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U.S. Department of Energy
Portsmouth Site

Annual Environmental Data
for 1994

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

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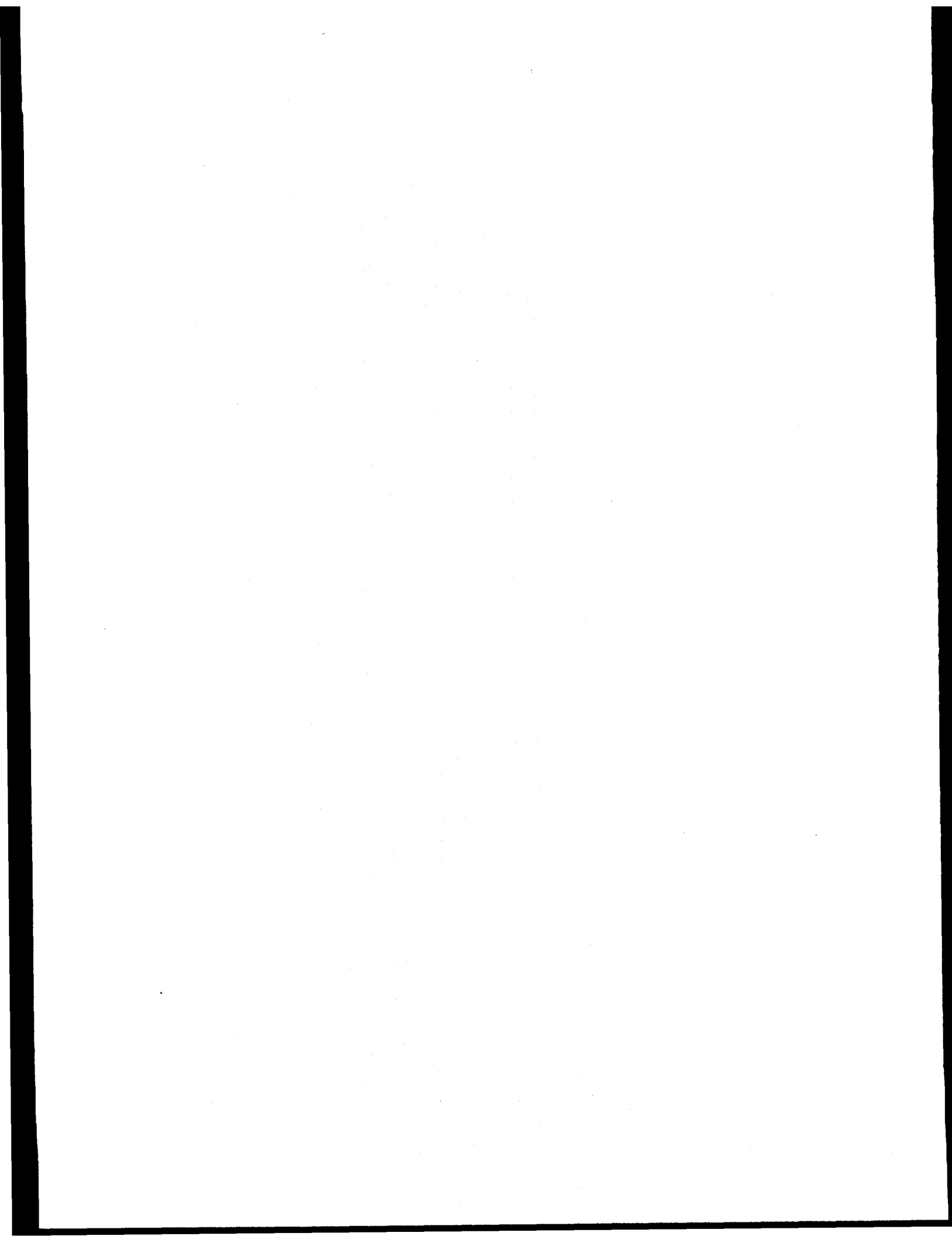
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Acronyms and Abbreviations

ADI	acceptable daily intake
AMAD	activity median aerodynamic diameter
Bkg	background
Btu	British thermal unit
°C	degrees celsius
CDI	chronic daily intake
CFC	chlorofluorocarbon
Ci	curie
cm	centimeter
cm ²	square centimeter
cm ³	cubic centimeter
CO	carbon monoxide
col.	colony
Cr	chromium
DCA	dichloroethane
DCE	dichloroethene
DCG	derived concentration guide
DOE	U.S. Department of Energy
EDE	effective dose equivalent
ENE	east-northeast
ft	feet
g	gram
gal	gallon
kg	kilogram
km	kilometer
L	liter
lb	pound
m	meter
m ³	cubic meter
M	million
max	maximum
µg	microgram
µrad	microrad
µCi	microcurie
µg	microgram
µm	micrometer
mCi	millicurie
MCL	maximum contaminant level
MCLG	maximum contaminant level goal

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mg	milligram
Mgd	million gallons per day
min	minimum
mL	milliliter
mrem	millirem
NA	not applicable
NPDES	National Pollutant Discharge Elimination System
Pa	protactinium
PCB	polychlorinated biphenyl
pCi	picocurie
s	second
SARA	Superfund Amendments and Reauthorization Act
SU	standard unit
Tc	technetium
TCA	trichloroethane
TCE	trichloroethylene
Th	thorium
U	uranium
USEC	United States Enrichment Corporation

Introduction

Environmental monitoring on the Portsmouth Gaseous Diffusion Plant site and its surroundings is conducted throughout the year. Monitoring ensures that the site is a safe place to work, that plant operations do not adversely affect neighboring communities, and that activities comply with federal and state regulations.

This document is a compilation of the environmental monitoring data for calendar year 1994 and is intended as a tool for analysts in environmental monitoring, environmental restoration, and other related disciplines. The data in this document form the basis for the summary information in the *Portsmouth Site Annual Environmental Report for 1994* (ES/ESH-63, POEF-3055).

1. Effluent Monitoring

Table 1.1. Radiological releases to air (50-m vents) in 1994

Month	²³⁴ U (mCi)	²³⁵ U (mCi)	²³⁶ U (mCi)	²³⁸ U (mCi)	Uranium (kg)	⁹⁹ Tc (mCi)	Uranium daughters (mCi)
January	6.00	0.166	0.000526	0.038	0.194	7.13	0.243
February	1.86	0.050	0.000169	0.011	0.056	8.67	0.072
March	2.73	0.062	0.000173	0.020	0.090	16.80	0.102
April	4.28	0.082	0.000174	0.040	0.160	26.81	0.162
May	3.85	0.076	0.000183	0.029	0.124	13.60	0.134
June	1.99	0.049	0.000106	0.048	0.168	8.76	0.145
July	2.12	0.050	0.000109	0.044	0.157	13.05	0.138
August	3.14	0.071	0.000164	0.052	0.191	9.27	0.175
September	3.02	0.078	0.000192	0.089	0.304	4.33	0.255
October	1.24	0.034	0.000094	0.044	0.148	5.00	0.122
November	0.84	0.020	0.000045	0.019	0.066	2.48	0.058
December	0.65	0.028	0.000048	0.018	0.064	4.91	0.054
Misc.	0.49	0.012	0.000028	0.012	0.042	1.06	0.036
Total	3.22E+01	7.69E-01	2.01E-03	4.64E-01	1.76E+00	1.22E+02	1.70E+00

Table 1.2. Radiological releases to air (20-m vents) in 1994

Month	²³⁴ U (mCi)	²³⁵ U (mCi)	²³⁶ U (mCi)	²³⁸ U (mCi)	Uranium (kg)	⁹⁹ Tc (mCi)	Uranium daughters (mCi)
January	1.159	0.0076	0.00012	0.092	0.280	1.1	0.191
February	1.920	0.0989	0.00203	1.050	3.204	1.5	2.198
March	0.418	0.0173	0.00031	0.154	1.471	1.7	0.325
April	0.357	0.0165	0.00028	0.145	0.444	1.4	0.307
May	1.150	0.0075	0.00016	0.084	0.257	1.0	0.176
June	0.405	0.0134	0.00023	0.114	0.349	1.5	0.241
July	0.177	0.0067	0.00009	0.047	0.145	1.1	0.101
August	0.149	0.0070	0.00018	0.092	0.280	1.3	0.191
September	0.152	0.0055	0.00010	0.050	0.154	1.5	0.106
October	0.112	0.0049	0.00010	0.052	0.160	1.2	0.109
November	0.098	0.0043	0.00009	0.047	0.142	1.3	0.097
December	0.195	0.0082	0.00013	0.064	0.185	1.5	0.135
Misc.	0.038	0.0020	0.00005	0.028	0.085	0.7	0.098
Total	4.33E-00	2.00E-01	3.87E-03	2.02E+00	6.17E+00	1.69E+01	4.24E+00

Table 1.3. Radiological releases to air (3-m vent) in 1994

Month	²³⁴ U (mCi)	²³⁵ U (mCi)	²³⁶ U (mCi)	²³⁸ U (mCi)	Uranium (kg)	⁹⁹ Tc (mCi)	Uranium daughters (mCi)
January	0.000	0.0000	0.000000	0.0000	0.0000	0.0000	0.0000
February	0.000	0.0000	0.000000	0.0000	0.0000	0.0000	0.0000
March	0.000	0.0000	0.000000	0.0000	0.0000	0.0000	0.0000
April	0.000	0.0000	0.000000	0.0000	0.0000	0.0000	0.0000
May	0.000	0.0000	0.000000	0.0000	0.0000	0.0000	0.0000
June	0.000	0.0000	0.000000	0.0000	0.0000	0.0000	0.0000
July	0.000	0.0000	0.000000	0.0000	0.0000	0.0000	0.0000
August	0.000	0.0000	0.000000	0.0000	0.0000	0.0000	0.0000
September	0.000	0.0000	0.000000	0.0000	0.0000	0.0000	0.0000
October	0.000	0.0000	0.000000	0.0000	0.0000	0.0000	0.0000
November	0.000	0.0000	0.000000	0.0000	0.0000	0.0000	0.0000
December	0.000	0.0000	0.000000	0.0000	0.0000	0.0000	0.0000
Misc.	0.000	0.0000	0.000000	0.0000	0.0000	0.0000	0.0000
Total	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 1.4. Superfund Amendments and Reauthorization Act, Section 313, releases to air in 1994 for DOE holdings

Chemical name	Type of environmental release	Released quantity (lb/kg)	Major release sources
Hydrogen fluoride	Stack	1600/726	Highly enriched uranium refeed system

Table 1.5. Radiological releases to surface water in 1994

NPDES ^a outfall	²³⁴ U (mCi)	²³⁵ U (mCi)	²³⁶ U (mCi)	²³⁸ U (mCi)	Total uranium (kg)	⁹⁹ Tc (mCi)	Uranium daughters (mCi)	Total flow (Mgal)
012	0.45	0.024	0.00069	0.00096	0.604	0.0	0.038	134
013	0.46	0.028	0.00071	0.00099	0.622	0.0	0.039	105
Total	0.91	0.052	0.0014	0.00195	1.206	0.0	0.077	239

^aNational Pollutant Discharge Elimination System.

Table 1.6. Uranium concentrations in water samples for 1994

NPDES ^a outfall	Number of samples	Concentration			
		Maximum (mg/L)	Minimum (mg/L)	Average (mg/L)	Standard deviation
012	12	0.002	<0.001	<0.001	0.000
013	12	0.002	<0.001	<0.001	0.000

^aNational Pollutant Discharge Elimination System.

Table 1.7. Radioactivity concentrations in water samples for 1994

NPDES ^a outfall	Number of samples	Concentration				Standard deviation
		Maximum (pCi/L)	Minimum (pCi/L)	Average (pCi/L) (% DCG ^b)		
<i>Gross alpha</i>						
012	12 (12) ^c	<7	<4	<4.9	0.98	0.720
013	12 (12) ^c	<9	<4	<5.7	1.14	1.474
⁹⁹ Tc						
012	12	<22	<22	<22.0	0.22	0.0
013	12	<22	<22	<22.0	0.22	0.0
<i>Gross beta</i>						
012	12	<11	<9	<9.8	NA ^d	0.960
013	12	12	<9	<9.9	NA	1.06

^aNational Pollutant Discharge Elimination System.

^bDerived concentration guide.

^cNumber in parentheses indicates the number of samples that were below the detection limit for gross alpha activity.

^dNot applicable.

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Table 1.8. Portsmouth National Pollutant Discharge Elimination System permit summary for 1994

Effluent characteristics		Monitoring requirements		Discharge limitations			
Parameter	Units	Measurement frequency	Sample type	Concentration		Loading	
				30 day	Daily	30 day	Daily
<i>Outfall 609 (X-624 carbon filtration facility)</i>							
Flow rate	Mgd	Daily	24-hour total				
Trichloroethylene	µg/L	1/2 weeks	Grab	10	10		
<i>Outfall 606 (X-701E/X-623 filtration facility)</i>							
Flow rate	Mgd	1/day	24-hour total				
pH	SU	1/week	Grab				
Total zinc	µg/L	1/2 weeks	Grab				
Trichloroethylene	µg/L	1/2 weeks	Grab				10
1,2-trans-dichloroethylene	µg/L	1/2 weeks	Grab	25	66		
<i>Outfall 607 (X-700 air stripper)</i>							
Flow rate	MgD	1/day	24-hour total				
pH	SU	1/week	Grab				
Trichloroethylene	µg/L	1/2 weeks	Grab	26	69		
<i>Outfall 608 (X-622 carbon filtration facility)</i>							
Flow rate	Mgd	1/day	24-hour total				
pH	SU	1/week	Grab				
Total zinc	µg/L	1/2 weeks	Grab				
Trichloroethylene	µg/L	1/2 weeks	Grab				10
1,2-trans-dichloroethylene	µg/L	1/2 weeks	Grab	25	66		
<i>Outfall 006 (X-611A north lime sludge lagoon)</i>							
Flow rate	Mgd	1/week	24-hour total				
pH	SU	1/week	Grab			6.5-9.0	
Total suspended solids	mg/L	1/week	Grab	10	15		
<i>Outfall 007 (X-611A middle lime sludge lagoon)</i>							
Flow rate	Mgd	1/week	24-hour total				
pH	SU	1/week	Grab			6.5-9.0	
Total suspended solids	mg/L	1/week	Grab	10	15		
<i>Outfall 008 (X-611A south lime sludge lagoon)</i>							
Flow rate	Mgd	1/week	24-hour total				
pH	SU	1/week	Grab			6.5-9.0	
Total suspended solids	mg/L	1/week	Grab	10	15		
<i>Outfall 012 (X-2230M holding pond)</i>							
Flow rate	Mgd	1/day	24-hour total				
pH	SU	1/2 weeks	Grab			6.5-9.0	
Total suspended solids	mg/L	1/2 weeks	Grab	30	45		
Oil and grease	mg/L	1/2 weeks	Grab	10	20	11	23
Total residual chlorine ^a	mg/L	1/2 weeks	Grab				
Phosphorus	mg/L	1/2 weeks	Grab				
Hexavalent chromium	µg/L	1/2 weeks	Grab				
Total chromium	µg/L	1/2 weeks	Grab				
Trichloroethylene	µg/L	1/2 weeks	Grab				
Polychlorinated biphenyls ^b	µg/L	1/quarter	Grab				
<i>Outfall 013 (X-2230N holding pond)</i>							
Flow rate	Mgd	1/day	24-hour total				
pH	SU	1/2 weeks	Grab			6.5-9.0	
Total suspended solids	mg/L	1/2 weeks	Grab	30	45		
Oil and grease	mg/L	1/2 weeks	Grab	10	20	11	23
Total residual chlorine ^a	mg/L	1/2 weeks	Grab				
Phosphorus	mg/L	1/2 weeks	Grab				
Hexavalent chromium	µg/L	1/2 weeks	Grab				
Total chromium	µg/L	1/2 weeks	Grab				
Polychlorinated biphenyls ^b	µg/L	1/quarter	Grab				

^aSummer only.

^bNo detectable polychlorinated biphenyls without a numerical limit specified.

Table 1.9. 1994 NPDES^a discharge and compliance rates

Parameter	NPDES compliance rate (%)	Number of samples	Concentrations/loadings			Standard deviation	Units
			Minimum	Maximum	Average		
<i>Outfall 006 (X-611A north lime sludge lagoon)</i>							
Flow rate	<i>b</i>	22	0.01	0.84	0.28	0.32	Mgd
pH	<i>c</i>	5	8.10	9.50	9.10	0.50	SU
Total suspended solids	<i>c</i>	5	1.00	3.40	2.60	0.90	mg/L
30-day average	<i>c</i>	2	1.00	2.82	1.81	0.81	mg/L
Polychlorinated biphenyls	<i>d</i>	1	1.00	1.00	1.00	0.00	µg/L
<i>Outfall 007 (X-611A middle lime sludge lagoon)^f</i>							
Flow rate	<i>b</i>	0	0.00	0.00	0.00	0.00	Mgd
pH	<i>c</i>	0	0.00	0.00	0.00	0.00	SU
Total suspended solids	<i>c</i>	0	0.00	0.00	0.00	0.00	mg/L
30-day average	<i>c</i>	0	0.00	0.00	0.00	0.00	mg/L
Polychlorinated biphenyls	<i>d</i>	0	0.00	0.00	0.00	0.00	µg/L
<i>Outfall 008 (X-611A south lime sludge lagoon)</i>							
Flow rate	<i>b</i>	4	0.01	0.05	0.03	0.01	Mgd
pH	<i>c</i>	2	8.90	9.10	9.00	0.10	SU
Total suspended solids	<i>c</i>	2	2.20	3.80	3.00	0.80	mg/L
30-day average	<i>c</i>	1	2.38	2.38	2.38	0.00	mg/L
Polychlorinated biphenyls	<i>d</i>	1	1.00	1.00	1.00	0.00	µg/L
<i>Outfall 012 (X-2230M holding pond)</i>							
Flow rate	<i>b</i>	249	0.00	24.49	0.54	1.80	Mgd
pH	100	27	7.00	8.20	7.70	0.30	SU
Total suspended solids	96	25	1.00	61.00	14.14	13.37	mg/L
30-day average	92	12	2.52	60.87	17.11	15.83	mg/L
Oil and grease	100	25	5.00	6.40	5.06	0.27	mg/L
30-day average	100	12	5.00	5.58	5.05	0.16	mg/L
daily loading	100	25	0.00	46.76	7.15	11.13	kg/day
30-day average loading	100	12	0.01	17.99	6.50	6.36	kg
Phosphorus	<i>f</i>	25	0.02	0.09	0.04	0.02	mg/L
Hexavalent chromium	<i>f</i>	25	0.01	0.01	0.01	0.00	µg/L
Total chromium	<i>f</i>	25	0.02	14.00	1.50	3.16	µg/L
Trichloroethylene	<i>f</i>	25	1.00	1.00	1.00	0.00	µg/L
Total residual chlorine	<i>f</i>	13	0.02	0.02	0.02	0.00	mg/L
Polychlorinated biphenyls	<i>d</i>	4	1.00	1.00	1.00	0.00	µg/L
<i>Outfall 013 (X-2230N holding pond)</i>							
Flow rate	<i>b</i>	249	0.00	16.87	0.42	1.39	Mgd
pH	97	29	7.20	9.20	7.90	0.50	SU
Total suspended solids	96	27	1.00	46.30	8.43	8.67	mg/L
30-day average	100	12	2.16	19.80	8.30	5.04	mg/L
Oil and grease	100	27	5.00	6.60	5.06	0.30	mg/L
30-day average	100	12	5.00	5.68	5.06	0.19	mg/L
daily loading	100	27	0.00	20.46	3.99	5.15	kg/day
30-day average loading	100	12	0.22	15.60	4.04	4.13	kg
Phosphorus	<i>f</i>	27	0.02	0.15	0.06	0.03	mg/L
Hexavalent chromium	<i>f</i>	27	0.01	0.01	0.01	0.00	µg/L
Total chromium	<i>f</i>	27	0.02	14.00	1.16	3.02	µg/L
Total residual chlorine	<i>f</i>	15	0.02	0.02	0.02	0.00	mg/L
Polychlorinated biphenyls	<i>d</i>	4	1.00	1.00	1.00	0.00	µg/L
<i>Outfall 606 (X-701/X-623 carbon filtration facility)</i>							
Flow rate	<i>b</i>	182	0.00	0.04	0.01	0.01	Mgd
pH	100	13	6.90	8.60	7.40	0.60	SU
Trichloroethylene	100	8	1.00	1.00	1.00	0.00	µg/L
1,2- <i>trans</i> -dichloroethylene	100	8	1.00	40.00	5.88	12.90	µg/L
30-day average	100	6	0.09	18.73	3.80	6.68	µg/L
Total zinc	<i>f</i>	8	0.03	102.00	22.89	30.72	µg/L

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Table 1.9 (continued)

Parameter	NPDES compliance rate (%)	Number of samples	Concentrations/loadings			Standard deviation	Units
			Minimum	Maximum	Average		
<i>Outfall 607 (X-700 air stripper)^f</i>							
Flow rate	<i>b</i>	0	0.00	0.00	0.00	0.00	Mgd
pH	<i>c</i>	0	0.00	0.00	0.00	0.00	SU
Trichloroethylene	<i>c</i>	0	0.00	0.00	0.00	0.00	µg/L
30-day average	<i>c</i>	0	0.00	0.00	0.00	0.00	µg/L
<i>Outfall 608 (X-622 carbon filtration facility)</i>							
Flow rate	<i>b</i>	365	0.00	0.04	0.02	0.01	Mgd
pH	100	50	6.30	7.90	7.10	0.30	SU
Trichloroethylene	100	30	1.00	1.00	1.00	0.00	µg/L
1,2- <i>trans</i> -dichloroethylene	100	30	1.00	66.00	10.95	20.61	µg/L
30-day average	92	12	1.00	53.54	7.57	14.54	µg/L
Total zinc	<i>f</i>	26	0.03	68.00	17.63	15.93	µg/L
<i>Outfall 609 (X-624 carbon filtration facility)</i>							
Flow rate	<i>b</i>	365	0.00	0.07	0.02	0.01	Mgd
Trichloroethylene	100	27	1.00	8.00	1.96	1.63	µg/L
30-day average	100	12	1.00	3.66	1.85	0.85	µg/L

^aNational Pollutant Discharge Elimination System.

^bFlow does not have a numerical limit, no compliance rates are generated.

^cInsufficiently frequent flow to calculate useful compliance rate.

^dThe permit specifies no detectable polychlorinated biphenyls in the effluent without setting a numerical limit of detection.

^eNo flow throughout entire calendar year.

^fMonitoring only required.

Table 1.10. Superfund Amendments and Reauthorization Act, Section 313, releases to surface water during 1994 for DOE holdings

Chemical name	Type of environmental release	Release quantity (lb)	Major release sources
Zinc	West drainage ditch	45	Water treatment
	Southwest drainage ditch	167	Water treatment

2. Environmental Surveillance

Table 2.1. Quarterly external gamma radiation levels ($\mu\text{rad}/\text{hour}$) for 1994

Location	Quarter				Annual dose ($\mu\text{rad}/\text{hour}$)	Annual dose (mrem/year)
	First	Second	Third	Fourth		
<i>On site</i>						
PP518	26.2	19.9	21.2	18.0	21.2	
PP862	21.2	26.1	23.3	24.2	23.8	
PP906	23.9	49.5	29.5	21.4	31.9	
PP933	27.1	<i>a</i>	22.0	17.9	22.1	
PP1406	20.5	16.2	21.2	18.5	19.1	
A35	33.9	22.2	37.8	20.6	28.9	
X100	26.6	17.1	19.9	12.8	16.7	
611	30.0	<i>a</i>	35.7	26.7	31.9	
Mean	26.04	25.16	26.33	20.26	24.6	215
Standard deviation	4.13	11.36	6.63	4.43		
874 ^b	106.4	121.7	158.6	157.2	137.5	0.60
<i>Boundary line</i>						
A3	28.7	15.3	26.7	17.3	22.5	
A8	24.7	23.1	25.4	24.3	24.4	
A9	21.3	23.8	23.5	22.0	22.8	
A12	23.0	20.8	20.5	22.1	21.5	
A15	43.1	<i>a</i>	36.1	23.8	34.2	
A23	54.2	16.5	26.9	20.7	26.9	
A24	24.7	20.4	24.9	21.2	22.8	
A29	23.3	21.5	22.2	19.7	21.7	
Mean	30.4	20.5	26.0	21.4	24.4	214
Standard deviation	11.1	2.7	4.5	2.1		
<i>Off site</i>						
A6	21.8	19.9	24.6	19.4	21.6	189
A28	25.7	15.9	23.0	17.4	20.4	179

^aData not acceptable for use.

^bNot included in on-site averages or standard deviations.

Table 2.2. Airborne gross alpha radiation concentrations (pCi/m³) for 1994

Month	Sampling location													
	A3 S	A6 Pike ^a	A8 NW	A9 SW	A10 NW	A12 E	A15 SE	A23 NE	A24 N	A28 Bkg ^b	A29 W	A36 X-611	A37 Bkg ^b	A40 X-100
January	0.005	0.005	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.003	0.004	0.006	0.005	0.004
February	<0.003	<0.004	<0.003	<0.003	<0.003	<0.003	<0.004	<0.003	<0.003	<0.003	<0.003	<0.006	0.008	<0.003
March	<0.002	0.004	<0.002	<0.002	<0.002	<0.002	<0.003	<0.002	<0.002	<0.002	0.002	<0.003	<0.002	<0.002
April	<0.004	<0.004	<0.003	<0.004	<0.004	<0.004	<0.005	<0.004	<0.003	<0.003	<0.003	<0.005	<0.003	<0.003
May	<0.003	<0.004	<0.004	<0.003	<0.003	<0.005	<0.004	0.004	<0.003	<0.003	<0.003	<0.004	0.003	0.004
June	<0.003	0.005	0.004	<0.003	<0.003	<0.003	<0.004	<0.006	<0.003	<0.003	<0.004	<0.005	<0.003	<0.003
July	<0.004	<0.005	<0.005	<0.004	<0.006	<0.004	<0.005	0.005	<0.004	<0.003	<0.004	<0.005	<0.003	<0.003
August	<0.001	<0.001	<0.001	<0.002	<0.003	0.002	<0.001	0.004	0.003	0.003	0.003	<0.001	<0.001	0.006
September	<0.004	<0.004	<0.004	<0.004	0.008	<0.004	<0.005	<0.004	<0.003	0.003	<0.003	<0.005	<0.003	<0.003
October	0.006	<0.004	<0.004	<0.003	<0.004	<0.004	<0.004	<0.004	0.005	<0.003	0.004	<0.004	<0.003	<0.003
November	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.002	<0.003	<0.003	<0.004	<0.002	<0.002
December	<0.003	0.004	<0.004	<0.003	<0.004	<0.004	<0.004	<0.004	<0.003	<0.003	<0.004	<0.004	<0.003	<0.003

^aPiketon.^bBackground sampling location.

Table 2.3. Airborne gross beta-gamma radiation concentrations (pCi/m³) for 1994

Month	Sampling location													
	A3 S	A6 Pike ^a	A8 NW	A9 SW	A10 NW	A12 E	A15 SE	A23 NE	A24 N	A28 Bkg ^b	A29 W	A36 X-611	A37 Bkg ^b	A40 X-100
January	0.034	0.045	0.036	0.037	0.022	0.024	0.022	0.045	0.023	<0.007	0.009	0.033	0.050	0.028
February	0.021	0.032	0.026	0.026	0.025	0.020	0.029	0.026	0.018	0.024	0.025	0.029	0.059	0.023
March	0.017	0.027	0.028	0.019	0.011	0.018	0.024	0.020	0.014	0.019	0.030	0.021	0.021	<0.005
April	0.023	0.032	0.018	0.026	0.025	0.018	0.035	0.018	0.021	0.018	0.022	0.036	0.015	<0.007
May	0.018	0.027	0.029	0.026	0.023	0.039	0.022	0.021	0.021	0.018	0.020	0.030	0.022	0.021
June	0.028	0.051	0.037	0.043	0.032	0.025	0.035	0.050	0.023	<0.006	0.030	0.033	0.026	0.022
July	0.026	0.035	0.034	0.021	0.020	0.022	0.027	0.035	0.024	0.036	0.026	0.037	0.017	0.026
August	0.024	0.033	0.022	0.023	<0.004	0.020	0.028	0.040	0.025	0.014	0.008	0.044	0.023	0.039
September	0.053	0.047	0.009	0.039	0.060	0.034	0.039	0.041	0.030	0.036	0.017	0.039	0.031	0.031
October	0.056	0.037	0.049	0.040	0.048	0.032	0.054	0.060	0.045	0.033	0.061	0.044	0.021	0.030
November	0.033	0.042	0.023	0.033	0.044	0.029	0.041	0.033	0.029	0.053	0.030	0.049	0.022	0.027
December	0.040	0.057	0.030	0.044	0.052	0.036	0.050	0.057	0.037	0.039	0.039	0.061	0.027	0.031

^aPiketon.

^bBackground sampling location.

Table 2.4. Airborne gross gaseous fluoride concentrations ($\mu\text{g}/\text{m}^3$) for 1994

Week	On-site air sampling stations			Off-site (fence-line) air sampling stations								Off-site air sampling stations		
	A10 X-230-J3	A36 X-611	A40 X-100	A3 S	A8 NW	A9 SW	A12 E	A15 SE	A23 NE	A24 N	A29 W	A6 Pike ^a	A28 Bkg ^b	A37 Bkg ^b
January														
11	0.06	0.09	0.47	<0.07	<0.07	<0.06	0.09	0.13	<0.09	0.08	<0.07	<0.08	<0.07	<0.07
25	0.10	0.13	0.46	0.07	0.06	0.05	0.10	0.17	0.04	0.08	0.06	0.05	0.04	0.06
February														
1	0.11	0.13	0.38	0.10	0.08	0.11	0.10	0.13	0.08	0.08	0.09	<0.09	0.07	0.07
8	<0.06	0.16	0.16	<0.06	0.06	<0.06	<0.06	<0.08	<0.06	<0.05	<0.06	<0.08	<0.05	<0.05
14	0.07	0.18	<0.07	0.10	0.10	0.10	0.14	0.13	<0.08	0.07	0.10	0.10	0.12	<0.10
22	0.05	0.13	0.11	<0.06	0.07	<0.06	0.08	<0.07	0.08	<0.05	<0.06	<0.09	<0.06	<0.07
March														
1	<0.06	<0.11	<0.06	<0.09	<0.06	<0.07	0.06	<0.08	<0.07	<0.06	<0.05	<0.07	<0.05	<0.05
7	0.07	<0.15	0.21	<0.07	<0.08	<0.08	0.08	<0.10	<0.08	<0.07	0.08	<0.10	0.08	<0.07
14	<0.06	<0.11	<0.05	<0.06	<0.06	<0.06	0.11	<0.08	<0.07	<0.06	0.08	<0.09	<0.06	<0.05
21	0.08	<0.11	<0.06	<0.06	<0.06	ND	0.07	0.10	0.07	0.06	0.10	<0.09	<0.06	0.07
28	0.07	0.15	0.08	<0.06	0.07	<0.07	0.10	<0.08	0.07	0.06	0.09	<0.09	<0.06	<0.05
April														
5	0.07	0.16	0.05	<0.05	<0.05	<0.05	<0.05	<0.07	<0.06	0.06	0.07	<0.08	<0.07	<0.06
11	<0.09	<0.14	0.06	<0.09	<0.07	<0.10	0.07	<0.09	0.08	<0.07	0.09	<0.11	<0.06	<0.05
18	0.12	0.60	0.36	<0.10	0.08	0.08	0.09	<0.12	<0.09	<0.07	<0.09	<0.09	<0.08	<0.05
25	<0.07	0.14	0.37	<0.07	0.06	<0.07	<0.06	<0.09	<0.08	0.06	<0.08	<0.10	<0.08	<0.05
May														
2	0.10	0.11	0.15	0.13	0.06	0.09	0.09	<0.11	0.07	0.08	<0.09	<0.06	<0.09	<0.05
9	0.09	0.18	0.30	0.09	<0.06	0.08	0.12	<0.13	0.09	<0.08	<0.06	<0.11	0.11	0.05
16	0.09	0.13	0.25	<0.07	<0.06	<0.07	0.06	0.10	0.11	<0.07	<0.08	<0.06	<0.06	<0.06

Table 2.4 (continued)

Week	On-site air sampling stations			Off-site (fence-line) air sampling stations								Off-site air sampling stations		
	A10 X-230-J3	A36 X-611	A40 X-100	A3 S	A8 NW	A9 SW	A12 E	A15 SE	A23 NE	A24 N	A29 W	A6 Pike ^a	A28 Bkg ^b	A37 Bkg ^b
23	<0.08	<0.14	<0.11	<0.07	<0.06	<0.07	<0.07	<0.10	<0.09	<0.06	<0.08	<0.11	<0.06	<0.06
31	0.06	0.11	0.19	0.07	<0.06	<0.06	0.09	0.08	<0.12	0.05	0.09	0.10	<0.07	<0.06
June														
6	0.12	0.16	0.17	<0.10	0.09	<0.08	0.09	0.23	0.12	<0.09	0.11	<0.12	<0.08	0.05
14	0.13	0.34	0.30	0.17	0.12	0.11	0.11	0.19	0.28	0.09	0.10	0.13	0.11	0.09
20	<0.11	<0.13	0.13	0.11	0.10	<0.11	0.17	0.23	0.09	<0.07	0.09	<0.12	<0.07	<0.06
27	<0.07	0.24	0.29	<0.07	<0.08	<0.08	0.12	<0.10	<0.08	<0.06	<0.07	<0.09	<0.07	<0.06
July														
6	0.09	0.29	0.20	0.08	<0.06	0.06	<0.06	0.10	0.07	0.09	0.09	0.08	<0.06	<0.05
11	<0.13	0.18	0.19	<0.12	<0.08	<0.10	0.11	0.22	0.09	<0.08	<0.08	<0.10	<0.08	<0.07
19	<0.07	0.41	0.35	0.14	0.14	<0.09	0.11	0.24	0.17	0.12	0.12	0.14	0.09	0.08
25	0.16	0.62	0.51	0.14	0.14	0.09	0.26	0.24	0.16	0.14	0.12	<0.11	0.12	0.08
August														
1	0.12	0.44	0.24	0.10	0.08	ND	0.14	0.12	0.16	0.17	0.09	<0.09	0.16	<0.06
8	0.10	0.32	0.24	0.14	0.15	ND	0.12	0.17	0.14	0.11	<0.07	0.11	ND	0.07
16	0.10	0.35	0.58	0.20	0.15	ND	0.09	0.15	0.18	<0.12	ND	0.12	ND	0.09
22	<0.10	0.27	ND ^c	0.15	0.11	<0.10	0.14	0.16	0.15	<0.10	ND	0.12	<0.07	<0.06
30	0.11	0.25	ND	0.15	0.11	<0.06	0.09	0.14	0.16	0.08	ND	0.12	0.15	0.08
September														
6	0.13	0.13	ND	<0.07	0.09	0.09	0.14	0.10	0.09	<0.08	ND	0.11	0.09	<0.05
12	0.11	0.16	ND	<0.07	<0.08	<0.08	0.08	<0.09	<0.10	<0.08	ND	<0.10	<0.08	<0.07
19	0.10	0.19	ND	<0.10	ND	<0.11	<0.08	<0.12	0.12	<0.07	ND	<0.07	<0.07	<0.06
26	0.11	<0.10	ND	<0.07	<0.08	<0.07	0.08	<0.09	<0.08	<0.07	<0.08	<0.10	<0.07	0.06

Table 2.4 (continued)

Week	On-site air sampling stations			Off-site (fence-line) air sampling stations								Off-site air sampling stations		
	A10 X-230-J3	A36 X-611	A40 X-100	A3 S	A8 NW	A9 SW	A12 E	A15 SE	A23 NE	A24 N	A29 W	A6 Pike ^a	A28 Bkg ^b	A37 Bkg ^b
October														
3	0.08	0.07	ND	<0.07	<0.07	<0.06	<0.08	<0.09	<0.08	<0.06	<0.06	<0.07	<0.07	<0.06
11	<0.06	<0.11	0.06	<0.05	<0.07	<0.06	<0.07	<0.06	<0.09	<0.06	<0.06	<0.08	<0.06	<0.05
17	<0.11	<0.13	0.09	<0.07	<0.07	<0.08	<0.08	<0.10	<0.11	<0.09	0.08	<0.08	<0.08	<0.06
24	<0.06	0.13	0.14	<0.06	<0.06	<0.04	0.10	<0.06	<0.09	<0.05	<0.06	<0.07	<0.08	<0.08
November														
1	<0.09	0.14	0.14	<0.06	<0.05	<0.05	<0.08	<0.07	<0.08	<0.05	<0.06	<0.08	<0.06	<0.06
8	<0.10	0.14	0.11	<0.07	<0.07	<0.06	0.11	<0.08	0.09	0.06	<0.06	<0.07	<0.06	<0.06
14	<0.11	0.11	<0.08	<0.07	<0.06	<0.06	<0.09	<0.08	<0.09	<0.09	<0.06	<0.09	<0.08	<0.08
21	<0.09	0.09	0.07	0.07	<0.06	<0.05	0.10	<0.08	<0.09	<0.06	<0.06	<0.07	<0.07	<0.07
28	<0.08	0.12	0.47	<0.06	<0.06	<0.05	0.10	<0.07	<0.08	<0.06	<0.07	<0.09	<0.07	<0.06
December														
5	<0.08	0.14	0.29	<0.06	<0.07	<0.05	0.12	<0.08	<0.10	0.06	<0.06	<0.06	<0.09	<0.06
12	<0.08	<0.11	0.08	<0.06	<0.05	<0.05	0.08	<0.07	<0.07	<0.08	<0.06	<0.08	<0.06	<0.06
19	<0.08	<0.08	0.12	<0.06	<0.06	0.05	<0.08	<0.07	<0.08	<0.06	<0.07	<0.08	<0.07	0.07
27	<0.07	<0.06	<0.05	<0.05	<0.06	<0.05	<0.07	<0.07	<0.07	<0.05	<0.06	<0.07	<0.06	<0.06
January '95														
3	<0.07	<0.08	<0.06	<0.05	<0.08	0.06	<0.10	<0.07	<0.10	<0.05	<0.08	<0.06	<0.08	<0.07

^aPiketon.^bBackground sampling location.

*No data available.

3. Dose

Table 3.1. Committed effective dose rate conversion factors^a

Radionuclide (solubility)	Inhalation (rem/ μ Ci)	Ingestion (rem/ μ Ci)	Immersion (mrem/year per μ Ci/cm ³)	Ground surfaces (mrem/year per μ Ci/cm ²)
⁹⁹ Tc (D) ^b	1.03×10^{-3}	1.45×10^{-3}	2.55×10^3	6.03×10^{-1}
²³⁴ U (D)	2.67	2.74×10^{-1}	7.46×10^5	8.00×10^2
²³⁵ U (D)	2.54	2.64×10^{-1}	7.51×10^8	1.67×10^5
²³⁶ U (D)	2.53	2.60×10^{-1}	5.90×10^5	7.27×10^2
²³⁸ U (D)	2.40	2.47×10^{-1}	5.06×10^5	6.41×10^2
²³¹ Th (W) ^b	9.62×10^{-4}	1.35×10^{-3}	5.82×10^1	1.91
²³⁴ Th (W)	3.06×10^{-2}	1.37×10^{-2}	3.73×10^7	9.71×10^3
^{234m} Pa (W)	3.77×10^{-6}	5.90×10^{-6}	5.93×10^7	1.12×10^4

^aFactors taken from the ALLRAD88 data file provided with CAP-88.

^bD = soluble in blood; W = moderately soluble in blood.

Table 3.2. Release point parameters and receptor locations used in dose calculations

Name	Type	Release height (m)	Inner diameter (m)	Gas exit velocity (m/s)	Gas exit temperature (°C)	Distance (m) and direction to receptor ^a
Stack 1	Point	50	0.25	0	Ambient	1770 ENE
Stack 2	Point	20	0.57	0	Ambient	1770 ENE
Stack 3 ^b	Point	3	0.10	0	Ambient	1770 ENE

^aReceptor is residence of maximally exposed member of public.

^bDOE source.

Table 3.3. Activities (Ci), solubilities, and AMAD^a (μm) of radionuclides released from Portsmouth during 1994

Radionuclide (solubility)	AMAD (μm)	Curies released during 1994		
		Stack 1 USEC (1)	Stack 2 USEC (2)	Stack 3 ^c DOE
⁹⁹ Tc (D) ^b	1.0	1.219 E-1	1.581 E-2	1.115 E-3
²³⁴ U (D)	1.0	3.220 E-2	4.243 E-3	8.755 E-5
²³⁵ U (D)	1.0	7.693 E-4	1.972 E-4	2.413 E-6
²³⁶ U (D)	1.0	7.470 E-6	3.864 E-6	7.578 E-9
²³⁸ U (D)	1.0	4.634 E-4	2.016 E-3	3.863 E-6
²³¹ Th (W) ^b	1.0	7.693 E-4	1.972 E-4	5.777 E-6
²³⁴ Th (W)	1.0	4.643 E-4	2.016 E-3	3.655 E-6
^{234m} Pa (W)	1.0	4.643 E-4	2.016 E-3	3.395 E-6

^aActivity median aerodynamic diameter.

^bD = soluble in blood; W = moderately soluble in blood.

^cRepresents 27% of curies released.

Table 3.4. Predicted radiation doses from airborne releases at the Portsmouth site during 1994

Effective dose equivalent (EDE) to:	EDE
Maximum exposed individual ^a	0.06 mrem
Population ^b	0.6 person-rem
Nearest community ^c	0.02 person-rem

^aMaximum exposed individual resides on the reservation boundary, 1770 m (5807 ft) ENE of plant center.

^bCollective EDE to general population with 80 km (50 miles) of plant site.

^cCollective EDE to residents of nearest community (Piketon, Ohio).

Table 3.5. Predicted radiation doses from waterborne releases at the Portsmouth site during 1994

Pathway of exposure ^a	Effective dose equivalent
Drinking water from Scioto River ^b	0.0052
Eating fish from Scioto River ^c	0.0015
Swimming in Scioto River ^d	<0.0001
Boating on Scioto River ^e	<0.0001
Shoreline use ^f	<0.0001
Total	0.007

^aPoint of maximum exposure is the Scioto River downstream of the Portsmouth site.

^bAssumed consumption of 730 L (193 gal) of water per year.

^cAssumed consumption of 21 kg (46 lb) of fish per year.

^dAssumed total time of 27 hours per year.

^eAssumed total time of 105 hours per year.

^fAssumed total time of 69 hours per year.

4. Groundwater

**Table 4.1. Portsmouth groundwater monitoring for 1994:
trichloroethylene results for the X-701B holding pond**

Well	Parameter	Min ^a	Max ^a	Mean ^b	Standard deviation ^b	Units
<i>Gallia wells</i>						
X701-02G	Trichloroethylene	4	5	3.8	1.3	µg/L
X701-05G	Trichloroethylene	7	10	9.0	1.4	µg/L
X701-06G	Trichloroethylene	79	225	148	60.6	µg/L
X701-08G	Trichloroethylene	153,000	449,000	260,250	133,829	µg/L
X701-10G	Trichloroethylene	1400	1770	1620	159	µg/L
X701-14G	Trichloroethylene	163,000	430,000	341,250	124,973	µg/L
X701-15G	Trichloroethylene	6	17	12.0	5.0	µg/L
X701-16G	Trichloroethylene	2 U	2 U	NA	NA	µg/L
X701-19G	Trichloroethylene	2 U	2 U	NA	NA	µg/L
X701-21G	Trichloroethylene	77	94	82.8	7.6	µg/L
X701-23G	Trichloroethylene	2 U	2 U	NA	NA	µg/L
X701-24G	Trichloroethylene	41,900	92,900	64,475	21,098	µg/L
X701-25G	Trichloroethylene	2 U	2 U	NA	NA	µg/L
X701-30G	Trichloroethylene	17	22	19.0	2.2	µg/L
X701-31G	Trichloroethylene	2 U	2 U	NA	NA	µg/L
X701-32G	Trichloroethylene	2 U	2 U	NA	NA	µg/L
X701-38G	Trichloroethylene	2 U	2 U	NA	NA	µg/L
X701-48G	Trichloroethylene	2 U	2 U	NA	NA	µg/L
X701-49G	Trichloroethylene	2 U	2 U	NA	NA	µg/L
X701-BW1G	Trichloroethylene	2 U	2 U	NA	NA	µg/L
X701-BW4G	Trichloroethylene	2 U	2 U	NA	NA	µg/L
LBC-PZ03	Trichloroethylene	367	1070	727	337	µg/L
LBC-PZ06	Trichloroethylene	2 U	2 U	NA	NA	µg/L
<i>Berea wells</i>						
X701-50B	Trichloroethylene	2 U	2 U	NA	NA	µg/L
X701-58B	Trichloroethylene	2 U	2 U	NA	NA	µg/L
X701-61B	Trichloroethylene	2 U	2 U	NA	NA	µg/L

^aQualifiers include: U—parameter was not detected; the result is the attainable detection limit for the sample.

^bNA—at least 50% of the results for the given parameter at this location were below detection; therefore, mean and standard deviation functions are not applicable.

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Table 4.2. Portsmouth groundwater monitoring for 1994:
radionuclide results for the X-701B holding pond

Well	Parameter	Min ^a	Max ^a	Mean ^b	Standard deviation ^b	Units
<i>Gallia wells</i>						
X701-02G	Gross alpha	5 U	5 U	NA	NA	pCi/L
	Gross beta	9 U	11	NA	NA	pCi/L
	Technetium	22 U	30	NA	NA	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X701-05G	Gross alpha	5 U	6 U	NA	NA	pCi/L
	Gross beta	9 U	11 U	NA	NA	pCi/L
	Technetium	22 U	22 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X701-06G	Gross alpha	2 U	7 U	NA	NA	pCi/L
	Gross beta	12	30	22.0	7.5	pCi/L
	Technetium	24 U	73	42.3	26.0	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X701-08G	Gross alpha	6 U	7	NA	NA	pCi/L
	Gross beta	77	193	122.5	52.9	pCi/L
	Technetium	118	238	173.0	52.2	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X701-10G	Gross alpha	6 U	7 U	NA	NA	pCi/L
	Gross beta	9 U	10 U	NA	NA	pCi/L
	Technetium	22 U	22 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X701-14G	Gross alpha	6 U	7 U	NA	NA	pCi/L
	Gross beta	20	131	77.8	55.4	pCi/L
	Technetium	34	162	91.3	61.9	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X701-15G	Gross alpha	3 U	9	NA	NA	pCi/L
	Gross beta	9 U	19 U	NA	NA	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X701-16G	Gross alpha	4 U	9	NA	NA	pCi/L
	Gross beta	9 U	15	NA	NA	pCi/L
	Technetium	22 U	25	NA	NA	pCi/L
	Total uranium	1.0 U	1.3	1.0	0.3	µg/L
X701-19G	Gross alpha	4 U	4 U	NA	NA	pCi/L
	Gross beta	9 U	11 U	NA	NA	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L

Table 4.2 (continued)

Well	Parameter	Min ^a	Max ^a	Mean ^b	Standard deviation ^b	Units
X701-21G	Gross alpha	8 U	11 U	NA	NA	pCi/L
	Gross beta	15	27	20.0	5.1	pCi/L
	Technetium	26	36	32.0	4.5	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X701-23G	Gross alpha	5 U	5 U	NA	NA	pCi/L
	Gross beta	9 U	11 U	NA	NA	pCi/L
	Technetium	22 U	22 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X701-24G	Gross alpha	5 U	26	NA	NA	pCi/L
	Gross beta	18	55	36.5	18.2	pCi/L
	Technetium	25	48	37.8	9.8	pCi/L
	Total uranium	1.0 U	6.8	2.9	2.9	µg/L
X701-25G	Gross alpha	7 U	28 U	NA	NA	pCi/L
	Gross beta	10 U	38 U	NA	NA	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X701-30G	Gross alpha	6 U	7 U	NA	NA	pCi/L
	Gross beta	10	16	11.4	4.6	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X701-31G	Gross alpha	4 U	5 U	NA	NA	pCi/L
	Gross beta	9 U	13	NA	NA	pCi/L
	Technetium	22 U	22 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X701-32G	Gross alpha	5 U	27	NA	NA	pCi/L
	Gross beta	11 U	38 U	NA	NA	pCi/L
	Technetium	22 U	48 U	NA	NA	pCi/L
	Total uranium	1.0 U	3.3	NA	NA	µg/L
X701-38G	Gross alpha	6 U	7 U	NA	NA	pCi/L
	Gross beta	9 U	11 U	NA	NA	pCi/L
	Technetium	22 U	36	NA	NA	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X701-48G	Gross alpha	4 U	10	6.5	3.3	pCi/L
	Gross beta	9 U	16	NA	NA	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	1.0 U	2.6	NA	NA	µg/L

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Table 4.2 (continued)

Well	Parameter	Min ^a	Max ^a	Mean ^b	Standard deviation ^b	Units
X701-49G	Gross alpha	6 U	22	11.0	9.8	pCi/L
	Gross beta	9 U	11 U	NA	NA	pCi/L
	Technetium	22 U	22 U	NA	NA	pCi/L
	Total uranium	2.1	2.3	1.7	1.1	µg/L
X701-BW1G	Gross alpha	6 U	11 U	NA	NA	pCi/L
	Gross beta	9 U	35	NA	NA	pCi/L
	Technetium	22 U	22 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X701-BW4G	Gross alpha	8 U	11 U	NA	NA	pCi/L
	Gross beta	11 U	58	NA	NA	pCi/L
	Technetium	22 U	68	NA	NA	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
LBC-PZ03	Gross alpha	5 U	13	NA	NA	pCi/L
	Gross beta	10	19 U	NA	NA	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
LBC-PZ06	Gross alpha	4 U	37	NA	NA	pCi/L
	Gross beta	9 U	38 U	NA	NA	pCi/L
	Technetium	22 U	34	NA	NA	pCi/L
	Total uranium	1.0 U	5	2.4	1.9	µg/L
<i>Berea wells</i>						
X701-50B	Gross alpha	18 U	41	26.3	13.5	pCi/L
	Gross beta	21	67	36.8	20.6	pCi/L
	Technetium	22 U	42	NA	NA	pCi/L
	Total uranium	1.0	4.3	2.2	1.5	µg/L
X701-58B	Gross alpha	11 U	31	19.9	12.7	pCi/L
	Gross beta	10 U	30	NA	NA	pCi/L
	Technetium	22 U	22 U	NA	NA	pCi/L
	Total uranium	1.0 U	2.5	1.5	0.8	µg/L
X701-61B	Gross alpha	48	92	67.3	18.6	pCi/L
	Gross beta	32	95	67.3	28.8	pCi/L
	Technetium	22 U	22 U	NA	NA	pCi/L
	Total uranium	2.1	4.1	3.3	0.9	µg/L

^aQualifiers include: U—parameter was not detected; the result is the attainable detection limit for the sample.

^bNA—at least 50% of the results for the given parameter at this location were below detection; therefore, mean and standard deviation functions are not applicable.

Table 4.3. Portsmouth groundwater monitoring for 1994:
results for volatile organic compounds at X-749

Well	Parameter ^a	Min ^b	Max ^b	Mean ^c	Standard deviation ^c	Units
<i>Gallia wells</i>						
X120-08G	1,1,1-TCA	42	61	53	8	µg/L
	1,1-DCA	11	16	13	2	µg/L
	1,1-DCE	55	69	62	6	µg/L
	1,2-DCA	3	4	3	1	µg/L
	1,2-DCEs (<i>cis/t</i>)	2 U	2 U	NA	NA	µg/L
	Chloroform	2 U	2 U	NA	NA	µg/L
	Freon-113	2 U	5	4	2	µg/L
	TCE	9	10	9	1	µg/L
X749-04G	1,1,1-TCA	10 U	20 U	NA	NA	µg/L
	1,1-DCA	10 U	20 U	NA	NA	µg/L
	1,1-DCE	10 U	20 U	NA	NA	µg/L
	1,2-DCA	10 U	20 U	NA	NA	µg/L
	1,2-DCEs (<i>cis/t</i>)	10 U	20 U	NA	NA	µg/L
	Chloroform	10 U	20 U	NA	NA	µg/L
	Freon-113	10 U	20 U	NA	NA	µg/L
	TCE	55	180	117	53	µg/L
X749-06G	1,1,1-TCA	3200	5140	4045	875	µg/L
	1,1-DCA	1600	2690	2073	460	µg/L
	1,1-DCE	100 U	2200	1393	940	µg/L
	1,2-DCA	100 U	1000 U	NA	NA	µg/L
	1,2-DCEs (<i>cis/t</i>)	373	1000 U	NA	NA	µg/L
	Chloroform	182	1000 U	NA	NA	µg/L
	Freon-113	511	1000 U	525	24	µg/L
	TCE	6200	10,600	8170	1941	µg/L
X749-07G	1,1,1-TCA	1370	2290	1668	420	µg/L
	1,1-DCA	720	1040	840	139	µg/L
	1,1-DCE	717	1140	842	200	µg/L
	1,2-DCA	293	435	365	58	µg/L
	1,2-DCEs (<i>cis/t</i>)	200 U	234	NA	NA	µg/L
	Chloroform	100 U	200 U	NA	NA	µg/L
	Freon-113	200 U	258	NA	NA	µg/L
	TCE	1590	2010	1728	191	µg/L
X749-08G	1,1,1-TCA	610	900	742	119	µg/L
	1,1-DCA	21	40 U	NA	NA	µg/L
	1,1-DCE	410	572	481.8	69.5	µg/L
	1,2-DCA	20 U	40 U	NA	NA	µg/L

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Table 4.3 (continued)

Well	Parameter ^a	Min ^b	Max ^b	Mean ^c	Standard deviation ^c	Units
X749-09G	1,2-DCEs (<i>cis/t</i>)	37	70	51	14	µg/L
	Chloroform	20 U	40 U	NA	NA	µg/L
	Freon-113	77	125	94	22	µg/L
	TCE	410	615	518	92	µg/L
	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	1,1-DCA	17	24	21	3	µg/L
	1,1-DCE	6	10	8	2	µg/L
	1,2-DCA	2 U	2 U	NA	NA	µg/L
	1,2-DCEs (<i>cis/t</i>)	3	5	3.8	1.0	µg/L
	Chloroform	2 U	2 U	NA	NA	µg/L
X749-10G	Freon-113	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L
	1,1,1-TCA	230	450	371	99	µg/L
	1,1-DCA	29	55	42	11	µg/L
	1,1-DCE	85	164	143	38	µg/L
	1,2-DCA	2 U	20 U	NA	NA	µg/L
	1,2-DCEs (<i>cis/t</i>)	22	30	28	4	µg/L
	Chloroform	4	20 U	NA	NA	µg/L
	Freon-113	2 U	20 U	NA	NA	µg/L
	TCE	300	417	370	50	µg/L
X749-13G	1,1,1-TCA	110	165	143	25	µg/L
	1,1-DCA	5	8	7	1	µg/L
	1,1-DCE	91	155	126	27	µg/L
	1,2-DCA	2 U	4 U	NA	NA	µg/L
	1,2-DCEs (<i>cis/t</i>)	10 U	16	12	5	µg/L
	Chloroform	7	11	9	2	µg/L
	Freon-113	34	50	39	7	µg/L
	TCE	140	204	183	29	µg/L
X749-21G	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	1,1-DCA	2 U	2 U	NA	NA	µg/L
	1,1-DCE	2 U	2 U	NA	NA	µg/L
	1,2-DCA	2 U	2 U	NA	NA	µg/L
	1,2-DCEs (<i>cis/t</i>)	2 U	2 U	NA	NA	µg/L
	Chloroform	2 U	2 U	NA	NA	µg/L
	Freon-113	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L

Table 4.3 (continued)

Well	Parameter ^a	Min ^b	Max ^b	Mean ^c	Standard deviation ^c	Units
X749-23G	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	1,1-DCA	2 U	2 U	NA	NA	µg/L
	1,1-DCE	2 U	2 U	NA	NA	µg/L
	1,2-DCA	2 U	2 U	NA	NA	µg/L
	1,2-DCEs (<i>cis/t</i>)	2 U	2 U	NA	NA	µg/L
	Chloroform	2 U	2 U	NA	NA	µg/L
	Freon-113	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L
X749-24G	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	1,1-DCA	2 U	2 U	NA	NA	µg/L
	1,1-DCE	2 U	2 U	NA	NA	µg/L
	1,2-DCA	2 U	2 U	NA	NA	µg/L
	1,2-DCEs (<i>cis/t</i>)	2 U	2 U	NA	NA	µg/L
	Chloroform	2 U	2 U	NA	NA	µg/L
	Freon-113	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L
X749-25G	1,1,1-TCA	88	125	109	17	µg/L
	1,1-DCA	2 U	20 U	NA	NA	µg/L
	1,1-DCE	74	110	87	17	µg/L
	1,2-DCA	2 U	20 U	NA	NA	µg/L
	1,2-DCEs (<i>cis/t</i>)	8	20 U	NA	NA	µg/L
	Chloroform	4	20 U	NA	NA	µg/L
	Freon-113	24	40	32	7	µg/L
	TCE	126	160	140	16	µg/L
X749-26G	1,1,1-TCA	183	249	NA	NA	µg/L
	1,1-DCA	210	653	392	189	µg/L
	1,1-DCE	119	200 U	NA	NA	µg/L
	1,2-DCA	154	235	NA	NA	µg/L
	1,2-DCEs (<i>cis/t</i>)	100 U	200 U	NA	NA	µg/L
	Chloroform	100 U	200 U	NA	NA	µg/L
	Freon-113	100 U	200 U	NA	NA	µg/L
	TCE	360	1070	612	314	µg/L
X749-32G	1,1,1-TCA	740	1380	1148	283	µg/L
	1,1-DCA	220	377	325	71	µg/L
	1,1-DCE	540	860	746	142	µg/L
	1,2-DCA	100 U	200 U	NA	NA	µg/L
	1,2-DCEs (<i>cis/t</i>)	100 U	200 U	NA	NA	µg/L

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Table 4.3 (continued)

Well	Parameter ^a	Min ^b	Max ^b	Mean ^c	Standard deviation ^c	Units
X749-36G	Chloroform	100 U	200 U	NA	NA	µg/L
	Freon-113	200 U	300	236	92	µg/L
	TCE	1050	1870	1578	362	µg/L
	1,1,1-TCA	460	643	550	75	µg/L
	1,1-DCA	110	137	124	12	µg/L
	1,1-DCE	330	464	411.8	61.2	µg/L
	1,2-DCA	20 U	40 U	NA	NA	µg/L
	1,2-DCEs (<i>cis/t</i>)	20 U	40 U	NA	NA	µg/L
X749-37G	Chloroform	20 U	40 U	NA	NA	µg/L
	Freon-113	60	89	74	13	µg/L
	TCE	270	346	307	33	µg/L
	1,1,1-TCA	371	840	531	211	µg/L
	1,1-DCA	80	161	110	35	µg/L
	1,1-DCE	275	560	399	118	µg/L
	1,2-DCA	15	40 U	NA	NA	µg/L
	1,2-DCEs (<i>cis/t</i>)	10 U	40 U	NA	NA	µg/L
X749-43G	Chloroform	16	40 U	NA	NA	µg/L
	Freon-113	38	72	53	17	µg/L
	TCE	264	420	324	67	µg/L
	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	1,1-DCA	2 U	2 U	NA	NA	µg/L
	1,1-DCE	2 U	2 U	NA	NA	µg/L
	1,2-DCA	2 U	2 U	NA	NA	µg/L
	1,2-DCEs (<i>cis/t</i>)	2 U	2 U	NA	NA	µg/L
X749-44G	Chloroform	2 U	2 U	NA	NA	µg/L
	Freon-113	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L
	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	1,1-DCA	2 U	2 U	NA	NA	µg/L
	1,1-DCE	2 U	2 U	NA	NA	µg/L
	1,2-DCA	2 U	2 U	NA	NA	µg/L
	1,2-DCEs (<i>cis/t</i>)	2 U	2 U	NA	NA	µg/L
	Chloroform	2 U	2 U	NA	NA	µg/L
	Freon-113	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L

Table 4.3 (continued)

Well	Parameter ^a	Min ^b	Max ^b	Mean ^c	Standard deviation ^c	Units
X749-45G	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	1,1-DCA	2 U	2 U	NA	NA	µg/L
	1,1-DCE	2 U	2 U	NA	NA	µg/L
	1,2-DCA	2 U	2 U	NA	NA	µg/L
	1,2-DCEs (<i>cis/t</i>)	2 U	2 U	NA	NA	µg/L
	Chloroform	2 U	2 U	NA	NA	µg/L
	Freon-113	2 U	3	NA	NA	µg/L
	TCE	2	7	4	2	µg/L
X749-PZ02G	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	1,1-DCA	2 U	2 U	NA	NA	µg/L
	1,1-DCE	2 U	2 U	NA	NA	µg/L
	1,2-DCA	2 U	2 U	NA	NA	µg/L
	1,2-DCEs (<i>cis/t</i>)	2 U	2 U	NA	NA	µg/L
	Chloroform	2 U	2 U	NA	NA	µg/L
	Freon-113	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L
X749-PZ03G	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	1,1-DCA	2 U	2 U	NA	NA	µg/L
	1,1-DCE	2 U	2 U	NA	NA	µg/L
	1,2-DCA	2 U	2 U	NA	NA	µg/L
	1,2-DCEs (<i>cis/t</i>)	2 U	2 U	NA	NA	µg/L
	Chloroform	2 U	2 U	NA	NA	µg/L
	Freon-113	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L
X749-PZ04G	1,1,1-TCA	14	22	15	5	µg/L
	1,1-DCA	18	33	24	7	µg/L
	1,1-DCE	14	22	NA	NA	µg/L
	1,2-DCA	6	20 U	NA	NA	µg/L
	1,2-DCEs (<i>cis/t</i>)	8	20 U	10	2	µg/L
	Chloroform	5	20 U	7	2	µg/L
	Freon-113	31	56	39	12	µg/L
	TCE	102	160	124	26	µg/L
X749-PZ05G	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	1,1-DCA	2 U	2 U	NA	NA	µg/L
	1,1-DCE	2 U	2 U	NA	NA	µg/L
	1,2-DCA	2 U	2 U	NA	NA	µg/L
	1,2-DCEs (<i>cis/t</i>)	2 U	2 U	NA	NA	µg/L

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Table 4.3 (continued)

Well	Parameter ^a	Min ^b	Max ^b	Mean ^c	Standard deviation ^c	Units
	Chloroform	2 U	2 U	NA	NA	µg/L
	Freon-113	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L
<i>Berea wells</i>						
X749-14B	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	1,1-DCA	2 U	2 U	NA	NA	µg/L
	1,1-DCE	2 U	2 U	NA	NA	µg/L
	1,2-DCA	2 U	2 U	NA	NA	µg/L
	1,2-DCEs (<i>cis/t</i>)	2 U	2 U	NA	NA	µg/L
	Chloroform	2 U	2 U	NA	NA	µg/L
	Freon-113	2 U	2 U	NA	NA	µg/L
X749-50B	TCE	2 U	2 U	NA	NA	µg/L
	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	1,1-DCA	4	6	5	1	µg/L
	1,1-DCE	2 U	2 U	NA	NA	µg/L
	1,2-DCA	3	4	3	1	µg/L
	1,2-DCEs (<i>cis/t</i>)	2 U	2 U	NA	NA	µg/L
	Chloroform	2 U	2 U	NA	NA	µg/L
X749-51B	Freon-113	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L
	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	1,1-DCA	2 U	2 U	NA	NA	µg/L
	1,1-DCE	2 U	2 U	NA	NA	µg/L
	1,2-DCA	2 U	2 U	NA	NA	µg/L
	1,2-DCEs (<i>cis/t</i>)	2 U	2 U	NA	NA	µg/L
X749-54B	Chloroform	2 U	2 U	NA	NA	µg/L
	Freon-113	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L
	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	1,1-DCA	2 U	2 U	NA	NA	µg/L
	1,1-DCE	2 U	2 U	NA	NA	µg/L
	1,2-DCA	2 U	4	NA	NA	µg/L
1,2-DCEs (<i>cis/t</i>)	2 U	2 U	NA	NA	µg/L	
	Chloroform	2 U	2 U	NA	NA	µg/L
	Freon-113	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L

Table 4.3 (continued)

Well	Parameter ^a	Min ^b	Max ^b	Mean ^c	Standard deviation ^c	Units
X749-60B	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	1,1-DCA	2 U	2 U	NA	NA	µg/L
	1,1-DCE	2 U	2 U	NA	NA	µg/L
	1,2-DCA	2 U	2 U	NA	NA	µg/L
	1,2-DCEs (<i>cis/t</i>)	2 U	2 U	NA	NA	µg/L
	Chloroform	2 U	2 U	NA	NA	µg/L
	Freon-113	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L
X749-64B	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	1,1-DCA	2 U	2 U	NA	NA	µg/L
	1,1-DCE	2 U	2 U	NA	NA	µg/L
	1,2-DCA	2 U	2 U	NA	NA	µg/L
	1,2-DCEs (<i>cis/t</i>)	2 U	2 U	NA	NA	µg/L
	Chloroform	2 U	2 U	NA	NA	µg/L
	Freon-113	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L

^aParameter abbreviations: 1,1,1-TCA = 1,1,1-Trichloroethane; 1,1-DCA = 1,1-Dichloroethane; 1,1-DCE = 1,1-Dichloroethene; 1,2-DCA = 1,2-Dichloroethane; 1,2-DCEs (*cis/t*) = 1,2-Dichloroethenes (*cis* and *trans*); and TCE = Trichloroethylene.

^bQualifiers include: U—parameter was not detected; the result is the attainable detection limit for the sample.

^cNA—at least 50% of the results for the given parameter at this location were below detection; therefore, mean and standard deviation functions are not applicable.

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Table 4.4. Portsmouth groundwater monitoring for 1994:
results for radionuclide parameters at X-749

Well	Parameter	Min ^a	Max ^a	Mean ^b	Standard deviation ^b	Units
<i>Gallia wells</i>						
X120-08G	Gross alpha	5 U	13	NA	NA	pCi/L
	Gross beta	9 U	25	NA	NA	pCi/L
	Technetium	22 U	22 U	NA	NA	pCi/L
	Total uranium	2.9	7.5	4	2.2	µg/L
X749-04G	Gross alpha	5 U	8	NA	NA	pCi/L
	Gross beta	91 U	11 U	NA	NA	pCi/L
	Technetium	22 U	22 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.6	NA	NA	µg/L
X749-06G	Gross alpha	6 U	9	NA	NA	pCi/L
	Gross beta	66	90	77	10	pCi/L
	Technetium	104	136	121	13	pCi/L
	Total uranium	1.0 U	4.1	NA	NA	µg/L
X749-07G	Gross alpha	6 U	14	8	4.6	pCi/L
	Gross beta	187	382	241	94	pCi/L
	Technetium	288	448	335	76	pCi/L
	Total uranium	1.0 U	2.3	NA	NA	µg/L
X749-08G	Gross alpha	6 U	8	NA	NA	pCi/L
	Gross beta	144	164	152	8.8	pCi/L
	Technetium	173	304	218	59	pCi/L
	Total uranium	1.0 U	1.2	NA	NA	µg/L
X749-09G	Gross alpha	5 U	9	NA	NA	pCi/L
	Gross beta	9 U	11 U	NA	NA	pCi/L
	Technetium	22 U	22 U	NA	NA	pCi/L
	Total uranium	1.0 U	2.6	NA	NA	µg/L
X749-10G	Gross alpha	8 U	39	NA	NA	pCi/L
	Gross beta	14	53	25	19	pCi/L
	Technetium	22 U	25	22	7.0	pCi/L
	Total uranium	1.4	3.3	2	0.9	µg/L
X749-13G	Gross alpha	5 U	8	NA	NA	pCi/L
	Gross beta	104	129	117	10	pCi/L
	Technetium	143	193	160	23	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X749-21G	Gross alpha	5 U	50	NA	NA	pCi/L
	Gross beta	9 U	53	NA	NA	pCi/L
	Technetium	22 U	22 U	NA	NA	pCi/L
	Total uranium	1.0 U	13.2	6	5.8	µg/L
X749-23G	Gross alpha	5 U	10	NA	NA	pCi/L
	Gross beta	9 U	11 U	NA	NA	pCi/L
	Technetium	22 U	22 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.6	NA	NA	µg/L

Table 4.4 (continued)

Well	Parameter	Min ^a	Max ^a	Mean ^b	Standard deviation ^b	Units
X749-24G	Gross alpha	4 U	6	NA	NA	pCi/L
	Gross beta	9 U	11 U	NA	NA	pCi/L
	Technetium	22 U	22 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X749-25G	Gross alpha	5 U	6 U	NA	NA	pCi/L
	Gross beta	88	104	97	6.7	pCi/L
	Technetium	107	172	136	29	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X749-26G	Gross alpha	4 U	5 U	NA	NA	pCi/L
	Gross beta	108	328	214	97	pCi/L
	Technetium	153	445	303	137	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X749-32G	Gross alpha	5	10	NA	NA	pCi/L
	Gross beta	166	213	189	21	pCi/L
	Technetium	227	298	261	34	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X749-36G	Gross alpha	2 U	6 U	NA	NA	pCi/L
	Gross beta	14	18	16	1.7	pCi/L
	Technetium	22 U	34	24	10	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X749-37G	Gross alpha	4 U	5 U	NA	NA	pCi/L
	Gross beta	9 U	33	16	12	pCi/L
	Technetium	24 U	36	27	10	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X749-43G	Gross alpha	5 U	11	NA	NA	pCi/L
	Gross beta	10	21	15	4.6	pCi/L
	Technetium	22 U	36	NA	NA	pCi/L
	Total uranium	1.0 U	3.9	2	1.5	µg/L
X749-44G	Gross alpha	4 U	5 U	NA	NA	pCi/L
	Gross beta	9 U	11 U	NA	NA	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.1 J	NA	NA	µg/L
X749-45G	Gross alpha	6 U	16 U	NA	NA	pCi/L
	Gross beta	9 U	43 U	NA	NA	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.5 J	NA	NA	µg/L
X749-PZ02G	Gross alpha	3 U	5 U	NA	NA	pCi/L
	Gross beta	9 U	11 U	NA	NA	pCi/L
	Technetium	22 U	36	NA	NA	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L

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Table 4.4 (continued)

Well	Parameter	Min ^a	Max ^a	Mean ^b	Standard deviation ^b	Units
X-749-PZ03G	Gross alpha	2 U	18 U	NA	NA	pCi/L
	Gross beta	9 U	38 U	NA	NA	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X749-PZ04G	Gross alpha	5 U	19 U	NA	NA	pCi/L
	Gross beta	15	84	59	31	pCi/L
	Technetium	22 U	135	87	53	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X749-PZ05G	Gross alpha	19 U	474	152	222	pCi/L
	Gross beta	38 U	527	174	245	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	3.4 U	80.2	40	39	µg/L
<i>Berea wells</i>						
X749-14B	Gross alpha	4 U	5 U	NA	NA	pCi/L
	Gross beta	9 U	11 U	NA	NA	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X749-50B	Gross alpha	13 U	24	NA	NA	pCi/L
	Gross beta	17	47	24	16	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	1.5	4.9	3	1.6	µg/L
X749-51B	Gross alpha	6 U	10 U	NA	NA	pCi/L
	Gross beta	9 U	19 U	NA	NA	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X749-54B	Gross alpha	5 U	94	45	38	pCi/L
	Gross beta	9 U	41 U	NA	NA	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X749-60B	Gross alpha	14	17	15	1.3	pCi/L
	Gross beta	10 U	13	NA	NA	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	2.4	3.1	3	0.3	µg/L
X749-64B	Gross alpha	14 U	81	NA	NA	pCi/L
	Gross beta	25	89	NA	NA	pCi/L
	Technetium	22 U	32 U	NA	NA	pCi/L
	Total uranium	1.3	4	2	1.2	µg/L

^aQualifiers include: U—parameter was not detected; the result is the attainable detection limit for the sample. J—result must be considered an estimate.

^bNA—at least 50% of the results for the given parameter at this location were below detection; therefore, mean and standard deviation functions are not applicable.

Table 4.5. Portsmouth groundwater monitoring for 1994:
results for volatile organic compounds at the X-231B oil biodegradation plot

Well	Parameter ^a	Min ^b	Max ^b	Mean ^c	Standard deviation ^c	Units
<i>Gallia wells</i>						
X231B-02G	1,1,1-TCA	50 U	100 U	NA	NA	µg/L
	1,1-DCE	43	100 U	NA	NA	µg/L
	TCE	1510	2640	1928	501	µg/L
X231B-03G	1,1,1-TCA	54	210	134	67	µg/L
	1,1-DCE	41	170	102	56	µg/L
	TCE	610	1110	800	228	µg/L
X231B-04G	1,1,1-TCA	20 U	20 U	NA	NA	µg/L
	1,1-DCE	20 U	20 U	NA	NA	µg/L
	TCE	218	305	281	42	µg/L
X231B-06G	1,1,1-TCA	300	520	405	110	µg/L
	1,1-DCE	200	279	227	45	µg/L
	TCE	61	200	116	74	µg/L
X231B-14G	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	1,1-DCE	2 U	2 U	NA	NA	µg/L
	TCE	39	52	43	6	µg/L
X231B-15G	1,1,1-TCA	2 U	6	NA	NA	µg/L
	1,1-DCE	2 U	4	NA	NA	µg/L
	TCE	41	58	48	7	µg/L
X231B-16G	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	1,1-DCE	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L
X231B-23G	1,1,1-TCA	2	20 U	NA	NA	µg/L
	1,1-DCE	2 U	20 U	NA	NA	µg/L
	TCE	13	26	16	7	µg/L
X231B-27G	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	1,1-DCE	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L
X231B-28G	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	1,1-DCE	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L
X231B-37G	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	1,1-DCE	7	8	7.5	0.6	µg/L
	TCE	62	74	69	5	µg/L

Table 4.5 (continued)

Well	Parameter ^a	Min ^b	Max ^b	Mean ^c	Standard deviation ^c	Units
<i>Berea wells</i>						
X231B-24B	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	1,1-DCE	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L
X231B-32B	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	1,1-DCE	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L
X231B-33B	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	1,1-DCE	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L
X231B-34B	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	1,1-DCE	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L

^aParameter abbreviations: 1,1,1-TCA = 1,1,1-trichloroethane; 1,1-DCE = 1,1-dichloroethene; and TCE = trichloroethylene.

^bQualifiers include: U—parameter was not detected; the result is the attainable detection limit for the sample.

^cNA—at least 50% of the results for the given parameter at this location were below detection; therefore, mean and standard deviation functions are not applicable.

Table 4.6. Portsmouth groundwater monitoring for 1994:
results for radionuclide parameters at X-231B

Well	Parameter	Min ^a	Max ^a	Mean ^b	Standard deviation ^b	Units
<i>Gallia wells</i>						
X231B-02G	Gross alpha	5 U	19 U	NA	NA	pCi/L
	Gross beta	11 U	41 U	NA	NA	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.1	NA	NA	µg/L
X231B-03G	Gross alpha	4 U	17 U	NA	NA	pCi/L
	Gross beta	10	43 U	NA	NA	pCi/L
	Technetium	22 U	31	NA	NA	pCi/L
	Total uranium	1.0 U	2.9 U	NA	NA	µg/L
X231B-04G	Gross alpha	7 U	64	29	25	pCi/L
	Gross beta	11 U	43 U	NA	NA	pCi/L
	Technetium	22 U	23	NA	NA	pCi/L
	Total uranium	2.5	18.9	8.1	7.4	µg/L
X231B-06G	Gross alpha	14	96	40	40	pCi/L
	Gross beta	304	824	548	242	pCi/L
	Technetium	359	1041	715	324	pCi/L
	Total uranium	2.7	17.1	9.2	6.0	µg/L
X231B-14G	Gross alpha	4 U	5 U	NA	NA	pCi/L
	Gross beta	9 U	11 U	NA	NA	pCi/L
	Technetium	22 U	27	NA	NA	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X231B-15G	Gross alpha	10 U	11 U	NA	NA	pCi/L
	Gross beta	10 U	21 U	NA	NA	pCi/L
	Technetium	22 U	22 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X231B-16G	Gross alpha	14 U	18 U	NA	NA	pCi/L
	Gross beta	11	22 U	NA	NA	pCi/L
	Technetium	22 U	22 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X231B-23G	Gross alpha	8 U	18 U	NA	NA	pCi/L
	Gross beta	10 U	43 U	NA	NA	pCi/L
	Technetium	22 U	22 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.0	NA	NA	µg/L
X231B-27G	Gross alpha	5 U	15 U	NA	NA	pCi/L
	Gross beta	9 U	43 U	NA	NA	pCi/L
	Technetium	22 U	22 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.1	NA	NA	µg/L

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Table 4.6 (continued)

Well	Parameter	Min ^a	Max ^a	Mean ^b	Standard deviation ^b	Units
X231B-28G	Gross alpha	9 U	11 U	NA	NA	pCi/L
	Gross beta	10 U	21 U	NA	NA	pCi/L
	Technetium	22 U	22 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X231B-37G	Gross alpha	5 U	9 U	NA	NA	pCi/L
	Gross beta	9 U	21 U	NA	NA	pCi/L
	Technetium	22 U	36	NA	NA	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
<i>Berea wells</i>						
X231B-24B	Gross alpha	14 U	21 U	NA	NA	pCi/L
	Gross beta	12	22 U	NA	NA	pCi/L
	Technetium	22 U	22 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.8	1.4	0.6	µg/L
X231B-32B	Gross alpha	17 U	25	NA	NA	pCi/L
	Gross beta	19 U	27	NA	NA	pCi/L
	Technetium	22 U	22 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.2	NA	NA	µg/L
X231B-33B	Gross alpha	6 U	15	NA	NA	pCi/L
	Gross beta	10 U	20	NA	NA	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	1.0 U	1.0 U	NA	NA	µg/L
X231B-34B	Gross alpha	14	26	19	5.3	pCi/L
	Gross beta	10	15	NA	NA	pCi/L
	Technetium	22 U	22 U	NA	NA	pCi/L
	Total uranium	1.6	2	1.8	0.2	µg/L

^aQualifiers include: U—parameter was not detected; the result is the attainable detection limit for the sample.

^bNA—at least 50% of the results for the given parameter at this location were below detection; therefore, mean and standard deviation functions are not applicable.

**Table 4.7. Portsmouth groundwater monitoring for 1994:
results for volatile organic compounds at X-616**

Well	Parameter	Min ^a	Max ^a	Mean ^b	Standard deviation ^b	Units
<i>Gallia wells</i>						
X616-05G	1,1,1-Trichloroethane	2 U	5 U	NA	NA	µg/L
	Trichloroethylene	2 U	5 U	NA	NA	µg/L
X616-09G	1,1,1-Trichloroethane	2 U	5 U	NA	NA	µg/L
	Trichloroethylene	3	4	3.3	0.6	µg/L
X616-10G	1,1,1-Trichloroethane	2 U	5 U	NA	NA	µg/L
	Trichloroethylene	2 U	5 U	NA	NA	µg/L
X616-13G	1,1,1-Trichloroethane	2 U	2 U	NA	NA	µg/L
	Trichloroethylene	2 U	2 U	NA	NA	µg/L
X616-14G	1,1,1-Trichloroethane	2 U	5 U	NA	NA	µg/L
	Trichloroethylene	2 U	5 U	NA	NA	µg/L
X616-16G	1,1,1-Trichloroethane	2 U	5 U	NA	NA	µg/L
	Trichloroethylene	4	5	4.7	0.6	µg/L
X616-17G	1,1,1-Trichloroethane	2 U	5 U	NA	NA	µg/L
	Trichloroethylene	2 U	5 U	NA	NA	µg/L
X616-21G	1,1,1-Trichloroethane	2 U	5 U	NA	NA	µg/L
	Trichloroethylene	2 U	5 U	NA	NA	µg/L
X616-22G	1,1,1-Trichloroethane	2 U	5 U	NA	NA	µg/L
	Trichloroethylene	2 U	5 U	NA	NA	µg/L
X616-25G	1,1,1-Trichloroethane	2 U	5 U	NA	NA	µg/L
	Trichloroethylene	2 U	5 U	NA	NA	µg/L
X616-26G	1,1,1-Trichloroethane	2 U	5 U	NA	NA	µg/L
	Trichloroethylene	2 U	5 U	NA	NA	µg/L
<i>Berea wells</i>						
X616-19B	1,1,1-Trichloroethane	2 U	5 U	NA	NA	µg/L
	Trichloroethylene	2 U	3	NA	NA	µg/L
X616-20B	1,1,1-Trichloroethane	2 U	5 U	NA	NA	µg/L
	Trichloroethylene	15	21	18.0	3.0	µg/L
X616-24B	1,1,1-Trichloroethane	2 U	5 U	NA	NA	µg/L
	Trichloroethylene	2 U	5 U	NA	NA	µg/L
X616-28B	1,1,1-Trichloroethane	2 U	4	NA	NA	µg/L
	Trichloroethylene	2 U	5 U	NA	NA	µg/L

^aQualifiers include: U—parameter was not detected; the result is the attainable detection limit for the sample.

^bNA—at least 50% of the results for the given parameter at this location were below detection; therefore, mean and standard deviation functions are not applicable.

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Table 4.8. Portsmouth groundwater monitoring for 1994:
dissolved and total chromium results for X-616

Well	Parameter	Min ^a	Max ^a	Mean ^b	Standard deviation ^b	Units
<i>Gallia wells</i>						
X616-05G	Dissolved Cr ^c	339	465	402	89	µg/L
	Total Cr	464	1520	1104	563	µg/L
X616-09G	Dissolved Cr	2.5 U	6.2	NA	NA	µg/L
	Total Cr	2.5 U	4.3 U	NA	NA	µg/L
X616-10G	Dissolved Cr	2.5 U	2.6 U	NA	NA	µg/L
	Total Cr	2.5 U	2.6 U	NA	NA	µg/L
X616-13G	Dissolved Cr	4.3 U	12.5 U	NA	NA	µg/L
	Total Cr	5.1 U	189	NA	NA	µg/L
X616-14G	Dissolved Cr	12.5 U	8.2	NA	NA	µg/L
	Total Cr	2.5 U	9.5	NA	NA	µg/L
X616-16G	Dissolved Cr	2.6 U	3.2	NA	NA	µg/L
	Total Cr	2.5 U	2.6 U	NA	NA	µg/L
X616-17G	Dissolved Cr	2.5 U	4.3 U	NA	NA	µg/L
	Total Cr	21.1	52.9	40.2	16.9	µg/L
X616-21G	Dissolved Cr	2.5 U	4.3 U	NA	NA	µg/L
	Total Cr	5.3	14.2	8.4	5.1	µg/L
X616-22G	Dissolved Cr	2.5 U	4.3 U	NA	NA	µg/L
	Total Cr	4.3 U	17.2	7.9	8.2	µg/L
X616-25G	Dissolved Cr	2.5 U	4.3 U	NA	NA	µg/L
	Total Cr	4.3 U	21.4	13.9	10.3	µg/L
X616-26G	Dissolved Cr	2.6 U	12.5 U	NA	NA	µg/L
	Total Cr	2.5 U	2.8	NA	NA	µg/L
<i>Berea wells</i>						
X616-19B	Dissolved Cr	2.5 U	2.6 U	NA	NA	µg/L
	Total Cr	2.5 U	4.2	NA	NA	µg/L
X616-20B	Dissolved Cr	2.5 U	4.3 U	NA	NA	µg/L
	Total Cr	4.3 U	7.2	4.2	2.7	µg/L
X616-24B	Dissolved Cr	3.9	7.7	5.8	2.7	µg/L
	Total Cr	7.9	71.2	32.1	34.2	µg/L
X616-28B	Dissolved Cr	2.5 U	2.6 U	NA	NA	µg/L
	Total Cr	2.6 U	3.6	2.6	1.2	µg/L

^aQualifiers include: U—parameter was not detected; the result is the attainable detection limit for the sample.

^bNA—at least 50% of the results for the given parameter at this location were below detection; therefore, mean and standard deviation functions are not applicable.

^cChromium.

Table 4.9. Portsmouth groundwater monitoring for 1994:
surface water^a monitoring results for volatile organic compounds

Well	Parameter ^b	Min ^c	Max ^c	Mean ^d	Standard deviation ^d	Units
BRC-SW01	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L
BRC-SW02	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L
EDD-SW01	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2	NA	NA	µg/L
LBC-SW01	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	TCE	2 U	24	NA	NA	µg/L
LBC-SW02	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	TCE	2 U	18	NA	NA	µg/L
LBC-SW03	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	TCE	2 U	7	NA	NA	µg/L
LBC-SW04	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2	NA	NA	µg/L
NHP-SW01	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L
UND-SW01	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	TCE	2 U	3	2	1	µg/L
UND-SW02	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L
WDD-SW01	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L
WDD-SW02	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L
WDD-SW03	1,1,1-TCA	2 U	2 U	NA	NA	µg/L
	TCE	2 U	2 U	NA	NA	µg/L

^aSurface water samples are collected to analyze groundwater discharge.

^bParameter abbreviations: 1,1,1-TCA = 1,1,1-trichloroethane; TCE = trichloroethylene.

^cQualifiers include U—parameter was not detected; the result is the attainable detection limit for the sample.

^dNA—at least 50% of the results for the given parameter at this location were below detection; therefore, mean and standard deviation functions are not applicable.

Portsmouth Gaseous Diffusion Plant

Table 4.10. Portsmouth groundwater monitoring for 1994:
surface water^a monitoring results for radionuclide parameters

Well	Parameter	Min ^b	Max ^b	Mean ^c	Standard deviation ^c	Units
BRC-SW01	Gross alpha	6 U	13	NA	NA	pCi/L
	Gross beta	10	17	11.0	5.0	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	1 U	3.7	NA	NA	µg/L
BRC-SW02	Gross alpha	7 U	13	NA	NA	pCi/L
	Gross beta	10 U	11 U	NA	NA	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	1.2	1.9	1.3	0.5	µg/L
EDD-SW01	Gross alpha	5 U	44	22.6	18.5	pCi/L
	Gross beta	9 U	18	NA	NA	pCi/L
	Technetium	22 U	24	NA	NA	pCi/L
	Total uranium	1.1	7.3	4.1	2.6	µg/L
LBC-SW01	Gross alpha	5 U	36	NA	NA	pCi/L
	Gross beta	9 U	16	NA	NA	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	1 U	4.9	2.1	2.0	µg/L
LBC-SW02	Gross alpha	5 U	17	8.6	6.2	pCi/L
	Gross beta	9 U	11	NA	NA	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	1 U	3.7	1.9	1.3	µg/L
LBC-SW03	Gross alpha	5 U	44	NA	NA	pCi/L
	Gross beta	9 U	16	NA	NA	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	1 U	4.9	2.1	1.9	µg/L
LBC-SW04	Gross alpha	5 U	29	NA	NA	pCi/L
	Gross beta	9 U	19	NA	NA	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	1 U	5.5	2.9	2.3	µg/L
NHP-SW01	Gross alpha	5 U	13	NA	NA	pCi/L
	Gross beta	9 U	10 U	NA	NA	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	2.9	7.9	5.9	2.1	µg/L
UND-SW01	Gross alpha	5 U	7 U	NA	NA	pCi/L
	Gross beta	9 U	11 U	NA	NA	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	1 U	2.1	1.7	0.8	µg/L

Table 4.10 (continued)

Well	Parameter	Min ^b	Max ^b	Mean ^c	Standard deviation ^c	Units
UND-SW02	Gross alpha	5 U	6 U	NA	NA	pCi/L
	Gross beta	9 U	11	NA	NA	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	1 U	2.3	NA	NA	µg/L
WDD-SW01	Gross alpha	5 U	16	NA	NA	pCi/L
	Gross beta	9 U	14	NA	NA	pCi/L
	Technetium	22 U	22 U	NA	NA	pCi/L
	Total uranium	1.8	7.4	4.8	2.4	µg/L
WDD-SW02	Gross alpha	6 U	12 U	NA	NA	pCi/L
	Gross beta	9 U	11 U	NA	NA	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	1 U	2.8	1.8	1.2	µg/L
WDD-SW03	Gross alpha	5 U	8 U	NA	NA	pCi/L
	Gross beta	9 U	11 U	NA	NA	pCi/L
	Technetium	22 U	24 U	NA	NA	pCi/L
	Total uranium	3.0	4.8	3.6	0.8	µg/L

^aSurface water samples are collected to analyze groundwater discharge.

^bQualifiers include: U—parameter was not detected; the result is the attainable detection limit for the sample.

^cNA—at least 50% of the results for the given parameter at this location were below detection; therefore, mean and standard deviation functions are not applicable.

**Table 4.11. Portsmouth groundwater monitoring for 1994:
results for trichloroethylene at X-701C**

Well	Parameter	Min	Max	Mean	Standard deviation	Units
X701-68G	Trichloroethylene	30	46	40	6.8	µg/L
X701-69G	Trichloroethylene	300 J ^a	2690	1663	997	µg/L
X701-70G	Trichloroethylene	170	470	310	124	µg/L

^aJ = data qualifier indicating that the result must be considered an estimate.

**Table 4.12. Portsmouth groundwater monitoring for 1994:
results for radionuclide parameters at X-701C**

Well	Parameter	Min ^a	Max ^a	Mean ^b	Standard deviation ^b	Units
X701-68G	Gross alpha	12 U	14 U	NA	NA	pCi/L
	Gross beta	14	18	16	1.6	pCi/L
	Technetium	22 U	26	NA	NA	pCi/L
	Total uranium	1.0 U	2.1	NA	NA	µg/L
X701-69G	Gross alpha	3 U	20 U	NA	NA	pCi/L
	Gross beta	10 U	20 U	NA	NA	pCi/L
	Technetium	22 U	22 U	NA	NA	pCi/L
	Total uranium	6.2	7.0	6.5	0.4	µg/L
X701-70G	Gross alpha	6 U	9 U	NA	NA	pCi/L
	Gross beta	42	49	45	3.2	pCi/L
	Technetium	51	71	61	9.7	pCi/L
	Total uranium	3.0	3.4	3.1	0.2	µg/L

^aQualifiers include U—parameter was not detected; the result is the attainable detection limit for the sample.

^bNA—at least 50% of the results for the given parameter at this location were below detection; therefore, mean and standard deviation functions are not applicable.