	0.081833	0.1	2
Chromium, AAS (mg/L)	Filtered	9	3	0.067	0.038	0.055333	0.1	0
Chromium, ICAP (mg/L)		9	6	0.19	0.021	0.0765	0.1	1
Chromium, ICAP (mg/L)	Filtered	9	3	0.061	0.034	0.05	0.1	0

Table 4.16 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Copper, ICAP (mg/L)		9	3	0.012	0.0076	0.0093	1.3 g	0
Copper, ICAP (mg/L)	Filtered	9	3	0.019	0.0052	0.010133	1.3 g	0
Iron, ICAP (mg/L)		9	9	1.3	0.032	0.520778	0.3	6
Iron, ICAP (mg/L)	Filtered	9	8	0.76	0.0054	0.120925	0.3	1
Magnesium, ICAP (mg/L)		9	9	22	18	20.44444	NR	NA
Magnesium, ICAP (mg/L)	Filtered	9	9	23	17	20.44444	NR	NA
Manganese, ICAP (mg/L)		9	9	0.02	0.0016	0.007	0.050	0
Manganese, ICAP (mg/L)	Filtered	9	8	0.0049	0.0011	0.002588	0.050	0
Nickel, ICAP (mg/L)		9	3	0.25	0.15	0.183333	0.100 h	3
Nickel, ICAP (mg/L)	Filtered	9	3	0.23	0.075	0.132667	0.100 h	1
Potassium, ICAP (mg/L)		9	8	2.2	0.77	1.53375	NR	NA
Potassium, ICAP (mg/L)	Filtered	9	8	2.6	1.1	1.6	NR	NA
Selenium, ICAP (mg/L)		9	1	0.083	0.083	0.083	0.050	1
Sodium, ICAP (mg/L)		9	9	4.5	0.56	2.237778	NR	NA
Sodium, ICAP (mg/L)	Filtered	9	9	5	0.57	2.163333	NR	NA
Strontium, ICAP (mg/L)		9	9	0.78	0.02	0.260667	NR	NA
Strontium, ICAP (mg/L)	Filtered	9	9	0.81	0.019	0.263222	NR	NA
Uranium (mg/L)		9	8	0.0047	0.00051	0.001923	0.020	0
Uranium (mg/L)	Filtered	9	6	0.0048	0.00056	0.00241	0.020	0
Zinc, ICAP (mg/L)		9	8	0.028	0.0027	0.010513	5.000	0

Table 4.16 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Zinc, ICAP (mg/L)	Filtered	9	9	0.018	0.003	0.006589	5.000	0
Conductivity, field measurement (µmhos/cm)		9	NA	336	236	289.2222	NR	N
Dissolved oxygen, field measurement (ppm)		9	NA	6.8	0.5	4.3	NR	NA
pH, field measurement (pH units)		9	NA	8.4	7.8	8.111111	6.5/8.5	0
Redox, field measurement (MV)		9	NA	223	62	142.7778	NR	NA
Static water level (ft-TOC)		9	9	–28.63	–109.32	–73.3711	NR	NA
Water temperature, field measurement (°C)		9	NA	18	10	15.23333	NR	NA
Alkalinity-HCO_3 (mg/L)		9	9	177	141	157.7778	NR	NA
Chemical oxygen demand (mg/L)		9	1	6.4	6.4	6.4	NR	NA
Conductivity (µmhos/cm)		9	9	368	294	334	NR	NA
Dissolved solids (mg/L)		9	9	220	40	165.3333	500.000	0
pH (pH units)		9	9	8.4	8	8.166667	NR	NA
Total organic carbon (mg/L)		9	8	6	1.2	2.775	NR	NA
Total suspended solids (mg/L)		9	7	78	1	21.42857	NR	NA
Turbidity (NTU)		9	9	34	0.4	9.422222	1.0	7
^{137}Cs (pCi/L)		3	3	1.29 E	–8.46 F	–2.624	120.00	0
$^{231+234}Th$ (pCi/L)		3	3	92.2 H	–60.9 HF	0.233333	400.000	0
^{234}U (pCi/L)		3	3	0.476 *	0	0.257667	20.000	0

Table 4.16 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
^{235}U (pCi/L)		3	3	7.15 E	–0.95 F	3.22	24.000	0
^{238}U (pCi/L)		3	3	0.526	0 *	0.245667	24.000	0
Gross alpha (pCi/L)		9	9	7.17	–0.334	2.712923	15 n	0
Gross beta (pCi/L)		9	9	11.3 C	–0.737	5.208111	50 g	0
Protactinium (pCi/L)		3	3	750 HE	–166 HF	403	NR	NA
1,1,1,2-Tetrachloroethane (µg/L)		11	2	51 s	51 s	51	NR	NA
1,1-Dichloroethene (µg/L)		22	4	58 s	50 s	54.25	7.000	4
1,2-Dibromo-3-chloropropane (µg/L)		11	2	57 s	51 s	54	NR	NA
1,2-Dichlorobenzene (µg/L)		11	2	50 s	50 s	50	600.00	0
1,4-Dichlorobenzene (µg/L)		11	2	50 s	49 s	49.5	75.000	0
2-Butanone (µg/L)		22	5	9 JB	6 JB	8.2	NR	NA
Benzene (µg/L)		22	4	52 s	48 s	49.75	5.000	4
Bromochloromethane (µg/L)		11	2	52 s	52 s	52	NR	NA
Chlorobenzene (µg/L)		22	4	50 s	46 s	48.75	100.000	0
Cis-1,2-Dichloroethene (µg/L)		11	2	50 s	49 s	49.5	70.000	0
Dibromomethane (µg/L)		23	2	53 s	52 s	52.5	NR	NA
Ethanol (µg/L)		13	3	970 JB	470 JB	730	NR	NA
Toluene (µg/L)		22	4	51 s	47 s	49	1000.00	0
Trans-1,2-dichloroethene (µg/L)		23	2	49 s	48 s	48.5	100.000	0
Trichloroethene (µg/L)		22	4	51 s	47 s	48.5	5.000	4

Table 4.17. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=CR Location Description=Industrial Landfill IV

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Chloride (mg/L)		10	10	2.7	1.9	2.31	250	0
Nitrate nitrogen (mg/L)		10	10	1.1	0.44	0.694	10.000	0
Sulfate (mg/L)		10	7	6.9	1.4	3.357143	250.000	0
Aluminum, ICAP (mg/L)		10	10	2.3	0.071	0.598	0.2	5
Aluminum, ICAP (mg/L)	Filtered	10	4	0.058	0.022	0.03475	0.2	0
Barium, ICAP (mg/L)		10	10	0.031	0.0066	0.0155	2.000	0
Barium, ICAP (mg/L)	Filtered	10	10	0.034	0.0058	0.01463	2.000	0
Beryllium, ICAP (mg/L)		10	3	0.00074	0.00032	0.0005	0.004	0
Boron, ICAP (mg/L)		10	10	0.19	0.0068	0.05342	NR	NA
Boron, ICAP (mg/L)	Filtered	10	9	0.19	0.015	0.063556	NR	NA
Cadmium, ICAP (mg/L)		10	2	0.0033	0.0032	0.00325	0.005	0
Cadmium, ICAP (mg/L)	Filtered	10	2	0.0036	0.0031	0.00335	0.005	0
Calcium, ICAP (mg/L)		10	10	48	28	33.3	NR	NA
Calcium, ICAP (mg/L)	Filtered	10	10	48	26	32.4	NR	NA
Copper, ICAP (mg/L)		10	4	0.011	0.0042	0.008175	1.3 g	0
Copper, ICAP (mg/L)	Filtered	10	2	0.0075	0.0047	0.0061	1.3 g	0
Iron, ICAP (mg/L)		10	10	1.9	0.14	0.605	0.3	5
Iron, ICAP (mg/L)	Filtered	10	10	0.13	0.0057	0.02398	0.3	0
Magnesium, ICAP (mg/L)		10	10	30	17	21	NR	NA
Magnesium, ICAP (mg/L)	Filtered	10	10	31	16	20.3	NR	NA
Manganese, ICAP (mg/L)		10	10	0.057	0.0034	0.01722	0.050	1

Table 4.17 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Manganese, ICAP (mg/L)	Filtered	10	4	0.025	0.0012	0.008	0.050	0
Nickel, ICAP (mg/L)		10	1	0.06	0.06	0.06	0.100 h	0
Nickel, ICAP (mg/L)	Filtered	10	1	0.035	0.035	0.035	0.100 h	0
Potassium, ICAP (mg/L)		10	9	5.4	0.85	1.836667	NR	NA
Potassium, ICAP (mg/L)	Filtered	10	6	4.2	0.63	1.891667	NR	NA
Sodium, ICAP (mg/L)		10	10	6.3	0.62	2.114	NR	NA
Sodium, ICAP (mg/L)	Filtered	10	10	6.2	0.63	1.973	NR	NA
Strontium, ICAP (mg/L)		10	10	0.037	0.01	0.0159	NR	NA
Strontium, ICAP (mg/L)	Filtered	10	10	0.031	0.0096	0.01486	NR	NA
Vanadium, ICAP (mg/L)		10	1	0.0059	0.0059	0.0059	NR	NA
Zinc, ICAP (mg/L)		10	9	0.044	0.0056	0.018333	5.000	0
Zinc, ICAP (mg/L)	Filtered	10	7	0.012	0.0031	0.006886	5.000	0
Conductivity, field measurement (µmhos/cm)		10	NA	429	222	299.3	NR	NA
Dissolved oxygen, field measurement (ppm)		10	NA	10.7	6.5	8.58	NR	NA
pH, field measurement (pH units)		10	NA	8.2	7.2	7.84	6.5/8.5	0
Redox, field measurement (MV)		10	NA	203	109	155.6	NR	NA
Static water level (ft-TOC)		10	10	–84.5	–125.33	–103.558	NR	NA

Table 4.17 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Water temperature, field measurement (°C)		10	NA	17.8	11.4	15.27	NR	NA
Alkalinity-HCO_3 (mg/L)		10	10	234	126	161.2	NR	NA
Conductivity (µmhos/cm)		10	10	448	242	312.1	NR	NA
Dissolved solids (mg/L)		10	10	250	100	158	500.000	0
pH (pH units)		10	10	8.3	7.4	7.96	NR	NA
Total organic carbon (mg/L)		10	10	12	1.4	3.31	NR	NA
Total suspended solids (mg/L)		10	9	27	2	9.5	NR	NA
Turbidity (NTU)		10	10	55	2.9	12.87	1.0	10
^{129}I, X-10 lab (Bq/L)		2	2	0.1	0.1	0.1	NR	NA
^{234}U (pCi/L)		2	2	0.239	0.111	0.175	20.000	0
^{235}U (pCi/L)		2	2	18.2 E	6.34 E	12.27	24.000	0
^{237}Np (pCi/L)		2	2	0.418	0.0751	0.24655	1.2	0
^{238}Pu (pCi/L)		2	2	0.409	–0.133	0.138	1.600	0
^{238}U (pCi/L)		2	2	0	–0.223	–0.1115	24.000	0
^{239}Pu (pCi/L)		2	2	0.0818	0	0.0409	1.200	0
^{241}Am (pCi/L)		2	2	0.767 J	0.739	0.753	1.20	0
^{99}Tc (pCi/L)		2	2	17.8	2.17	9.985	4000.000	0
Gross alpha (pCi/L)		10	10	0.803	–0.167	0.328194	15 n	0
Gross beta (pCi/L)		10	10	6.04	–0.986	1.48463	50 g	0
Radium, X-10 lab (Bq/L)		2	2	0.029	0.015	0.022	0.15	0

Table 4.17 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Strontium (pCi/L)		2	2	14.5	–24	–4.75	8 p	1
Tritium, X-10 lab (Bq/L)		2	2	5	–9	–2	20000 p	0
1,1,1-Trichloroethane (µg/L)		20	4	7	6 J	6.25	200.000	0
Ethanol (µg/L)		10	5	1000 JB	780 JB	896	NR	NA

Table 4.18. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=CR Location Description=Industrial Landfill V

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Chloride (mg/L)		12	12	5.35	1.4	2.3125	250	0
Fluoride (mg/L)		12	2	0.12	0.11	0.115	4.000	0
Nitrate nitrogen (mg/L)		12	12	1.1	0.32	0.660833	10.000	0
Sulfate (mg/L)		12	12	12.8	1.3	3.15	250.000	0
Aluminum, ICAP (mg/L)		12	12	0.38	0.066	0.12525	0.2	2
Aluminum, ICAP (mg/L)	Filtered	12	7	0.1	0.02	0.050857	0.2	0
Antimony, ICAP (mg/L)	Filtered	12	1	0.064	0.064	0.064	0.006	1
Arsenic, ICAP (mg/L)		12	3	0.079	0.053	0.068333	0.050	3
Arsenic, ICAP (mg/L)	Filtered	12	5	0.12	0.055	0.081	0.050	5
Barium, ICAP (mg/L)		12	12	0.12	0.0022	0.025233	2.000	0
Barium, ICAP (mg/L)	Filtered	12	12	0.12	0.0022	0.024683	2.000	0
Boron, ICAP (mg/L)		12	11	0.075	0.0044	0.025836	NR	NA
Boron, ICAP (mg/L)	Filtered	12	11	0.12	0.0088	0.035709	NR	NA
Calcium, ICAP (mg/L)		12	12	37	22	30.33333	NR	NA
Calcium, ICAP (mg/L)	Filtered	12	12	37	20	29.75	NR	NA
Copper, ICAP (mg/L)	Filtered	12	2	0.005	0.0047	0.00485	1.3 g	0
Iron, ICAP (mg/L)		12	12	0.46	0.032	0.121583	0.3	1
Iron, ICAP (mg/L)	Filtered	12	5	0.19	0.011	0.0686	0.3	0
Magnesium, ICAP (mg/L)		12	12	22	12	16.66667	NR	NA
Magnesium, ICAP (mg/L)	Filtered	12	12	22	12	16.41667	NR	NA
Manganese, ICAP (mg/L)		12	11	0.014	0.0015	0.003791	0.050	0

Table 4.18 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Manganese, ICAP (mg/L)	Filtered	12	4	0.0092	0.0016	0.00395	0.050	0
Potassium, ICAP (mg/L)		12	12	3.2	0.98	1.648333	NR	NA
Potassium, ICAP (mg/L)	Filtered	12	12	2.9	0.68	1.3475	NR	NA
Selenium, ICAP (mg/L)		12	2	0.12	0.067	0.0935	0.050	2
Selenium, ICAP (mg/L)	Filtered	12	1	0.064	0.064	0.064	0.050	1
Sodium, ICAP (mg/L)		12	12	2.2	0.59	1.0275	NR	NA
Sodium, ICAP (mg/L)	Filtered	12	12	2.5	0.65	1.061667	NR	NA
Strontium, ICAP (mg/L)		12	12	0.098	0.015	0.03275	NR	NA
Strontium, ICAP (mg/L)	Filtered	12	12	0.098	0.014	0.030917	NR	NA
Zinc, ICAP (mg/L)		12	11	0.016	0.0039	0.007755	5.000	0
Zinc, ICAP (mg/L)	Filtered	12	10	0.018	0.0028	0.00665	5.000	0
Conductivity, field measurement (µmhos/cm)		14	NA	695	190	273.9286	NR	NA
Dissolved oxygen, field measurement (ppm)		14	NA	9.1	0	6.235714	NR	NA
pH, field measurement (pH units)		14	NA	8.8	6.4	7.735714	6.5/8.5	2
Redox, field measurement (MV)		11	NA	285	150	194.8182	NR	NA
Static water level (ft-TOC)		20	20	–8.98	–122.56	–74.0395	NR	NA
Water temperature, field measurement (°C)		14	NA	19.3	12.9	14.67143	NR	NA

Table 4.18 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Alkalinity-HCO_3 (mg/L)		12	12	169	114	139.75	NR	NA
Chemical oxygen demand (mg/L)		12	1	7.7	7.7	7.7	NR	NA
Conductivity (µmhos/cm)		12	12	320	215	268.0833	NR	NA
Dissolved solids (mg/L)		12	12	300	134	169.6667	500.000	0
pH (pH units)		12	12	8.6	7	7.95	NR	NA
Total petroleum hydrocarbons (mg/L)		1	1	0.1	0.1	0.1	0.10 m	0
Total organic carbon (mg/L)		12	9	3.1	1.2	1.811111	NR	NA
Total suspended solids (mg/L)		12	9	11	1	3.555556	NR	NA
Turbidity (NTU)		12	12	14	1.5	4.341667	1.0	12
^{137}Cs (pCi/L)		12	12	6.81 E	–16.8 G	–4.10767	120.00	0
$^{231+234}Th$ (pCi/L)		12	12	79.6 H	–215 HG	–1.88583	400.000	0
^{234}U (pCi/L)		12	12	1.06	0.155	0.450667	20.000	0
^{235}U (pCi/L)		12	12	4.94 E	–5.23 F	0.85625	24.000	0
^{238}U (pCi/L)		12	12	0.363	–0.303	0.012617	24.000	0
Gross alpha (pCi/L)		12	12	2.61	–0.166	0.630583	15 n	0
Gross beta (pCi/L)		12	12	11	–1.97	1.000667	50 g	0
Protactinium (pCi/L)		12	12	1670 HE	–375 HF	597.1167	NR	NA
1,1,1-Trichloroethane (µg/L)		24	4	1 J	1 J	1	200.000	0
2-Butanone (µg/L)		24	1	9 JB	9 JB	9	NR	NA

Table 4.18 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Acetone (µg/L)		24	2	21	15	18	NR	NA
Ethanol (µg/L)		12	2	620 JB	610 JB	615	NR	NA
Ethylbenzene (µg/L)		24	1	3 JB	3 JB	3	700.000	0
Methylene chloride (µg/L)		24	2	3 JB	3 JB	3	5.000	0
Xylenes (µg/L)		24	1	11 B	11 B	11	10000.0	0

Table 4.19. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=CR Location Description=Kerr Hollow Quarry

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		14	12	0.3	0.013	0.117667	NR	NA
Lithium, ICAP (mg/L)	Filtered	14	12	0.32	0.01	0.1165	NR	NA
Chloride (mg/L)		28	28	12	1.91	5.133214	250.000	0
Fluoride (mg/L)		28	23	3.7	0.1	1.651739	4.000	0
Nitrate nitrogen (mg/L)		28	21	2.46	0.35	1.131619	10.000	0
Sulfate (mg/L)		28	28	70	3.5	22.52107	250.000	0
Aluminum, ICAP (mg/L)		30	19	6.3	0.027	0.456632	0.2	4
Aluminum, ICAP (mg/L)	Filtered	30	15	0.061	0.022	0.035667	0.2	0
Arsenic, ICAP (mg/L)		30	1	0.053	0.053	0.053	0.050	1
Arsenic, ICAP (mg/L)	Filtered	30	1	0.052	0.052	0.052	0.050	1
Barium, ICAP (mg/L)		30	30	0.44	0.023	0.1362	2.000	0
Barium, ICAP (mg/L)	Filtered	30	30	0.43	0.022	0.1266	2.000	0
Beryllium, ICAP (mg/L)		30	2	0.0073	0.0007	0.004	0.004	1
Beryllium, ICAP (mg/L)	Filtered	30	1	0.00046	0.00046	0.00046	0.004	0
Boron, ICAP (mg/L)		30	30	0.96	0.0082	0.25984	NR	NA
Boron, ICAP (mg/L)	Filtered	30	30	1	0.013	0.255633	NR	NA
Cadmium, ICAP (mg/L)		30	2	0.007	0.0031	0.00505	0.005	1
Cadmium, ICAP (mg/L)	Filtered	30	1	0.0032	0.0032	0.0032	0.005	0
Calcium, ICAP (mg/L)		30	30	74	28	40.8	NR	NA
Calcium, ICAP (mg/L)	Filtered	30	30	46	28	38.93333	NR	NA
Cobalt, ICAP (mg/L)		30	2	0.009	0.0081	0.00855	NR	NA
Copper, ICAP (mg/L)		30	9	0.024	0.0042	0.010444	1.3 g	0

Table 4.19 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Copper, ICAP (mg/L)	Filtered	30	10	0.012	0.0044	0.00707	1.3 g	0
Iron, ICAP (mg/L)		30	28	13	0.0061	1.758325	0.300	16
Iron, ICAP (mg/L)	Filtered	30	18	1	0.0057	0.203344	0.300	4
Magnesium, ICAP (mg/L)		30	30	45	15	26.73333	NR	NA
Magnesium, ICAP (mg/L)	Filtered	30	30	42	14	26.23333	NR	NA
Manganese, ICAP (mg/L)		30	27	1.7	0.001	0.088267	0.050	5
Manganese, ICAP (mg/L)	Filtered	30	22	0.054	0.001	0.020432	0.050	3
Molybdenium, ICAP (mg/L)		30	1	0.01	0.01	0.01	NR	NA
Molybdenum, ICAP (mg/L)	Filtered	30	2	0.011	0.011	0.011	NR	NA
Nickel, ICAP (mg/L)		30	1	0.022	0.022	0.022	0.100 h	0
Potassium, ICAP (mg/L)		30	30	18	0.68	8.262667	NR	NA
Potassium, ICAP (mg/L)	Filtered	30	30	19	0.64	7.934333	NR	NA
Selenium, ICAP (mg/L)		30	2	0.057	0.056	0.0565	0.05	2
Selenium, ICAP (mg/L)	Filtered	30	1	0.071	0.071	0.071	0.05	1
Silver, ICAP (mg/L)		30	4	0.4	0.0061	0.106325	0.10	1
Silver, ICAP (mg/L)	Filtered	30	2	0.028	0.0063	0.01715	0.10	0
Sodium, ICAP (mg/L)		30	30	27	0.85	6.994667	NR	NA
Sodium, ICAP (mg/L)	Filtered	30	30	29	0.87	6.916333	NR	NA
Strontium, ICAP (mg/L)		30	30	7.8	0.033	2.783133	NR	NA
Strontium, ICAP (mg/L)	Filtered	30	30	7.5	0.033	2.597067	NR	NA
Uranium (mg/L)		28	22	0.013	0.00089	0.004345	0.020	0
Uranium (mg/L)	Filtered	28	24	0.013	0.001	0.004554	0.020	0

Table 4.19 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Vanadium, ICAP (mg/L)		30	2	0.02	0.011	0.0155	NR	NA
Zinc, ICAP (mg/L)		30	18	0.11	0.0024	0.014617	5.000	0
Zinc, ICAP (mg/L)	Filtered	30	19	0.41	0.0023	0.027879	5.000	0
Conductivity, field measurement (µmhos/CM)		32	NA	573	266	415.2813	NR	NA
Dissolved oxygen, field measurement (ppm)		32	NA	17	0.4	5.003125	NR	NA
pH, field measurement (pH units)		32	NA	8.2	7.2	7.921875	6.5/8.5	0
Redox, field measurement (MV)		32	NA	237	22.6	145.5571	NR	NA
Static water level (ft-TOC)		32	32	–2.47	–154.75	–64.0113	NR	NA
Water temperature, field measurement (°C)		32	NA	18.1	11.4	14.825	NR	NA
Alkalinity-HCO_3 (mg/L)		28	28	242	151	196.6786	NR	NA
Conductivity (µmhos/cm)		28	28	560	301	426.6071	NR	NA
Conductivity, rep. 2 (µmhos/cm)		28	28	564	296	427.3929	NR	NA
Conductivity, rep. 3 (µmhos/cm)		28	28	563	301	427.5714	NR	NA
Conductivity, rep. 4 (µmhos/cm)		28	28	563	301	427.25	NR	NA
Dissolved solids (mg/L)		28	28	344	104	229.2857	500.000	0
pH (pH units)		28	28	8.2	7.34	7.92	NR	NA
pH, rep. 2 (pH units)		28	28	8.2	7.32	7.907857	NR	NA
pH, rep. 3 (pH units)		28	28	8.2	7.36	7.908214	NR	NA
pH, rep. 4 (pH units)		28	28	8.2	7.38	7.9275	NR	NA

Table 4.19 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Total organic carbon (mg/L)		28	25	11	1	3.312	NR	NA
Total organic carbon, rep. 2 (mg/L)		28	21	6	1.2	2.961905	NR	NA
Total organic carbon, rep. 3 (mg/L)		28	21	7.3	1.3	3.557143	NR	NA
Total organic carbon, rep. 4 (mg/L)		28	19	6	1	3.084211	NR	NA
Total organic halide (µg/L)		28	2	21.21	11.4	16.305	NR	NA
Total organic halide, rep. 2 (µg/L)		28	1	17	17	17	NR	NA
Total organic halide, rep. 3 (µg/L)		28	1	14.82	14.82	14.82	NR	NA
Total organic halide, rep. 4 (µg/L)		28	2	20.2	16.31	18.255	NR	NA
Total suspended solids (mg/L)		28	19	22	1	6.463158	NR	NA
Turbidity (NTU)		28	28	40	0.1	9.857143	1.0	21
$^{231+234}$Th (pCi/L)		3	3	95.8 H	65.1 H	82.3	400.000	0
^{234}U (pCi/L)		24	24	8.07	0.229	2.358958	20.000	0
^{235}U (pCi/L)		24	24	96.6 i	–5.21 F	7.766708	24.000	1
^{238}U (pCi/L)		24	24	5.7	0	1.166054	24.000	0
^{40}K (pCi/L)		4	4	96.4	71 i	85.675	NR	NA
Gross alpha (pCi/L)		28	28	14.1	0.0761	3.982146	15 n	0
Gross beta (pCi/L)		28	28	21.1	0.23	9.461679	50 g	0

Table 4.19 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Strontium (pCi/L)		24	24	39.8	–4.23	7.7645	8 p	7
2-Butanone (µg/L)		28	3	10 J	5 JB	8	NR	NA
Acetone (µg/L)		28	2	8 JB	4 JB	6	NR	NA
Carbon tetrachloride (µg/L)		28	3	3 J	2 J	2.666667	5.000	0
Chloroform (µg/L)		28	1	1 J	1 J	1	100.000	0
Tetrachloroethene (µg/L)		28	3	2 J	1 J	1.333333	5.000	0
Toluene (µg/L)		28	2	6 JB	6 JB	6	1000.00	0

Table 4.20. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=CR Location Description=Rogers Quarry

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		4	3	0.2	0.025	0.084333	NR	NA
Lithium, ICAP (mg/L)	Filtered	4	3	0.2	0.019	0.082667	NR	NA
Chloride (mg/L)		8	8	110	2	32.61875	250.000	0
Fluoride (mg/L)		8	7	1.1	0.12	0.564286	4.000	0
Nitrate nitrogen (mg/L)		8	5	5.87	0.28	1.994	10.000	0
Sulfate (mg/L)		8	8	61	21	32.4375	250.000	0
Aluminum, ICAP (mg/L)		8	6	2	0.022	0.375833	0.2	1
Aluminum, ICAP (mg/L)	Filtered	8	4	0.049	0.021	0.0345	0.2	0
Barium, ICAP (mg/L)		8	8	0.3	0.017	0.116375	2.000	0
Barium, ICAP (mg/L)	Filtered	8	8	0.29	0.018	0.113875	2.000	0
Boron, ICAP (mg/L)		8	8	0.57	0.028	0.213625	NR	NA
Boron, ICAP (mg/L)	Filtered	8	8	0.6	0.026	0.221875	NR	NA
Calcium, ICAP (mg/L)		8	8	110	34	66.125	NR	NA
Calcium, ICAP (mg/L)	Filtered	8	8	110	34	66	NR	NA
Copper, ICAP (mg/L)		8	1	0.0043	0.0043	0.0043	1.3 g	0
Copper, ICAP (mg/L)	Filtered	8	1	0.0049	0.0049	0.0049	1.3 g	0
Iron, ICAP (mg/L)		8	8	2.3	0.041	0.588	0.300	4
Iron, ICAP (mg/L)	Filtered	8	7	0.79	0.0068	0.228686	0.300	2
Magnesium, ICAP (mg/L)		8	8	33	6.3	21.2625	NR	NA
Magnesium, ICAP (mg/L)	Filtered	8	8	34	6.3	21.4	NR	NA
Manganese, ICAP (mg/L)		8	8	0.23	0.0031	0.064525	0.050	3
Manganese, ICAP (mg/L)	Filtered	8	7	0.12	0.0012	0.042586	0.050	2

Table 4.20 (continued)

Variable	Filtered status	No samples	No detected	Max	Min	Av	Reference value	No. of measurements
Nickel, ICAP (mg/L)		8	2	0.024	0.023	0.0235	0.100 h	0
Potassium, ICAP (mg/L)		8	8	4.6	1.3	2.5625	NR	NA
Potassium, ICAP (mg/L)	Filtered	8	8	3.2	1.4	2.325	NR	NA
Sodium, ICAP (mg/L)		8	8	140	1.3	50.875	NR	NA
Sodium, ICAP (mg/L)	Filtered	8	8	140	1.3	50.275	NR	NA
Strontium, ICAP (mg/L)		8	8	1.9	0.14	1.15	NR	NA
Strontium, ICAP (mg/L)	Filtered	8	8	1.9	0.14	1.17625	NR	NA
Zinc, ICAP (mg/L)		8	8	0.03	0.0041	0.008575	5.000	0
Zinc, ICAP (mg/L)	Filtered	8	8	0.014	0.0026	0.005625	5.000	0
Conductivity, field measurement (µmhos/cm)		8	NA	964	394	670.875	NR	NA
Dissolved oxygen, field measurement (ppm)		8	NA	7.5	0.4	2.7875	NR	NA
pH, field measurement (pH units)		8	NA	8.1	7.1	7.5875	6.5/8.5	0
Redox, field measurement (MV)		8	NA	171	168	169.5	NR	NA
Static water level (ft-TOC)		8	8	–14.2	–110.23	–40.885	NR	NA
Water temperature, field measurement (°C)		8	NA	16.5	13.6	15.05	NR	NA
Alkalinity-HCO_3 (mg/L)		8	8	419	177	280.5	NR	NA
Conductivity (µmhos/cm)		8	8	1000	387	671.5	NR	NA
Dissolved solids (mg/L)		8	8	592	250	417.5	500.000	4
pH (pH units)		8	8	8.2	7.18	7.76375	NR	NA

Table 4.20 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Total suspended solids (mg/L)		8	3	34	1.5	13.16667	NR	NA
Turbidity (NTU)		8	8	95	0.8	26.7625	1.0	7
Gross alpha (pCi/L)		8	8	3.26	–1.91	0.281	15 n	0
Gross beta (pCi/L)		8	8	6.57	–0.0908	2.236362	50 g	0

Table 4.21. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=CR Location Description=United Nuclear Corporation Site

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		6	1	0.01	0.01	0.01	NR	NA
Lithium, ICAP (mg/L)	Filtered	6	1	0.012	0.012	0.012	NR	NA
Chloride (mg/L)		12	12	27	1.6	12.59167	250.000	0
Nitrate nitrogen (mg/L)		12	12	6.3	0.46	1.430833	10.000	0
Sulfate (mg/L)		12	11	6.1	1.2	3.572727	250.000	0
Aluminum, ICAP (mg/L)		12	6	0.35	0.021	0.164833	0.2	2
Aluminum, ICAP (mg/L)	Filtered	12	1	0.028	0.028	0.028	0.2	0
Barium, ICAP (mg/L)		12	12	0.027	0.0069	0.016533	2.000	0
Barium, ICAP (mg/L)	Filtered	12	12	0.028	0.0067	0.01605	2.000	0
Boron, ICAP (mg/L)		12	11	0.085	0.0074	0.032509	NR	NA
Boron, ICAP (mg/L)	Filtered	12	12	0.15	0.0094	0.039033	NR	NA
Cadmium, ICAP (mg/L)		12	1	0.003	0.003	0.003	0.005	0
Calcium, ICAP (mg/L)		12	12	57	24	40.41667	NR	NA
Calcium, ICAP (mg/L)	Filtered	12	12	57	23	41.08333	NR	NA
Chromium, AAS (mg/L)		2	2	0.34	0.23	0.285	0.1	2
Chromium, ICAP (mg/L)		12	3	0.3	0.068	0.209333	0.1	2
Copper, ICAP (mg/L)		12	4	0.01	0.0048	0.0078	1.3 g	0
Copper, ICAP (mg/L)	Filtered	12	1	0.0064	0.0064	0.0064	1.3 g	0
Iron, ICAP (mg/L)		12	12	4.9	0.031	0.968417	0.300	4
Iron, ICAP (mg/L)	Filtered	12	6	0.28	0.0094	0.067233	0.300	0
Magnesium, ICAP (mg/L)		12	12	35	17	24.58333	NR	NA
Magnesium, ICAP (mg/L)	Filtered	12	12	34	16	24.66667	NR	NA
Manganese, ICAP (mg/L)		12	12	0.091	0.0012	0.021325	0.050	3

Table 4.21 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Manganese, ICAP (mg/L)	Filtered	12	9	0.0095	0.0017	0.005167	0.050	0
Nickel, ICAP (mg/L)		12	5	0.43	0.026	0.209	0.100 h	3
Nickel, ICAP (mg/L)	Filtered	12	5	0.3	0.078	0.1332	0.100 h	2
Potassium, ICAP (mg/L)		12	11	8.9	0.8	1.804545	NR	NA
Potassium, ICAP (mg/L)	Filtered	12	12	9.8	0.63	1.828333	NR	NA
Selenium, ICAP (mg/L)	Filtered	12	2	0.096	0.063	0.0795	0.05	2
Sodium, ICAP (mg/L)		12	12	12	0.52	5.529167	NR	NA
Sodium, ICAP (mg/L)	Filtered	12	12	12	0.56	5.8125	NR	NA
Strontium, ICAP (mg/L)		12	12	0.025	0.009	0.016142	NR	NA
Strontium, ICAP (mg/L)	Filtered	12	12	0.026	0.0081	0.0163	NR	NA
Uranium (mg/L)		12	2	0.00092	0.0006	0.00076	0.020	0
Uranium (mg/L)	Filtered	12	2	0.00088	0.00057	0.000725	0.020	0
Zinc, ICAP (mg/L)		12	11	0.018	0.0021	0.008718	5.000	0
Zinc, ICAP (mg/L)	Filtered	12	10	0.04	0.0024	0.01201	5.000	0
Conductivity, field measurement (µmhos/cm)		12	NA	588	247	395.6667	NR	NA
Dissolved oxygen, field measurement (ppm)		12	NA	6.9	0.4	3.1	NR	NA
pH, field measurement (pH units)		12	NA	8.1	7.2	7.65	6.5/8.5	0
Redox, field measurement (MV)		12	NA	157	18	113.1667	NR	NA
Static water level (ft-TOC)		12	12	–59.7	–108	–80.2642	NR	NA
Water temperature, field measurement (°C)		12	NA	17	15	16.15	NR	NA

Table 4.21 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Alkalinity-HCO_3 (mg/L)		12	12	267	137	201.5833	NR	NA
Conductivity (µmhos/cm)		12	12	562	260	410.0833	NR	NA
Dissolved solids (mg/L)		12	12	326	140	204.1667	500.000	0
pH (pH units)		12	12	8.3	7.5	7.816667	NR	NA
Total suspended solids (mg/L)		12	7	5.5	2	3.142857	NR	NA
Turbidity (NTU)		12	12	18	0.35	4.704167	1.0	9
^{137}Cs (pCi/L)		1	1	5.3	5.3	5.3	120.000	0
$^{231+234}Th$ (pCi/L)		1	1	76.5	76.5	76.5	400.000	0
^{234}U (pCi/L)		12	12	0.953	0.263	0.468333	20.000	0
^{235}U (pCi/L)		12	12	6.94 E	–4.08 F	1.489408	24.000	0
^{238}U (pCi/L)		12	12	0.202	0	0.083075	24.000	0
^{40}K (pCi/L)		1	1	85.9 i	85.9 i	85.9	NR	NA
Gross alpha (pCi/L)		12	12	2.57	–1.14	0.526667	15 n	0
Gross beta (pCi/L)		12	12	5.09	–0.488	1.986495	50 g	0
Radium, X-10 lab (Bq/L)		12	12	0.099	0.004	0.032083	0.15	0
2-Butanone (µg/L)		12	2	9 JB	8 JB	8.5	NR	NA
Acetone (µg/L)		12	1	11 B	11 B	11	NR	NA
Ethylbenzene (µg/L)		12	4	4 JB	3 JB	3.25	700.000	0
Methylene chloride (µg/L)		12	2	1 J	1 J	1	5.000	0
Xylenes (µg/L)		12	4	14 B	11 B	12	10000.0	0

Table 4.22. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=Beta-4 Security Pits

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		8	8	0.023	0.0082	0.016525	NR	NA
Lithium, ICAP (mg/L)	Filtered	8	8	0.014	0.01	0.0115	NR	NA
Chloride (mg/L)		16	16	16	3.7	8.158125	250.000	0
Fluoride (mg/L)		16	9	0.24	0.11	0.158889	4.000	0
Nitrate nitrogen (mg/L)		16	9	0.57	0.23	0.426667	10.000	0
Sulfate (mg/L)		16	16	15	1.6	9.924375	250.000	0
Aluminum, ICAP (mg/L)		16	16	8.2	0.37	3.795625	0.2	16
Aluminum, ICAP (mg/L)	Filtered	16	11	0.092	0.025	0.043364	0.2	0
Antimony, ICAP (mg/L)	Filtered	16	2	0.061	0.051	0.056	0.006	2
Barium, ICAP (mg/L)		16	16	1.2	0.13	0.38	2.000	0
Barium, ICAP (mg/L)	Filtered	16	16	0.36	0.15	0.248125	2.000	0
Beryllium, ICAP (mg/L)		16	6	0.00041	0.0003	0.000348	0.004	0
Boron, ICAP (mg/L)		16	16	0.062	0.015	0.028938	NR	NA
Boron, ICAP (mg/L)	Filtered	16	16	0.12	0.013	0.03725	NR	NA
Calcium, ICAP (mg/L)		16	16	120	63	86.8125	NR	NA
Calcium, ICAP (mg/L)	Filtered	16	16	130	64	87.9375	NR	NA
Chromium, ICAP (mg/L)		16	3	0.017	0.012	0.014	0.1	0
Cobalt, ICAP (mg/L)		16	8	0.012	0.0062	0.0085	NR	NA
Cobalt, ICAP (mg/L)	Filtered	16	1	0.01	0.01	0.01	NR	NA
Copper, ICAP (mg/L)		16	12	0.029	0.0043	0.014675	1.3 g	0
Copper, ICAP (mg/L)	Filtered	16	4	0.0059	0.0042	0.005175	1.3 g	0
Iron, ICAP (mg/L)		16	16	12	0.32	6.195	0.300	16

Table 4.22 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Iron, ICAP (mg/L)	Filtered	16	9	6.1	0.013	1.532222	0.300	4
Magnesium, ICAP (mg/L)		16	16	17	7	10.24375	NR	NA
Magnesium, ICAP (mg/L)	Filtered	16	16	16	5.8	9.525	NR	NA
Manganese, ICAP (mg/L)		16	16	19	0.015	2.445938	0.050	15
Manganese, ICAP (mg/L)	Filtered	16	16	2.4	0.0085	0.579781	0.050	6
Nickel, ICAP (mg/L)		16	5	0.019	0.011	0.0142	0.100 h	0
Potassium, ICAP (mg/L)		16	16	5.7	1.4	3.0625	NR	NA
Potassium, ICAP (mg/L)	Filtered	16	16	3.3	0.75	1.736875	NR	NA
Selenium, ICAP (mg/L)		16	1	0.073	0.073	0.073	0.05	1
Sodium, ICAP (mg/L)		16	16	11	5	7.50625	NR	NA
Sodium, ICAP (mg/L)	Filtered	16	16	10	6	7.5875	NR	NA
Strontium, ICAP (mg/L)		16	16	0.67	0.13	0.2625	NR	NA
Strontium, ICAP (mg/L)	Filtered	16	16	0.7	0.14	0.26875	NR	NA
Uranium (mg/L)		16	2	0.0014	0.00052	0.00096	0.020	0
Uranium (mg/L)	Filtered	16	2	0.001	0.00051	0.000755	0.020	0
Vanadium, ICAP (mg/L)		16	10	0.014	0.0052	0.00893	NR	NA
Zinc, ICAP (mg/L)		16	16	0.045	0.0063	0.027163	5.000	0
Zinc, ICAP (mg/L)	Filtered	16	15	0.044	0.004	0.015467	5.000	0
Conductivity, field measurement (µmhos/cm)		16	NA	716	305	492.5	NR	NA
Dissolved oxygen, field measurement (ppm)		16	NA	11.9	0.7	4.21875	NR	NA

Table 4.22 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
pH, field measurement (pH units)		16	NA	7.6	6.4	6.95625	6.5/8.5	1
Redox, field measurement (MV)		16	NA	282	8.2	155.6571	NR	NA
Static water level (ft-TOC)		16	16	–3.8	–8.82	–6.06313	NR	NA
Water temperature, field measurement (°C)		16	NA	23.3	13.3	17.6125	NR	NA
Alkalinity-HCO_3 (mg/L)		16	16	370	177	261.9375	NR	NA
Conductivity (µmhos/cm)		16	16	693	368	513.25	NR	NA
Dissolved solids (mg/L)		16	16	434	224	321.5	500.000	0
pH (pH units)		16	16	8.1	6.67	7.230625	NR	NA
Total suspended solids (mg/L)		16	16	785	5	162	NR	NA
Turbidity (NTU)		16	16	1100	8.8	157.675	1.0	16
Gross alpha (pCi/L)		16	16	16.9	–1.31	4.593188	15 n	1
Gross beta (pCi/L)		16	16	31.8	–26.7	7.407875	50 g	0
1,1-Dichloroethane (µg/L)		16	1	2 J	2 J	2	NR	NA
1,1-Dichloroethene (µg/L)		16	1	1 J	1 J	1	7.000	0
1,2-Dichloroethene (µg/L)		16	4	23	5 J	15.75	70	0
2-Butanone (µg/L)		16	1	10	10	10	NR	NA
Acetone (µg/L)		16	2	6 JB	5 JB	5.5	NR	NA
Methylene chloride (µg/L)		16	3	3 JB	3 JB	3	5.000	0
Tetrachloroethene (µg/L)		16	3	4 J	2 J	3	5.000	0
Trichloroethene (µg/L)		16	3	5 J	3 J	3.666667	5.000	0
Vinyl chloride (µg/L)		16	1	1 J	1 J	1	2.000	0

Table 4.23. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=East Fork Exit Pathway

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		27	16	0.097	0.0045	0.021675	NR	NA
Lithium, ICAP (mg/L)	Filtered	27	15	0.076	0.0045	0.021373	NR	NA
Chloride (mg/L)		54	54	42.7	1.78	12.03019	250.000	0
Fluoride (mg/L)		54	30	0.7	0.1	0.246333	4.000	0
Nitrate nitrogen (mg/L)		54	36	3.6	0.274	1.223639	10.000	0
Sulfate (mg/L)		54	51	100	1.2	28.41275	250.000	0
Aluminum, ICAP (mg/L)		54	34	8.7	0.025	0.824853	0.2	19
Aluminum, ICAP (mg/L)	Filtered	54	26	0.14	0.021	0.043692	0.2	0
Barium, ICAP (mg/L)		54	54	0.78	0.024	0.154556	2.000	0
Barium, ICAP (mg/L)	Filtered	54	54	0.79	0.021	0.153037	2.000	0
Beryllium, ICAP (mg/L)		54	2	0.0004	0.00036	0.00038	0.004	0
Boron, ICAP (mg/L)		54	54	0.5	0.01	0.111185	NR	NA
Boron, ICAP (mg/L)	Filtered	54	54	0.55	0.011	0.108722	NR	NA
Cadmium, AAS (mg/L)		18	4	0.028	0.019	0.02375	0.005	4
Cadmium, AAS (mg/L)	Filtered	18	4	0.028 s	0.018	0.02175	0.005	4
Cadmium, ICAP (mg/L)		54	4	0.023	0.021	0.02175	0.005	4
Cadmium, ICAP (mg/L)	Filtered	54	4	0.02	0.019	0.0195	0.005	4
Calcium, ICAP (mg/L)		54	54	130	15	67.14815	NR	NA
Calcium, ICAP (mg/L)	Filtered	54	54	120	18	66.64815	NR	NA
Chromium, AAS (mg/L)		18	2	0.034	0.016	0.025	0.1	0
Chromium, ICAP (mg/L)		54	7	0.099	0.011	0.043857	0.1	0
Cobalt, ICAP (mg/L)		54	6	0.015	0.0052	0.008817	NR	NA

Table 4.23 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Cobalt, ICAP (mg/L)	Filtered	54	3	0.02	0.0054	0.012133	NR	NA
Copper, ICAP (mg/L)		54	11	0.016	0.0048	0.009427	1.3 g	0
Copper, ICAP (mg/L)	Filtered	54	8	0.011	0.0042	0.00705	1.3 g	0
Iron, ICAP (mg/L)		54	53	25	0.0068	3.540732	0.300	33
Iron, ICAP (mg/L)	Filtered	54	45	24	0.0054	2.844656	0.300	13
Magnesium, ICAP (mg/L)		54	54	41	4.5	18.73333	NR	NA
Magnesium, ICAP (mg/L)	Filtered	54	54	41	4.5	18.5537	NR	NA
Manganese, ICAP (mg/L)		54	53	4.2	0.0014	0.506779	0.050	27
Manganese, ICAP (mg/L)	Filtered	54	52	4	0.001	0.50669	0.050	26
Mercury, CVAA (mg/L)		54	1	0.00022	0.00022	0.00022	0.002	0
Mercury, CVAA (mg/L)	Filtered	54	1	0.00055	0.00055	0.00055	0.002	0
Nickel, ICAP (mg/L)		54	9	0.4	0.012	0.106667	0.100 h	3
Nickel, ICAP (mg/L)	Filtered	54	7	0.35	0.013	0.087286	0.100 h	1
Potassium, ICAP (mg/L)		54	54	6.5	1	3.457407	NR	NA
Potassium, ICAP (mg/L)	Filtered	54	53	6.7	0.81	3.328491	NR	NA
Selenium, ICAP (mg/L)		54	2	0.1	0.06	0.08	0.05	2
Selenium, ICAP (mg/L)	Filtered	54	2	0.081	0.052	0.0665	0.05	2
Silver, ICAP (mg/L)	Filtered	54	1	0.0061	0.0061	0.0061	0.10	0
Sodium, ICAP (mg/L)		54	54	18	1.7	7.683333	NR	NA
Sodium, ICAP (mg/L)	Filtered	54	54	18	1.7	7.627778	NR	NA
Strontium, ICAP (mg/L)		54	54	1.5	0.035	0.329574	NR	NA
Strontium, ICAP (mg/L)	Filtered	54	54	1.5	0.036	0.327722	NR	NA

Table 4.23 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Uranium (mg/L)		54	14	0.23	0.0005	0.058106	0.020	5
Uranium (mg/L)	Filtered	54	13	0.23	0.00055	0.062324	0.020	4
Vanadium, ICAP (mg/L)		54	3	0.013	0.0057	0.008433	NR	NA
Vanadium, ICAP (mg/L)	Filtered	54	1	0.0053	0.0053	0.0053	NR	NA
Zinc, ICAP (mg/L)		54	53	1.7	0.0021	0.117236	5.000	0
Zinc, ICAP (mg/L)	Filtered	54	52	1.5	0.0024	0.101237	5.000	0
Conductivity, field measurement (µmhos/cm)		54	NA	825	161	497.5185	NR	NA
Dissolved oxygen, field measurement (ppm)		54	NA	10.5	0.33	2.545926	NR	NA
pH, field measurement (pH units)		54	NA	8	5.4	7.135185	6.5/8.5	5
Redox, field measurement (MV)		52	NA	221	15	126.2105	NR	NA
Static water level (ft-TOC)		52	52	0	–59.64	–21.8242	NR	NA
Water temperature, field measurement (°C)		54	NA	23	11.4	15.93704	NR	NA
Alkalinity-HCO_3 (mg/L)		54	54	313	37	226.5926	NR	NA
Conductivity (µmhos/cm)		54	54	660	151	499.7037	NR	NA
Dissolved solids (mg/L)		54	54	442	78	301.4074	500.000	0
pH (pH units)		54	54	8.2	6.1	7.385	NR	NA
Total suspended solids (mg/L)		54	31	390	1	30.06452	NR	NA
Turbidity (NTU)		54	54	850	0.2	37.9037	1.0	45
Gross alpha (pCi/L)		54	54	115	–2.13	8.678932	15 n	4

Table 4.23 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Gross beta (pCi/L)		54	54	73.6	–22.8	7.557333	50 g	2
1,1-Dichloroethane (µg/L)		57	3	3 J	2 JD	2.333333	NR	NA
1,1-Dichloroethene (µg/L)		57	1	2 J	2 J	2	7.000	0
1,2-Dichloroethene (µg/L)		57	14	54	1 J	20.78571	70	0
2-Butanone (µg/L)		57	3	10	9 J	9.666667	NR	NA
Acetone (µg/L)		57	5	12	4 JB	6.4	NR	NA
Carbon tetrachloride (µg/L)		57	17	1100 E	14	312.8235	5.000	17
Chloroform (µg/L)		57	21	250	1 J	60.85714	100.000	5
Di-n-Butylphthalate (µg/L)		2	1	50 JB	50 JB	50	NR	NA
Diethylphthalate (µg/L)		2	1	7 JB	7 JB	7	NR	NA
Methylene chloride (µg/L)		57	4	49 J	1 J	14.25	5.000	1
Tetrachloroethene (µg/L)		57	25	65	1 J	14.36	5.000	14
Toluene (µg/L)		57	3	5 JB	4 JB	4.666667	1000.00	0
Trichloroethene (µg/L)		57	15	37	1 J	11.6	5.000	8
Vinyl chloride (µg/L)		57	2	2 J	2 J	2	2.000	0
Xylenes (µg/L)		57	3	3 JB	2 JB	2.666667	10000.0	0

Table 4.24. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=Fire Training Facility

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		4	2	0.033	0.019	0.026	NR	NA
Lithium, ICAP (mg/L)	Filtered	4	2	0.03	0.024	0.027	NR	NA
Chloride (mg/L)		8	8	3.2	2.2	2.72125	250.000	0
Fluoride (mg/L)		8	2	0.19	0.1	0.145	4.000	0
Nitrate nitrogen (mg/L)		8	8	2.7	1	1.79875	10.000	0
Sulfate (mg/L)		8	8	6.8	3.6	5.3025	250.000	0
Aluminum, ICAP (mg/L)		8	8	2.3	0.14	1.29125	0.2	7
Aluminum, ICAP (mg/L)	Filtered	8	5	2.4	0.095	1.263	0.2	4
Barium, ICAP (mg/L)		8	8	0.069	0.0094	0.034675	2.000	0
Barium, ICAP (mg/L)	Filtered	8	8	0.061	0.0087	0.023588	2.000	0
Beryllium, ICAP (mg/L)		8	1	0.00035	0.00035	0.00035	0.004	0
Boron, ICAP (mg/L)		8	8	0.055	0.014	0.038	NR	NA
Boron, ICAP (mg/L)	Filtered	8	8	0.054	0.018	0.037125	NR	NA
Calcium, ICAP (mg/L)		8	8	200	45	70.5	NR	NA
Calcium, ICAP (mg/L)	Filtered	8	8	65	23	45.5	NR	NA
Chromium, ICAP (mg/L)	Filtered	8	1	0.02	0.02	0.02	0.1	0
Copper, ICAP (mg/L)		8	4	0.014	0.0073	0.010875	1.3 g	0
Copper, ICAP (mg/L)	Filtered	8	3	0.0063	0.0048	0.005467	1.3 g	0
Iron, ICAP (mg/L)		8	7	2.5	0.014	0.607714	0.300	3
Iron, ICAP (mg/L)	Filtered	8	4	0.093	0.012	0.03575	0.300	0
Magnesium, ICAP (mg/L)		8	8	17	1.4	6.025	NR	NA
Magnesium, ICAP (mg/L)	Filtered	8	8	15	0.23	4.49125	NR	NA

Table 4.24 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Manganese, ICAP (mg/L)		8	7	0.073	0.0012	0.019171	0.050	1
Manganese, ICAP (mg/L)	Filtered	8	4	0.051	0.0016	0.017575	0.050	1
Nickel, ICAP (mg/L)		8	1	0.012	0.012	0.012	0.100 h	0
Nickel, ICAP (mg/L)	Filtered	8	1	0.013	0.013	0.013	0.100 h	0
Potassium, ICAP (mg/L)		8	8	23	7.1	14.9875	NR	NA
Potassium, ICAP (mg/L)	Filtered	8	8	24	6.1	15.6375	NR	NA
Sodium, ICAP (mg/L)		8	8	3.4	2.5	2.9625	NR	NA
Sodium, ICAP (mg/L)	Filtered	8	8	3.4	2.4	3.0375	NR	NA
Strontium, ICAP (mg/L)		8	8	0.61	0.17	0.24625	NR	NA
Strontium, ICAP (mg/L)	Filtered	8	8	0.34	0.17	0.2125	NR	NA
Uranium (mg/L)		8	2	0.0012	0.00051	0.000855	0.020	0
Vanadium, ICAP (mg/L)		8	3	0.0098	0.0065	0.007733	NR	NA
Vanadium, ICAP (mg/L)	Filtered	8	4	0.0097	0.0058	0.00735	NR	NA
Zinc, ICAP (mg/L)		8	8	0.029	0.0036	0.013213	5.000	0
Zinc, ICAP (mg/L)	Filtered	8	7	0.01	0.0029	0.006629	5.000	0
Conductivity, field measurement (µmhos/cm)		8	NA	1163	272	448.375	NR	NA
Dissolved oxygen, field measurement (ppm)		8	NA	9.4	1.9	5.2125	NR	NA
pH, field measurement (pH units)		8	NA	11.8	8.2	10.45	6.5/8.5	7
Redox, field measurement (MV)		8	NA	175	3	82.16667	NR	NA

Table 4.24 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Static water level (ft-TOC)		8	8	–19	–31	–25.1163	NR	NA
Water temperature, field measurement (°C)		8	NA	17.3	13.4	15.35	NR	NA
Alkalinity-CO_3 (mg/L)		8	5	42	8	22.8	NR	NA
Alkalinity-HCO_3 (mg/L)		8	6	138	2	75	NR	NA
Conductivity (µmhos/cm)		8	8	744	137	271.125	NR	NA
Dissolved solids (mg/L)		8	8	210	84	137.5	500.000	0
pH (pH units)		8	8	11.6	8.08	9.56375	NR	NA
Total suspended solids (mg/L)		8	8	82	20	46	NR	NA
Turbidity (NTU)		8	8	61	26	46.125	1.0	8
Gross alpha (pCi/L)		8	8	2.12	–0.875	0.123125	15 n	0
Gross beta (pCi/L)		8	8	17	6.26	13.0575	50 g	0
1,2-Dichloroethene (µg/L)		9	9	370	55	214.3333	70	7
Acetone (µg/L)		9	2	46 JB	10 B	28	NR	NA
Tetrachloroethene (µg/L)		9	9	490	110	292.2222	5.000	9
Trichloroethene (µg/L)		9	9	140	30	85.11111	5.000	9

Table 4.25. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=GW Monitoring Plan Grid Location A1

Variable	Filtered status	No samples	No detected	Max	Min	Av	Reference value	No. of measurements
Chloride (mg/L)		4	4	7.6	1.8	4.675	250.000	0
Fluoride (mg/L)		4	3	0.2	0.13	0.173333	4.000	0
Nitrate nitrogen (mg/L)		4	3	0.43	0.35	0.396667	10.000	0
Sulfate (mg/L)		4	4	37	9	22.775	250.000	0
Aluminum, ICAP (mg/L)		4	4	0.59	0.14	0.3325	0.2	3
Aluminum, ICAP (mg/L)	Filtered	4	2	0.041	0.039	0.04	0.2	0
Barium, ICAP (mg/L)		4	4	0.33	0.086	0.2065	2.000	0
Barium, ICAP (mg/L)	Filtered	4	4	0.32	0.061	0.192	2.000	0
Boron, ICAP (mg/L)		4	4	0.037	0.017	0.02475	NR	NA
Boron, ICAP (mg/L)	Filtered	4	4	0.059	0.014	0.0315	NR	NA
Calcium, ICAP (mg/L)		4	4	63	47	55.75	NR	NA
Calcium, ICAP (mg/L)	Filtered	4	4	61	47	54.75	NR	NA
Copper, ICAP (mg/L)		4	3	0.04	0.0048	0.022933	1.3 g	0
Copper, ICAP (mg/L)	Filtered	4	1	0.0088	0.0088	0.0088	1.3 g	0
Iron, ICAP (mg/L)		4	4	0.7	0.28	0.49	0.300	2
Iron, ICAP (mg/L)	Filtered	4	2	0.056	0.043	0.0495	0.300	0
Magnesium, ICAP (mg/L)		4	4	13	6.8	9.7	NR	NA
Magnesium, ICAP (mg/L)	Filtered	4	4	13	6.6	9.85	NR	NA
Manganese, ICAP (mg/L)		4	4	0.058	0.012	0.03725	0.050	2
Manganese, ICAP (mg/L)	Filtered	4	4	0.057	0.0028	0.0266	0.050	1
Potassium, ICAP (mg/L)		4	4	2.9	1.6	2.275	NR	NA
Potassium, ICAP (mg/L)	Filtered	4	4	2.6	1.4	2	NR	NA
Silver, ICAP (mg/L)		4	1	0.0081	0.0081	0.0081	0.10	0

Table 4.25 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Sodium, ICAP (mg/L)		4	4	14	9.9	11.725	NR	NA
Sodium, ICAP (mg/L)	Filtered	4	4	14	10	12	NR	NA
Strontium, ICAP (mg/L)		4	4	0.18	0.091	0.14525	NR	NA
Strontium, ICAP (mg/L)	Filtered	4	4	0.17	0.086	0.129	NR	NA
Zinc, ICAP (mg/L)		4	3	0.021	0.0068	0.0125	5.000	0
Zinc, ICAP (mg/L)	Filtered	4	2	0.003	0.0022	0.0026	5.000	0
Conductivity, field measurement (µmhos/cm)		4	NA	374	364	369.75	NR	NA
Dissolved oxygen, field measurement (ppm)		4	NA	4.3	2.3	2.975	NR	NA
pH, field measurement (pH units)		4	NA	8.1	7.1	7.6	6.5/8.5	0
Redox, field measurement (MV)		4	NA	214	155	184.5	NR	NA
Static water level (ft-TOC)		4	4	–17.18	–17.85	–17.4875	NR	NA
Water temperature, field measurement (°C)		4	NA	21	15.4	17.625	NR	NA
Alkalinity-HCO_3 (mg/L)		4	4	194	144	172	NR	NA
Conductivity (µmhos/cm)		4	4	386	370	378.25	NR	NA
Dissolved solids (mg/L)		4	4	316	248	280.5	500.000	0
pH (pH units)		4	4	8	7.2	7.6	NR	NA
Total suspended solids (mg/L)		4	4	8	1.5	5.375	NR	NA
Turbidity (NTU)		4	4	8.3	5.1	6.025	1.0	4
Gross alpha (pCi/L)		4	4	1.14	–0.642	–0.15125	15 n	0
Gross beta (pCi/L)		4	4	4.32	0.545	2.75875	50 g	0

Table 4.26. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=GW Monitoring Plan Grid Location A2

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Chloride (mg/L)		4	4	40	7.3	22.075	250.000	0
Fluoride (mg/L)		4	3	0.24	0.1	0.18	4.000	0
Nitrate nitrogen (mg/L)		4	2	0.82	0.6	0.71	10.000	0
Sulfate (mg/L)		4	4	125	21	63.5	250.000	0
Aluminum, ICAP (mg/L)		4	4	1.4	0.068	0.452	0.2	2
Aluminum, ICAP (mg/L)	Filtered	4	4	0.17	0.024	0.06575	0.2	0
Barium, ICAP (mg/L)		4	4	0.27	0.033	0.1235	2.000	0
Barium, ICAP (mg/L)	Filtered	4	4	0.15	0.027	0.0915	2.000	0
Boron, ICAP (mg/L)		4	4	0.077	0.022	0.051	NR	NA
Boron, ICAP (mg/L)	Filtered	4	4	0.27	0.025	0.092	NR	NA
Cadmium, AAS (mg/L)		2	1	0.0021	0.0021	0.0021	0.005	0
Cadmium, AAS (mg/L)	Filtered	2	1	0.0046	0.0046	0.0046	0.005	0
Cadmium, ICAP (mg/L)	Filtered	4	1	0.0034	0.0034	0.0034	0.005	0
Calcium, ICAP (mg/L)		4	4	140	64	99	NR	NA
Calcium, ICAP (mg/L)	Filtered	4	4	130	65	95.25	NR	NA
Chromium, AAS (mg/L)		2	2	2.9	0.048	1.474	0.1	1
Chromium, AAS (mg/L)	Filtered	2	1	0.18	0.18	0.18	0.1	1
Chromium, ICAP (mg/L)		4	2	2.8	0.043	1.4215	0.1	1
Chromium, ICAP (mg/L)	Filtered	4	1	0.16	0.16	0.16	0.1	1
Cobalt, ICAP (mg/L)		4	1	0.02	0.02	0.02	NR	NA
Cobalt, ICAP (mg/L)	Filtered	4	1	0.0069	0.0069	0.0069	NR	NA
Copper, ICAP (mg/L)		4	3	0.11	0.0059	0.0463	1.3 g	0

Table 4.26 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Copper, ICAP (mg/L)	Filtered	4	2	0.018	0.0077	0.01285	1.3 g	0
Iron, ICAP (mg/L)		4	4	34	0.34	8.8925	0.300	4
Iron, ICAP (mg/L)	Filtered	4	4	1.9	0.018	0.5945	0.300	1
Lead, AAS (mg/L)		2	2	0.0083	0.0063	0.0073	0.015 g	0
Magnesium, ICAP (mg/L)		4	4	41	15	26.75	NR	NA
Magnesium, ICAP (mg/L)	Filtered	4	4	37	16	25.75	NR	NA
Manganese, ICAP (mg/L)		4	4	0.19	0.031	0.0885	0.050	3
Manganese, ICAP (mg/L)	Filtered	4	4	0.064	0.031	0.04475	0.050	2
Molybdenum, ICAP (mg/L)		4	1	0.021	0.021	0.021	NR	NA
Nickel, ICAP (mg/L)		4	2	0.97	0.32	0.645	0.100 h	2
Nickel, ICAP (mg/L)	Filtered	4	2	0.35	0.33	0.34	0.100 h	2
Potassium, ICAP (mg/L)		4	4	4.5	2	3	NR	NA
Potassium, ICAP (mg/L)	Filtered	4	4	4.1	1.6	2.825	NR	NA
Silver, ICAP (mg/L)		4	1	0.0068	0.0068	0.0068	0.10	0
Sodium, ICAP (mg/L)		4	4	29	20	24.25	NR	NA
Sodium, ICAP (mg/L)	Filtered	4	4	28	21	24.5	NR	NA
Strontium, ICAP (mg/L)		4	4	0.34	0.14	0.245	NR	NA
Strontium, ICAP (mg/L)	Filtered	4	4	0.32	0.15	0.235	NR	NA
Vanadium, ICAP (mg/L)		4	2	0.0087	0.0055	0.0071	NR	NA
Zinc, ICAP (mg/L)		4	3	0.013	0.0034	0.0086	5.000	0
Zinc, ICAP (mg/L)	Filtered	4	1	0.0036	0.0036	0.0036	5.000	0

Table 4.26 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Conductivity, field measurement (μmhos/cm)		4	NA	898	438	679.75	NR	NA
Dissolved oxygen, field measurement (ppm)		4	NA	5.9	1.6	3.975	NR	NA
pH, field measurement (pH units)		4	NA	7.8	6.9	7.35	6.5/8.5	0
Redox, field measurement (MV)		4	NA	204	2	103	NR	NA
Static water level (ft-TOC)		4	4	–27.6	–28.55	–28.145	NR	NA
Water temperature, field measurement (°C)		4	NA	17.8	11.2	14.9	NR	NA
Alkalinity-HCO_3 (mg/L)		4	4	420	196	309.5	NR	NA
Conductivity (μmhos/cm)		4	4	1050	508	736.25	NR	NA
Dissolved solids (mg/L)		4	4	676	298	521.75	500.000	2
pH (pH units)		4	4	8.3	7.4	7.85	NR	NA
Total suspended solids (mg/L)		4	4	972	1	251.25	NR	NA
Turbidity (NTU)		4	4	440	2	124.175	1.0	4
Gross alpha (pCi/L)		4	4	1.53	–0.215	0.63125	15 n	0
Gross beta (pCi/L)		4	4	5.24	–0.261	3.35475	50 g	0
2-Butanone (μg/L)		4	1	9 JB	9 JB	9	NR	NA

Table 4.27. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=GW Monitoring Plan Grid Location B2

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Chloride (mg/L)		4	4	10	2.8	6.2	250.000	0
Fluoride (mg/L)		4	1	0.1	0.1	0.1	4.000	0
Nitrate nitrogen (mg/L)		4	4	1.4	0.37	0.8725	10.000	0
Sulfate (mg/L)		4	4	25	11	18	250.000	0
Aluminum, ICAP (mg/L)		4	4	39	0.082	10.2055	0.2	2
Aluminum, ICAP (mg/L)	Filtered	4	3	0.053	0.027	0.038	0.2	0
Barium, ICAP (mg/L)		4	4	0.74	0.098	0.3145	2.000	0
Barium, ICAP (mg/L)	Filtered	4	4	0.2	0.075	0.13775	2.000	0
Beryllium, ICAP (mg/L)		4	1	0.0022	0.0022	0.0022	0.004	0
Boron, ICAP (mg/L)		4	4	0.064	0.024	0.0505	NR	NA
Boron, ICAP (mg/L)	Filtered	4	4	0.065	0.017	0.033	NR	NA
Calcium, ICAP (mg/L)		4	4	68	50	61.75	NR	NA
Calcium, ICAP (mg/L)	Filtered	4	4	68	50	59.25	NR	NA
Chromium, ICAP (mg/L)		4	2	0.17	0.045	0.1075	0.1	1
Cobalt, ICAP (mg/L)		4	2	0.049	0.0074	0.0282	NR	NA
Copper, ICAP (mg/L)		4	3	0.097	0.004	0.036167	1.3 g	0
Copper, ICAP (mg/L)	Filtered	4	1	0.0049	0.0049	0.0049	1.3 g	0
Iron, ICAP (mg/L)		4	4	79	0.15	20.375	0.300	2
Iron, ICAP (mg/L)	Filtered	4	4	0.22	0.014	0.0825	0.300	0
Lead, ICAP (mg/L)		4	1	0.1	0.1	0.1	0.015 g	1
Magnesium, ICAP (mg/L)		4	4	24	7.3	11.875	NR	NA
Magnesium, ICAP (mg/L)	Filtered	4	4	9.2	7	8.15	NR	NA

Table 4.27 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Manganese, ICAP (mg/L)		4	4	3.8	0.042	0.99725	0.050	3
Manganese, ICAP (mg/L)	Filtered	4	4	0.051	0.0058	0.0277	0.050	1
Nickel, ICAP (mg/L)		4	2	0.11	0.012	0.061	0.100 h	1
Nickel, ICAP (mg/L)	Filtered	4	1	0.016	0.016	0.016	0.100 h	0
Potassium, ICAP (mg/L)		4	4	10	1.8	4.3	NR	NA
Potassium, ICAP (mg/L)	Filtered	4	4	2.8	1.1	1.925	NR	NA
Sodium, ICAP (mg/L)		4	4	13	9.9	11.475	NR	NA
Sodium, ICAP (mg/L)	Filtered	4	4	15	9.7	11.875	NR	NA
Strontium, ICAP (mg/L)		4	4	0.2	0.085	0.15125	NR	NA
Strontium, ICAP (mg/L)	Filtered	4	4	0.2	0.09	0.14175	NR	NA
Uranium, (mg/L)		4	1	0.00074	0.00074	0.00074	0.020	0
Vanadium, ICAP (mg/L)		4	3	0.084	0.0051	0.031567	NR	NA
Zinc, ICAP (mg/L)		4	4	0.15	0.0028	0.041725	5.000	0
Zinc, ICAP (mg/L)	Filtered	4	3	0.007	0.0023	0.004167	5.000	0
Conductivity, field measurement (µmhos/cm)		4	NA	401	314	363.75	NR	NA
Dissolved oxygen, field measurement (ppm)		4	NA	4.1	2	2.725	NR	NA
pH, field measurement (pH units)		4	NA	7.5	6.6	7.125	6.5/8.5	0
Redox, field measurement (MV)		4	NA	180	65	137	NR	NA
Static water level (ft-TOC)		4	4	–7	–7.7	–7.3875	NR	NA

Table 4.27 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Water temperature, field measurement (°C)		4	NA	18.5	14	16.1	NR	NA
Alkalinity-HCO_3 (mg/L)		4	4	209	135	175.25	NR	NA
Conductivity (µmhos/cm)		4	4	412	370	389.25	NR	NA
Dissolved solids (mg/L)		4	4	250	216	229	500.000	0
pH (pH units)		4	4	8	7	7.45	NR	NA
Total suspended solids (mg/L)		4	4	1287	2	331.125	NR	NA
Turbidity (NTU)		4	4	900	1.6	233.825	1.0	4
Gross alpha (pCi/L)		4	4	5.94	–0.00724	1.52266	15 n	0
Gross beta (pCi/L)		4	4	11.8	–2.11	3.2575	50 g	0
2-Butanone (µg/L)		4	1	9 J	9 J	9	NR	NA

Table 4.28. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=GW Monitoring Plan Grid Location C1

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		4	2	0.015	0.011	0.013	NR	NA
Lithium, ICAP (mg/L)	Filtered	4	2	0.016	0.0092	0.0126	NR	NA
Chloride (mg/L)		8	8	53	7.88	28.6475	250.000	0
Fluoride (mg/L)		8	2	0.12	0.1	0.11	4.000	0
Nitrate nitrogen (mg/L)		8	2	0.59	0.36	0.475	10.000	0
Sulfate (mg/L)		8	8	14	2.1	8.64375	250.000	0
Aluminum, ICAP (mg/L)		8	8	7.1	0.057	1.058875	0.2	3
Aluminum, ICAP (mg/L)	Filtered	8	5	0.12	0.022	0.0488	0.2	0
Arsenic, ICAP (mg/L)	Filtered	8	1	0.064	0.064	0.064	0.050	1
Barium, ICAP (mg/L)		8	8	0.18	0.083	0.137375	2.000	0
Barium, ICAP (mg/L)	Filtered	8	8	0.18	0.081	0.131125	2.000	0
Beryllium, ICAP (mg/L)		8	2	0.00071	0.00047	0.00059	0.004	0
Boron, ICAP (mg/L)		8	8	0.059	0.009	0.03025	NR	NA
Boron, ICAP (mg/L)	Filtered	8	8	0.077	0.0099	0.030988	NR	NA
Calcium, ICAP (mg/L)		8	8	79	12	43.75	NR	NA
Calcium, ICAP (mg/L)	Filtered	8	8	81	12	44.75	NR	NA
Chromium, ICAP (mg/L)		8	2	0.18	0.012	0.096	0.1	1
Cobalt, ICAP (mg/L)		8	4	0.059	0.055	0.05675	NR	NA
Cobalt, ICAP (mg/L)	Filtered	8	4	0.056	0.054	0.05525	NR	NA
Copper, ICAP (mg/L)		8	6	0.01	0.0047	0.00715	1.3 g	0
Copper, ICAP (mg/L)	Filtered	8	1	0.005	0.005	0.005	1.3 g	0
Iron, ICAP (mg/L)		8	8	94	0.12	25.7	0.300	6

Table 4.28 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Iron, ICAP (mg/L)	Filtered	8	7	39	0.025	20.44486	0.300	4
Magnesium, ICAP (mg/L)		8	8	8.1	5.5	6.8375	NR	NA
Magnesium, ICAP (mg/L)	Filtered	8	8	8.2	5.5	6.875	NR	NA
Manganese, ICAP (mg/L)		8	8	13	0.14	6.46625	0.050	8
Manganese, ICAP (mg/L)	Filtered	8	8	13	0.08	6.4495	0.050	8
Nickel, ICAP (mg/L)		8	3	0.056	0.012	0.035333	0.100 h	0
Nickel, ICAP (mg/L)	Filtered	8	2	0.017	0.015	0.016	0.100 h	0
Potassium, ICAP (mg/L)		8	8	3.2	1.3	1.8375	NR	NA
Potassium, ICAP (mg/L)	Filtered	8	8	1.7	1.1	1.425	NR	NA
Selenium, ICAP (mg/L)		8	1	0.089	0.089	0.089	0.05	1
Sodium, ICAP (mg/L)		8	8	25	5.2	14.225	NR	NA
Sodium, ICAP (mg/L)	Filtered	8	8	25	5.5	14.425	NR	NA
Strontium, ICAP (mg/L)		8	8	0.18	0.038	0.104375	NR	NA
Strontium, ICAP (mg/L)	Filtered	8	8	0.2	0.038	0.110375	NR	NA
Vanadium, ICAP (mg/L)		8	1	0.0066	0.0066	0.0066	NR	NA
Zinc, ICAP (mg/L)		8	8	0.03	0.0064	0.017413	5.000	0
Zinc, ICAP (mg/L)	Filtered	8	7	0.024	0.0066	0.010971	5.000	0
Conductivity, field measurement (µmhos/cm)		8	NA	450	354	403.375	NR	NA
Dissolved oxygen, field measurement (ppm)		8	NA	4	0.4	1.9	NR	NA

Table 4.28 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
pH, field measurement (pH units)		8	NA	7.6	5.8	6.8625	6.5/8.5	3
Redox, field measurement (MV)		8	NA	118	12	74.2	NR	NA
Static water level (ft-TOC)		8	8	–8.55	–14.37	–10.67	NR	NA
Water temperature, field measurement (°C)		8	NA	20.4	16.3	18.4375	NR	NA
Alkalinity-HCO_3 (mg/L)		8	8	214	79	151.25	NR	NA
Conductivity (µmhos/cm)		8	8	435	282	392.125	NR	NA
Dissolved solids (mg/L)		8	8	298	136	219	500.000	0
pH (pH units)		8	8	7.9	6.4	7.07125	NR	NA
Total suspended solids (mg/L)		8	6	131	2	32.33333	NR	NA
Turbidity (NTU)		8	8	150	1.6	30.125	1.0	8
Gross alpha (pCi/L)		8	8	1.29	–1.26	0.14375	15 n	0
Gross beta (pCi/L)		8	8	4.89	–0.409	2.38375	50 g	0
1,2-Dichloroethane (µg/L)		8	1	4 JB	4 JB	4	5.000	0
2-Butanone (µg/L)		8	1	8 J	8 J	8	NR	NA
Acetone (µg/L)		8	1	14	14	14	NR	NA

Table 4.29. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=GW Monitoring Plan Grid Location D1

Variable	Filtered status	No samples	No detected	Max	Min	Av	Reference value	No. of measurements
Chloride (mg/L)		4	4	31	18	24.5	250.000	0
Sulfate (mg/L)		4	2	15	11	13	250.000	0
Aluminum, ICAP (mg/L)		4	3	4.2	0.077	2.292333	0.2	2
Aluminum, ICAP (mg/L)	Filtered	4	2	0.4	0.04	0.22	0.2	1
Barium, ICAP (mg/L)		4	4	0.23	0.043	0.139	2.000	0
Barium, ICAP (mg/L)	Filtered	4	4	0.24	0.032	0.1345	2.000	0
Boron, ICAP (mg/L)		4	4	0.061	0.011	0.02775	NR	NA
Boron, ICAP (mg/L)	Filtered	4	4	0.15	0.0096	0.0539	NR	NA
Calcium, ICAP (mg/L)		4	4	86	2	42.775	NR	NA
Calcium, ICAP (mg/L)	Filtered	4	4	86	2.1	43.775	NR	NA
Chromium, AAS (mg/L)		4	2	0.045	0.011	0.028	0.1	0
Chromium, ICAP (mg/L)		4	1	0.036	0.036	0.036	0.1	0
Cobalt, ICAP (mg/L)		4	2	0.015	0.0091	0.01205	NR	NA
Cobalt, ICAP (mg/L)	Filtered	4	2	0.012	0.0064	0.0092	NR	NA
Copper, ICAP (mg/L)		4	1	0.0069	0.0069	0.0069	1.3 g	0
Iron, ICAP (mg/L)		4	4	32	0.55	16.315	0.300	4
Iron, ICAP (mg/L)	Filtered	4	4	29	0.28	13.935	0.300	3
Magnesium, ICAP (mg/L)		4	4	9.3	1.6	5.45	NR	NA
Magnesium, ICAP (mg/L)	Filtered	4	4	9.3	1.3	5.3	NR	NA
Manganese, ICAP (mg/L)		4	4	1.3	0.26	0.7875	0.050	4
Manganese, ICAP (mg/L)	Filtered	4	4	1.4	0.27	0.81	0.050	4
Nickel, ICAP (mg/L)		4	1	0.013	0.013	0.013	0.100 h	0

Table 4.29 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Nickel, ICAP (mg/L)	Filtered	4	1	0.01	0.01	0.01	0.100 h	0
Potassium, ICAP (mg/L)		4	4	2.5	1.9	2.175	NR	NA
Potassium, ICAP (mg/L)	Filtered	4	4	2.5	0.85	1.7125	NR	NA
Sodium, ICAP (mg/L)		4	4	10	7.2	8.7	NR	NA
Sodium, ICAP (mg/L)	Filtered	4	4	10	7.2	8.75	NR	NA
Strontium, ICAP (mg/L)		4	4	0.46	0.013	0.22675	NR	NA
Strontium, ICAP (mg/L)	Filtered	4	4	0.47	0.012	0.2275	NR	NA
Vanadium, ICAP (mg/L)		4	1	0.0062	0.0062	0.0062	NR	NA
Zinc, ICAP (mg/L)		4	4	0.024	0.0063	0.012975	5.000	0
Zinc, ICAP (mg/L)	Filtered	4	4	0.022	0.0031	0.010175	5.000	0
Conductivity, field measurement (µmhos/cm)		4	NA	514	168	338.75	NR	NA
Dissolved oxygen, field measurement (ppm)		4	NA	2.8	0.8	1.4	NR	NA
pH, field measurement (pH units)		4	NA	7.4	5.9	6.725	6.5/8.5	2
Redox, field measurement (MV)		4	NA	17	3	10	NR	NA
Static water level (ft-TOC)		4	4	–9.19	–11.53	–10.335	NR	NA
Water temperature, field measurement (°C)		4	NA	19.3	7.4	14.75	NR	NA
Alkalinity-HCO_3 (mg/L)		4	4	220	38	132.75	NR	NA
Conductivity (µmhos/cm)		4	4	523	152	334.5	NR	NA
Dissolved solids (mg/L)		4	4	334	90	203	500.000	0

Table 4.29 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
pH (pH units)		4	4	7.5	6.3	6.9	NR	NA
Total suspended solids (mg/L)		4	3	134	7	59	NR	NA
Turbidity (NTU)		4	4	110	1.3	40.775	1.0	4
Gross alpha (pCi/L)		4	4	2.32	–0.916	0.72975	15 n	0
Gross beta (pCi/L)		4	4	6.85	1.39	3.2825	50 g	0

Table 4.30. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=GW Monitoring Plan Grid Location D2

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		4	4	0.014	0.0061	0.010175	NR	NA
Lithium, ICAP (mg/L)	Filtered	4	4	0.013	0.0052	0.009075	NR	NA
Chloride (mg/L)		8	8	5.6	3.5	4.9825	250.000	0
Fluoride (mg/L)		8	4	0.2	0.1	0.15	4.000	0
Nitrate nitrogen (mg/L)		8	4	5.5	2.9	3.94	10.000	0
Sulfate (mg/L)		8	8	28.7	10	18.65	250.000	0
Aluminum, ICAP (mg/L)		8	8	2.5	0.023	0.74975	0.2	5
Aluminum, ICAP (mg/L)	Filtered	8	7	0.076	0.021	0.039714	0.2	0
Arsenic, ICAP (mg/L)	Filtered	8	1	0.056	0.056	0.056	0.050	1
Barium, ICAP (mg/L)		8	8	0.29	0.091	0.1895	2.000	0
Barium, ICAP (mg/L)	Filtered	8	8	0.3	0.073	0.180875	2.000	0
Boron, ICAP (mg/L)		8	8	0.047	0.018	0.03225	NR	NA
Boron, ICAP (mg/L)	Filtered	8	8	0.079	0.02	0.038625	NR	NA
Cadmium, AAS (mg/L)	Filtered	8	1	0.0024	0.0024	0.0024	0.005	0
Calcium, ICAP (mg/L)		8	8	68	24	50.625	NR	NA
Calcium, ICAP (mg/L)	Filtered	8	8	70	30	50.75	NR	NA
Copper, ICAP (mg/L)		8	4	0.0077	0.0051	0.006225	1.3 g	0
Copper, ICAP (mg/L)	Filtered	8	2	0.0084	0.0052	0.0068	1.3 g	0
Iron, ICAP (mg/L)		8	8	2.9	0.079	0.943625	0.300	5
Iron, ICAP (mg/L)	Filtered	8	6	0.11	0.0099	0.073483	0.300	0
Lead, AAS (mg/L)		8	1	0.0059	0.0059	0.0059	0.015 g	0
Magnesium, ICAP (mg/L)		8	8	14	3.3	8.7375	NR	NA

Table 4.30 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Magnesium, ICAP (mg/L)	Filtered	8	8	14	3.1	8.55	NR	NA
Manganese, ICAP (mg/L)		8	8	0.32	0.017	0.09775	0.050	4
Manganese, ICAP (mg/L)	Filtered	8	8	0.02	0.0061	0.013113	0.050	0
Potassium, ICAP (mg/L)		8	8	2.5	1.3	1.9	NR	NA
Potassium, ICAP (mg/L)	Filtered	8	8	2.6	0.9	1.60625	NR	NA
Sodium, ICAP (mg/L)		8	8	10	7.4	8.2125	NR	NA
Sodium, ICAP (mg/L)	Filtered	8	8	8.5	7.3	7.975	NR	NA
Strontium, ICAP (mg/L)		8	8	0.43	0.062	0.23675	NR	NA
Strontium, ICAP (mg/L)	Filtered	8	8	0.4	0.061	0.228875	NR	NA
Vanadium, ICAP (mg/L)		8	1	0.0051	0.0051	0.0051	NR	NA
Zinc, ICAP (mg/L)		8	8	0.083	0.0083	0.023162	5.000	0
Zinc, ICAP (mg/L)	Filtered	8	8	0.044	0.0021	0.0137	5.000	0
Conductivity, field measurement (µmhos/cm)		8	NA	519	229	356.625	NR	NA
Dissolved oxygen, field measurement (ppm)		8	NA	11.2	0.8	3.7	NR	NA
pH, field measurement (pH units)		8	NA	7.6	6.2	6.875	6.5/8.5	3
Redox, field measurement (MV)		8	NA	297	91	157.75	NR	NA
Static water level (ft-TOC)		8	8	–22.74	–25.3	–23.865	NR	NA
Water temperature, field measurement (°C)		8	NA	25.8	15.6	22.275	NR	NA
Alkalinity-HCO_3 (mg/L)		8	8	240	41	155.25	NR	NA

Table 4.30 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Conductivity (µmhos/cm)		8	8	459	217	353.125	NR	NA
Dissolved solids (mg/L)		8	8	482	138	269.75	500.000	0
pH (pH units)		8	8	7.7	6.28	7.04375	NR	NA
Total suspended solids (mg/L)		8	4	36	5	19.875	NR	NA
Turbidity (NTU)		8	8	27	0.2	8.18625	1.0	5
Gross alpha (pCi/L)		8	8	1.73	–1.01	0.113125	15 n	0
Gross beta (pCi/L)		8	8	3.26	–0.326	1.574	50 g	0
2-Butanone (µg/L)		9	1	9 J	9 J	9	NR	NA
Acetone (µg/L)		9	1	8 J	8 J	8	NR	NA
Tetrachloroethene (µg/L)		9	9	2900	8 J	1195.222	5.000	9
Trichloroethene (µg/L)		9	1	6 J	6 J	6	5.000	1

Table 4.31. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=GW Monitoring Plan Grid Location E1

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		4	4	0.022	0.016	0.01925	NR	NA
Lithium, ICAP (mg/L)	Filtered	4	4	0.023	0.012	0.01725	NR	NA
Chloride (mg/L)		8	8	12	3.6	7.645	250.000	0
Fluoride (mg/L)		8	2	0.11	0.1	0.105	4.000	0
Sulfate (mg/L)		8	8	10	9.52	9.85375	250.000	0
Aluminum, ICAP (mg/L)		8	8	12	0.16	3.5475	0.2	6
Aluminum, ICAP (mg/L)	Filtered	8	6	0.094	0.023	0.041167	0.2	0
Arsenic, ICAP (mg/L)		8	1	0.066	0.066	0.066	0.050	1
Arsenic, ICAP (mg/L)	Filtered	8	1	0.087	0.087	0.087	0.050	1
Barium, ICAP (mg/L)		8	8	0.36	0.17	0.27625	2.000	0
Barium, ICAP (mg/L)	Filtered	8	8	0.31	0.15	0.22625	2.000	0
Beryllium, ICAP (mg/L)		8	2	0.00094	0.0003	0.00062	0.004	0
Boron, ICAP (mg/L)		8	8	0.092	0.028	0.060375	NR	NA
Boron, ICAP (mg/L)	Filtered	8	8	0.12	0.021	0.0605	NR	NA
Cadmium, ICAP (mg/L)		8	1	0.0038	0.0038	0.0038	0.005	0
Calcium, ICAP (mg/L)		8	8	110	46	76.25	NR	NA
Calcium, ICAP (mg/L)	Filtered	8	8	110	44	73.25	NR	NA
Chromium, ICAP (mg/L)		8	2	0.019	0.01	0.0145	0.1	0
Cobalt, ICAP (mg/L)		8	1	0.01	0.01	0.01	NR	NA
Copper, ICAP (mg/L)		8	4	0.018	0.0065	0.009575	1.3 g	0
Iron, ICAP (mg/L)		8	8	20	0.23	4.765	0.300	7
Iron, ICAP (mg/L)	Filtered	8	7	0.73	0.011	0.166	0.300	1

Table 4.31 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Magnesium, ICAP (mg/L)		8	8	12	6.1	8.65	NR	NA
Magnesium, ICAP (mg/L)	Filtered	8	8	11	5.8	8.05	NR	NA
Manganese, ICAP (mg/L)		8	8	0.53	0.073	0.202625	0.050	8
Manganese, ICAP (mg/L)	Filtered	8	8	0.33	0.042	0.1265	0.050	6
Nickel, ICAP (mg/L)		8	1	0.014	0.014	0.014	0.100 h	0
Potassium, ICAP (mg/L)		8	8	4.8	1.3	2.875	NR	NA
Potassium, ICAP (mg/L)	Filtered	8	8	2.7	1.4	1.975	NR	NA
Selenium, ICAP (mg/L)	Filtered	8	1	0.056	0.056	0.056	0.05	1
Sodium, ICAP (mg/L)		8	8	28	8.6	18.3625	NR	NA
Sodium, ICAP (mg/L)	Filtered	8	8	27	9.1	18.1125	NR	NA
Strontium, ICAP (mg/L)		8	8	0.51	0.14	0.32	NR	NA
Strontium, ICAP (mg/L)	Filtered	8	8	0.47	0.14	0.29875	NR	NA
Vanadium, ICAP (mg/L)		8	3	0.016	0.0052	0.0095	NR	NA
Zinc, ICAP (mg/L)		8	8	0.043	0.0048	0.0186	5.000	0
Zinc, ICAP (mg/L)	Filtered	8	7	0.011	0.0021	0.005586	5.000	0
Conductivity, field measurement (μmhos/cm)		8	NA	647	286	471.75	NR	NA
Dissolved oxygen, field measurement (ppm)		8	NA	9.5	1.5	3.0625	NR	NA
pH, field measurement (pH units)		8	NA	7.9	7	7.4875	6.5/8.5	0
Redox, field measurement (MV)		8	NA	200	11	107.875	NR	NA

Table 4.31 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Static water level (ft-TOC)		8	8	–18.8	–21.22	–20.1188	NR	NA
Water temperature, field measurement (°C)		8	NA	21.8	13.8	17.2375	NR	NA
Alkalinity-HCO_3 (mg/L)		8	8	294	186	238.125	NR	NA
Conductivity (µmhos/cm)		8	8	582	368	473.125	NR	NA
Dissolved solids (mg/L)		8	8	366	196	282.25	500.000	0
pH (pH units)		8	8	8	7.21	7.64	NR	NA
Total suspended solids (mg/L)		8	8	396	2	88.5	NR	NA
Turbidity (NTU)		8	8	260	2.5	85.8125	1.0	8
Gross alpha (pCi/L)		8	8	2.44	–1.5	0.219593	15 n	0
Gross beta (pCi/L)		8	8	4.88	–0.324	2.288625	50 g	0
1,2-Dichloroethane (µg/L)		8	1	4 J	4 J	4	5.000	0

Table 4.32. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=GW Monitoring Plan Grid Location E2

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		4	2	0.018	0.013	0.0155	NR	NA
Lithium, ICAP (mg/L)	Filtered	4	2	0.016	0.014	0.015	NR	NA
Chloride (mg/L)		8	8	16	3.2	8.03	250.000	0
Fluoride (mg/L)		8	1	0.1	0.1	0.1	4.000	0
Nitrate nitrogen (mg/L)		8	4	0.55	0.45	0.4975	10.000	0
Sulfate (mg/L)		8	5	8.6	1.99	6.914	250.000	0
Aluminum, ICAP (mg/L)		8	8	6.3	0.057	1.2535	0.2	6
Aluminum, ICAP (mg/L)	Filtered	8	6	0.056	0.023	0.038833	0.2	0
Barium, ICAP (mg/L)		8	8	0.43	0.08	0.241	2.000	0
Barium, ICAP (mg/L)	Filtered	8	8	0.41	0.029	0.22675	2.000	0
Beryllium, ICAP (mg/L)		8	1	0.00032	0.00032	0.00032	0.004	0
Boron, ICAP (mg/L)		8	8	0.033	0.0094	0.018675	NR	NA
Boron, ICAP (mg/L)	Filtered	8	8	0.059	0.01	0.033875	NR	NA
Calcium, ICAP (mg/L)		8	8	73	2	35.4	NR	NA
Calcium, ICAP (mg/L)	Filtered	8	8	72	2	35.9875	NR	NA
Chromium, AAS (mg/L)		8	2	0.052	0.01	0.031	0.1	0
Chromium, ICAP (mg/L)		8	1	0.21	0.21	0.21	0.1	1
Cobalt, ICAP (mg/L)		8	1	0.0073	0.0073	0.0073	NR	NA
Copper, ICAP (mg/L)		8	7	0.019	0.0051	0.009886	1.3 g	0
Copper, ICAP (mg/L)	Filtered	8	4	0.0089	0.0055	0.007025	1.3 g	0
Iron, ICAP (mg/L)		8	8	8.2	0.068	1.58975	0.300	6
Iron, ICAP (mg/L)	Filtered	8	6	0.083	0.029	0.047667	0.300	0

Table 4.32 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Magnesium, ICAP (mg/L)		8	8	13	1.3	7.075	NR	NA
Magnesium, ICAP (mg/L)	Filtered	8	8	13	1.2	7.0125	NR	NA
Manganese, ICAP (mg/L)		8	8	0.36	0.016	0.0755	0.050	3
Manganese, ICAP (mg/L)	Filtered	8	8	0.027	0.0048	0.015225	0.050	0
Nickel, ICAP (mg/L)		8	2	0.11	0.014	0.062	0.100 h	1
Nickel, ICAP (mg/L)	Filtered	8	1	0.011	0.011	0.011	0.100 h	0
Potassium, ICAP (mg/L)		8	7	2.2	0.72	1.587143	NR	NA
Potassium, ICAP (mg/L)	Filtered	8	5	2.8	0.66	1.632	NR	NA
Sodium, ICAP (mg/L)		8	8	9.9	3.1	6.325	NR	NA
Sodium, ICAP (mg/L)	Filtered	8	8	11	3.1	6.675	NR	NA
Strontium, ICAP (mg/L)		8	8	0.21	0.012	0.1055	NR	NA
Strontium, ICAP (mg/L)	Filtered	8	8	0.21	0.011	0.105875	NR	NA
Vanadium, ICAP (mg/L)		8	1	0.014	0.014	0.014	NR	NA
Zinc, ICAP (mg/L)		8	8	0.66	0.0036	0.0967	5.000	0
Zinc, ICAP (mg/L)	Filtered	8	8	0.29	0.0033	0.048725	5.000	0
Conductivity, field measurement (µmhos/cm)		8	NA	488	41	258.875	NR	NA
Dissolved oxygen, field measurement (ppm)		8	NA	7.5	0.6	4.5875	NR	NA
pH, field measurement (pH units)		8	NA	7.8	5.5	6.525	6.5/8.5	4
Redox, field measurement (MV)		8	NA	253	42.5	156.3571	NR	NA

Table 4.32 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Static water level (ft-TOC)		8	8	–7.16	–18.17	–12.7963	NR	NA
Water temperature, field measurement (°C)		8	NA	18.9	15.6	17.5625	NR	NA
Alkalinity-HCO_3 (mg/L)		8	8	234	10	123	NR	NA
Conductivity (μmhos/cm)		8	8	480	37	255.65	NR	NA
Dissolved solids (mg/L)		8	8	310	4	162.25	500.000	0
pH (pH units)		8	8	8	5.87	6.88125	NR	NA
Total suspended solids (mg/L)		8	7	129	2	26.78571	NR	NA
Turbidity (NTU)		8	8	72	0.2	16.0875	1.0	7
Gross alpha (pCi/L)		8	8	1.33	–0.00072	0.500034	15 n	0
Gross beta (pCi/L)		8	8	3.56	–0.169	1.561625	50 g	0

Table 4.33. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=GW Monitoring Plan Grid Location E3

Variable	Filtered status	No samples	No detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		6	6	0.057	0.005	0.026117	NR	NA
Lithium, ICAP (mg/L)	Filtered	6	6	0.056	0.004	0.02585	NR	NA
Chloride (mg/L)		12	12	69	7.1	28.80667	250.000	0
Fluoride (mg/L)		12	4	0.4	0.1	0.19	4.000	0
Nitrate nitrogen (mg/L)		12	9	4.6	0.266	1.422889	10.000	0
Sulfate (mg/L)		12	12	24	7.6	15.70167	250.000	0
Aluminum, ICAP (mg/L)		12	11	1.4	0.055	0.472	0.2	6
Aluminum, ICAP (mg/L)	Filtered	12	10	0.069	0.024	0.0472	0.2	0
Arsenic, ICAP (mg/L)	Filtered	12	1	0.059	0.059	0.059	0.050	1
Barium, ICAP (mg/L)		12	12	0.7	0.12	0.383333	2.000	0
Barium, ICAP (mg/L)	Filtered	12	12	0.68	0.12	0.3825	2.000	0
Boron, ICAP (mg/L)		12	12	0.52	0.053	0.221	NR	NA
Boron, ICAP (mg/L)	Filtered	12	12	0.5	0.046	0.22175	NR	NA
Cadmium, ICAP (mg/L)	Filtered	12	1	0.0034	0.0034	0.0034	0.005	0
Calcium, ICAP (mg/L)		12	12	110	13	65.66667	NR	NA
Calcium, ICAP (mg/L)	Filtered	12	12	110	12	64.75	NR	NA
Chromium, AAS (mg/L)		12	5	0.76	0.049	0.4214	0.1	3
Chromium, ICAP (mg/L)		12	5	0.8	0.04	0.412	0.1	3
Cobalt, ICAP (mg/L)		12	2	0.01	0.0093	0.00965	NR	NA
Cobalt, ICAP (mg/L)	Filtered	12	1	0.0081	0.0081	0.0081	NR	NA
Copper, ICAP (mg/L)		12	6	0.023	0.0042	0.012467	1.3 g	0
Copper, ICAP (mg/L)	Filtered	12	1	0.004	0.004	0.004	1.3 g	0

Table 4.33 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Iron, ICAP (mg/L)		12	12	6.1	0.0062	1.55035	0.300	8
Iron, ICAP (mg/L)	Filtered	12	11	0.18	0.013	0.040091	0.300	0
Magnesium, ICAP (mg/L)		12	12	16	3.9	8.858333	NR	NA
Magnesium, ICAP (mg/L)	Filtered	12	12	15	4	8.725	NR	NA
Manganese, ICAP (mg/L)		12	12	0.12	0.0078	0.054233	0.050	6
Manganese, ICAP (mg/L)	Filtered	12	12	0.093	0.0066	0.033458	0.050	3
Molybdenum, ICAP (mg/L)		12	1	0.01	0.01	0.01	NR	NA
Nickel, ICAP (mg/L)		12	5	0.64	0.023	0.2966	0.100 h	4
Nickel, ICAP (mg/L)	Filtered	12	4	0.54	0.12	0.2975	0.100 h	4
Potassium, ICAP (mg/L)		12	12	5.6	2	4.133333	NR	NA
Potassium, ICAP (mg/L)	Filtered	12	12	6.1	1.6	4.158333	NR	NA
Selenium, ICAP (mg/L)		12	1	0.12	0.12	0.12	0.05	1
Selenium, ICAP (mg/L)	Filtered	12	1	0.093	0.093	0.093	0.05	1
Silver, ICAP (mg/L)		12	1	0.0062	0.0062	0.0062	0.10	0
Sodium, ICAP (mg/L)		12	12	83	9.5	34.45833	NR	NA
Sodium, ICAP (mg/L)	Filtered	12	12	83	9.7	34.64167	NR	NA
Strontium, ICAP (mg/L)		12	12	1.2	0.18	0.633333	NR	NA
Strontium, ICAP (mg/L)	Filtered	12	12	1.1	0.18	0.634167	NR	NA
Uranium, (mg/L)		12	8	0.0014	0.00063	0.001081	0.020	0
Uranium, (mg/L)	Filtered	12	8	0.0012	0.00059	0.001003	0.020	0
Vanadium, ICAP (mg/L)		12	1	0.0062	0.0062	0.0062	NR	NA
Zinc, ICAP (mg/L)		12	12	0.014	0.0039	0.008625	5.000	0

Table 4.33 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Zinc, ICAP (mg/L)	Filtered	12	12	0.13	0.0021	0.019217	5.000	0
Conductivity, field measurement (µmhos/cm)		12	NA	839	389	518	NR	NA
Dissolved oxygen, field measurement (ppm)		12	NA	6.4	0.3	2.725	NR	NA
pH, field measurement (pH units)		12	NA	8.3	7.1	7.625	6.5/8.5	0
Redox, field measurement (MV)		12	NA	239	10	144.5833	NR	NA
Static water level (ft-TOC)		12	12	–7	–10.62	–8.61167	NR	NA
Water temperature, field measurement (°C)		12	NA	22.6	11.7	17.9	NR	NA
Alkalinity-HCO_3 (mg/L)		12	12	252	153	220.8333	NR	NA
Conductivity (µmhos/cm)		12	12	668	393	521.9167	NR	NA
Dissolved solids (mg/L)		12	12	444	246	335	500.000	0
pH (pH units)		12	12	8.4	7.25	7.809167	NR	NA
Total suspended solids (mg/L)		12	8	41	2	19.125	NR	NA
Turbidity (NTU)		12	12	110	0.2	23.53333	1.0	11
Gross alpha (pCi/L)		12	12	27.6	–1.66	8.596816	15 n	3
Gross beta (pCi/L)		12	12	6.79	1.71	4.489167	50 g	0
1,1,1-Trichloroethane (µg/L)		13	11	22	1 J	7.909091	200.000	0
1,1-Dichloroethane (µg/L)		13	12	170 D	5 J	64.16667	NR	NA
1,1-Dichloroethene (µg/L)		13	11	42 D	2 J	18.09091	7.000	5

Table 4.33 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
1,2-Dichloroethene (µg/L)		13	9	30	8 J	16.55556	70.	0
Butanone (µg/L)		13	1	10 J	10 J	10	NR	NA
Carbon tetrachloride (µg/L)		13	6	14 J	1 J	4.166667	5.000	1
Chloroform (µg/L)		13	5	3 J	1 J	1.4	100.000	0
Tetrachloroethene (µg/L)		13	12	240 E	1 J	92.58333	5.000	9
Trichloroethene (µg/L)		13	9	59 D	6 J	31.77778	5.000	9
Vinyl chloride (µg/L)		13	3	3 J	2 J	2.666667	2.000	2

Table 4.34. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=GW Monitoring Plan Grid Location F2

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		4	4	0.035	0.015	0.024	NR	NA
Lithium, ICAP (mg/L)	Filtered	4	4	0.032	0.014	0.0235	NR	NA
Chloride (mg/L)		8	8	89	3.1	44.90125	250.000	0
Fluoride (mg/L)		8	4	0.6	0.4	0.52	4.000	0
Nitrate nitrogen (mg/L)		8	1	0.42	0.42	0.42	10.000	0
Sulfate (mg/L)		8	8	14	7.4	10.76625	250.000	0
Aluminum, ICAP (mg/L)		8	8	1.5	0.081	0.477	0.2	5
Aluminum, ICAP (mg/L)	Filtered	8	7	0.11	0.022	0.055143	0.2	0
Barium, ICAP (mg/L)		8	8	0.57	0.18	0.375	2.000	0
Barium, ICAP (mg/L)	Filtered	8	8	0.64	0.18	0.375	2.000	0
Boron, ICAP (mg/L)		8	8	0.21	0.047	0.12725	NR	NA
Boron, ICAP (mg/L)	Filtered	8	8	0.22	0.045	0.13275	NR	NA
Calcium, ICAP (mg/L)		8	8	120	4.4	61.9625	NR	NA
Calcium, ICAP (mg/L)	Filtered	8	8	120	4.2	61.4	NR	NA
Chromium, AAS (mg/L)		8	4	0.23	0.013	0.09175	0.1	1
Chromium, ICAP (mg/L)		8	4	0.22	0.01	0.08725	0.1	1
Copper, ICAP (mg/L)		8	4	0.0067	0.0047	0.005725	1.3 g	0
Copper, ICAP (MG/L)	Filtered	8	1	0.014	0.014	0.014	1.3 g	0
Iron, ICAP (MG/L)		8	8	2.7	0.025	1.066125	0.300	6
Iron, ICAP (MG/L)	Filtered	8	6	0.79	0.011	0.258	0.300	2
Magnesium, ICAP (mg/L)		8	8	17	1.9	9.4625	NR	NA
Magnesium, ICAP (mg/L)	Filtered	8	8	18	1.9	9.4875	NR	NA

Table 4.34 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Manganese, ICAP (mg/L)		8	8	1.1	0.0018	0.458638	0.050	4
Manganese, ICAP (mg/L)	Filtered	8	6	1.2	0.0026	0.612617	0.050	4
Nickel, ICAP (mg/L)		8	4	0.054	0.018	0.0355	0.100 h	0
Nickel, ICAP (mg/L)	Filtered	8	4	0.027	0.012	0.0185	0.100 h	0
Potassium, ICAP (mg/L)		8	8	3.5	1.4	2.2625	NR	NA
Potassium, ICAP (mg/L)	Filtered	8	8	2.7	1.6	2.0875	NR	NA
Sodium, ICAP (mg/L)		8	8	93	17	53.375	NR	NA
Sodium, ICAP (mg/L)	Filtered	8	8	91	17	53	NR	NA
Strontium, ICAP (mg/L)		8	8	0.72	0.35	0.5275	NR	NA
Strontium, ICAP (mg/L)	Filtered	8	8	0.75	0.34	0.52125	NR	NA
Zinc, ICAP (mg/L)		8	8	0.047	0.0048	0.016963	5.000	0
Zinc, ICAP (mg/L)	Filtered	8	8	0.057	0.0025	0.014775	5.000	0
Conductivity, field measurement (µmhos/cm)		8	NA	889	373	603.625	NR	NA
Dissolved oxygen, field measurement (ppm)		8	NA	8.3	0.6	3.1625	NR	NA
pH, field measurement (pH units)		8	NA	9.4	7	7.9875	6.5/8.5	4
Redox, field measurement (MV)		8	NA	190	21	102.4286	NR	NA
Static water level (ft-TOC)		8	8	–9.77	–12.4	–11.0513	NR	NA
Water temp, field measurement (°C)		8	NA	21.8	14	17.3	NR	NA

Table 4.34 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Alkalinity-CO_3 (mg/L)		8	4	54	4	19.5	NR	NA
Alkalinity-HCO_3 (mg/L)		8	8	283	150	229.375	NR	NA
Conductivity (µmhos/cm)		8	8	828	379	598.75	NR	NA
Dissolved solids (mg/L)		8	8	516	116	356.25	500.000	3
pH (pH units)		8	8	9.4	7.13	8.08875	NR	NA
Total suspended solids (mg/L)		8	7	18.5	1.5	7.142857	NR	NA
Turbidity (NTU)		8	8	24	0.3	10.9375	1.0	7
Gross alpha (pCi/L)		8	8	3.79	–0.576	0.74025	15 n	0
Gross beta (PCI/L)		8	8	6.56	0.385	2.6665	50 g	0

Table 4.35. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=GW Monitoring Plan Grid Location F3

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		4	4	0.086	0.01	0.046	NR	NA
Lithium, ICAP (mg/L)	Filtered	4	4	0.074	0.0093	0.042075	NR	NA
Chloride (mg/L)		8	8	8.9	5.7	7.23875	250.000	0
Fluoride (mg/L)		8	7	1.4	0.1	0.844286	4.000	0
Nitrate nitrogen (mg/L)		8	8	1.6	0.54	1.045	10.000	0
Sulfate (mg/L)		8	8	29.1	17	22.5625	250.000	0
Aluminum, ICAP (mg/L)		8	8	11	1	5.2875	0.2	8
Aluminum, ICAP (mg/L)	Filtered	8	6	1.6	0.037	0.355333	0.2	2
Barium, ICAP (mg/L)		8	8	0.41	0.12	0.26125	2.000	0
Barium, ICAP (mg/L)	Filtered	8	8	0.38	0.09	0.203375	2.000	0
Beryllium, ICAP (mg/L)		8	4	0.0007	0.00041	0.000503	0.004	0
Boron, ICAP (mg/L)		8	8	1.5	0.091	0.72825	NR	NA
Boron, ICAP (mg/L)	Filtered	8	8	1.4	0.064	0.691875	NR	NA
Calcium, ICAP (mg/L)		8	8	94	11	45.5	NR	NA
Calcium, ICAP (mg/L)	Filtered	8	8	66	7	35.5375	NR	NA
Chromium, AAS (mg/L)		8	6	0.034	0.013	0.021333	0.1	0
Chromium, AAS (mg/L)	Filtered	8	1	0.011	0.011	0.011	0.1	0
Chromium, ICAP (mg/L)		8	5	0.028	0.011	0.0154	0.1	0
Cobalt, ICAP (mg/L)		8	2	0.01	0.0069	0.00845	NR	NA
Copper, ICAP (mg/L)		8	8	0.1	0.0067	0.0356	1.3 g	0
Copper, ICAP (mg/L)	Filtered	8	3	0.0061	0.0055	0.005733	1.3 g	0
Iron, ICAP (mg/L)		8	8	14	0.82	5.29	0.300	8
Iron, ICAP (mg/L)	Filtered	8	6	1.1	0.013	0.203333	0.300	1

Table 4.35 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lead, AAS (mg/L)		8	3	0.011	0.0045	0.008167	0.015 g	0
Magnesium, ICAP (mg/L)		8	8	11	2.9	6.975	NR	NA
Magnesium, ICAP (mg/L)	Filtered	8	8	11	2.1	5.9125	NR	NA
Manganese, ICAP (mg/L)		8	8	0.48	0.028	0.158625	0.050	6
Manganese, ICAP (mg/L)	Filtered	8	8	0.039	0.0013	0.00975	0.050	0
Nickel, ICAP (mg/L)		8	4	0.05	0.012	0.02775	0.100 h	0
Potassium, ICAP (mg/L)		8	8	7.8	3.3	5.9	NR	NA
Potassium, ICAP (mg/L)	Filtered	8	8	7.1	2.5	4.0125	NR	NA
Sodium, ICAP (mg/L)		8	8	140	5.9	67.3	NR	NA
Sodium, ICAP (mg/L)	Filtered	8	8	140	5.9	67.3875	NR	NA
Strontium, ICAP (mg/L)		8	8	0.58	0.26	0.40125	NR	NA
Strontium, ICAP (mg/L)	Filtered	8	8	0.52	0.23	0.3625	NR	NA
Uranium (mg/L)		8	6	0.0016	0.00071	0.001187	0.020	0
Uranium (mg/L)	Filtered	8	4	0.0017	0.00074	0.00108	0.020	0
Vanadium, ICAP (mg/L)		8	5	0.016	0.0063	0.01166	NR	NA
Zinc, ICAP (mg/L)		8	8	0.069	0.011	0.0335	5.000	0
Zinc, ICAP (mg/L)	Filtered	8	8	0.033	0.0027	0.012613	5.000	0
Conductivity, field measurement (µmhos/cm)		8	NA	659	382	497.375	NR	NA
Dissolved oxygen, field measurement (ppm)		8	NA	7.1	2.2	4.5875	NR	NA
pH, field measurement (pH units)		8	NA	8.7	7.3	7.95	6.5/8.5	1

Table 4.35 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Redox, field measurement (MV)		8	NA	181	64	146.75	NR	NA
Static water level (ft-TOC)		8	8	0	–4	–2.0625	NR	NA
Water temperature, field measurement (°C)		8	NA	23.2	13.9	18.4875	NR	NA
Alkalinity-CO_3 (mg/L)		8	3	6	4	5.333333	NR	NA
Alkalinity-HCO_3 (mg/L)		8	8	270	180	221.25	NR	NA
Conductivity (µmhos/cm)		8	8	562	386	476	NR	NA
Dissolved solids (mg/L)		8	8	515	182	327.625	500.000	1
pH (pH units)		8	8	8.64	7.62	8.2075	NR	NA
Total suspended solids (mg/L)		8	8	460	14.5	185.8125	NR	NA
Turbidity (NTU)		8	8	900	20	214.875	1.0	8
Gross alpha (pCi/L)		8	8	4.44	0.87	1.87875	15 n	0
Gross beta (pCi/L)		8	8	14.6	2.44	5.85	50 g	0
1,1-Dichloroethene (µg/L)		10	2	51 s	47 s	49	7.000	2
2-Butanone (µg/L)		10	1	9 J	9 J	9	NR	NA
Benzene (µg/L)		10	2	49 s	47 s	48	5.000	2
Chlorobenzene (µg/L)		10	2	50 s	50 s	50	100.000	0
Chloroform (µg/L)		10	2	1 J	1 J	1	100.000	0
Toluene (µg/L)		10	2	51 s	49 s	50	1000.00	0
Trichloroethene (µg/L)		10	4	47 s	1 J	23.75	5.000	2

Table 4.36. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=GW Monitoring Plan Grid Location G1

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		4	4	0.031	0.021	0.0265	NR	NA
Lithium, ICAP (mg/L)	Filtered	4	4	0.035	0.022	0.0275	NR	NA
Chloride (mg/L)		8	8	30	17	22.6875	250.000	0
Fluoride (mg/L)		8	5	0.18	0.1	0.138	4.000	0
Nitrate nitrogen (mg/L)		8	1	0.31	0.31	0.31	10.000	0
Sulfate (mg/L)		8	8	21	18	19.4375	250.000	0
Aluminum, ICAP (mg/L)		8	7	1.6	0.042	0.62	0.2	3
Aluminum, ICAP (mg/L)	Filtered	8	4	0.098	0.025	0.0525	0.2	0
Arsenic, ICAP (mg/L)		8	1	0.053	0.053	0.053	0.050	1
Barium, ICAP (mg/L)		8	8	0.13	0.1	0.11875	2.000	0
Barium, ICAP (mg/L)	Filtered	8	8	0.12	0.1	0.115	2.000	0
Boron, ICAP (mg/L		8	8	0.11	0.023	0.0475	NR	NA
Boron, ICAP (mg/L)	Filtered	8	8	0.076	0.028	0.042875	NR	NA
Calcium, ICAP (mg/L)		8	8	76	65	71.375	NR	NA
Calcium, ICAP (mg/L)	Filtered	8	8	78	65	72	NR	NA
Chromium, ICAP (mg/L)		8	2	0.028	0.014	0.021	0.1	0
Copper, ICAP (mg/L)		8	3	0.006	0.0043	0.004867	1.3 g	0
Copper, ICAP (mg/L)	Filtered	8	2	0.042	0.0072	0.0246	1.3 g	0
Iron, ICAP (mg/L)		8	8	2.4	0.25	1.02375	0.300	7
Iron, ICAP (mg/L)	Filtered	8	8	0.27	0.075	0.184	0.300	0
Magnesium, ICAP (mg/L)		8	8	11	8.5	9.6625	NR	NA
Magnesium, ICAP (mg/L)	Filtered	8	8	11	8.5	9.6625	NR	NA

Table 4.36 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Manganese, ICAP (mg/L)		8	8	1	0.15	0.3625	0.050	8
Manganese, ICAP (mg/L)	Filtered	8	8	0.72	0.069	0.269875	0.050	8
Nickel, ICAP (mg/L)		8	4	0.085	0.017	0.05125	0.100 h	0
Nickel, ICAP (mg/L)	Filtered	8	4	0.055	0.013	0.0355	0.100 h	0
Potassium, ICAP (mg/L)		8	8	3.6	2.1	2.8125	NR	NA
Potassium, ICAP (mg/L)	Filtered	8	8	3.1	1.9	2.5125	NR	NA
Selenium, ICAP (mg/L)	Filtered	8	1	0.064	0.064	0.064	0.05	1
Sodium, ICAP (mg/L)		8	8	14	11	12.5	NR	NA
Sodium, ICAP (mg/L)	Filtered	8	8	14	12	12.875	NR	NA
Strontium, ICAP (mg/L)		8	8	0.52	0.2	0.3525	NR	NA
Strontium, ICAP (mg/L)	Filtered	8	8	0.52	0.2	0.3525	NR	NA
Vanadium, ICAP (mg/L)		8	1	0.0062	0.0062	0.0062	NR	NA
Zinc, ICAP (mg/L)		8	7	0.015	0.0041	0.011271	5.000	0
Zinc, ICAP (MG/L)	Filtered	8	6	0.16	0.0038	0.033333	5.000	0
Conductivity, field measurement (µmhos/cm)		8	NA	606	434	502.5	NR	NA
Dissolved oxygen, field measurement (ppm)		8	NA	3.5	0.4	1.7	NR	NA
pH, field measurement (pH units)		8	NA	7.8	7.2	7.525	6.5/8.5	0
Redox, field measurement (MV)		8	NA	130	3	66.71429	NR	NA

Table 4.36 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Static water level (ft-TOC)		8	8	-12.8	-20.89	-16.6738	NR	NA
Water temperature, field measurement (°C)		8	NA	20.4	12.8	16.3375	NR	NA
Alkalinity-HCO_3 (mg/L)		8	8	203	195	199.625	NR	NA
Conductivity (µmhos/cm)		8	8	491	448	471.625	NR	NA
Dissolved solids (mg/L)		8	8	350	230	290.5	500.000	0
pH (pH units)		8	8	7.8	7.53	7.6975	NR	NA
Total suspended solids (mg/L)		8	7	24	1	8.142857	NR	NA
Turbidity (NTU)		8	8	39	1.8	11.6875	1.0	8
Gross alpha (pCi/L)		8	8	1.23	-1.66	0.032625	15 n	0
Gross beta (pCi/L)		8	8	4.16	0.299	2.373625	50 g	0
2-Butanone (µg/L)		8	2	12 B	7 J	9.5	NR	NA
Acetone (µg/L)		8	1	20	20	20	NR	NA
Toluene (µg/L)		8	1	1 JB	1 JB	1	1000.00	0

Table 4.37. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=GW Monitoring Plan Grid Location G2

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		4	4	0.02	0.0084	0.013125	NR	NA
Lithium, ICAP (mg/L)	Filtered	4	4	0.019	0.0058	0.01235	NR	NA
Chloride (mg/L)		8	8	170	1.2	67.9725	250.000	0
Fluoride (mg/L)		8	4	0.26	0.11	0.1675	4.000	0
Nitrate nitrogen (mg/L)		8	7	1.2	0.418	0.725429	10.000	0
Sulfate (mg/L)		8	8	22	7.39	14.93625	250.000	0
Aluminum, ICAP (mg/L)		8	8	3.6	0.035	0.932875	0.2	5
Aluminum, ICAP (mg/L)	Filtered	8	6	0.069	0.031	0.045833	0.2	0
Arsenic, ICAP (mg/L)		8	1	0.093	0.093	0.093	0.050	1
Arsenic, ICAP (mg/L)	Filtered	8	1	0.076	0.076	0.076	0.050	1
Barium, ICAP (mg/L)		8	8	0.45	0.066	0.240875	2.000	0
Barium, ICAP (mg/L)	Filtered	8	8	0.44	0.054	0.23175	2.000	0
Boron, ICAP (mg/L)		8	8	0.068	0.023	0.03375	NR	NA
Boron, ICAP (mg/L)	Filtered	8	8	0.063	0.021	0.038625	NR	NA
Cadmium, AAS (mg/L)		4	1	0.0095	0.0095	0.0095	0.005	1
Cadmium, AAS (mg/L)	Filtered	4	1	0.0023	0.0023	0.0023	0.005	0
Cadmium, ICAP (mg/L)		8	1	0.0099	0.0099	0.0099	0.005	1
Cadmium, ICAP (mg/L)	Filtered	8	1	0.0037	0.0037	0.0037	0.005	0
Calcium, ICAP (mg/L)		8	8	120	22	72.75	NR	NA
Calcium, ICAP (mg/L)	Filtered	8	8	120	22	70.25	NR	NA
Chromium, AAS (mg/L)		4	4	0.38	0.1	0.225	0.1	2
Chromium, ICAP (mg/L)		8	7	0.49	0.079	0.228143	0.1	5

Table 4.37 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Cobalt, ICAP (mg/L)		8	2	0.0072	0.0052	0.0062	NR	NA
Copper, ICAP (mg/L)		8	4	0.018	0.0087	0.0119	1.3 g	0
Copper, ICAP (mg/L)	Filtered	8	1	0.0062	0.0062	0.0062	1.3 g	0
Iron, ICAP (mg/L)		8	8	5.4	0.35	1.945	0.300	8
Iron, ICAP (mg/L)	Filtered	8	6	0.092	0.0055	0.036367	0.300	0
Magnesium, ICAP (mg/L)		8	8	14	2.5	7.9875	NR	NA
Magnesium, ICAP (mg/L)	Filtered	8	8	14	2.2	7.7875	NR	NA
Manganese, ICAP (mg/L)		8	8	0.41	0.028	0.097625	0.050	3
Manganese, ICAP (mg/L)	Filtered	8	8	0.039	0.0033	0.015738	0.050	0
Nickel, ICAP (mg/L)		8	6	0.34	0.017	0.129833	0.100 h	3
Nickel, ICAP (mg/L)	Filtered	8	4	0.22	0.032	0.126	0.100 h	2
Potassium, ICAP (mg/L)		8	8	2.4	0.78	1.61	NR	NA
Potassium, ICAP (mg/L)	Filtered	8	6	2.5	0.87	1.645	NR	NA
Silver, ICAP (mg/L)		8	1	0.0066	0.0066	0.0066	0.10	0
Sodium, ICAP (mg/L)		8	8	12	5	8.6875	NR	NA
Sodium, ICAP (mg/L)	Filtered	8	8	12	4.9	8.675	NR	NA
Strontium, ICAP (mg/L)		8	8	0.29	0.039	0.149625	NR	NA
Strontium, ICAP (mg/L)	Filtered	8	8	0.28	0.036	0.148875	NR	NA
Uranium (mg/L)		8	1	0.0023	0.0023	0.0023	0.020	0
Vanadium, ICAP (mg/L)		8	1	0.0051	0.0051	0.0051	NR	NA
Zinc, ICAP (mg/L)		8	8	0.039	0.0024	0.013188	5.000	0

Table 4.37 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Zinc, ICAP (mg/L)	Filtered	8	6	0.018	0.0069	0.011683	5.000	0
Conductivity, field measurement (µmhos/cm)		8	NA	882	157	492	NR	NA
Dissolved oxygen, field measurement (ppm)		8	NA	8	2.4	4.65	NR	NA
pH, field measurement (pH units)		8	NA	7.8	6.8	7.325	6.5/8.5	0
Redox, field measurement (MV)		8	NA	276	73	148.75	NR	NA
Static water level (ft-TOC)		8	8	–7.83	–13.69	–10.0962	NR	NA
Water temperature, field measurement (°C)		8	NA	22.7	14.8	18.3625	NR	NA
Alkalinity-HCO_3 (mg/L)		8	8	172	73	120	NR	NA
Conductivity (µmhos/cm)		8	8	808	154	471.125	NR	NA
Dissolved solids (mg/L)		8	7	720	76	382.8571	500.000	3
pH (pH units)		8	8	8	6.94	7.52	NR	NA
Total suspended solids (mg/L)		8	7	41	1	16.14286	NR	NA
Turbidity (NTU)		8	8	170	1.6	38.3375	1.0	8
Gross alpha (pCi/L)		8	8	3.16	–1.15	0.617625	15 n	0
Gross beta (pCi/L)		8	8	3.3	–0.00365	1.784919	50 g	0
Acetone (µg/L)		8	1	13 B	13 B	13	NR	NA
Toluene (µg/L)		8	2	1 JB	1 JB	1	1000.00	0

Table 4.38. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=GW Monitoring Plan Grid Location G3

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		4	2	0.02	0.017	0.0185	NR	NA
Lithium, ICAP (mg/L)	Filtered	4	2	0.024	0.019	0.0215	NR	NA
Chloride (mg/L)		8	8	24	4.2	12.51625	250.000	0
Fluoride (mg/L)		8	4	0.25	0.17	0.205	4.000	0
Nitrate nitrogen (mg/L)		8	7	0.85	0.39	0.629143	10.000	0
Sulfate (mg/L)		8	8	28	16.6	20.9875	250.000	0
Aluminum, ICAP (mg/L)		8	8	0.45	0.02	0.145	0.2	3
Aluminum, ICAP (mg/L)	Filtered	8	5	0.052	0.024	0.04	0.2	0
Arsenic, ICAP (mg/L)	Filtered	8	1	0.07	0.07	0.07	0.050	1
Barium, ICAP (mg/L)		8	8	0.49	0.056	0.258875	2.000	0
Barium, ICAP (mg/L)	Filtered	8	8	0.49	0.057	0.26375	2.000	0
Boron, ICAP (mg/L)		8	8	0.11	0.032	0.060875	NR	NA
Boron, ICAP (mg/L)	Filtered	8	8	0.15	0.032	0.065	NR	NA
Calcium, ICAP (mg/L)		8	8	82	52	67.375	NR	NA
Calcium, ICAP (mg/L)	Filtered	8	8	82	55	69.125	NR	NA
Copper, ICAP (mg/L)	Filtered	8	2	0.0051	0.0041	0.0046	1.3 g	0
Iron, ICAP (mg/L)		8	8	0.48	0.022	0.22775	0.300	3
Iron, ICAP (mg/L)	Filtered	8	6	0.14	0.01	0.099167	0.300	0
Magnesium, ICAP (mg/L)		8	8	12	4	7.65	NR	NA
Magnesium, ICAP (mg/L)	Filtered	8	8	12	4.5	7.8875	NR	NA
Manganese, ICAP (mg/L)		8	8	0.02	0.0018	0.014225	0.050	0
Manganese, ICAP (mg/L)	Filtered	8	5	0.017	0.0015	0.0123	0.050	0

Table 4.38 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Potassium, ICAP (mg/L)		8	8	4.1	2.1	3	NR	NA
Potassium, ICAP (mg/L)	Filtered	8	8	3.9	2.2	3.0875	NR	NA
Sodium, ICAP (mg/L)		8	8	6.9	4.3	5.725	NR	NA
Sodium, ICAP (mg/L)	Filtered	8	8	7	4.6	5.8875	NR	NA
Strontium, ICAP (mg/L)		8	8	0.46	0.074	0.255625	NR	NA
Strontium, ICAP (mg/L)	Filtered	8	8	0.47	0.08	0.263875	NR	NA
Uranium (mg/L)		8	5	0.0012	0.00052	0.00087	0.020	0
Uranium (mg/L)	Filtered	8	4	0.0012	0.00052	0.000935	0.020	0
Zinc, ICAP (mg/L)		8	8	0.021	0.0022	0.007838	5.000	0
Zinc, ICAP (mg/L)	Filtered	8	6	0.018	0.0032	0.009567	5.000	0
Conductivity, field measurement (μmhos/cm)		8	NA	472	318	400.25	NR	NA
Dissolved oxygen, field measurement (ppm)		8	NA	4.5	0.5	2.3625	NR	NA
pH, field measurement (pH units)		8	NA	7.6	7.1	7.3	6.5/8.5	0
Redox, field measurement (MV)		8	NA	248	21	134.5	NR	NA
Static water level (ft-TOC)		8	8	–9.63	–14.56	–11.7838	NR	NA
Water temperature, field measurement (°C)		8	NA	20.3	16.3	18.5125	NR	NA
Alkalinity-HCO_3 (mg/L)		8	8	210	130	176.5	NR	NA
Conductivity (μmhos/cm)		8	8	486	321	414.125	NR	NA

Table 4.38 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Dissolved solids (mg/L)		8	8	334	36	229.75	500.000	0
pH (pH units)		8	8	8.2	7.2	7.51	NR	NA
Total suspended solids (mg/L)		8	3	14	2.5	7.166667	NR	NA
Turbidity (NTU)		8	8	8.9	0.4	2.575	1.0	5
Gross alpha (pCi/L)		8	8	1.17	–0.538	0.202196	15 n	0
Gross beta (pCi/L)		8	8	2.29	–0.244	1.1935	50 g	0
1,1,1-Trichloroethane (µg/L)		8	2	1 J	1 J	1	200.000	0
1,1-Dichloroethene (µg/L)		8	3	2 J	1 J	1.333333	7.000	0
1,2-Dichloroethene (µg/L)		8	2	4 J	2 J	3	70.	0
2-Butanone (µg/L)		8	1	9 JB	9 JB	9	NR	NA
Acetone (µg/L)		8	1	25 B	25 B	25	NR	NA
Carbon tetrachloride (µg/L)		8	8	18	2 J	8.375	5.000	5
Chloroform (µg/L)		8	8	4 J	2 J	2.875	100.000	0
Tetrachloroethene (µg/L)		8	5	13	1 J	7.2	5.000	4
Toluene (µg/L)		8	1	1 JB	1 JB	1	1000.00	0
Trichloroethene (µg/L)		8	3	4 J	2 J	2.666667	5.000	0

Table 4.39. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=GW Monitoring Plan Grid Location H2

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		4	4	0.012	0.0092	0.01055	NR	NA
Lithium, ICAP (mg/L)	Filtered	4	4	0.013	0.011	0.01175	NR	NA
Chloride, (mg/L)		8	8	4.1	3.2	3.66	250.000	0
Fluoride (mg/L)		8	1	0.13	0.13	0.13	4.000	0
Nitrate nitrogen (mg/L)		8	4	0.91 h	0.34	0.57075	10.000	0
Sulfate (mg/L)		8	8	6.4	5.02	5.69	250.000	0
Aluminum, ICAP (mg/L)		8	6	0.1	0.021	0.059167	0.2	0
Aluminum, ICAP (mg/L)	Filtered	8	3	0.077	0.02	0.04	0.2	0
Barium, ICAP (mg/L)		8	8	0.48	0.37	0.425	2.000	0
Barium, ICAP (mg/L)	Filtered	8	8	0.48	0.37	0.42625	2.000	0
Boron, ICAP (mg/L)		8	8	0.071	0.017	0.029375	NR	NA
Boron, ICAP (mg/L)	Filtered	8	8	0.28	0.016	0.057875	NR	NA
Calcium, ICAP (mg/L)		8	8	73	54	63	NR	NA
Calcium, ICAP (mg/L)	Filtered	8	8	75	53	63.5	NR	NA
Copper, ICAP (mg/L)		8	2	0.006	0.0043	0.00515	1.3 g	0
Copper, ICAP (mg/L)	Filtered	8	1	0.0051	0.0051	0.0051	1.3 g	0
Iron, ICAP (mg/L)		8	8	0.12	0.023	0.061375	0.300	0
Iron, ICAP (mg/L)	Filtered	8	6	0.055	0.015	0.0315	0.300	0
Magnesium, ICAP (mg/L)		8	8	7.5	6	6.7625	NR	NA
Magnesium, ICAP (mg/L)	Filtered	8	8	7.4	6.2	6.8125	NR	NA
Manganese, ICAP (mg/L)		8	8	0.029	0.016	0.02175	0.050	0
Manganese, ICAP (mg/L)	Filtered	8	8	0.029	0.014	0.01925	0.050	0

Table 4.39 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Potassium, ICAP (mg/L)		8	8	2.5	0.83	1.59125	NR	NA
Potassium, ICAP (mg/L)	Filtered	8	8	2.6	0.9	1.6625	NR	NA
Sodium, ICAP (mg/L)		8	8	5.8	4.3	4.9	NR	NA
Sodium, ICAP (mg/L)	Filtered	8	8	5.9	4.4	4.9875	NR	NA
Strontium, ICAP (mg/L)		8	8	0.16	0.11	0.13375	NR	NA
Strontium, ICAP (mg/L)	Filtered	8	8	0.16	0.11	0.13625	NR	NA
Zinc, ICAP (mg/L)		8	6	0.016	0.0024	0.007133	5.000	0
Zinc, ICAP (mg/L)	Filtered	8	7	0.011	0.0037	0.007171	5.000	0
Conductivity, field measurement (µmhos/cm)		8	NA	419	313	352.375	NR	NA
Dissolved oxygen, field measurement (ppm)		8	NA	7	0.6	2.2	NR	NA
pH, field measurement (pH units)		8	NA	7.9	7	7.4625	6.5/8.5	0
Redox, field measurement (MV)		8	NA	216	58	124.1875	NR	NA
Static water level (ft-TOC)		8	8	–8.21	–17.16	–11.7713	NR	NA
Water temperature, field measurement (°C)		8	NA	25.8	10.9	16.975	NR	NA
Alkalinity-HCO_3 (mg/L)		8	8	207	165	185.25	NR	NA
Conductivity (µmhos/cm)		8	8	402	326	364.125	NR	NA
Dissolved solids (mg/L)		8	8	380	18	192.25	500.000	0

Table 4.39 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
pH (pH units)		8	8	8.1	7.22	7.6675	NR	NA
Total suspended solids (mg/L)		8	2	2.5	2	2.25	NR	NA
Turbidity (NTU)		8	8	28	0.1	4.1	1.0	3
Gross alpha (pCi/L)		8	8	0.988	–1.71	–0.11679	15 n	0
Gross beta (pCi/L)		8	8	2.82	–2.32	1.303925	50 g	0
2-Butanone (µg/L)		8	2	14	14	14	NR	NA

Table 4.40. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=GW Monitoring Plan Grid Location H3

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		4	4	0.011	0.0046	0.0076	NR	NA
Lithium, ICAP (mg/L)	Filtered	4	3	0.012	0.004	0.008467	NR	NA
Chloride (mg/L)		8	8	49	27	35.675	250.000	0
Nitrate nitrogen (mg/L)		8	8	1.8 h	0.55	1.2035	10.000	0
Sulfate (mg/L)		8	8	45	27	34.95	250.000	0
Aluminum, ICAP (mg/L)		8	5	0.5	0.027	0.2714	0.2	3
Aluminum, ICAP (mg/L)	Filtered	8	5	0.049	0.02	0.0308	0.2	0
Barium, ICAP (mg/L)		8	8	0.19	0.08	0.132625	2.000	0
Barium, ICAP (mg/L)	Filtered	8	8	0.19	0.076	0.12925	2.000	0
Boron, ICAP (mg/L)		8	8	0.083	0.023	0.04725	NR	NA
Boron, ICAP (mg/L)	Filtered	8	8	0.064	0.025	0.03725	NR	NA
Cadmium, AAS (mg/L)		2	1	0.0043	0.0043	0.0043	0.005	0
Cadmium, AAS (mg/L)	Filtered	2	1	0.0054	0.0054	0.0054	0.005	1
Cadmium, ICAP (mg/L)		8	2	0.0045	0.0031	0.0038	0.005	0
Cadmium, ICAP (mg/L)	Filtered	8	1	0.004	0.004	0.004	0.005	0
Calcium, ICAP (mg/L)		8	8	110	79	89.875	NR	NA
Calcium, ICAP (mg/L)	Filtered	8	8	100	79	89.5	NR	NA
Chromium, AAS (mg/L)		2	2	0.032	0.027	0.0295	0.1	0
Chromium, ICAP (mg/L)		8	5	3	0.028	0.6962	0.1	2
Cobalt, ICAP (mg/L)		8	2	0.024	0.0078	0.0159	NR	NA
Copper, ICAP (mg/L)		8	3	0.023	0.0048	0.010867	1.3 g	0
Copper, ICAP (mg/L)	Filtered	8	1	0.0066	0.0066	0.0066	1.3 g	0

Table 4.40 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Iron, ICAP (mg/L)		8	6	32	0.036	6.692667	0.300	4
Iron, ICAP (mg/L)	Filtered	8	5	0.073	0.013	0.0372	0.300	0
Magnesium, ICAP (mg/L)		8	8	7.2	4.6	5.9375	NR	NA
Magnesium, ICAP (mg/L)	Filtered	8	8	7.4	4.5	5.9125	NR	NA
Manganese, ICAP (mg/L)		8	7	0.17	0.0018	0.044271	0.050	2
Manganese, ICAP (mg/L)	Filtered	8	8	0.033	0.0017	0.010375	0.050	0
Molybdenum, ICAP (mg/L)		8	1	0.036	0.036	0.036	NR	NA
Nickel, ICAP (mg/L)		8	4	1.1	0.24	0.58	0.100 h	4
Nickel, ICAP (mg/L)	Filtered	8	4	0.58	0.19	0.315	0.100 h	4
Potassium, ICAP (mg/L)		8	8	4.2	2.1	2.9625	NR	NA
Potassium, ICAP (mg/L)	Filtered	8	8	3.4	2.2	2.8875	NR	NA
Selenium, ICAP (mg/L)		8	1	0.063	0.063	0.063	0.05	1
Selenium, ICAP (mg/L)	Filtered	8	1	0.078	0.078	0.078	0.05	1
Silver, ICAP (mg/L)		8	1	0.0064	0.0064	0.0064	0.10	0
Sodium, ICAP (mg/L)		8	8	13	4.3	8.4375	NR	NA
Sodium, ICAP (mg/L)	Filtered	8	8	13	4.3	8.4375	NR	NA
Strontium, ICAP (mg/L)		8	8	0.23	0.14	0.18625	NR	NA
Strontium, ICAP (mg/L)	Filtered	8	8	0.22	0.14	0.18375	NR	NA
Uranium, (mg/L)	Filtered	8	1	0.00052	0.00052	0.00052	0.020	0
Vanadium, ICAP (mg/L)		8	1	0.0099	0.0099	0.0099	NR	NA
Zinc, ICAP (mg/L)		8	7	0.016	0.0022	0.010243	5.000	0

Table 4.40 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Zinc, ICAP (mg/L)	Filtered	8	4	0.017	0.0028	0.0092	5.000	0
Conductivity, field measurement (µmhos/cm)		8	NA	586	450	514.125	NR	NA
Dissolved oxygen, field measurement (ppm)		8	NA	6.6	0.6	3.8375	NR	NA
pH, field measurement (pH units)		8	NA	7.6	7.2	7.4375	6.5/8.5	0
Redox, field measurement (MV)		8	NA	210	87	151	NR	NA
Static water level (ft-TOC)		8	8	–10.9	–17.6	–13.9625	NR	NA
Water temperature, field measurement (°C)		8	NA	27.3	13.5	19.025	NR	NA
Alkalinity-HCO_3 (mg/L)		8	8	205	168	185.625	NR	NA
Conductivity (µmhos/cm)		8	8	575	468	521.75	NR	NA
Dissolved solids (mg/L)		8	8	334	178	274.75	500.000	0
pH (pH units)		8	8	7.7	7.29	7.4925	NR	NA
Total suspended solids (mg/L)		8	4	100	2.5	31	NR	NA
Turbidity (NTU)		8	8	75	0.1	24.0125	1.0	4
Gross alpha (pCi/L)		8	8	1.94	–10.6	–1.78796	15 n	0
Gross beta (pCi/L)		8	8	35.5	0.934	9.92675	50 g	0
Chloroform (µg/L)		8	3	1 J	1 J	1	100.000	0
Tetrachloroethene (µg/L)		8	3	2 J	2 J	2	5.000	0
Trichloroethene (µg/L)		8	8	8 J	3 J	4.625	5.000	2

Table 4.41. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=GW Monitoring Plan Grid Location I1

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		4	2	0.038	0.037	0.0375	NR	NA
Lithium, ICAP (mg/L)	Filtered	4	3	0.039	0.0042	0.0264	NR	NA
Chloride (mg/L)		8	8	7.7	3.48	4.76	250.000	0
Fluoride (mg/L)		8	8	0.43	0.13	0.27625	4.000	0
Nitrate nitrogen (mg/L)		8	8	1	0.4	0.6105	10.000	0
Sulfate (mg/L)		8	8	32	12.9	21.75	250.000	0
Aluminum, ICAP (mg/L)		8	8	250	0.024	32.06975	0.2	5
Aluminum, ICAP (mg/L)	Filtered	8	5	0.58	0.021	0.149	0.2	1
Barium, ICAP (mg/L)		8	8	3.8	0.15	0.70125	2.000	1
Barium, ICAP (mg/L)	Filtered	8	8	0.34	0.079	0.223625	2.000	0
Beryllium, ICAP (mg/L)		8	3	0.012	0.00049	0.004497	0.004	1
Boron, ICAP (mg/L)		8	8	0.39	0.022	0.124875	NR	NA
Boron, ICAP (mg/L)	Filtered	8	8	0.11	0.05	0.08375	NR	NA
Cadmium, ICAP (mg/L)		8	1	0.0033	0.0033	0.0033	0.005	0
Calcium, ICAP (mg/L)		8	8	96	27	52.5	NR	NA
Calcium, ICAP (mg/L)	Filtered	8	8	70	26	46.875	NR	NA
Chromium, ICAP (mg/L)		8	2	0.41	0.023	0.2165	0.1	1
Cobalt, ICAP (mg/L)		8	2	0.3	0.0058	0.1529	NR	NA
Copper, ICAP (mg/L)		8	4	0.29	0.0049	0.086725	1.3 g	0
Copper, ICAP (mg/L)	Filtered	8	3	0.007	0.0046	0.005733	1.3 g	0
Iron, ICAP (mg/L)		8	8	490	0.04	63.44513	0.300	5
Iron, ICAP (mg/L)	Filtered	8	7	0.97	0.0095	0.170357	0.300	1

Table 4.41 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lead, ICAP (mg/L)		8	1	0.67	0.67	0.67	0.015 g	1
Magnesium, ICAP (mg/L)		8	8	72	7	18.3	NR	NA
Magnesium, ICAP (mg/L)	Filtered	8	8	15	7.3	10.875	NR	NA
Manganese, ICAP (mg/L)		8	8	34	0.0082	4.857563	0.050	5
Manganese, ICAP (mg/L)	Filtered	8	8	4.5	0.0026	1.071425	0.050	4
Mercury, CVAA (mg/L)		8	1	0.00074	0.00074	0.00074	0.002	0
Nickel, ICAP (mg/L)		8	3	0.41	0.011	0.145667	0.100 h	1
Nickel, ICAP (mg/L)	Filtered	8	1	0.011	0.011	0.011	0.100 h	0
Potassium, ICAP (mg/L)		8	8	29	2.6	6.5375	NR	NA
Potassium, ICAP (mg/L)	Filtered	8	8	4.1	2.4	3.175	NR	NA
Sodium, ICAP (mg/L)		8	8	80	6.5	40.2	NR	NA
Sodium, ICAP (mg/L)	Filtered	8	8	76	7.3	40.725	NR	NA
Strontium, ICAP (mg/L)		8	8	0.93	0.13	0.475	NR	NA
Strontium, ICAP (mg/L)	Filtered	8	8	0.84	0.14	0.45	NR	NA
Uranium (mg/L)		8	3	0.017	0.00081	0.006303	0.020	0
Uranium (mg/L)	Filtered	8	3	0.00094	0.00063	0.00082	0.020	0
Vanadium, ICAP (mg/L)		8	2	0.38	0.017	0.1985	NR	NA
Zinc, ICAP (mg/L)		8	7	0.91	0.0022	0.155429	5.000	0
Zinc, ICAP (mg/L)	Filtered	8	5	0.2	0.0024	0.05012	5.000	0
Conductivity, field measurement (µmhos/cm)		8	NA	511	362	435.125	NR	NA

Table 4.41 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Dissolved oxygen, field measurement (ppm)		8	NA	8	2.8	5.75	NR	NA
pH, field measurement (pH units)		8	NA	8.3	6.6	7.4	6.5/8.5	0
Redox, field measurement (MV)		8	NA	206	78	127.8625	NR	NA
Static water level (ft-TOC)		8	8	–15.4	–19.22	–17.2875	NR	NA
Water temperature, field measurement (°C)		8	NA	21.8	10.7	15.8375	NR	NA
Alkalinity-HCO_3 (mg/L)		8	8	269	165	215.875	NR	NA
Conductivity (μmhos/cm)		8	8	525	368	451.25	NR	NA
Dissolved solids (mg/L)		8	8	403	226	300.375	500.000	0
pH (pH units)		8	8	8.2	6.8	7.525	NR	NA
Total suspended solids (mg/L)		8	6	12020	2	3225.833	NR	NA
Turbidity (NTU)		8	8	6000	0.9	1329.875	1.0	7
Gross alpha (pCi/L)		8	8	33.6	–0.0095	5.124813	15 n	1
Gross beta (pCi/L)		8	8	73.8	1.49	12.80875	50 g	1

Table 4.42. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=GW Monitoring Plan Grid Location I2

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		4	3	0.016	0.0053	0.011767	NR	NA
Lithium, ICAP (mg/L)	Filtered	4	3	0.016	0.0051	0.011367	NR	NA
Chloride (mg/L)		8	8	15	3.45	5.71125	250.000	0
Fluoride (mg/L)		8	1	0.2	0.2	0.2	4.000	0
Nitrate nitrogen (mg/L)		8	5	1.1 h	0.31	0.6036	10.000	0
Sulfate (mg/L)		8	8	9.1	1.25	5.4325	250.000	0
Aluminum, ICAP (mg/L)		8	7	0.9	0.029	0.275571	0.2	2
Aluminum, ICAP (mg/L)	Filtered	8	4	0.06	0.022	0.032	0.2	0
Barium, ICAP (mg/L)		8	8	0.34	0.06	0.17425	2.000	0
Barium, ICAP (mg/L)	Filtered	8	8	0.33	0.036	0.153125	2.000	0
Boron, ICAP (mg/L)		8	8	0.45	0.03	0.09425	NR	NA
Boron, ICAP (mg/L)	Filtered	8	8	0.057	0.016	0.03775	NR	NA
Calcium, ICAP (mg/L)		8	8	40	1.6	17.85	NR	NA
Calcium, ICAP (mg/L)	Filtered	8	8	39	1.6	16.225	NR	NA
Chromium, ICAP (mg/L)		8	1	0.052	0.052	0.052	0.1	0
Copper, ICAP (mg/L)		8	3	0.0072	0.0049	0.0058	1.3 g	0
Copper, ICAP (mg/L)	Filtered	8	2	0.0068	0.0066	0.0067	1.3 g	0
Iron, ICAP (mg/L)		8	8	1.6	0.023	0.395875	0.300	3
Iron, ICAP (mg/L)	Filtered	8	5	0.087	0.0057	0.02592	0.300	0
Magnesium, ICAP (mg/L)		8	8	9	0.96	4.47	NR	NA
Magnesium, ICAP (mg/L)	Filtered	8	8	8.9	0.94	4.12375	NR	NA
Manganese, ICAP (mg/L)		8	8	0.14	0.0047	0.045875	0.050	3

Table 4.42 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Manganese, ICAP (mg/L)	Filtered	8	6	0.068	0.0079	0.03615	0.050	1
Nickel, ICAP (mg/L)		8	1	0.011	0.011	0.011	0.100 h	0
Potassium, ICAP (mg/L)		8	7	4.6	1.1	2.757143	NR	NA
Potassium, ICAP (mg/L)	Filtered	8	8	4.6	0.75	2.5325	NR	NA
Selenium, ICAP (mg/L)		8	1	0.064	0.064	0.064	0.05	1
Sodium, ICAP (mg/L)		8	8	13	2.6	7.8375	NR	NA
Sodium, ICAP (mg/L)	Filtered	8	8	14	2.4	8	NR	NA
Strontium, ICAP (mg/L)		8	8	0.69	0.0093	0.289038	NR	NA
Strontium, ICAP (mg/L)	Filtered	8	8	0.67	0.0091	0.276225	NR	NA
Zinc, ICAP (mg/L)		8	7	0.24	0.0038	0.048514	5.000	0
Zinc, ICAP (mg/L)	Filtered	8	7	0.17	0.0022	0.037043	5.000	0
Conductivity, field measurement (μmhos/cm)		8	NA	317	35	154.75	NR	NA
Dissolved oxygen, field measurement (ppm)		8	NA	12.2	2.9	6.0625	NR	N
pH, field measurement (pH units)		8	NA	9	5.1	7.025	6.5/8.5	7
Redox, field measurement (MV)		8	NA	305	56.8	164.6	NR	NA
Static water level (ft-TOC)		8	8	–10.17	–12.8	–11.4512	NR	NA
Water temperature, field measurement (°C)		8	NA	26.1	13.4	18.8375	NR	NA
Alkalinity-CO_3 (mg/L)		8	3	16	4	10.66667	NR	NA
Alkalinity-HCO_3 (mg/L)		8	8	166	7	67.625	NR	NA

Table 4.42 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Conductivity (µmhos/cm)		8	8	314	33.2	173.525	NR	NA
Dissolved solids (mg/L)		8	7	222	52	144.2857	500.000	0
pH (pH units)		8	8	8.5	5.36	6.99	NR	NA
Total suspended solids (mg/L)		8	4	35	2	12.125	NR	NA
Turbidity (NTU)		8	8	20	0.3	3.4875	1.0	2
Gross alpha (pCi/L)		8	8	1.02	–1.17	–0.21409	15 n	0
Gross beta (pCi/L)		8	8	4.1	–2.47	1.139113	50 g	0

Table 4.43. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=GW Monitoring Plan Grid Location J3

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		4	2	0.02	0.018	0.019	NR	NA
Lithium, ICAP (mg/L)	Filtered	4	2	0.019	0.018	0.0185	NR	NA
Chloride (mg/L)		8	8	48	13	29.5625	250.000	0
Nitrate nitrogen (mg/L)		8	1	0.61	0.61	0.61	10.000	0
Sulfate (mg/L)		8	8	5.3	4.4	4.86375	250.000	0
Aluminum, ICAP (mg/L)		8	6	0.1	0.021	0.041333	0.2	0
Aluminum, ICAP (mg/L)	Filtered	8	2	0.042	0.032	0.037	0.2	0
Barium, ICAP (mg/L)		8	8	0.59	0.12	0.34	2.000	0
Barium, ICAP (mg/L)	Filtered	8	8	0.58	0.12	0.3475	2.000	0
Boron, ICAP (mg/L)		8	8	0.083	0.0096	0.038075	NR	NA
Boron, ICAP (mg/L)	Filtered	8	8	0.12	0.02	0.065125	NR	NA
Cadmium, ICAP (mg/L)		8	1	0.0037	0.0037	0.0037	0.005	0
Cadmium, ICAP (mg/L)	Filtered	8	1	0.0033	0.0033	0.0033	0.005	0
Calcium, ICAP (mg/L)		8	8	60	26	43.125	NR	NA
Calcium, ICAP (mg/L)	Filtered	8	8	59	26	43.25	NR	NA
Cobalt, ICAP (mg/L)		8	1	0.0057	0.0057	0.0057	NR	NA
Cobalt, ICAP (mg/L)	Filtered	8	2	0.007	0.0061	0.00655	NR	NA
Copper, ICAP (mg/L)		8	2	0.0081	0.0053	0.0067	1.3 g	0
Copper, ICAP (mg/L)	Filtered	8	1	0.008	0.008	0.008	1.3 g	0
Iron, ICAP (mg/L)		8	8	0.29	0.16	0.2375	0.300	0
Iron, ICAP (mg/L)	Filtered	8	8	0.23	0.096	0.18075	0.300	0
Magnesium, ICAP (mg/L)		8	8	10	3.4	6.775	NR	NA

Table 4.43 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Magnesium, ICAP (mg/L)	Filtered	8	8	11	3.4	6.9375	NR	NA
Manganese, ICAP (mg/L)		8	8	1.7	0.012	0.80625	0.050	4
Manganese, ICAP (mg/L)	Filtered	8	8	1.7	0.012	0.81875	0.050	4
Nickel, ICAP (mg/L)		8	4	0.029	0.024	0.02575	0.100 h	0
Nickel, ICAP (mg/L)	Filtered	8	4	0.029	0.022	0.0265	0.100 h	0
Potassium, ICAP (mg/L)		8	8	3.9	1.8	2.5125	NR	NA
Potassium, ICAP (mg/L)	Filtered	8	8	3.5	1.6	2.4375	NR	NA
Sodium, ICAP (mg/L)		8	8	10	7.5	9.0375	NR	NA
Sodium, ICAP (mg/L)	Filtered	8	8	10	8.3	9.175	NR	NA
Strontium, ICAP (mg/L)		8	8	0.49	0.076	0.2735	NR	NA
Strontium, ICAP (mg/L)	Filtered	8	8	0.48	0.077	0.27225	NR	NA
Zinc, ICAP (mg/L)		8	7	0.019	0.0024	0.009614	5.000	0
Zinc, ICAP (mg/L)	Filtered	8	7	0.022	0.0037	0.010286	5.000	0
Conductivity, field measurement (µmhos/cm)		8	NA	415	151	310.375	NR	NA
Dissolved oxygen, field measurement (ppm)		8	NA	1.2	0.4	0.625	NR	NA
pH, field measurement (pH units)		8	NA	7.7	5.1	6.4375	6.5/8.5	4
Redox, field measurement (MV)		8	NA	173	75	130	NR	NA
Static water level (ft-TOC)		8	8	–4.18	–6.32	–4.89125	NR	NA
Water temperature, field measurement (°C)		8	NA	20.2	13.7	16.575	NR	NA

Table 4.43 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Alkalinity-HCO_3 (mg/L)		8	8	190	43	115.375	NR	NA
Conductivity (μmhos/cm)		8	8	399	238	322.75	NR	NA
Dissolved solids (mg/L)		8	8	308	140	220.75	500.000	0
pH (pH units)		8	8	7.8	5.6	6.72875	NR	NA
Total suspended solids (mg/L)		8	3	1	1	1	NR	NA
Turbidity (NTU)		8	8	2.5	0.55	1.35625	1.0	6
Gross alpha (pCi/L)		8	8	2.22	–0.00738	1.153453	15 n	0
Gross beta (pCi/L)		8	8	4.66	1.81	2.71125	50 g	0

Table 4.44. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=GW Monitoring Plan Grid Location K1

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		6	6	0.023	0.004	0.01655	NR	NA
Lithium, ICAP (mg/L)	Filtered	6	4	0.024	0.022	0.02275	NR	NA
Chloride (mg/L)		12	12	15	4.11	9.9925	250.000	0
Fluoride (mg/L)		12	4	0.13	0.1	0.115	4.000	0
Nitrate nitrogen (mg/L)		12	5	1.01	0.46	0.686	10.000	0
Sulfate (mg/L)		12	12	32	18.5	24.18333	250.000	0
Aluminum, ICAP (mg/L)		12	9	5.1	0.027	1.024889	0.2	4
Aluminum, ICAP (mg/L)	Filtered	12	3	0.036	0.028	0.033	0.2	0
Antimony, ICAP (mg/L)	Filtered	12	1	0.068	0.068	0.068	0.006	1
Barium, ICAP (mg/L)		12	12	0.2	0.12	0.160833	2.000	0
Barium, ICAP (mg/L)	Filtered	12	12	0.2	0.1	0.153333	2.000	0
Beryllium, ICAP (mg/L)		12	1	0.00034	0.00034	0.00034	0.004	0
Boron, ICAP (mg/L)		12	12	0.11	0.024	0.056417	NR	NA
Boron, ICAP (mg/L)	Filtered	12	12	0.088	0.019	0.049417	NR	NA
Cadmium, ICAP (mg/L)		12	1	0.0051	0.0051	0.0051	0.005	1
Calcium, ICAP (mg/L)		12	12	63	20	45.66667	NR	NA
Calcium, ICAP (mg/L)	Filtered	12	12	62	18	45.75	NR	NA
Chromium, AAS (mg/L)		4	4	0.24	0.023	0.08425	0.1	1
Chromium, ICAP (mg/L)		12	4	0.23	0.028	0.084	0.1	1
Cobalt, ICAP (mg/L)		12	1	0.0069	0.0069	0.0069	NR	NA
Copper, ICAP (mg/L)		12	4	0.021	0.0045	0.008925	1.3 g	0
Copper, ICAP (mg/L)	Filtered	12	4	0.0082	0.0056	0.00685	1.3 g	0

Table 4.44 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Iron, ICAP (mg/L)		12	12	9.4	0.12	1.3775	0.300	5
Iron, ICAP (mg/L)	Filtered	12	11	0.26	0.021	0.123636	0.300	0
Lead, AAS (mg/L)		4	1	0.005	0.005	0.005	0.015 g	0
Magnesium, ICAP (mg/L)		12	12	11	6.5	8.966667	NR	NA
Magnesium, ICAP (mg/L)	Filtered	12	12	11	5.8	8.816667	NR	NA
Manganese, ICAP (mg/L)		12	12	0.62	0.029	0.24675	0.050	11
Manganese, ICAP (mg/L)	Filtered	12	12	0.58	0.021	0.244667	0.050	10
Nickel, ICAP (mg/L)		12	4	0.12	0.045	0.08325	0.100 h	1
Nickel, ICAP (mg/L)	Filtered	12	4	0.17	0.025	0.10625	0.100 h	2
Potassium, ICAP (mg/L)		12	12	3.8	1.9	2.891667	NR	NA
Potassium, ICAP (mg/L)	Filtered	12	12	3.7	1.6	2.583333	NR	NA
Selenium, ICAP (mg/L)	Filtered	12	1	0.09	0.09	0.09	0.05	1
Sodium, ICAP (mg/L)		12	12	31	7.4	19.58333	NR	NA
Sodium, ICAP (mg/L)	Filtered	12	12	31	7.4	19.525	NR	NA
Strontium, ICAP (mg/L)		12	12	1.1	0.083	0.618333	NR	NA
Strontium, ICAP (mg/L)	Filtered	12	12	1.1	0.073	0.608833	NR	NA
Uranium (mg/L)		12	1	0.00065	0.00065	0.00065	0.020	0
Vanadium, ICAP (mg/L)		12	1	0.018	0.018	0.018	NR	NA
Zinc, ICAP (mg/L)		12	10	0.029	0.0049	0.01118	5.000	0
Zinc, ICAP (mg/L)	Filtered	12	9	0.027	0.0041	0.010667	5.000	0

Table 4.44 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Conductivity, field measurement (µmhos/cm)		12	NA	573	184	373.0833	NR	NA
Dissolved oxygen, field measurement (ppm)		12	NA	6.8	0.4	3.033333	NR	NA
pH, field measurement (pH units)		12	NA	7.6	5.9	6.85	6.5/8.5	4
Redox, field measurement (MV)		12	NA	219	49	157.5556	NR	NA
Static water level (ft-TOC)		12	12	–5.45	–10.95	–7.0125	NR	NA
Water temperature, field measurement (°C)		12	NA	21.5	11.5	16.975	NR	NA
Alkalinity-HCO_3 (mg/L)		12	12	220	37	152.6667	NR	NA
Conductivity (µmhos/cm)		12	12	482	142	344.9167	NR	NA
Dissolved solids (mg/L)		12	12	314	116	236.6667	500.000	0
pH (pH units)		12	12	7.8	6.09	7.108333	NR	NA
Total suspended solids (mg/L)		12	7	70	1	15.64286	NR	NA
Turbidity (NTU)		12	12	80	1.5	10.95833	1.0	12
Gross alpha (pCi/L)		12	12	5.8	–1.11	1.516433	15 n	0
Gross beta (pCi/L)		12	12	11.1	–1.72	3.666333	50 g	0
2-Butanone (µg/L)		12	2	15	14	14.5	NR	NA

Table 4.45. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=GW Monitoring Plan Grid Location K2

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		6	4	0.016	0.012	0.0135	NR	NA
Lithium, ICAP (mg/L)	Filtered	6	4	0.016	0.0053	0.010775	NR	NA
Chloride (mg/L)		12	12	26	3.73	10.94667	250.000	0
Fluoride (mg/L)		12	9	0.2	0.1	0.136667	4.000	0
Nitrate nitrogen (mg/L)		12	4	0.7	0.23	0.3775	10.000	0
Sulfate (mg/L)		12	12	45	20.1	30.875	250.000	0
Aluminum, ICAP (mg/L)		12	9	5.9	0.035	2.065	0.2	6
Aluminum, ICAP (mg/L)	Filtered	12	5	0.11	0.024	0.045	0.2	0
Barium, ICAP (mg/L)		12	12	0.21	0.12	0.165833	2.000	0
Barium, ICAP (mg/L)	Filtered	12	12	0.22	0.11	0.149167	2.000	0
Boron, ICAP (mg/L)		12	12	0.21	0.017	0.065333	NR	NA
Boron, ICAP (mg/L)	Filtered	12	12	0.24	0.017	0.067833	NR	NA
Calcium, ICAP (mg/L)		12	12	120	48	78.25	NR	NA
Calcium, ICAP (mg/L)	Filtered	12	12	120	49	74.41667	NR	NA
Chromium, ICAP (mg/L)		12	3	0.046	0.013	0.026333	0.1	0
Cobalt, ICAP (mg/L)		12	1	0.0053	0.0053	0.0053	NR	NA
Copper, ICAP (mg/L)		12	7	0.014	0.0047	0.007371	1.3 g	0
Copper, ICAP (mg/L)	Filtered	12	4	0.0071	0.0042	0.00515	1.3 g	0
Iron, ICAP (mg/L)		12	12	9.7	0.069	2.52625	0.300	7
Iron, ICAP (mg/L)	Filtered	12	10	0.085	0.0051	0.04309	0.300	0
Magnesium, ICAP (mg/L)		12	12	11	6.4	9.65	NR	NA
Magnesium, ICAP (mg/L)	Filtered	12	12	11	6.4	9	NR	NA

Table 4.45 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Manganese, ICAP (mg/L)		12	12	2.6	0.012	0.448167	0.050	8
Manganese, ICAP (mg/L)	Filtered	12	12	1.8	0.0055	0.322125	0.050	4
Nickel, ICAP (mg/L)		12	2	0.024	0.013	0.0185	0.100 h	0
Nickel, ICAP (mg/L)	Filtered	12	1	0.011	0.011	0.011	0.100 h	0
Potassium, ICAP (mg/L)		12	12	3	0.91	1.975833	NR	NA
Potassium, ICAP (mg/L)	Filtered	12	11	2.6	0.85	1.758182	NR	NA
Sodium, ICAP (mg/L)		12	12	33	5.7	17.03333	NR	NA
Sodium, ICAP (mg/L)	Filtered	12	12	33	5.9	16.8	NR	NA
Strontium, ICAP (mg/L)		12	12	0.62	0.17	0.349167	NR	NA
Strontium, ICAP (mg/L)	Filtered	12	12	0.61	0.17	0.341667	NR	NA
Uranium (mg/L)		12	4	0.0062	0.0011	0.003575	0.020	0
Uranium (mg/L)	Filtered	12	4	0.0067	0.0032	0.00505	0.020	0
Vanadium, ICAP (mg/L)		12	5	0.018	0.007	0.0118	NR	NA
Vanadium, ICAP (mg/L)	Filtered	12	1	0.0053	0.0053	0.0053	NR	NA
Zinc, ICAP (mg/L)		12	11	0.051	0.0022	0.014664	5.000	0
Zinc, ICAP (mg/L)	Filtered	12	7	0.012	0.0022	0.0072	5.000	0
Conductivity, field measurement (µmhos/cm)		12	NA	599	334	453	NR	NA
Dissolved oxygen, field measurement (ppm)		12	NA	7.1	0.2	4.083333	NR	NA
pH, field measurement (pH units)		12	NA	7.7	6.6	7.333333	6.5/8.5	0
Redox, field measurement (MV)		12	NA	172	13	94.2	NR	NA

Table 4.45 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Static water level (ft-TOC)		12	12	–3.87	–8.75	–5.85667	NR	NA
Water temperature, field measurement (°C)		12	NA	21.1	12.4	16.75833	NR	NA
Alkalinity-HCO_3 (mg/L)		12	12	276	181	214.5	NR	NA
Conductivity (μmhos/cm)		12	12	676	421	487.5	NR	NA
Dissolved solids (mg/L)		12	12	456	152	307.6667	500.000	0
pH (pH units)		12	12	7.9	7.32	7.675	NR	NA
Total suspended solids (mg/L)		12	9	109	1	35.88889	NR	NA
Turbidity (NTU)		12	12	300	0.5	59.68333	1.0	10
Gross alpha (pCi/L)		12	12	4.94	–0.746	1.971917	15 n	0
Gross beta (pCi/L)		12	12	11	0.974	3.8945	50 g	0
2-Butanone (μg/L)		12	2	14	13	13.5	NR	NA

Table 4.46. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=GW Monitoring Plan Grid Location K3

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		2	2	0.015	0.012	0.0135	NR	NA
Lithium, ICAP (mg/L)	Filtered	2	2	0.015	0.01	0.0125	NR	NA
Chloride (mg/L)		4	4	6.33	5.1	5.6575	250.000	0
Fluoride (mg/L)		4	3	0.14	0.1	0.113333	4.000	0
Nitrate nitrogen (mg/L)		4	3	0.81	0.3	0.483333	10.000	0
Sulfate (mg/L)		4	4	63	13	28.9	250.000	0
Aluminum, ICAP (mg/L)		4	4	3.1	0.65	1.6275	0.2	4
Aluminum, ICAP (mg/L)	Filtered	4	1	0.021	0.021	0.021	0.2	0
Barium, ICAP (mg/L)		4	4	0.35	0.24	0.2875	2.000	0
Barium, ICAP (mg/L)	Filtered	4	4	0.33	0.21	0.265	2.000	0
Boron, ICAP (mg/L)		4	4	0.057	0.027	0.0365	NR	NA
Boron, ICAP (mg/L)	Filtered	4	4	0.051	0.017	0.03125	NR	NA
Calcium, ICAP (mg/L)		4	4	89	68	76.75	NR	NA
Calcium, ICAP (mg/L)	Filtered	4	4	87	61	73.5	NR	NA
Copper, ICAP (mg/L)		4	1	0.0049	0.0049	0.0049	1.3 g	0
Copper, ICAP (mg/L)	Filtered	4	1	0.007	0.007	0.007	1.3 g	0
Iron, ICAP (mg/L)		4	4	2.5	0.57	1.24	0.300	4
Iron, ICAP (mg/L)	Filtered	4	3	0.032	0.019	0.025333	0.300	0
Lead, AAS (mg/L)		4	1	0.0046	0.0046	0.0046	0.015 g	0
Magnesium, ICAP (mg/L)		4	4	11	7.4	9	NR	NA
Magnesium, ICAP (mg/L)	Filtered	4	4	10	6.6	8.35	NR	NA
Manganese, ICAP (mg/L)		4	4	0.17	0.072	0.1165	0.050	4

Table 4.46 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Manganese, ICAP (mg/L)	Filtered	4	4	0.11	0.006	0.03975	0.050	1
Potassium, ICAP (mg/L)		4	4	5.2	2.1	3.725	NR	NA
Potassium, ICAP (mg/L)	Filtered	4	4	4.6	1.5	3.1	NR	NA
Sodium, ICAP (mg/L)		4	4	19	6.3	11.95	NR	NA
Sodium, ICAP (mg/L)	Filtered	4	4	18	6.2	11.675	NR	NA
Strontium, ICAP (mg/L)		4	4	0.23	0.19	0.2125	NR	NA
Strontium, ICAP (mg/L)	Filtered	4	4	0.23	0.17	0.2075	NR	NA
Uranium (mg/L)		4	3	0.0028	0.00074	0.001713	0.020	0
Uranium (mg/L)	Filtered	4	3	0.0021	0.00064	0.00138	0.020	0
Zinc, ICAP (mg/L)		4	4	0.013	0.0023	0.0071	5.000	0
Zinc, ICAP (mg/L)	Filtered	4	3	0.0071	0.0031	0.004667	5.000	0
Conductivity, field measurement (µmhos/cm)		4	NA	520	384	440	NR	NA
Dissolved oxygen, field measurement (ppm)		4	NA	1.8	0.3	1.2075	NR	NA
pH, field measurement (pH units)		4	NA	7.9	7.12	7.63	6.5/8.5	0
Redox, field measurement (MV)		4	NA	173	30	78.5	NR	NA
Static water level (ft-TOC)		4	4	–6.24	–9.25	–7.49	NR	NA
Water temperature, field measurement (°C)		4	NA	17.6	12.9	15.375	NR	NA
Alkalinity-HCO_3 (mg/L)		4	4	222	203	213.75	NR	NA
Conductivity (µmhos/cm)		4	4	566	421	459	NR	NA

Table 4.46 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Dissolved solids (mg/L)		4	4	302	212	251.5	500.000	0
pH (pH units)		4	4	8	7.74	7.835	NR	NA
Total suspended solids (mg/L)		4	4	58	6	26.5	NR	NA
Turbidity (NTU)		4	4	50	8.2	27.05	1.0	4
Gross alpha (pCi/L)		4	4	2.52	–0.352	1.03475	15 n	0
Gross beta (pCi/L)		4	4	7.05	–0.559	4.25525	50 g	0

Table 4.47. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=Grid J Primary

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Chloride (mg/L)		6	6	45	30	39.26667	250.000	0
Fluoride (mg/L)		6	4	0.2	0.16	0.18	4.000	0
Sulfate (mg/L)		6	6	14	1.4	5.643333	250.000	0
Aluminum, ICAP (mg/L)		6	6	1.1	0.11	0.506667	0.2	4
Aluminum, ICAP (mg/L)	Filtered	6	4	0.053	0.025	0.03425	0.2	0
Barium, ICAP (mg/L)		6	6	0.61	0.074	0.250833	2.000	0
Barium, ICAP (mg/L)	Filtered	6	6	0.61	0.072	0.2505	2.000	0
Boron, ICAP (mg/L)		6	6	0.095	0.024	0.060167	NR	NA
Boron, ICAP (mg/L)	Filtered	6	6	0.13	0.026	0.063167	NR	NA
Calcium, ICAP (mg/L)		6	6	120	77	100.5	NR	NA
Calcium, ICAP (mg/L)	Filtered	6	6	110	79	99	NR	NA
Copper, ICAP (mg/L)		6	1	0.0051	0.0051	0.0051	1.3 g	0
Iron, ICAP (mg/L)		6	6	23	0.51	13.24833	0.300	6
Iron, ICAP (mg/L)	Filtered	6	6	20	0.17	9.813333	0.300	4
Magnesium, ICAP (mg/L)		6	6	26	11	16.5	NR	NA
Magnesium, ICAP (mg/L)	Filtered	6	6	26	11	16.5	NR	NA
Manganese, ICAP (mg/L)		6	6	1.2	0.11	0.8	0.050	6
Manganese, ICAP (mg/L)	Filtered	6	6	1.3	0.1	0.768333	0.050	6
Potassium, ICAP (mg/L)		6	6	3.7	0.76	2.193333	NR	NA
Potassium, ICAP (mg/L)	Filtered	6	6	3.6	0.76	2	NR	NA
Selenium, ICAP (mg/L)		6	1	0.07	0.07	0.07	0.05	1
Sodium, ICAP (mg/L)		6	6	11	7.7	9.3	NR	NA

Table 4.47 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Sodium, ICAP (mg/L)	Filtered	6	6	10	8.2	9.166667	NR	NA
Strontium, ICAP (mg/L)		6	6	0.88	0.2	0.42	NR	NA
Strontium, ICAP (mg/L)	Filtered	6	6	0.88	0.21	0.426667	NR	NA
Zinc, ICAP (mg/L)		6	6	0.032	0.0031	0.012317	5.000	0
Zinc, ICAP (mg/L)	Filtered	6	5	0.045	0.002	0.01958	5.000	0
Conductivity, field measurement (µmhos/cm)		6	NA	820	595	710.5	NR	NA
Dissolved oxygen, field measurement (ppm)		6	NA	2	1	1.366667	NR	NA
pH, field measurement (pH units)		6	NA	7.6	6.7	7.183333	6.5/8.5	0
Redox, field measurement (MV)		6	NA	46	46	46	NR	NA
Static water level (ft-TOC)		6	6	–9.33	–13.23	–11.005	NR	NA
Water temperature, field measurement (°C)		6	NA	22	16.8	18.88333	NR	NA
Alkalinity-HCO_3 (mg/L)		6	6	320	289	304.8333	NR	NA
Conductivity (µmhos/cm)		6	6	715	620	681.6667	NR	NA
Dissolved solids (mg/L)		6	6	416	286	376	500.000	0
pH (pH units)		6	6	8.1	6.86	7.36	NR	NA
Total suspended solids (mg/L)		6	6	50	4	20.66667	NR	NA
Turbidity (NTU)		6	6	220	6.9	90.81667	1.0	6
Gross alpha (pCi/L)		6	6	1.37	–1.17	0.072167	15 n	0
Gross beta (pCi/L)		6	6	6.53	–0.327	2.5225	50 g	0

Table 4.47 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
1,1-Dichloroethene (µg/L)		6	3	16 J	1 J	6	7.000	1
1,2-Dichloroethene (µg/L)		6	6	100	37	64.5	70.	1
Acetone (µg/L)		6	1	7 J	7 J	7	NR	NA
Bromomethane (µg/L)		6	1	9 J	9 J	9	NR	NA
Tetrachloroethene (µg/L)		6	6	1300	8 J	408.5	5.000	6
Trichloroethene (µg/L)		6	6	71 J	2 J	25.66667	5.000	2
Vinyl chloride (µg/L)		6	3	20	11	16.33333	2.000	3

Table 4.48. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=New Hope Pond

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		26	22	0.098	0.0042	0.022355	NR	NA
Lithium, ICAP (mg/L)	Filtered	26	21	0.096	0.0041	0.022176	NR	NA
Chloride (mg/L)		56	56	136	2.7	31.30786	250.000	0
Fluoride (mg/L)		56	42	2.9	0.1	0.444762	4.000	0
Nitrate nitrogen (mg/L)		56	34	4.5	0.21	1.240412	10.000	0
Sulfate (mg/L)		56	56	103	3.5	24.75446	250.000	0
Aluminum, ICAP (mg/L)		56	46	4.5	0.021	0.606609	0.2	24
Aluminum, ICAP (mg/L)	Filtered	56	27	0.42	0.021	0.064704	0.2	1
Arsenic, ICAP (mg/L)	Filtered	56	1	0.05	0.05	0.05	0.050	0
Barium, ICAP (mg/L)		56	56	0.58	0.03	0.220821	2.000	0
Barium, ICAP (mg/L)	Filtered	56	56	0.56	0.032	0.211714	2.000	0
Beryllium, ICAP (mg/L)		56	1	0.00031	0.00031	0.00031	0.004	0
Boron, ICAP (mg/L)		56	56	0.95	0.019	0.169393	NR	NA
Boron, ICAP (mg/L)	Filtered	56	56	0.87	0.018	0.1625	NR	NA
Cadmium, AAS (mg/L)		28	1	0.0021	0.0021	0.0021	0.005	0
Cadmium, ICAP (mg/L)		56	1	0.0032	0.0032	0.0032	0.005	0
Calcium, ICAP (mg/L)		56	56	140	1.1	71.3875	NR	NA
Calcium, ICAP (mg/L)	Filtered	56	56	140	0.99	70.28536	NR	NA
Chromium, AAS (mg/L)		28	4	4.6	0.16	1.36	0.1	4
Chromium, ICAP (mg/L)		56	5	3.8	0.014	0.9128	0.1	4
Cobalt, ICAP (mg/L)		56	2	0.013	0.0097	0.01135	NR	NA
Cobalt, ICAP (mg/L)	Filtered	56	1	0.043	0.043	0.043	NR	NA

Table 4.48 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Copper, ICAP (mg/L)		56	14	0.057	0.004	0.01005	1.3 g	0
Copper, ICAP (mg/L)	Filtered	56	6	0.0063	0.0042	0.004817	1.3 g	0
Iron, ICAP (mg/L)		56	52	15	0.021	1.513808	0.300	42
Iron, ICAP (mg/L)	Filtered	56	44	6.5	0.0054	0.60345	0.300	18
Lead, AAS (mg/L)		28	4	0.024	0.0046	0.00995	0.015 g	1
Magnesium, ICAP (mg/L)		56	56	29	0.27	15.79982	NR	NA
Magnesium, ICAP (mg/L)	Filtered	56	56	29	0.23	15.59946	NR	NA
Manganese, ICAP (mg/L)		56	52	4.2	0.0016	0.346429	0.050	38
Manganese, ICAP (mg/L)	Filtered	56	43	1.3	0.0014	0.258781	0.050	30
Mercury, CVAA (mg/L)		56	2	0.0025	0.00077	0.001635	0.002	1
Molybdenum, ICAP (mg/L)		56	1	0.044	0.044	0.044	NR	NA
Nickel, ICAP (mg/L)		56	6	0.61	0.01	0.246	0.100 h	4
Nickel, ICAP (mg/L)	Filtered	56	5	2.1	0.011	0.5212	0.100 h	3
Potassium, ICAP (mg/L)		56	56	8.2	1	3.1875	NR	NA
Potassium, ICAP (mg/L)	Filtered	56	56	6.8	0.89	3.0625	NR	NA
Selenium, ICAP (mg/L)		56	3	0.063	0.053	0.059667	0.05	3
Selenium, ICAP (mg/L)	Filtered	56	4	0.12	0.053	0.08825	0.05	4
Sodium, ICAP (mg/L)		56	56	180	3.8	33.39107	NR	NA
Sodium, ICAP (mg/L)	Filtered	56	56	180	3.9	33.7	NR	NA
Strontium, ICAP (mg/L)		56	56	1.1	0.048	0.369571	NR	NA
Strontium, ICAP (mg/L)	Filtered	56	56	1.1	0.05	0.368696	NR	NA
Uranium, (mg/L)		56	30	0.66	0.00052	0.092859	0.020	8

Table 4.48 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Uranium, (mg/L)	Filtered	56	28	0.57	0.0012	0.094882	0.020	8
Vanadium, ICAP (mg/L)		56	2	0.018	0.0056	0.0118	NR	NA
Vanadium, ICAP (mg/L)	Filtered	56	1	0.005	0.005	0.005	NR	NA
Zinc, ICAP (mg/L)		56	53	0.059	0.0027	0.013006	5.000	0
Zinc, ICAP (mg/L)	Filtered	56	47	0.059	0.002	0.009483	5.000	0
Conductivity, field measurement (umhos/cm)		59	NA	1021	304	615.9831	NR	NA
Dissolved oxygen, field measurement (ppm)		59	NA	8.5	0.2	2.151695	NR	NA
pH, field measurement (pH units)		59	NA	9.2	4	7.427119	6.5/8.5	7
Redox, field measurement (MV)		59	NA	233	5	121.0026	NR	NA
Static water level (ft-TOC)		56	56	–2.42	–21.52	–11.6614	NR	NA
Water temperature, field measurement (°C)		59	NA	25.6	9.7	16.9661	NR	NA
Alkalinity-CO_3 (mg/L)		56	4	76	44 h	55	NR	NA
Alkalinity-HCO_3 (mg/L)		56	56	357	151	250.6607	NR	NA
Conductivity (umhos/cm)		56	56	868	388	613	NR	NA
Conductivity, Rep. 2 (µmhos/cm)		1	1	714	714	714	NR	NA
Dissolved solids (mg/L)		56	56	562	100	363.1429	500.000	5
pH (pH units)		56	56	9.16	6.7	7.662857	NR	NA

Table 4.48 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
pH, Rep. 2 (pH units)		1	1	9.1	9.1	9.1	NR	NA
Total suspended solids (mg/L)		56	35	118	1	19.22857	NR	NA
Turbidity (NTU)		56	56	170	0.15	18.77607	1.0	51
Gross alpha (pCi/L)		56	56	508	–1.63	27.24321	15 n	7
Gross beta (pCi/L)		56	56	285	–0.408	18.91334	50 g	5
1,1-Dichloroethene (µg/L)		63	2	50 s	48 s	49	7.000	2
1,2-Dichloroethene (µg/L)		63	24	120	1 J	37.375	70.	5
2-Butanone (µg/L)		63	6	45 JB	9 JB	15.83333	NR	NA
Acetone (µg/L)		63	8	43 JB	2 J	12.625	NR	NA
Benzene (µg/L)		63	2	49 s	48 s	48.5	5.000	2
Carbon tetrachloride (µg/L)		63	34	8000	2 J	813	5.000	31
Chlorobenzene (µg/L)		63	2	50 s	48 s	49	100.000	0
Chloroform (µg/L)		63	33	2200	1 J	106.2424	100.000	4
Methylene chloride (µg/L)		63	3	6 JB	3 JB	4	5.000	1
Tetrachloroethene (µg/L)		63	36	490 D	1 J	142.9444	5.000	26
Toluene (µg/L)		63	2	48 s	47 s	47.5	1000.00	0
Trichloroethene (µg/L)		63	28	190 D	1 J	49.67857	5.000	20
Vinyl chloride (µg/L)		63	1	1 J	1 J	1	2.000	0

Table 4.49. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=S-2 Site

Variable	Filtered status	No samples	No detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		2	2	0.015	0.0042	0.0096	NR	NA
Chloride, (mg/L)		8	8	9.4	1	5.2775	250.000	0
Fluoride (mg/L)		8	5	1.5	0.1	1.2	4.000	0
Nitrate nitrogen (mg/L)		8	7	76	0.8	29.38857	10.000	3
Sulfate (mg/L)		8	7	19	1.7	11.71429	250.000	0
Aluminum, ICAP (mg/L)		8	8	12	0.48	5.0225	0.2	8
Aluminum, ICAP (mg/L)	Filtered	8	5	0.059	0.027	0.0496	0.2	0
Antimony, ICAP (mg/L)	Filtered	8	1	0.05	0.05	0.05	0.006	1
Barium, ICAP (mg/L)		8	8	0.13	0.0079	0.087738	2.000	0
Barium, ICAP (mg/L)	Filtered	8	8	0.12	0.0059	0.066488	2.000	0
Beryllium, ICAP (mg/L)		8	5	0.002	0.00053	0.001158	0.004	0
Beryllium, ICAP (mg/L)	Filtered	8	2	0.00039	0.00034	0.000365	0.004	0
Boron, ICAP (mg/L)		8	8	0.08	0.025	0.0375	NR	NA
Boron, ICAP (mg/L)	Filtered	8	8	0.051	0.015	0.031625	NR	NA
Cadmium, AAS (mg/L)		8	5	0.17	0.0033	0.11006	0.005	4
Cadmium, AAS (mg/L)	Filtered	8	5	0.18	0.002	0.1064	0.005	4
Cadmium, ICAP (mg/L)		8	4	0.15	0.092	0.1205	0.005	4
Cadmium, ICAP (mg/L)	Filtered	8	4	0.15	0.09	0.12	0.005	4
Calcium, ICAP (mg/L)		8	8	110	12	71.25	NR	NA
Calcium, ICAP (mg/L)	Filtered	8	8	110	7.6	69.2	NR	NA
Chromium, AAS (mg/L)		8	4	0.072	0.015	0.03325	0.1	0
Chromium, ICAP (mg/L)		8	3	0.052	0.014	0.027667	0.1	0

Table 4.49 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Cobalt, ICAP (mg/L)		8	5	0.035	0.015	0.024	NR	NA
Cobalt, ICAP (mg/L)	Filtered	8	4	0.031	0.014	0.02275	NR	NA
Copper, ICAP (mg/L)		8	8	0.82	0.011	0.3895	1.3 g	0
Copper, ICAP (mg/L)	Filtered	8	7	0.42	0.0074	0.184771	1.3 g	0
Iron, ICAP (mg/L)		8	8	19	0.5	6.1	0.300	8
Iron, ICAP (mg/L)	Filtered	8	3	0.04	0.0069	0.0187	0.300	0
Lead, AAS (mg/L)		8	7	0.055	0.0074	0.020971	0.015 g	2
Lead, ICAP (mg/L)		8	1	0.073	0.073	0.073	0.015 g	1
Magnesium, ICAP (mg/L)		8	8	36	6.6	20.075	NR	NA
Magnesium, ICAP (mg/L)	Filtered	8	8	29	4.1	18.2625	NR	NA
Manganese, ICAP (mg/L)		8	8	4.7	0.016	2.127	0.050	7
Manganese, ICAP (mg/L)	Filtered	8	7	4.4	0.0016	2.001043	0.050	4
Mercury, CVAA (mg/L)		8	2	0.00065	0.00023	0.00044	0.002	0
Nickel, ICAP (mg/L)		8	6	0.069	0.013	0.037167	0.100 h	0
Nickel, ICAP (mg/L)	Filtered	8	4	0.061	0.015	0.0385	0.100 h	0
Potassium, ICAP (mg/L)		8	8	6	2	3.4875	NR	NA
Potassium, ICAP (mg/L)	Filtered	8	8	3.6	0.92	2.4525	NR	NA
Selenium, ICAP (mg/L)		8	1	0.079	0.079	0.079	0.05	1
Selenium, ICAP (mg/L)	Filtered	8	1	0.076	0.076	0.076	0.05	1
Sodium, ICAP (mg/L)		8	8	18	3.4	10.4875	NR	NA
Sodium, ICAP (mg/L)	Filtered	8	8	18	3.3	10.45	NR	NA
Strontium, ICAP (mg/L)		8	8	0.22	0.0081	0.108013	NR	NA

Table 4.49 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Strontium, ICAP (mg/L)	Filtered	8	8	0.21	0.006	0.105	NR	NA
Uranium (mg/L)		8	6	0.0081	0.0011	0.004533	0.020	0
Uranium (mg/L)	Filtered	8	6	0.0045	0.00078	0.003053	0.020	0
Vanadium, ICAP (mg/L)		8	5	0.029	0.0053	0.0139	NR	NA
Zinc, ICAP (mg/L)		8	8	0.11	0.016	0.062625	5.000	0
Zinc, ICAP (mg/L)	Filtered	8	7	0.075	0.0031	0.0341	5.000	0
Conductivity, field measurement (umhos/cm)		8	NA	931	122	589.125	NR	NA
Dissolved oxygen, field measurement (ppm)		8	NA	9.9	0.4	5.7625	NR	NA
pH, field measurement (pH units)		8	NA	7.3	6.5	6.9	6.5/8.5	0
Redox, field measurement (MV)		8	NA	284	103	173.25	NR	NA
Static water level (ft-TOC)		8	8	–13.29	–25.3	–19.4838	NR	NA
Water temperature, field measurement (°C)		8	NA	19.5	11.8	15.35	NR	NA
Alkalinity-HCO_3 (mg/L)		8	8	229	60	171	NR	NA
Conductivity (µmhos/cm)		8	8	1002	98	619.5	NR	NA
Dissolved solids (mg/L)		8	8	766	44	439	500.000	4
pH (pH units)		8	8	7.5	6.53	7.06625	NR	NA
Total suspended solids (mg/L)		8	8	432	10	113.25	NR	NA

Table 4.49 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Turbidity (NTU)		8	8	390	17	92.125	1.0	8
Gross alpha (pCi/L)		8	8	15.6	-0.163	7.022875	15 n	1
Gross beta (pCi/L)		8	8	16.7	-1.96	7.3925	50 g	0
1,2-Dichloroethene (µg/L)		8	4	4 J	1 J	2	70.	0
2-Butanone (µg/L)		8	1	9 J	9 J	9	NR	NA
Acetone (µg/L)		8	1	18	18	18	NR	NA
Carbon tetrachloride (µg/L)		8	4	5 J	1 J	3	5.000	0
Chloroform (µg/L)		8	6	7 J	1 J	3.833333	100.000	0
Tetrachloroethene (µg/L)		8	4	120	59	85.5	5.000	4
Trichloroethene (µg/L)		8	4	49	24	35	5.000	4

Table 4.50. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=Union Valley

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		13	12	0.16	0.0045	0.042158	NR	NA
Lithium, ICAP (mg/L)	Filtered	13	8	0.14	0.0052	0.04135	NR	NA
Tritium (pCi/L)		7	5	200	3.13	69.63	NR	NA
Chloride (mg/L)		25	25	83	1.82	21.2228	250.000	0
Fluoride (mg/L)		25	9	2.3	0.12	1.007778	4.000	0
Nitrate nitrogen (mg/L)		25	12	1.2	0.302	0.873583	10.000	0
Sulfate (mg/L)		25	25	32	2	12.1136	250.000	0
Aluminum, ICAP (mg/L)		25	22	140	0.021	9.688273	0.2	8
Aluminum, ICAP (mg/L)	Filtered	25	18	5	0.02	0.316556	0.2	1
Arsenic, ICAP (mg/L)		25	1	0.083	0.083	0.083	0.050	1
Barium, ICAP (mg/L)		25	25	0.55	0.01	0.19976	2.000	0
Barium, ICAP (mg/L)	Filtered	25	25	0.39	0.0091	0.174644	2.000	0
Beryllium, ICAP (mg/L)		25	4	0.02	0.00036	0.007583	0.004	2
Beryllium, ICAP (mg/L)	Filtered	25	1	0.0069	0.0069	0.0069	0.004	1
Boron, ICAP (mg/L)		25	25	1.4	0.025	0.27796	NR	NA
Boron, ICAP (mg/L)	Filtered	25	25	1.3	0.034	0.26484	NR	NA
Cadmium, AAS (mg/L)		25	1	0.053	0.053	0.053	0.005	1
Cadmium, AAS (mg/L)	Filtered	25	1	0.034	0.034	0.034	0.005	1
Cadmium, ICAP (mg/L)		25	1	0.057	0.057	0.057	0.005	1
Cadmium, ICAP (mg/L)	Filtered	25	1	0.029	0.029	0.029	0.005	1
Calcium, ICAP (mg/L)		25	25	130	1.1	65.868	NR	NA
Calcium, ICAP (mg/L)	Filtered	25	25	130	1.1	65.788	NR	NA
Chromium, AAS (mg/L)		25	3	0.43	0.027	0.215667	0.1	2

Table 4.50 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Chromium, ICAP (mg/L)		25	3	0.17	0.015	0.086667	0.1	1
Cobalt, ICAP (mg/L)		25	5	0.13	0.0054	0.04062	NR	NA
Cobalt, ICAP (mg/L)	Filtered	25	1	0.009	0.009	0.009	NR	NA
Copper, ICAP (mg/L)		25	4	0.2	0.0053	0.074575	1.3 g	0
Copper, ICAP (mg/L)	Filtered	25	6	0.054	0.0056	0.015533	1.3 g	0
Iron, ICAP (mg/L)		25	24	200	0.067	14.14308	0.300	17
Iron, ICAP (mg/L)	Filtered	25	20	7.5	0.0065	1.728875	0.300	13
Lead, AAS (mg/L)		25	5	0.46	0.0048	0.12704	0.015 g	2
Lead, AAS (mg/L)	Filtered	25	1	0.065	0.065	0.065	0.015 g	1
Lead, ICAP (mg/L)		25	2	0.38	0.16	0.27	0.015 g	2
Lead, ICAP (mg/L)	Filtered	25	1	0.065	0.065	0.065	0.015 g	1
Magnesium, ICAP (mg/L)		25	25	32	0.89	15.8644	NR	NA
Magnesium, ICAP (mg/L)	Filtered	25	25	32	0.87	15.2696	NR	NA
Manganese, ICAP (mg/L)		25	22	13	0.0011	2.719559	0.050	15
Manganese, ICAP (mg/L)	Filtered	25	20	13	0.001	2.483615	0.050	14
Mercury, CVAA (mg/L)		25	2	0.00049	0.0002	0.000345	0.002	0
Molybdenum, ICAP (mg/L)		25	1	0.014	0.014	0.014	NR	NA
Nickel, ICAP (mg/L)		25	4	0.2	0.013	0.082	0.100 h	1
Nickel, ICAP (mg/L)	Filtered	25	1	0.013	0.013	0.013	0.100 h	0
Potassium, ICAP (mg/L)		25	25	18	1.7	4.608	NR	NA
Potassium, ICAP (mg/L)	Filtered	25	25	7.7	1.8	3.472	NR	NA
Selenium, ICAP (mg/L)		25	1	0.072	0.072	0.072	0.05	1
Selenium, ICAP (mg/L)	Filtered	25	1	0.051	0.051	0.051	0.05	1

Table 4.50 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Sodium, ICAP (mg/L)		25	25	240	1.5	46.592	NR	NA
Sodium, ICAP (mg/L)	Filtered	25	25	230	1.7	45.868	NR	NA
Strontium, ICAP (mg/L)		25	25	0.69	0.053	0.31052	NR	NA
Strontium, ICAP (mg/L)	Filtered	25	25	0.69	0.052	0.30828	NR	NA
Uranium (mg/L)		25	6	0.0089	0.00067	0.003367	0.020	0
Uranium (mg/L)	Filtered	25	4	0.0074	0.00051	0.002595	0.020	0
Vanadium, ICAP (mg/L)		25	4	0.3	0.0052	0.1088	NR	NA
Vanadium, ICAP (mg/L)	Filtered	25	1	0.016	0.016	0.016	NR	NA
Zinc, ICAP (mg/L)		25	24	3.5	0.0035	0.526042	5.000	0
Zinc, ICAP (mg/L)	Filtered	25	24	3.2	0.0024	0.476088	5.000	0
Conductivity, field measurement (µmhos/cm)		25	NA	1015	236	610.4	NR	NA
Dissolved oxygen, field measurement (ppm)		25	NA	9.3	0.3	2.5	NR	NA
pH, field measurement (pH units)		25	NA	9.5	6.4	7.416	6.5/8.5	5
Redox, field measurement (MV)		25	NA	231	5.6	121.725	NR	NA
Static water level (ft-TOC)		25	25	0	–32.87	–22.6608	NR	NA
Water temperature, field measurement (°C)		25	NA	18.1	11.6	14.992	NR	NA
Alkalinity-CO_3 (mg/L)		25	3	82	78	80	NR	NA
Alkalinity-HCO_3 (mg/L)		25	25	410	114	274.36	NR	NA
Conductivity (µmhos/cm)		25	25	969	238	608.84	NR	NA

Table 4.50 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Dissolved solids (mg/L)		25	25	598	156	361.08	500.00	7
pH (pH units)		25	25	9.3	6.53	7.5472	NR	NA
Total suspended solids (mg/L)		25	14	4720	2	497.65	NR	NA
Turbidity (NTU)		25	25	7000	0.5	341.406	1.0	22
^{129}I, X-10 lab (Bq/L)		18	18	0.8	–0.2	0.157778	NR	NA
^{131}I, X-10 lab (Bq/L)		3	3	0.1	0.1	0.1	120	0
^{137}Cs (pCi/L)		8	8	5.78	–5.02 F	1.879375	120.000	0
^{223,224,226}Ra (pCi/L)		7	7	1.48	–0.251	0.334771	NR	NA
^{228}Ra (pCi/L)		7	7	2.11	–0.961	0.074614	NR	NA
^{228}Th (pCi/L)		7	7	0.871	–0.0507	0.307714	16.000	0
^{230}Th (pCi/L)		7	7	0.529	0.0708	0.274686	2.000	0
$^{231+234}$Th (pCi/L)		6	6	113	54.4 H	90.83333	400.000	0
^{232}Th (pCi/L)		7	7	0.128	–0.0333	0.037511	2.000	0
^{234}U (pCi/L)		25	25	1.92	–0.122	0.38146	20.000	0
^{235}U (pCi/L)		25	25	35 E	–5.13 F	2.373556	24.000	1
^{237}Np (pCi/L)		25	25	0.13	–0.0961	0.01826	1.200	0
^{238}Pu (pCi/L)		25	25	0.488	–0.177	0.066628	1.600	0
^{238}U (pCi/L)		25	25	0.929	0	0.212836	24.000	0
^{239}Pu (pCi/L)		24	24	0.213 J	–0.198	0.004358	1.200	0
^{241}Am (pCi/L)		25	25	1.63	–0.303	0.289788	1.20	3
^{40}K (pCi/L)		2	2	96.4	76.1	86.25	NR	NA
^{99}Tc (pCi/L)		25	25	54.2	–17	6.0408	4000.000	0

Table 4.50 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Gross alpha (pCi/L)		25	25	18.7	–8.88	1.2906	15 n	2
Gross beta (pCi/L)		25	25	35.8	–6.93	4.93772	50 g	0
Radium, X-10 lab (Bq/L)		18	18	0.6	–0.001	0.082222	0.15	2
Strontium (pCi/L)		25	25	90.1	–16.3	5.642	8 p	3
Tritium, X-10 lab (Bq/L)		18	18	22	–8	3.666667	20000 p	0
1,2-Dichloroethene (µg/L)		25	4	22	17	19	70.	0
2-Butanone (µg/L)		25	1	11 B	11 B	11	NR	NA
Acetone (µg/L)		25	1	23	23	23	NR	NA
Bis(2-ethylhexyl)phthalate (µg/L)		18	3	6 J	3 J	4.666667	NR	NA
Carbon tetrachloride (µg/L)		25	4	19	2 J	9	5.000	3
Chloroform (µg/L)		25	4	50	34	40.5	100.000	0
Di-n-butylphthalate (µg/L)		18	13	4 JB	1 J	1.769231	NR	NA
Diethyl phthalate (µg/L)		18	8	3 JB	1 JB	2	NR	NA
Methylene chloride (µg/L)		25	2	4 J	3 J	3.5	5.000	0
Tetrachloroethene (µg/L)		25	8	6 J	1 J	3.5	5.000	2
Trichloroethene (µg/L)		25	7	3 J	2 J	2.285714	5.000	0
Vinyl chloride (µg/L)		25	4	5 J	4 J	4.5	2.000	4

Table 4.51. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=Waste Coolant Processing Area

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		2	2	0.021	0.02	0.0205	NR	NA
Lithium, ICAP (mg/L)	Filtered	2	2	0.019	0.018	0.0185	NR	NA
Chloride (mg/L)		6	6	17	6.7	10.17	250.000	0
Fluoride (mg/L)		6	1	0.12	0.12	0.12	4.000	0
Nitrate nitrogen (mg/L)		6	4	0.97	0.7	0.865	10.000	0
Sulfate (mg/L)		6	6	17.1	6.4	12.43333	250.000	0
Aluminum, ICAP (mg/L)		6	6	1.9	0.18	0.798333	0.2	5
Aluminum, ICAP (mg/L)	Filtered	6	4	0.059	0.03	0.04075	0.2	0
Antimony, ICAP (mg/L)	Filtered	6	1	0.055	0.055	0.055	0.006	1
Barium, ICAP (mg/L)		6	6	0.36	0.21	0.288333	2.000	0
Barium, ICAP (mg/L)	Filtered	6	6	0.36	0.21	0.266667	2.000	0
Boron, ICAP (mg/L)		6	6	0.11	0.026	0.060667	NR	NA
Boron, ICAP (mg/L)	Filtered	6	6	0.087	0.021	0.0415	NR	NA
Cadmium, AAS (mg/L)		2	2	0.0053	0.0022	0.00375	0.005	1
Cadmium, AAS (mg/L)	Filtered	2	1	0.0058	0.0058	0.0058	0.005	1
Cadmium, ICAP (mg/L)		6	1	0.0069	0.0069	0.0069	0.005	1
Cadmium, ICAP (mg/L)	Filtered	6	1	0.0074	0.0074	0.0074	0.005	1
Calcium, ICAP (mg/L)		6	6	90	86	88.5	NR	NA
Calcium, ICAP (mg/L)	Filtered	6	6	90	81	87.5	NR	NA
Chromium, ICAP (mg/L)		6	1	0.012	0.012	0.012	0.1	0
Cobalt, ICAP (mg/L)	Filtered	6	1	0.007	0.007	0.007	NR	NA

Table 4.51 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Copper, ICAP (mg/L)		6	5	0.018	0.006	0.01246	1.3 g	0
Copper, ICAP (mg/L)	Filtered	6	3	0.019	0.0046	0.010967	1.3 g	0
Iron, ICAP (mg/L)		6	6	2.6	0.17	1.018333	0.300	5
Iron, ICAP (mg/L)	Filtered	6	2	0.055	0.0072	0.0311	0.300	0
Magnesium, ICAP (mg/L)		6	6	10	8.8	9.466667	NR	NA
Magnesium, ICAP (mg/L)	Filtered	6	6	10	8.7	9.416667	NR	NA
Manganese, ICAP (mg/L)		6	6	0.52	0.14	0.3	0.050	6
Manganese, ICAP (mg/L)	Filtered	6	6	0.19	0.05	0.107667	0.050	5
Nickel, ICAP (mg/L)		6	2	0.021	0.019	0.02	0.100 h	0
Potassium, ICAP (mg/L)		6	6	3.8	2.5	3.05	NR	NA
Potassium, ICAP (mg/L)	Filtered	6	6	2.9	2	2.5	NR	NA
Silver, ICAP (mg/L)		6	3	0.0075	0.0067	0.007167	0.10	0
Silver, ICAP (mg/L)	Filtered	6	1	0.006	0.006	0.006	0.10	0
Sodium, ICAP (mg/L)		6	6	6.6	4.4	5.633333	NR	NA
Sodium, ICAP (mg/L)	Filtered	6	6	6.6	4.4	5.633333	NR	NA
Strontium, ICAP (mg/L)		6	6	0.25	0.22	0.238333	NR	NA
Strontium, ICAP (mg/L)	Filtered	6	6	0.26	0.21	0.238333	NR	NA
Uranium, (mg/L)		6	5	0.0013	0.00052	0.000806	0.020	0
Uranium, (mg/L)	Filtered	6	4	0.0015	0.00052	0.00093	0.020	0
Vanadium, ICAP (mg/L)		6	1	0.0052	0.0052	0.0052	NR	NA
Zinc, ICAP (mg/L)		6	6	0.017	0.0051	0.013033	5.000	0

Table 4.51 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Zinc, ICAP (mg/L)	Filtered	6	6	0.016	0.0036	0.008617	5.000	0
Conductivity, field measurement (µmhos/cm)		6	NA	666	389	517.6667	NR	NA
Dissolved oxygen, field measurement (ppm)		6	NA	13.7	1	5.75	NR	NA
pH, field measurement (pH units)		6	NA	7.1	6.8	6.966667	6.5/8.5	0
Redox, field measurement (MV)		6	NA	224	114	174.1667	NR	NA
Static water level (ft-TOC)		6	6	–8.54	–11	–9.56167	NR	NA
Water temperature, field measurement (°C)		6	NA	22.3	12.1	17.18333	NR	NA
Alkalinity-HCO_3 (mg/L)		6	6	257	230	248.5	NR	NA
Conductivity (µmhos/cm)		6	6	523	480	508.6667	NR	NA
Dissolved solids (mg/L)		6	6	320	292	304	500.000	0
pH (pH units)		6	6	7.7	6.9	7.283333	NR	NA
Total suspended solids (mg/L)		6	4	60	3.5	24.625	NR	NA
Turbidity (NTU)		6	6	35	2.2	13.78333	1.0	6
Gross alpha (pCi/L)		6	6	7.77	–1.75	1.6615	15 n	0
Gross beta (pCi/L)		6	6	4.09	–28.3	–3.249	50 g	0
1,1,1-Trichloroethane (µg/L)		6	2	410 J	290 J	350	200.000	2
1,1-Dichloroethane (µg/L)		6	2	200 J	150 J	175	NR	NA

Table 4.51 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
1,1-Dichloroethene (µg/L)		6	2	210 J	170 J	190	7.000	2
1,2-Dichloroethene (µg/L)		6	2	7900	5700	6800	70.	2
2-Butanone (µg/L)		6	2	530	11 B	270.5	NR	NA
Acetone (µg/L)		6	1	500	500	500	NR	NA
Carbon tetrachloride (µg/L)		6	1	60 J	60 J	60	5.000	1
Methylene chloride (µg/L)		6	1	98 J	98 J	98	5.000	1
Tetrachloroethene (µg/L)		6	2	980	790	885	5.000	2
Trichloroethene (µg/L)		6	2	1100	870	985	5.000	2
Vinyl chloride (µg/L)		6	1	130 J	130 J	130	2.000	1

Table 4.52. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=EF Location Description=Y-12 Salvage Yard

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Lithium, ICAP (mg/L)		2	1	0.23	0.23	0.23	NR	NA
Lithium, ICAP (mg/L)	Filtered	2	1	0.28	0.28	0.28	NR	NA
Chloride (mg/L)		4	4	1100	110	374	250.000	1
Fluoride (mg/L)		4	1	32	32	32	4.000	1
Nitrate nitrogen, (mg/L)		4	4	39000	4270	15212.5	10.000	4
Aluminum, ICAP (mg/L)		4	4	21	0.51	6.3525	0.2	4
Aluminum, ICAP (mg/L)	Filtered	4	1	21	21	21	0.2	1
Barium, ICAP (mg/L)		4	4	120	37	76.5	2.000	4
Barium, ICAP (mg/L)	Filtered	4	4	120	37	76	2.000	4
Beryllium, ICAP (mg/L)		4	1	0.018	0.018	0.018	0.004	1
Beryllium, ICAP (mg/L)	Filtered	4	1	0.016	0.016	0.016	0.004	1
Boron, ICAP (mg/L)		4	1	0.19	0.19	0.19	NR	NA
Boron, ICAP (mg/L)	Filtered	4	1	0.14	0.14	0.14	NR	NA
Cadmium, AAS (mg/L)		4	2	4.4	0.0072	2.2036	0.005	2
Cadmium, AAS (mg/L)	Filtered	4	2	4.6	0.0071	2.30355	0.005	2
Cadmium, ICAP (mg/L)		4	1	4.1	4.1	4.1	0.005	1
Cadmium, ICAP (mg/L)	Filtered	4	1	4.2	4.2	4.2	0.005	1
Calcium, ICAP (mg/L)		4	4	14000	5400	9525	NR	NA
Calcium, ICAP (mg/L)	Filtered	4	4	14000	5400	9500	NR	NA
Chromium, ICAP (mg/L)		4	2	0.44	0.37	0.405	0.1	2
Chromium, ICAP (mg/L)	Filtered	4	2	0.43	0.4	0.415	0.1	2

Table 4.52 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Cobalt, ICAP (mg/L)		4	2	1	0.25	0.625	NR	NA
Cobalt, ICAP (mg/L)	Filtered	4	3	1.1	0.26	0.546667	NR	NA
Iron, ICAP (mg/L)		4	4	2.3	0.49	1.16	0.300	4
Iron, ICAP (mg/L)	Filtered	4	2	0.94	0.9	0.92	0.300	2
Lead, AAS (mg/L)		4	1	0.013	0.013	0.013	0.015 g	0
Lead, AAS (mg/L)	Filtered	4	1	0.006	0.006	0.006	0.015 g	0
Magnesium, ICAP (mg/L)		4	4	1400	710	1127.5	NR	NA
Magnesium, ICAP (mg/L)	Filtered	4	4	1400	710	1127.5	NR	NA
Manganese, ICAP (mg/L)		4	4	190	5.7	98.425	0.050	4
Manganese, ICAP (mg/L)	Filtered	4	4	200	5.6	100.65	0.050	4
Mercury, CVAA (mg/L)		4	2	0.041	0.0019	0.02145	0.002	1
Mercury, CVAA (mg/L)	Filtered	4	1	0.04	0.04	0.04	0.002	1
Nickel, ICAP (mg/L)		4	3	7.8	0.44	2.95	0.100 h	3
Nickel, ICAP (mg/L)	Filtered	4	2	8	0.51	4.255	0.100 h	2
Potassium, ICAP (mg/L)		4	3	100	21	51.66667	NR	NA
Potassium, ICAP (mg/L)	Filtered	4	2	120	24	72	NR	NA
Selenium, ICAP (mg/L)		4	1	3.2	3.2	3.2	0.05	1
Selenium, ICAP (mg/L)	Filtered	4	1	3.5	3.5	3.5	0.05	1
Silver, ICAP (mg/L)		4	1	0.15	0.15	0.15	0.10	1
Silver, ICAP (mg/L)	Filtered	4	1	0.17	0.17	0.17	0.10	1
Sodium, ICAP (mg/L)		4	4	680	210	432.5	NR	NA
Sodium, ICAP (mg/L)	Filtered	4	4	690	210	430	NR	NA

Table 4.52 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Strontium, ICAP (mg/L)		4	4	50	17	33.75	NR	NA
Strontium, ICAP (mg/L)	Filtered	4	4	50	16	33.5	NR	NA
Uranium, (mg/L)		4	4	0.032	0.0042	0.01605	0.020	1
Uranium, (mg/L)	Filtered	4	4	0.033	0.0038	0.0162	0.020	1
Zinc, ICAP (mg/L)		4	1	0.13	0.13	0.13	5.000	0
Zinc, ICAP (mg/L)	Filtered	4	1	0.12	0.12	0.12	5.000	0
Conductivity, field measurement (µmhos/cm)		4	NA	51.3	27.9	39.525	NR	NA
Dissolved oxygen, field measurement (ppm)		4	NA	1	0.3	0.8	NR	NA
pH, field measurement (pH units)		4	NA	6.4	5.3	5.775	6.5/8.5	4
Redox, field measurement (MV)		4	NA	310	170	258.5	NR	NA
Static water level (ft-TOC)		2	2	–3.62	–4.75	–4.185	NR	NA
Water temperature, field measurement (°C)		4	NA	18.5	16.5	17.375	NR	NA
Alkalinity-HCO_3 (mg/L)		4	4	709	90	453.5	NR	NA
Conductivity (µmhos/cm)		4	4	71900	26900	47275	NR	NA
Dissolved solids (mg/L)		4	4	64600	984	36054.5	500.000	4
pH (pH units)		4	4	6.48	5.58	6.04	NR	NA
Total suspended solids (mg/L)		4	4	55	2.5	27	NR	NA

Table 4.52 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Turbidity (NTU)		4	4	27	0.2	8.975	1.0	2
Gross alpha (pCi/L)		4	4	122	–7.04	48.265	15 n	3
Gross beta (pCi/L)		4	4	9500	125	5288.75	50 g	4
1,2-Dichloroethene (µg/L)		4	1	4 J	4 J	4	70.	0
2-Butanone (µg/L)		4	1	33	33	33	NR	NA
Acetone (µg/L)		4	2	240	35	137.5	NR	NA
Benzene (µg/L)		4	1	2 J	2 J	2	5.000	0
Bromoform (µg/L)		4	3	8 J	1 J	3.666667	100.000	0
Chloroform (µg/L)		4	4	22	1 J	14.75	100.000	0
Methylene chloride (µg/L)		4	4	38	3 J	28.25	5.000	3
Tetrachloroethene (µg/L)		4	2	180	36	108	5.000	2
Trichloroethene (µg/L)		4	3	6 J	2 J	4.666667	5.000	2

Table 4.53. Constituents in groundwater at the Y-12 Plant site for 1995
Regime=SP Location Description=Special Request

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Chloride (mg/L)		1	1	1.7	1.7	1.7	NR	NA
Fluoride (mg/L)		1	1	0.23	0.23	0.23	NR	NA
Nitrate nitrogen (mg/L)		1	1	0.62	0.62	0.62	NR	NA
Sulfate (mg/L)		1	1	3.1	3.1	3.1	NR	NA
Aluminum, ICAP (mg/L)		1	1	0.38	0.38	0.38	NR	NA
Aluminum, ICAP (mg/L)	Filtered	1	1	0.035	0.035	0.035	NR	NA
Antimony, ICAP (mg/L)	Filtered	1	1	0.052	0.052	0.052	NR	NA
Barium, ICAP (mg/L)		1	1	0.04	0.04	0.04	NR	NA
Barium, ICAP (mg/L)	Filtered	1	1	0.039	0.039	0.039	NR	NA
Boron, ICAP (mg/L)		1	1	0.0062	0.0062	0.0062	NR	NA
Boron, ICAP (mg/L)	Filtered	1	1	0.011	0.011	0.011	NR	NA
Calcium, ICAP (mg/L)		1	1	31	31	31	NR	NA
Calcium, ICAP (mg/L)	Filtered	1	1	29	29	29	NR	NA
Iron, ICAP (mg/L)		1	1	3.2	3.2	3.2	NR	NA
Iron, ICAP (mg/L)	Filtered	1	1	0.31	0.31	0.31	NR	NA
Magnesium, ICAP (mg/L)		1	1	16	16	16	NR	NA
Magnesium, ICAP (mg/L)	Filtered	1	1	14	14	14	NR	NA
Manganese, ICAP (mg/L)		1	1	0.054	0.054	0.054	NR	NA
Manganese, ICAP (mg/L)	Filtered	1	1	0.079	0.079	0.079	NR	NA
Potassium, ICAP (mg/L)		1	1	2.5	2.5	2.5	NR	NA
Potassium, ICAP (mg/L)	Filtered	1	1	2.4	2.4	2.4	NR	NA
Selenium, ICAP (mg/L)	Filtered	1	1	0.075	0.075	0.075	NR	NA
Sodium, ICAP (mg/L)		1	1	0.85	0.85	0.85	NR	NA
Sodium, ICAP (mg/L)	Filtered	1	1	1.4	1.4	1.4	NR	NA

Table 4.53 (continued)

Variable	Filtered status	No. samples	No. detected	Max	Min	Av	Reference value	No. of measurements
Strontium, ICAP (mg/L)		1	1	0.014	0.014	0.014	NR	NA
Strontium, ICAP (mg/L)	Filtered	1	1	0.016	0.016	0.016	NR	NA
Uranium (mg/L)	Filtered	1	1	0.00081	0.00081	0.00081	NR	NA
Zinc, ICAP (mg/L)		1	1	0.24	0.24	0.24	NR	NA
Zinc, ICAP (mg/L)	Filtered	1	1	0.58	0.58	0.58	NR	NA
Conductivity, field measurement (µmhos/cm)		1	NA	341	341	341	NR	NA
Dissolved oxygen, field measurement (ppm)		1	NA	5.9	5.9	5.9	NR	NA
pH, field measurement (pH units)		1	NA	7.2	7.2	7.2	NR	NA
Redox, field measurement (MV)		1	NA	174	174	174	NR	NA
Static water level (ft-TOC)		1	1	–47.5	–47.5	–47.5	NR	NA
Water temperature, field measurement (°C)		1	NA	15	15	15	NR	NA
Alkalinity-HCO_3 (mg/L)		1	1	139	139	139	NR	NA
Conductivity (µmhos/cm)		1	1	250	250	250	NR	NA
Dissolved solids (mg/L)		1	1	168	168	168	NR	NA
pH (pH units)		1	1	7.8	7.8	7.8	NR	NA
Total suspended solids (mg/L)		1	1	26	26	26	NR	NA
Turbidity (NTU)		1	1	19	19	19	NR	NA
Gross alpha (pCi/L)		1	1	4.26	4.26	4.26	NR	NA
Gross beta (pCi/L)		1	1	13.6	13.6	13.6	NR	NA

Table 4.54. 1995 Bear Creek Hydrogeologic Regime and Area Summary

Site	Well	Sample Number
Above Grade Low-Level Storage Facility	GW-793	950124-007, 950124-008, 950619-024, 950619-025, 950720-014, 950720-015, 951020-009, 951020-010
	GW-794	950125-070, 950125-071, 950619-084, 950619-085, 950725-007, 950725-008, 951024-148, 951024-149
	GW-795	950126-030, 950126-031, 950619-089, 950619-090, 950725-010, 950725-011, 951024-151, 951024-152
Bear Creek Valley Operable Unit	BCK 4.55Y	E952000027, S952000027
	BCK 9.40Y	E952000026
	C WEST TOE	E952000020, E952060088, E952140035, S952000020, S952140035
	GW-005Y	E951990095
	GW-014Y	E952000002, S952000002
	GW-040Y	E951990097
	GW-044Y	E952000015, S952000015
	GW-087Y	E951990096
	GW-162Y	E952000014
	GW-243Y	E951990088, S951990088
	GW-244Y	E951990085, S951990085
	GW-258Y	E951990099, E951990100
	GW-291Y	E951990098
	GW-537Y	E951990078, S951990078
	GW-613Y	E952000016
	GW-623Y	E952000001, S952000001
	GW-624Y	E952000000
	GW-684Y	E952000011
	GW-706Y	E952000012
	GW-710Y	E952000004, S952000004
	GW-711Y	E952000005
	GW-712Y	E952000006, E952000007, S952000006, S952000007
	GW-713Y	E952000008
	GW-714Y	E952000009
	GW-715Y	E952000010
	GW-794Y	E951990093, S951990093

Table 4.54 (continued)

Site	Well	Sample Number
	SEEP1Y	E952000018, E952060068, S952000018
	SEEP2Y	E952000019, E952060085, S952000019, S952060085
	SS-4Y	E952000021, S952000021
	SS-5Y	E952000022, S952000022
	SS-6 WESTY	E952000023, E952000024, S952000023, S952000024
	SS-7Y	E952000025
Bear Creek Burial Grounds WMA	GW-014	950807-044, 950807-045
	GW-040	950202-006, 950202-007, 950606-078, 950606-079, 950811-012, 950811-013, 951012-006, 951012-007
	GW-042	950202-008, 950202-009, 950606-081, 950606-082, 950810-012, 950810-013, 951012-004, 951012-005
	GW-046	950810-005, 950810-006
	GW-047	950126-028, 950126-029, 950619-087, 950619-088, 950725-012, 950725-013
	GW-053	950329-037, 950329-038, 950629-005, 950629-006, 950926-006, 950926-007, 951211-051, 951211-052
	GW-061	950329-040, 950329-041, 950629-002, 950629-003, 950922-079, 950922-080
	GW-069	950327-023, 950327-024, 950627-110, 950627-111, 950815-114, 950815-115, 950922-144, 950922-145, 951207-077, 951207-078
	GW-079	950327-041, 950327-042, 950619-103, 950619-104, 950919-039, 950919-040, 951210-026, 951210-027
	GW-080	950327-025, 950327-026, 950619-108, 950619-109, 950922-076, 950922-077, 951210-029, 951210-030
	GW-095	950328-006, 950328-007, 950621-054, 950621-055, 950921-005, 950921-006, 951212-001, 951212-002

Table 4.54 (continued)

Site	Well	Sample Number
	GW-162	950127-019, 950127-020, 950531-059, 950531-060, 950803-080, 950803-081, 951012-001, 951012-002
	GW-248	950809-005, 950809-006
	GW-257	950809-010, 950809-011
	GW-287	950327-037, 950327-038, 950621-047, 950621-048, 950919-044, 950919-045, 951211-059, 951211-060
	GW-288	950810-007, 950810-008
	GW-289	950809-008, 950809-009
	GW-290	950808-146, 950808-147
	GW-291	950804-005, 950804-006
	GW-370	950202-003, 950202-004, 950606-022, 950606-023, 950809-042, 950809-043
	GW-372	950201-012, 950201-013, 950602-128, 950602-129, 950808-158, 950808-159, 951013-079, 951013-080
	GW-373	950201-014, 950201-015, 950606-019, 950606-020, 950809-045, 950809-046, 951013-084, 951013-085
	GW-627	950329-081, 950329-082, 950622-120, 950622-121, 950926-003, 950926-004, 951211-053, 951211-054
	GW-642	950201-010, 950201-011, 950602-125, 950602-126, 950808-160, 950808-161, 951011-005, 951011-006
	GW-652	950328-016, 950328-017, 950621-050, 950621-051, 950919-097, 950919-098
	GW-653	950328-013, 950328-014, 950621-052, 950621-053, 950921-008, 950921-009, 951210-014, 951210-015
	GW-654	950327-039, 950327-040, 950619-106, 950619-107, 950919-042, 950919-043, 951210-031, 951210-032

Table 4.54 (continued)

Site	Well	Sample Number
Bear Creek Exit Pathway	BCK-00.63	950310-040, 950310-041, 950725-081, 950725-082
	BCK-04.55	950310-042, 950310-043, 950725-083, 950725-084
	BCK-09.40	950310-034, 950310-035, 950725-087, 950725-088
	BCK-11.97	950310-142, 950310-143, 950725-093, 950725-094
	GCS1	950524-017, 950524-018, 951026-071, 951026-072
	GW-056	950307-036, 950307-037, 950807-041, 950807-042
	GW-057	950307-038, 950307-039, 950807-071, 950807-072
	GW-621	950330-022, 950330-023, 950831-002, 950831-003
	GW-683	950313-077, 950313-078, 950808-031, 950808-032
	GW-684	950313-082, 950313-083, 950808-033, 950808-034
	GW-685	950308-100, 950308-101, 950808-036, 950808-037
	GW-694	950331-002, 950331-003, 950901-001, 950901-00
	G-695	950330-026, 950330-027, 950831-005, 950831-006
	GW-703	950330-029, 950330-030, 950831-043, 950831-044
	GW-704	950331-004, 950331-005, 950831-070, 950831-071
	GW-706	950331-050, 950331-051, 950831-040, 950831-041
	GW-710	950117-049, 950117-050, 950728-014, 950728-015
	GW-711	950113-055, 950113-056, 950727-049, 950727-050
	GW-712	950113-057, 950113-058, 950725-104, 950725-105
	GW-713	950117-068, 950117-069, 950727-040, 950727-041
	GW-714	950117-072, 950117-073, 950731-030, 950731-031
	GW-715	950117-070, 950117-071, 950731-035, 950731-036

Table 4.54 (continued)

Site	Well	Sample Number
	GW-723	950221-054, 950221-055, 950914-007, 950914-008
	GW-724	950220-086, 950220-087, 950925-066, 950925-067
	GW-725	950301-053, 950301-054, 950926-012, 950926-013
	GW-736	950301-055, 950301-056, 950927-006, 950927-007, 950928-057, 950928-058
	GW-737	950302-017, 950302-018, 950927-009, 950927-010
	GW-739	950220-089, 950220-090, 950918-092, 950918-093
	GW-740	950217-044, 950217-045, 950918-097, 950918-098
	NT-01	950310-138, 950310-139, 950725-095, 950725-096
	NT-02	950310-144, 950310-145, 950922-115, 950922-116
	SS-1	950310-140, 950310-141, 950922-113, 950922-114
	SS-4	950310-146, 950310-147, 950725-091, 950725-092
	SS-5	950310-038, 950310-039, 950725-089, 950725-090
	SS-5.95K	950524-009, 950524-010, 951026-075 951026-076
	SS-6	950310-036, 950310-037, 950725-085, 950725-086
	SS-6.6K	950524-013, 950524-014
	SS-6W	950524-011, 950524-012, 951026-077, 951026-078
	SS-7	950524-015, 950524-016, 951026-073, 951026-074
Oil Landfarm WMA	GW-043	950317-008, 950317-009, 950602-013, 950602-014, 950807-057, 950807-058, 951019-102, 951019-103
	GW-044	950317-004, 950317-005, 950602-015, 950602-016, 950807-054, 950807-055, 951019-011, 951019-012

Table 4.54 (continued)

Site	Well	Sample Number
	GW-064	950327-082, 950327-083, 950608-006, 950608-007, 950808-110, 950808-111 GW-066950928-002, 950928-003
	GW-084	950324-011, 950324-012, 950608-003, 950608-004, 950807-120, 950807-121, 951019-099, 951019-100
	GW-085	950327-078, 950327-079, 950609-012, 950609-013, 950808-112, 950808-113, 951026-057, 951026-058,
	GW-087	950928-005, 950928-006, 951002-003, GW-228950918-037, 950918-038
	GW-229	950918-034, 950918-035
	GW-363	950124-005, 950124-006, 950619-031, 950619-032, 950720-010, 950720-011, 951020-004, 951020-005
	GW-537	950327-080, 950327-081, 950609-015, 950609-016, 950804-032, 950804-033, 951026-059, 951026-060
	GW-637	950125-068, 950125-069, 950619-029, 950619-030, 950720-012, 950720-013
	GW-800	950327-108, 950327-109, 950531-056, 950531-057, 950807-125
	GW-800	950807-126
	GW-828	950628-010, 950628-011, 950825-028, 950825-029, 951210-011, 951210-012
	GW-828-100	950214-083
	GW-828-200	950220-070
	GW-829	950628-013, 950628-014, 950830-084, 950830-085, 951211-057, 951211-058
	GW-829-116	950307-080
	GW-829-29	950301-140

Table 4.54 (continued)

Site	Well	Sample Number
Rust Spoil Area	GW-311	950327-104, 950327-105, 950607-005, 950607-006, 951026-055, 951026-056
	GW-312	950327-106, 950327-107, 950607-008, 950607-009, 950808-115, 950808-116
S-3 Site	GW-100	950906-081, 950906-082, 950907-037, 950907-038
	GW-115	950117-066, 950117-067, 950731-048, 950731-049
	GW-124	950918-029, 950918-030
	GW-236	950918-032, 950918-033, 950920-002, 950920-003
	GW-276	950125-006, 950125-007, 950731-033, 950731-034
	GW-346	950901-007, 950901-008, 950905-003, 950905-004
	GW-347	950316-020, 950316-021, 950621-143, 950621-144, 950816-004, 950816-005
	GW-348	950316-022, 950316-023, 950627-043, 950627-044, 950822-013, 950822-014
	GW-613	950112-010, 950112-011, 950725-017, 950725-018
	GW-614	950112-012, 950112-013, 950725-020, 950725-021
	MS1	950504-117
	NT-1N	950504-114
	NT-1S	950504-115
	TS	950504-116
Spoil Area I	GW-315	950316-018, 950316-019, 950627-041, 950627-042, 950822-011, 950822-012, 951208-025, 951208-026
	GW-317	950315-039, 950315-040, 950621-138, 950621-139, 950816-001, 950816-002

Table 4.55. 1995 Chestnut Ridge Hydrogeologic Regime and Area Summary

Site	Well	Sample Number
Ash Disposal Basin	GW-321	950111-103, 950111-104, 950426-266, 950426-267, 951027-053, 951027-054
	GW-512	950427-127, 950427-128, 951101-027, 951101-028
	GW-513	950426-268, 950426-269, 951101-029, 951101-030
	GW-514	950427-211, 950427-212, 951103-060, 951103-061
Borrow Area Waste Pile	GW-160	950427-122, 950427-123, 950427-124, 951103-030, 951103-031, 951103-033
	GW-161	950420-117, 950420-118, 950420-130, 951102-042, 951102-043, 951102-045
	GW-295	950503-135, 950503-136, 950503-138
	GW-298	950502-089, 950502-090, 950502-092, 951106-002, 951106-003, 951106-005
	GW-299	950501-127, 950501-128, 950501-130, 951104-009, 951104-010, 951104-011
	GW-300	950427-200, 950427-201, 950427-202, 951104-006, 951104-007, 951104-008
	GW-301	950427-195, 950427-196, 950427-198, 951104-001, 951104-002, 951104-004
Security Pits	GW-175	950214-094, 950214-095, 950516-001, 950516-002, 950802-031, 950802-032, 951120-003, 951120-004
	GW-177	950213-105, 950213-106, 950512-004, 950512-005, 950801-069, 950801-070, 951117-001, 951117-002
	GW-181	950125-073, 950125-074, 950502-135, 950502-136, 950731-082, 950731-083, 951107-014, 951107-055
	GW-511	950125-075, 950125-076, 950503-140, 950503-144, 950731-022, 950731-023, 951107-085, 951107-086

Table 4.55 (continued)

Site	Well	Sample Number
	GW-608	950203-049, 950203-050, 950512-001, 950512-002, 950801-010, 950801-011, 951117-003, 951117-004
	GW-609	950216-005, 950216-006, 950516-122, 950516-123, 950802-028, 950802-029, 951121-001, 951121-002
	GW-610	950201-003, 950201-004, 950508-032, 950508-033, 950801-030, 950801-031, 951114-009, 951114-010
	GW-611	950214-096, 950214-097, 950516-003, 950516-004, 950801-066, 950801-067, 951120-005, 951120-006
	GW-742	950130-040, 950130-041, 950508-029, 950508-030, 950731-051, 950731-052, 951110-001, 951110-002
	GW-743	950201-001, 950201-002, 950508-034, 950508-035, 950801-032, 950801-033, 951114-006, 951114-007
	SCR2.2SP	950316-063, 950316-064
Sediment Disposal Basin	GW-156	950119-022, 950119-023, 950410-044, 950410-045, 950713-120, 950713-121, 951027-071, 951027-072
	GW-156-1	951024-046, 951024-047
	GW-156-2	951025-001, 951025-002
	GW-156-3	951025-110, 951025-111
	GW-158	950120-125, 950120-126, 950413-166, 950413-167, 950719-290, 950719-291
	GW-159	950117-076, 950117-077, 950407-055, 950407-056, 950713-068, 950713-069, 951027-073, 951027-074
	GW-159-1	951025-011, 951025-012
	GW-159-2	951025-003, 951025-004
	GW-159-3	951025-112, 951025-113
	GW-241	950120-129, 950120-130, 950410-058, 950410-059, 950717-118, 950717-119

Table 4.55 (continued)

Site	Well	Sample Number
	GW-303	950119-093, 950119-094, 950410-055, 950410-056, 950717-113, 950717-114
	GW-304	950117-078, 950117-079, 950407-060, 950407-061, 950713-071, 950713-072
	GW-731	950118-007, 950118-008, 950410-039, 950410-040, 950713-124, 950713-125, 951027-075, 951027-076
	GW-731-1	951024-044, 951024-045
	GW-731-2	951025-005, 951025-006
	GW-731-3	951025-104, 951025-105
	GW-732	950119-015, 950119-016, 950410-042, 950410-043, 950713-122, 950713-123, 950815-079, 950815-080, 951027-077, 951027-078
	GW-732-1	951025-013, 951025-014
	GW-732-2	951025-007, 951025-008
	GW-732-3	951025-106, 951025-107
Construction Debris Landfill VI	GW-540	950405-007, 950405-008, 950405-010, 951012-028, 951012-029, 951012-031
	GW-541	950406-032, 950406-033, 950406-034, 951013-008, 951013-009, 951013-011
	GW-542	950407-026, 950407-027, 950407-028, 951017-034, 951017-035, 951017-036
	GW-543	950407-029, 950407-030, 950407-031, 951018-014, 951018-015, 951018-017
	GW-544	950407-032, 950407-033, 950407-034, 951018-011, 951018-012, 951018-013
	GW-546	950406-027, 950406-028, 950406-030, 951013-005, 951013-006, 951013-007
	GW-827	950406-035, 950406-036, 950406-037, 951017-029, 951017-030, 951017-032

Table 4.55 (continued)

Site	Well	Sample Number
Construction Debris Landfill VII	GW-560	950406-019, 950406-020, 950406-021, 950406-022, 951009-005, 951009-006, 951009-008, 951009-010
	GW-562	950406-012, 950406-013, 950406-015, 950406-017, 951009-016, 951009-017, 951009-018, 951009-019
	GW-564	950407-016, 950407-017, 950407-018, 950407-019, 951009-119, 951009-120, 951009-122, 951009-137
	GW-798	950412-034, 950412-035, 950412-037, 950412-039, 951009-159, 951009-160, 951009-162, 951009-164
East Chestnut Ridge Waste Pile	GW-292	950424-139, 950424-140, 951107-001, 951107-002
	GW-293	950424-068, 950424-069, 951107-005, 951107-006
	GW-294	950423-004, 950423-005, 951106-038, 951106-039
	GW-296	950423-001, 950423-002, 951106-035, 951106-036
Industrial Landfill II	GW-539	950105-049, 950105-050, 950105-051, 950105-052, 950711-001, 950711-002, 950711-004, 950711-006, 950712-050, 950712-051, 950716-016, 950716-017, 951009-041, 951009-042, 951009-043, 951009-044
	GW-709	950110-996, 950110-997, 950110-998, 950110-999, 950711-008, 950711-009, 950711-010, 950711-011, 951009-029, 951009-030, 951009-031, 951009-032
	GW-757	950110-A04, 950110-A05, 950110-A06, 950110-A07, 950712-009, 950712-010, 950712-012, 950712-014, 950714-002, 950714-003, 951009-033, 951009-034, 951009-035, 951009-036

Table 4.55 (continued)

Site	Well	Sample Number
Industrial Landfill IV	GW-141	950110-035, 950110-036, 950110-037, 950110-038, 950711-057, 950711-058, 950711-059, 950711-060
	GW-217	950104-279, 950104-280, 950104-281, 950104-282, 950711-061, 950711-062, 950711-063, 950711-064,
	GW-305	950111-077, 950111-078, 950111-079, 950111-080, 950713-026, 950713-027, 950713-028, 950713-029
	GW-521	950110-031, 950110-032, 950110-033, 950110-034, 950712-001, 950712-002, 950712-004, 950712-006,
	GW-522	950111-081, 950111-082, 950111-083, 950111-084, 950713-014, 950713-015, 950713-017, 950713-019,
Industrial Landfill V	CBS-1	950417-087, 950417-088, 950417-090, 950417-091, 951011-058, 951011-059, 951011-065, 951011-066
	GW-557	950407-020, 950407-021, 950407-022, 950407-023, 951009-143, 951009-144, 951009-145, 951009-146
	GW-796	950413-113, 950413-114, 950413-115, 950413-116, 951009-170, 951009-171, 951009-172, 951009-173
	GW-797	950412-041, 950412-042, 950412-043, 950412-044, 951009-166, 951009-167, 951009-168, 951009-169
	GW-799	950407-009, 950407-010, 950407-012, 950407-014, 951009-139, 951009-140, 951009-141, 951009-142
	GW-801	950413-139, 950413-140, 950413-142, 950413-144, 951010-026, 951010-027, 951010-029, 951010-033

Table 4.55 (continued)

Site	Well	Sample Number
Kerr Hollow Quarry	GW-142	950111-100, 950111-101, 950320-173, 950320-177, 950421-004, 950421-005, 950714-054, 950714-055, 951106-061, 951106-062
	GW-143	950118-012, 950118-013, 950425-053, 950425-054, 950717-106, 950717-107, 951110-004, 951110-005
	GW-144	950118-053, 950118-054, 950322-085, 950426-261, 950426-262, 950717-109, 950717-110, 951114-093, 951114-094
	GW-145	950118-051, 950118-052, 950324-048, 950324-049, 950426-310, 950426-311, 950718-004, 950718-005, 951115-056, 951115-057
	GW-146	950118-010, 950118-011, 950324-008, 950425-055, 950425-056, 950718-007, 950718-008, 951108-170, 951108-171
	GW-147	950117-115, 950117-116, 950421-056, 950421-057, 950714-057, 950714-058, 951106-095, 951106-096
	GW-231	950117-117, 950117-118, 950421-054, 950421-055, 950717-103, 950717-104, 951106-093, 951106-094,
Rogers Quarry	GW-184	950501-140, 950501-141, 951101-050, 951101-051
	GW-186	950503-147, 950503-148, 951103-050, 951103-051
	GW-187	950502-104, 950502-105, 951103-041, 951103-042
	GW-188	950501-138, 950501-139, 951101-048, 951101-049

Table 4.55 (continued)

Site	Well	Sample Number
United Nuclear Corporation Site	1090	950420-101, 950420-102, 951010-011, 951010-012
	GW-203	950418-196, 950418-197, 951009-073, 951009-074
	GW-205	950418-199, 950418-200, 951009-076, 951009-077
	GW-221	950420-007, 950420-008, 951010-005, 951010-006
	GW-302	950420-001, 950420-002, 951010-003, 951010-004
	GW-339	950420-003, 950420-004, 951010-001, 951010-002

Table 4.56. 1995 East Fork Hydrogeologic Regime and Area Summary

Site	Well	Sample Number
Beta-4 Security Pits	GW-191	950223-059, 950223-060, 950523-011, 950523-012, 950911-093, 950911-094, 951204-090, 951204-091
	GW-192	950224-064, 950224-065, 950525-007, 950525-008, 950913-008, 950913-009, 951206-003, 951206-004
	GW-194	950321-011, 950321-012, 950525-002, 950525-003, 950913-001, 950913-002, 951206-007, 951206-008
	GW-195	950223-057, 950223-058, 950525-005, 950525-006, 950913-004, 950913-005, 951206-005, 951206-006
East Fork Exit Pathway	GW-206	950308-133, 950308-134, 950614-129, 950614-130, 950908-003, 950908-004, 951130-042, 951130-043
	GW-207	950308-135, 950308-136, 950612-081, 950612-082, 950908-009, 950908-010, 951128-050, 951128-051
	GW-208	950313-044, 950313-045, 950614-001, 950614-002, 950911-049, 950911-050, 951207-023, 951207-024
	GW-603	950313-042, 950313-043, 950614-131, 950614-132, 950911-056, 950911-057, 951207-028, 951207-029
	GW-604	950313-091, 950313-092, 950615-070, 950615-071, 950911-054, 950911-055, 951210-019, 951210-020
	GW-605	950314-037, 950314-038, 950619-038, 950619-039, 950622-023, 950928-010, 950928-011, 951213-001, 951213-002
	GW-606	950314-040, 950314-041, 950619-040, 950619-041, 950928-066, 950928-067, 951002-050, 951213-004, 951213-005, 951218-041

Table 4.56 (continued)

Site	Well	Sample Number
	GW-617	950224-066, 950224-067, 950525-111, 950525-112, 950913-010, 950913-011, 951207-017, 951207-018
	GW-618	950228-015, 950228-016, 950525-116, 950525-117, 950914-010, 950914-011, 951207-015, 951207-016
	GW-733	950313-087, 950313-088, 950619-013, 950619-014, 950928-007, 950928-008, 951212-005, 951212-006
	GW-735	950313-093, 950313-094, 950615-075, 950615-076, 950911-072, 950911-073, 951210-024, 951210-025
	GW-750	950313-095, 950313-096, 950616-088, 950616-089, 950911-075, 950911-076, 951210-022, 951210-023
	GW-816	950308-131, 950308-132, 950614-133, 950614-134, 950908-001, 950908-002, 951130-040, 951130-041
	LRSPW	950306-125, 950306-126, 950922-110, 950922-111
Fire Training Facility	GW-619	950301-043, 950301-044, 950530-131, 950530-132, 950914-013, 950914-014, 951207-080, 951207-081
	GW-620	950301-041, 950301-042, 950530-128, 950530-129, 950915-068, 950915-069, 950918-084, 951207-082, 951207-083
Groundwater Monitoring Plan Grid Location A1	GW-261	950203-041, 950203-042, 950517-080, 950517-081
	GW-262	950203-043, 950203-044, 950517-082, 950517-083

Table 4.56 (continued)

Site	Well	Sample Number
Groundwater Monitoring Plan Grid Location A2	GW-263	950213-110, 950213-111, 950517-084, 950517-085
	GW-264	950213-108, 950213-109, 950517-086, 950517-087
Groundwater Monitoring Plan Grid Location B2	GW-777	950216-043, 950216-044, 950518-136, 950518-137
	GW-778	950216-041, 950216-042, 950518-139, 950518-140
Groundwater Monitoring Plan Grid Location C1	GW-771	950216-038, 950216-039, 950517-112, 950517-113, 950807-059, 950807-060, 951114-017, 951114-018
	GW-772	950216-036, 950216-037, 950517-116, 950517-117, 950807-066, 950807-067, 951114-011, 951114-012
Groundwater Monitoring Plan Grid Location D1	GW-784	950223-022, 950223-023, 950530-114, 950530-115
	GW-785	950223-014, 950223-015, 950601-027, 950601-028
Groundwater Monitoring Plan Grid Location D2	GW-791	950308-018, 950308-019, 950606-008, 950606-009, 950822-017, 950822-018, 950824-053, 951129-144, 951129-145
	GW-792	950308-020, 950308-021, 950606-011, 950606-012, 950822-020, 950822-021, 951129-147, 951129-148
Groundwater Monitoring Plan Grid Location E1	GW-764	950217-039, 950217-040, 950518-128, 950518-129, 950807-062, 950807-063, 951114-013, 951114-014
	GW-765	950217-041, 950217-042, 950518-131, 950518-132, 950807-064, 950807-065, 951115-005, 951115-006

Table 4.56 (continued)

Site	Well	Sample Number
Groundwater Monitoring Plan Grid Location E2	GW-786	950223-020, 950223-021, 950601-025, 950601-026, 950809-097, 950809-098, 951128-013, 951128-014
	GW-787	950223-018, 950223-019, 950601-023, 950601-024, 950809-102, 950809-103, 951128-007, 951128-008
Groundwater Monitoring Plan Grid Location E3	GW-781	950308-016, 950308-017, 950606-013, 950606-014, 950823-012, 950823-013, 951130-057, 951130-058
	GW-782	950308-072, 950308-073, 950606-070, 950606-071, 950824-011, 950824-012, 950829-002, 951130-053, 951130-054
	GW-783	950308-075, 950308-076, 950606-067, 950606-068, 950824-014, 950824-015, 951130-055, 951130-056
Groundwater Monitoring Plan Grid Location F2	GW-779	950224-076, 950224-077, 950601-019, 950601-020, 950810-114, 950810-115, 951128-009, 951128-010
	GW-780	950224-072, 950224-073, 950601-021, 950601-022, 950810-117, 950810-118, 951129-005, 951129-006
Groundwater Monitoring Plan Grid Location F3	GW-788	950224-074, 950224-075, 950602-008, 950602-009, 950815-003, 950815-004, 950817-004, 950817-005, 951129-001, 951129-002
	GW-789	950303-013, 950303-014, 950602-011, 950602-012, 950815-006, 950815-007, 951129-003, 951129-004

Table 4.56 (continued)

Site	Well	Sample Number
Groundwater Monitoring Plan Grid Location G1	GW-758	950220-072, 950220-073, 950522-130, 950522-131, 950807-087, 950807-088, 951115-001, 951115-002
	GW-759	950220-098, 950220-099, 950522-133, 950522-134, 950807-092, 950807-093, 951115-003, 951115-004
Groundwater Monitoring Plan Grid Location G2	GW-760	950220-092, 950220-093, 950523-110, 950523-111, 950807-094, 950807-095, 951115-072, 951115-073
	GW-761	950220-094, 950220-095, 950523-112, 950523-113, 950807-096, 950807-097, 951115-079, 951115-080
Groundwater Monitoring Plan Grid Location G3	GW-769	950221-057, 950221-058, 950530-070, 950530-071, 950808-151, 950808-152, 951115-074, 951115-075
	GW-770	950220-096, 950220-097, 950530-073, 950530-074, 950808-154, 950808-155, 951115-077, 951115-078
Groundwater Monitoring Plan Grid Location H2	GW-773	950120-021, 950120-022, 950512-009, 950512-010, 950717-044, 950717-045, 951120-020, 951120-021
	GW-774	950120-109, 950120-110, 950516-045, 950516-046, 950717-048, 950717-049, 951120-024, 951120-025
Groundwater Monitoring Plan Grid Location H3	GW-775	950120-111, 950120-112, 950516-048, 950516-049, 950717-050, 950717-051, 951120-073, 951120-074
	GW-776	950120-113, 950120-114, 950516-050, 950516-051, 950717-052, 950717-053, 951120-076, 951120-077

Table 4.56 (continued)

Site	Well	Sample Number
Groundwater Monitoring Plan Grid Location I1	GW-199	950120-015, 950120-016, 950508-097, 950508-098, 950714-013, 950714-014, 951116-045, 951116-046
	GW-768	950120-107, 950120-108, 950508-102, 950508-103, 950714-011, 950714-012, 951117-053, 951117-054,
Groundwater Monitoring Plan Grid Location I2	GW-766	950120-017, 950120-018, 950508-100, 950508-101, 950714-009, 950714-010, 951117-051, 951117-052
	GW-767	950120-019, 950120-020, 950512-006, 950512-007, 950717-041, 950717-042, 951120-017, 951120-018
Groundwater Monitoring Plan Grid Location J3	GW-751	950124-013, 950124-014, 950509-008, 950509-009, 950718-136, 950718-137, 951117-058, 951117-059
	GW-752	950126-020, 950126-021, 950509-012, 950509-013, 950718-143, 950718-144, 951117-056, 951117-057
Groundwater Monitoring Plan Grid Location K1	GW-744	950126-018, 950126-019, 950509-006, 950509-007, 950718-141, 950718-142, 951120-039, 951120-040
	GW-745	950127-022, 950127-023, 950510-013, 950510-014, 950718-145, 950718-146, 951120-031, 951120-032
	GW-746	950127-024, 950127-025, 950510-016, 950510-017, 950718-182, 950718-183, 951120-033, 951120-034
Groundwater Monitoring Plan Grid Location K2	GW-747	950131-135, 950131-136, 950510-018, 950510-019, 950718-185, 950718-186, 951120-035, 951120-036
	GW-748	950131-131, 950131-132, 950510-088, 950510-089, 950718-187, 950718-188, 951120-070, 951120-071
	GW-749	950131-133, 950131-134, 950510-091, 950510-092, 950720-019, 950720-020, 951120-068, 951120-069

Table 4.56 (continued)

Site	Well	Sample Number
Groundwater Monitoring Plan Grid Location K3	GW-817	950201-094, 950201-095, 950510-093, 950510-094, 950731-045, 950731-046, 951128-001, 951128-002
Grid J Primary	GW-762	950221-020, 950221-021, 950518-001, 950518-002
	GW-763	950221-018, 950221-019, 950519-007, 950519-008, 950823-007, 950823-008, 951128-023, 951128-024
New Hope Pond	GW-148	950223-054, 950223-055, 950519-003, 950519-004, 950823-001, 950823-002, 951128-026, 951128-027
	GW-149	950223-050, 950223-051, 950519-005, 950519-006, 950823-003, 950823-004, 951129-014, 951129-015
	GW-151	950301-050, 950301-051, 950303-982, 950525-013, 950525-014, 950830-001, 950830-002, 951204-095, 951204-096
	GW-153	950223-052, 950223-053, 950523-003, 950523-004, 950824-008, 950824-009, 951129-008, 951129-009
	GW-154	950228-024, 950228-025, 950524-003, 950524-004, 950825-005, 950825-006, 951130-001, 951130-002
	GW-220	950228-020, 950228-021, 950302-112, 950525-015, 950525-016, 950830-006, 950830-007, 951201-008, 951201-009
	GW-222	950224-011, 950224-012, 950523-006, 950523-007, 950524-025, 950824-004, 950824-005, 951130-003, 951130-004, 951204-060
	GW-223	950224-013, 950224-014, 950523-008, 950523-009, 950824-006, 950824-007, 951129-010, 951129-011

Table 4.56 (continued)

Site	Well	Sample Number
	GW-240	950228-022, 950228-023, 950525-017, 950525-018, 950825-001, 950825-002, 950828-040, 950828-041, 951201-006, 951201-007
	GW-380	950228-026, 950228-027, 950524-001, 950524-002, 950825-003, 950825-004, 951201-010, 951201-011
	GW-381	950307-052, 950307-053, 950530-066, 950530-067
	GW-382	950303-016, 950303-017, 950526-118, 950526-119
	GW-383	950301-048, 950301-049, 950303-981, 950526-001, 950526-002, 950830-003, 950830-004, 951207-002, 951207-003
	GW-384	950213-101, 950213-102, 950517-029, 950517-030, 950731-042, 950731-043, 951128-003, 951128-004
	GW-385	950203-046, 950203-047, 950517-032, 950517-033, 950725-034, 950725-035, 951120-090, 951120-091
S-2 Site	GW-251	950228-017, 950228-018, 950525-114, 950525-115, 950914-015, 950914-016, 951207-084, 951207-085
	GW-252	950214-091, 950214-092, 950518-051, 950518-052
	GW-255	950214-087, 950214-088, 950518-054, 950518-055
Union Valley	7UV7.1SP	951214-001, 951214-002
	GW-169	950317-002, 950317-003, 950612-089, 950612-090, 950929-037, 950929-038, 951214-003, 951214-004
	GW-170	950323-009, 950323-010, 950620-001, 950620-002, 950929-034, 950929-035, 951213-008, 951213-009
	GW-171	950314-003, 950314-004, 950612-086, 950612-087, 950925-012, 950925-013, 951212-044, 951212-045

Table 4.56 (continued)

Site	Well	Sample Number
	GW-172	950314-005, 950314-006, 950614-010, 950614-011, 950919-069, 950919-070, 951212-042, 951212-043
	GW-230	950316-015, 950316-016, 950316-095, 950616-001, 950616-002, 950921-002, 950921-003, 951214-009, 951214-010
	GW-232	950322-008, 950322-009, 950619-008, 950619-009, 950925-009, 950925-010, 951215-003, 951215-004
Waste Coolant Processing Area	GW-337	950303-019, 950303-020, 950530-125, 950530-126
	GW-338	950224-068, 950224-069, 950525-009, 950525-010, 950913-006, 950913-007, 951206-001, 951206-002
Y-12 Salvage Yard	GW-108	950629-008, 950629-009
	GW-109	950629-076, 950629-077
	GW-274	951031-008, 951031-009
	GW-275	951031-011, 951031-012

Table 4.57. 1995 Special Request Hydrogeologic Regime and Area Summary

Site	Well	Sample Number
Special Request	GW-830	950914-105, 950914-106

Table 4.58. Constituents in Waste Area Grouping (WAG) 1 groundwater at ORNL, March 20–May 8, 1995

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of values exceeding reference [ref][c]
		Downgradient Wells				
Anions, unfiltered (mg/L)						
Bromide	12/19	1.0	<0.10	~0.24	*d*	[*d*]
Chloride	19/19	92	1.2	28	250	0[3]
Fluoride	9/19	4.5	<0.10	~0.60	4	1[2]
Nitrate	8/19	3.1	<0.10	~0.43	10	0[2]
Sulfate, as SO_4	19/19	150	0.77	37	250	0[3]
Base neutral/acid extractable organics, unfiltered (µg/L)						
Benzyl alcohol	5/19	UJ11	U11	~11	*d*	[*d*]
Carbazole	5/19	UJ11	U11	~11	*d*	[*d*]
Di-n-butylphthalate	3/19	U11	JB1.0	~9.4	*d*	[*d*]
Field measurements, unfiltered						
Conductivity (mS/cm)	19/19	1.2	0.31	0.77	*d*	[*d*]
Dissolved oxygen (mg/L)	19/19	13	8.4	10	*d*	[*d*]
Redox (mV)	19/19	400	27	140	*d*	[*d*]
Temperature (°C)	19/19	18	11	15	30.5	0[1]
Turbidity (JTU)	19/19	210	0	40	1	16[2]
pH (SU)	19/19	9.0	6.7	7.3	(6.0, 9.0)	0[1]
Metals, unfiltered (mg/L)						
Aluminum, total	8/19	1.9	<0.050	~0.32	0.2	4[3]
Barium, total	19/19	0.31	0.012	0.12	2	0[1]
Boron, total	9/19	1.0	<0.080	~0.21	*d*	[*d*]
Calcium, total	19/19	160	1.3	79	*d*	[*d*]
Chromium, total	2/19	0.024	<0.0040	~0.0051	0.1	0[1]
Cobalt, total	4/19	0.0046	<0.0040	~0.0041	*d*	[*d*]
Iron, total	14/19	8.4	<0.050	~1.5	0.3	11[3]
Magnesium, total	19/19	29	0.62	17	*d*	[*d*]
Manganese, total	16/19	6.0	<0.0010	~0.93	0.05	8[3]
Nickel, total	1/19	0.073	<0.010	~0.013	0.1	0[1]
Potassium, total	4/19	5.3	<2.0	~2.4	*d*	[*d*]
Silicon, total	19/19	7.5	2.7	5.4	*d*	[*d*]
Sodium, total	19/19	300	1.7	45	*d*	[*d*]
Vanadium, total	4/19	0.0034	<0.0020	~0.0021	*d*	[*d*]
Zinc, total	7/19	0.0074	<0.0050	~0.0053	5	0[3]
Others, unfiltered						
Alkalinity (mg/L)	19/19	480	130	310	*d*	[*d*]
Total organic carbon (mg/L)	19/19	4.3	0.51	1.7	*d*	[*d*]
Total organic halides (µg/L)	12/19	180	<10	~48	*d*	[*d*]
Total suspended solids (mg/L)	10/19	26	<5.0	~8.7	*d*	[*d*]

Table 4.58 (continued)

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of values exceeding reference [ref][c]
Radionuclides, filtered (pCi/L)[e]						
Co-60	1/19	4.1	−3.5	0.31	200	0[4]
Gross alpha	6/19	4.3*	−0.89	1.1*	15	0[2]
Gross beta	16/19	270*	−2.1	22	50	2[2]
H-3	12/19	19,000*	−460	2,300*	20,000	0[2]
Total rad Sr	6/19	140*	−0.54	9.8	8	3[2]
Radionuclides, unfiltered (pCi/L)[e]						
Co-60	4/19	6.8*	−4.9	1.6*	200	0[4]
Gross alpha	6/19	4.3*	−0.78	1.1*	15	0[2]
Gross beta	12/19	270*	0.54	22	50	2[2]
H-3	13/19	21,000*	−160	2,600*	20,000	1[2]
Total rad Sr	6/19	130*	−16	8.5	8	3[2]
Volatile organics, unfiltered (µg/L)						
1,2-Dichloroethene, total	3/19	23	J1.0	−5.5	70	0[2]
2-Butanone	19/19	JB2.0	JB1.0	−1.9	*d*	[*d*]
Benzene	1/19	U5.0	J1.0	−4.8	5	0[1]
Carbon disulfide	3/19	10	J2.0	−5.0	*d*	[*d*]
Chloromethane	1/19	U10	J3.0	−9.6	*d*	[*d*]
Vinyl chloride	1/19	25	U10	−11	2	19[1]
cis-1,2-Dichloroethene	3/19	23	J1.0	−5.5	*d*	[*d*]
		Upgradient Wells				
Anions, unfiltered (mg/L)						
Chloride	3/3	18	2.8	8.2	250	0[3]
Fluoride	1/3	1.1	<0.10	−0.43	4	0[2]
Nitrate	3/3	6.3	0.41	4.2	10	0[2]
Sulfate, as SO_4	3/3	38	21	30	250	0[3]
Base neutral/acid extractable organics, unfiltered (µg/L)						
Di-n-butylphthalate	3/3	J2.0	JB1.0	−1.7	*d*	[*d*]
Field measurements, unfiltered						
Conductivity (mS/cm)	3/3	0.78	0.60	0.68	*d*	[*d*]
Dissolved oxygen (mg/L)	3/3	11	10	11	*d*	[*d*]
Redox (mV)	3/3	320	210	280	*d*	[*d*]
Temperature (°C)	3/3	16	14	15	30.5	0[1]
Turbidity (JTU)	3/3	110	0	37	1	1[2]
pH (SU)	3/3	7.9	6.6	7.2	(6.0, 9.0)	0[1]
Metals, unfiltered (mg/L)						
Aluminum, total	1/3	1.9	<0.050	−0.67	0.2	1[3]
Barium, total	3/3	0.18	0.040	0.098	2	0[1]
Boron, total	1/3	0.25	<0.080	−0.14	*d*	[*d*]

Table 4.58 (continued)

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of values exceeding reference [ref][c]
Calcium, total	3/3	130	33	79	*d*	[*d*]
Cobalt, total	1/3	0.018	<0.0040	~0.0087	*d*	[*d*]
Copper, total	1/3	0.017	<0.0070	~0.010	1.3	0[2]
Iron, total	1/3	2.1	<0.050	~0.73	0.3	1[3]
Magnesium, total	3/3	27	4.5	15	*d*	[*d*]
Manganese, total	1/3	0.057	<0.0010	~0.020	0.05	1[3]
Nickel, total	1/3	0.049	<0.010	~0.023	0.1	0[1]
Potassium, total	1/3	11	<2.0	~5.0	*d*	[*d*]
Silicon, total	3/3	7.7	4.5	6.4	*d*	[*d*]
Sodium, total	3/3	39	2.2	15	*d*	[*d*]
Vanadium, total	1/3	0.0055	<0.0020	~0.0032	*d*	[*d*]
Zinc, total	1/3	0.014	<0.0050	~0.0080	5	0[3]
Others, unfiltered						
Alkalinity (mg/L)	3/3	370	250	290	*d*	[*d*]
Total organic carbon (mg/L)	3/3	0.73	0.57	0.67	*d*	[*d*]
Total organic halides (µg/L)	1/3	19	<10	~13	*d*	[*d*]
Total suspended solids (mg/L)	2/3	40	<5.0	~17	*d*	[*d*]
Radionuclides, filtered (pCi/L)[e]						
Gross alpha	1/3	2.2*	0.70	1.4*	15	0[2]
Gross beta	1/3	2.7*	0.54	1.9	50	0[2]
H-3	3/3	1,400*	810*	1,200*	20,000	0[2]
Radionuclides, unfiltered (pCi/L)[e]						
Gross alpha	1/3	2.3*	−0.84	0.45	15	0[2]
Gross beta	3/3	6.5*	1.6*	4.0	50	0[2]
H-3	3/3	1,200*	760*	1,000*	20,000	0[2]
Total rad Sr	1/3	3.0*	−2.0	0.54	8	0[2]
Volatile organics, unfiltered (µg/L)						
2-Butanone	3/3	JB2.0	JB2.0	~2.0	*d*	[*d*]
Chloroform	1/3	10	U5.0	~6.7	100	0[2]

[a]Prefix "<" indicates the value for a parameter (excluding organics) was not quantifiable at the analytical detection limit; "J" indicates the value was estimated at or below the analytical detection limit by the laboratory; "JB" indicates the value was estimated at or below the analytical detection limit and was found in the laboratory blank; "UJ" indicates the compound was undetected, however, the reporting limit was estimated due to poor acid recoveries; and "U" indicates the value for an organic parameter was undetected at the analytical detection limit.

[b]A tilde (~) indicates that estimated and/or undetected values were used in the calculation.

[c]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]Not applicable.

[e]Individual and average radionuclide concentrations significantly greater than zero are identified by an *.

Table 4.59. Constituents in Waste Area Grouping (WAG) 2 groundwater at ORNL, February 17–March 10, 1995

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of values exceeding reference [ref][c]
		Downgradient Wells				
Anions, unfiltered (mg/L)						
Bromide	3/8	0.75	<0.10	~0.20	*d*	[*d*]
Chloride	8/8	27	0.96	11	250	0[3]
Fluoride	2/8	2.7	<0.10	~0.45	4	0[2]
Nitrate	3/8	7.4	<0.10	~1.3	10	0[2]
Phosphate	1/8	0.88	<0.50	~0.55	*d*	[*d*]
Sulfate, as SO_4	8/8	28	0.59	12	250	0[3]
Base neutral/acid extractable organics, unfiltered (µg/L)						
Bis(2-ethylhexyl) phthalate	1/8	U11	J3.0	~9.3	*d*	[*d*]
Di-n-butylphthalate	2/8	U11	J2.0	~8.4	*d*	[*d*]
Diethyl phthalate	1/8	U11	J1.0	~9.0	*d*	[*d*]
Field measurements, unfiltered						
Conductivity (mS/cm)	8/8	0.99	0.28	0.68	*d*	[*d*]
Dissolved oxygen (mg/L)	8/8	11	8.8	9.4	*d*	[*d*]
Redox (mV)	8/8	200	45	130	*d*	[*d*]
Temperature (°C)	8/8	17	11	14	30.5	0[1]
Turbidity (JTU)	8/8	98	0	23	1	6[2]
pH (SU)	8/8	9.6	6.2	7.4	(6.0, 9.0)	2[1]
Metals, unfiltered (mg/L)						
Aluminum, total	4/8	0.43	<0.050	~0.16	0.2	2[3]
Barium, total	8/8	0.92	0.034	0.24	2	0[1]
Boron, total	2/8	0.99	<0.080	~0.21	*d*	[*d*]
Calcium, total	8/8	140	0.82	64	*d*	[*d*]
Chromium, total	1/8	2.6	<0.0040	~0.33	0.1	1[1]
Cobalt, total	1/8	0.014	<0.0040	~0.0053	*d*	[*d*]
Copper, total	1/8	0.0075	<0.0070	~0.0071	1.3	0[2]
Iron, total	7/8	25	<0.050	~6.9	0.3	5[3]
Magnesium, total	8/8	20	0.20	8.7	*d*	[*d*]
Manganese, total	8/8	0.94	0.0038	0.23	0.05	5[3]
Mercury, total	4/8	0.0016	<0.000050	~0.00038	0.002	0[1]
Nickel, total	2/8	0.11	<0.010	~0.023	0.1	1[1]
Potassium, total	3/8	4.6	<2.0	~2.5	*d*	[*d*]
Silicon, total	8/8	9.9	3.7	6.6	*d*	[*d*]
Sodium, total	8/8	200	4.2	52	*d*	[*d*]
Vanadium, total	2/8	0.0033	<0.0020	~0.0022	*d*	[*d*]
Zinc, total	2/8	0.012	<0.0050	~0.0063	5	0[3]
Others, unfiltered						
Alkalinity (mg/L)	8/8	470	110	300	*d*	[*d*]
Total organic carbon (mg/L)	7/8	3.9	<0.50	~1.1	*d*	[*d*]

Table 4.59 (continued)

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of values exceeding reference [ref][c]
Total organic halides (µg/L)	2/8	370	<10	~61	*d*	[*d*]
Total suspended solids (mg/L)	3/8	43	<5.0	~14	*d*	[*d*]
Radionuclides, filtered (pCi/L)[e]						
Cs-137	1/8	5.7*	−0.27	1.7*	120	0[4]
Gross alpha	1/8	1.4*	−1.9	0.037	15	0[2]
Gross beta	2/8	730*	−0.27	93	50	1[2]
H-3	6/8	120,000*	−890	26,000	20,000	3[2]
Total rad Sr	3/8	320*	−0.51	42	8	1[2]
Radionuclides, unfiltered (pCi/L)[e]						
Co-60	1/8	5.9*	−1.4	1.7*	200	0[4]
Gross alpha	1/8	1.9*	−0.81	0.63	15	0[2]
Gross beta	3/8	780*	0.54	99	50	1[2]
H-3	5/8	120,000*	−780	27,000	20,000	3[2]
Total rad Sr	1/8	270*	−4.9	34	8	1[2]
Volatile organics, unfiltered (µg/L)						
2-Butanone	8/8	JB4.0	JB2.0	~2.9	*d*	[*d*]
Carbon disulfide	1/8	U5.0	J3.0	~4.8	*d*	[*d*]
		Upgradient Wells				
Anions, unfiltered (mg/L)						
Bromide	2/12	0.12	<0.10	~0.10	*d*	[*d*]
Chloride	12/12	8.7	0.84	3.5	250	0[3]
Fluoride	3/12	0.72	<0.10	~0.20	4	0[2]
Nitrate	7/12	3.7	<0.10	~0.58	10	0[2]
Phosphate	1/12	0.64	<0.50	~0.51	*d*	[*d*]
Sulfate, as SO_4	12/12	82	5.9	35	250	0[3]
Base neutral/acid extractable organics, unfiltered (µg/L)						
Di-n-butylphthalate	2/11	U11	JB1.0	~9.0	*d*	[*d*]
Field measurements, unfiltered						
Conductivity (mS/cm)	12/12	0.89	0.30	0.63	*d*	[*d*]
Dissolved oxygen (mg/L)	12/12	13	9.3	11	*d*	[*d*]
Redox (mV)	12/12	350	77	210	*d*	[*d*]
Temperature (°C)	12/12	14	11	12	30.5	0[1]
Turbidity (JTU)	12/12	140	0	14	1	5[2]
pH (SU)	12/12	9.0	6.4	7.5	(6.0, 9.0)	0[1]
Metals, unfiltered (mg/L)						
Aluminum, total	1/12	0.18	<0.050	~0.061	0.2	0[3]
Barium, total	12/12	0.49	0.041	0.18	2	0[1]
Boron, total	6/12	0.80	<0.080	~0.20	*d*	[*d*]
Calcium, total	12/12	120	0.86	56	*d*	[*d*]

Table 4.59 (continued)

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of values exceeding reference [ref][c]
Cobalt, total	2/12	0.014	<0.0040	~0.0050	*d*	[*d*]
Iron, total	7/12	4.0	<0.050	~0.47	0.3	2[3]
Magnesium, total	12/12	25	0.23	13	*d*	[*d*]
Manganese, total	12/12	8.2	0.0031	0.75	0.05	5[3]
Mercury, total	4/12	0.0015	<0.000050	~0.00018	0.002	0[1]
Nickel, total	1/12	0.024	<0.010	~0.011	0.1	0[1]
Potassium, total	7/12	6.3	<2.0	~2.8	*d*	[*d*]
Silicon, total	12/12	9.0	2.6	6.4	*d*	[*d*]
Sodium, total	12/12	180	3.5	46	*d*	[*d*]
Zinc, total	8/12	0.030	<0.0050	~0.0082	5	0[3]
Others, unfiltered						
Alkalinity (mg/L)	12/12	390	130	260	*d*	[*d*]
Total organic carbon (mg/L)	9/12	3.3	<0.50	~1.0	*d*	[*d*]
Total organic halides (µg/L)	2/12	16	<10	~11	*d*	[*d*]
Total suspended solids (mg/L)	1/12	5.0	<5.0	~5.0	*d*	[*d*]
Radionuclides, filtered (pCi/L)[e]						
Co-60	3/12	140*	−0.54	13	200	0[4]
Gross alpha	5/12	12*	−1.1	1.7	15	0[2]
Gross beta	8/12	430*	−3.2	39	50	1[2]
H-3	7/12	320,000*	−350	30,000	20,000	2[2]
Total rad Sr	3/12	3.2*	−2.1	0.99*	8	0[2]
Radionuclides, unfiltered (pCi/L)[e]						
Co-60	2/12	140*	−2.2	13	200	0[4]
Gross alpha	3/12	7.3*	−0.97	1.3*	15	0[2]
Gross beta	9/12	410*	−4.9	37	50	1[2]
H-3	7/12	350,000*	160	33,000	20,000	2[2]
Total rad Sr	1/12	3.0*	−1.7	0.27	8	0[2]
Volatile organics, unfiltered (µg/L)						
2-Butanone	11/12	U10	JB2.0	~3.1	*d*	[*d*]

[a]Prefix "<" indicates the value for a parameter (excluding organics) was not quantifiable at the analytical detection limit; "J" indicates the value was estimated at or below the analytical detection limit by the laboratory; "JB" indicates the value was estimated at or below the analytical detection limit and was found in the laboratory blank; and "U" indicates the value for an organic parameter was undetected at the analytical detection limit.

[b]A tilde (~) indicates that estimated and/or undetected values were used in the calculation.

[c]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]Not applicable.

[e]Individual and average radionuclide concentrations significantly greater than zero are identified by an *.

Table 4.60. Constituents in Waste Area Grouping (WAG) 3 groundwater at ORNL, May 4–June 2, 1995

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of values exceeding reference [ref][c]
		Downgradient Wells				
Anions, unfiltered (mg/L)						
Bromide	5/10	0.40	<0.10	~0.15	*d*	[*d*]
Chloride	10/10	390	1.8	80	250	1[3]
Fluoride	1/10	0.13	<0.10	~0.10	4	0[2]
Nitrate	3/10	2.0	<0.10	~0.38	10	0[2]
Sulfate, as SO_4	10/10	150	3.8	41	250	0[3]
Base neutral/acid extractable organics, unfiltered (μg/L)						
Benzyl alcohol	3/10	UJ10	U10	~10	*d*	[*d*]
Carbazole	3/10	UJ10	U10	~10	*d*	[*d*]
Field measurements, unfiltered						
Conductivity (mS/cm)	10/10	1.7	0.36	0.82	*d*	[*d*]
Dissolved oxygen (mg/L)	10/10	13	11	12	*d*	[*d*]
Redox (mV)	10/10	380	130	240	*d*	[*d*]
Temperature (°C)	10/10	15	13	15	30.5	0[1]
Turbidity (JTU)	10/10	130	7.0	45	1	10[2]
pH (SU)	10/10	7.8	6.1	6.9	(6.0, 9.0)	0[1]
Metals, unfiltered (mg/L)						
Aluminum, total	3/10	1.7	<0.050	~0.23	0.2	1[3]
Barium, total	10/10	0.59	0.041	0.16	2	0[1]
Boron, total	7/10	2.4	<0.080	~0.45	*d*	[*d*]
Calcium, total	10/10	160	47	100	*d*	[*d*]
Chromium, total	1/10	0.0047	<0.0040	~0.0041	0.1	0[1]
Iron, total	8/10	3.2	<0.050	~0.62	0.3	3[3]
Magnesium, total	10/10	56	4.2	25	*d*	[*d*]
Manganese, total	9/10	1.7	<0.0010	~0.26	0.05	5[3]
Potassium, total	10/10	11	2.0	3.7	*d*	[*d*]
Silicon, total	10/10	6.8	4.0	5.2	*d*	[*d*]
Sodium, total	10/10	110	4.0	30	*d*	[*d*]
Vanadium, total	1/10	0.0025	<0.0020	~0.0021	*d*	[*d*]
Zinc, total	2/10	0.013	<0.0050	~0.0062	5	0[3]
Others, unfiltered						
Alkalinity (mg/L)	10/10	420	140	310	*d*	[*d*]
Phenolics, total recoverable (mg/L)	1/10	0.0040	<0.0010	~0.0013	*d*	[*d*]
Total organic carbon (mg/L)	10/10	5.8	0.59	1.7	*d*	[*d*]
Total organic halides (μg/L)	6/10	80	<10	~27	*d*	[*d*]
Total suspended solids (mg/L)	1/10	16	<5.0	~6.1	*d*	[*d*]
Radionuclides, filtered (pCi/L)[e]						
Co-60	2/10	5.1*	−2.2	1.6*	200	0[4]
Cs-137	1/10	3.5*	−1.9	0.59	120	0[4]

Table 4.60 (continued)

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of values exceeding reference [ref][c]
Gross alpha	5/10	12*	−0.27	3.3*	15	0[2]
Gross beta	9/10	1,500*	2.2	250	50	4[2]
H-3	8/10	19,000*	220	2,600	20,000	0[2]
Total rad Sr	8/10	970*	0.54	150	8	4[2]
Radionuclides, unfiltered (pCi/L)[e]						
Co-60	1/10	4.3*	−4.1	0.43	200	0[4]
Cs-137	1/10	3.2*	−1.1	0.78	120	0[4]
Gross alpha	5/10	10*	−0.11	3.0*	15	0[2]
Gross beta	8/10	1,500*	1.9	250	50	4[2]
H-3	8/10	19,000*	220	2,600	20,000	0[2]
Total rad Sr	8/10	860*	0.81	140	8	4[2]
Volatile organics, unfiltered (µg/L)						
1,2-Dichloroethene, total	3/10	12	J2.0	−5.3	70	0[2]
2-Butanone	10/10	JB4.0	JB2.0	−2.9	*d*	[*d*]
Acetone	1/10	U10	JB3.0	−9.3	*d*	[*d*]
Benzene	1/10	U5.0	J1.0	−4.6	5	0[1]
Carbon disulfide	2/10	7.0	J1.0	−4.8	*d*	[*d*]
Trichloroethene	1/10	10	U5.0	−5.5	5	1[1]
Vinyl chloride	2/10	U10	J2.0	−8.4	2	8[1]
cis-1,2-Dichloroethene	3/10	12	J2.0	−5.3	*d*	[*d*]
		Upgradient Wells				
Anions, unfiltered (mg/L)						
Chloride	3/3	2.9	2.1	2.4	250	0[3]
Nitrate	1/3	1.5	<0.10	−0.57	10	0[2]
Sulfate, as SO_4	3/3	21	6.8	13	250	0[3]
Base neutral/acid extractable organics, unfiltered (µg/L)						
Benzyl alcohol	3/3	UJ10	UJ10	−10	*d*	[*d*]
Carbazole	3/3	UJ10	UJ10	−10	*d*	[*d*]
Field measurements, unfiltered						
Conductivity (mS/cm)	3/3	0.70	0.21	0.49	*d*	[*d*]
Dissolved oxygen (mg/L)	3/3	13	12	12	*d*	[*d*]
Redox (mV)	3/3	310	270	280	*d*	[*d*]
Temperature (°C)	3/3	16	13	15	30.5	0[1]
Turbidity (JTU)	3/3	330	23	140	1	3[2]
pH (SU)	3/3	7.2	6.2	6.8	(6.0, 9.0)	0[1]
Metals, unfiltered (mg/L)						
Aluminum, total	3/3	0.47	0.27	0.34	0.2	3[3]
Barium, total	3/3	0.049	0.022	0.031	2	0[1]
Calcium, total	3/3	110	35	85	*d*	[*d*]

Table 4.60 (continued)

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of values exceeding reference [ref][c]
Iron, total	3/3	0.53	0.20	0.36	0.3	2[3]
Magnesium, total	3/3	13	2.1	6.3	*d*	[*d*]
Manganese, total	3/3	0.040	0.0021	0.019	0.05	0[3]
Silicon, total	3/3	5.1	3.0	4.3	*d*	[*d*]
Sodium, total	3/3	2.7	1.6	2.3	*d*	[*d*]
Vanadium, total	1/3	0.0021	<0.0020	~0.0020	*d*	[*d*]
Others, unfiltered						
Alkalinity (mg/L)	3/3	350	85	240	*d*	[*d*]
Total organic carbon (mg/L)	3/3	1.6	0.77	1.3	*d*	[*d*]
Total suspended solids (mg/L)	1/3	21	<5.0	~10	*d*	[*d*]
Radionuclides, filtered (pCi/L)[e]						
Co-60	2/3	7.0*	0.54	4.1	200	0[4]
Gross alpha	1/3	1.5*	0.27	0.85	15	0[2]
Gross beta	1/3	4.9*	1.9	3.0*	50	0[2]
H-3	2/3	810*	410	640*	20,000	0[2]
Radionuclides, unfiltered (pCi/L)[e]						
Co-60	2/3	6.8*	3.2	5.0*	200	0[4]
Cs-137	1/3	3.0*	0.54	1.4	120	0[4]
Gross alpha	2/3	2.7*	1.1	1.7*	15	0[2]
Gross beta	2/3	7.0*	1.4	4.2	50	0[2]
H-3	2/3	1,400*	190	800	20,000	0[2]
Total rad Sr	1/3	3.8*	1.2	2.3*	8	0[2]
Volatile organics, unfiltered (µg/L)						
2-Butanone	3/3	JB4.0	JB3.0	~3.3	*d*	[*d*]

[a]Prefix "<" indicates the value for a parameter (excluding organics) was not quantifiable at the analytical detection limit; "J" indicates the value was estimated at or below the analytical detection limit by the laboratory; "JB" indicates the value was estimated at or below the analytical detection limit and was found in the laboratory blank; "U" indicates the value for an organic parameter was undetected at the analytical detection limit; and "UJ" indicates the compound was undetected; however, the reporting limit was estimated due to poor acid recoveries.

[b]A tilde (~) indicates that estimated and/or undetected values were used in the calculation.

[c]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]Not applicable

[e]Individual and average radionuclide concentrations significantly greater than zero are identified by an *.

Table 4.61. Constituents in Waste Area Grouping (WAG) 4 groundwater at ORNL, January 9–February 7, 1995

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of values exceeding reference [ref][c]
		Downgradient Wells				
Anions, unfiltered (mg/L)						
Bromide	6/11	2.0	<0.10	~0.47	*d*	[*d*]
Chloride	11/11	270	1.7	58	250	1[3]
Fluoride	4/11	6.9	<0.10	~1.1	4	1[2]
Nitrate	4/11	2.5	<0.10	~0.41	10	0[2]
Sulfate, as SO_4	11/11	180	0.41	54	250	0[3]
Base neutral/acid extractable organics, unfiltered (µg/L)						
2,4,5-Trichlorophenol	1/10	UJ28	U11	~26	*d*	[*d*]
2,4,6-Trichlorophenol	1/10	UJ11	U11	~11	*d*	[*d*]
2,4-Dichlorophenol	1/10	UJ11	U11	~11	*d*	[*d*]
2,4-Dimethylphenol	1/10	UJ11	U11	~11	*d*	[*d*]
2,4-Dinitrophenol	1/10	UJ28	U28	~28	*d*	[*d*]
2-Chlorophenol	1/10	UJ11	U11	~11	*d*	[*d*]
2-Methylphenol	1/10	UJ11	U11	~11	*d*	[*d*]
2-Nitrophenol	1/10	UJ11	U11	~11	*d*	[*d*]
4,6-Dinitro-2-methylphenol	1/10	UJ28	U28	~28	*d*	[*d*]
4-Chloro-3-methylphenol	1/10	UJ11	U11	~11	*d*	[*d*]
4-Methylphenol	1/10	UJ11	U11	~11	*d*	[*d*]
4-Nitrophenol	1/10	UJ28	U28	~28	*d*	[*d*]
Bis(2-ethylhexyl) phthalate	1/10	B23	U11	~12	*d*	[*d*]
Isophorone	1/10	U11	J1.0	~10	*d*	[*d*]
Pentachlorophenol	1/10	UJ28	U28	~28	1	10[1]
Phenol	1/10	UJ11	U11	~11	*d*	[*d*]
Field measurements, unfiltered						
Conductivity (mS/cm)	11/11	1.6	0.50	0.94	*d*	[*d*]
Dissolved oxygen (mg/L)	11/11	10	8.0	9.1	*d*	[*d*]
Redox (mV)	11/11	540	59	200	*d*	[*d*]
Temperature (°C)	11/11	15	13	14	30.5	0[1]
Turbidity (JTU)	11/11	98	0	21	1	9[2]
pH (SU)	11/11	9.5	6.8	7.8	(6.0, 9.0)	2[1]
Metals, unfiltered (mg/L)						
Aluminum, total	2/11	0.53	<0.050	~0.095	0.2	1[3]
Barium, total	11/11	0.74	0.018	0.17	2	0[1]
Boron, total	5/11	0.60	<0.080	~0.21	*d*	[*d*]
Calcium, total	11/11	130	1.5	60	*d*	[*d*]
Chromium, total	1/11	0.036	<0.0040	~0.0069	0.1	0[1]
Iron, total	9/11	22	<0.050	~3.2	0.3	6[3]
Magnesium, total	11/11	28	0.24	14	*d*	[*d*]
Manganese, total	11/11	3.3	0.0036	0.48	0.05	7[3]

Table 4.61 (continued)

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of values exceeding reference [ref][c]
Mercury, total	11/11	0.00057	0.00013	0.00020	0.002	0[1]
Nickel, total	6/11	0.18	<0.010	~0.061	0.1	3[1]
Potassium, total	9/11	5.1	<2.0	~3.1	*d*	[*d*]
Selenium, total	2/11	0.0084	<0.0050	~0.0053	0.05	0[1]
Silicon, total	11/11	15	3.3	8.3	*d*	[*d*]
Sodium, total	11/11	390	9.4	110	*d*	[*d*]
Others, unfiltered						
Alkalinity (mg/L)	11/11	530	120	330	*d*	[*d*]
Total organic carbon (mg/L)	7/11	8.7	<0.50	~1.6	*d*	[*d*]
Total organic halides (µg/L)	6/11	1,500	<10	~230	*d*	[*d*]
Total suspended solids (mg/L)	3/11	38	<5.0	~8.5	*d*	[*d*]
Radionuclides, filtered (pCi/L)[e]						
Co-60	2/11	4.3*	−1.9	0.81	200	0[4]
Gross alpha	4/11	5.9*	−1.5	2.2*	15	0[2]
Gross beta	8/11	1,500*	0.81	140	50	1[2]
H-3	9/11	7,600,000*	−110	1,400,000	20,000	6[2]
Total rad Sr	5/11	570*	−1.2	52	8	1[2]
Radionuclides, unfiltered (pCi/L)[e]						
Co-60	2/11	3.8*	−0.27	1.7*	200	0[4]
Gross alpha	4/11	6.8*	−0.11	2.4*	15	0[2]
Gross beta	10/11	1,500*	1.6	140	50	1[2]
H-3	9/11	7,800,000*	−27	1,400,000	20,000	6[2]
Total rad Sr	3/11	590*	−1.6	55	8	2[2]
Volatile organics, unfiltered (µg/L)						
1,1,1-Trichloroethane	1/11	U5.0	J1.0	~4.6	200	0[1]
1,1-Dichloroethene	2/11	28	U5.0	~8.6	7	2[1]
1,2-Dichloroethane	1/11	U5.0	J3.0	~4.8	5	0[1]
1,2-Dichloroethene, total	2/11	Y2,500	U5.0	~400	70	2[2]
2-Butanone	8/11	U10	JB1.0	~4.5	*d*	[*d*]
Acetone	1/11	U10	J4.0	~9.5	*d*	[*d*]
Benzene	1/11	U5.0	J4.0	~4.9	5	0[1]
Carbon disulfide	1/11	U5.0	J4.0	~4.9	*d*	[*d*]
Chlorobenzene	1/11	U5.0	J2.0	~4.7	100	0[2]
Trichloroethene	2/11	Y330	U5.0	~42	5	2[1]
Vinyl chloride	3/11	Y1,800	J3.0	~230	2	11[1]
cis-1,2-Dichloroethene	2/11	Y2,400	U5.0	~390	*d*	[*d*]
trans-1,2-Dichloroethene	2/11	120	U5.0	~17	*d*	[*d*]

Table 4.61 (continued)

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of values exceeding reference [ref][c]
			Upgradient Wells			
Anions, unfiltered (mg/L)						
Chloride	4/4	3.5	1.7	2.5	250	0[3]
Fluoride	3/4	0.41	<0.10	~0.29	4	0[2]
Phosphate	2/4	1.2	<0.50	~0.73	*d*	[*d*]
Sulfate, as SO_4	4/4	69	14	33	250	0[3]
Base neutral/acid extractable organics, unfiltered (µg/L)						
2,4,5-Trichlorophenol	1/4	UJ28	U28	~28	*d*	[*d*]
2,4,6-Trichlorophenol	1/4	UJ11	U11	~11	*d*	[*d*]
2,4-Dichlorophenol	1/4	UJ11	U11	~11	*d*	[*d*]
2,4-Dimethylphenol	1/4	UJ11	U11	~11	*d*	[*d*]
2,4-Dinitrophenol	1/4	UJ28	U28	~28	*d*	[*d*]
2-Chlorophenol	1/4	UJ11	U11	~11	*d*	[*d*]
2-Methylphenol	1/4	UJ11	U11	~11	*d*	[*d*]
2-Nitrophenol	1/4	UJ11	U11	~11	*d*	[*d*]
4,6-Dinitro-2-methylphenol	1/4	UJ28	U28	~28	*d*	[*d*]
4-Chloro-3-methylphenol	1/4	UJ11	U11	~11	*d*	[*d*]
4-Methylphenol	1/4	UJ11	U11	~11	*d*	[*d*]
4-Nitrophenol	1/4	UJ28	U28	~28	*d*	[*d*]
Bis(2-ethylhexyl) phthalate	1/4	B20	U11	~13	*d*	[*d*]
Diethyl phthalate	1/4	U11	JB1.0	~8.5	*d*	[*d*]
Pentachlorophenol	1/4	UJ28	U28	~28	1	4[1]
Phenol	1/4	UJ11	U11	~11	*d*	[*d*]
Field measurements, unfiltered						
Conductivity (mS/cm)	4/4	0.54	0.24	0.37	*d*	[*d*]
Dissolved oxygen (mg/L)	4/4	11	9.8	10	*d*	[*d*]
Redox (mV)	4/4	360	75	180	*d*	[*d*]
Temperature (°C)	4/4	15	13	14	30.5	0[1]
Turbidity (JTU)	4/4	120	3.0	35	1	4[2]
pH (SU)	4/4	7.3	6.3	6.9	(6.0, 9.0)	0[1]
Metals, unfiltered (mg/L)						
Aluminum, total	1/4	0.057	<0.050	~0.052	0.2	0[3]
Barium, total	4/4	0.20	0.033	0.14	2	0[1]
Calcium, total	4/4	66	11	37	*d*	[*d*]
Iron, total	4/4	8.2	0.27	4.0	0.3	3[3]
Magnesium, total	4/4	13	7.3	10	*d*	[*d*]
Manganese, total	4/4	3.0	0.65	1.5	0.05	4[3]
Mercury, total	4/4	0.00014	0.00011	0.00013	0.002	0[1]
Potassium, total	2/4	5.2	<2.0	~3.3	*d*	[*d*]

Table 4.61 (continued)

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of values exceeding reference [ref][c]
Silicon, total	4/4	17	12	15	*d*	[*d*]
Sodium, total	4/4	18	7.5	11	*d*	[*d*]
Others, unfiltered						
Alkalinity (mg/L)	4/4	200	60	130	*d*	[*d*]
Total suspended solids (mg/L)	1/4	6.0	<5.0	~5.3	*d*	[*d*]
Radionuclides, filtered (pCi/L)[e]						
Gross beta	3/4	6.5*	2.7*	3.9*	50	0[2]
Total rad Sr	2/4	1.7*	−0.62	0.81	8	0[2]
Radionuclides, unfiltered (pCi/L)[e]						
Co-60	1/4	3.2*	−2.4	1.0	200	0[4]
Gross alpha	1/4	1.8*	−0.027	0.70	15	0[2]
Gross beta	3/4	24*	1.6	15*	50	0[2]
H-3	1/4	1,500*	−840	27	20,000	0[2]
Total rad Sr	2/4	8.1*	0.51	2.8	8	1[2]
Volatile organics, unfiltered (µg/L)						
2-Butanone	2/4	U10	JB2.0	~6.0	*d*	[*d*]

[a]Prefix "<" indicates the value for a parameter (excluding organics) was not quantifiable at the analytical detection limit; "J" indicates the value was estimated at or below the analytical detection limit by the laboratory; "B" indicates that the compound was found in the laboratory blank; "JB" indicates the value was estimated at or below the analytical detection limit and was found in the laboratory blank; "U" indicates the value for an organic parameter was undetected at the analytical detection limit; "UJ" indicates the compound was undetected; however, the reporting limit was estimated due to poor acid recoveries; and "Y" indicates the value exceeded the calibration range and the sample was diluted and was reanalyzed.

[b]A tilde (~) indicates that estimated and/or undetected values were used in the calculation.

[c]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]Not applicable.

[e]Individual and average radionuclide concentrations significantly greater than zero are identified by an *.

Table 4.62. Constituents in Waste Area Grouping (WAG) 5 groundwater at ORNL, June 9–August 3, 1995

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of exceeding reference [ref][c]
			Downgradient Wells			
Anions, unfiltered (mg/L)						
Bromide	7/19	0.41	<0.10	~0.15	*d*	[*d*]
Chloride	19/19	31	1.7	11	250	0[3]
Fluoride	4/19	0.44	<0.10	~0.14	4	0[2]
Nitrate	5/19	1.2	<0.10	~0.24	10	0[2]
Sulfate, as SO_4	19/19	320	1.2	41	250	1[3]
Base neutral/acid extractable organics, unfiltered (µg/L)						
Bis(2-chloroethyl) ether	1/19	U11	J3.0	~10	*d*	[*d*]
Field measurements, unfiltered						
Conductivity (mS/cm)	19/19	0.99	0.33	0.66	*d*	[*d*]
Dissolved oxygen (mg/L)	19/19	13	9.8	11	*d*	[*d*]
Redox (mV)	19/19	510	82	260	*d*	[*d*]
Temperature (°C)	19/19	18	14	16	30.5	0[1]
Turbidity (JTU)	19/19	410	0	76	1	18[2]
pH (SU)	19/19	8.9	6.2	7.1	(6.0, 9.0)	0[1]
Metals, unfiltered (mg/L)						
Aluminum, total	8/19	5.0	<0.050	~0.49	0.2	4[3]
Barium, total	19/19	1.1	0.019	0.29	2	0[1]
Boron, total	7/19	1.3	<0.080	~0.19	*d*	[*d*]
Cadmium, total	1/19	0.0083	<0.0050	~0.0052	0.005	1[1]
Calcium, total	19/19	180	3.4	98	*d*	[*d*]
Chromium, total	4/19	0.0096	<0.0040	~0.0043	0.1	0[1]
Cobalt, total	1/19	0.0066	<0.0040	~0.0041	*d*	[*d*]
Copper, total	2/19	0.0083	<0.0070	~0.0071	1.3	0[2]
Iron, total	18/19	3.3	<0.050	~0.65	0.3	11[3]
Magnesium, total	19/19	34	1.4	16	*d*	[*d*]
Manganese, total	19/19	1.1	0.0030	0.21	0.05	11[3]
Nickel, total	3/19	0.022	<0.010	~0.011	0.1	0[1]
Potassium, total	7/19	8.6	<2.0	~2.6	*d*	[*d*]
Silicon, total	19/19	13	1.8	8.6	*d*	[*d*]
Sodium, total	19/19	150	5.2	24	*d*	[*d*]
Vanadium, total	8/19	0.0057	<0.0020	~0.0024	*d*	[*d*]
Zinc, total	8/19	0.014	<0.0050	~0.0060	5	0[3]
Others, unfiltered						
Alkalinity (mg/L)	19/19	550	160	320	*d*	[*d*]
Phenolics, total recoverable (mg/L)	2/19	0.021	<0.0010	~0.0024	*d*	[*d*]

Table 4.62 (continued)

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of exceeding reference [ref][c]
Total organic carbon (mg/L)	16/19	4.6	<0.50	~1.2	*d*	[*d*]
Total organic halides (µg/L)	7/19	2,600	<10	~160	*d*	[*d*]
Total suspended solids (mg/L)	4/19	140	<5.0	~13	*d*	[*d*]
Radionuclides, filtered (pCi/L)[e]						
Co-60	7/19	17*	−320	−28	200	0[4]
Cs-137	2/19	4.1*	−1.4	1.4*	120	0[4]
Gross alpha	8/19	14*	−0.84	2.3*	15	0[2]
Gross beta	16/19	1,800*	−0.81	130	50	4[2]
H-3	17/19	320,000,000*	27	22,000,000	20,000	10[2]
Total rad Sr	13/19	840*	−1.2	59	8	6[2]
Radionuclides, unfiltered (pCi/L)[e]						
Co-60	8/19	22	−1.6	4.8*	200	0[4]
Cs-137	5/19	7.0*	−5.1	1.6*	120	0[4]
Gross alpha	10/19	14*	−0.57	2.8*	15	0[2]
Gross beta	17/19	1,800*	1.6	140	50	3[2]
H-3	18/19	320,000,000*	0*	22,000,000	20,000	10[2]
Total rad Sr	11/19	590*	−0.51	44	8	5[2]
Volatile organics, unfiltered (µg/L)						
1,1-Dichloroethane	3/19	U5.0	J2.0	~4.6	*d*	[*d*]
1,1-Dichloroethene	1/19	U5.0	J4.0	~4.9	7	0[1]
1,2-Dichloroethane	1/19	U5.0	J3.0	~4.9	5	0[1]
1,2-Dichloroethene, total	4/19	Y2,800	U5.0	~160	70	2[2]
2-Butanone	13/19	U10	JB2.0	~4.5	*d*	[*d*]
Acetone	3/19	45	J1.0	~11	*d*	[*d*]
Benzene	1/19	23	U5.0	~5.9	5	1[1]
Carbon disulfide	5/19	33	J2.0	~6.7	*d*	[*d*]
Chloroethane	1/19	U10	J5.0	~9.7	200	0[2]
Tetrachloroethene	1/19	U5.0	J2.0	~4.8	5	0[1]
Toluene	1/19	U5.0	J2.0	~4.8	1,000	0[1]
Trichloroethene	5/19	20	J2.0	~6.2	5	3[1]
Vinyl chloride	5/19	Y4,600	J1.0	~250	2	18[1]
Xylene, m&p	1/19	U5.0	J1.0	~4.8	*d*	[*d*]
Xylene, o	1/19	U5.0	J1.0	~4.8	*d*	[*d*]
Xylene, total	2/19	U5.0	J1.0	~4.6	10,000	0[1]
cis-1,2-Dichloroethene	4/19	Y2,800	U5.0	~160	*d*	[*d*]
trans-1,2-Dichloroethene	1/19	23	U5.0	~5.9	*d*	[*d*]

Table 4.62 (continued)

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of exceeding reference [ref][c]
			Upgradient Wells			
Anions, unfiltered (mg/L)						
Chloride	2/2	2.6	2.4	2.5	250	0[3]
Fluoride	1/2	0.13	<0.10	~0.12	4	0[2]
Nitrate	1/2	0.60	<0.10	~0.35	10	0[2]
Phosphate	1/2	0.96	<0.50	~0.73	*d*	[*d*]
Sulfate, as SO_4	2/2	22	9.7	16	250	0[3]
Base neutral/acid extractable organics, unfiltered (µg/L)						
Bis(2-ethylhexyl) phthalate	1/2	U10	J1.0	~5.5	*d*	[*d*]
Field measurements, unfiltered						
Conductivity (mS/cm)	2/2	0.46	0.44	0.45	*d*	[*d*]
Dissolved oxygen (mg/L)	2/2	13	12	12	*d*	[*d*]
Redox (mV)	2/2	410	320	360	*d*	[*d*]
Temperature (°C)	2/2	17	14	15	30.5	0[1]
Turbidity (JTU)	2/2	79	42	61	1	2[2]
pH (SU)	2/2	7.2	6.4	6.8	(6.0, 9.0)	0[1]
Metals, unfiltered (mg/L)						
Aluminum, total	1/2	0.16	<0.050	~0.11	0.2	0[3]
Barium, total	2/2	0.17	0.14	0.16	2	0[1]
Calcium, total	2/2	91	84	88	*d*	[*d*]
Iron, total	1/2	0.22	<0.050	~0.14	0.3	0[3]
Magnesium, total	2/2	12	3.6	7.8	*d*	[*d*]
Manganese, total	2/2	0.061	0.0077	0.034	0.05	1[3]
Silicon, total	2/2	12	7.4	9.7	*d*	[*d*]
Sodium, total	2/2	7.6	6.9	7.3	*d*	[*d*]
Others, unfiltere[d]						
Alkalinity (mg/L)	2/2	240	240	240	*d*	[*d*]
Total organic carbon (mg/L)	2/2	0.71	0.51	0.61	*d*	[*d*]
Radionuclides, filtered (pCi/L)[e]						
Gross beta	1/2	3.0*	−1.2	0.88	50	0[2]
H-3	2/2	1,100*	890*	990*	20,000	0[2]
Radionuclides, unfiltered (pCi/L)[e]						
Gross alpha	1/2	2.4*	−0.30	1.1	15	0[2]
Gross beta	1/2	4.9*	1.9	3.4	50	0[2]

Table 4.62 (continued)

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of exceeding reference [ref][c]
H-3	2/2	1,200*	1,000*	1,100*	20,000	0[2]
Total rad Sr	1/2	5.7*	0.54	3.1	8	0[2]
Volatile organics, unfiltered (µg/L)						
2-Butanone	2/2	JB2.0	JB2.0	~2.0	*d*	[*d*]

[a]Prefix "<" indicates the value for a parameter (excluding organics) was not quantifiable at the analytical detection limit; "J" indicates the value was estimated at or below the analytical detection limit by the laboratory; "JB" indicates the value was estimated at or below the analytical detection limit and was found in the laboratory blank; "Y" indicates the value exceeded the calibration range and the sample was diluted and was reanalyzed; "U" indicates the value for an organic parameter was undetected at the analytical detection limit.

[b]A tilde (~) indicates that estimated and/or undetected values were used in the calculation.

[c]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]Not applicable.

[e]Individual and average radionuclide concentrations significantly greater than zero are identified by an *.

Table 4.63. Constituents in Waste Area Grouping (WAG) 6 groundwater at ORNL, 1995[a]

Parameter	N det/ N total	Max[b]	Min[b]	Av[c]	Reference value	Number of values exceeding reference [ref][d]
		Downgradient Wells				
Field measurements, unfiltered						
Conductivity (mS/cm)	62/62	1.1	0.010	0.47	*e*	[*e*]
Temperature (°C)	62/62	19	9.2	15	*e*	[*e*]
pH (SU)	62/62	7.5	5.0	6.5	(6.0, 9.0)	12[1]
Metals, unfiltered (µg/L)						
Lead, total	1/2	39	<4.0	~22	5	1[1]
Radionuclides, filtered (pCi/L)[f]						
Co-60	2/8	460*	−3.0	59	200	1[4]
Gross alpha	1/8	2.4	−0.11	0.53	15	0[2]
H-3	1/1	14,000*	14,000*	14,000	20,000	0[2]
Total rad Sr	3/8	2.7*	−1.4	0.49	8	0[2]
Radionuclides, unfiltered (pCi/L)[f]						
Ba-214	3/4	32*	11	21*	*e*	[*e*]
Co-60	15/52	460*	−4.9	33*	200	2[4]
Cs-137	9/52	96	−3.2	11*	120	0[4]
Gamma activity	7/9	80*	0	41*	*e*	[*e*]
Gross alpha	15/51	21*	−1.0	2.7*	15	2[2]
H-3	50/53	3,500,000*	81	300,000*	20,000	32[2]
Pb-212	1/4	10*	0	5.8*	120	0[4]
Pb-214	3/4	34*	8.0	18*	*e*	[*e*]
Sr-90	1/4	0.94*	−0.15	0.20	8	0[2]
Total rad Sr	14/50	54*	−2.7	2.2*	8	2[2]
Volatile organics, unfiltered (µg/L)						
1,1,1-Trichloroethane	1/51	10	J4.0	~5.9	200	0[1]
1,1-Dichloroethane	3/51	10	J2.0	~5.6	*e*	[*e*]
1,2-Dichloroethane	6/51	11	J1.0	~6.1	5	12[1]
1,2-Dichloroethene, total	6/51	10	J2.0	~5.8	70	0[2]
2-Butanone	25/51	10	J2.0	~6.7	*e*	[*e*]
Acetone	8/51	12	J1.0	~9.2	*e*	[*e*]
Benzene	1/51	10	J2.0	~5.8	5	9[1]
Carbon disulfide	4/51	10	J4.0	~5.9	*e*	[*e*]
Carbon tetrachloride	4/51	34	U5.0	~7.9	5	12[1]
Chloroform	7/51	40	J1.0	~8.0	100	0[2]
Tetrachloroethene	2/51	10	J1.0	~5.7	5	9[1]
Trichloroethene	8/51	200	U5.0	~20	5	13[1]
cis-1,2-Dichloroethene	8/51	10	J2.0	~5.8	*e*	[*e*]

Table 4.63 (continued)

Parameter	N det/ N total	Max[b]	Min[b]	Av[c]	Reference value	Number of values exceeding reference [ref][d]
			Upgradient Wells			
Field measurements, unfiltered						
Conductivity (mS/cm)	23/23	1.1	0	0.47	*e*	[*e*]
Temperature (°C)	23/23	19	11	15	*e*	[*e*]
pH (SU)	23/23	8.2	4.9	6.9	(6.0, 9.0)	2[1]
Radionuclides, filtered (pCi/L)[f]						
Co-60	1/7	4.1*	−1.4	1.2	200	0[4]
Gross alpha	2/7	2.1*	−1.7	0.31	15	0[2]
H-3	1/2	11,000*	1,100	5,900	20,000	0[2]
Total rad Sr	3/7	3.0*	−0.43	0.54	8	0[2]
Radionuclides, unfiltered (pCi/L)[f]						
Cs-137	3/15	94*	−1.6	17*	120	0[4]
Gamma activity	3/3	94*	69*	81*	*e*	[*e*]
Gross alpha	4/15	3.2*	−0.92	1.2*	15	0[2]
H-3	5/15	1,600	−54	660*	20,000	0[2]
Total rad Sr	4/15	38	−2.2	2.9	8	1[2]
Volatile organics, unfiltered (µg/L)						
2-Butanone	8/17	<10	J2.0	~6.8	*e*	[*e*]
Acetone	1/17	<10	J6.0	~9.8	*e*	[*e*]
Carbon disulfide	1/17	<10	J2.0	~5.7	*e*	[*e*]
Tetrachloroethene	1/17	<10	J3.0	~5.8	5	3[1]

[a]Data provided by WAG 6 Environmental Monitoring Project Team.

[b]Prefix "<" indicates the value for a parameter (excluding organics) was not quantifiable at the analytical detection limit; "J" indicates the value was estimated at or below the analytical detection limit by the laboratory; and "U" indicates the value for an organic parameter was undetected at the analytical detection limit.

[c]A tilde (~) indicates that estimated and/or undetected values were used in the calculation.

[d]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.

[e]Not applicable.

[f]Individual and average radionuclide concentrations significantly greater than zero are identified by an *.

Table 4.64. Constituents in Waste Area Grouping (WAG) 7 groundwater at ORNL, August 11–September 14, 1995

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of exceeding reference [ref][c]
		Downgradient Wells				
Anions, unfiltered (mg/L)						
Bromide	3/13	0.44	<0.10	~0.15	*d*	[*d*]
Chloride	13/13	86	1.1	14	250	0[3]
Fluoride	2/13	7.7	<0.10	~0.86	4	1[2]
Nitrate	7/13	1,300	<0.10	~110	10	3[2]
Phosphate	1/13	0.66	<0.50	~0.51	*d*	[*d*]
Sulfate, as SO_4	13/13	740	8.9	160	250	2[3]
Base neutral/acid extractable organics, unfiltered (μg/L)						
2-Methylnaphthalene	1/12	U11	J5.0	~11	*d*	[*d*]
4-Nitrophenol	1/12	U28	J7.0	~26	*d*	[*d*]
Bis(2-ethylhexyl) phthalate	2/12	U11	JB1.0	~9.4	*d*	[*d*]
Di-n-butylphthalate	2/12	U11	JB1.0	~9.4	*d*	[*d*]
Phenanthrene	1/12	U11	J2.0	~10	*d*	[*d*]
Field measurements, unfiltered						
Conductivity (mS/cm)	13/13	2.6	0.45	1.0	*d*	[*d*]
Dissolved oxygen (mg/L)	13/13	13	9.4	11	*d*	[*d*]
Redox (mV)	13/13	510	170	360	*d*	[*d*]
Temperature (°C)	13/13	21	15	18	30.5	0[1]
Turbidity (JTU)	13/13	690	3.0	210	1	13[2]
pH (SU)	13/13	8.6	7.0	7.5	(6.0, 9.0)	0[1]
Metals, unfiltered (mg/L)						
Aluminum, total	7/13	13	<0.050	~2.0	0.2	5[3]
Barium, total	13/13	0.29	0.0094	0.11	2	0[1]
Boron, total	4/13	0.42	<0.080	~0.16	*d*	[*d*]
Cadmium, total	1/13	<0.0050	<0.0050	~0.0050	0.005	0[1]
Calcium, total	13/13	210	0.0010	66	*d*	[*d*]
Chromium, total	3/13	0.051	<0.0040	~0.0099	0.1	0[1]
Cobalt, total	3/13	0.033	<0.0040	~0.0087	*d*	[*d*]
Copper, total	1/13	0.032	<0.0070	~0.0089	1.3	0[2]
Iron, total	11/13	20	<0.050	~2.8	0.3	7[3]
Magnesium, total	13/13	33	0.71	15	*d*	[*d*]
Manganese, total	13/13	1.2	0.0027	0.21	0.05	7[3]
Mercury, total	1/13	0.000055	<0.000050	~0.000050	0.002	0[1]
Nickel, total	6/13	0.33	<0.010	~0.045	0.1	1[1]
Potassium, total	8/13	8.7	<2.0	~3.3	*d*	[*d*]
Silicon, total	13/13	27	3.6	10	*d*	[*d*]
Sodium, total	13/13	570	4.2	120	*d*	[*d*]
Vanadium, total	4/13	0.019	<0.0020	~0.0035	*d*	[*d*]
Zinc, total	9/13	0.065	<0.0050	~0.013	5	0[3]

Table 4.64 (continued)

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of exceeding reference [ref][c]
Others, unfiltered						
Alkalinity (mg/L)	13/13	620	40	300	*d*	[*d*]
Phenolics, total recoverable (mg/L)	1/13	0.0030	<0.0010	~0.0012	*d*	[*d*]
Total organic carbon (mg/L)	7/13	2.1	<0.50	~0.82	*d*	[*d*]
Total organic halides (µg/L)	3/13	120	<5.0	~15	*d*	[*d*]
Total suspended solids (mg/L)	7/13	710	<5.0	~76	*d*	[*d*]
Radionuclides, filtered (pCi/L)[e]						
Co-60	4/13	380*	−4.6	34	200	1[4]
Gross alpha	2/13	180*	−6.2	13	15	1[2]
Gross beta	13/13	5,900*	3.5*	510	50	4[2]
H-3	8/13	380,000*	27	56,000*	20,000	4[2]
Tc-99	3/4	11,000*	−5.9	2,900	4,000	1[4]
Total rad Sr	2/13	2.3*	−1.4	0.54	8	0[2]
Total-U	1/1	160*	160*	160	*d*	[*d*]
U-234	1/1	140*	140*	140	20	1[4]
U-235	1/1	1.2*	1.2*	1.2	24	0[4]
U-238	1/1	15*	15*	15	24	0[4]
Radionuclides, unfiltered (pCi/L)[e]						
Co-60	4/13	380*	−1.9	34	200	1[4]
Gross alpha	6/13	210*	−1.0	18	15	1[2]
Gross beta	13/13	6,200*	4.1*	530	50	4[2]
H-3	11/13	380,000*	−27	55,000*	20,000	4[2]
Total rad Sr	6/13	4.6*	−0.97	1.3*	8	0[2]
Total U	1/1	150*	150*	150	d	[*d*]
U-234	1/1	140*	140*	140	20	1[4]
U-235	1/1	2.7*	2.7*	2.7	24	0[4]
U-238	1/1	16*	16*	16	24	0[4]
Volatile organics, unfiltered (µg/L)						
2-Butanone	9/13	U10	JB2.0	~4.8	*d*	[*d*]
Acetone	1/13	U10	J2.0	~9.4	*d*	[*d*]
Carbon disulfide	1/13	U5.0	J1.0	~4.7	*d*	[*d*]
		Upgradient Wells				
Anions, unfiltered (mg/L)						
Chloride	2/2	3.6	0.59	2.1	250	0[3]
Phosphate	1/2	0.67	<0.50	~0.59	*d*	[*d*]
Sulfate, as SO_4	2/2	85	6.2	46	250	0[3]
Field measurements, unfiltered						
Conductivity (mS/cm)	2/2	0.55	0.30	0.290	*d*	[*d*]
Dissolved oxygen (mg/L)	2/2	12	12	12	*d*	[*d*]
Redox (mV)	2/2	510	450	480	*d*	[*d*]

Table 4.64 (continued)

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of exceeding reference [ref][c]
Temperature (°C)	2/2	16	16	16	30.5	0[1]
Turbidity (JTU)	2/2	470	56	260	1	2[2]
pH (SU)	2/2	6.6	5.1	5.9	(6.0, 9.0)	1[1]
Metals, unfiltered (mg/L)						
Aluminum, total	1/2	3.3	<0.050	~1.7	0.2	1[3]
Barium, total	2/2	0.067	0.036	0.052	2	0[1]
Boron, total	1/2	0.091	<0.080	~0.086	*d*	[*d*]
Calcium, total	2/2	38	1.6	20	*d*	[*d*]
Chromium, total	2/2	0.049	0.0090	0.029	0.1	0[1]
Iron, total	2/2	2.7	0.45	1.6	0.3	2[3]
Magnesium, total	2/2	8.3	2.7	5.5	*d*	[*d*]
Manganese, total	2/2	0.51	0.029	0.27	0.05	1[3]
Nickel, total	1/2	0.024	<0.010	~0.017	0.1	0[1]
Potassium, total	1/2	4.2	<2.0	~3.1	*d*	[*d*]
Silicon, total	2/2	16	10	13	*d*	[*d*]
Sodium, total	2/2	60	3.6	32	*d*	[*d*]
Vanadium, total	1/2	0.0027	<0.0020	~0.0024	*d*	[*d*]
Zinc, total	1/2	0.014	<0.0050	~0.0095	5	0[3]
Others, unfiltered						
Alkalinity (mg/L)	2/2	210	13	110	*d*	[*d*]
Total suspended solids (mg/L)	1/2	60	<5.0	~33	*d*	[*d*]
Radionuclides, filtered (pCi/L)[e]						
Cs-137	1/2	2.5*	−0.81	0.85	120	0[4]
Gross alpha	1/2	1.3*	0.32	0.81	15	0[2]
Gross beta	2/2	3.5*	3.2*	3.4*	50	0[2]
H-3	1/2	840*	460	650	20,000	0[2]
Total rad Sr	1/2	2.6*	0.70	1.7	8	0[2]
Radionuclides, unfiltered (pCi/L)[e]						
Cs-137	2/2	7.0*	6.8*	6.9*	120	0[4]
Gross beta	1/2	2.7*	0.81	1.8	50	0[2]

Table 4.64 (continued)

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of exceeding reference [ref][c]
H-3	1/2	1,400*	270	820	20,000	0[2]
Total rad Sr	2/2	2.3*	1.8*	2.1*	8	0[2]
Volatile organics, unfiltered (µg/L)						
Carbon disulfide	1/2	U5.0	J3.0	~4.0	*d*	[*d*]

[a]Prefix "<" indicates the value for a parameter (excluding organics) was not quantifiable at the analytical detection limit; "J" indicates the value was estimated at or below the analytical detection limit by the laboratory; "JB" indicates the value was estimated at or below the analytical detection limit and was found in the laboratory blank; and "U" indicates the value for an organic parameter was undetected at the analytical detection limit.

[b]A tilde (~) indicates that estimated and/or undetected values were used in the calculation.

[c]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]Not applicable.

[e]Individual and average radionuclide concentrations significantly greater than zero are identified by an *.

Table 4.65. Constituents in Waste Area Groupings (WAGs) 8 & 9 groundwater at ORNL, November 6–December 18, 1995

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of values exceeding reference [ref][c]
			Downgradient Wells			
Anions, unfiltered (mg/L)						
Chloride	9/9	23	3.9	7.5	250	0[3]
Fluoride	4/9	1.8	<0.10	~0.36	4	0[2]
Nitrate	3/9	9.8	<0.10	~1.4	10	0[2]
Phosphate	2/9	0.72	<0.50	~0.53	*d*	[*d*]
Sulfate, as SO_4	9/9	250	9.5	63	250	0[3]
Field measurements, unfiltered						
Conductivity (mS/cm)	9/9	0.90	0.27	0.51	*d*	[*d*]
Dissolved oxygen (mg/L)	9/9	11	4.9	9.0	*d*	[*d*]
Redox (mV)	9/9	320	100	250	*d*	[*d*]
Temperature (°C)	9/9	17	15	16	30.5	0[1]
Turbidity (JTU)	9/9	97	0	29	1	8[2]
pH (SU)	9/9	9.6	6.4	7.3	(6.0, 9.0)	1[1]
Metals, unfiltered (mg/L)						
Aluminum, total	5/9	0.55	<0.050	~0.20	0.2	3[3]
Barium, total	9/9	0.20	0.026	0.10	2	0[1]
Boron, total	3/9	0.73	<0.080	~0.17	*d*	[*d*]
Calcium, total	9/9	110	1.4	49	*d*	[*d*]
Cobalt, total	1/9	0.016	<0.0040	~0.0053	*d*	[*d*]
Iron, total	9/9	24	0.058	3.5	0.3	5[3]
Magnesium, total	9/9	24	0.11	13	*d*	[*d*]
Manganese, total	9/9	3.1	0.0052	0.67	0.05	6[3]
Mercury, total	7/8	0.000096	<0.000050	~0.000072	0.002	0[1]
Potassium, total	7/9	4.5	<2.0	~2.8	*d*	[*d*]
Silicon, total	9/9	15	3.6	7.5	*d*	[*d*]
Sodium, total	9/9	200	5.0	44	*d*	[*d*]
Zinc, total	3/9	0.0054	<0.0050	~0.0051	5	0[3]
Others, unfiltered						
Alkalinity (mg/L)	9/9	390	85	210	*d*	[*d*]
Phenolics, total recoverable (mg/L)	1/9	0.0050	<0.0010	~0.0014	*d*	[*d*]
Total organic carbon (mg/L)	4/9	1.7	<0.50	~0.65	*d*	[*d*]
Total organic halides (µg/L)	3/9	17	<5.0	~7.0	*d*	[*d*]
Total suspended solids (mg/L)	4/9	35	<5.0	~12	*d*	[*d*]

Table 4.65 (continued)

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of values exceeding reference [ref][c]
Radionuclides, filtered (pCi/L)[e]						
Co-60	2/9	4.9*	−3.0	0.96	200	0[4]
Gross alpha	2/9	4.6*	−2.2	0.43	15	0[2]
Gross beta	8/9	3,800*	−1.4	680	50	3[2]
H-3	4/9	59,000*	160	7,100	20,000	1[2]
Total rad Sr	6/9	1,100*	0.27	230	8	3[2]
Radionuclides, unfiltered (pCi/L)[e]						
Co-60	1/9	3.8*	−3.0	0.62	200	0[4]
Cs-137	1/9	3.0*	−1.9	0.38	120	0[4]
Gross alpha	3/9	3.5*	−1.1	0.63	15	0[2]
Gross beta	7/9	3,800*	1.1	720	50	3[2]
H-3	4/9	59,000*	−190	7,000	20,000	1[2]
Total rad Sr	3/9	1,300*	−0.62	270	8	3[2]
Volatile organics, unfiltered (µg/L)						
1,2-Dichloroethene, total	1/9	11	U5.0	~5.7	70	0[2]
2-Butanone	9/9	JB5.0	JB1.0	~2.1	*d*	[*d*]
Trichloroethene	1/9	U5.0	J4.0	~4.9	5	0[1]
Vinyl chloride	1/9	U10	J2.0	~9.1	2	8[1]
cis-1,2-Dichloroethene	1/9	11	U5.0	~5.7	*d*	[*d*]
		Upgradient Wells				
Anions, unfiltered (mg/L)						
Chloride	2/2	5.2	3.3	4.3	250	0[3]
Nitrate	1/2	0.39	<0.10	~0.25	10	0[2]
Sulfate, as SO_4	2/2	130	25	78	250	0[3]
Field measurements, unfiltered						
Conductivity (mS/cm)	2/2	0.60	0.36	0.48	*d*	[*d*]
Dissolved oxygen (mg/L)	2/2	9.0	8.3	8.7	*d*	[*d*]
Redox (mV)	2/2	410	250	330	*d*	[*d*]
Temperature (°C)	2/2	15	14	14	30.5	0[1]
Turbidity (JTU)	2/2	110	35	72	1	2[2]
pH (SU)	2/2	7.4	6.6	7.0	(6.0, 9.0)	0[1]
Metals, unfiltered (mg/L)						
Aluminum, total	1/2	1.9	<0.050	~0.98	0.2	1[3]
Barium, total	2/2	0.10	0.028	0.064	2	0[1]
Boron, total	1/2	0.32	<0.080	~0.20	*d*	[*d*]
Calcium, total	2/2	72	15	44	*d*	[*d*]
Iron, total	2/2	3.7	0.93	2.3	0.3	2[3]
Magnesium, total	2/2	21	4.6	13	*d*	[*d*]

Table 4.65 (continued)

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of values exceeding reference [ref][c]
Manganese, total	2/2	2.5	0.090	1.3	0.05	2[3]
Mercury, total	2/2	0.000064	0.000052	0.000058	0.002	0[1]
Potassium, total	2/2	3.5	2.6	3.1	*d*	[*d*]
Silicon, total	2/2	15	9.7	12	*d*	[*d*]
Sodium, total	2/2	62	10	36	*d*	[*d*]
Zinc, total	1/2	0.0062	<0.0050	~0.0056	5	0[3]
Others, unfiltered						
Alkalinity (mg/L)	2/2	180	150	160	*d*	[*d*]
Total organic carbon (mg/L)	1/2	0.50	<0.50	~0.50	*d*	[*d*]
Total suspended solids (mg/L)	2/2	25	11	18	*d*	[*d*]
Radionuclides, filtered (pCi/L)[e]						
Gross alpha	1/2	3.2*	0.81	2.0	15	0[2]
Gross beta	2/2	5.9*	4.3*	5.1*	50	0[2]
Radionuclides, unfiltered (pCi/L)[e]						
Gross alpha	1/2	4.1*	0.68	2.4	15	0[2]
Gross beta	2/2	5.9*	4.6*	5.3*	50	0[2]
Volatile organics, unfiltered (µg/L)						
2-Butanone	2/2	JB3.0	JB3.0	~3.0	*d*	[*d*]

[a]Prefix "<" indicates the value for a parameter (excluding organics) was not quantifiable at the analytical detection limit; "J" indicates the value was estimated at or below the analytical detection limit by the laboratory; "JB" indicates the value was estimated at or below the analytical detection limit and was found in the laboratory blank; and "U" indicates the value for an organic parameter was undetected at the analytical detection limit.

[b]A tilde (~) indicates that estimated and/or undetected values were used in the calculation.

[c]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]Not applicable.

[e]Individual and average radionuclide concentrations significantly greater than zero are identified by an *.

Table 4.66. Constituents in Waste Area Grouping (WAG) 11 groundwater at ORNL, September 27–October 25, 1995

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of values exceeding reference [ref][c]
		Downgradient Wells				
Anions, unfiltered (mg/L)						
Chloride	5/5	1.9	0.50	1.2	250	0[3]
Fluoride	3/5	0.35	<0.10	–0.18	4	0[2]
Nitrate	4/5	1.8	<0.10	–1.1	10	0[2]
Sulfate, as SO_4	5/5	11	1.6	5.1	250	0[3]
Field measurements, unfiltered						
Conductivity (mS/cm)	5/5	0.33	0.14	0.28	*d*	[*d*]
Dissolved oxygen (mg/L)	5/5	11	9.6	10	*d*	[*d*]
Redox (mV)	5/5	310	230	270	*d*	[*d*]
Temperature (°C)	5/5	16	13	14	30.5	0[1]
Turbidity (JTU)	5/5	130	1.0	36	1	4[2]
pH (SU)	5/5	7.7	6.2	7.2	(6.0, 9.0)	0[1]
Metals, unfiltered (mg/L)						
Aluminum, total	3/5	0.34	<0.050	–0.15	0.2	2[3]
Barium, total	5/5	0.14	0.015	0.062	2	0[1]
Calcium, total	5/5	66	15	39	*d*	[*d*]
Iron, total	4/5	0.54	<0.050	–0.23	0.3	2[3]
Magnesium, total	5/5	17	1.6	11	*d*	[*d*]
Manganese, total	4/5	0.022	<0.0010	–0.0075	0.05	0[3]
Mercury, total	3/5	0.000071	<0.000050	–0.000060	0.002	0[1]
Potassium, total	2/5	3.3	<2.0	–2.4	*d*	[*d*]
Silicon, total	5/5	11	2.7	5.8	*d*	[*d*]
Sodium, total	5/5	9.8	0.99	3.0	*d*	[*d*]
Zinc, total	3/5	0.0071	<0.0050	–0.0055	5	0[3]
Others, unfiltered						
Alkalinity (mg/L)	5/5	190	39	130	*d*	[*d*]
Total organic halides (µg/L)	3/5	23	<5.0	–11	*d*	[*d*]
Radionuclides, filtered (pCi/L)[e]						
Co-60	1/5	4.6*	–1.1	1.3	200	0[4]
Gross alpha	4/5	10*	1.7	4.9*	15	0[2]
Gross beta	4/5	21*	1.4	9.2*	50	0[2]
H-3	1/5	570*	–140	310*	20,000	0[2]
Total rad Sr	2/5	3.0*	0.27	1.6*	8	0[2]
Radionuclides, unfiltered (pCi/L)[e]						
Co-60	1/5	4.9*	–5.7	–0.11	200	0[4]
Gross alpha	5/5	9.2*	2.2*	6.1*	15	0[2]
Gross beta	5/5	19*	3.5*	12*	50	0[2]
H-3	1/5	680*	–190	170	20,000	0[2]
Total rad Sr	1/5	3.2*	–0.27	1.6*	8	0[2]

Table 4.66 (continued)

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of values exceeding reference [ref][c]
Volatile organics, unfiltered (µg/L)						
2-Butanone	1/5	U10	JB3.0	~8.6	*d*	[*d*]
Trichloroethene	2/5	31	U5.0	~12	5	2[1]
		Upgradient Wells				
Anions, unfiltered (mg/L)						
Bromide	1/5	0.19	<0.10	~0.12	*d*	[*d*]
Chloride	5/5	1.5	0.84	1.1	250	0[3]
Fluoride	2/5	0.40	<0.10	~0.17	4	0[2]
Nitrate	3/5	4.3	<0.10	~1.4	10	0[2]
Sulfate, as SO_4	5/5	4.2	2.7	3.5	250	0[3]
Base neutral/acid extractable organics, unfiltered (µg/L)						
Di-n-butylphthalate	1/4	U11	J1.0	~8.5	*d*	[*d*]
Diethyl phthalate	2/4	U11	JB1.0	~6.3	*d*	[*d*]
Field measurements, unfiltered						
Conductivity (mS/cm)	5/5	0.52	0.24	0.36	*d*	[*d*]
Dissolved oxygen (mg/L)	5/5	12	9.8	11	*d*	[*d*]
Redox (mV)	5/5	380	250	320	*d*	[*d*]
Temperature (°C)	5/5	15	15	15	30.5	0[1]
Turbidity (JTU)	5/5	63	0	20	1	4[2]
pH (SU)	5/5	8.3	5.8	7.2	(6.0, 9.0)	1[1]
Metals, unfiltered (mg/L)						
Aluminum, total	1/5	3.0	<0.050	~0.64	0.2	1[3]
Barium, total	5/5	0.19	0.047	0.099	2	0[1]
Calcium, total	5/5	91	24	65	*d*	[*d*]
Chromium, total	2/5	0.0083	<0.0040	~0.0049	0.1	0[1]
Iron, total	4/5	3.2	<0.050	~1.0	0.3	3[3]
Magnesium, total	5/5	16	2.6	8.9	*d*	[*d*]
Manganese, total	4/5	1.3	<0.0010	~0.37	0.05	2[3]
Mercury, total	4/5	0.000087	<0.000050	~0.000067	0.002	0[1]
Nickel, total	1/5	0.013	<0.010	~0.011	0.1	0[1]
Potassium, total	4/5	3.6	<2.0	~2.6	*d*	[*d*]
Silicon, total	5/5	6.9	1.2	5.2	*d*	[*d*]
Sodium, total	5/5	5.5	1.4	3.6	*d*	[*d*]
Zinc, total	3/5	0.022	<0.0050	~0.0088	5	0[3]
Others, unfiltered						
Alkalinity (mg/L)	5/5	300	140	200	*d*	[*d*]
Total organic carbon (mg/L)	2/5	1.0	<0.50	~0.61	*d*	[*d*]
Total suspended solids (mg/L)	1/5	120	<5.0	~28	*d*	[*d*]

Table 4.66 (continued)

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of values exceeding reference [ref][c]
Radionuclides, filtered (pCi/L)[e]						
Gross beta	2/5	14*	0.81	4.9	50	0[2]
H-3	2/5	620*	240	460*	20,000	0[2]
Radionuclides, unfiltered (pCi/L)[e]						
Gross beta	2/5	4.9*	−0.27	2.4*	50	0[2]
H-3	2/5	1,000*	54	490*	20,000	0[2]
Total rad Sr	2/5	4.1*	−0.35	1.4	8	0[2]

[a]Prefix "<" indicates the value for a parameter (excluding organics) was not quantifiable at the analytical detection limit; "J" indicates the value was estimated at or below the analytical detection limit by the laboratory; "JB" indicates the value was estimated at or below the analytical detection limit and was found in the laboratory blank; and "U" indicates the value for an organic parameter was undetected at the analytical detection limit.

[b]A tilde (~) indicates that estimated and/or undetected values were used in the calculation.

[c]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]Not applicable.

[e]Individual and average radionuclide concentrations significantly greater than zero are identified by an *.

Table 4.67. Constituents in Waste Area Grouping (WAG) 17 groundwater at ORNL, April 19–28, 1995

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of values exceeding reference [ref][c]
			Downgradient Wells			
Anions, unfiltered (mg/L)						
Bromide	3/4	0.16	<0.10	~0.13	*d*	[*d*]
Chloride	4/4	26	3.3	17	250	0[3]
Fluoride	1/4	0.21	<0.10	~0.13	4	0[2]
Nitrate	2/4	5.3	<0.10	~1.5	10	0[2]
Sulfate, as SO_4	4/4	50	25	38	250	0[3]
Base neutral/acid extractable organics, unfiltered (µg/L)						
Benzyl alcohol	4/4	UJ10	UJ10	~10	*d*	[*d*]
Carbazole	4/4	UJ10	UJ10	~10	*d*	[*d*]
Field measurements, unfiltered						
Conductivity (mS/cm)	4/4	0.84	0.46	0.68	*d*	[*d*]
Dissolved oxygen (mg/L)	4/4	12	9.3	11	*d*	[*d*]
Redox (mV)	4/4	270	180	230	*d*	[*d*]
Temperature (°C)	4/4	18	14	16	30.5	0[1]
Turbidity (JTU)	4/4	7.0	0	2.3	1	1[2]
pH (SU)	4/4	7.4	6.9	7.1	(6.0, 9.0)	0[1]
Metals, unfiltered (mg/L)						
Aluminum, total	1/4	0.087	<0.050	~0.059	0.2	0[3]
Barium, total	4/4	0.18	0.029	0.092	2	0[1]
Boron, total	1/4	0.082	<0.080	~0.081	*d*	[*d*]
Calcium, total	4/4	130	76	110	*d*	[*d*]
Chromium, total	1/4	0.16	<0.0040	~0.043	0.1	1[1]
Copper, total	2/4	0.0085	<0.0070	~0.0075	1.3	0[2]
Iron, total	2/4	1.0	<0.050	~0.40	0.3	2[3]
Magnesium, total	4/4	37	7.0	24	*d*	[*d*]
Manganese, total	4/4	0.15	0.0043	0.056	0.05	2[3]
Nickel, total	1/4	0.068	<0.010	~0.025	0.1	0[1]
Potassium, total	2/4	2.2	<2.0	~2.1	*d*	[*d*]
Silicon, total	4/4	6.2	2.3	4.4	*d*	[*d*]
Sodium, total	4/4	11	6.6	9.0	*d*	[*d*]
Others, unfiltered						
Alkalinity (mg/L)	4/4	400	190	310	*d*	[*d*]
Phenolics, total recoverable (mg/L)	1/4	0.0080	<0.0010	~0.0028	*d*	[*d*]
Total organic carbon (mg/L)	4/4	1.3	0.85	1.1	*d*	[*d*]
Total organic halides (µg/L)	3/4	10,000	<10	~2,500	*d*	[*d*]

Table 4.67 (continued)

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of values exceeding reference [ref][c]
Radionuclides, filtered (pCi/L)[e]						
Co-60	2/4	4.3*	1.1	2.6*	200	0[4]
Cs-137	3/4	6.2*	3.5	4.5*	120	0[4]
Gross alpha	2/4	~*	0.16	1.4*	15	0[2]
Gross beta	3/4	6.2*	−1.2	3.6	50	0[2]
H-3	4/4	5,900*	3,200*	4,700*	20,000	0[2]
Total rad Sr	2/4	1.9*	0.73	1.3*	8	0[2]
Radionuclides, unfiltered (pCi/L)[e]						
Co-60	3/4	10*	1.1	5.7*	200	0[4]
Cs-137	3/4	6.2*	1.1	4.0*	120	0[4]
Gross alpha	1/4	13	0.51	3.9	15	0[2]
Gross beta	2/4	6.8*	−1.1	3.0	50	0[2]
H-3	4/4	7,000*	3,000*	4,800*	20,000	0[2]
Total rad Sr	4/4	5.4*	1.4*	2.8*	8	0[2]
Volatile organics, unfiltered (µg/L)						
1,1,1-Trichloroethane	1/4	U5.0	J2.0	~4.3	200	0[1]
1,1-Dichloroethane	1/4	U5.0	J2.0	~4.3	*d*	[*d*]
1,1-Dichloroethene	1/4	19	U5.0	~8.5	7	1[1]
1,2-Dichloroethene, total	2/4	Y2,800	U5.0	~700	70	1[2]
2-Butanone	4/4	JB2.0	JB1.0	~1.8	*d*	[*d*]
Benzene	2/4	17	J3.0	~7.5	5	1[1]
Carbon disulfide	1/4	U5.0	J4.0	~4.8	*d*	[*d*]
Tetrachloroethene	1/4	20	U5.0	~8.8	5	1[1]
Trichloroethene	2/4	Y13,000	U5.0	~3,300	5	2[1]
Vinyl chloride	1/4	110	U10	~35	2	4[1]
cis-1,2-Dichloroethene	3/4	Y2,800	J1.0	~700	*d*	[*d*]
trans-1,2-Dichloroethene	1/4	23	U5.0	~9.5	*d*	[*d*]
		Upgradient Wells				
Anions, unfiltered (mg/L)						
Chloride	4/4	11	1.6	5.2	250	0[3]
Fluoride	2/4	0.50	<0.10	~0.26	4	0[2]
Nitrate	2/4	1.1	<0.10	~0.54	10	0[2]
Sulfate, as SO_4	4/4	57	11	34	250	0[3]
Base neutral/acid extractable organics, unfiltered (µg/L)						
Benzyl alcohol	3/4	UJ11	UJ10	~11	*d*	[*d*]
Carbazole	3/4	UJ11	UJ10	~11	*d*	[*d*]
Field measurements, unfiltered						
Conductivity (mS/cm)	4/4	0.84	0.56	0.70	*d*	[*d*]
Dissolved oxygen (mg/L)	4/4	11	10	11	*d*	[*d*]

Table 4.67 (continued)

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of values exceeding reference [ref][c]
Redox (mV)	4/4	250	210	230	*d*	[*d*]
Temperature (°C)	4/4	17	13	15	30.5	0[1]
Turbidity (JTU)	4/4	22	4.0	12	1	4[2]
pH (SU)	4/4	7.3	6.5	6.8	(6.0, 9.0)	0[1]
Metals, unfiltered (mg/L)						
Aluminum, total	2/4	0.52	<0.050	~0.17	0.2	1[3]
Barium, total	4/4	0.094	0.027	0.061	2	0[1]
Boron, total	2/4	0.17	<0.080	~0.10	*d*	[*d*]
Calcium, total	4/4	150	47	100	*d*	[*d*]
Iron, total	4/4	0.46	0.065	0.22	0.3	1[3]
Magnesium, total	4/4	39	5.5	23	*d*	[*d*]
Manganese, total	3/4	0.010	<0.0010	~0.0059	0.05	0[3]
Potassium, total	1/4	3.3	<2.0	~2.3	*d*	[*d*]
Silicon, total	4/4	7.6	3.9	6.0	*d*	[*d*]
Sodium, total	4/4	7.2	5.2	6.5	*d*	[*d*]
Others, unfiltered						
Alkalinity (mg/L)	4/4	390	270	340	*d*	[*d*]
Total organic carbon (mg/L)	3/4	1.2	<0.50	~0.87	*d*	[*d*]
Radionuclides, filtered (pCi/L)[e]						
Co-60	2/4	5.9*	−2.4	2.9	200	0[4]
Gross alpha	2/4	2.6*	−0.081	1.3	15	0[2]
Gross beta	3/4	4.6*	1.9	3.4*	50	0[2]
H-3	4/4	7,800*	3,000*	5,200*	20,000	0[2]
Total rad Sr	1/4	2.5*	−0.43	0.96	8	0[2]
Radionuclides, unfiltered (pCi/L)[e]						
Co-60	2/4	7.3*	−0.27	3.6	200	0[4]
Cs-137	3/4	4.6*	−1.1	2.6	120	0[4]
Gross alpha	2/4	~*	0.081	1.3	15	0[2]
Gross beta	3/4	5.9*	−0.81	3.4	50	0[2]
H-3	4/4	8,600*	2,400*	5,300*	20,000	0[2]
Total rad Sr	3/4	4.9*	0.16	2.7*	8	0[2]

Table 4.67 (continued)

Parameter	N det/ N total	Max[a]	Min[a]	Av[b]	Reference value	Number of values exceeding reference [ref][c]
Volatile organics, unfiltered (µg/L)						
2-Butanone	4/4	JB4.0	JB2.0	~3.0	*d*	[*d*]
Acetone	1/4	U10	JB1.0	~7.8	*d*	[*d*]
Carbon disulfide	4/4	26	J1.0	~13	*d*	[*d*]

[a]Prefix "<" indicates the value for a parameter (excluding organics) was not quantifiable at the analytical detection limit; "J" indicates the value was estimated at or below the analytical detection limit by the laboratory; "JB" indicates the value was estimated at or below the analytical detection limit and was found in the laboratory blank; "Y" indicates the value exceeded the calibration range and the sample was diluted and was reanalyzed; "U" indicates the value for an organic parameter was undetected at the analytical detection limit; and "UJ" indicates the compound was undetected; however, the reporting limit was estimated due to poor acid recoveries.

[b]A tilde (~) indicates that estimated and/or undetected values were used in the calculation.

[c]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]Not applicable

[e]Individual and average radionuclide concentrations significantly greater than zero are identified by an *.

Table 4.68. ORNL Plant Perimeter Monitoring summary statistics from 1995 sampling events

Parameter	N det/ N total	Concentration			Reference value	Number of values exceeding reference [ref][c]
		Max[a]	Min[a]	Av[b]		
Melton Valley Exit Pathway						
Field Measurements—Unfiltered						
Conductivity (mS/cm)	5/17	0.89	0	0.26	*d*	[*d*]
Dissolved oxygen (ppm)	5/5	9.6	6.5	8.8	*d*	[*d*]
Temperature (°C)	5/17	25	11	16	*d*	[*d*]
pH (SU)	5/17	8.8	4.9	6.6	(6.0, 9.0)	4[1]
Radionuclides (pCi/L)e—Filtered[e]						
Cs-137	2/8	24*	–2.4	3.8	120	0[4]
Gross alpha	1/8	5.4*	–0.81	0.85	15	0[2]
Gross beta	2/5	730*	1.4	180	50	2[2]
H-3	5/5	120,000*	2,000*	42,000	20,000	3[2]
Total rad Sr	2/11	320*	–0.51	35	8	2[2]
Radionuclides (pCi/L)—Unfiltered[e]						
Cs-137	1/20	94	–2.2	12*	120	0[4]
Gross alpha	2/20	14*	–0.97	1.4*	15	0[2]
Gross beta	3/5	780*	0.54	190	50	2[2]
H-3	5/17	120,000*	–190	13,000*	20,000	3[2]
Total rad Sr	2/26	270*	–4.9	13	8	2[2]
Volatile Organics (µg/L)—Unfiltered						
2-Butanone	5/17	<10	JB 2.0	–6.2	*d*	[*d*]
Carbon disulfide	1/17	<10	J 2.0	–5.3	*d*	[*d*]
East Bethel Valley Exit Pathway						
Field Measurements—Unfiltered						
Conductivity (mS/cm)	5/5	0.84	0.24	0.61	*d*	[*d*]
Dissolved oxygen (ppm)	5/5	11	6.8	10	*d*	[*d*]
Temperature (°C)	5/5	24	13	17	*d*	[*d*]
pH (SU)	5/5	8.3	6.5	7.1	(6.0, 9.0)	0[1]
Radionuclides (pCi/L)—Filtered[e]						
Co-60	2/5	5.9*	–2.4	2.4	200	0[4]
Gross alpha	3/5	2.6*	–0.081	1.5*	15	0[2]
Gross beta	4/5	5.9*	1.9	3.9*	50	0[2]
H-3	4/5	7,800*	–110	4,100*	20,000	0[2]
Total rad Sr	1/5	2.5*	–0.43	0.89	8	0[2]
Radionuclides (pCi/L)—Unfiltered[e]						
Co-60	2/5	7.3*	–0.27	3.3*	200	0[4]
Cs-137	3/5	4.6*	–1.1	2.4*	120	0[4]
Gross alpha	2/5	2.7	0.081	1.6*	15	0[2]
Gross beta	4/5	5.9*	–0.81	3.6*	50	0[2]
H-3	4/5	8,600*	300	4,300*	20,000	0[2]
Total rad Sr	3/5	4.9*	0.16	2.4*	8	0[2]

Table 4.68 (continued)

Parameter	N det/ N total	Concentration			Reference value	Number of values exceeding reference [ref][c]
		Max[a]	Min[a]	Av[b]		
Volatile Organics (µg/L)—Unfiltered						
2-Butanone	5/5	JB 9.0	JB 2.0	~4.2	*d*	[*d*]
Acetone	1/5	U 10	JB 1.0	~8.2	*d*	[*d*]
Carbon disulfide	5/5	26	J 1.0	~11	*d*	[*d*]
West Bethel Valley Exit Pathway						
Field Measurements—Unfiltered						
Conductivity (mS/cm)	2/2	0.80	0.59	0.69	*d*	[*d*]
Dissolved oxygen (ppm)	2/2	11	6.2	8.6	*d*	[*d*]
Temperature (°C)	2/2	20	14	17	*d*	[*d*]
pH (SU)	2/2	7.4	7.0	7.2	(6.0, 9.0)	0[1]
Radionuclides (pCi/L)—Filtered[e]						
Gross alpha	1/2	5.4*	0.027	2.7	15	0[2]
Gross beta	2/2	150*	7.0*	76	50	1[2]
H-3	2/2	760*	730*	740*	20,000	0[2]
Total rad Sr	1/2	68*	0.81	34	8	1[2]
Radionuclides (pCi/L)—Unfiltered[e]						
Gross alpha	1/2	1.9*	–0.11	0.88	15	0[2]
Gross beta	1/2	140*	1.9	71	50	1[2]
H-3	2/2	1,300*	680*	970	20,000	0[2]
Total rad Sr	2/2	65*	3.8*	34	8	1[2]
Volatile Organics (µg/L)—Unfiltered						
2-Butanone	2/2	JB 8.0	JB 2.0	~5.0	*d*	[*d*]
White Wing Scrapyard Exit Pathway						
Field Measurements—Unfiltered						
Conductivity (mS/cm)	4/4	0.42	0.28	0.34	*d*	[*d*]
Dissolved oxygen (ppm)	4/4	10	6.0	9.2	*d*	[*d*]
Temperature (°C)	4/4	19	13	15	*d*	[*d*]
pH (SU)	4/4	7.9	7.1	7.5	(6.0, 9.0)	0[1]
Radionuclides (pCi/L)—Filtered[e]						
Co-60	1/4	4.6*	–1.9	1.2	200	0[4]
Gross alpha	2/4	14*	0.70	6.6	15	0[2]
Gross beta	2/4	21*	0.81	8.8	50	0[2]
H-3	1/4	570*	300	420*	20,000	0[2]
Total rad Sr	1/4	2.2*	–0.76	1.0	8	0[2]
Radionuclides (pCi/L)—Unfiltered[e]						
Co-60	1/4	4.9*	–0.81	1.9	200	0[4]
Gross alpha	3/4	15*	0.35	7.9*	15	0[2]
Gross beta	3/4	19*	–0.27	9.7*	50	0[2]
H-3	1/4	650*	–190	190	20,000	0[2]
Total rad Sr	1/4	3.2*	–0.35	1.7	8	0[2]

Table 4.68 (continued)

Parameter	N det/ N total	Concentration			Reference value	Number of values exceeding reference [ref][c]
		Max[a]	Min[a]	Av[b]		
Volatile Organics (µg/L)—Unfiltered						
2-Butanone	2/4	U 10	JB 3.0	~8.0	*d*	[*d*]
Trichloroethene	1/4	13	U 5.0	~7.0	5	1[1]

[a]Prefix "<" indicates the value for a parameter (excluding organics) was not quantifiable at the analytical detection limit; "J" indicates the value was estimated at or below the analytical detection limit by the laboratory; "JB" indicates the value was estimated at or below the analytical detection limit and was found in the laboratory blank; and "U" indicates the value for an organic parameter was undetected at the analytical detection limit.

[b]A tilde (~) indicates that estimated and/or undetected values were used in the calculation.

[c]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]Not applicable.

[e]Individual and average radionuclide concentrations significantly greater than zero are identified by an *.

Table 4.69. Constituents detected in groundwater wells at the K-901 Area of the K-25 Site in 1995

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Anions (mg/L)						
Chloride	30/56	1	3.2747	18.3	250 S	0
Fluoride	13/56	0.1	0.4131	1	4 P	0
Nitrate/nitrite	38/57	0.13	0.7913	3.87	10 P	0
Sulfate	27/56	5	16.14	62.2	250 S	0
Field measurements						
Conductivity (µmho/cm)	*n*/60	1.67	212.17	581	–	–
Dissolved oxygen (ppm)	*n*/43	1.2	8.3791	17.1	5 F	10
Dissolved oxygen-initial (ppm)	*n*/18	1.9	6.6889	13.4	5 F	5
Redox (mV)	*n*/61	–223	116.65	327	–	–
Temperature (°C)	*n*/61	8.2	16.48	24.7	30.5 D	0
Turbidity (NTU)	*n*/42	0.02	9.9012	200	1 P	35
pH (standard units)	*n*/61	4.87	7.5516	11.01	6.5–8.5 S	25
Dissolved[f] metals (µg/L)						
Aluminum	23/58	23.5	54.27	351	200 S	1
Antimony	22/58	1	5.8773	14	6 P	10
Arsenic	7/58	1.4	4.6	11.6	50 P	0
Barium	58/58	J 5.1	54.107	339	2000 P	0
Beryllium	1/58	0.62	0.62	0.62	4 P	0
Cadmium	1/58	1.9	1.9	1.9	5 P	0
Calcium	57/58	2620	26,419	62,200	–	–
Chromium	7/58	3.2	9.3143	24.8	100 P	0
Cobalt	17/58	3.2	8.0471	17.5	–	–
Copper	13/58	3.9	7.1615	10.3	1300 P	0
Iron	24/58	25.8	265.93	922	300 S	7
Lead	5/58	2.5	5.18	8.3	15 P	0
Magnesium	57/58	276	13,457	29,400	–	–
Manganese	43/58	1.2	133.33	1030	50 S	20
Mercury	17/58	0.11	0.1794	0.34	2 P	0
Molybdenum	1/18	53.3	53.3	53.3	–	–
Nickel	7/58	10.1	37.8	115	100 P	1
Potassium	31/58	376	6713.6	74,300	–	–
Silicon	40/40	2840	4018.5	6100	–	–

Table 4.69 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Silver	1/57	5.1	5.1	5.1	100 S	0
Sodium	56/58	504	7741.5	86,500	–	–
Thallium	5/58	4.8	5.62	6.6	2 P	5
Vanadium	9/56	2.7	10.822	20.6	–	–
Zinc	27/58	12.4	39.059	150	5000 S	0
			Total[f] metals (µg/L)			
Aluminum	25/56	23.9	351.84	4090	200 S	5
Antimony	7/56	0.71	0.9729	1.8	6 P	0
Arsenic	12/56	1.7	4.1667	9.1	50 P	0
Barium	53/56	5.3	61.03	352	2000 P	0
Calcium	55/56	J 2870	28,731	66,000	–	–
Chromium	8/56	6.8	18.137	51.3	100 P	0
Cobalt	18/56	4.8	12.267	34.6	–	–
Copper	10/56	3.7	7.85	10.7	1300 P	0
Iron	41/56	10.4	654.76	8030	300 S	15
Lead	8/56	0.95	7.8938	23.2	15 P	2
Magnesium	56/56	263	14,003	30,300	–	–
Manganese	43/56	1.7	145.87	1010	50 S	20
Mercury	12/56	J 0.1	0.1633	0.3	2 P	0
Molybdenum	1/18	42.8	42.8	42.8	–	–
Nickel	13/56	6.8	36.762	161	100 P	1
Potassium	37/56	323	5600.6	62,700	–	–
Selenium	2/56	3	3.3	3.6	50 P	0
Silicon	38/38	3240	4273.4	7890	–	–
Silver	1/56	4.6	4.6	4.6	100 S	0
Sodium	56/56	418	7084.9	103,000	–	–
Thallium	1/56	5.4	5.4	5.4	2 P	1
Vanadium	7/56	4.3	7.5286	10.5	–	–
Zinc	38/55	J 6.6	40.413	203	5000 S	0
			Dissolved[f] radiochemistry (pCi/L)			
Alpha activity	10/39	J 1.4±1	3.1635±0.5175	J 19.2±4.2	15 P	1
Beta activity	31/39	J 2.4±1.4	7.5732±0.3626	6770±340	50 P	11
$^{239/240}Pu$	2/5	J 0.126±0.045	0.1265±0.0322	J 0.127±0.046	1.2 G	0
^{99}Tc	7/7	64.8±6.3	115.84±5.116	J 1950±160	4000 G	0

Table 4.69 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
^{208}Tl	1/4	4.5±3	4.5±3	4.5±3	–	–
Thorium	2/2	J 0.056±0.03	0.0592±0.0222	J 0.063±0.033	2 G	0
^{228}Th	1/5	0.119±0.06	0.119±0.06	0.119±0.06	16 G	0
^{230}Th	2/5	J 0.099±0.037	0.1378±0.0338	J 0.333±0.083	12 G	0
Uranium	2/2	0.99±0.15	1.6068±0.1286	3.32±0.25	24 G	0
$^{233/234}$U	5/5	1.15±0.16	1.4762±0.0846	24.1±1.3	20 G	1
^{235}U	5/9	0.085±0.042	0.144±0.0227	1.24±0.15	24 G	0
^{238}U	3/3	1.04±0.17	1.9032±0.1256	4.76±0.35	24 G	0
Total[f] radiochemistry (pCi/L)						
Alpha activity	14/58	1±0.95	3.076±0.4404	9.1±2.4	15 P	0
Beta activity	51/58	2.7±1.4	12.432±0.3466	7870±400	50 P	19
^{214}Bi	7/22	10.9±5.7	31.91±3.8444	53±9.2	24,000 G	0
^{214}Pb	1/22	49±18	49±18	49±18	–	–
^{237}Np	2/26	J 0.096±0.056	0.1091±0.0377	J 0.12±0.051	1.2 G	0
$^{239/240}$Pu	2/28	J 0.023±0.022	0.0268±0.0173	J 0.033±0.028	1.2 G	0
^{99}Tc	34/46	J 1.73±0.93	9.0093±0.5136	11,690±910	4000 G	1
Thorium	2/20	0.05±0.026	0.0512±0.0168	0.052±0.022	2 G	0
^{228}Th	9/44	J 0.106±0.069	0.205±0.0453	0.61±0.4	16 G	0
^{230}Th	9/44	J 0.06±0.037	0.1347±0.0212	0.69±0.41	12 G	0
^{232}Th	4/24	J 0.035±0.028	0.0856±0.0218	0.379±0.095	2 G	0
Uranium	2/2	1.12±0.18	1.5006±0.1724	5.73±0.6	24 G	0
$^{233/234}$U	24/26	J 0.065±0.034	0.2518±0.016	2.99±0.41	20 G	0
^{234}U	5/18	0.43±0.31	0.7596±0.1979	2.5±0.9	20 G	0
^{235}U	18/66	J 0.022±0.02	0.0586±0.009	0.55±0.16	24 G	0
^{238}U	25/42	J 0.048±0.029	0.1784±0.0137	5.5±1.3	24 G	0
Semivolatile organics (µg/L)						
Bis(2-ethylhexyl)phthalate	44/51	J 7	233.14	840	59 R	37
Butylbenzylphthalate	2/51	J 1	1.5	J 2	–	–
Di-n-butylphthalate	4/51	J 2	4.25	J 5	12,000 R	0
Di-n-octylphthalate	1/51	J 3	3	J 3	–	–
Diethylphthalate	1/51	J 3	3	J 3	120,000 R	0
Semivolatile organics, tentatively identified compounds (µg/L)						
Acetic acid, (Triphenylphosp	1/1	NJ 5	5	NJ 5	–	–
Benzene, 1,1'-Sulfonylbis[4-	1/1	NJ 3	3	NJ 3	–	–

Table 4.69 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Benzenemethanol, .alpha.,.al	1/1	NJ 3	3	NJ 3	–	–
Ethanone, 1-Phenyl-	4/4	NJ 2	3.5	NJ 7	–	–
Phenol, 4,4'-(1-Methylethyli	4/4	NJ 4	12.25	NJ 30	–	–
Substituted phenol	1/1	NJ 3	3	NJ 3	–	–
Unknown	87/87	NJ 2	5.1494	NJ 19	–	–
Unknown ester hexanedioic acid	1/1	NJ 28	28	NJ 28	–	–
Unknown hydrocarbon	4/4	NJ 2	3.5	NJ 6	–	–
Unknown phthalate	1/1	J 3	3	J 3	–	–
Unknown phthalate ester	1/1	NJ 21	21	NJ 21	–	–
Total petroleum hydrocarbon organics (mg/L)						
Oil & grease	24/42	1.9	4.23	11.3	–	–
Petroleum hydrocarbon	1/41	2.91	2.91	2.91	–	–
Volatile organics (µg/L)						
1,1,1-Trichloroethane	29/59	J 2	221.14	J 1100	200 P	8
1,1,2-Trichloro-1,2,2-trifluoro	24/59	J 1	39.042	J 270	–	–
1,1,2-Trichloroethane	12/59	J 1	16.083	89	5 P	8
1,1-Dichloroethane	9/59	J 1	24.778	110	–	–
1,1-Dichloroethene	31/59	J 1	197.32	J 1000	7 P	20
1,2-Dichloroethane	2/59	J 2	3.5	5	5 P	0
1,2-Dichloroethene	10/59	J 3	12.4	40	70 P	0
2-Butanone	1/59	45	45	45	–	–
Acetone	3/59	J 4	12.333	J 29	–	–
Benzene	5/59	J 2	4	10	5 P	1
Carbon disulfide	9/59	J 1	13.333	98	–	–
Carbon tetrachloride	24/59	J 2	71.792	360	5 P	18
Chloroethane	1/59	J 54	54	J 54	200 P	0
Chloroform	25/59	J 1	18.52	140	100 P	1
Chloromethane	1/59	J 2	2	J 2	–	–
Methylene chloride	5/59	J 2	10.6	J 45	5 P	1
Tetrachloroethene	13/59	J 1	22.308	110	5 P	6

Table 4.69 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Toluene	3/59	J 1	1.3333	J 2	1000 P	0
Trichloroethene	47/59	J 2	475.26	3600	5 P	40
Volatile organics, tentatively identified compounds (µg/L)						
2-Propanol	2/2	NJ 37	52.5	NJ 68	–	–
Boric acid (H_3BO_3), trimethy	3/3	NJ 10	35.333	NJ 86	–	–
Ethane, 1,2-Dichloro-1,1,2-t	1/1	NJ 16	16	NJ 16	–	–
Ethene, chlorotrifluoro-	1/1	NJ 20	20	NJ 20	–	–
Unknown	8/8	NJ 6	11.25	NJ 21	–	–
Total[f] wet chemistry (mg/L)						
Alkalinity	53/53	4.1	117.8	265	–	–
Alkalinity as CO_3	33/33	0.0001	3.1807	15.45	–	–
Alkalinity as HCO_3	33/33	7.32	143.84	316.96	–	–
Total dissolved solids	36/36	16	163.42	309	500 S	0
Total suspended solids	14/36	4	12.071	73	500 S	0

[a]Both the number of detected results and the total number of results include all duplicate and replicate measurements. A detected result is an analytical result with a validation qualifier that does not include "U" or "<". No blanks, matrix spikes, equipment rinsate or other QA/QC data are reported in this table. *n* denotes not applicable.

[b]The minimum and maximum detected results are listed with their validation qualifiers.

J denotes the associated numerical value is the approximate concentration of the analyte in the sample.

N denotes the analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

[c]The average radiochemistry results and their associated limits of error were calculated from all of the detected results using optimallyweighted mean and variance estimates assuming independent measurements with unequal errors, as documented in *Radiation Detection and Measurement* by Glenn F. Knoll, New York: John Wiley and Sons (1979), pp. 137-139. For the non-radiochemistry analytes the average listed is the unweighted arithmetic mean of all detected results. No analytical qualifiers are listed for the average.

[d]If a reference value exists it originates from one of the following sources:

D Tennessee water quality criteria for domestic water supply, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

F Tennessee water quality criteria for fish and aquatic life, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

G DOE Order 5400.5, Chapter III, Derived Concentration Guides (DCG) for Air and Water. Four percent of the DOE DCG represents the DOE criterion of 4 mrem effective dose equivalent from ingestion of drinking water.

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

R Tennessee water quality criteria for recreation, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

S 40 CFR Part 143 National Secondary Drinking Water Regulations, as amended

– denotes no reference value exists for this analyte

[e]The number of detected results exceeding the reference value is given.

– denotes that since no reference value exists for this analyte, the number exceeding is not applicable.

[f]Total = unfiltered sample (soluable + suspended). Dissolved = filtered sample (soluable only).

Table 4.70. Constituents detected in groundwater wells at the North Main Plant Area of K-25 in 1995

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
		Anions (mg/L)				
Bromide	2/198	1.61	3.76	5.91	–	–
Chloride	185/198	1	39.197	1410	250 S	3
Fluoride	112/198	0.1	0.3904	1.82	4 P	0
Nitrate/nitrite	66/198	0.2	1.7759	31.8	10 P	2
Sulfate	151/198	5	45.983	295	250 S	2
		Field measurements				
Conductivity (μmho/cm)	*n*/202	30.7	628.57	7050	–	–
Dissolved oxygen (ppm)	*n*/202	0	6.7927	27.8	5 F	76
Redox (mV)	*n*/202	–226	78.579	325	–	–
Temperature (°C)	*n*/202	10.3	18.174	28	30.5 D	0
Turbidity (NTU)	*n*/175	0	8.0452	560	1 P	113
pH (standard units)	*n*/201	4.33	7.4143	12.32	6.5–8.5 S	78
		Herbicides (μg/L)				
Simazine	1/103	1.3	1.3	1.3	4 P	0
		Dissolved[f] metals (μg/L)				
Aluminum	26/185	26	1092.4	7560	200 S	11
Antimony	29/191	1.6	6.1517	27.5	6 P	9
Arsenic	17/197	1.4	3.7941	9.3	50 P	0
Barium	194/197	7.5	175.01	4940	2000 P	2
Beryllium	1/197	0.84	0.84	0.84	4 P	0
Cadmium	1/197	3.9	3.9	3.9	5 P	0
Calcium	197/197	1330	68,684	563,000	–	–
Chromium	40/197	3.1	15.595	50.6	100 P	0
Cobalt	86/197	4.4	17.227	93.2	–	–
Copper	41/187	J 3.8	11.617	30	1300 P	0
Iron	96/197	36.5	3851.3	28,900	300 S	59
Lead	4/184	2.4	3.8	5.6	15 P	0
Magnesium	187/197	J 366	16,286	260,000	–	–
Manganese	145/197	2.3	2528.5	14,000	50 S	99
Mercury	2/197	0.57	0.715	0.86	2 P	0
Nickel	31/197	11.6	29.642	126	100 P	1
Potassium	139/197	1230	28614	498,000	–	–
Selenium	21/186	1.6	4.6333	11	50 P	0
Silicon	197/197	1260	6954.6	35,100	–	–
Sodium	197/197	851	29,040	252,000	–	–
Thallium	15/197	2.8	4.68	9.1	2 P	15

Table 4.70 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Vanadium	47/183	J 4.1	12.181	31.9	–	–
Zinc	138/197	5.7	31.986	223	5000 S	0
			Total[f] metals (µg/L)			
Aluminum	67/198	J 22.8	914.39	9200	200 S	32
Antimony	14/198	1.8	2.9929	6.5	6 P	1
Arsenic	24/198	1.7	13.396	205	50 P	1
Barium	195/198	9.3	200.21	4710	2000 P	3
Cadmium	2/198	4.4	10.45	16.5	5 P	1
Calcium	197/198	2580	70,238	534,000	–	–
Chromium	42/194	2.9	16.138	54.8	100 P	0
Cobalt	88/197	4	22.188	529	–	–
Copper	30/193	J 4	13.407	36.7	1300 P	0
Cyanide	3/96	1	7.4	18.2	200 P	0
Iron	128/198	75.8	8898.3	681,000	300 S	90
Lead	14/198	1.1	5.7143	19.7	15 P	2
Magnesium	189/198	551	16,480	247,000	–	–
Manganese	154/198	2.6	3056.3	90,700	50 S	109
Mercury	1/198	1	1	1	2 P	0
Nickel	36/198	11.6	27.522	121	100 P	1
Potassium	135/198	1390	29,934	576,000	–	–
Selenium	19/198	2.3	5.1474	16.4	50 P	0
Silicon	198/198	1240	7329.2	33,800	–	–
Silver	8/198	3.7	5.275	7.2	100 S	0
Sodium	197/198	869	29,266	253,000	–	–
Thallium	6/198	3.1	22.1	113	2 P	6
Vanadium	16/190	J 5	14.238	31.8	–	–
Zinc	141/197	11.8	34.26	167	5000 S	0
			Pesticides (µg/L)			
Lindane	3/107	0.059	0.0633	0.066	0.2 P	0
			Dissolved[f] radiochemistry (pCi/L)			
Alpha activity	22/197	1.31±0.98	4.2818±0.4968	J 43.2±7.7	15 P	5
^{241}Am	1/12	J 0.036±0.032	0.036±0.032	J 0.036±0.032	1.2 G	0
Beta activity	148/197	J 2±1.3	6.0245±0.1568	528±35	50 P	12
^{237}Np	5/13	0.043±0.032	0.0505±0.0163	0.064±0.045	1.2 G	0
^{238}Pu	2/13	0.02±0.019	0.023±0.0162	J 0.031±0.031	1.6 G	0
$^{239/240}$Pu	5/13	J 0.063±0.044	0.1097±0.0205	J 0.142±0.051	1.2 G	0
^{40}K	2/9	390±130	417.78±95.263	450±140	280 G	2
^{90}Sr	2/18	J 0.94±0.49	0.9442±0.3743	J 0.95±0.58	–	–
^{99}Tc	9/18	2.1±1	6.1081±0.6404	333±27	4000 G	0

Table 4.70 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Thorium	6/7	J 0.025±0.02	0.0469±0.0116	J 0.096±0.039	2 G	0
^{228}Th	5/13	0.079±0.059	0.1474±0.0291	0.225±0.085	16 G	0
^{230}Th	7/13	J 0.033±0.022	0.0899±0.0153	J 0.51±0.13	12 G	0
Uranium	6/7	J 0.03±0.022	0.1033±0.0212	11.43±0.8	24 G	0
$^{233/234}$U	12/13	J 0.08±0.032	0.309±0.0277	23.6±1.4	20 G	2
^{235}U	10/22	J 0.051±0.028	0.22±0.0203	1.78±0.24	24 G	0
^{238}U	6/6	0.215±0.055	0.6038±0.0515	12.33±0.86	24 G	0
		Total[f] radiochemistry (pCi/L)				
Alpha activity	24/198	1.38±0.88	4.7271±0.5048	797±62	15 P	6
^{241}Am	1/14	J 0.021±0.021	0.021±0.021	J 0.021±0.021	1.2 G	0
Beta activity	160/198	2.4±1.4	8.3179±0.17543	580±190	50 P	13
^{214}Bi	2/10	19.9±6.8	19.917±6.1933	20±15	24,000 G	0
^{214}Pb	1/10	15.4±5.8	15.4±5.8	15.4±5.8	–	–
^{237}Np	5/13	J 0.03±0.029	0.0574±0.0172	J 0.102±0.039	1.2 G	0
^{238}Pu	2/14	0.006±0.0065	0.0076±0.0063	J 0.044±0.029	1.6 G	0
$^{239/240}$Pu	4/13	0.009±0.009	0.0158±0.0071	J 0.029±0.025	1.2 G	0
^{40}K	2/10	390±130	395.36±62.985	397±72	280 G	2
^{90}Sr	1/19	1.4±0.68	1.4±0.68	1.4±0.68	–	–
^{99}Tc	11/18	1.4±1.1	6.0686±0.627	84500±360	4000 G	1
Thorium	7/8	0.025±0.014	0.0536±0.0087	0.134±0.035	2 G	0
^{228}Th	3/14	0.079±0.05	0.1914±0.0399	5.93±0.45	16 G	0
^{230}Th	5/14	J 0.036±0.022	0.0846±0.0154	0.37±0.089	12 G	0
^{232}Th	1/6	J 0.039±0.03	0.039±0.03	J 0.039±0.03	2 G	0
Uranium	7/8	0.072±0.058	0.3346±0.0484	17.3±1.2	24 G	0
$^{233/234}$U	14/14	J 0.043±0.04	0.2914±0.0321	742±40	20 G	4
^{235}U	14/24	0.038±0.034	0.1208±0.0164	31.4±3.2	24 G	1
^{238}U	6/6	0.294±0.068	0.7328±0.0654	139.7±9.2	24 G	1
		Semivolatile organics (µg/L)				
2,4-Dimethylphenol	1/124	J 3	3	J 3	–	–
2-Methylnaphthalene	10/124	J 1	21.3	78	–	–
2-Methylphenol	2/124	J 2	6	10	–	–
Acenaphthene	8/124	J 1	1.875	J 3	–	–
Bis(2-ethylhexyl)-phthalate	124/124	14	272.22	910	59 R	110
Butylbenzylphthalate	9/124	J 1	2.5556	J 6	–	–
Carbazole	10/124	J 2	4.4	J 9	–	–
Di-n-butylphthalate	15/124	J 1	2.5333	J 5	12,000 R	0
Di-n-octylphthalate	7/124	J 1	2	J 4	–	–
Dibenzofuran	3/124	J 1	1.6667	J 2	–	–
Diethylphthalate	5/124	J 1	14.4	63	120,000 R	0

Table 4.70 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Fluorene	6/124	J 1	2.1667	J 3	0.03 R	6
N-Nitrosodiphenylamine	1/120	J 2	2	J 2	–	–
Naphthalene	11/124	J 3	34.273	120	–	–
Phenanthrene	7/124	J 1	1.5714	J 2	0.03 R	7
Phenol	6/124	J 4	7.3333	14	–	–
Semivolatile organics, tentatively identified compounds (µg/L)						
1,2-Benzenedicarboxylic acid	1/1	NJ 6	6	NJ 6	–	–
1-Methylnaphthalene	4/4	NJ 7	40.5	NJ 59	–	–
1h-Inden-1-one, 2,3-Dihydro-	1/1	NJ 4	4	NJ 4	–	–
1h-Indene, 2,3-Dihydro-	3/3	NJ 16	75.333	NJ 110	–	–
1h-Indene, 2,3-Dihydro-4-met	4/4	NJ 19	31	NJ 44	–	–
1h-Indene, 2,3-Dihydro-5-met	1/1	NJ 24	24	NJ 24	–	–
2(3h)-Benzothiazolone	1/1	NJ 6	6	NJ 6	–	–
2(3h)-Furanone, Dihydro-	1/1	NJ 9	9	NJ 9	–	–
2-Propanol, 1,1'-[(1-Methyl	1/1	NJ 8	8	NJ 8	–	–
3-Octanone	1/1	NJ 11	11	NJ 11	–	–
Benzaldehyde	1/1	NJ 3	3	NJ 3	–	–
Benzene, (1-Methylethyl-	6/6	NJ 10	25	NJ 56	–	–
Benzene, (Chloromethyl-	1/1	NJ 9	9	NJ 9	–	–
Benzene, 1,2,3,5-Tetramethyl	2/2	NJ 7	15	NJ 23	–	–
Benzene, 1,2,4,5-Tetramethyl	2/2	NJ 19	22.5	NJ 26	–	–
Benzene, 1,2,4-Trimethyl-	7/7	NJ 8	53.857	NJ 120	–	–
Benzene, 1,2-Diethyl-	2/2	NJ 46	46	NJ 46	–	–
Benzene, 1,4-Diethyl-	1/1	NJ 7	7	NJ 7	–	–
Benzene, 1-Ethyl-2-methyl-	3/3	NJ 18	37	NJ 57	–	–
Benzene, 1-Ethyl-4-methyl-	1/1	NJ 40	40	NJ 40	–	–
Benzene, 1-Methyl-4-(1-methy	9/9	NJ 7	26.111	NJ 47	–	–
Benzene, 2-Ethyl-1,4-dimethy	1/1	NJ 13	13	NJ 13	–	–
Benzene, Propyl-	3/3	NJ 19	44	NJ 58	–	–
Benzeneacetic acid	1/1	NJ 9	9	NJ 9	–	–

Table 4.70 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Benzenemethanol, alpha.,.al	1/1	NJ 10	10	NJ 10	–	–
Benzoic acid	6/6	NJ 1	1.8333	NJ 3	–	–
Benzoic acid, 4-Methyl-	1/1	NJ 3	3	NJ 3	–	–
Benzothiazole	1/1	NJ 5	5	NJ 5	–	–
Benzyl alcohol	1/1	NJ 4	4	NJ 4	–	–
Diethyl benzene (para?)	1/1	NJ 15	15	NJ 15	–	–
Ethanol, 2,2'-[Oxybis(2,1-et	2/2	NJ 35	77.5	NJ 120	–	–
Ethanone, 1-Phenyl-	2/2	NJ 3	4.5	NJ 6	–	–
Ethene, Tetrachloro-	1/1	NJ 38	38	NJ 38	–	–
Hexanedioic acid, dioctyl es	1/1	NJ 3	3	NJ 3	–	–
Naphthalene, 1,4-Dimethyl-	1/1	NJ 7	7	NJ 7	–	–
Phenol, 4,4'-(1-Methylethyli	15/15	NJ 2	13.933	NJ 45	–	–
Unknown	608/608	NJ 2	32.35	NJ 2000	–	–
Unknown adipate	2/2	NJ 3	8	NJ 13	–	–
Unknown $C_{10}H_{12}$	9/9	NJ 6	12.556	NJ 31	–	–
Unknown $C_{10}H_{14}$	37/37	NJ 2	25.486	NJ 110	–	–
Unknown $C_{10}H_{14}O$	1/1	NJ 2	2	NJ 2	–	–
Unknown $C_{11}H_{14}$	2/2	NJ 11	11.5	NJ 12	–	–
Unknown $C_{12}H_{12}$	5/5	NJ 9	14.4	NJ 21	–	–
Unknown $C_{14}H_{22}O$	1/1	NJ 4	4	NJ 4	–	–
Unknown $C_2H_8N_2$	1/1	NJ 44	44	NJ 44	–	–
Unknown C_3H_3NO	3/3	NJ 3	54.333	NJ 83	–	–
Unknown $C_4H_6O_2$	1/1	NJ 65	65	NJ 65	–	–
Unknown $C_4H_8O_2$	1/1	NJ 15	15	NJ 15	–	–
Unknown $C_6H_{12}O$	1/1	NJ 10	10	NJ 10	–	–
Unknown C_7H_7CL	1/1	NJ 4	4	NJ 4	–	–
Unknown C_7H_8	1/1	NJ 17	17	NJ 17	–	–
Unknown C_8H_{10}	13/13	NJ 9	287.15	NJ 970	–	–
Unknown $C_8H_{10}O$	1/1	NJ 6	6	NJ 6	–	–
Unknown $C_8H_{16}O$	1/1	NJ 17	17	NJ 17	–	–
Unknown C_9H_{10}	1/1	NJ 2	2	NJ 2	–	–
Unknown C_9H_{12}	26/26	NJ 3	134.92	NJ 650	–	–
		Total petroleum hydrocarbon organics				
Benzene (µg/L)	21/43	2	30.452	130	5 P	14
Dimethylbenzene (µg/L)	10/43	2.2	344.74	1400	10,000 P	0
Ethylbenzene (µg/L)	8/43	34	157.75	370	700 P	0

Table 4.70 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Gasoline range organics (µg/L)	14/43	J 120	2070.7	J 6000	–	–
Petroleum hydrocarbon (mg/L)	9/43	0.53	2.0389	3.86	–	–
Toluene (µg/L)	11/43	2	65.5	280	1000 P	0
Volatile organics (µg/L)						
1,1,1-Trichloroethane	34/198	J 1	5663.3	140,000	200 P	3
1,1,2-Trichloro-1,2,2-trifluoro	45/198	J 1	798.11	13,000	–	–
1,1,2-Trichloroethane	4/198	J 1	17.5	41	5 P	3
1,1-Dichloroethane	42/198	J 3	360.57	6300	–	–
1,1-Dichloroethene	41/198	J 1	175.9	J 2800	7 P	24
1,2-Dichloroethane	4/198	7	17.5	42	5 P	4
1,2-Dichloroethene	93/198	J 1	377.76	4500	70 P	53
2-Butanone	3/198	10	56.333	130	–	–
Acetone	13/198	J 3	176.69	J 630	–	–
Benzene	25/198	J 1	29.84	170	5 P	15
Carbon disulfide	4/198	J 1	1.75	J 3	–	–
Carbon tetrachloride	1/198	J 3	3	J 3	5 P	0
Chlorobenzene	1/198	J 3	3	J 3	100 P	0
Chloroethane	7/198	14	87.143	360	200 P	1
Chloroform	21/198	J 1	7.7619	37	100 P	0
Chloromethane	5/198	J 2	55.8	J 260	–	–
Dimethylbenzene	15/198	J 1	243.4	J 1500	10,000 P	0
Ethylbenzene	10/198	J 1	127	380	700 P	0
Methylene chloride	5/198	J 3	40.6	110	5 P	3
Tetrachloroethene	31/198	J 1	93.645	J 950	5 P	23
Toluene	14/198	J 1	678.57	6400	1000 P	2
Trichloroethene	99/198	J 1	628.14	11,000	5 P	81
Vinyl chloride	38/198	J 2	116.21	J 550	2 P	37
Volatile organics, tentatively identified compounds (µg/L)						
1,3-Dioxolane	1/1	NJ 8	8	NJ 8	–	–
1,4-Dioxane	2/2	NJ 5	5.5	NJ 6	–	–
1-Pentene	1/1	NJ 35	35	NJ 35	–	–
1h-Indene, 2,3-Dihydro-1-met	5/5	NJ 6	67.6	NJ 170	–	–
2-Butanol, 2-Methyl-	1/1	NJ 17	17	NJ 17	–	–
2-Propanol	2/2	NJ 11	20	NJ 29	–	–
Benzene, 1,2,4-Trimethyl-	2/2	NJ 76	323	NJ 570	–	–

Table 4.70 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Benzene, 1,3,5-Trimethyl-	1/1	NJ 110	110	NJ 110	–	–
Benzene, 1-Ethyl-2-methyl-	2/2	NJ 11	28	NJ 45	–	–
Benzene, 1-Methyl-3-(1-methy	1/1	NJ 36	36	NJ 36	–	–
Benzene, 1-Methyl-4-(1-methy	1/1	NJ 42	42	NJ 42	–	–
Benzene, Propyl-	2/2	NJ 48	104	NJ 160	–	–
Boric acid (H_3BO_3), Trimethy	3/3	NJ 21	27	NJ 36	–	–
Cyclohexane(Dot	2/2	NJ 37	78.5	NJ 120	–	–
Cyclohexane, Methyl-	2/2	NJ 23	33	NJ 43	–	–
Cyclopentane, 1,3-Dimethyl-,	1/1	NJ 8	8	NJ 8	–	–
Cyclopentane, Methyl-	6/6	NJ 23	177.83	NJ 390	–	–
Cyclopropane, 1,1-Dimethyl-	1/1	NJ 30	30	NJ 30	–	–
Ethane, 1,2-Dichloro-1,1,2-t	18/18	NJ 11	282	NJ 1400	–	–
Ethene, Chlorotrifluoro-	3/3	NJ 130	550	NJ 1300	–	–
Ethene, Trifluoro-	1/1	NJ 20	20	NJ 20	–	–
Naphthalene	1/1	NJ 17	17	NJ 17	–	–
Pentane	2/2	NJ 10	41.5	NJ 73	–	–
Pentane, 3-Methyl-	1/1	NJ 81	81	NJ 81	–	–
Phenol, 2,6-bis(1,1-Dimethyl	1/1	NJ 130	130	NJ 130	–	–
Trichlorofluoromethane	2/2	NJ 10	14	NJ 18	–	–
Unknown	60/60	NJ 5	131.17	NJ 1700	–	–
Unknown alkane	1/1	NJ 83	83	NJ 83	–	–
Unknown aromatic	5/5	NJ 8	24.6	NJ 44	–	–
Unknown $C_{10}H_{12}$	7/7	NJ 18	53.714	NJ 110	–	–
Unknown $C_{10}H_{14}$	13/13	NJ 11	83.462	NJ 160	–	–
Unknown $C5H_{10}$	3/3	NJ 15	117.33	NJ 240	–	–
Unknown C_6H_{12}	2/2	NJ 120	170	NJ 220	–	–
Unknown C_6H_{14}	3/3	NJ 250	400	NJ 480	–	–
Unknown C_7H_{14}	2/2	NJ 44	44.5	NJ 45	–	–
Unknown $C_8H_{16}O$	1/1	NJ 5	5	NJ 5	–	–
Unknown C_9H_{10}	5/5	NJ 34	152.6	NJ 250	–	–
Unknown C_9H_{12}	19/19	NJ 33	281.16	NJ 930	–	–
Unknown hydrocarbon	1/1	NJ 220	220	NJ 220	–	–
		Total wet chemistry (mg/L)				
Alkalinity	104/104	6	220.05	1439	–	–
Alkalinity as CO_3	104/104	0	23.036	859.1	–	–

Table 4.70 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Alkalinity as HCO_3	104/104	1.7	221.62	657.16	–	–
Total dissolved solids	198/198	24	381.2	4180	500 S	25
Total suspended solids	81/198	4	38.531	1360	500 S	1

[a]Both the number of detected results and the total number of results include all duplicate and replicate measurements. A detected result is an analytical result with a validation qualifier that does not include "U" or "<". No blanks, matrix spikes, equipment rinsate or other QA/QC data are reported in this table. *n* denotes not applicable.

[b]The minimum and maximum detected results are listed with their validation qualifiers.

J denotes the associated numerical value is the approximate concentration of the analyte in the sample.

N denotes the analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

[c]The average radiochemistry results and their associated limits of error were calculated from all of the detected results using optimally weighted mean and variance estimates assuming independent measurements with unequal errors, as documented in *Radiation Detection and Measurement* by Glenn F. Knoll, New York: John Wiley and Sons (1979), pp. 137–139. For the non-radiochemistry analytes the average listed is the unweighted arithmetic mean of all detected results. No analytical qualifiers are listed for the average.

[d]If a reference value exists it originates from one of the following sources:

D Tennessee water quality criteria for domestic water supply, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

F Tennessee water quality criteria for fish and aquatic life, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

G DOE Order 5400.5, Chapter III, Derived Concentration Guides (DCG) for Air and Water. Four percent of the DOE DCG represents the DOE criterion of 4 mrem effective dose equivalent from ingestion of drinking water.

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

R Tennessee water quality criteria for recreation, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

S 40 CFR Part 143 National Secondary Drinking Water Regulations, as amended

– denotes no reference value exists for this analyte

[e]The number of detected results exceeding the reference value is given.

– denotes that since no reference value exists for this analyte, the number exceeding is not applicable.

[f]Total = unfiltered sample (soluable + suspended). Dissolved = filtered sample (soluable only).

Table 4.71. Constituents detected in groundwater wells at the Powerhouse Area of K-25 in 1995

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
			Anions (mg/L)			
Chloride	33/39	1.02	3.327	9.38	250 S	0
Fluoride	20/39	0.12	0.1935	0.45	4 P	0
Nitrate/nitrite	22/39	0.22	1.335	6.47	10 P	0
Sulfate	29/39	5	245.3	1580	250 S	6
			Field measurements			
Conductivity (µmho/cm)	*n*/41	15.3	467.11	2150	–	–
Dissolved oxygen (ppm)	*n*/41	0.4	6.5585	20.3	5 F	15
Redox (mV)	*n*/41	−113	143.09	332	–	–
Temperature (°C)	*n*/41	11.7	16.659	22.9	30.5 D	0
Turbidity (NTU)	*n*/33	0.02	20.295	200	1 P	25
pH (standard units)	*n*/41	4.48	6.5973	8.54	6.5–8.5 S	20
			Dissolved[f] metals (µg/L)			
Aluminum	8/39	34.4	319.7	1640	200 S	2
Antimony	5/38	2.2	2.78	3.5	6 P	0
Arsenic	6/39	2.4	11.867	29.5	50 P	0
Barium	38/39	9.4	51.274	J 123	2000 P	0
Calcium	39/39	1540	71,235	223,000	–	–
Chromium	6/39	3.4	9.2333	23.8	100 P	0
Cobalt	16/39	5.3	227.67	1130	–	–
Copper	4/33	J 5	15.15	27.3	1300 P	0
Iron	17/39	69.3	21,083	91,000	300 S	13
Lead	3/39	4.7	6.5333	8.1	15 P	0
Magnesium	37/39	J 510	27,743	149,000	–	–
Manganese	29/39	3.1	12,900	119,000	50 S	20
Nickel	8/39	16.8	51.363	159	100 P	1
Potassium	16/39	1680	3892.5	7380	–	–
Selenium	7/39	1.9	15.157	50.5	50 P	1
Silicon	39/39	332	5472.7	11,000	–	–
Silver	3/34	4.6	13.067	20.5	100 S	0
Sodium	39/39	695	5569.5	18,200	–	–
Thallium	5/39	3.8	7.78	19.3	2 P	5
Vanadium	4/33	J 3.1	8.45	14	–	–
Zinc	31/39	J 7.4	53.274	446	5000 S	0

Table 4.71 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
			Total[f] metals (µg/L)			
Aluminum	22/39	27.9	534.55	3930	200 S	11
Arsenic	7/39	2.4	11.571	31.4	50 P	0
Barium	39/39	8.1	52.723	J 121	2000 P	0
Calcium	39/39	2890	73,564	244,000	–	–
Chromium	6/39	4.3	10.483	27.2	100 P	0
Cobalt	16/39	5.5	225.86	1070	–	–
Copper	4/37	J 3.9	12.525	J 35	1300 P	0
Iron	30/39	124	12,994	88,600	300 S	23
Lead	5/39	2	5.34	9.5	15 P	0
Magnesium	39/39	J 847	27,200	158,000	–	–
Manganese	32/39	13	11,651	116,000	50 S	23
Nickel	6/39	14.1	57.417	154	100 P	1
Potassium	22/39	1510	3450.9	9270	–	–
Selenium	5/39	1.7	18.92	49	50 P	0
Silicon	39/39	439	5895.3	10,900	–	–
Silver	4/39	2.5	8.525	10.7	100 S	0
Sodium	39/39	839	5631.5	18,400	–	–
Thallium	4/39	4.9	10.025	20.7	2 P	4
Vanadium	3/35	J 3.1	5.9667	7.8	–	–
Zinc	30/38	15.2	75.22	424	5000 S	0
			Dissolved[f] radiochemistry (pCi/L)			
Alpha activity	4/39	J 23.3±4.6	31.422±2.8083	J 84±43	15 P	4
^{241}Am	1/6	J 0.031±0.027	0.031±0.027	J 0.031±0.027	1.2 G	0
Beta activity	22/39	J 2.1±1.3	6.5612±0.3963	85.3±6.3	50 P	1
^{237}Np	1/6	J 0.104±0.073	0.104±0.073	J 0.104±0.073	1.2 G	0
^{238}Pu	1/6	J 0.024±0.019	0.024±0.019	J 0.024±0.019	1.6 G	0
$^{239/240}$Pu	2/6	J 0.112±0.045	0.1289±0.0331	J 0.149±0.049	1.2 G	0
^{99}Tc	7/9	16.6±2.4	34.959±2.0754	284±24	4000 G	0
Thorium	2/3	J 0.026±0.016	0.0293±0.0127	J 0.035±0.021	2 G	0
^{230}Th	4/6	J 0.027±0.018	0.0353±0.0107	J 0.073±0.031	12 G	0
^{232}Th	2/3	J 0.026±0.019	0.029±0.0155	J 0.035±0.027	2 G	0
Uranium	2/3	0.039±0.032	0.0526±0.0252	0.075±0.041	24 G	0
$^{233/234}$U	6/6	J 0.038±0.031	0.0753±0.0186	27.7±1.6	20 G	1
^{235}U	3/11	J 0.047±0.035	0.0718±0.0242	1.57±0.2	24 G	0
^{238}U	3/3	J 0.036±0.024	0.0519±0.0215	18.3±1.1	24 G	0

Table 4.71 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
			Total[f] radiochemistry (pCi/L)			
Alpha activity	6/39	J 2±1.1	5.171±0.8966	56.6±7.6	15 P	3
^{241}Am	1/6	J 0.045±0.027	0.045±0.027	J 0.045±0.027	1.2 G	0
Beta activity	26/39	3.2±1.4	7.5055±0.3857	233±14	50 P	4
^{214}Bi	1/5	24±16	24±16	24±16	24,000 G	0
^{214}Pb	1/5	26±12	26±12	26±12	–	–
^{237}Np	1/5	J 0.074±0.059	0.074±0.059	J 0.074±0.059	1.2 G	0
^{99}Tc	7/9	57.8±5.6	89.541±3.891	1 390±31	4000 G	0
Thorium	3/3	0.028±0.019	0.0376±0.0137	0.052±0.028	2 G	0
^{228}Th	2/6	0.124±0.05	0.1254±0.0405	J 0.128±0.069	16 G	0
^{230}Th	2/6	J 0.036±0.021	0.0469±0.0181	J 0.079±0.036	12 G	0
^{232}Th	1/3	J 0.073±0.039	0.073±0.039	J 0.073±0.039	2 G	0
Uranium	3/3	J 0.072±0.048	0.0833±0.0275	J 0.093±0.046	24 G	0
$^{233/234}$U	6/6	J 0.05±0.042	0.0846±0.0207	36.3±2.1	20 G	1
^{235}U	2/11	0.066±0.046	0.1313±0.0452	2.06±0.25	24 G	0
^{238}U	3/3	J 0.044±0.028	0.0509±0.0223	22.1±1.3	24 G	0
			Semivolatile organics (µg/L)			
Bis(2-ethylhexyl)phthalate	21/21	J 9	172.1	530	59 R	16
Butylbenzylphthalate	5/21	J 1	2	J 6	–	–
Di-n-butylphthalate	2/21	J 1	1.5	J 2	12,000 R	0
Di-n-octylphthalate	1/21	J 1	1	J 1	–	–
			Semivolatile organics, tentatively identified compounds (µg/L)			
Benzothiazole	1/1	NJ 8	8	NJ 8	–	–
Hexadecanoic acid	1/1	NJ 4	4	NJ 4	–	–
Octadecanoic acid	1/1	NJ 2	2	NJ 2	–	–
Phenol, 4,4′-(1-Methylethyli	1/1	NJ 10	10	NJ 10	–	–
Unknown	54/54	NJ 2	5.4259	NJ 68	–	–
			Volatile organics (µg/L)			
1,1,2-Trichloro-1,2,2-trifluoro	1/39	J 3	3	J 3	–	–
Acetone	2/39	J 21	21.5	J 22	–	–
Carbon tetrachloride	2/39	J 2	2	J 2	5 P	0
Tetrachloroethene	3/39	J 2	2.6667	J 4	5 P	0
Toluene	1/39	J 1	1	J 1	1000 P	0
Trichloroethene	3/39	J 1	1.6667	J 3	5 P	0

Table 4.71 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Volatile organics, tentatively identified compounds (µg/L)						
2-Propanol	1/1	NJ 30	30	NJ 30	–	–
6 Methyl-2 phenylindole	1/1	NJ 8	8	NJ 8	–	–
Unknown	3/3	NJ 5	14.333	NJ 25	–	–
Total[f] wet chemistry (mg/L)						
Alkalinity	20/20	4	136.35	267	–	–
Alkalinity as CO_3	20/20	0.00002	0.267	3.1	–	–
Alkalinity as HCO_3	20/20	4.88	165.8	325.48	–	–
Total dissolved solids	39/39	47	431.36	2310	500 S	6
Total suspended solids	23/39	4	22.652	80	500 S	0

[a]Both the number of detected results and the total number of results include all duplicate and replicate measurements. A detected result is an analytical result with a validation qualifier that does not include "U" or "<". No blanks, matrix spikes, equipment rinsate or other QA/QC data are reported in this table. *n* denotes not applicable.

[b]The minimum and maximum detected results are listed with their validation qualifiers.

J denotes the associated numerical value is the approximate concentration of the analyte in the sample.

N denotes the analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

[c]The average radiochemistry results and their associated limits of error were calculated from all of the detected results using optimallyweighted mean and variance estimates assuming independent measurements with unequal errors, as documented in *Radiation Detection and Measurement* by Glenn F. Knoll, New York: John Wiley and Sons (1979), pp. 173-139. For the non-radiochemistry analytes the average listed is the unweighted arithmetic mean of all detected results. No analytical qualifiers are listed for the average.

[d]If a reference value exists it originates from one of the following sources:

D Tennessee water quality criteria for domestic water supply, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

F Tennessee water quality criteria for fish and aquatic life, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

G DOE Order 5400.5, Chapter III, Derived Concentration Guides (DCG) for Air and Water. Four percent of the DOE DCG represents the DOE criterion of 4 mrem effective dose equivalent from ingestion of drinking water.

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

R Tennessee water quality criteria for recreation, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

S 40 CFR Part 143 National Secondary Drinking Water Regulations, as amended

– denotes no reference value exists for this analyte

[e]The number of detected results exceeding the reference value is given.

– denotes that since no reference value exists for this analyte, the number exceeding is not applicable.

[f]Total = unfiltered sample (soluable + suspended). Dissolved = filtered sample (soluable only).

Table 4.72. Constituents detected in groundwater wells at the South Main Plant Area of K-25, 1995

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
		Anions (mg/L)				
Chloride	32/32	2.03	20.023	49.5	250 S	0
Fluoride	24/32	0.13	0.2392	0.49	4 P	0
Nitrate/nitrite	6/32	0.23	0.9967	2.38	10 P	0
Sulfate	26/32	J 5.31	29.925	65.7	250 S	0
		Field measurements				
Conductivity (µmho/cm)	*n*/33	134	533.27	782	–	–
Dissolved oxygen (ppm)	*n*/33	0.6	5.2485	J 18	5 F	17
Redox (mV)	*n*/33	–46	99.212	285	–	–
Temperature (°C)	*n*/33	12.9	19.73	26.5	30.5 D	0
Turbidity (NTU)	*n*/26	0.02	4.965	52.7	1 P	20
pH (standard units)	*n*/33	6.11	7.7018	12.15	6.5–8.5 S	4
		Herbicides (µg/L)				
Simazine	1/21	1	1	1	4 P	0
		Dissolved metals (µg/L)				
Aluminum	8/32	24.7	41.188	73.3	200 S	0
Antimony	6/31	2.8	8.1833	14.2	6 P	3
Arsenic	2/32	1.4	2.55	3.7	50 P	0
Barium	32/32	15.5	59.869	152	2000 P	0
Calcium	32/32	30,800	92,944	136,000	–	–
Chromium	2/32	5.8	8.15	10.5	100 P	0
Cobalt	16/32	5.5	10.45	26.2	–	–
Copper	4/32	J 5.5	24.175	73.4	1300 P	0
Iron	17/32	62.3	409.24	1270	300 S	7
Lead	1/32	3.9	3.9	3.9	15 P	0
Magnesium	32/32	5210	17,704	45,300	–	–
Manganese	28/32	8.9	446.31	3510	50 S	12
Nickel	15/32	15.6	127.59	613	100 P	5
Potassium	19/32	1380	5861.6	39,700	–	–
Selenium	3/32	3.2	4	4.4	50 P	0
Silicon	32/32	1370	4997.5	8550	–	–
Sodium	32/32	1490	12,488	47,300	–	–
Thallium	2/32	3.4	5.15	6.9	2 P	2
Vanadium	3/30	9.4	12.333	14	–	–
Zinc	30/32	J 12.7	39.513	324	5000 S	0
		Total metals (µg/L)				
Aluminum	7/32	29.8	125.81	553	200 S	1
Antimony	2/32	2	2.1	2.2	6 P	0
Barium	32/32	14.8	61.119	149	2000 P	0

Table 4.72 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Calcium	32/32	29,600	92,397	134,000	–	–
Chromium	6/32	6.6	42.85	167	100 P	1
Cobalt	13/32	3.6	12.292	38.7	–	–
Copper	3/32	J 5	44.233	120	1300 P	0
Cyanide	1/17	J 3.2	3.2	J 3.2	200 P	0
Iron	19/32	78.6	460.52	1470	300 S	7
Magnesium	32/32	4410	17,717	45,500	–	–
Manganese	28/32	8.3	462.71	3430	50 S	12
Nickel	12/32	20.2	160.87	626	100 P	5
Potassium	19/32	1260	5254.2	34,400	–	–
Silicon	32/32	1300	5185.3	9590	–	–
Sodium	32/32	1500	19,463	230,000	–	–
Thallium	2/32	2.9	3.95	5	2 P	2
Vanadium	4/31	5.7	7.525	10.3	–	–
Zinc	25/32	11.5	43.32	356	5000 S	0
			Dissolved[f] radiochemistry			
Alpha activity	1/32	4.9±2.8	4.9±2.8	4.9±2.8	15 P	0
Beta activity	12/32	J 2.2±1.4	5.5212±0.5914	43.9±4.1	50 P	0
			Total[f] radiochemistry			
Alpha activity	2/32	J 3.9±2.6	4.2±1.8385	J 4.5±2.6	15 P	0
Beta activity	11/32	2.9±1.5	6.1473±0.6337	30.5±4.2	50 P	0
			Semivolatile organics (µg/L)			
Bis(2-ethylhexyl)-phthalate	17/17	57	263.35	610	59 R	16
Butylbenzylphthalate	1/17	J 1	1	J 1	–	–
Diethylphthalate	2/17	J 2	5	J 8	120,000 R	0
			Semivolatile organics, tentatively identified compounds (µg/L)			
Ethanone, 1-Phenyl-	1/1	NJ 3	3	NJ 3	–	–
Ethene, Tetrachloro-	1/1	NJ 11	11	NJ 11	–	–
Phenol, 4,4'-(1-Methylethyli	1/1	NJ 2	2	NJ 2	–	–
Unknown	49/49	NJ 2	4.5306	NJ 24	–	–
Unknown adipate	1/1	NJ 3	3	NJ 3	–	–
			Volatile organics (µg/L)			
1,1,1-Trichloroethane	1/32	14	14	14	200 P	0
1,1,2-Trichloro-1,2,2-trifluoro	13/32	J 2	206.31	J 2000	–	–
1,2-Dichloroethene	16/32	J 1	9	39	70 P	0
Benzene	3/32	J 1	2.3333	J 3	5 P	0
Chloroform	1/32	J 1	1	J 1	100 P	0

Table 4.72 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Tetrachloroethene	4/32	J 3	9	J 17	5 P	3
Toluene	3/32	J 1	2.6667	J 4	1000 P	0
Trichloroethene	18/32	J 2	17.389	120	5 P	10
Volatile organics, tentatively identified compounds (µg/L)						
Ethane, 1,2-Dichloro-1,1,2-t	6/6	NJ 20	119	NJ 530	–	–
Unknown	4/4	NJ 5	12.75	NJ 27	–	–
Total[f] wet chemistry (mg/L)						
Alkalinity	17/17	42	249.47	355	–	–
Alkalinity as CO_3	17/17	0.02	11.16	149.06	–	–
Alkalinity as HCO_3	17/17	1.91	281.66	432.55	–	–
Total dissolved solids	32/32	100	356.91	473	500 S	0
Total suspended solids	7/32	4	5.4286	9	500 S	0

[a]Both the number of detected results and the total number of results include all duplicate and replicate measurements. A detected result is an analytical result with a validation qualifier that does not include "U" or "<". No blanks, matrix spikes, equipment rinsate or other QA/QC data are reported in this table. *n* denotes not applicable.

[b]The minimum and maximum detected results are listed with their validation qualifiers.

J denotes the associated numerical value is the approximate concentration of the analyte in the sample.

N denotes the analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

[c]The average radiochemistry results and their associated limits of error were calculated from all of the detected results using optimally weighted mean and variance estimates assuming independent measurements with unequal errors, as documented in *Radiation Detection and Measurement* by Glenn F. Knoll, New York: John Wiley and Sons (1979), pp. 137-139. For the non-radiochemistry analytes the average listed is the unweighted arithmetic mean of all detected results. No analytical qualifiers are listed for the average.

[d]If a reference value exists it originates from one of the following sources:

D Tennessee water quality criteria for domestic water supply, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

F Tennessee water quality criteria for fish and aquatic life, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

G DOE Order 5400.5, Chapter III, Derived Concentration Guides (DCG) for Air and Water. Four percent of the DOE DCG represents the DOE criterion of 4 mrem effective dose equivalent from ingestion of drinking water.

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

R Tennessee water quality criteria for recreation, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

S 40 CFR Part 143 National Secondary Drinking Water Regulations, as amended

– denotes no reference value exists for this analyte

[e]The number of detected results exceeding the reference value is given.

– denotes that since no reference value exists for this analyte, the number exceeding is not applicable.

[f]Total = unfiltered sample (soluable + suspended). Dissolved = filtered sample (soluable only).

Table 4.73. Constituents detected in groundwater wells at the K-25 Site Duct Island Area in 1995

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
		Anions (mg/L)				
Chloride	6/11	1.13	1.5883	1.98	250S	0
Fluoride	8/11	0.16	0.7525	2.12	4P	0
Nitrate/nitrite	3/11	0.26	0.2867	0.32	10P	0
Sulfate	8/11	5.09	11.451	27.5	250S	0
		Field measurements				
Conductivity (µmho/cm)	*n*/11	272	500.91	760	–	–
Dissolved oxygen (ppm)	*n*/11	4.4	7.7	13.6	5F	2
Redox (mV)	*n*/11	–164	57.545	254	–	–
Temperature (°C)	*n*/11	11.4	15.018	20	30.5D	0
Turbidity (NTU)	*n*/10	0.02	12.623	45.6	1P	9
pH (standard units)	*n*/11	6.82	8.0755	9.94	6.5–8.5S	3
		Dissolved[f] metals (µg/L)				
Aluminum	5/11	32.8	60.54	100	200S	0
Antimony	2/9	2	2.1	2.2	6P	0
Arsenic	3/11	2	4.3667	8.3	50P	0
Barium	10/11	4.4	42.44	103	2000P	0
Calcium	11/11	2100	65,266	133,000	–	–
Cobalt	6/11	5.3	14.7	41.4	–	–
Copper	3/11	3.2	9	12.5	1300P	0
Iron	8/11	121	589.88	1770	300S	4
Magnesium	10/11	567	14,055	30,100	–	–
Manganese	7/11	13.3	109.94	316	50S	5
Potassium	9/11	1450	9042.2	21,600	–	–
Silicon	11/11	3890	5010.9	5580	–	–
Sodium	11/11	1210	53,842	214,000	–	–
Thallium	1/11	3.4	3.4	3.4	2P	1
Vanadium	3/11	9.6	17.567	29.8	–	–
Zinc	6/11	20.7	30.45	45.4	5000S	0
		Total[f] metals (µg/L)				
Aluminum	3/11	225	412	687	200S	3
Antimony	1/11	3.6	3.6	3.6	6P	0
Arsenic	1/11	7.3	7.3	7.3	50P	0
Barium	10/11	J7.4	44.1	104	2000P	0
Calcium	11/11	3420	68,111	134,000	–	–
Chromium	1/11	3.2	3.2	3.2	100P	0
Cobalt	4/11	5.9	10.85	20.1	–	–
Copper	1/11	58.7	58.7	58.7	1300P	0

Table 4.73 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Cyanide	1/6	5.9	5.9	5.9	200P	0
Iron	10/11	385	827.5	2000	300S	10
Lead	1/11	2.5	2.5	2.5	15P	0
Magnesium	11/11	700	13,328	30,800	–	–
Manganese	9/11	8	87.722	337	50S	5
Nickel	1/11	18.8	18.8	18.8	100P	0
Potassium	8/11	1490	9677.5	21,300	–	–
Silicon	11/11	3810	5328.2	6620	–	–
Silver	2/11	2.5	4.2	5.9	100S	0
Sodium	11/11	1360	55,209	219,000	–	–
Vanadium	3/11	3.7	16.867	39.4	–	–
Zinc	10/11	19.8	102.86	304	5000S	0
Dissolved[f] radiochemistry (pCi/L)						
Beta activity	6/11	2.7±1.4	9.4843±0.9511	20.2±3	50P	0
Total[f] radiochemistry (pCi/L)						
Beta activity	9/11	J2.9±1.7	7.4761±0.8097	19.2±3	50P	0
Semivolatile organics (µg/L)						
Bis(2-ethylhexyl)phthalate	7/7	67	248.86	650	59R	7
Butylbenzylphthalate	1/7	J2	2	J2	–	–
Di-n-octylphthalate	1/7	J2	2	J2	–	–
Semivolatile organics, tentatively identified compounds (µg/L)						
Phenol, 4,4'-(1-Methylethyl)	1/1	NJ2	2	NJ2	–	–
Unknown	17/17	NJ2	4.5882	NJ16	–	–
Volatile organics (µg/L)						
1,1,1-Trichloroethane	1/11	J2	2	J2	200P	0
1,1,2-Trichloro-1,2,2-trifluoro	2/11	13	16.5	20	–	–
1,2-Dichloroethene	1/11	J4	4	J4	70P	0
Carbon disulfide	1/11	J2	2	J2	–	–
Toluene	2/11	J2	4.5	7	1000P	0
Trichloroethene	3/11	J2	7	16	5P	1
Volatile organics, tentatively identified compounds (µg/L)						
2-Propanol	1/1	NJ11	11	NJ11	–	–
Unknown	3/3	NJ9	20	NJ41	–	–

Table 4.73 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
		Total[f] wet chemistry (mg/L)				
Alkalinity	6/6	221	326	477	–	–
Alkalinity as CO_3	6/6	0.12	21.685	126.86	–	–
Alkalinity as HCO_3	6/6	268.94	353.63	449.78	–	–
Total dissolved solids	11/11	185	348.09	531	500S	2
Total suspended solids	9/11	4	13.444	62	500S	0

[a]Both the number of detected results and the total number of results include all duplicate and replicate measurements. A detected result is an analytical result with a validation qualifier that does not include "U" or "<". No blanks, matrix spikes, equipment rinsate or other QA/QC data are reported in this table. *n* denotes not applicable.

[b]The minimum and maximum detected results are listed with their validation qualifiers.

J denotes the associated numerical value is the approximate concentration of the analyte in the sample.

N denotes the analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

[c]The average radiochemistry results and their associated limits of error were calculated from all of the detected results using optimally weighted mean and variance estimates assuming independent measurements with unequal errors, as documented in *Radiation Detection and Measurement* by Glenn F. Knoll, New York: John Wiley and Sons (1979), pp. 137-139. For the non-radiochemistry analytes the average listed is the unweighted arithmetic mean of all detected results. No analytical qualifiers are listed for the average.

[d]If a reference value exists it originates from one of the following sources:

D Tennessee water quality criteria for domestic water supply, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

F Tennessee water quality criteria for fish and aquatic life, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

G DOE Order 5400.5, Chapter III, Derived Concentration Guides (DCG) for Air and Water. Four percent of the DOE DCG represents the DOE criterion of 4 mrem effective dose equivalent from ingestion of drinking water.

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

R Tennessee water quality criteria for recreation, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

S 40 CFR Part 143 National Secondary Drinking Water Regulations, as amended

– denotes no reference value exists for this analyte

[e]The number of detected results exceeding the reference value is given.

– denotes that since no reference value exists for this analyte, the number exceeding is not applicable.

[f]Total = unfiltered sample (soluable + suspended). Dissolved = filtered sample (soluable only).

Table 4.74. Constituents detected in Exit Pathway groundwater wells at the K-25 Site in 1995

Parameter	No. detected/ No. of results[a]	Detected results			Refrence value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
		Anions (mg/L)				
Chloride	12/16	1.22	5.6808	10.8	250 S	0
Fluoride	7/16	0.16	0.3886	0.62	4 P	0
Nitrate/nitrite	4/16	0.21	0.275	0.39	10 P	0
Sulfate	16/16	7.39	25.126	49.4	250 S	0
		Field measurements				
Conductivity (µmho/cm)	*n*/17	153	361.94	738	–	–
Dissolved oxygen (ppm)	*n*/17	0.5	6.1412	18.2	5 F	8
Redox (mV)	*n*/17	–66	141.06	262	–	–
Temperature (°C)	*n*/17	11.8	16.441	21.7	30.5 D	0
Turbidity (NTU)	*n*/10	0.02	11.352	96	1 P	5
pH (standard units)	*n*/17	4.34	7.1453	9.24	6.5–8.5 S	3
		Dissolved[f] metals (µg/L)				
Aluminum	4/16	31.7	41.575	51.5	200 S	0
Antimony	3/14	2.5	3.4	4.1	6 P	0
Arsenic	2/16	2.4	3.05	3.7	50 P	0
Barium	16/16	18.1	47.156	107	2000 P	0
Calcium	16/16	30,700	66,256	111,000	–	–
Chromium	1/16	25.7	25.7	25.7	100 P	0
Cobalt	6/16	5.2	16.9	34.2	–	–
Copper	2/16	6.3	12.3	18.3	1300 P	0
Iron	11/16	136	975	4180	300 S	7
Magnesium	16/16	6090	12,292	30,300	–	–
Manganese	14/16	6.4	526.35	2310	50 S	9
Nickel	3/16	14.6	16.867	19	100 P	0
Potassium	6/16	1790	10,338	24,500	–	–
Silicon	16/16	900	2861.1	5990	–	–
Silver	1/14	J 2.3	2.3	J 2.3	100 S	0
Sodium	16/16	1230	14,241	92,100	–	–
Vanadium	4/16	7.5	8.975	10.2	–	–
Zinc	13/16	6.6	28.708	63.8	5000 S	0
		Total[f] metals (µg/L)				
Aluminum	3/16	1550	3706.7	7770	200 S	3
Arsenic	1/16	1.9	1.9	1.9	50 P	0
Barium	16/16	21.1	49.831	111	2000 P	0
Calcium	16/16	29,800	70,031	114,000	–	–
Chromium	2/16	11	25.95	40.9	100 P	0
Cobalt	9/16	3.6	9.7	25.1	–	–

Table 4.74 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Refrence value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Copper	1/16	12.2	12.2	12.2	1300 P	0
Cyanide	1/9	2.3	2.3	2.3	200 P	0
Iron	11/16	J 132	2867.6	16,900	300 S	6
Lead	2/16	1.3	4.3	7.3	15 P	0
Magnesium	16/16	6990	12,618	29,600	–	–
Manganese	12/16	7.6	632.47	2420	50 S	11
Nickel	1/16	21.7	21.7	21.7	100 P	0
Potassium	9/16	1250	6893.3	20,000	–	–
Selenium	1/16	3	3	3	50 P	0
Silicon	16/16	1010	3540.6	9520	–	–
Silver	1/16	4	4	4	100 S	0
Sodium	16/16	1240	10,674	53,500	–	–
Vanadium	3/16	3.1	9.6	16.8	–	–
Zinc	9/16	J 1.9	19.167	42.7	5000 S	0
		Dissolved[f] radiochemistry (pCi/L)				
Alpha activity	1/16	J 3.3±1.6	3.3±1.6	J 3.3±1.6	15 P	0
Beta activity	9/16	J 2.4±1.4	6.0933±0.6239	26.6±3.6	50 P	0
^{90}Sr	1/4	J 1.43±0.78	1.43±0.78	J 1.43±0.78	–	–
$^{233/234}U$	1/1	0.266±0.086	0.266±0.086	0.266±0.086	20 G	0
^{238}U	1/1	0.135±0.06	0.135±0.06	0.135±0.06	24 G	0
		Total[f] radiochemistry (pCi/L)				
Alpha activity	2/16	2.6±1.6	3.2959±1.5609	17±7.1	15 P	1
Beta activity	16/16	J 2.2±1.4	5.5482±0.468	22.9±3.7	50 P	0
^{237}Np	1/1	J 0.062±0.045	0.062±0.045	J 0.062±0.045	1.2 G	0
^{99}Tc	2/4	4.2±1.1	5.2431±0.8397	6.7±1.3	4000 G	0
^{230}Th	1/1	J 0.059±0.042	0.059±0.042	J 0.059±0.042	12 G	0
$^{233/234}U$	1/1	0.25±0.081	0.25±0.081	0.25±0.081	20 G	0
^{238}U	1/1	0.207±0.073	0.207±0.073	0.207±0.073	24 G	0
		Semivolatile organics (µg/L)				
Bis(2-ethylhexyl)phthalate	8/8	21	200	580	59 R	6
		Semivolatile organics, tentatively identified compounds (µg/L)				
Unknown	4/4	NJ 2	2.75	NJ 4	–	–
		Volatile organics (µg/L)				
1,1,2-Trichloro-1,2,2-trifluoro	1/16	J 2	2	J 2	–	–
1,2-Dichloroethene	2/16	J 2	2	J 2	70 P	0
Methylene chloride	1/16	J 4	4	J 4	5 P	0

Table 4.74 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Refrence value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Toluene	1/16	J 1	1	J 1	1000 P	0
Trichloroethene	2/16	J 1	1.5	J 2	5 P	0
		Total[f] wet chemistry (mg/L)				
Alkalinity	8/8	115	185.38	340	–	–
Alkalinity as CO_3	8/8	0.0002	3.815	27.97	–	–
Alkalinity as HCO_3	8/8	140.23	218.4	357.94	–	–
Total dissolved solids	16/16	113	268.31	444	500 S	0
Total suspended solids	7/16	5	71	379	500 S	0

[a]Both the number of detected results and the total number of results include all duplicate and replicate measurements. A detected result is an analytical result with a validation qualifier that does not include "U" or "<". No blanks, matrix spikes, equipment rinsate or other QA/QC data are reported in this table. *n* denotes not applicable.

[b]The minimum and maximum detected results are listed with their validation qualifiers.

J denotes the associated numerical value is the approximate concentration of the analyte in the sample.

N denotes the analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

[c]The average radiochemistry results and their associated limits of error were calculated from all of the detected results using optimally weighted mean and variance estimates assuming independent measurements with unequal errors, as documented in *Radiation Detection and Measurement* by Glenn F. Knoll, New York: John Wiley and Sons (1979), pp. 137–139. For the non-radiochemistry analytes the average listed is the unweighted arithmetic mean of all detected results. No analytical qualifiers are listed for the average.

[d]If a reference value exists it originates from one of the following sources:

D Tennessee water quality criteria for domestic water supply, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

F Tennessee water quality criteria for fish and aquatic life, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

G DOE Order 5400.5, Chapter III, Derived Concentration Guides (DCG) for Air and Water. Four percent of the DOE DCG represents the DOE criterion of 4 mrem effective dose equivalent from ingestion of drinking water.

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

R Tennessee water quality criteria for recreation, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

S 40 CFR Part 143 National Secondary Drinking Water Regulations, as amended

– denotes no reference value exists for this analyte

[e]The number of detected results exceeding the reference value is given.

– denotes that since no reference value exists for this analyte, the number exceeding is not applicable.

[f]Total = unfiltered sample (soluable + suspended). Dissolved = filtered sample (soluable only).

Table 4.75. Constituents detected in groundwater wells at the K-25 and K-1064 Area of K-25 in 1995

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Anions (mg/L)						
Chloride	25/29	3.09	10.18	26.7	250 S	0
Fluoride	24/29	0.1	0.6983	5.25	4 P	1
Nitrate/nitrite	24/29	0.35	0.8238	3.62	10 P	0
Sulfate	24/29	14	94.113	251	250 S	1
Field measurements						
Conductivity (µmho/cm)	*n*/32	241	553.41	876	–	–
Dissolved oxygen (ppm)	*n*/32	0.9	7.6625	17	5 F	11
Redox (mV)	*n*/29	–94	132.76	248	–	–
Temperature (°C)	*n*/32	12.1	17.088	24.4	30.5 D	0
Turbidity (NTU)	*n*/27	0.03	14.502	97	1 P	20
pH (standard units)	*n*/32	6.73	7.6763	9.44	6.5–8.5 S	2
Dissolved[f] metals (µg/L)						
Aluminum	10/29	28.8	46.93	85.4	200 S	0
Antimony	3/29	2.3	3.4333	4.4	6 P	0
Arsenic	8/29	2.3	20.175	89.4	50 P	1
Barium	28/29	9.8	38.439	91.1	2000 P	0
Calcium	29/29	2500	87,498	163,000	–	–
Chromium	8/29	6.7	11.95	15.5	100 P	0
Cobalt	11/29	5.1	12.964	34.9	–	–
Copper	8/29	10.4	35.05	159	1300 P	0
Iron	9/29	23	214.41	1430	300 S	1
Magnesium	29/29	632	19,815	48,000	–	–
Manganese	14/29	4	179.18	884	50 S	3
Nickel	2/29	51.4	66.9	82.4	100 P	0
Potassium	25/29	1100	3044	9580	–	–
Silicon	29/29	1500	3469	6490	–	–
Sodium	29/29	4950	22,477	220,000	–	–
Thallium	7/29	3.2	4	5.2	2 P	7
Vanadium	8/27	6.2	12.813	17.8	–	–
Zinc	18/29	J 14.2	25.922	64.1	5000 S	0
Total[f] metals (µg/L)						
Aluminum	12/29	26.9	168.77	457	200 S	4
Antimony	2/29	2.2	3.2	4.2	6 P	0
Arsenic	6/29	2.2	30.4	88.4	50 P	1

Table 4.75 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Barium	27/29	14.3	39.2	85.6	2000 P	0
Calcium	29/29	2540	87,117	161,000	–	–
Chromium	10/29	5.7	9.49	15.6	100 P	0
Cobalt	13/29	4.3	9.5	36.3	–	–
Copper	6/29	5.9	20.533	59.5	1300 P	0
Iron	12/29	86.4	299.2	571	300 S	5
Lead	2/29	2.1	12.55	23	15 P	1
Magnesium	29/29	647	19,213	48,100	–	–
Manganese	15/29	4.2	152.15	802	50 S	3
Mercury	1/29	0.11	0.11	0.11	2 P	0
Nickel	1/29	58.8	58.8	58.8	100 P	0
Potassium	22/29	1250	2956.8	8910	–	–
Silicon	29/29	1990	3563.4	7990	–	–
Sodium	29/29	5270	22,330	233,000	–	–
Vanadium	5/29	8.9	12.16	16.6	–	–
Zinc	17/29	12.4	22.559	44.9	5000 S	0
		Dissolved[f] radiochemistry (pCi/L)				
Alpha activity	12/29	3.6±1.9	8.791±1.1317	32.1±7.5	15 P	8
Beta activity	26/29	2.1±1.1	5.1133±0.3896	60.1±6.3	50 P	1
^{237}Np	2/11	0.043±0.027	0.0464±0.0214	0.052±0.035	1.2 G	0
$^{239/240}$Pu	2/12	J 0.039±0.038	0.0859±0.0309	J 0.177±0.053	1.2 G	0
^{99}Tc	7/8	20.4±2.4	35.28±1.4524	69.3±6.6	4000 G	0
Thorium	4/8	J 0.05±0.027	0.0766±0.0175	J 0.102±0.043	2 G	0
^{228}Th	8/12	0.073±0.049	0.1302±0.02	0.242±0.064	16 G	0
^{230}Th	8/12	J 0.055±0.027	0.1094±0.0145	J 0.382±0.1	12 G	0
Uranium	8/8	J 0.193±0.05	0.5269±0.0494	21.7±1.2	24 G	0
$^{233/234}$U	12/12	J 0.489±0.081	1.6054±0.0779	26.3±1.5	20 G	4
^{235}U	12/17	J 0.058±0.027	0.3401±0.0225	2±0.21	24 G	0
^{238}U	4/4	7.67±0.52	8.5272±0.291	10.71±0.68	24 G	0
		Total[f] radiochemistry (pCi/L)				
Alpha activity	13/29	2.7±1.7	8.8869±1.0368	38±9.2	15 P	8
^{241}Am	1/12	J 0.024±0.024	0.024±0.024	J 0.024±0.024	1.2 G	0
Beta activity	28/29	J 2.4±1.4	6.9841±0.4105	75.7±7.2	50 P	1
^{237}Np	7/11	J 0.055±0.041	0.0703±0.018	J 0.093±0.051	1.2 G	0

Table 4.75 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
$^{239/240}$Pu	1/12	0.01±0.011	0.01±0.011	0.01±0.011	1.2 G	0
^{99}Tc	7/8	40.8±4	51.632±1.9502	100.3±8.9	4000 G	0
Thorium	8/8	J 0.023±0.016	0.0417±0.007	0.099±0.029	2 G	0
^{228}Th	1/12	J 0.144±0.043	0.144±0.043	J 0.144±0.043	16 G	0
^{230}Th	1/12	J 0.085±0.024	0.085±0.024	J 0.085±0.024	12 G	0
Uranium	8/8	0.249±0.092	0.8722±0.0897	J 25.4±1.9	24 G	1
$^{233/234}$U	12/12	J 0.79±0.17	3.9217±0.1468	28.3±1.9	20 G	4
^{235}U	12/17	0.113±0.061	0.5446±0.0389	J 3.54±0.55	24 G	0
^{238}U	4/4	6.75±0.46	7.8256±0.2747	9.72±0.63	24 G	0
		Semivolatile organics (µg/L)				
Bis(2-ethylhexyl)phthalate	13/14	14	189.54	690	59 R	9
Butylbenzylphthalate	1/14	J 1	1	J 1	–	–
Di-n-butylphthalate	1/14	J 1	1	J 1	12,000 R	0
Di-n-octylphthalate	1/14	19	19	19	–	–
		Semivolatile organics, tentatively identified compounds (µg/L)				
Unknown	16/16	NJ 2	7.625	NJ 25	–	–
		Volatile organics (µg/L)				
1,1,1-Trichloroethane	9/29	J 3	8.7778	14	200 P	0
1,1,2-Trichloro-1,2,2-trifluoro	3/29	J 1	2	J 3	–	–
1,1,2-Trichloroethane	5/29	J 1	2.4	5	5 P	0
1,1-Dichloroethane	3/29	8	10.333	12	–	–
1,1-Dichloroethene	4/29	J 1	2.75	J 4	7 P	0
1,2-Dichloroethene	5/29	J 1	5.4	13	70 P	0
2-Butanone	1/29	J 8	8	J 8	–	–
Benzene	2/29	J 3	4.5	6	5 P	1
Bromodichloromethane	4/29	J 2	4.25	5	100 P	0
Chloroform	13/29	J 1	27.923	44	100 P	0
Chloromethane	4/29	J 1	1.25	J 2	–	–
Methylene chloride	2/29	J 2	2.5	J 3	5 P	0
Trichloroethene	8/29	J 2	8.75	17	5 P	4
		Volatile organics, tentatively identified compounds (µg/L)				
Unknown	2/2	NJ 5	7.5	NJ 10	–	–

Table 4.75 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
		Total[f] wet chemistry (mg/L)				
Alkalinity	14/14	101	227.64	399	–	–
Alkalinity as CO_3	14/14	0.08	2.6036	27.03	–	–
Alkalinity as HCO_3	14/14	123.06	272.43	486.54	–	–
Total dissolved solids	29/29	140	377.69	642	500 S	8
Total suspended solids	7/29	4	10.571	30	500 S	0

[a]Both the number of detected results and the total number of results include all duplicate and replicate measurements. A detected result is an analytical result with a validation qualifier that does not include "U" or "<". No blanks, matrix spikes, equipment rinsate or other QA/QC data are reported in this table. *n* denotes not applicable.

[b]The minimum and maximum detected results are listed with their validation qualifiers.

J denotes the associated numerical value is the approximate concentration of the analyte in the sample.

N denotes the analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

[c]The average radiochemistry results and their associated limits of error were calculated from all of the detected results using optimallyweighted mean and variance estimates assuming independent measurements with unequal errors, as documented in *Radiation Detection and Measurement* by Glenn F. Knoll, New York: John Wiley and Sons (1979), pp. 137-139. For the non-radiochemistry analytes the average listed is the unweighted arithmetic mean of all detected results. No analytical qualifiers are listed for the average.

[d]If a reference value exists it originates from one of the following sources:

D Tennessee water quality criteria for domestic water supply, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

F Tennessee water quality criteria for fish and aquatic life, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

G DOE Order 5400.5, Chapter III, Derived Concentration Guides (DCG) for Air and Water. Four percent of the DOE DCG represents the DOE criterion of 4 mrem effective dose equivalent from ingestion of drinking water.

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

R Tennessee water quality criteria for recreation, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

S 40 CFR Part 143 National Secondary Drinking Water Regulations, as amended

– denotes no reference value exists for this analyte

[e]The number of detected results exceeding the reference value is given.

– denotes that since no reference value exists for this analyte, the number exceeding is not applicable.

[f]Total = unfiltered sample (soluable + suspended). Dissolved = filtered sample (soluable only).

Table 4.76. Constituents detected in groundwater wells at the K-27 and K-29 Area of K-25 in 1995

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
			Anions (mg/L)			
Chloride	37/37	1.15	15.536	105	250 S	0
Fluoride	24/37	0.1	1.5954	8.64	4 P	3
Nitrate/nitrite	22/37	0.22	1.1486	8.65	10 P	0
Sulfate	25/37	9.89	27.776	51	250 S	0
			Field measurements			
Conductivity (µmho/cm)	*n*/37	131	365.46	706	–	–
Dissolved oxygen (ppm)	*n*/37	0.4	8.5459	19.7	5 F	7
Redox (mV)	*n*/37	-154	97.378	248	–	–
Temperature (°C)	*n*/37	11.8	17.584	26.3	30.5 D	0
Turbidity (NTU)	*n*/30	0.01	4.5757	20.1	1 P	21
pH (standard units)	*n*/37	4.79	8.0962	12.24	6.5–8.5 S	13
			Dissolved[f] metals (µg/L)			
Aluminum	12/36	24.5	134.04	359	200 S	3
Antimony	4/36	1.7	2.675	3.9	6 P	0
Arsenic	1/36	2.7	2.7	2.7	50 P	0
Barium	36/36	14.1	53.436 J	284	2000 P	0
Beryllium	3/36	0.68	1.16	1.6	4 P	0
Calcium	36/36	2990	41,476	94,800	–	–
Chromium	14/36	3.3	61.579	275	100 P	4
Cobalt	13/36	4.1	8.0231	14.2	–	–
Copper	11/36	4.9	13	48.4	1300 P	0
Iron	19/36	29.1	386.21 J	1060	300 S	9
Magnesium	36/36	858	14,573	34,700	–	–
Manganese	15/36	2.9	1005.6	5070	50 S	9
Mercury	6/36	0.16	0.26	0.58	2 P	0
Nickel	15/36	19.5	64.147	115	100 P	2
Potassium	22/36	1430	5910.5	14,500	–	–
Selenium	2/36	1.5	2.65	3.8	50 P	0
Silicon	36/36	1800	4507.8	7500	–	–
Sodium	36/36	1390	19,477	145,000	–	–
Thallium	5/36	2.9	4.06	6.2	2 P	5
Vanadium	13/36	6.6	10.031	15.8	–	–
Zinc	23/36	10.8	33.296	117	5000 S	0
			Total[f] metals (µg/L)			
Aluminum	12/37	35.4	333.82	1260	200 S	7
Antimony	4/37	3	3.725	4.7	6 P	0
Arsenic	1/37	3.1	3.1	3.1	50 P	0
Barium	37/37	13.6	54.205	278	2000 P	0

Table 4.76 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Calcium	37/37	3060	41,861	103,000	–	–
Chromium	16/35	5.1	109.96	J 741	100 P	5
Cobalt	12/37	4.4	11.433	17	–	–
Copper	7/37	5.7	9.2857	23.2	1300 P	0
Iron	29/37	90.1	802.68	4840	300 S	18
Lead	3/37	1.1	1.6	1.9	15 P	0
Magnesium	36/37	2250	15,036	34,700	–	–
Manganese	24/37	6.4	635.1	5140	50 S	13
Mercury	1/37	0.44	0.44	0.44	2 P	0
Nickel	18/37	14.9	54.978	118	100 P	1
Potassium	26/37	1470	5572.7	14,800	–	–
Selenium	4/37	1.9	2.7	4	50 P	0
Silicon	37/37	1440	4585.7	8120	–	–
Sodium	37/37	1410	19,498	144,000	–	–
Thallium	6/37	3	4.6333	6.2	2 P	6
Vanadium	6/37	4.3	7.0167	10	–	–
Zinc	27/37	11.7	32.681	122	5000 S	0
Pesticides (µg/L)						
Endosulfan II	1/20	0.15	0.15	0.15	0.22 F	0
Dissolved[f] radiochemistry (pCi/L)						
Alpha activity	2/36	5±1.9	5.135±1.4089	5.3±2.1	15 P	0
Beta activity	31/36	2.3±1.4	7.7701±0.3324	38.3±3.4	50 P	0
Bismuth-214	1/2	10.9±6.1	10.9±6.1	10.9±6.1	24,000 G	0
Technetium-99	2/2	26.3±2.9	32.174±2.5653	53.3±5.5	4000 G	0
Total[f] radiochemistry (pCi/L)						
Alpha activity	2/37	5.5±2.1	5.7861±1.519	6.1±2.2	15 P	0
Beta activity	33/37	J 2.3±1.4	10.042±0.3581	43.2±4.9	50 P	0
Technetium-99	2/2	29.4±3.3	36.839±2.9425	65.7±6.5	4000 G	0
Semivolatile organics (µg/L)						
Bis(2-ethylhexyl)phthalate	21/21	J 9	244.29	660	59 R	17
Di-n-butylphthalate	1/21	J 3	3	J 3	12,000 R	0
N-Nitrosodiphenylamine	2/20	10	14	18	–	–
Semivolatile organics, tentatively identified compounds (µg/L)						
1h-Benzotriazole	1/1	NJ 3	3	NJ 3	–	–
Benzothiazole	1/1	NJ 9	9	NJ 9	–	–
N,n-Dimethylthiobenzamide	2/2	NJ 3	3	NJ 3	–	–

Table 4.76 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Phenol, 4-(1,1-Dimethylethyl	2/2	NJ 6	6	NJ 6	–	–
Unknown	36/36	NJ 2	7.3889	NJ 67	–	–
Unknown adipate	2/2	NJ 3	5	NJ 7	–	–
Unknown $C_{14}H_{22}O$	1/1	NJ 3	3	NJ 3	–	–
Unknown $C_6H_{12}O$	1/1	NJ 4	4	NJ 4	–	–
Unknown C_7H_5NS	1/1	NJ 12	12	NJ 12	–	–
Unknown phthalate	1/1	NJ 2	2	NJ 2	–	–
Urea, tetramethyl-	1/1	NJ 5	5	NJ 5	–	–
Volatile organics (µg/L)						
1,1,2-Trichloro-1,2,2-trifluoro	5/37	J 2	3.2	J 5	–	–
1,1-Dichloroethene	5/37	J 1	3.8	10	7 P	1
1,2-Dichloroethene	19/37	J 3	79.474	J 1200	70 P	1
4-Methyl-2-pentanone	1/37	J 3	3	J 3	–	–
Acetone	1/37	J 19	19	J 19	–	–
Benzene	1/37	J 2	2	J 2	5 P	0
Carbon tetrachloride	7/37	J 1	5.7143	J 9	5 P	4
Chloroform	18/37	J 1	4	10	100 P	0
Chloromethane	2/37	J 1	4.5	J 8	–	–
Methylene chloride	5/37	J 1	2	J 3	5 P	0
Toluene	2/37	J 1	1.5	J 2	1000 P	0
Trichloroethene	28/37	J 1	117.61	J 860	5 P	22
Vinyl chloride	4/37	41	64.5	J 130	2 P	4
Volatile organics, tentatively identified compounds (µg/L)						
2-Propanol	2/2	NJ 6	13.5	NJ 21	–	–
Boric acid (H_3BO_3), trimethy	1/1	NJ 15	15	NJ 15	–	–
Trichlorofluoromethane	2/2	NJ 3	3.5	NJ 4	–	–
Unknown	1/1	NJ 8	8	NJ 8	–	–
Total wet chemistry (mg/L)						
Alkalinity	20/20	4	146.8	291	–	–
Alkalinity as CO_3	20/20	0.00002	10.007	97.41	–	–

Table 4.76 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Alkalinity as HCO_3	20/20	2.79	158.75	346.31	–	–
Total dissolved solids	37/37	107	234.19	411	500 S	0
Total suspended solids	23/37	4	12.174	101	500 S	0

[a]Both the number of detected results and the total number of results include all duplicate and replicate measurements. A detected result is an analytical result with a validation qualifier that does not include "U" or "<". No blanks, matrix spikes, equipment rinsate or other QA/QC data are reported in this table. *n* denotes not applicable.

[b]The minimum and maximum detected results are listed with their validation qualifiers.

J denotes the associated numerical value is the approximate concentration of the analyte in the sample.

N denotes the analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

[c]The average radiochemistry results and their associated limits of error were calculated from all of the detected results using optimally weighted mean and variance estimates assuming independent measurements with unequal errors, as documented in *Radiation Detection and Measurement* by Glenn F. Knoll, New York: John Wiley and Sons (1979), pp. 137-139. For the non-radiochemistry analytes the average listed is the unweighted arithmetic mean of all detected results. No analytical qualifiers are listed for the average.

[d]If a reference value exists it originates from one of the following sources:

D Tennessee water quality criteria for domestic water supply, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

F Tennessee water quality criteria for fish and aquatic life, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

G DOE Order 5400.5, Chapter III, Derived Concentration Guides (DCG) for Air and Water. Four percent of the DOE DCG represents the DOE criterion of 4 mrem effective dose equivalent from ingestion of drinking water.

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

R Tennessee water quality criteria for recreation, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

S 40 CFR Part 143 National Secondary Drinking Water Regulations, as amended

– denotes no reference value exists for this analyte

[e]The number of detected results exceeding the reference value is given.

– denotes that since no reference value exists for this analyte, the number exceeding is not applicable.

[f]Total = unfiltered sample (soluble + suspended). Dissolved = filtered sample (soluble only).

Table 4.77. Constituents detected in groundwater wells at the K-33 and K-31 Area of K-25 in 1995

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Anions (mg/L)						
Chloride	43/45	1.4	12.593	40.3	250S	0
Fluoride	27/45	0.1	0.2222	0.44	4P	0
Nitrate/nitrite	35/45	0.2	0.7494	1.9	10P	0
Sulfate	42/45	8.86	56.232	222	250S	0
Field measurements						
Conductivity (µmho/cm)	*n*/44	102	460.3	896	–	–
Dissolved oxygen (ppm)	*n*/44	0.3	7.4361	16.3	5F	14
Redox (mV)	*n*/44	–148	136.16	288	–	–
Temperature (°C)	*n*/44	11.5	17.875	23.3	30.5D	0
Turbidity (NTU)	*n*/41	0.02	6.8785	86.9	1P	30
pH (standard units)	*n*/44	5.75	7.4782	9.14	6.5–8.5S	6
Dissolved[f] metals (µg/L)						
Aluminum	10/42	24.6	39.97	93.8	200S	0
Antimony	5/45	2	2.74	4.3	6P	0
Arsenic	4/45	1.6	2.775	4.3	50P	0
Barium	45/45	19.3	48.378	148	2000P	0
Calcium	45/45	16,900	75,789	154,000	–	–
Chromium	31/45	3	39.403	134	100P	4
Cobalt	12/45	4.2	9.25	20.9	–	–
Copper	12/44	8.6	14.758	22.1	1300P	0
Iron	17/45	40.8	230.46	592	300S	4
Magnesium	45/45	2860	14,794	33,800	–	–
Manganese	30/45	2.6	112.01	922	50S	8
Mercury	6/45	0.11	0.16	0.18	2P	0
Nickel	15/45	14	465	3640	100P	5
Potassium	25/45	1280	3938	16,600	–	–
Selenium	3/42	1.5	3.6	5.4	50P	0
Silicon	45/45	1810	3837.3	7530	–	–
Silver	1/43	5.6	5.6	5.6	100S	0
Sodium	45/45	2280	16,137	47,200	–	–
Thallium	7/45	4.4	5.5143	6.7	2P	7
Vanadium	17/40	2.5	10.588	23.9	–	–
Zinc	25/45	11	29.356	118	5000S	0
Total[f] metals (µg/L)						
Aluminum	13/45	27.3	78.915	227	200S	1
Antimony	4/45	2	2.175	2.5	6P	0
Arsenic	4/45	1.6	2.1	3.2	50P	0
Barium	45/45	19	48.722	149	2000P	0
Cadmium	1/45	2.4	2.4	2.4	5P	0

Table 4.77 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Calcium	45/45	17,200	76,513	165,000	–	–
Chromium	32/45	4.4	46.425	178	100P	4
Cobalt	17/45	5.1	9.3471	16.3	–	–
Copper	6/44	5.7	8.8167	11.9	1300P	0
Iron	24/45	41.1	312.19	J1450	300S	7
Lead	1/45	2.7	2.7	2.7	15P	0
Magnesium	45/45	J2910	14,974	J33,700	–	–
Manganese	28/45	2.9	126.01	912	50S	8
Mercury	1/45	0.18	0.18	0.18	2P	0
Nickel	16/45	11.9	455.78	3910	100P	6
Potassium	27/45	1230	4114.4	15,400	–	–
Selenium	7/45	1.5	3.2143	6.9	50P	0
Silicon	45/45	1900	3935.6	J8280	–	–
Silver	2/45	3.7	3.95	4.2	100S	0
Sodium	45/45	2350	16,285	45,600	–	–
Thallium	1/45	4.3	4.3	4.3	2P	1
Vanadium	6/42	3.6	7.7333	12.5	–	–
Zinc	33/45	J13.1	30.539	181	5000S	0
Dissolved[f] radiochemistry (pCi/L)						
Alpha activity	1/45	J2.6±1.8	2.6±1.8	J2.6±1.8	15P	0
Beta activity	24/45	J2.5±1.4	5.8666±0.3769	16.1±2.7	50P	0
Total[f] radiochemistry (pCi/L)						
Alpha activity	5/45	3.4±2.2	5.4465±1.2651	29.6±6.8	15P	1
Beta activity	32/45	J2.6±1.5	6.8593±0.3543	20.6±2.5	50P	0
Semivolatile organics (µg/L)						
Bis(2-ethylhexyl)phthalate	1/21	16	263.9	550	59R	19
Butylbenzylphthalate	2/21	J1	25.5	50	–	–
Di-n-butylphthalate	4/21	J1	2.25	J3	12,000R	0
Di-n-octylphthalate	1/21	J1	1	J1	–	–
Diethylphthalate	1/21	51	51	51	120,000R	0
Semivolatile organics, tentatively identified compounds (µg/L)						
2(3H)-Benzothiazolethione	1/1	NJ2	2	NJ2	–	–
Benzothiazole	2/2	NJ8	9.5	NJ11	–	–
Phenol, 4,4'-(1-Methylethyli	1/1	NJ4	4	NJ4	–	–
Unknown	56/56	NJ2	6.8571	NJ34	–	–
Unknown $C_{14}H_{22}O$	1/1	NJ2	2	NJ2	–	–
Unknown silicone	5/5	NJ3	4.6	NJ6	–	–

Table 4.77 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Volatile organics (µg/L)						
1,1,1-Trichloroethane	4/45	J2	3.5	6	200P	0
1,1,2-Trichloro-1,2,2-trifluoro	7/45	J2	4.1429	J8	–	–
1,1-Dichloroethene	1/45	J7	7	J7	7P	0
1,2-Dichloroethene	4/45	8	10.25	14	70P	0
Acetone	3/45	J8	23.333	J51	–	–
Chloroform	8/45	J1	5.625	20	100P	0
Chloromethane	3/45	J1	6	12	–	–
Methylene chloride	5/45	J1	1.6	J3	5P	0
Toluene	3/45	J1	2.3333	J4	1000P	0
Trichloroethene	11/45	J1	13.636	43	5P	5
Volatile organics, tentatively identified compounds (µg/L)						
2-Propanol	5/5	NJ23	54.6	NJ170	–	–
Boric acid (H_3BO_3), trimethy	1/1	NJ8	8	NJ8	–	–
Unknown	1/1	NJ5	5	NJ5	–	–
Total[f] wet chemistry (mg/L)						
Alkalinity	21/21	18	196	363	–	–
Alkalinity as CO_3	21/21	0.0007	0.5519	1.9	–	–
Alkalinity as HCO_3	21/21	21.96	238	441.46	–	–
Total dissolved solids	44/44	107	308.89	616	500S	4
Total suspended solids	12/44	4	5.4167	8	500S	0

[a]Both the number of detected results and the total number of results include all duplicate and replicate measurements. A detected result is an analytical result with a validation qualifier that does not include "U" or "<". No blanks, matrix spikes, equipment rinsate or other QA/QC data are reported in this table. *n* denotes not applicable.

[b]The minimum and maximum detected results are listed with their validation qualifiers.

J denotes the associated numerical value is the approximate concentration of the analyte in the sample.

N denotes the analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

[c]The average radiochemistry results and their associated limits of error were calculated from all of the detected results using optimallyweighted mean and variance estimates assuming independent measurements with unequal errors, as documented in *Radiation Detection and Measurement* by Glenn F. Knoll, New York: John Wiley and Sons (1979), pp. 137-139. For the non-radiochemistry analytes the average listed is the unweighted arithmetic mean of all detected results. No analytical qualifiers are listed for the average.

[d]If a reference value exists it originates from one of the following sources:

D Tennessee water quality criteria for domestic water supply, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

F Tennessee water quality criteria for fish and aquatic life, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

G DOE Order 5400.5, Chapter III, Derived Concentration Guides (DCG) for Air and Water. Four percent of the DOE DCG represents the DOE criterion of 4 mrem effective dose equivalent from ingestion of drinking water.

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

R Tennessee water quality criteria for recreation, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

S 40 CFR Part 143 National Secondary Drinking Water Regulations, as amended

– denotes no reference value exists for this analyte

[e]The number of detected results exceeding the reference value is given.

– denotes that since no reference value exists for this analyte, the number exceeding is not applicable.

[f]Total = unfiltered sample (soluable + suspended). Dissolved = filtered sample (soluable only).

Table 4.78. Constituents detected in the seeps at the K-25 Site in 1995

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
			Anions (mg/L)			
Chloride	13/16	1.08	2.4031	8.18	250 S	0
Fluoride	4/16	0.17	0.18	0.2	4 P	0
Nitrate/nitrite	7/16	0.21	0.2943	0.39	10 P	0
Sulfate	7/16	5.62	57.577	103	250 S	0
			Field measurements			
Conductivity (µmho/cm)	*n*/21	23	234.6	513	–	–
Dissolved oxygen (ppm)	*n*/16	2.4	5.0125	9.2	5 F	9
Redox (mV)	*n*/16	–29	117.19	248	–	–
Temperature (°C)	*n*/22	5.9	14.723	28.2	30.5 D	0
Turbidity (NTU)	*n*/5	0.02	5.426	10.3	1 P	3
pH (standard units)	*n*/21	6.52	7.34	7.83	6.5–8.5 S	0
			Herbicides (µg/L)			
Simazine	1/16	J 1.3	1.3 J	1.3	4 P	0
			Dissolved metals (µg/L)			
Antimony	3/16	2.6	5.3333	9.3	6 P	1
Barium	16/16	12.3	41.5	65.7	2000 P	0
Calcium	16/16	11,700	39,488	74,900	–	–
Cobalt	8/16	4	12.875	52.9	–	–
Copper	3/16	11.2	11.867	12.7	1300 P	0
Iron	6/16	J 131	315.33	J 872	300 S	2
Magnesium	16/16	6970	14,941	28,300	–	–
Manganese	13/16	3.2	82.769	340	50 S	6
Mercury	1/16	0.12	0.12	0.12	2 P	0
Potassium	12/16	1440	2754.2	4360	–	–
Silicon	16/16	2160	4825	6990	–	–
Sodium	16/16	721	2443.3	8920	–	–
Vanadium	7/16	4.4	8.3	11.2	–	–
Zinc	7/16	12.7	17.9	30.2	5000 S	0
			Total metals (µg/L)			
Aluminum	2/16	247	316.5	386	200 S	2
Barium	16/16	12.8	42.119	68.4	2000 P	0
Calcium	16/16	11,600	38,938	72,400	–	–
Cobalt	10/16	5	10.51	19.8	–	–
Copper	3/16	12.1	18.233	25.4	1300 P	0
Cyanide	3/16	2.7	2.7	2.7	200 P	0
Iron	12/16	91.6	491.63	1190	300 S	8
Magnesium	16/16	7090	14,848	28,200	–	–
Manganese	13/16	3.3	84.085	333	50 S	6

Table 4.78 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Potassium	13/16	1170	2618.5	3870	–	–
Silicon	16/16	2130	4876.9	6960	–	–
Sodium	16/16	726	2366.9	8610	–	–
Vanadium	4/16	4.6	7.2	10.5	–	–
Zinc	6/16	12.7	15.333	20.2	5000 S	0
			Dissolved[f] radiochemistry (pCi/L)			
Beta activity	8/15	J 2.5±1.4	3.1039±0.5225	4.3±1.9	50 P	0
$^{239/240}Pu$	1/7	J 0.04±0.028	0.04±0.028	J 0.04±0.028	1.2 G	0
^{99}Tc	1/7	3.3±1.1	3.3±1.1	3.3±1.1	4000 G	0
$^{233/234}U$	7/7	J 0.071±0.036	0.1823±0.0215	0.6±0.11	20 G	0
^{235}U	1/7	0.087±0.039	0.087±0.039	0.087±0.039	24 G	0
^{238}U	7/7	J 0.051±0.03	0.098±0.0157	0.366±0.082	24 G	0
			Total[f] radiochemistry (pCi/L)			
Alpha activity	1/16	36.9±4.4	36.9±4.4	36.9±4.4	15 P	1
^{241}Am	1/7	J 0.023±0.023	0.023±0.023	J 0.023±0.023	1.2 G	0
Beta activity	12/16	2.2±1.3	3.4546±0.4355	6.7±2	50 P	0
$^{239/240}Pu$	1/7	J 0.026±0.026	0.026±0.026	J 0.026±0.026	1.2 G	0
^{99}Tc	1/7	4.5±1.2	4.5±1.2	4.5±1.2	4000 G	0
$^{233/234}U$	7/7	J 0.078±0.04	0.1982±0.0227	0.78±0.12	20 G	0
^{235}U	4/7	J 0.028±0.024	0.0423±0.0146	J 0.06±0.033	24 G	0
^{238}U	6/7	0.081±0.038	0.1239±0.019	0.413±0.085	24 G	0
			Semivolatile organics (µg/L)			
Bis(2-ethylhexyl)phthalate	8/16	J 2	29.25	92	59 R	2
Butylbenzylphthalate	1/16	J 1	1	J 1	–	–
			Semivolatile organics, tentatively identified compounds (µg/L)			
1,3-Isobenzofurandione	1/1	NJ 3	3	NJ 3	–	–
Benzoic acid	1/1	NJ 140	140	NJ 140	–	–
Benzoic acid, 2,4-Dichloro-	1/1	NJ 7	7	NJ 7	–	–
Ethanone, 1-Phenyl-	2/2	NJ 2	2	NJ 2	–	–
Unknown	13/13	NJ 2	4.3846	NJ 13	–	–
			Volatile organics (µg/L)			
1,1,2-Trichloro-1,2,2-trifluoro	1/16	J 14	14	J 14	–	–
1,2-Dichloroethene	1/16	18	18	18	70 P	0
Bromodichloromethane	1/16	J 3	3	J 3	100 P	0
Carbon disulfide	2/16	J 3	11.5	J 20	–	–
Chloroform	1/16	25	25	25	100 P	0
Tetrachloroethene	1/16	20	20	20	5 P	1

Table 4.78 (continued)

Parameter	No. detected/ No. of results[a]	Detected results			Reference value[d]	Number exceeding reference value[e]
		Min[b]	Av[c]	Max[b]		
Trichloroethene	1/16	180	180	180	5 P	1
		Total[f] wet chemistry (mg/L)				
Alkalinity	16/16	48	117.31	210	–	–
Alkalinity as CO_3	16/16	0.03	0.2344	0.71	–	–
Alkalinity as HCO_3	16/16	58.5	142.64	255.69	–	–
Total dissolved solids	16/16	71	169.06	327	500 S	0
Total suspended solids	4/16	4	5	7	500 S	0

[a]Both the number of detected results and the total number of results include all duplicate and replicate measurements. A detected result is an analytical result with a validation qualifier that does not include "U" or "<". No blanks, matrix spikes, equipment rinsate or other QA/QC data are reported in this table. *n* denotes not applicable.

[b]The minimum and maximum detected results are listed with their validation qualifiers.

J denotes the associated numerical value is the approximate concentration of the analyte in the sample.

N denotes the analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

[c]The average radiochemistry results and their associated limits of error were calculated from all of the detected results using optimally weighted mean and variance estimates assuming independent measurements with unequal errors, as documented in *Radiation Detection and Measurement* by Glenn F. Knoll, New York: John Wiley and Sons (1979), pp. 137-139. For the non-radiochemistry analytes the average listed is the unweighted arithmetic mean of all detected results. No analytical qualifiers are listed for the average.

[d]If a reference value exists it originates from one of the following sources:

D Tennessee water quality criteria for domestic water supply, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

F Tennessee water quality criteria for fish and aquatic life, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

G DOE Order 5400.5, Chapter III, Derived Concentration Guides (DCG) for Air and Water. Four percent of the DOE DCG represents the DOE criterion of 4 mrem effective dose equivalent from ingestion of drinking water.

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

R Tennessee water quality criteria for recreation, Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200 4-3, General Water Quality Criteria, as amended

S 40 CFR Part 143 National Secondary Drinking Water Regulations, as amended

– denotes no reference value exists for this analyte

[e]The number of detected results exceeding the reference value is given.

– denotes that since no reference value exists for this analyte, the number exceeding is not applicable.

[f]Total = unfiltered sample (soluble + suspended). Dissolved = filtered sample (soluble only).