



U.S. Department of Energy Portsmouth Gaseous Diffusion Plant

American Recovery and Reinvestment
Act funding accelerates cleanup
at the Portsmouth Gaseous Diffusion Plant



(From top to bottom)
Demolition of the X-533 Switchyard Complex,
demolition of the X-633 Recirculating Cooling Water Complex,
and remediation of soil and groundwater
at the X-701B Holding Pond.

**Annual Site
Environmental
Data – 2010**

**U.S. Department of Energy
Portsmouth Gaseous Diffusion Plant
Annual Site Environmental Data – 2010
Piketon, Ohio**

**U.S. Department of Energy
DOE/PPPO/03-0244&D1**

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**By
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CONTENTS

TABLES	v
ACRONYMS AND ABBREVIATIONS	vii
1. INTRODUCTION.....	1-1
2. ENVIRONMENTAL MONITORING.....	2-1
3. DOSE	3-1
4. GROUNDWATER.....	4-1

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TABLES

2.1	Radionuclide concentrations in LPP and USEC Government Services NPDES outfall water samples – 2010.....	2-2
2.2	LPP and UDS NPDES permit summaries – 2010.....	2-5
2.3	LPP NPDES discharge and compliance rates – 2010.....	2-6
2.4	UDS NPDES discharge and compliance rates – 2010	2-7
2.5	USEC Government Services NPDES discharge monitoring results – 2010.....	2-8
2.6	Radionuclides in surface water runoff samples from DUF ₆ cylinder storage yards – 2010.....	2-12
2.7	Drainage basin monitoring of surface water and sediment for DUF ₆ cylinder storage yards – 2010.....	2-13
2.8	Ambient air monitoring program summary for radionuclides and fluoride – 2010.....	2-15
2.9	DOE environmental radiation monitoring program (mrem) – 2010	2-19
2.10	Environmental radiation monitoring (mrem) at locations near DUF ₆ cylinder storage yards – 2010.....	2-20
2.11	Local surface water monitoring program results – 2010	2-21
2.12	Sediment monitoring program results – 2010.....	2-25
2.13	Soil and vegetation monitoring at ambient air monitoring stations – 2010	2-30
2.14	Biota (fish) monitoring program results – 2010.....	2-33
2.15	Biota (crops) monitoring program results – 2010.....	2-34
2.16	Biota (deer) monitoring program results – 2010.....	2-35
2.17	Off-site dairy monitoring – 2010	2-36
3.1	Emissions (Ci/year) from DOE air emission sources – 2010	3-1
3.2	Predicted radiation doses from airborne releases at PORTS – 2010	3-2
3.3	Dose calculations for ambient air monitoring stations – 2010.....	3-2
4.1	VOCs detected at the X-749/X-120/PK Landfill – 2010	4-4
4.2	Results for radionuclides at the X-749/X-120/PK Landfill – 2010	4-14

4.3	VOCs detected at the Quadrant I Groundwater Investigative Area – 2010	4-15
4.4	Results for radionuclides at the Quadrant I Groundwater Investigative Area – 2010	4-19
4.5	VOCs detected at the Quadrant II Groundwater Investigative Area – 2010.....	4-20
4.6	VOCs detected at the X-701B Holding Pond – 2010	4-21
4.7	Results for radionuclides at the X-701B Holding Pond – 2010.....	4-23
4.8	Results for chromium at the X-633 Pumphouse/Cooling Towers Area – 2010.....	4-27
4.9	VOCs detected at the X-616 Chromium Sludge Surface Impoundments – 2010.....	4-28
4.10	Results for chromium at the X-616 Chromium Sludge Surface Impoundments – 2010	4-29
4.11	VOCs detected at the X-740 Waste Oil Handling Facility – 2010	4-30
4.12	Results for beryllium and chromium at the X-611A Former Lime Sludge Lagoons – 2010.....	4-33
4.13	VOCs detected at the X-735 Landfills – 2010.....	4-34
4.14	VOCs detected at the X-734 Landfills – 2010.....	4-35
4.15	Results for cadmium, cobalt, and nickel at the X-533 Switchyard Area – 2010	4-36
4.16	VOCs detected at the Former X-344C Hydrogen Fluoride Storage Building – 2010	4-37
4.17	VOCs detected at surface water monitoring locations – 2010.....	4-38
4.18	Results for radionuclides at surface water monitoring locations – 2010	4-40
4.19	Results for radionuclides at exit pathway monitoring locations – 2010	4-43

ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
CFR	Code of Federal Regulations
Ci	curie
cm	centimeter
DCG	derived concentration guide
DOE	U.S. Department of Energy
DUF ₆	depleted uranium hexafluoride
EPA	Environmental Protection Agency
°F	degrees Fahrenheit
g	gram
GPD	gallons per day
GWTF	groundwater treatment facility
kg	kilogram
km	kilometer
L	liter
LPP	LATA/Parallax Portsmouth, LLC
m	meter
m ³	cubic meter
µg	microgram
mg	milligram
MGD	million gallons per day
mrem	millirem
na	not analyzed
ND	not detected
ng	nanogram
NPDES	National Pollutant Discharge Elimination System
OVEC	Ohio Valley Electric Corporation
PCB	polychlorinated biphenyl
pCi	picocurie
PK	Peter Kiewit
PORTS	Portsmouth Gaseous Diffusion Plant
SU	standard unit
TUa	acute toxicity unit
UDS	Uranium Disposition Services, LLC
USEC	United States Enrichment Corporation
VOC	volatile organic compound

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1. INTRODUCTION

Environmental monitoring at the Portsmouth Gaseous Diffusion Plant (PORTS) is conducted throughout the year. Monitoring demonstrates 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 2010 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 Gaseous Diffusion Plant Annual Site Environmental Report – 2010* (DOE/PPPO/03-0243&D1).

Radiological monitoring data presented in this Data Report and discussed in the *Annual Environmental Report for 2010* indicate that the maximum dose a member of the public could receive from radionuclides released by PORTS in 2010 or detected by environmental monitoring programs in 2010 is 1.4 millirem (mrem). This dose is significantly less than the 100 mrem limit set by the U.S. Department of Energy (DOE).

Other non-radiological chemicals such as polychlorinated biphenyls (PCBs), metals, and volatile organic compounds (VOCs) are also monitored. Discharges of metals and other chemicals to surface water are controlled by National Pollutant Discharge Elimination System (NPDES) permits. The *Portsmouth Gaseous Diffusion Plant Annual Site Environmental Report – 2010* provides more information about non-radiological chemicals released from PORTS or detected by PORTS monitoring programs during 2010.

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2. ENVIRONMENTAL MONITORING

This section provides environmental monitoring data collected in 2010 by DOE contractors LATA/Parallax Portsmouth, LLC (LPP) and Uranium Disposition Services, LLC (UDS), as well as the United States Enrichment Corporation (USEC) Government Services at or nearby PORTS.

- Table 2.1. Radionuclide concentrations in LPP and USEC Government Services NPDES outfall water samples – 2010
- Table 2.2. LPP and UDS NPDES permit summaries – 2010
- Table 2.3. LPP NPDES discharge and compliance rates – 2010
- Table 2.4. UDS NPDES discharge and compliance rates – 2010
- Table 2.5. USEC Government Services NPDES discharge monitoring results – 2010
- Table 2.6. Radionuclides in surface water runoff samples from DUF₆ cylinder storage yards – 2010
- Table 2.7. Drainage basin monitoring of surface water and sediment for DUF₆ cylinder storage yards – 2010
- Table 2.8. Ambient air monitoring program summary for radionuclides and fluoride – 2010
- Table 2.9. DOE environmental radiation monitoring program (mrem) – 2010
- Table 2.10. Environmental radiation monitoring (mrem) at locations near DUF₆ cylinder storage yards – 2010
- Table 2.11. Local surface water monitoring program results – 2010
- Table 2.12. Sediment monitoring program results – 2010
- Table 2.13. Soil and vegetation monitoring at ambient air monitoring stations – 2010
- Table 2.14. Biota (fish) monitoring program results – 2010
- Table 2.15. Biota (crops) monitoring program results – 2010
- Table 2.16. Biota (deer) monitoring program results – 2010
- Table 2.17. Off-site dairy monitoring – 2010

**Table 2.1. Radionuclide concentrations in LPP and USEC
Government Services NPDES outfall water samples – 2010**

NPDES outfall ^a	Parameter ^b	Number of samples ^c	Minimum ^d	Maximum ^d	Average ^e	DCG ^f
<i>LPP Outfalls</i>						
015	americium-241	4(4)	< 0.01923	< 0.04572		30
	neptunium-237	4(4)	0	< 0.02361		30
	plutonium-238	4(4)	< 0.007753	< 0.0519		40
	plutonium-239/240	4(4)	< 0.007745	< 0.02377		30
	technetium-99	12(9)	0	16.2		100,000
	uranium	12(2)	< 0.0466	1.557		
	uranium-233/234	12(1)	0.04693	1.919	0.627	500
	uranium-235	12(10)	0	0.1058		600
	uranium-236	12(12)	0	< 0.035		500
	uranium-238	12(2)	< 0.01561	0.5137		600
608	americium-241	4(4)	0	< 0.03974		
	neptunium-237	4(4)	< 0.000005876	< 0.02798		
	plutonium-238	4(4)	< 0.000007013	< 0.03001		
	plutonium-239/240	4(4)	0	< 0.02106		
	technetium-99	12(0)	169	615	412	
	uranium	12(0)	0.503	1.13	0.762	
	uranium-233/234	12(0)	0.2653	0.7025	0.455	
	uranium-235	12(11)	< 0.009383	0.05322		
	uranium-236	12(12)	0	< 0.02625		
	uranium-238	12(0)	0.1664	0.3776	0.254	
610	americium-241	4(4)	0	< 0.04456		
	neptunium-237	4(4)	0	< 0.03731		
	plutonium-238	4(4)	< 0.008322	< 0.02817		
	plutonium-239/240	4(4)	< 0.00002787	< 0.02113		
	technetium-99	12(10)	0	32.7		
	uranium	12(4)	0.000127	4.853		
	uranium-233/234	12(3)	< 0.00003728	5.094		
	uranium-235	12(10)	0	0.2074		
	uranium-236	12(11)	0	0.04857		
	uranium-238	12(5)	0	1.612		
611	americium-241	4(4)	0	< 0.02464		
	neptunium-237	4(4)	< 0.000008156	< 0.03206		
	plutonium-238	4(4)	0	< 0.02291		
	plutonium-239/240	4(4)	< 0.00000798	< 0.00814		
	technetium-99	12(2)	0	2330		
	uranium	12(0)	2.238	12.28	5.576	
	uranium-233/234	12(0)	2.156	31.27	7.506	
	uranium-235	12(0)	0.07519	1.302	0.317	
	uranium-236	12(7)	0	0.1291		
	uranium-238	12(0)	0.7452	4.009	1.845	

**Table 2.1. Radionuclide concentrations in LPP and USEC
Government Services NPDES outfall water samples – 2010 (continued)**

NPDES outfall ^a	Parameter ^b	Number of samples ^c	Minimum ^d	Maximum ^d	Average ^e	DCG ^f
<i>USEC Government Services Outfalls</i>						
001	americium-241	4(4)	< 0.022	< 0.082		30
	neptunium-237	4(4)	< 0.021	< 0.068		30
	plutonium-238	4(4)	< 0.02	< 0.085		40
	plutonium-239/240	4(4)	< 0.025	< 0.101		30
	technetium-99	52(40)	< 7.84	37.7		100,000
	uranium	52(0)	0.122	3.66	0.88	
002	americium-241	4(4)	< 0.023	< 0.117		30
	neptunium-237	4(4)	< 0.062	< 0.084		30
	plutonium-238	4(4)	< 0.021	< 0.076		40
	plutonium-239/240	4(4)	< 0.018	< 0.052		30
	technetium-99	52(52)	< 7.89	< 12.4		100,000
	uranium	52(0)	0.261	2.24	0.77	
003	americium-241	4(4)	< 0.024	< 0.034		30
	neptunium-237	4(4)	< 0.024	< 0.094		30
	plutonium-238	4(4)	< 0.024	< 0.071		40
	plutonium-239/240	4(4)	< 0.021	< 0.105		30
	technetium-99	52(0)	49.3	312	152	100,000
	uranium	52(0)	1.45	13.2	5.96	
004	americium-241	4(4)	< 0.023	< 0.087		30
	neptunium-237	4(4)	< 0.046	< 0.08		30
	plutonium-238	4(4)	< 0.019	< 0.064		40
	plutonium-239/240	4(4)	< 0.017	< 0.056		30
	technetium-99	52(52)	< 7.82	< 12.3		100,000
	uranium	52(0)	0.282	7.04	0.79	
005	americium-241	2(2)	< 0.028	< 0.14		30
	neptunium-237	2(2)	< 0.02	< 0.089		30
	plutonium-238	2(2)	< 0.053	< 0.099		40
	plutonium-239/240	2(2)	< 0.053	< 0.077		30
	technetium-99	7(7)	< 9.05	< 9.54		100,000
	uranium	7(0)	0.23	0.354	0.318	
009	americium-241	4(4)	< 0.024	< 0.068		30
	neptunium-237	4(4)	< 0.05	< 0.073		30
	plutonium-238	4(4)	< 0.018	< 0.027		40
	plutonium-239/240	4(4)	< 0.018	< 0.054		30
	technetium-99	52(51)	< 7.84	< 12.3		100,000
	uranium	52(0)	2.14	12	4.72	
010	americium-241	4(4)	< 0.023	< 0.087		30
	neptunium-237	4(4)	< 0.019	< 0.129		30
	plutonium-238	4(4)	< 0.021	< 0.052		40
	plutonium-239/240	4(4)	< 0.019	< 0.021		30
	technetium-99	52(51)	< 7.87	< 12.3		100,000
	uranium	52(0)	0.67	4.04	1.89	

**Table 2.1. Radionuclide concentrations in LPP and USEC
Government Services NPDES outfall water samples – 2010 (continued)**

NPDES outfall ^a	Parameter ^b	Number of samples ^c	Minimum ^d	Maximum ^d	Average ^e	DCG ^f
<i>USEC Government Services Outfalls</i>						
011	americium-241	4(4)	< 0.028	< 0.098		30
	neptunium-237	4(4)	< 0.019	< 0.102		30
	plutonium-238	4(4)	< 0.019	< 0.069		40
	plutonium-239/240	4(4)	< 0.054	< 0.083		30
	technetium-99	52(52)	< 7.84	< 12.4		100,000
	uranium	52(0)	0.84	2.61	1.50	
012	americium-241	4(4)	< 0.023	< 0.111		30
	neptunium-237	4(4)	< 0.021	< 0.07		30
	plutonium-238	4(4)	< 0.021	< 0.086		40
	plutonium-239/240	4(4)	< 0.02	< 0.057		30
	technetium-99	52(52)	< 7.86	< 12.4		100,000
	uranium	52(0)	0.49	2.18	1.30	
013	americium-241	4(4)	< 0.042	< 0.136		30
	neptunium-237	4(4)	< 0.022	< 0.093		30
	plutonium-238	4(4)	< 0.02	< 0.072		40
	plutonium-239/240	4(4)	< 0.018	< 0.083		30
	technetium-99	52(52)	< 7.86	< 12.4		100,000
	uranium	52(0)	0.374	2.87	1.16	

^aLPP internal NPDES Outfalls 608, 610, and 611 discharge to USEC NPDES Outfall 003 (X-6619 Sewage Treatment Plant).^bUranium is reported in µg/L; all other radionuclides are reported in pCi/L.^cNumber in parentheses is the number of samples that were below the detection limit.^dMinimum values reported as “0” may actually be negative results. Because of the statistical nature of radiation detection, results for samples that have no radioactivity are often negative values because background radioactivity is subtracted out. These negative value results are reported as “0” in the table for simplicity.^eAverages were not calculated for outfalls that had greater than 15% of the results below the detection limit. For outfalls with less than 15% of the results below the detection limit, any result below the detection limit was assigned a value at the detection limit to calculate the average for the parameter.^fDerived Concentration Guide (DCG)(pCi/L). DCGs are not provided for LPP internal outfalls (Outfalls 608, 610, and 611) because water from these outfalls flows through another outfall prior to discharge from the site. A DCG is not available for uranium.

Table 2.2. LPP and UDS NPDES permit summaries – 2010

Effluent characteristics		Monitoring requirements		Discharge limitations	
Parameter	Units	Measurement frequency	Sampling type	Concentration	
				Monthly	Daily
<i>LPP Outfall 015 (X-624 Groundwater Treatment Facility)</i>					
Flow rate	MGD	Daily	24-hour total		
pH	SU	1/2 weeks	Grab		6.5–9.0
Trichloroethene	µg/L	1/2 weeks	Grab	10	10
PCBs	µg/L	1/quarter	Grab	^a	^a
<i>LPP Outfall 608 (X-622 Groundwater Treatment Facility)</i>					
Flow rate	MGD	Daily	24-hour total		
pH	SU	1/2 weeks	Grab		
Trichloroethene	µg/L	1/2 weeks	Grab		10
1,2-trans-dichloroethene	µg/L	1/2 weeks	Grab	25	66
<i>LPP Outfall 610 (X-623 Groundwater Treatment Facility)</i>					
Flow rate	MGD	Daily	24-hour total		
pH	SU	1/2 weeks	Grab		
Trichloroethene	µg/L	1/2 weeks	Grab	10	10
1,2-trans-dichloroethene	µg/L	1/2 weeks	Grab	25	66
<i>LPP Outfall 611 (X-627 Groundwater Treatment Facility)</i>					
Flow rate	MGD	Daily	24-hour total		
pH	SU	1/2 weeks	Grab		
Trichloroethene	µg/L	1/2 weeks	Grab	10	10
<i>UDS Outfall 001</i>					
Water temperature	°F	Daily	Maximum	^b	^b
Flow rate	GPD	Daily	24-hour total		
Biochemical oxygen demand, 5-day	mg/L	1/week	24-hour composite		
pH	SU	1/day	Grab		6.5–9.0
Total suspended solids	mg/L	1/week	24-hour composite	30	45
Total suspended solids, loading	kg/day	1/week	-	0.9	1.4
Oil and grease, total	mg/L	1/month	Grab		
Nitrogen, ammonia	mg/L	1/week	24-hour composite		
Phosphorus, total	mg/L	1/week	24-hour composite		
Chlorine, total residual	mg/L	1/day	Grab		0.05
Dissolved solids, sum of	mg/L	1/week	24-hour composite		1500
Dissolved solids, sum of, loading	kg/day	1/week	-	45.4	

^aNo detectable PCBs.

^bMaximum daily and monthly average limits vary according to month.

Table 2.3. LPP NPDES discharge and compliance rates – 2010

Parameter	NPDES compliance rate (%)	Number of measurements ^a	Concentration			Units
			Minimum	Maximum	Average ^b	
<i>Outfall 015 (X-624 Groundwater Treatment Facility)</i>						
Flow rate	c	365	0	0.0378	0.00686	MGD
pH	100	26	7.28	8.14	7.67	SU
Trichloroethene	100	26(13)	< 0.16	7.82		µg/L
monthly average ^d	100	12	0	5.8	1.3	µg/L
PCBs	e	5(5)	< 0.094	< 0.098		µg/L
<i>Outfall 608 (X-622 Groundwater Treatment Facility)</i>						
Flow rate	c	365	0.0252	0.0742	0.0499	MGD
pH	f	26	7.1	8.29	7.86	SU
Trichloroethene	100	26(0)	0.19	1.5	0.69	µg/L
1,2-trans-dichloroethene	100	26(26)	< 0.15	< 0.15		µg/L
monthly average ^d	100	12	0	0	0	µg/L
<i>Outfall 610 (X-623 Groundwater Treatment Facility)</i>						
Flow rate	c	365	0	0.072	0.0205	MGD
pH	f	27	2.39	7.41	5.53	SU
Trichloroethene	100	26(12)	< 0.16	3.5		µg/L
monthly average ^d	100	12	0	1.9	0.39	µg/L
1,2-trans-dichloroethene	100	26(26)	< 0.15	< 0.15		µg/L
monthly average ^d	100	12	0	0	0	µg/L
<i>Outfall 611 (X-627 Groundwater Treatment Facility)</i>						
Flow rate	c	365	0	0.04	0.0211	MGD
pH	f	26	7.5	8.68	8.06	SU
Trichloroethene	100	26(2)	< 0.16	2.5	0.87	µg/L
monthly average ^d	100	12	0	2.4	0.85	µg/L

^aNumber in parentheses is the number of samples that were below the detection limit.^bAverages were not calculated for outfalls that had greater than 15% of the results below the detection limit. For outfalls with less than 15% of the results below the detection limit, any result below the detection limit was assigned a value at the detection limit for calculating an average for the parameter.^cFlow rate does not have a numerical limit; therefore, no compliance rates are generated.^dTo compute the monthly average, parameters that are undetected are assumed to be zero.^eThe permit specifies no detectable PCBs in the effluent without setting a numerical limit of detection.^fMonitoring only required; therefore, no compliance rates are generated.

Table 2.4. UDS NPDES discharge and compliance rates – 2010

Parameter	NPDES compliance rate (%)	Number of measurements ^a	Concentration			Units
			Minimum	Maximum	Average	
<i>Outfall 001</i>						
Biochemical oxygen demand	<i>d</i>	5(0)	0	3.0	1.42	mg/L
Chlorine, total residual	100	6(0)	0.0125	0.0125	0.0125	mg/L
Dissolved solids	100	6(0)	165	1470	650	mg/L
Flow rate	<i>c</i>	6(0)	6890	13850	9763	GPD
Nitrogen-ammonia	<i>d</i>	6(0)	0.022	0.384	0.148	mg/L
Oil and grease	<i>d</i>	6(0)	0	3.0	1.7	mg/L
pH	100	6(0)	7.01	7.56	7.27	SU
Phosphorus, total	<i>d</i>	6(0)	0.026	0.141	0.071	mg/L
Suspended solids, total	83	6(0)	0	45.2	9.8	mg/L
monthly average	83	6(0)	0	45.2	9.8	mg/L
Temperature	100	6(0)	48	80	62.6	°F
monthly average	83	6(0)	48	80	62.6	°F

^aNumber in parentheses is the number of samples that were below the detection limit.

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

^cMonitoring only required; therefore, no compliance rates are generated.

Table 2.5. USEC Government Services NPDES discharge monitoring results – 2010

Parameter	Number of samples ^a	Concentration			Units
		Minimum	Maximum	Average ^b	
<i>Outfall 001 (X-230J7 East Holding Pond)</i>					
Cadmium, total recoverable	12(11)	< 0.276	< 1.82		µg/L
Chlorine, total residual	48(48)	< 0.02	< 0.02		mg/L
Dissolved solids	48(0)	100	526	208	mg/L
Flow rate	365	0.793	5.888	1.649	MGD
Fluoride, total	12(4)	< 0.1	0.2		mg/L
Oil and grease, total	48(48)	< 5	< 5		mg/L
pH	54	6.87	8.33	7.44	SU
Silver, total recoverable	12(12)	< 1.88	< 13.1		µg/L
Suspended solids	48(34)	< 2	16		mg/L
Zinc, total recoverable	12(4)	4.2	23.5		µg/L
<i>Outfall 002 (X-230K South Holding Pond)</i>					
Cadmium, total recoverable	12(11)	< 1	1.05		µg/L
Flow rate	365	0	1.550	0.473	MGD
Fluoride, total	12(0)	0.2	0.2	0.2	mg/L
Mercury, total	12(0)	0.58	3.2	1.8	ng/L
Oil and grease, total	48(48)	< 5	< 5		mg/L
pH	48	6.85	8.47	7.49	SU
Silver, total recoverable	48(48)	< 1	< 1		µg/L
Suspended solids	48(0)	3	39.0	11.1	mg/L
Thallium, total recoverable	48(48)	< 1	< 1		µg/L
<i>Outfall 003 (X-6619 Sewage Treatment Plant)</i>					
Acute toxicity, <i>Ceriodaphnia dubia</i>	6(6)	< 1	< 1		Tua
Acute toxicity, <i>Pimephales promelas</i>	6(6)	< 1	< 1		Tua
Ammonia, nitrogen	24(8)	< 0.1	4.4		mg/L
Carbonaceous biochemical oxygen demand, 5-day	48(41)	< 5	15.7		mg/L
Chlorine, total residual	125(125)	< 0.02	< 0.02		mg/L
Copper, total recoverable	12(4)	< 1.04	11.2		µg/L
Fecal coliform	25(0)	3	2400	161	#/100 mL
Flow rate	365	0.135	0.656	0.309	MGD
Mercury, total	12(0)	7.4	66	40.8	ng/L
Nitrite + nitrate	12(0)	5.7	14.4	7.7	mg/L
Oil and grease, total	4(4)	< 5	< 5		mg/L
pH	249	6.60	7.73	7.23	SU
Silver, total recoverable	12(11)	< 1.88	< 13.1		µg/L
Suspended solids	48(4)	< 2	16.6	6.5	mg/L
Zinc, total recoverable	12(0)	11.8	47.1	33.7	µg/L
<i>Outfall 004 (Cooling Tower Blowdown)</i>					
Acute toxicity, <i>Ceriodaphnia dubia</i>	6(6)	< 1	< 1		Tua
Acute toxicity, <i>Pimephales promelas</i>	6(6)	< 1	< 1		Tua

Table 2.5. USEC Government Services NPDES discharge monitoring results – 2010 (continued)

Parameter	Number of samples ^a	Concentration			Units
		Minimum	Maximum	Average ^b	
<i>Outfall 004 (Cooling Tower Blowdown) (continued)</i>					
Chlorine, total residual	47(47)	< 0.02	< 0.02		mg/L
Copper, total recoverable	12(1)	< 1.04	30	16.7	µg/L
Dissolved solids	12(0)	192	365	271	mg/L
Flow rate	365	0	2.115	0.463	MGD
Mercury, total	12(0)	1.4	7.5	3.5	ng/L
Oil and grease, total	12(12)	< 5	< 5		mg/L
pH	12	7.01	7.74	7.40	SU
Suspended solids	13(9)	< 2	20.2		mg/L
Zinc, total recoverable	12(0)	23.2	65.5	33.8	µg/L
<i>Outfall 005 (X-611B Lime Sludge Lagoon)</i>					
Flow rate	36	0.008	2.154	1.158	MGD
pH	7	7.60	9.04	8.28	SU
Suspended solids	7(0)	2.4	7.8	4.6	mg/L
<i>Outfall 009 (X-230L North Holding Pond)</i>					
Cadmium, total recoverable	12(10)	< 0.276	0.4		µg/L
Flow rate	365	0.077	1.995	0.490	MGD
Fluoride, total	12(1)	< 0.1	0.3	0.2	mg/L
Oil and grease, total	12(12)	< 5	< 5		mg/L
pH	48	7.18	8.69	7.63	SU
Suspended solids	48(4)	< 2	60.2	9.8	mg/L
Zinc, total recoverable	12(3)	< 7.6	34.1		µg/L
<i>Outfall 010 (X-230J5 Northwest Holding Pond)</i>					
Cadmium, total recoverable	12(12)	< 0.276	< 0.298		µg/L
Flow rate	365	0.147	0.778	0.369	MGD
Mercury, Total	12(0)	0.59	2.2	1.2	ng/L
Oil and grease, total	12(12)	< 5	< 5		mg/L
pH	24	7.15	7.90	7.53	SU
Suspended solids	24(9)	< 2	19.2		mg/L
Zinc, total recoverable	12(0)	5.7	44.3	23.0	µg/L
<i>Outfall 011 (X-230J6 Northeast Holding Pond)</i>					
Cadmium, total recoverable	12(12)	< 0.276	< 0.298		µg/L
Chlorine, total residual	24(24)	< 0.02	< 0.02		mg/L
Copper, total recoverable	12(6)	< 1.04	7		µg/L
Flow rate	365	0	0.227	0.016	MGD
Fluoride, total	12(0)	0.2	0.3	0.2	mg/L
Oil and grease, total	24(24)	< 5	< 5		mg/L
pH	25	6.90	8.69	7.60	SU
Suspended solids	24(10)	< 2	75.6		mg/L
Zinc, total recoverable	12(5)	< 7.6	112		µg/L
<i>Outfall 012 (X-230M Southwest Holding Pond)</i>					
Chlorine	24(24)	< 0.02	< 0.02		mg/L
Flow rate	365	0.019	1.394	0.183	mg/L
Iron	24(0)	111	1440	539	MGD
Oil and grease	24(24)	< 5	< 5		mg/L
PCBs, total	4(4)	< 0.5	< 0.5		µg/L
pH	24	6.96	8.43	7.63	SU
Suspended solids	24(4)	< 2	15.4		mg/L
Trichloroethene	24(24)	< 1	< 1		µg/L

Table 2.5. USEC Government Services NPDES discharge monitoring results – 2010 (continued)

Parameter	Number of samples ^a	Concentration			Units
		Minimum	Maximum	Average ^b	
<i>Outfall 013 (X-230N West Holding Pond)</i>					
Chlorine	26(26)	< 0.02	< 0.02		mg/L
Flow rate	365	0.005	1.291	0.150	MGD
Oil and grease	24(24)	< 5	< 5		mg/L
PCBs, total	4(4)	< 0.5	< 0.5		µg/L
pH	24	7.47	8.23	7.82	SU
Suspended solids	24(14)	< 2	13.2		mg/L
<i>Outfall 602 (X-621 Coal Pile Runoff Treatment Facility)</i>					
Flow rate	365	0	0.600	0.032	MGD
Iron, total	24(0)	47	1490	321	µg/L
Manganese, total	24(0)	5.4	149	46.4	µg/L
pH	24(0)	7.35	9.69	8.31	SU
Suspended solids	24(5)	< 2	14		mg/L
<i>Outfall 604 (X-700 Biodenitrification Facility)</i>					
Copper, total	12(1)	< 1.04	31.4	12.0	µg/L
Flow rate	365	0	0.104	0.011	MGD
Iron, total	12(0)	74.9	701	178	µg/L
Nickel, total	12(6)	2.9	19.3		µg/L
Nitrate, nitrogen	12(1)	0.18	24.1	6.7	mg/L
pH	12	6.51	8.69	7.24	SU
Zinc, total	12(5)	< 1.59	55.1		µg/L
<i>Outfall 605 (X-705 Decontamination Microfiltration System)</i>					
Ammonia, nitrogen	12(5)	< 0.1	9.1		mg/L
Chromium, hexavalent	12(8)	< 0.972	1.6		mg/L
Chromium, total	12(12)	< 0.01	< 0.01		µg/L
Copper, total	12(0)	5.4	29.8	10.4	µg/L
Flow rate	365	0	0.1234	0.0075	MGD
Iron, total	12(2)	< 10.2	433		µg/L
Kjeldahl nitrogen	12(0)	0.6	3	1.5	mg/L
Nickel, total	12(8)	< 0.591	9.6		µg/L
Nitrogen, nitrate	12(1)	< 0.1	105	60.9	mg/L
Nitrogen, nitrite	12(8)	< 0.1	17		mg/L
Oil and grease, total	12(12)	< 5	< 5		mg/L
pH	12	6.98	9.11	7.76	SU
Sulfate	12(0)	5	106	61	mg/L
Suspended solids	12(12)	< 2	< 2		mg/L
Trichloroethene	12(12)	< 1	< 5		µg/L
Zinc, total	12(6)	1.9	19.4		µg/L
<i>Outfall 613 (X-6002 Particulate Separator)</i>					
Chlorine	19(19)	< 0.02	< 0.02		mg/L
Flow rate	305	0	0.0500	0.00308	MGD
Suspended solids	19(7)	< 2	768		mg/L

Table 2.5. USEC Government Services NPDES discharge monitoring results – 2010 (continued)

Parameter	Number of samples ^a	Concentration			Units
		Minimum	Maximum	Average ^b	
<i>Station Number 801 (Scioto River control sample, upstream of Outfalls 003 and 004)</i>					
48-hr. acute toxicity, <i>Ceriodaphnia dubia</i>	6	0	0		% affected
96-hr. acute toxicity, <i>Pimephales promelas</i>	6	0	0		% affected
<i>Station Number 902 (downstream of Outfall 001)</i>					
Water temperature	96	3	27	16	°C
<i>Station Number 903 (downstream of Outfall 002)</i>					
Water temperature	96	1	28	16	°C

^aNumber in parentheses is the number of samples that were below the detection limit.

^bAverages were not calculated for outfalls that had greater than 15% of the results below the detection limit. For outfalls with less than 15% of the results below the detection limit, any result below the detection limit was assigned a value at the detection limit for calculating an average for the parameter.

**Table 2.6. Radionuclides in surface water runoff samples from
DUF₆ cylinder storage yards – 2010**

Sample location	Parameter	Units	Number of samples ^a	Minimum ^b	Maximum ^b	Average ^c
X745-C1	alpha activity	pCi/L	12(8)	0	8.6	
	beta activity	pCi/L	12(2)	< 2.75	8.79	
	uranium	µg/L	12(0)	0.661	10.5	4.1
X745-C2	alpha activity	pCi/L	12(4)	< 0.38	10.4	
	beta activity	pCi/L	12(3)	< 0.629	11.5	
	uranium	µg/L	12(0)	1.52	17.6	9.0
X745-C3	alpha activity	pCi/L	12(10)	0	3.59	
	beta activity	pCi/L	12(5)	< 0.927	10.2	
	uranium	µg/L	12(0)	0.123	3.64	1.8
X745-C4 ^d	alpha activity	pCi/L	11(6)	< 0.738	7.54	
	beta activity	pCi/L	11(6)	< 0.0829	14	
	uranium	µg/L	11(0)	0.797	11.7	6.3
X745-E1	alpha activity	pCi/L	12(8)	0	4.94	
	beta activity	pCi/L	12(2)	0.846	12.4	
	uranium	µg/L	12(0)	0.534	3.55	1.7
X745-G1A ^d	alpha activity	pCi/L	8(3)	< 0.229	15.5	
	beta activity	pCi/L	8(2)	< 1.2	20.9	
	uranium	µg/L	8(0)	0.403	4.89	3.2
X745-G2	alpha activity	pCi/L	12(6)	0	9.67	
	beta activity	pCi/L	12(5)	< 0.41	15.5	
	uranium	µg/L	12(0)	0.322	7.28	2.4

^aNumber in parentheses is the number of samples that were below the detection limit.^bMinimum values reported as “0” may actually be negative results. Because of the statistical nature of radiation detection, results for samples that have no radioactivity are often negative values because background radioactivity is subtracted out. These negative value results are reported as “0” in the table for simplicity.^cAverages were not calculated for locations that had greater than 15% of the results below the detection limit. For locations with less than 15% of the results below the detection limit, any result below the detection limit was assigned a value at the detection limit to calculate the average for the parameter.^dSampling location X745-C4 was dry in August and X745-G1A was dry in April, August, September, and October; no samples could be collected.

Table 2.7. Drainage basin monitoring of surface water and sediment for DUF₆ cylinder storage yards – 2010

Location	Parameter ^a	First quarter ^b			Second quarter ^b		
		SW-F	SW-UF	Sed	SW-F	SW-UF	Sed
UDS X01	PCB-1242	0.1U	0.103U	9.69U	0.103U	0.106U	4.7U
	PCB-1248	0.1U	0.103U	9.69U	0.103U	0.106U	4.7U
	PCB-1254	0.1U	0.103U	26.6P	0.103U	0.106U	15.6
	PCB-1260	0.1U	0.103U	29	0.103U	0.106U	18
	PCB-1262	0.1U	0.103U	9.69U	0.103U	0.106U	4.7U
	PCB-1268	0.1U	0.103U	9.69U	0.103U	0.106U	4.7U
	Total PCB	0.1U	0.103U	55.6	0.103U	0.106U	33.6
RM-8	PCB-1242	0.106U	0.1U	9.33U	0.105U	0.106U	4.6U
	PCB-1248	0.106U	0.1U	9.33U	0.105U	0.106U	4.6U
	PCB-1254	0.106U	0.1U	46.6P	0.105U	0.106U	26.4P
	PCB-1260	0.106U	0.1U	86.4	0.105U	0.106U	51.4
	PCB-1262	0.106U	0.1U	9.33U	0.105U	0.106U	4.6U
	PCB-1268	0.106U	0.1U	9.33U	0.105U	0.106U	4.6U
	Total PCB	0.106U	0.1U	133	0.105U	0.106U	77.8
UDS X02	PCB-1242	0.1U	0.104U	10.6U	0.11U	0.108U	5.58U
	PCB-1248	0.1U	0.104U	10.6U	0.11U	0.108U	5.58U
	PCB-1254	0.1U	0.104U	10.6U	0.11U	0.108U	21.2P
	PCB-1260	0.1U	0.104U	166	0.11U	0.108U	54
	PCB-1262	0.1U	0.104U	10.6U	0.11U	0.108U	5.58U
	PCB-1268	0.1U	0.104U	10.6U	0.11U	0.108U	5.58U
	Total PCB	0.1U	0.104U	166	0.11U	0.108U	75.2
RM-10	PCB-1242	0.105U	0.105U	4.44U	0.105U	0.104U	4.17U
	PCB-1248	0.105U	0.105U	4.44U	0.105U	0.104U	4.17U
	PCB-1254	0.105U	0.105U	4.44U	0.105U	0.104U	4.17U
	PCB-1260	0.105U	0.105U	2.3J	0.105U	0.104U	2.1J
	PCB-1262	0.105U	0.105U	4.44U	0.105U	0.104U	4.17U
	PCB-1268	0.105U	0.105U	4.44U	0.105U	0.104U	4.17U
	Total PCB	0.105U	0.105U	2.3J	0.105U	0.104U	2.1J

Table 2.7. Drainage basin monitoring of surface water and sediment for DUF₆ cylinder storage yards – 2010 (continued)

Location	Parameter ^a	Third quarter ^b			Fourth quarter ^b		
		SW-F	SW-UF	Sed	SW-F	SW-UF	Sed
UDS X01	PCB-1242	0.103U	0.102U	4.67U	0.103U	0.102U	4.62U
	PCB-1248	0.103U	0.102U	4.67U	0.103U	0.102U	4.62U
	PCB-1254	0.103U	0.102U	19.5	0.103U	0.102U	9.7P
	PCB-1260	0.103U	0.102U	24.8	0.103U	0.102U	19.5
	PCB-1262	0.103U	0.102U	4.67U	0.103U	0.102U	4.62U
	PCB-1268	0.103U	0.102U	4.67U	0.103U	0.102U	4.62U
	Total PCB	0.103U	0.102U	44.3	0.3U	0.3U	29.2
RM-8	PCB-1242	0.109U	0.111U	4.31U	0.105U	0.103U	2.3J
	PCB-1248	0.109U	0.111U	4.31U	0.105U	0.103U	4.38U
	PCB-1254	0.109U	0.111U	12.9	0.105U	0.103U	2.2JP
	PCB-1260	0.109U	0.111U	20.2	0.105U	0.103U	4.7
	PCB-1262	0.109U	0.111U	4.31U	0.105U	0.103U	4.38U
	PCB-1268	0.109U	0.111U	4.31U	0.105U	0.103U	4.38U
	Total PCB	0.109U	0.111U	33.1	0.3U	0.3U	9.2J
UDS X02	PCB-1242	0.111U	0.103U	5.29U	0.104U	0.101U	5.14U
	PCB-1248	0.111U	0.103U	5.29U	0.104U	0.101U	5.14U
	PCB-1254	0.111U	0.103U	5.29U	0.104U	0.101U	5.14U
	PCB-1260	0.111U	0.103U	80.5	0.104U	0.101U	53
	PCB-1262	0.111U	0.103U	5.29U	0.104U	0.101U	5.14U
	PCB-1268	0.111U	0.103U	5.29U	0.104U	0.101U	5.14U
	Total PCB	0.111U	0.103U	80.5	0.3U	0.3U	53
RM-10	PCB-1242	0.108U	0.103U	4.3U	0.106U	0.102U	4.27U
	PCB-1248	0.108U	0.103U	4.3U	0.106U	0.102U	4.27U
	PCB-1254	0.108U	0.103U	4.3U	0.106U	0.102U	4.27U
	PCB-1260	0.108U	0.103U	4.3U	0.106U	0.102U	4.27U
	PCB-1262	0.108U	0.103U	4.3U	0.106U	0.102U	4.27U
	PCB-1268	0.108U	0.103U	4.3U	0.106U	0.102U	4.27U
	Total PCB	0.108U	0.103U	4.3U	0.3U	0.3U	10U

^aResults for surface water (SW) are reported in µg/L; results for sediment (Sed) are reported in µg/kg.

^bAbbreviations and data qualifiers are as follows: SW-F – filtered surface water; SW-UF – unfiltered surface water; Sed – sediment; J – the reported value is an estimated concentration greater than the method detection limit but less than the practical quantitation limit; P – there is a greater than 25% difference for detected concentrations between two gas chromatograph columns. U – undetected.

Table 2.8. Ambient air monitoring program summary for radionuclides and fluoride – 2010

Sampling Location	Parameter ^a	No. of measurements ^b	Minimum ^{c, d}	Maximum ^c	Average ^{c, e}
<i>On-site air samplers</i>					
A8	americium-241	4(4)	3.3E-06	1.3E-05	
	fluoride	52(51)	1.2E-02	4.5E-02	
	neptunium-237	4(4)	0	1.3E-08	
	plutonium-238	4(4)	0	1.2E-05	
	plutonium-239/240	4(4)	0	6.0E-06	
	technetium-99	12(7)	0	2.2E-02	
	uranium	12(0)	4.8E-04	1.0E-03	8.0E-04
	uranium-233/234	12(0)	2.3E-04	7.0E-04	4.2E-04
	uranium-235	12(8)	0	3.5E-05	
	uranium-236	12(12)	0	1.1E-05	
	uranium-238	12(0)	1.6E-04	3.4E-04	2.7E-04
A10	americium-241	4(4)	6.5E-06	1.3E-05	
	fluoride	51(36)	1.0E-02	3.6E-01	
	neptunium-237	4(4)	0	6.1E-06	
	plutonium-238	4(4)	5.8E-06	1.2E-05	
	plutonium-239/240	4(4)	2.9E-06	1.2E-05	
	technetium-99	12(9)	0	1.2E-02	
	uranium	12(0)	4.5E-04	1.0E-03	8.0E-04
	uranium-233/234	12(0)	2.1E-04	8.7E-04	4.6E-04
	uranium-235	12(8)	0	4.7E-05	
	uranium-236	12(12)	0	1.1E-05	
	uranium-238	12(0)	1.5E-04	3.4E-04	2.7E-04
A29	americium-241	4(4)	0	1.3E-05	
	fluoride	52(36)	1.4E-02	1.0E-01	
	neptunium-237	4(4)	0	1.4E-05	
	plutonium-238	4(4)	0	6.2E-06	
	plutonium-239/240	4(4)	0	1.2E-05	
	technetium-99	12(10)	0	1.1E-02	
	uranium	12(0)	6.6E-04	1.1E-03	8.4E-04
	uranium-233/234	12(0)	2.2E-04	6.6E-04	3.9E-04
	uranium-235	12(8)	0	3.2E-05	
	uranium-236	12(12)	0	8.2E-06	
	uranium-238	12(0)	2.2E-04	3.5E-04	2.8E-04
A36	americium-241	4(4)	0	1.3E-05	
	fluoride	52(32)	1.1E-02	1.2E-01	
	neptunium-237	4(4)	0	6.0E-06	
	plutonium-238	4(4)	2.9E-06	1.5E-05	
	plutonium-239/240	4(4)	0	8.9E-06	
	technetium-99	12(6)	0	3.2E-02	
	uranium	12(0)	6.0E-04	1.2E-03	9.1E-04
	uranium-233/234	12(0)	2.9E-04	1.4E-03	7.4E-04
	uranium-235	12(6)	3.7E-06	5.2E-05	
	uranium-236	12(12)	0	1.1E-05	
	uranium-238	12(0)	2.0E-04	4.1E-04	3.0E-04
A40	fluoride	51(19)	2.4E-02	2.4E-01	

Table 2.8. Ambient air monitoring program summary for radionuclides and fluoride – 2010 (continued)

Sampling Location	Parameter ^a	No. of measurements ^b	Minimum ^{c, d}	Maximum ^c	Average ^{c, e}
<i>On-site air samplers</i>					
T7	americium-241	4(4)	5.9E-06	1.0E-05	
	neptunium-237	4(4)	0	9.9E-06	
	plutonium-238	4(4)	6.2E-09	1.1E-05	
	plutonium-239/240	4(4)	0	9.9E-06	
	technetium-99	12(8)	0	3.1E-02	
	uranium	12(0)	1.9E-04	2.1E-03	8.6E-04
	uranium-233/234	12(0)	1.3E-04	6.1E-04	3.8E-04
	uranium-235	12(10)	3.7E-09	3.0E-05	
	uranium-236	12(12)	0	1.3E-05	
	uranium-238	12(0)	6.3E-05	7.2E-04	2.9E-04
<i>Off-site air samplers</i>					
A3	americium-241	4(4)	3.2E-09	1.4E-05	
	fluoride	52(33)	1.4E-02	8.0E-02	
	neptunium-237	4(4)	0	1.4E-05	
	plutonium-238	4(4)	3.0E-09	6.0E-06	
	plutonium-239/240	4(4)	0	6.4E-06	
	technetium-99	12(10)	0	1.8E-02	
	uranium	12(0)	4.7E-04	1.3E-03	8.7E-04
	uranium-233/234	12(0)	2.9E-04	1.0E-03	5.8E-04
	uranium-235	12(4)	0	5.2E-05	
	uranium-236	12(12)	0	1.0E-05	
	uranium-238	12(0)	1.6E-04	4.5E-04	2.9E-04
A6	americium-241	4(4)	0	1.0E-05	
	fluoride	52(51)	8.9E-03	4.3E-02	
	neptunium-237	4(4)	0	7.3E-06	
	plutonium-238	4(4)	3.5E-09	1.1E-05	
	plutonium-239/240	4(4)	0	1.2E-05	
	technetium-99	12(11)	0	3.7E-03	
	uranium	12(0)	4.7E-04	1.1E-03	8.0E-04
	uranium-233/234	12(0)	1.6E-04	5.4E-04	3.2E-04
	uranium-235	12(9)	4.3E-06	3.7E-05	
	uranium-236	12(12)	0	7.2E-06	
	uranium-238	12(0)	1.6E-04	3.6E-04	2.7E-04
A9	americium-241	4(4)	3.3E-09	7.0E-06	
	fluoride	52(38)	1.6E-02	8.8E-02	
	neptunium-237	4(4)	0	1.3E-05	
	plutonium-238	4(4)	3.1E-06	1.1E-05	
	plutonium-239/240	4(4)	2.7E-09	1.2E-05	
	technetium-99	12(11)	0	3.4E-03	
	uranium	12(0)	7.2E-04	1.2E-03	9.2E-04
	uranium-233/234	12(0)	2.8E-04	8.0E-04	4.4E-04
	uranium-235	12(6)	6.0E-06	5.3E-05	
	uranium-236	12(12)	0	1.9E-05	
	uranium-238	12(0)	2.4E-04	4.0E-04	3.1E-04

Table 2.8. Ambient air monitoring program summary for radionuclides and fluoride – 2010 (continued)

Sampling Location	Parameter ^a	No. of measurements ^b	Minimum ^{c, d}	Maximum ^c	Average ^{c, e}
A12	americium-241	4(4)	0	5.7E-06	
	fluoride	52(27)	1.7E-02	8.2E-02	
	neptunium-237	4(4)	0	6.2E-06	
	plutonium-238	4(4)	3.0E-06	1.2E-05	
	plutonium-239/240	4(4)	0	9.1E-06	
	technetium-99	12(9)	0	2.3E-02	
	uranium	12(0)	5.8E-04	1.3E-03	8.5E-04
	uranium-233/234	12(0)	2.3E-04	1.1E-03	6.3E-04
	uranium-235	12(6)	7.1E-09	4.2E-05	
	uranium-236	12(12)	0	1.9E-05	
	uranium-238	12(0)	1.9E-04	4.3E-04	2.9E-04
A15	americium-241	4(4)	0	1.2E-05	
	fluoride	52(43)	1.4E-02	9.0E-02	
	neptunium-237	4(4)	0	9.0E-06	
	plutonium-238	4(4)	0	9.0E-06	
	plutonium-239/240	4(4)	0	3.3E-06	
	technetium-99	12(10)	0	1.2E-02	
	uranium	12(0)	4.8E-04	1.3E-03	8.0E-04
	uranium-233/234	12(0)	1.7E-04	8.9E-04	4.9E-04
	uranium-235	12(7)	7.0E-06	4.2E-05	
	uranium-236	12(12)	0	7.6E-06	
	uranium-238	12(0)	1.6E-04	4.5E-04	2.7E-04
A23	americium-241	4(4)	6.4E-06	1.3E-05	
	fluoride	52(33)	2.1E-02	1.7E-01	
	neptunium-237	4(4)	0	2.8E-06	
	plutonium-238	4(4)	2.8E-06	1.1E-05	
	plutonium-239/240	4(4)	0	2.7E-06	
	technetium-99	12(7)	0	1.0E-01	
	uranium	12(0)	6.2E-04	1.5E-03	1.0E-03
	uranium-233/234	12(0)	2.4E-04	1.6E-03	8.6E-04
	uranium-235	12(3)	5.0E-09	5.8E-05	
	uranium-236	12(12)	0	1.2E-05	
	uranium-238	12(0)	2.1E-04	5.0E-04	3.4E-04
A24	americium-241	4(4)	3.1E-06	9.5E-06	
	fluoride	52(45)	2.6E-02	7.3E-02	
	neptunium-237	4(4)	0	9.5E-06	
	plutonium-238	4(4)	3.2E-09	2.1E-05	
	plutonium-239/240	4(4)	0	3.0E-06	
	technetium-99	12(7)	0	6.4E-02	
	uranium	12(0)	6.3E-04	1.3E-03	9.2E-04
	uranium-233/234	12(0)	3.1E-04	8.8E-04	5.1E-04
	uranium-235	12(8)	1.1E-08	4.7E-05	
	uranium-236	12(11)	0	1.7E-05	
	uranium-238	12(0)	2.1E-04	4.3E-04	3.1E-04

Table 2.8. Ambient air monitoring program summary for radionuclides and fluoride – 2010 (continued)

Sampling Location	Parameter ^a	No. of measurements ^b	Minimum ^{c, d}	Maximum ^c	Average ^{c, e}
A28	americium-241	4(4)	3.2E-09	6.6E-06	
	fluoride	52(42)	2.7E-02	4.7E-02	
	neptunium-237	4(4)	0	3.1E-06	
	plutonium-238	4(4)	2.8E-09	5.8E-06	
	plutonium-239/240	4(4)	0	1.8E-05	
	technetium-99	12(12)	0	1.6E-03	
	uranium	12(0)	6.2E-04	1.0E-03	8.0E-04
	uranium-233/234	12(0)	2.0E-04	4.7E-04	3.1E-04
	uranium-235	12(10)	0.0E+00	2.4E-05	
	uranium-236	12(12)	0	7.0E-06	
	uranium-238	12(0)	2.1E-04	3.4E-04	2.7E-04
A37 (background)	americium-241	4(4)	0	1.1E-05	
	fluoride	52(47)	1.0E-02	4.4E-01	
	neptunium-237	4(4)	0	6.0E-06	
	plutonium-238	4(4)	3.0E-06	1.3E-05	
	plutonium-239/240	4(4)	0	6.4E-06	
	technetium-99	12(12)	0	1.2E-03	
	uranium	12(0)	4.8E-04	9.4E-04	7.6E-04
	uranium-233/234	12(0)	2.1E-04	4.2E-04	2.9E-04
	uranium-235	12(10)	4.2E-06	2.8E-05	
	uranium-236	12(12)	0	7.3E-06	
	uranium-238	12(0)	1.6E-04	3.1E-04	2.5E-04
A41	americium-241	4(4)	6.6E-09	6.1E-06	
	fluoride	50(49)	1.6E-02	4.2E-02	
	neptunium-237	4(4)	0	2.9E-06	
	plutonium-238	4(4)	0	6.6E-06	
	plutonium-239/240	4(4)	0	8.7E-06	
	technetium-99	12(9)	0	5.9E-03	
	uranium	12(0)	6.5E-04	1.3E-03	8.9E-04
	uranium-233/234	12(0)	2.7E-04	6.3E-04	4.1E-04
	uranium-235	12(7)	4.3E-09	5.2E-05	
	uranium-236	12(12)	0	7.5E-06	
	uranium-238	12(0)	2.2E-04	4.2E-04	3.0E-04

^aAll parameters are measured in pCi/m³ with the exception of uranium and fluoride which are measured in µg/m³.

^bRadiological samples for technetium-99, uranium, and uranium isotopes are analyzed monthly, samples for americium-241, neptunium-237, plutonium-238, and plutonium-239/240 are analyzed one month per quarter, and samples for fluoride are analyzed weekly. Number in parentheses is the number of samples that were below the detection limit. If the analytical result for a sample was below the detection limit, the ambient air concentration was calculated based on the detection limit for the sample.

^cResults are provided in scientific notation. The number and sign (+ or -) to the right of the “E” indicate the number of places to the right or left of the decimal point. For example, 3.4E-04 is 0.00034 (the decimal point moves four places to the left); 2.1E+02 is 210 (the decimal point moves two places to the right).

^dValues reported as “0” may actually be negative results. Because of the statistical nature of radiation detection, results for samples that have no radioactivity are often negative values because background radioactivity is subtracted out. These negative value results are reported as “0” in the table for simplicity.

^eAverages are not calculated for locations that had greater than 15% of the results below the detection limit.

Table 2.9. DOE environmental radiation monitoring program (mrem) – 2010

Location	First quarter	Second quarter	Third quarter	Fourth quarter	Cumulative annual whole body dose ^a
#1404A	22	22	21	20	85
#518	24	22	21	21	88
#862	35	35	31	32	133
#874	171	186	160	172	689
#906	20	19	19	20	78
#933	48	33	30	27	138
A12	23	21	21	21	86
A15	24	24	22	22	92
A23	23	25	22	23	93
A24	24	26	20	24	94
A28	24	22	20	21	87
A29	25	25	23	24	97
A3	22	25	20	20	87
A36	23	22	19	21	85
A40	20	18	17	17	72
A6	21	21	21	21	84
A8	25	25	23	24	97
A9	23	24	22	21	90
X-230J2	27	24	20	23	94
Control ^b	20	21	16	19	76
Trip blank ^b	24	25	19	20	88

^aThe annual occupational whole body dose limit set by 10 CFR Part 20 is 5000 mrem.

^bThe control dosimeter is sent from the laboratory at the beginning of the quarter, remains at PORTS throughout the quarter in a low background location, and is returned to the laboratory with the other dosimeters at the end of the quarter. The trip blank dosimeter is sent from the laboratory at the beginning of the quarter, accompanies the sample team to the field locations at the beginning and end of each quarter and is returned to the laboratory with the other dosimeters at the end of the quarter. The control and trip blank measurements are an indication of background radiation.

Table 2.10. Environmental radiation monitoring (mrem) at locations near DUF₆ cylinder storage yards – 2010

Location	First quarter ^a			Second quarter ^a		
	Deep ^b	N ^c	Shallow ^d	Deep ^b	N ^c	Shallow ^d
#41	65	ND	65	66	ND	66
#868	488	61	488	423	ND	423
#874	211	38	211	183	ND	183
#882	310	54	310	283	20	283
#890	81	27	81	76	22	76
Trip blank	61	38	61	22	ND	22

Location	Third quarter ^a			Fourth quarter ^a			Annual (total) ^a		
	Deep ^b	N ^c	Shallow ^d	Deep ^b	N ^c	Shallow ^d	Deep ^b	N ^c	Shallow ^d
#41	60	ND	60	68	ND	68	259	ND	259
#868	361	ND	361	414	21	414	1686	82	1686
#874	169	ND	169	187	ND	187	750	38	750
#882	237	ND	237	242	ND	242	1072	74	1072
#890	89	34	89	48	ND	48	294	83	294
Trip blank	21	ND	21	22	ND	22	126	38	126

^aND – not detected above the minimum reportable dose.

^bDeep dose (dose equivalent at a tissue depth of 1 cm) applies to external whole body exposure. Dose is reported for photon energies from approximately 10 kilo-electron volts (keV) to 6 mega-electron volts (MeV) and includes neutron dose (if present).

^cNeutron component of deep dose.

^dShallow dose (dose equivalent at a tissue depth of 0.007 cm averaged over an area of 1 square centimeter) applies to exposure of the skin or an extremity. It includes the dose for beta particles and photons. Extremity doses are based on 662 keV photons. Neutron dose is included if present.

Table 2.11. Local surface water monitoring program results – 2010

Location	Parameter ^{a,b}	Second quarter ^{c,d}	Fourth quarter ^{c,d}
Scioto River RW-1 (downstream)	americium-241	-0.02281U	0.02384U
	neptunium-237	0.008278U	-0.01478U
	plutonium-238	0U	0.02952U
	plutonium-239/240	0.008255U	0.000007372U
	technetium-99	-2.37U	-3.25U
	uranium	1.644	1.548
	uranium-233/234	0.5591	0.5395
	uranium-235	0.01791U	0.02528U
	uranium-236	0.01608U	0.007565U
	uranium-238	0.5507	0.518
	americium-241	0U	-0.0122U
	neptunium-237	-0.01575U	-0.02904U
Scioto River RW-6 (upstream)	plutonium-238	0.007863U	0.02899U
	plutonium-239/240	0.007863U	0U
	technetium-99	-2.94U	-3.68U
	uranium	1.476	1.114
	uranium-233/234	0.6004	0.4652
	uranium-235	0.02614U	0.0174U
	uranium-236	0.007824U	0U
	uranium-238	0.4935	0.3728
	americium-241	0.02646U	0.0243U
	neptunium-237	-0.0206U	-0.0227U
	plutonium-238	0.01375U	0.02268U
	plutonium-239/240	0.02058U	0.007559U
Little Beaver Creek RW-7 (downstream)	technetium-99	4.84U	0.384U
	uranium	1.052	0.5592
	uranium-233/234	1.606	0.7556
	uranium-235	0.06005U	-0.008306U
	uranium-236	0.008985U	0.01495U
	uranium-238	0.3481	0.1885
	americium-241	0.02754U	0.009815U
	neptunium-237	-0.007238U	-0.01533U
	plutonium-238	0.02173U	0.02298U
	plutonium-239/240	0.00724U	-0.007653U
	technetium-99	5.61U	21.1
	uranium	0.7388	3.716
RW-8 (downstream)	uranium-233/234	1.072	1.385
	uranium-235	0.04861	0.06011U
	uranium-236	0.008738U	0.01542U
	uranium-238	0.2438	1.243
	americium-241	0.01692U	0.0000247U
	neptunium-237	-0.007366U	0.000006576U
	plutonium-238	0.000007354U	0.02625U
	plutonium-239/240	0.007368U	-0.006557U
	technetium-99	-4.21U	-5.77U
	uranium	0.02502U	0.09923U
	uranium-233/234	0.0483U	0.1002
	uranium-235	0.01702U	0U
RW-12 (upstream)	uranium-236	0U	0U
	uranium-238	0.006885U	0.03334U

Table 2.11. Local surface water monitoring program results – 2010 (continued)

Location	Parameter ^{a,b}	Second quarter ^{c,d}	Fourth quarter ^{c,d}
Big Beaver Creek RW-13 (downstream)	americium-241	0.01008U	0.01152U
	neptunium-237	0.00001686U	-0.01524U
	plutonium-238	0.000008404U	0.01523U
	plutonium-239/240	0.000008404U	0.03047U
	technetium-99	-1.68U	-3.21U
	uranium	1.027	0.67
	uranium-233/234	1.597	0.8148
	uranium-235	0.05604	0.05111
	uranium-236	0.01677U	0.007648U
	uranium-238	0.34	0.2205
RW-5 (upstream)	americium-241	0.02403U	0.02223U
	neptunium-237	-0.04119U	0.02268U
	plutonium-238	0.008232U	0.0151U
	plutonium-239/240	0.03289U	-0.007533U
	technetium-99	-0.443U	1.72U
	uranium	0.09674U	0.5261
	uranium-233/234	0.114	0.7725
	uranium-235	0U	0.03434U
	uranium-236	0U	0.007708U
	uranium-238	0.0325U	0.1736
Big Run Creek RW-2 (downstream)	americium-241	0.000009895U	0.02532U
	neptunium-237	0U	-0.007669U
	plutonium-238	0.000008047U	0U
	plutonium-239/240	0.000008046U	0.007655U
	technetium-99	-1.09U	-5.86U
	uranium	0.1826U	0.1651U
	uranium-233/234	0.08765	0.2321
	uranium-235	0.008316U	-0.008666U
	uranium-236	0.007467U	0.01558U
	uranium-238	0.06056U	0.05615
RW-3 (downstream)	americium-241	-0.01033U	0.02103U
	neptunium-237	0.00000827U	-0.008446U
	plutonium-238	-0.01649U	0.02529U
	plutonium-239/240	0U	-0.01685U
	technetium-99	-4.05U	16.7
	uranium	0.6445	0.6358
	uranium-233/234	0.4953	0.6196
	uranium-235	0.01771U	0.02796U
	uranium-236	0.007959U	0U
	uranium-238	0.2149	0.2111

Table 2.11. Local surface water monitoring program results – 2010 (continued)

Location	Parameter ^{a,b}	Second quarter ^{c,d}	Fourth quarter ^{c,d}
Big Run Creek (continued)	americium-241	0.01856U	0.03912U
RW-33	neptunium-237	-0.05175U	0.008336U
(upstream)	plutonium-238	0.007381U	0.008313U
	plutonium-239/240	0U	0U
	technetium-99	-4.34U	-6.75U
	uranium	0.08901U	0.06294U
	uranium-233/234	0.007747U	0.01462U
	uranium-235	-0.009509U	-0.008995U
	uranium-236	-0.008538U	0.01617U
	uranium-238	0.0308U	0.02187U
Background creeks	americium-241	0.0187U	0.00002978U
RW-10N	neptunium-237	0.00001609U	0.01371U
	plutonium-238	-0.01604U	0.02051U
	plutonium-239/240	0.008029U	0.006836U
	technetium-99	-3.35U	-7.51U
	uranium	0.4586	0.4129
	uranium-233/234	0.2826	0.2695
	uranium-235	0.01884U	0.008525U
	uranium-236	0U	0.007655U
	uranium-238	0.1524	0.1379
RW-10S	americium-241	0.0277U	0.009709U
	neptunium-237	-0.008445U	-0.06256U
	plutonium-238	0.02532U	-0.007793U
	plutonium-239/240	0.01688U	0.00784U
	technetium-99	-4.41U	-0.932U
	uranium	0.4317	0.3
	uranium-233/234	0.2818	0.1163
	uranium-235	0.008913U	-0.008958U
	uranium-236	0.008003U	0.008051U
	uranium-238	0.1442	0.1016
RW-10E	americium-241	0.01993U	0.000007576U
	neptunium-237	0.0156U	0.006875U
	plutonium-238	0.00777U	-0.006835U
	plutonium-239/240	0.000007763U	0.006848U
	technetium-99	-1.36U	-4.2U
	uranium	0.07079U	0.021U
	uranium-233/234	0.046U	0.0768
	uranium-235	0.009453U	0.007893U
	uranium-236	0U	-0.00708U
	uranium-238	0.02294U	0.006386U

Table 2.11. Local surface water monitoring program results – 2010 (continued)

Location	Parameter ^{a,b}	Second quarter ^{c,d}	Fourth quarter ^{c,d}
Background creeks RW-10W	americium-241	0.00001004U	0.01618U
	neptunium-237	0.00001718U	0.007U
	plutonium-238	0.008575U	0.01397U
	plutonium-239/240	0.000008567U	-0.006966U
	technetium-99	-1.7U	-5.98U
	uranium	0.1532U	0.3095
	uranium-233/234	0.01475U	0.06513
	uranium-235	0U	0U
	uranium-236	0U	0.000007207U
	uranium-238	0.05149U	0.104

^aResults are reported in µg/L (uranium) and pCi/L (all other parameters).

^bThe derived concentration guide (DCG) for each radionuclide is as follows: americium-241, 30 pCi/L; neptunium-237, 30 pCi/L; plutonium-238, 40 pCi/L; plutonium-239/240, 30 pCi/L; technetium-99, 100,000 pCi/L; uranium-233/234, 500 pCi/L; uranium-235, 600 pCi/L; uranium-236, 500 pCi/L; uranium-238, 600 pCi/L. All results are well below these DOE standards. A DCG is not available for total uranium.

^cAbbreviations and data qualifiers are as follows: U – undetected.

^dBecause of the statistical nature of radiation detection, results for samples that have no radioactivity are often negative values because background radioactivity is subtracted out.

Table 2.12. Sediment monitoring program results – 2010

Parameter	Unit	Location/results ^{a,b}				
		Scioto River and outfalls that discharge to the Scioto River				
		RM-6 Upstream @ Piketon	RM-1 Downstream @ Lucasville	RM-9 Outfall 012	RM-10 010/Outfall 013	
Aluminum	mg/kg	3110	7150	7150	3660	
Americium-241	pCi/g	0.002855U	0.002627U	0.003535U	0U	
Antimony	mg/kg	0.421J	0.441J	0.735U	0.285J	
Arsenic	mg/kg	5.21	10.4	4.42	6.18	
Barium	mg/kg	30.7	64.7	47.8	26.8	
Beryllium	mg/kg	0.199	0.464	0.766	0.265	
Cadmium	mg/kg	0.14J	0.178J	0.0631J	0.162J	
Calcium	mg/kg	16200	8560	2110	1950	
Chromium	mg/kg	4.98	9.56	11.1	5.44	
Copper	mg/kg	6.24	11.5	19.9	8.21	
Iron	mg/kg	7990	15100	24900	8950	
Lead	mg/kg	5.49	10.1	3.47	7.6	
Magnesium	mg/kg	6860	4210	2340	1590	
Manganese	mg/kg	257	497	325	108	
Mercury	mg/kg	0.00971J	0.0156J	0.0225U	0.0243U	
Neptunium-237	pCi/g	0.006735	-0.001418U	-0.001147U	-0.00138U	
Nickel	mg/kg	8.04	15.6	23.3	10.4	
PCB, total	µg/kg	60.2	39U	38.2U	26.6J	
PCB-1016	µg/kg	12.8U	3.74J	12.7U	12.7U	
PCB-1221	µg/kg	12.8U	13U	12.7U	12.7U	
PCB-1232	µg/kg	12.8U	13U	12.7U	12.7U	
PCB-1242	µg/kg	12.8U	13U	12.7U	12.7U	
PCB-1248	µg/kg	40.4	13U	12.7U	12.7U	
PCB-1254	µg/kg	15.1	13U	12.7U	4.8J	
PCB-1260	µg/kg	4.73J	13U	12.7U	21.8	
PCB-1268	µg/kg	12.8U	13U	12.7U	12.7U	
Plutonium-238	pCi/g	0.001343U	0.000002829U	0.003439U	0.002755U	
Plutonium-239/240	pCi/g	0.00403U	0.000001414U	-0.001145U	0U	
Selenium	mg/kg	0.909U	0.271J	0.735U	0.344J	
Silicon	mg/kg	454	569	747	562	
Silver	mg/kg	0.909U	0.893U	0.735U	0.909U	
Technetium-99	pCi/g	-0.0334U	-0.014U	-0.00559U	0.365	
Thallium	mg/kg	0.195J	0.367J	0.735U	0.909U	
Uranium	µg/g	0.4505	0.7456	0.4826	1.293	
Uranium-233/234	pCi/g	0.1794	0.2651	0.1884	2.241	
Uranium-235	pCi/g	0.006656U	0.01595	0.007878	0.1099	
Uranium-236	pCi/g	0.000001493U	0.002865U	0U	0.01269	
Uranium-238	pCi/g	0.1508	0.2491	0.1615	0.4244	
Zinc	mg/kg	31	54.4	47	52.1	

Table 2.12. Sediment monitoring program results – 2010 (continued)

Parameter	Unit	Location/results ^{a,b}				
		Little Beaver Creek				
		RM-12 Upstream	RM-11 Discharge	X-230J7	RM-8 Downstream @ Outfall 009 Discharge	RM-7 Downstream @ Confluence
Aluminum	mg/kg	4600		3230	4400	2890
Americium-241	pCi/g		0.005251U	0.001323U	0.005351U	0.00554U
Antimony	mg/kg		0.704U	0.567J	0.593J	0.246J
Arsenic	mg/kg	13.3		5.34	12.2	8.6
Barium	mg/kg	42.5		29.5	37.7	47.5
Beryllium	mg/kg	0.521		0.213	0.477	0.332
Cadmium	mg/kg	0.0758J		0.312	0.372	0.297
Calcium	mg/kg	727		7270	2450	5210
Chromium	mg/kg	9.62		6.57	14.5	7.6
Copper	mg/kg	6.84		18.9	10.8	6.38
Iron	mg/kg	19400		7240	16800	11700
Lead	mg/kg	12.1		8.3	9.84	6.48
Magnesium	mg/kg	855		4180	1530	2530
Manganese	mg/kg	543		568	345	250
Mercury	mg/kg	0.0281U		0.0533	0.0351	0.0273U
Neptunium-237	pCi/g	0.001377U		0.000002559U	0.01451	0.009592U
Nickel	mg/kg	9.51		12.2	18.9	13.3
PCB, total	µg/kg	39.4U		53.5	174	102
PCB-1016	µg/kg	13.1U		13.2U	13.2U	12.9U
PCB-1221	µg/kg	13.1U		13.2U	13.2U	12.9U
PCB-1232	µg/kg	13.1U		13.2U	13.2U	12.9U
PCB-1242	µg/kg	13.1U		13.2U	13.2U	12.9U
PCB-1248	µg/kg	13.1U		13.2U	13.2U	12.9U
PCB-1254	µg/kg	13.1U		20.2	62.3	40.7
PCB-1260	µg/kg	13.1U		33.3	112	61.2
PCB-1268	µg/kg	13.1U		13.2U	13.2U	12.9U
Plutonium-238	pCi/g	0.000002742U		0.002554U	-0.001314U	0.003189U
Plutonium-239/240	pCi/g	0.002744U		0.01532	0.01184	0.002126U
Selenium	mg/kg	0.704U		0.471J	1.07	0.283J
Silicon	mg/kg	795		486	415	689
Silver	mg/kg	0.704U		0.909U	0.82U	0.649U
Technetium-99	pCi/g	0.0271U		2.42	3.3	1.96
Thallium	mg/kg	0.704U		0.449J	0.35J	0.649U
Uranium	µg/g	0.568		1.074	2.045	1.315
Uranium-233/234	pCi/g	0.2266		1.824	2.636	1.476
Uranium-235	pCi/g	0.006112U		0.07774	0.1095	0.067
Uranium-236	pCi/g	0U		0.01449	0.01212	0.008257
Uranium-238	pCi/g	0.1903		0.3536	0.6771	0.4358
Zinc	mg/kg	33		112	84.8	45.4

Table 2.12. Sediment monitoring program results – 2010 (continued)

Parameter	Unit	Location/results ^{a,b}	
		Big Beaver Creek	
		RM-5 <i>Upstream</i>	RM-13 <i>Downstream</i>
Aluminum	mg/kg	3830	5890
Americium-241	pCi/g	0U	0.006326U
Antimony	mg/kg	0.758U	0.278J
Arsenic	mg/kg	5.52	8
Barium	mg/kg	55.8	55.8
Beryllium	mg/kg	0.3	0.456
Cadmium	mg/kg	0.17J	0.349
Calcium	mg/kg	1200	4900
Chromium	mg/kg	5.45	8.9
Copper	mg/kg	5.89	12.4
Iron	mg/kg	9260	13700
Lead	mg/kg	6.12	9.79
Magnesium	mg/kg	1200	3670
Manganese	mg/kg	617	372
Mercury	mg/kg	0.0218J	0.0192J
Neptunium-237	pCi/g	0.002377U	0.00403U
Nickel	mg/kg	10.9	17.7
PCB, total	µg/kg	39U	51.8
PCB-1016	µg/kg	13U	13.2U
PCB-1221	µg/kg	13U	13.2U
PCB-1232	µg/kg	13U	13.2U
PCB-1242	µg/kg	13U	13.2U
PCB-1248	µg/kg	13U	13.2U
PCB-1254	µg/kg	13U	13.9
PCB-1260	µg/kg	13U	37.9
PCB-1268	µg/kg	13U	13.2U
Plutonium-238	pCi/g	0.00474U	0.000003009U
Plutonium-239/240	pCi/g	0.001187U	-0.002001U
Selenium	mg/kg	0.758U	0.332J
Silicon	mg/kg	820	539
Silver	mg/kg	0.758U	0.877U
Technetium-99	pCi/g	0.0606U	2.29
Thallium	mg/kg	0.758U	0.239J
Uranium	µg/g	0.5106	1.105
Uranium-233/234	pCi/g	0.2278	1.201
Uranium-235	pCi/g	0.01536	0.05179
Uranium-236	pCi/g	0.001379U	0.005284
Uranium-238	pCi/g	0.1702	0.3666
Zinc	mg/kg	27.4	59.2

Table 2.12. Sediment monitoring program results – 2010 (continued)

Parameter	Unit	Location/results ^{a,b}			
		<i>Big Run Creek</i>		<i>RM-2 Downstream @ Wakefield</i>	<i>RM-3 Downstream</i>
		<i>RM-33 Upstream</i>	<i>RM-3</i>		
Aluminum	mg/kg	6430	3770	4520	
Americium-241	pCi/g	0.002382U	0.002343U	0.009354U	
Antimony	mg/kg	0.536J	0.572J	0.292J	
Arsenic	mg/kg	15.4	14.8	7.78	
Barium	mg/kg	62.8	32.7	42.6	
Beryllium	mg/kg	0.582	0.506	0.386	
Cadmium	mg/kg	0.15J	0.152J	0.0658J	
Calcium	mg/kg	846	1010	443	
Chromium	mg/kg	10.5	8.3	5.93	
Copper	mg/kg	9.35	6.58	5.55	
Iron	mg/kg	20800	17100	11100	
Lead	mg/kg	9.99	9.9	7.21	
Magnesium	mg/kg	1160	728	721	
Manganese	mg/kg	312	441	404	
Mercury	mg/kg	0.0281U	0.0265U	0.0225U	
Neptunium-237	pCi/g	0.001154U	-0.001148U	0.00000248U	
Nickel	mg/kg	16.2	10.2	10.1	
PCB, total	µg/kg	39.8U	61.2	39.5U	
PCB-1016	µg/kg	13.2U	12.8U	13.1U	
PCB-1221	µg/kg	13.2U	12.8U	13.1U	
PCB-1232	µg/kg	13.2U	12.8U	13.1U	
PCB-1242	µg/kg	13.2U	12.8U	13.1U	
PCB-1248	µg/kg	13.2U	12.8U	13.1U	
PCB-1254	µg/kg	13.2U	29.4	13.1U	
PCB-1260	µg/kg	13.2U	31.7	13.1U	
PCB-1268	µg/kg	13.2U	12.8U	13.1U	
Plutonium-238	pCi/g	0.0023U	0.000001146U	0.00495U	
Plutonium-239/240	pCi/g	0.000001149U	0.002294U	0.00248U	
Selenium	mg/kg	0.346J	0.55J	0.758U	
Silicon	mg/kg	424	576	369	
Silver	mg/kg	0.758U	0.962U	0.758U	
Technetium-99	pCi/g	0.0324U	0.495	0.107U	
Thallium	mg/kg	0.316J	0.285J	0.234J	
Uranium	µg/g	1.534	1.484	0.8313	
Uranium-233/234	pCi/g	0.4764	1.111	0.3515	
Uranium-235	pCi/g	0.01717	0.04841	0.01741	
Uranium-236	pCi/g	0.001186U	0.006393U	0.001421U	
Uranium-238	pCi/g	0.514	0.4941	0.2778	
Zinc	mg/kg	45.4	48.5	26.2	

Table 2.12. Sediment monitoring program results – 2010 (continued)

Parameter	Unit	Location/results ^{a,b}			
		Background creeks			
		RM-10N North background	RM-10S South background	RM-10E East background	RM-10W West background
Aluminum	mg/kg	2370	4760	2140	3370
Americium-241	pCi/g	0.002529U	0.005134U	0.000001147U	0.004953U
Antimony	mg/kg	0.315J	0.319J	0.735U	0.726
Arsenic	mg/kg	4.94	5.85	2.37	10.9
Barium	mg/kg	21.3	55	23.2	32.6
Beryllium	mg/kg	0.225	0.39	0.209	0.407
Cadmium	mg/kg	0.167J	0.179U	0.184U	0.661
Calcium	mg/kg	4520	450	517	910
Chromium	mg/kg	5.47	6.09	3.83	6.12
Copper	mg/kg	4.73	3.81	2.02	11.4
Iron	mg/kg	8050	10800	4720	12000
Lead	mg/kg	6.63	52.2	3.78	9.1
Magnesium	mg/kg	2330	542	242	698
Manganese	mg/kg	126	266	111	297
Mercury	mg/kg	0.0225U	0.0225U	0.0243U	0.0281U
Neptunium-237	pCi/g	0.001244U	-0.00254U	0.001136U	-0.006723U
Nickel	mg/kg	9.36	6.75	3.12	17.3
PCB, total	µg/kg	38.9U	37.8U	39.6U	39.9U
PCB-1016	µg/kg	12.9U	12.6U	13.2U	13.3U
PCB-1221	µg/kg	12.9U	12.6U	13.2U	13.3U
PCB-1232	µg/kg	12.9U	12.6U	13.2U	13.3U
PCB-1242	µg/kg	12.9U	12.6U	13.2U	13.3U
PCB-1248	µg/kg	12.9U	12.6U	13.2U	13.3U
PCB-1254	µg/kg	12.9U	12.6U	13.2U	13.3U
PCB-1260	µg/kg	12.9U	12.6U	13.2U	13.3U
PCB-1268	µg/kg	12.9U	12.6U	13.2U	13.3U
Plutonium-238	pCi/g	0.002482U	0U	0U	0.004029U
Plutonium-239/240	pCi/g	-0.001239U	0.001268U	0.003397U	0U
Selenium	mg/kg	0.714U	0.714U	0.735U	0.539J
Silicon	mg/kg	296	537	287	307
Silver	mg/kg	0.714U	0.714U	0.735U	0.685U
Technetium-99	pCi/g	0.118U	0.0578U	0.0301U	0.0903U
Thallium	mg/kg	0.714U	0.714U	0.735U	0.398J
Uranium	µg/g	0.3668	0.8958	0.2118	1.295
Uranium-233/234	pCi/g	0.1272	2.711	0.1044	0.4613
Uranium-235	pCi/g	0.008114	0.09661	0U	0.03676
Uranium-236	pCi/g	0U	0.01068	0.002289U	0.003961U
Uranium-238	pCi/g	0.1225	0.2922	0.07116	0.4318
Zinc	mg/kg	30.3	16.8	11.4	61.3

^aAbbreviations and data qualifiers are as follows: J – the reported value is an estimated concentration greater than the method detection limit but less than the practical quantitation limit; U – undetected.

^bBecause of the statistical nature of radiation detection, results for samples that have no radioactivity are often negative values because background radioactivity is subtracted out.

Table 2.13. Soil and vegetation monitoring at ambient air monitoring stations – 2010

Parameter ^a	Location/results ^{b,c}			
	<i>A8 – On site at northwest boundary</i>		<i>T7 – On site near X-230L North Holding Pond</i>	
	Vegetation	Soil	Vegetation	Soil
Americium-241	0.001065U	0.00000213U	-0.00384U	0.003985U
Neptunium-237	0.001169U	0U	-0.006922U	0.002525U
Plutonium-238	0.006987U	0.0009508U	-0.006905U	0.0008394U
Plutonium-239/240	0.002329U	0.004754	-0.001722U	0.01091
Technetium-99	-0.0296U	0.00352U	-0.0362U	0.0781U
Uranium	-0.0003002U	3.683	0.02117U	3.162
Uranium-233/234	0.002692U	1.276	0.04511	1.12
Uranium-235	-0.001104U	0.04917	0U	0.05684
Uranium-236	-0.0009917U	-0.004411U	0U	0U
Uranium-238	0.000002681U	1.233	0.007113U	1.058
	<i>A10 – On site on northwest segment of Perimeter Road</i>		<i>A29 – On site at OVEC</i>	
	Vegetation	Soil	Vegetation	Soil
Americium-241	0.0009462U	0.002894U	0U	0.005349
Neptunium-237	0U	0.0009562U	-0.002369U	-0.001865U
Plutonium-238	0.001024U	0.002858U	-0.002359U	0.0009337U
Plutonium-239/240	0.002045U	0.003811U	0.001184U	0.007462
Technetium-99	-0.019U	0.0512U	-0.0217U	0.00558U
Uranium	0.01174U	2.362	0.01074	2.942
Uranium-233/234	0.02527	0.9102	0.01157	1.034
Uranium-235	0.002311U	0.06313	0U	0.0468
Uranium-236	0U	0U	0U	0U
Uranium-238	0.003738U	0.788	0.003609	0.9843
	<i>A36 – On site at X-611 Water Treatment Plant</i>		<i>A6 – North of PORTS in Piketon</i>	
	Vegetation	Soil	Vegetation	Soil
Americium-241	0.003382U	0.001986U	-0.0009613U	0.004996U
Neptunium-237	-0.0135U	0.001855U	-0.002923U	0U
Plutonium-238	0.003853U	0.002775U	0.004378U	0.001708U
Plutonium-239/240	-0.003845U	0.005551U	0.002918U	0.007685
Technetium-99	0.0573U	0.0307U	-0.052U	-0.031U
Uranium	-0.0004724U	2.342	0.0118U	1.737
Uranium-233/234	0.007202U	0.8876	0.02255	0.635
Uranium-235	-0.001771U	0.02724	0U	0.02589U
Uranium-236	-0.00159U	0.009783U	-0.001468U	0U
Uranium-238	0.000007165U	0.7845	0.003971U	0.5813

Table 2.13. Soil and vegetation monitoring at ambient air monitoring stations – 2010 (continued)

Parameter ^a	Location/results ^{b,c}			
	<i>A24 – North of PORTS at Schuster Road</i>		<i>A41 - North of PORTS at Zahns Corner</i>	
	Vegetation	Soil	Vegetation	Soil
Americium-241	0.002899U	0.006966	0.002072U	0.01046
Neptunium-237	0.000001012U	0.0008866U	0.0009995U	0U
Plutonium-238	0.003029U	0.003537U	0.002984U	0.0009102U
Plutonium-239/240	0.004038U	0.007073	0.0000009938U	0.01273
Technetium-99	-0.00299U	0.092U	0.0787U	0.00263U
Uranium	0.01426U	2.83	0.01521	2.805
Uranium-233/234	0.01597	0.966	0.005859U	1.011
Uranium-235	0.001159U	0.04181	0.0000009018U	0.03212
Uranium-236	0U	0.004693U	0U	0.004806U
Uranium-238	0.004688U	0.9471	0.005112	0.9397
<i>A23 – Northeastern PORTS boundary</i>		<i>A12 – Eastern PORTS boundary</i>		
	Vegetation	Soil	Vegetation	Soil
Americium-241	-0.000936U	0.00948U	0.002289U	0.002922U
Neptunium-237	0.002697U	0.0000008715U	0.000001814U	0.001667U
Plutonium-238	0.001795U	0.00174U	0.001812U	0.001662U
Plutonium-239/240	0.001793U	0.01479	0.000001809U	0.007478
Technetium-99	-0.00599U	0.0578U	0.0486U	0.0765U
Uranium	0.0113	2.683	0.01125U	2.765
Uranium-233/234	0.01196	0.8659	0.01436	0.8939
Uranium-235	-0.0009212U	0.02428	0.002214U	0.02162
Uranium-236	0.000828U	0U	0U	-0.003875U
Uranium-238	0.00373	0.8995	0.003582U	0.9271
<i>A15 – Southeast of PORTS on Loop Road</i>		<i>A3 – Southern PORTS boundary</i>		
	Vegetation	Soil	Vegetation	Soil
Americium-241	0.0009876U	0.00104U	0.001979U	0.003U
Neptunium-237	0.001147U	0.0008579U	0.000002529U	0.003138U
Plutonium-238	0.001143U	0.002566U	-0.002519U	0.001565U
Plutonium-239/240	-0.001141U	0.01369	-0.006303U	0.007824
Technetium-99	-0.00304U	0.033U	0.0248U	0.0366U
Uranium	0.009218U	3.197	-0.007288U	2.204
Uranium-233/234	0.02939	1.129	0.01865	8.88
Uranium-235	0.001814U	0.04269	-0.001436U	0.1237
Uranium-236	0U	0.009582U	0U	0.0119U
Uranium-238	0.002934U	1.071	-0.002322U	0.729

Table 2.13. Soil and vegetation monitoring at ambient air monitoring stations – 2010 (continued)

Parameter ^a	Location/results ^{b,c}			
	<i>A9 – South of PORTS</i>		<i>A28 – Southwest of PORTS on Camp Creek Road</i>	
	Vegetation	Soil	Vegetation	Soil
Americium-241	-0.00263U	0.009534	0.0009271U	0.008636
Neptunium-237	-0.002966U	0.001884U	0.0009388U	0.001735U
Plutonium-238	0.0009879U	0.0009395U	0.002809U	0.00173U
Plutonium-239/240	0.000000986U	0.02067	0.0009362U	0.006054
Technetium-99	0.0826U	-0.0164U	0.0218U	0.0685U
Uranium	0.004485U	2.188	0.02061	2.879
Uranium-233/234	0.008683	0.6837	0.01129	0.945
Uranium-235	0.0009735U	0.025U	0.001857U	0.04484
Uranium-236	-0.0008732U	0U	0U	0.000004469U
Uranium-238	0.001576U	0.7329	0.006761	0.9633
<i>A37 – Background station near Otway</i>				
	Vegetation	Soil		
Americium-241	0.001876U	0.01412		
Neptunium-237	-0.001695U	0.0009053U		
Plutonium-238	0.001695U	0.003608U		
Plutonium-239/240	-0.004233U	0.01172		
Technetium-99	-0.0218U	-0.0379U		
Uranium	0.01085	3.215		
Uranium-233/234	0.009495	1.063		
Uranium-235	0.0000009001U	0.04018		
Uranium-236	0U	0.009018U		
Uranium-238	0.003644	1.077		

^aAll parameters are measured in pCi/g with the exception of uranium which is measured in µg/g.

^bAbbreviations and data qualifiers are as follows: U – undetected.

^cBecause of the statistical nature of radiation detection, results for samples that have no radioactivity are often negative values because background radioactivity is subtracted out.

Table 2.14. Biota (fish) monitoring program results – 2010

Parameter	Unit	Location/fish/results ^{a,b}		
		Scioto River (RW-1) freshwater drum	Scioto River (RW-6) freshwater drum	Big Beaver Creek (RW-15) rock bass
Americium-241	pCi/g	0.001232U	0.002208U	na
Neptunium-237	pCi/g	0.000004173U	0.002738U	na
PCB, total	µg/kg	889U	1010U	1030U
PCB-1248	µg/kg	296U	335U	342U
PCB-1254	µg/kg	296U	335U	342U
PCB-1260	µg/kg	296U	335U	342U
PCB-1268	µg/kg	296U	335U	342U
Plutonium-238	pCi/g	-0.000831U	0.00156U	na
Plutonium-239/240	pCi/g	-0.001663U	0.0003903U	na
Technetium-99	pCi/g	-0.00984U	-0.0203U	na
Uranium	µg/g	0.002898U	-0.002168U	na
Uranium-233/234	pCi/g	0.0000006681U	-0.001523U	na
Uranium-235	pCi/g	0.0004129U	-0.0004692U	na
Uranium-236	pCi/g	0U	0U	na
Uranium-238	pCi/g	0.001001U	-0.0007595U	na
		<i>Big Beaver Creek (RW-13) blue gill</i>	<i>Little Beaver Creek (RW-8) rock bass & large mouth bass</i>	
Americium-241	pCi/g	na	0.0007855U	
Neptunium-237	pCi/g	na	-0.003943U	
PCB, total	µg/kg	909U	1110U	
PCB-1248	µg/kg	302U	369U	
PCB-1254	µg/kg	302U	369U	
PCB-1260	µg/kg	302U	369U	
PCB-1268	µg/kg	302U	369U	
Plutonium-238	pCi/g	na	0.001074U	
Plutonium-239/240	pCi/g	na	0.000002146U	
Technetium-99	pCi/g	na	-0.0037U	
Uranium	µg/g	na	0.001089U	
Uranium-233/234	pCi/g	na	0.002566	
Uranium-235	pCi/g	na	0U	
Uranium-236	pCi/g	na	0U	
Uranium-238	pCi/g	na	0.0003658U	

^aAbbreviations and data qualifiers are as follows: na – not analyzed (insufficient sample volume). U – undetected.

^bBecause of the statistical nature of radiation detection, results for samples that have no radioactivity are often negative values because background radioactivity is subtracted out.

Table 2.15. Biota (crops) monitoring program results – 2010

Type	Location	Tc-99 ^{a,b,c}	U	U-233/234	U-235	U-238
Tomatoes	Off-site #1	0.0182U	0.002293U	0.01123	0.001552U	0.0006277U
Cucumber	Off-site #1	-0.0247U	0.003007U	0.007365	0.000649U	0.00105U
Peppers	Off-site #1	0.0112U	0.001738U	0.009354	0U	0.0005834U
Corn	Off-site #2	0.0284U	0.001813U	0.004297U	0U	0.0006125U
Peppers	Off-site #2	0.0507U	0.003468U	0.002913U	0U	0.001162U
Tomatoes	Off-site #2	-0.0308U	0.00524U	0.004224	0.0007443U	0.001806U
Green beans	Off-site #3	-0.0044U	0.00163U	0.005976	0.0007372U	0.0005964U
Peppers	Off-site #3	0.0558U	0.01098	0.003656U	-0.0007498U	0.003643
Corn	Off-site #4	-0.00403U	-0.001415U	-0.00126U	0.001556U	-0.000629U
Green beans	Off-site #4	-0.000813U	0.01113	0.006644U	-0.0009094U	0.003682
Peppers	Off-site #4	0.0605U	-0.001568U	-0.0005274U	0U	-0.0005269U
Acorn squash	Off-site #5	-0.00479U	0.02174	0.008535	0U	0.007301
Blackberries	Off-site #5	0.0558U	0.005175U	0.004596U	-0.001133U	0.001834U
Butternut squash	Off-site #5	0.0225U	-0.002367U	0.00789U	-0.00162U	-0.0006552U
Cucumber	Off-site #5	-0.00482U	-0.000008577U	-0.00421U	0U	0.000001402U
Melon	Off-site #5	-0.00788U	0.00694	0.000005848U	0U	0.002337

^aResults are reported in µg/g (uranium) and pCi/g (all other parameters). Abbreviations are as follows: Tc-99 – technetium-99, U – uranium, U-233/234 – uranium-233/234, U-235 – uranium-235, U-238 – uranium-238. Data qualifiers are as follows:
U – undetected.

^bBecause of the statistical nature of radiation detection, results for samples that have no radioactivity are often negative values because background radioactivity is subtracted out.

^cSamples were also analyzed for transuranic radionuclides (americium-241, neptunium-237, plutonium-238, and plutonium-239/240) and uranium-236. None of these radionuclides were detected in the samples.

Table 2.16 Biota (deer) monitoring program results – 2010

Parameter	Units	Result ^{a,b}
<i>kidney</i>		
Americium-241	pCi/g	0.0007062U
Neptunium-237	pCi/g	0.001305U
Plutonium-238	pCi/g	0.0006502U
Plutonium-239/240	pCi/g	0.002601U
Technetium-99	pCi/g	-0.0375U
Uranium	µg/g	-0.003565U
Uranium-233/234	pCi/g	0.004405U
Uranium-235	pCi/g	-0.000775U
Uranium-236	pCi/g	0.0006966U
Uranium-238	pCi/g	-0.001253U
<i>liver</i>		
Americium-241	pCi/g	0.001889U
Neptunium-237	pCi/g	0.0000006776U
Plutonium-238	pCi/g	0.0006763U
Plutonium-239/240	pCi/g	0.0006763U
Technetium-99	pCi/g	0.0193U
Uranium	µg/g	0.003635U
Uranium-233/234	pCi/g	0.001837U
Uranium-235	pCi/g	0U
Uranium-236	pCi/g	0U
Uranium-238	pCi/g	0.001221U
<i>muscle</i>		
Americium-241	pCi/g	0.002919U
Neptunium-237	pCi/g	-0.001966U
Plutonium-238	pCi/g	0.001963U
Plutonium-239/240	pCi/g	0.002617U
Technetium-99	pCi/g	-0.0634U
Uranium	µg/g	-0.002213U
Uranium-233/234	pCi/g	-0.002053U
Uranium-235	pCi/g	0.0008467U
Uranium-236	pCi/g	-0.0007587U
Uranium-238	pCi/g	-0.0006836U

^aAbbreviations and data qualifiers are as follows: U – undetected.

^bBecause of the statistical nature of radiation detection, results for samples that have no radioactivity are often negative values because background radioactivity is subtracted out.

Table 2.17 Off-site dairy monitoring – 2010

Parameter	Units	Milk ^{a,b}	Eggs ^{a,b}
Americium-241	pCi/g	0.0008595U	0U
Neptunium-237	pCi/g	0.000792U	0.000004283U
Plutonium-238	pCi/g	0.000005538U	-0.005367U
Plutonium-239/240	pCi/g	0.000001578U	0.002145U
Technetium-99	pCi/g	-0.01U	0.000785U
Uranium	µg/g	0U	0U
Uranium-233/234	pCi/g	0.001629U	0.001173U
Uranium-235	pCi/g	0.0006603U	0.000001896U
Uranium-236	pCi/g	0.002398U	0.0003172U
Uranium-238	pCi/g	0.004624U	0.0009537U

^aAbbreviations and data qualifiers are as follows: U – undetected.

^bBecause of the statistical nature of radiation detection, results for samples that have no radioactivity are often negative values because background radioactivity is subtracted out.

3. DOSE

This section provides summary tables for dose calculations completed for the PORTS site. Information is provided for the dose calculation required by the National Emission Standards for Hazardous Air Pollutants for airborne radionuclide emissions. The following tables are provided in this section:

- Table 3.1. Emissions (Ci/year) from DOE air emission sources – 2010
- Table 3.2. Predicted radiation doses from airborne releases at PORTS – 2010
- Table 3.3. Dose calculations for ambient air monitoring stations – 2010.

Table 3.1. Emissions (Ci/year) from DOE air emission sources – 2010

Radionuclide	X-622 GWTF ^{a,b}	X-623 GWTF ^{a,b}	X-624 GWTF ^{a,b}	X-627 GWTF ^{a,b}	X-326 GB ^{a,c}	DUF ₆ facility ^{a,d}
Americium-241	2.2E-07	0	0	1.2E-07	5.5E-12	-
Neptunium-237	1.1E-07	1.8E-07	0	2.6E-06	1.1E-11	-
Plutonium-238	3.9E-07	1.6E-07	4.0E-08	1.5E-07	1.9E-12	-
Plutonium-239/240 ^a	3.0E-09	1.4E-07	0	1.3E-06	8.8E-12	-
Technetium-99	6.7E-02	9.5E-03	3.8E-05	4.3E-02	6.5E-05	-
Uranium-233/234 ^a	9.1E-06	6.5E-05	2.0E-06	1.8E-05	5.3E-07	1.2E-08
Uranium-235	5.9E-08	2.8E-06	1.0E-07	2.0E-06	2.4E-08	5.4E-10
Uranium-236	1.8E-07	2.6E-07	3.6E-09	5.6E-07	2.9E-09	-
Uranium-238	3.3E-06	3.8E-05	5.2E-07	5.9E-06	5.7E-07	1.2E-08
Total	6.7E-02	9.7E-03	4.1E-05	4.3E-02	6.6E-05	2.4E-08

GWTF – groundwater treatment facility. GB – glovebox.

^aMeasurements are provided in scientific notation. The number and sign (+ or -) to the right of the “E” indicate the number of places to the right or left of the decimal point. For example, 3.4E-04 is 0.00034 (the decimal point moves four places to the left); 2.1E+02 is 210 (the decimal point moves two places to the right).

^bEmissions are calculated based on quarterly influent and effluent sampling at each facility and quarterly throughput.

^cEmissions are calculated based on the mass of materials transferred within the glovebox, analytical data available for each material, and EPA emission factors.

^dEmissions are based on the annual allowable emissions provided in the facility’s Permit-to-Install.

Table 3.2. Predicted radiation doses from airborne releases at PORTS – 2010

Effective dose to:	DOE releases	All PORTS releases (DOE and USEC ^a)
Maximally exposed individual (mrem/year)	0.12	0.17
Population ^b (person-rem/year)	0.59	1.4

^aUSEC is defined as both USEC Government Services and USEC, Inc..

^bPopulation within 50 miles (80 km) of plant site.

Table 3.3. Dose calculations for ambient air monitoring stations – 2010

Station	Parameter ^a	Dose ^b (mrem/year)	Total dose for station ^c	Net dose for station ^d
A3	Americium-241	5.6E-09		
	Neptunium-237	1.0E-08		
	Plutonium-238	2.2E-09		
	Plutonium-239/240	2.1E-09		
	Technetium-99	1.6E-03		
	Uranium-233/234	9.4E-06		
	Uranium-235	5.4E-07		
	Uranium-236	5.1E-08	(0.0016)	(0.0015)
	Uranium-238	5.0E-06	1.6E-03	1.5E-03
A6	Americium-241	4.0E-09		
	Neptunium-237	5.3E-09		
	Plutonium-238	3.9E-09		
	Plutonium-239/240	3.9E-09		
	Technetium-99	3.3E-04		
	Uranium-233/234	5.0E-06		
	Uranium-235	3.9E-07		
	Uranium-236	3.6E-08	(0.00034)	(0.00028)
	Uranium-238	4.1E-06	3.4E-04	2.8E-04
A8	Americium-241	5.0E-09		
	Neptunium-237	9.6E-12		
	Plutonium-238	4.3E-09		
	Plutonium-239/240	2.0E-09		
	Technetium-99	2.0E-03		
	Uranium-233/234	6.4E-06		
	Uranium-235	3.7E-07		
	Uranium-236	5.3E-08	(0.0020)	(0.0019)
	Uranium-238	3.8E-06	2.0E-03	1.9E-03

Table 3.3. Dose calculations for ambient air monitoring stations – 2010 (continued)

Station	Parameter ^a	Dose ^b (mrem/year)	Total dose for station ^c	Net dose for station ^d
A9	Americium-241	2.8E-09		
	Neptunium-237	9.7E-09		
	Plutonium-238	3.9E-09		
	Plutonium-239/240	4.1E-09		
	Technetium-99	3.0E-04		
	Uranium-233/234	7.4E-06		
	Uranium-235	5.4E-07		
	Uranium-236	9.4E-08	(0.00032)	(0.00026)
	Uranium-238	4.4E-06	3.2E-04	2.6E-04
A10	Americium-241	5.2E-09		
	Neptunium-237	4.4E-09		
	Plutonium-238	4.2E-09		
	Plutonium-239/240	4.0E-09		
	Technetium-99	1.1E-03		
	Uranium-233/234	8.0E-06		
	Uranium-235	4.8E-07		
	Uranium-236	5.6E-08	(0.0011)	(0.0010)
	Uranium-238	3.8E-06	1.1E-03	1.0E-03
A12	Americium-241	2.3E-09		
	Neptunium-237	4.5E-09		
	Plutonium-238	4.2E-09		
	Plutonium-239/240	3.0E-09		
	Technetium-99	2.0E-03		
	Uranium-233/234	1.0E-05		
	Uranium-235	4.4E-07		
	Uranium-236	9.5E-08	(0.0020)	(0.0019)
	Uranium-238	4.9E-06	2.0E-03	1.9E-03
A15	Americium-241	4.9E-09		
	Neptunium-237	6.5E-09		
	Plutonium-238	3.2E-09		
	Plutonium-239/240	1.1E-09		
	Technetium-99	1.1E-03		
	Uranium-233/234	8.2E-06		
	Uranium-235	4.4E-07		
	Uranium-236	3.8E-08	(0.0011)	(0.0010)
	Uranium-238	5.0E-06	1.1E-03	1.0E-03
A23	Americium-241	5.2E-09		
	Neptunium-237	2.0E-09		
	Plutonium-238	3.9E-09		
	Plutonium-239/240	9.0E-10		
	Technetium-99	9.0E-03		
	Uranium-233/234	1.5E-05		
	Uranium-235	6.0E-07		
	Uranium-236	5.8E-08	(0.0090)	(0.0089)
	Uranium-238	5.6E-06	9.0E-03	8.9E-03

Table 3.3. Dose calculations for ambient air monitoring stations – 2010 (continued)

Station	Parameter ^a	Dose ^b (mrem/year)	Total dose for station ^c	Net dose for station ^d
A24	Americium-241	3.8E-09		
	Neptunium-237	6.9E-09		
	Plutonium-238	7.6E-09		
	Plutonium-239/240	1.0E-09		
	Technetium-99	5.7E-03		
	Uranium-233/234	8.1E-06		
	Uranium-235	4.8E-07		
	Uranium-236	1.7E-07	(0.0057)	(0.0056)
	Uranium-238	4.8E-06	5.7E-03	5.6E-03
A28	Americium-241	2.6E-09		
	Neptunium-237	2.3E-09		
	Plutonium-238	2.1E-09		
	Plutonium-239/240	5.8E-09		
	Technetium-99	7.2E-05		
	Uranium-233/234	4.3E-06		
	Uranium-235	2.5E-07		
	Uranium-236	3.5E-08	(0.000080)	(0.000020)
	Uranium-238	3.8E-06	8.0E-05	2.0E-05
A29	Americium-241	5.3E-09		
	Neptunium-237	9.8E-09		
	Plutonium-238	2.2E-09		
	Plutonium-239/240	4.1E-09		
	Technetium-99	9.5E-04		
	Uranium-233/234	6.1E-06		
	Uranium-235	3.3E-07		
	Uranium-236	4.1E-08	(0.00096)	(0.00090)
	Uranium-238	4.0E-06	9.6E-04	9.0E-04
A36	Americium-241	5.0E-09		
	Neptunium-237	4.3E-09		
	Plutonium-238	5.4E-09		
	Plutonium-239/240	3.0E-09		
	Technetium-99	2.9E-03		
	Uranium-233/234	1.3E-05		
	Uranium-235	5.4E-07		
	Uranium-236	5.7E-08	(0.0029)	(0.0028)
	Uranium-238	4.6E-06	2.9E-03	2.8E-03
A37	Americium-241	4.5E-09		
	Neptunium-237	4.3E-09		
	Plutonium-238	4.7E-09		
	Plutonium-239/240	2.1E-09		
	Technetium-99	5.3E-05		
	Uranium-233/234	3.9E-06		
	Uranium-235	2.9E-07		
	Uranium-236	3.7E-08	(0.000061)	
	Uranium-238	3.5E-06	6.1E-05	-

Table 3.3. Dose calculations for ambient air monitoring stations – 2010 (continued)

Station	Parameter ^a	Dose ^b (mrem/year)	Total dose for station ^c	Net dose for station ^d
A41	Americium-241	2.4E-09		
	Neptunium-237	2.1E-09		
	Plutonium-238	2.4E-09		
	Plutonium-239/240	2.9E-09		
	Technetium-99	5.3E-04		
	Uranium-233/234	5.8E-06		
	Uranium-235	5.3E-07		
	Uranium-236	3.8E-08	(0.00054)	(0.00048)
	Uranium-238	4.7E-06	5.4E-04	4.8E-04
T7	Americium-241	4.0E-09		
	Neptunium-237	7.2E-09		
	Plutonium-238	3.9E-09		
	Plutonium-239/240	3.3E-09		
	Technetium-99	2.7E-03		
	Uranium-233/234	5.6E-06		
	Uranium-235	3.1E-07		
	Uranium-236	6.6E-08	(0.0028)	(0.0027)
	Uranium-238	8.0E-06	2.8E-03	2.7E-03

^aParameters listed in **bold** type were detected at least once in the samples collected in 2010 (see Table 2.8).

^bThe dose calculation is based on the maximum detection of each parameter at each station. For parameters that were not detected, half of the highest undetected result for the parameter was used to calculate the activity of each parameter in ambient air that is the basis for the dose. Measurements are provided in scientific notation. The number and sign (+ or -) to the right of the “E” indicate the number of places to the right or left of the decimal point. For example, 3.4E-04 is 0.00034 (the decimal point moves four places to the left); 2.1E+02 is 210 (the decimal point moves two places to the right).

^cThe total dose is provided in scientific notation and standard numeric format (in parentheses).

^dThe net dose is calculated by subtracting the total dose at Station A37 (background) from the total dose calculated for each station (the net dose is recorded as zero for stations with a gross dose less than the background station). The net dose is provided in scientific notation and standard numeric format (in parentheses).

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4. GROUNDWATER

This section summarizes analytical results for routine groundwater monitoring at PORTS in 2010 at the following locations:

- X-749/X-120/Peter Kiewit (PK) Landfill
- Quadrant I Groundwater Investigative Area/X-749A Classified Materials Disposal Facility
- Quadrant II Groundwater Investigative Area
- X-701B Holding Pond
- X-633 Pumphouse/Cooling Towers Area
- X-616 Chromium Sludge Surface Impoundments
- X-740 Waste Oil Handling Facility
- X-611A Former Lime Sludge Lagoons
- X-735 Landfills
- X-734 Landfills
- X-533 Switchyard Area
- Former X-344C Hydrogen Fluoride Storage Building
- Surface water monitoring locations
- Exit pathway monitoring locations.

Results for radiological parameters and VOCs are reported in this section. Only those VOCs that were detected in at least one sampling event are listed in this section.

All results are included for radiological parameters, even if a specific constituent was not detected at a specific well or location during any sampling event in 2010. Sampling for radionuclides in many of the monitoring areas or wells is completed biennially (i.e., every two years in odd numbered years). Therefore, samples collected in 2010 at the X-749A Classified Materials Disposal Facility, Quadrant II Groundwater Investigative Area, X-735 Landfills, and X-734 Landfills were not analyzed for radionuclides. Sampling for radionuclides is not part of the monitoring programs for the X-633 Pumphouse/Cooling Towers Area, X-616 Chromium Sludge Surface Impoundments, X-740 Waste Oil Handling Facility, X-611A Former Lime Sludge Lagoons, X-533 Switchyard Area, and Former X-344C Hydrogen Fluoride Storage Building.

Results for chromium at the X-616 Chromium Sludge Surface Impoundments are also included in this section because chromium is a primary contaminant in this area. Results are provided for metals at the X-633 Pumphouse/Cooling Towers Area, X-611A Former Lime Sludge Lagoons, and X-533 Switchyard Area because metals are the only analytical parameters for these areas.

Two VOCs, acetone and methylene chloride, were frequently detected in both environmental and blank samples (field and trip blanks) collected in 2010. Acetone and methylene chloride are common laboratory contaminants that are not typically detected in the PORTS groundwater plumes. Detections of acetone and methylene chloride are often qualified by the laboratory with a "B", which indicates that the analyte was also detected in the laboratory blank associated with the environmental sample and may be present due to laboratory contamination. 1,2-Dichloroethane was also detected in at least one laboratory blank associated with the routine groundwater monitoring samples collected during 2010.

Other VOCs, including trichloroethene, 2-butanone (methyl ethyl ketone), bromodichloromethane, carbon disulfide, chlorobenzene, chloroform, chloromethane, and toluene were detected in trip and/or field blanks during 2010. These detections indicate that samples (both environmental samples and blank samples) may become contaminated with low concentrations of VOCs during other portions of the

sampling process, although contamination can still occur in the laboratory. Other sources of contamination may include storage areas for sampling equipment (such as bottles and blank water), areas in which samples are collected or prepared, sample containers, and storage areas after samples are collected (such as refrigerators or sample shipping containers).

The primary purpose of the groundwater data, as stated in the *Quality Assurance Project Plan*, is to determine the nature and extent of contamination in groundwater and associated surface water at PORTS. Data collected in 2010 meet this purpose.

Complete groundwater monitoring results for sampling completed as required by the *Integrated Groundwater Monitoring Plan* are provided in the *2010 Groundwater Monitoring Report for the Portsmouth Gaseous Diffusion Plant*.

The following tables are included in this section:

- Table 4.1. VOCs detected at the X-749/X-120/PK Landfill – 2010
- Table 4.2. Results for radionuclides at the X-749/X-120/PK Landfill – 2010
- Table 4.3. VOCs detected at the Quadrant I Groundwater Investigative Area – 2010
- Table 4.4. Results for radionuclides at the Quadrant I Groundwater Investigative Area – 2010
- Table 4.5. VOCs detected at the Quadrant II Groundwater Investigative Area – 2010
- Table 4.6. VOCs detected at the X-701B Holding Pond – 2010
- Table 4.7. Results for radionuclides at the X-701B Holding Pond – 2010
- Table 4.8. Results for chromium at the X-633 Pumphouse/Cooling Towers Area – 2010
- Table 4.9. VOCs detected at the X-616 Chromium Sludge Surface Impoundments – 2010
- Table 4.10. Results for chromium at the X-616 Chromium Sludge Surface Impoundments – 2010
- Table 4.11. VOCs detected at the X-740 Waste Oil Handling Facility – 2010
- Table 4.12. Results for beryllium and chromium at the X-611A Former Lime Sludge Lagoons – 2010
- Table 4.13. VOCs detected at the X-735 Landfills – 2010
- Table 4.14. VOCs detected at the X-734 Landfills – 2010
- Table 4.15. Results for cadmium, cobalt, and nickel at the X-533 Switchyard Area – 2010

- Table 4.16. VOCs detected at the Former X-344C Hydrogen Fluoride Storage Building – 2010
- Table 4.17. VOCs detected at surface water monitoring locations – 2010
- Table 4.18. Results for radionuclides at surface water monitoring locations – 2010
- Table 4.19. Results for radionuclides at exit pathway monitoring locations – 2010.

A table for VOCs detected at exit pathway monitoring locations is not provided because none were detected in the sample collected from well F-29B. Results for other exit pathway monitoring locations sampled during 2010 (that are part of the monitoring programs for other areas) are provided in the tables for their respective monitoring areas as follows:

- Table 4.1: VOCs detected at the X-749/X-120/PK Landfill (wells X749-44G, X749-45G, and X749-97G). VOCs were not detected or samples were not collected in 2010 from wells X749-14B, X749-64B, X749-68G, X749-96G, and X749-98G. These wells were not sampled for radionuclides during 2010.
- Tables 4.6 and 4.7: VOCs and radionuclides detected at X-701B Holding Pond area well X701-48G.
- Tables 4.17 and 4.18: VOCs and radionuclides detected at surface water monitoring locations BRC-SW02, LBC-SW04, UND-SW02, and WDD-SW03.

The following laboratory data qualifiers are used in the tables in this section:

Data qualifier	Meaning
*	Organics (VOCs): surrogate values were outside control limits.
B	Inorganics (metals): the result was less than the practical quantitation limit but greater than or equal to the instrument detection limit. Organics (VOCs): the analyte was detected in the laboratory blank sample.
J	Organics (VOCs): the reported value is an estimated concentration greater than the method detection limit but less than the practical quantitation limit.
U	Undetected

Some results for radionuclides are reported in exponential notation. The number and sign (+ or -) to the right of the “E” indicate the number of places to the right or left of the decimal point. For example, 3.4E-04 is 0.00034 (the decimal point moves four places to the left); 2.1E+02 is 210 (the decimal point moves two places to the right). Data qualifiers, if any, are to the right of the result (for example, 5.66E-07 U, where U is the data qualifier that indicates the parameter was undetected).

Table 4.1. VOCs detected at the X-749/X-120/PK Landfill – 2010

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
PK-08G	cis-1,2-Dichloroethene	µg/L	0.24 J			
	Trichloroethene	µg/L	6.7			
PK-09G	Chloroform	µg/L			0.48 J	
	cis-1,2-Dichloroethene	µg/L			1.4	
PK-11G	Trichloroethene	µg/L			76	
	Methylene chloride	µg/L		0.32 U		0.51 BJ
PK-15B	cis-1,2-Dichloroethene	µg/L		0.48 J		0.15 U
PK-16G	cis-1,2-Dichloroethene	µg/L	0.15 U	0.15 U	3	2.7
	Vinyl chloride	µg/L	0.4 U	0.4 U	0.83 J	0.44 J
PK-17B	1,1-Dichloroethane	µg/L	1.2	3.3	3.9	3.8
	1,1-Dichloroethene	µg/L	0.23 U	0.36 J	0.35 J	0.43 J
	Acetone	µg/L	1.9 U	2.3 J	1.9 U	1.9 U
	Benzene	µg/L	0.16 U	0.21 J	0.16 U	0.16 U
	Chlorobenzene	µg/L	0.63 J	0.81 J	0.48 J	1.1
	cis-1,2-Dichloroethene	µg/L	17	45	57	58
	trans-1,2-Dichloroethene	µg/L	0.56 J	1.4	1.7	1.8
	Trichloroethene	µg/L	1.1	1.3	1.1	1.3
	Vinyl chloride	µg/L	5.7	16	23	16
	Acetone	µg/L		1.9 U		4.9 J
PK-18B	Methylene chloride	µg/L		0.32 U		0.41 BJ
	Acetone	µg/L		5.1 J		1.9 U
PK-19B	Chloroethane	µg/L		0.87 J		0.48 J
	cis-1,2-Dichloroethene	µg/L		0.16 J		0.15 U
PK-21B	Toluene	µg/L		0.17 U		0.58 J
	1,1-Dichloroethane	µg/L	130	150	130	130
	1,1-Dichloroethene	µg/L	1.8	1.8	1.7	1.6
	1,2-Dichloroethane	µg/L	0.74 J	0.76 J	0.68 J	0.8 BJ
	Acetone	µg/L	1.9 U	1.9 U	1.9 U	3.7 J
	Benzene	µg/L	0.72 J	0.66 J	0.73 J	0.82 J
	Chloroethane	µg/L	0.41 U	1.1 J	0.41 U	0.41 U
	cis-1,2-Dichloroethene	µg/L	12	11	12	13
	Methylene chloride	µg/L	0.32 U	0.32 U	0.32 U	0.4 BJ
	Toluene	µg/L	0.17 U	0.17 U	0.17 U	0.31 J
PK-PL6	Trichloroethene	µg/L	0.41 J	0.44 J	0.49 J	0.52 J
	Vinyl chloride	µg/L	14	17	15	15
	1,1,1-Trichloroethane	µg/L	6.7	4.5	6	2.5
	1,1-Dichloroethane	µg/L	7.5	7.5	14	6.1
	1,1-Dichloroethene	µg/L	4.9	3.9	5.8	3.4
	cis-1,2-Dichloroethene	µg/L	2.2	1.9	3.1	1.9
	Methylene chloride	µg/L	0.32 U	0.53 J	0.34 J	0.32 U
PK-PL6A	Trichloroethene	µg/L	2.9	2.1	2.6	1.5
	Vinyl chloride	µg/L	0.4 U	0.52 J	1	0.57 J
	1,1,1-Trichloroethane	µg/L	14	6.3	4.6	4.3
	1,1-Dichloroethane	µg/L	19	23	18	9.5
	1,1-Dichloroethene	µg/L	10	7.1	5.2	5.4
	Acetone	µg/L	1.9 U	3.4 J	1.9 U	1.9 U
	cis-1,2-Dichloroethene	µg/L	3.3	3.4	3.6	2.5
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Table 4.1. VOCs detected at the X-749/X-120/PK Landfill – 2010 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
STSW-101G	1,1,1-Trichloroethane	µg/L		28		29
	1,1,2-Trichloroethane	µg/L		1.3		1.5
	1,1-Dichloroethane	µg/L		40		42
	1,1-Dichloroethene	µg/L		120		100
	1,2-Dichloroethane	µg/L		9.2		8.2
	Chloroethane	µg/L		0.98 J		0.95 J
	Chloroform	µg/L		3.6		3.7
	cis-1,2-Dichloroethene	µg/L		27		31
	Tetrachloroethene	µg/L		1.6		2.2
	Trichloroethene	µg/L		110		95
STSW-102G	1,1,1-Trichloroethane	µg/L		31		24
	1,1,2-Trichloroethane	µg/L		0.69 J		0.68 J
	1,1-Dichloroethane	µg/L		160		140
	1,1-Dichloroethene	µg/L		120		91
	1,2-Dichloroethane	µg/L		59		53
	Benzene	µg/L		0.37 J		0.16 U
	Chloroethane	µg/L		5.2		1.5 J
	Chloroform	µg/L		6		5.1
	cis-1,2-Dichloroethene	µg/L		64		54
	Methylene chloride	µg/L		0.32 U		0.85 BJ
	Tetrachloroethene	µg/L		0.39 J		0.27 J
	trans-1,2-Dichloroethene	µg/L		0.53 J		0.37 J
	Trichloroethene	µg/L		340		310
WP-01G	Vinyl chloride	µg/L		0.72 J		0.4 U
	Toluene	µg/L	0.17 U	0.17 U	0.17 U	0.27 J
WP-02G	Toluene	µg/L		0.17 U		0.52 J
WP-03G	1,1-Dichloroethane	µg/L	0.63 J	0.23 J	0.22 U	0.22 U
	1,1-Dichloroethene	µg/L	0.22 J	0.23 U	0.23 U	0.23 U
	Toluene	µg/L	0.17 U	0.17 U	0.17 U	0.23 J
	Trichloroethene	µg/L	0.87 J	0.24 J	0.22 J	0.21 J
WP-04G	Toluene	µg/L		0.17 U		0.36 J
WP-06G	Toluene	µg/L		0.17 U		0.42 J
X120-05G	Trichloroethene	µg/L			5.6	
X120-08G	1,1,1-Trichloroethane	µg/L		1.4		
	1,1-Dichloroethane	µg/L		1.4		
	1,1-Dichloroethene	µg/L		5.6		
	Chloroform	µg/L		0.24 J		
	Trichloroethene	µg/L		6.9		
X120-10G	1,1,1-Trichloroethane	µg/L			8.1	
	1,1,2-Trichloroethane	µg/L			0.9 J	
	1,1-Dichloroethane	µg/L			10	
	1,1-Dichloroethene	µg/L			52	
	1,2-Dichloroethane	µg/L			0.98 J	
	Carbon tetrachloride	µg/L			1.3	
	Chloroform	µg/L			1.3	
	cis-1,2-Dichloroethene	µg/L			0.35 J	
	Trichloroethene	µg/L			8.5	
X749-04G	Chloroform	µg/L			0.45 J	
	cis-1,2-Dichloroethene	µg/L			0.55 J	
	Tetrachloroethene	µg/L			5	

Table 4.1. VOCs detected at the X-749/X-120/PK Landfill – 2010 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-04G	Trichloroethene	µg/L		740		
X749-05G	1,1-Dichloroethane	µg/L		0.36 J		
	1,1-Dichloroethene	µg/L		0.24 J		
	Carbon tetrachloride	µg/L		0.38 J		
	Chloroform	µg/L		2		
	cis-1,2-Dichloroethene	µg/L		1.9		
	Tetrachloroethene	µg/L		2.3		
	Trichloroethene	µg/L		110		
X749-06G	1,1,1-Trichloroethane	µg/L	110		100	
	1,1,2-Trichloroethane	µg/L	6.8		10	
	1,1-Dichloroethane	µg/L	320		300	
	1,1-Dichloroethene	µg/L	320		190	
	1,2-Dichloroethane	µg/L	8.4		10	
	Acetone	µg/L	20 J		13 J	
	Chloroform	µg/L	26		29	
	cis-1,2-Dichloroethene	µg/L	62		93	
	Methylene chloride	µg/L	5.4 J		9.8 J	
	Tetrachloroethene	µg/L	29		36	
	Trichloroethene	µg/L	860		740	
	Vinyl chloride	µg/L	2.3 J		3.3 J	
X749-07G	1,1,1-Trichloroethane	µg/L	28		32	
	1,1,2-Trichloroethane	µg/L	0.59 J		0.63 J	
	1,1-Dichloroethane	µg/L	47		58	
	1,1-Dichloroethene	µg/L	53		49	
	1,2-Dichloroethane	µg/L	19		20	
	Acetone	µg/L	3.6 J		1.9 U	
	Chloroform	µg/L	2.6		2.5	
	cis-1,2-Dichloroethene	µg/L	8.6		11	
	Methylene chloride	µg/L	0.32 U		0.44 BJ	
	Tetrachloroethene	µg/L	1.4		1.2	
	trans-1,2-Dichloroethene	µg/L	0.15 U		0.23 J	
	Trichloroethene	µg/L	150		160	
	Vinyl chloride	µg/L	0.4 U		0.46 J	
X749-08G	1,1,1-Trichloroethane	µg/L	21		8.4	
	1,1-Dichloroethane	µg/L	9.5		3.6	
	1,1-Dichloroethene	µg/L	41		12	
	1,2-Dichloroethane	µg/L	2		0.13 U	
	Chloroform	µg/L	0.63 J		0.16 U	
	cis-1,2-Dichloroethene	µg/L	9.8		3.7	
	Trichloroethene	µg/L	51		21	
X749-09GA	1,1,1-Trichloroethane	µg/L	26		31	
	1,1,2-Trichloroethane	µg/L	0.27 U		0.3 J	
	1,1-Dichloroethane	µg/L	12		12	
	1,1-Dichloroethene	µg/L	36		40	
	1,2-Dichloroethane	µg/L	1.7		1.7	
	Chloroform	µg/L	0.8 J		0.77 J	
	cis-1,2-Dichloroethene	µg/L	8		9.3	
	Methylene chloride	µg/L	0.32 U		0.41 BJ	
	trans-1,2-Dichloroethene	µg/L	0.19 J		0.3 J	
	Trichloroethene	µg/L	24		29	

Table 4.1. VOCs detected at the X-749/X-120/PK Landfill – 2010 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-09GA	Vinyl chloride	µg/L		0.4 U		0.41 J
X749-10GA	1,1-Dichloroethane	µg/L		3.5		6.3
	1,1-Dichloroethene	µg/L		8.6		17
	Chloroethane	µg/L		0.41 U		0.85 J
	cis-1,2-Dichloroethene	µg/L		2		3.9
	Trichloroethene	µg/L		0.35 J		0.61 J
	Vinyl chloride	µg/L		0.4 U		1.1
X749-13G	1,1,1-Trichloroethane	µg/L			22	
	1,1-Dichloroethane	µg/L			6.7	
	1,1-Dichloroethene	µg/L			43	
	1,2-Dichloroethane	µg/L			0.92 J	
	Chloroform	µg/L			1	
	cis-1,2-Dichloroethene	µg/L			6.2	
	Trichloroethene	µg/L			44	
X749-20G	1,1,1-Trichloroethane	µg/L			4.5	
	1,1-Dichloroethane	µg/L			8.1	
	1,1-Dichloroethene	µg/L			8.8	
	1,2-Dichloroethane	µg/L			2	
	Acetone	µg/L			14	
	Chloroform	µg/L			0.73 J	
	cis-1,2-Dichloroethene	µg/L			4.7	
	Trichloroethene	µg/L			58	
X749-21G	1,1,1-Trichloroethane	µg/L		0.16 U		0.5 J
	1,1-Dichloroethene	µg/L		0.23 U		0.26 J
	Methylene chloride	µg/L		0.32 U		0.76 BJ
	Trichloroethene	µg/L		0.43 J		1.1
X749-22G	1,1-Dichloroethane	µg/L		0.57 J		0.3 J
	1,1-Dichloroethene	µg/L		0.63 J		0.38 J
	Methylene chloride	µg/L		0.32 U		0.6 BJ
X749-23G	Methylene chloride	µg/L		0.4 BJ		0.74 BJ
X749-26G	1,1,1-Trichloroethane	µg/L		5.4		6.1
	1,1-Dichloroethane	µg/L		8.8		12
	1,1-Dichloroethene	µg/L		14		13
	1,2-Dichloroethane	µg/L		4		6.4
	Chloroform	µg/L		0.59 J		0.74 J
	cis-1,2-Dichloroethene	µg/L		1.4		1.7
	Trichloroethene	µg/L		17		24
X749-27G	1,1,1-Trichloroethane	µg/L		28		23
	1,1,2-Trichloroethane	µg/L		1.1		0.95 J
	1,1-Dichloroethane	µg/L		34		22
	1,1-Dichloroethene	µg/L		88		59
	1,2-Dichloroethane	µg/L		11		5.7
	Chloroethane	µg/L		2.1		0.64 J
	Chloroform	µg/L		4		3
	cis-1,2-Dichloroethene	µg/L		23		8.8
	Tetrachloroethene	µg/L		2		1.8
	trans-1,2-Dichloroethene	µg/L		0.16 J		0.15 U
	Trichloroethene	µg/L		110		88
X749-28G	1,1,1-Trichloroethane	µg/L			5.6	
	1,1-Dichloroethane	µg/L			3.4	

Table 4.1. VOCs detected at the X-749/X-120/PK Landfill – 2010 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-28G	1,1-Dichloroethene	µg/L			14	
	Chloroform	µg/L			0.78 J	
	cis-1,2-Dichloroethene	µg/L			0.59 J	
	Tetrachloroethene	µg/L			0.38 J	
	Trichloroethene	µg/L		29		
X749-29G	1,1,1-Trichloroethane	µg/L			0.23 J	
	Chloroform	µg/L			0.6 J	
	cis-1,2-Dichloroethene	µg/L			0.31 J	
	Trichloroethene	µg/L		19		
X749-30G	1,1-Dichloroethene	µg/L			1	
	Chloroform	µg/L			0.28 J	
	cis-1,2-Dichloroethene	µg/L			0.37 J	
	Trichloroethene	µg/L			14	
X749-33G	1,1,1-Trichloroethane	µg/L		28		24
	1,1,2-Trichloroethane	µg/L		1.1		1.2
	1,1-Dichloroethane	µg/L		36		28
	1,1-Dichloroethene	µg/L		97		68
	1,2-Dichloroethane	µg/L		11		7.8
	Chloroethane	µg/L		0.72 J		0.64 J
	Chloroform	µg/L		3.7		3.3
	cis-1,2-Dichloroethene	µg/L		11		9.6
	Tetrachloroethene	µg/L		1.6		1.8
	Trichloroethene	µg/L		110		95
X749-35G	1,1,1-Trichloroethane	µg/L			67	
	1,1,2-Trichloroethane	µg/L			0.33 J	
	1,1-Dichloroethane	µg/L			7.3	
	1,1-Dichloroethene	µg/L			50	
	Acetone	µg/L			3.7 J	
	Chloroform	µg/L			0.45 J	
	cis-1,2-Dichloroethene	µg/L			5.1	
	Trichloroethene	µg/L			86	
	Vinyl chloride	µg/L			0.64 J	
X749-36G	1,1,1-Trichloroethane	µg/L			1.9	
	1,1-Dichloroethane	µg/L			2.1	
	1,1-Dichloroethene	µg/L			9.2	
	Methylene chloride	µg/L			0.32 J	
	Trichloroethene	µg/L			4.4	
X749-37G	1,1,1-Trichloroethane	µg/L		15		35
	1,1,2-Trichloroethane	µg/L		0.75 J		1.9
	1,1-Dichloroethane	µg/L		16		31
	1,1-Dichloroethene	µg/L		57		100
	1,2-Dichloroethane	µg/L		1.3		3
	Acetone	µg/L		4 J		1.9 U
	Chloroform	µg/L		1.4		3.2
	cis-1,2-Dichloroethene	µg/L		6.5		7.7
	Methylene chloride	µg/L		1 BJ		0.32 U
	Tetrachloroethene	µg/L		1.2		1.9
X749-38G	Trichloroethene	µg/L		44		88
	1,1,1-Trichloroethane	µg/L		31		50
	1,1,2-Trichloroethane	µg/L		2.7		2.8

Table 4.1. VOCs detected at the X-749/X-120/PK Landfill – 2010 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-38G	1,1-Dichloroethane	µg/L		45		54
	1,1-Dichloroethene	µg/L		47		150
	1,2-Dichloroethane	µg/L		5.4		8
	Acetone	µg/L		1.9 U		2.3 J
	Carbon disulfide	µg/L		1.8 J		0.45 U
	Chloroethane	µg/L		1.3 J		1 J
	Chloroform	µg/L		3.9		6.5
	cis-1,2-Dichloroethene	µg/L		32		39
	Tetrachloroethene	µg/L		2.3		3.4
	Trichloroethene	µg/L		66		160
X749-40G	Chloroform	µg/L			0.29 J	
X749-42G	Trichloroethene	µg/L		7.1		14
X749-43G	Methylene chloride	µg/L			0.4 J	
X749-44G	1,1,1-Trichloroethane	µg/L	0.31 J	0.21 J	0.2 J	0.33 J
	1,1-Dichloroethane	µg/L	2.2	1.6	1.3	2
	1,1-Dichloroethene	µg/L	1.3	0.99 J	0.73 J	1.1
	1,2-Dichloroethane	µg/L	0.55 J	0.37 J	0.29 J	0.52 J
	cis-1,2-Dichloroethene	µg/L	0.23 J	0.17 J	0.15 U	0.15 U
	Methylene chloride	µg/L	0.32 U	0.38 BJ	0.32 U	0.32 U
	Trichloroethene	µg/L	3.3	2.6	2.1	3.4
	1,1-Dichloroethane	µg/L	0.52 J	0.69 J	0.42 J	0.22 U
	1,1-Dichloroethene	µg/L	0.33 J	0.42 J	0.23 U	0.23 U
	Acetone	µg/L	11 B	1.9 U	1.9 U	1.9 U
X749-45G	cis-1,2-Dichloroethene	µg/L	0.32 J	0.42 J	0.15 U	0.15 U
	Trichloroethene	µg/L	1.2 J	1.5	0.92 J	0.43 J
	1,1-Dichloroethane	µg/L			2.2	
	1,2-Dichloroethane	µg/L			1.3	
	cis-1,2-Dichloroethene	µg/L			0.38 J	
X749-54B	1,1-Dichloroethane	µg/L		1.4		1.5
	Methylene chloride	µg/L		0.32 U		0.54 BJ
	Trichloroethene	µg/L		7.2		4.4
X749-67G	1,1,1-Trichloroethane	µg/L	24	17	21	25
	1,1,2-Trichloroethane	µg/L	1.3 U	1.5	1.2 J	1 J
	1,1-Dichloroethane	µg/L	190	150	190	190
	1,1-Dichloroethene	µg/L	180	170	180	170
	1,2-Dichloroethane	µg/L	58	45	55	54
	Acetone	µg/L	7.6 U	1.9 U	16 J	7.5 J
	Benzene	µg/L	0.64 U	0.75 J	0.81 J	0.65 J
	Chloroethane	µg/L	5.8 J	6.2	4.8	2.5 J
	Chloroform	µg/L	8.7	7.4	8.5	7.5
	cis-1,2-Dichloroethene	µg/L	120	100	120	98
	Methylene chloride	µg/L	1.3 U	0.32 U	1.4 J	0.95 J
	Tetrachloroethene	µg/L	0.8 U	0.56 J	0.66 J	0.4 U
	trans-1,2-Dichloroethene	µg/L	0.87 J	0.79 J	0.69 J	0.64 J
	Trichloroethene	µg/L	600	510	600	520
	Vinyl chloride	µg/L	1.6 U	1.3	1.9 J	0.8 U
X749-97G	Trichloroethene	µg/L	0.57 J	0.65 J	0.22 J	0.16 U
X749-102G	1,1-Dichloroethane	µg/L	0.6 J	0.34 J	0.22 J	0.22 U
	1,1-Dichloroethene	µg/L	0.25 J	0.28 J	0.23 U	0.23 U
	1,2-Dichloroethane	µg/L	0.13 J	0.13 U	0.13 U	0.13 U

Table 4.1. VOCs detected at the X-749/X-120/PK Landfill – 2010 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-102G	Methylene chloride	µg/L	0.32 U	0.41 BJ	0.32 U	0.32 U
	Trichloroethene	µg/L	0.79 J	0.54 J	0.3 J	0.18 J
X749-104G	Bromomethane	µg/L	0.21 U	0.21 U	0.23 J	0.21 U
X749-106G	1,1,1-Trichloroethane	µg/L		50		37
	1,1,2-Trichloroethane	µg/L		2.6		2.4
	1,1-Dichloroethane	µg/L		47		40
	1,1-Dichloroethene	µg/L		200		150
	1,2-Dichloroethane	µg/L		4.5		4.4
	Acetone	µg/L		7.7 J		3.2 J
	Chloroform	µg/L		4.9		4.5
	cis-1,2-Dichloroethene	µg/L		3.3		3.3
	Methylene chloride	µg/L		0.4 BJ		0.35 BJ
	Tetrachloroethene	µg/L		1.7		1.5
	Trichloroethene	µg/L		99		84
	1,1,1-Trichloroethane	µg/L		52		40
X749-107G	1,1,2-Trichloroethane	µg/L		3.9		3.4
	1,1-Dichloroethane	µg/L		60		48
	1,1-Dichloroethene	µg/L		240		150
	1,2-Dichloroethane	µg/L		5.9		5.1 B
	Acetone	µg/L		8.1 J		1.9 U
	Chloroform	µg/L		6.5		5.5
	cis-1,2-Dichloroethene	µg/L		5		4.6
	Methylene chloride	µg/L		0.4 BJ		0.37 BJ
	Tetrachloroethene	µg/L		1.6		1.3
	Trichloroethene	µg/L		130		98
X749-108G	1,1,1-Trichloroethane	µg/L		66		62
	1,1,2-Trichloroethane	µg/L		3.8		3.5
	1,1-Dichloroethane	µg/L		63		60
	1,1-Dichloroethene	µg/L		230		220
	1,2-Dichloroethane	µg/L		6.6		5.2
	Acetone	µg/L		7 J		1.9 U
	Chloroform	µg/L		8.2		7.2
	cis-1,2-Dichloroethene	µg/L		5.9		5.8
	Methylene chloride	µg/L		0.62 BJ		0.32 U
	Tetrachloroethene	µg/L		1.8		1.7
	Trichloroethene	µg/L		150		140
	Vinyl chloride	µg/L		0.48 J		0.45 J
X749-109G	1,1,1-Trichloroethane	µg/L		8		3.7
	1,1,2-Trichloroethane	µg/L		0.5 J		0.27 U
	1,1-Dichloroethane	µg/L		16		7.2
	1,1-Dichloroethene	µg/L		39		15
	1,2-Dichloroethane	µg/L		2.6		1.3
	Chloroform	µg/L		1.2		0.58 J
	cis-1,2-Dichloroethene	µg/L		3.3		1.1
	Methylene chloride	µg/L		0.8 BJ		0.32 U
	Tetrachloroethene	µg/L		0.36 J		0.2 U
	Trichloroethene	µg/L		31		13
X749-110G	1,1,1-Trichloroethane	µg/L		31		36
	1,1,2-Trichloroethane	µg/L		0.65 J		0.82 J
	1,1-Dichloroethane	µg/L		58		87

Table 4.1. VOCs detected at the X-749/X-120/PK Landfill – 2010 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-110G	1,1-Dichloroethene	µg/L		120		170
	1,2-Dichloroethane	µg/L		17		21
	Benzene	µg/L		0.28 J		0.37 J
	Chloroethane	µg/L		4		4.7
	Chloroform	µg/L		3.7		4.3
	cis-1,2-Dichloroethene	µg/L		60		85
	Methylene chloride	µg/L		0.32 U		0.77 BJ
	trans-1,2-Dichloroethene	µg/L		0.39 J		1.4
	Trichloroethene	µg/L		190		280
	Vinyl chloride	µg/L		2.7		2.9
X749-113G	1,1,1-Trichloroethane	µg/L		30		32
	1,1,2-Trichloroethane	µg/L		1.1		0.49 J
	1,1-Dichloroethane	µg/L		38		35
	1,1-Dichloroethene	µg/L		65		62
	1,2-Dichloroethane	µg/L		19		16
	Chloroform	µg/L		3.2		3.1
	cis-1,2-Dichloroethene	µg/L		4.8		4.8
	Methylene chloride	µg/L		0.32 U		0.42 BJ
	Tetrachloroethene	µg/L		0.94 J		0.94 J
	trans-1,2-Dichloroethene	µg/L		0.15 U		0.26 J
X749-114G	Trichloroethene	µg/L		79		93
	1,1,1-Trichloroethane	µg/L			0.23 J	
	1,1-Dichloroethane	µg/L			0.35 J	
	Benzene	µg/L			0.32 J	
X749-115G	cis-1,2-Dichloroethene	µg/L			0.87 J	
	Chloroform	µg/L				0.35 J
	cis-1,2-Dichloroethene	µg/L				2.3
X749-120G	Trichloroethene	µg/L				130
	1,1,1-Trichloroethane	µg/L				770
	1,1,2-Trichloroethane	µg/L				74 J
	1,1-Dichloroethane	µg/L				4300
	1,1-Dichloroethene	µg/L				1900
	1,2-Dichloroethane	µg/L				55 J
	Chloroform	µg/L				520
	cis-1,2-Dichloroethene	µg/L				1700
	Methylene chloride	µg/L				160 BJ
	Tetrachloroethene	µg/L				380
X749-121G	Toluene	µg/L				24 J
	Trichloroethene	µg/L				25000
	1,1,1-Trichloroethane	µg/L				70
	1,1,2-Trichloroethane	µg/L				2.5
	1,1-Dichloroethane	µg/L				43
	1,1-Dichloroethene	µg/L				230
	1,2-Dichloroethane	µg/L				3
	Acetone	µg/L				11
	Chloroethane	µg/L				14
	Chloroform	µg/L				1.9
	cis-1,2-Dichloroethene	µg/L				18
	Tetrachloroethene	µg/L				0.69 J
	Trichloroethene	µg/L				61

Table 4.1. VOCs detected at the X-749/X-120/PK Landfill – 2010 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-121G	Vinyl chloride	µg/L				2.3
X749-122G	1,1,1-Trichloroethane	µg/L				230
	1,1,2-Trichloroethane	µg/L				3.5
	1,1-Dichloroethane	µg/L				72
	1,1-Dichloroethene	µg/L				200
	1,2-Dichloroethane	µg/L				6.2
	Acetone	µg/L				5.9 J
	Benzene	µg/L				0.71 J
	Chloroethane	µg/L				1 J
	Chloroform	µg/L				3.9
	cis-1,2-Dichloroethene	µg/L				47
	Methylene chloride	µg/L				1.6 J
	trans-1,2-Dichloroethene	µg/L				0.71 J
	Trichloroethene	µg/L				470
	Vinyl chloride	µg/L				1.8 J
X749-BG9G	1,1-Dichloroethane	µg/L	0.24 J			0.22 U
	Carbon disulfide	µg/L	0.64 J			0.45 U
	Trichloroethene	µg/L	0.25 J			0.45 J
X749-PZ02G	1,1-Dichloroethene	µg/L	0.45 J			0.25 J
	Methylene chloride	µg/L	0.32 U			0.75 BJ
	Trichloroethene	µg/L	0.69 J			0.65 J
X749-PZ03G	Methylene chloride	µg/L	0.32 U	0.32 U	0.32 U	0.74 BJ
X749-PZ04G	1,1,1-Trichloroethane	µg/L	0.19 J	0.16 U	0.16 U	0.16 U
	1,1-Dichloroethane	µg/L	1.9	1.3	1	0.82 J
	1,1-Dichloroethene	µg/L	0.95 J	0.55 J	0.47 J	0.42 J
	1,2-Dichloroethane	µg/L	0.61 J	0.13 U	0.31 J	0.13 U
	cis-1,2-Dichloroethene	µg/L	0.81 J	0.51 J	0.42 J	0.36 J
	Methylene chloride	µg/L	0.32 U	0.32 U	0.32 U	0.76 BJ
	Trichloroethene	µg/L	4	3	2.3	1.9
X749-PZ05G	Methylene chloride	µg/L	0.32 U	0.39 BJ	0.32 U	0.67 BJ
	Trichloroethene	µg/L	15	0.16 U	0.16 U	0.16 U
X749-PZ06G	1,1,1-Trichloroethane	µg/L		14		16
	1,1,2-Trichloroethane	µg/L		0.27 U		1.3
	1,1-Dichloroethane	µg/L		20		24
	1,1-Dichloroethene	µg/L		66		57
	1,2-Dichloroethane	µg/L		2		2.5 B
	Chloroform	µg/L		2.1		2.7
	cis-1,2-Dichloroethene	µg/L		2.1		2.9
	Methylene chloride	µg/L		0.32 U		0.42 BJ
	Toluene	µg/L		0.17 U		0.17 J
	Trichloroethene	µg/L		25		34
X749-PZ07G	1,1,1-Trichloroethane	µg/L		0.53 J		
	1,1-Dichloroethane	µg/L		0.41 J		
	1,1-Dichloroethene	µg/L		1.5		
	Trichloroethene	µg/L		2.1		
X749-PZ10G	1,1,1-Trichloroethane	µg/L		16		21
	1,1-Dichloroethane	µg/L		0.65 J		0.88 U
	1,1-Dichloroethene	µg/L		150		160
	Chloroform	µg/L		28		33
	cis-1,2-Dichloroethene	µg/L		0.36 J		0.69 J

Table 4.1. VOCs detected at the X-749/X-120/PK Landfill – 2010 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-PZ10G	Methylene chloride	µg/L		0.64 U		2.5 BJ
	Trichloroethene	µg/L		650		670
X749-WPW	1,1,1-Trichloroethane	µg/L		71		140
	1,1,2-Trichloroethane	µg/L		1.1		1.6 J
	1,1-Dichloroethane	µg/L		100		130
	1,1-Dichloroethene	µg/L		130		200
	1,2-Dichloroethane	µg/L		33		45
	Acetone	µg/L		9.9 J		9.6 J
	Benzene	µg/L		0.88 J		1.5 J
	Chloroethane	µg/L		1.2 J		1.1 U
	Chloroform	µg/L		19		40
	cis-1,2-Dichloroethene	µg/L		30		49
	Methylene chloride	µg/L		1.1 J		0.85 U
	Tetrachloroethene	µg/L		3.1		4.4
X749-X120	Trichloroethene	µg/L		400		610
	Vinyl chloride	µg/L		7.2		7.2

Table 4.2. Results for radionuclides at the X-749/X-120/PK Landfill – 2010

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
PK-07G	Technetium-99	pCi/L	0.449 U			
PK-08G	Technetium-99	pCi/L	0.377 U			
X749-20G	Americium-241	pCi/L		0 U		
	Neptunium-237	pCi/L		0.02459 U		
	Plutonium-238	pCi/L		0.04905 U		
	Plutonium-239/240	pCi/L		0.01635 U		
	Technetium-99	pCi/L		234		
	Uranium	µg/L		0.5883		
	Uranium-233/234	pCi/L		0.2438		
	Uranium-235	pCi/L		0 U		
	Uranium-236	pCi/L		0.008437 U		
	Uranium-238	pCi/L		0.1976		
X749-WPW	Americium-241	pCi/L			0.013 U	
	Neptunium-237	pCi/L			-0.01489 U	
	Plutonium-238	pCi/L			0.0223 U	
	Plutonium-239/240	pCi/L			0.02973 U	
	Technetium-99	pCi/L			6090	
	Uranium	µg/L			0.5766	
	Uranium-233/234	pCi/L			0.2555	
	Uranium-235	pCi/L			0.008517 U	
	Uranium-236	pCi/L			0.007655 U	
	Uranium-238	pCi/L			0.193	

Table 4.3. VOCs detected at the Quadrant I Groundwater Investigative Area – 2010

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X230K-14G	cis-1,2-Dichloroethene	µg/L			0.24 J	
	Trichloroethene	µg/L			3.6	
X230K-15G	Methylene chloride	µg/L			0.35 BJ	
	Trichloroethene	µg/L			1.3	
X231A-01G	1,1-Dichloroethane	µg/L			1.4	
	1,1-Dichloroethene	µg/L			0.82 J	
	Chloroform	µg/L			0.27 J	
	cis-1,2-Dichloroethene	µg/L			1	
	Trichloroethene	µg/L			25	
	1,1,1-Trichloroethane	µg/L			3.1	
X231A-02G	1,1-Dichloroethane	µg/L			1.8	
	1,1-Dichloroethene	µg/L			41	
	Chloroform	µg/L			1.2	
	cis-1,2-Dichloroethene	µg/L			11	
	Trichloroethene	µg/L			170	
	1,1,1-Trichloroethane	µg/L			3.4	
X231A-03G	1,1-Dichloroethane	µg/L			2.5	
	1,1-Dichloroethene	µg/L			20	
	Carbon tetrachloride	µg/L			0.51 J	
	Chloroform	µg/L			13	
	cis-1,2-Dichloroethene	µg/L			79	
	trans-1,2-Dichloroethene	µg/L			0.6 J	
X231A-04G	Trichloroethene	µg/L			690	
	Trichlorofluoromethane	µg/L			13	
	1,1,1-Trichloroethane	µg/L			0.82 J	
	1,1-Dichloroethene	µg/L			9	
	Chloroform	µg/L			1.8	
	cis-1,2-Dichloroethene	µg/L			1.8	
X231B-02G	Trichloroethene	µg/L			39	
	1,1,1-Trichloroethane	µg/L			0.75 J	
	1,1-Dichloroethane	µg/L			32	
	1,1-Dichloroethene	µg/L			19	
	Acetone	µg/L			7 BJ	
	Chloroform	µg/L			43	
X231B-03G	cis-1,2-Dichloroethene	µg/L			52	
	Methylene chloride	µg/L			1.3 J	
	trans-1,2-Dichloroethene	µg/L			2.4	
	Trichloroethene	µg/L			620	
	Vinyl chloride	µg/L			4.3	
	1,1,1-Trichloroethane	µg/L			1.9	
X231B-06G	1,1-Dichloroethane	µg/L			1.6	
	1,1-Dichloroethene	µg/L			26	
	Chloroform	µg/L			0.44 J	
	cis-1,2-Dichloroethene	µg/L			17	
	Tetrachloroethene	µg/L			0.33 J	
	trans-1,2-Dichloroethene	µg/L			0.23 J	
X231B-06G	Trichloroethene	µg/L			170	
	1,1,1-Trichloroethane	µg/L			7.2	
	1,1,2-Trichloroethane	µg/L			0.47 J	
	1,1-Dichloroethane	µg/L			4	

Table 4.3. VOCs detected at the Quadrant I Groundwater Investigative Area – 2010 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X231B-06G	1,1-Dichloroethene	µg/L			62	
	Chloroform	µg/L			3.3	
	cis-1,2-Dichloroethene	µg/L			3.6	
	Methylene chloride	µg/L			0.36 J	
	Trichloroethene	µg/L			150	
X231B-12G	1,1,1-Trichloroethane	µg/L			1.1	
	1,1-Dichloroethene	µg/L			4.1	
	cis-1,2-Dichloroethene	µg/L			0.18 J	
	Trichloroethene	µg/L			3.7	
X231B-14G	1,1,1-Trichloroethane	µg/L			3.2	
	1,1-Dichloroethane	µg/L			1.3	
	1,1-Dichloroethene	µg/L			36	
	Chloroform	µg/L			1.2	
	Chloromethane	µg/L			1 J	
	cis-1,2-Dichloroethene	µg/L			6.9	
	Trichloroethene	µg/L			140	
X231B-15G	cis-1,2-Dichloroethene	µg/L	0.68 J		0.73 J	
	Methylene chloride	µg/L	0.32 U		0.74 BJ	
	Trichloroethene	µg/L	1.9		1.9	
X231B-16G	1,1,1-Trichloroethane	µg/L			0.75 J	
	1,1-Dichloroethene	µg/L			3.8	
	Chloroform	µg/L			0.78 J	
	Methylene chloride	µg/L			0.34 BJ	
X231B-20G	1,1-Dichloroethene	µg/L			2.8	
	Chloroform	µg/L			0.8 J	
	cis-1,2-Dichloroethene	µg/L			0.42 J	
	Trichloroethene	µg/L			59	
X231B-23G	1,1,1-Trichloroethane	µg/L			0.47 J	
	1,1-Dichloroethene	µg/L			2.5	
	Chloroform	µg/L			0.36 J	
	Trichloroethene	µg/L			2	
X231B-32B	1,2-Dimethylbenzene	µg/L			0.19 J	
	Benzene	µg/L			0.53 J	
	M + P Xylene	µg/L			0.46 J	
	Toluene	µg/L			0.9 J	
X231B-36G	Chloroform	µg/L			0.79 J	
	cis-1,2-Dichloroethene	µg/L			1.2	
	Trichloroethene	µg/L			91	
X231B-37G	1,1-Dichloroethane	µg/L			2.4	
	1,1-Dichloroethene	µg/L			2.6	
	cis-1,2-Dichloroethene	µg/L			7.5	
	trans-1,2-Dichloroethene	µg/L			1.1	
	Trichloroethene	µg/L			18	
X326-09G	1,1-Dichloroethene	µg/L	89		290	
	Bromodichloromethane	µg/L	9.4 J		17 U	
	Chloroform	µg/L	310		500	
	cis-1,2-Dichloroethene	µg/L	64		120	
	Methylene chloride	µg/L	38 J		78 BJ	
X326-10G	Trichloroethene	µg/L	12000		21000	
	cis-1,2-Dichloroethene	µg/L	1.1		1.1	

Table 4.3. VOCs detected at the Quadrant I Groundwater Investigative Area – 2010 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X326-10G	Trichloroethene	µg/L	8.2		9	
X622-PZ01G	Acetone	µg/L			2.5 BJ	
	Benzene	µg/L			0.27 J	
	cis-1,2-Dichloroethene	µg/L			6.5	
	trans-1,2-Dichloroethene	µg/L			0.65 J	
	Trichloroethene	µg/L			1.3	
X622-PZ02G	1,1,1-Trichloroethane	µg/L			0.86 J	
	1,1-Dichloroethane	µg/L			0.99 J	
	1,1-Dichloroethene	µg/L			11	
	Acetone	µg/L			3.6 BJ	
	Chloroform	µg/L			0.51 J	
	cis-1,2-Dichloroethene	µg/L			6.1	
	trans-1,2-Dichloroethene	µg/L			0.26 J	
	Trichloroethene	µg/L			56	
X622-PZ03G	1,1,1-Trichloroethane	µg/L			3.1 J	
	1,1-Dichloroethane	µg/L			1.3 J	
	1,1-Dichloroethene	µg/L			11	
	cis-1,2-Dichloroethene	µg/L			30	
	Tetrachloroethene	µg/L			1.4 J	
	Trichloroethene	µg/L			1500	
	Trichlorofluoromethane	µg/L			36	
X622-PZ05G	1,1-Dichloroethene	µg/L			0.54 J	
	Chloroform	µg/L			0.51 J	
	cis-1,2-Dichloroethene	µg/L			8	
	Trichloroethene	µg/L			420	
X626-07G	1,1,1-Trichloroethane	µg/L			5.3	
	1,1,2-Trichloroethane	µg/L			1.7 J	
	1,1-Dichloroethane	µg/L			1.1 J	
	1,1-Dichloroethene	µg/L			270	
	1,4-Dichlorobenzene	µg/L			0.39 J	
	Benzene	µg/L			0.66 J	
	Chloroform	µg/L			1.6 J	
	cis-1,2-Dichloroethene	µg/L			1.5 J	
	Trichloroethene	µg/L			680	
X749A-01G	Trichloroethene	µg/L		0.34 J		
X749A-02G	Methylene chloride	µg/L		0.41 BJ		
X749A-03G	Methylene chloride	µg/L		0.38 BJ		
X749A-05G	Methylene chloride	µg/L		0.63 BJ		
X749A-07G	Methylene chloride	µg/L		0.48 BJ		
X749A-09G	Trichloroethene	µg/L			3.3	
X749A-11G	Trichloroethene	µg/L		6.7		
X749A-12G	1,1-Dichloroethane	µg/L		0.22 J		
	cis-1,2-Dichloroethene	µg/L		3.5		
	Trichloroethene	µg/L		1.3		
X749A-13GA	Methylene chloride	µg/L		0.74 J		
X749A-14G	Methylene chloride	µg/L		0.49 BJ		
X749A-15G	Methylene chloride	µg/L		0.49 BJ		
X749A-16G	Methylene chloride	µg/L		1.1 BJ		
X749A-17G	Methylene chloride	µg/L		0.38 BJ		
X749A-18G	Acetone	µg/L		3 J		

Table 4.3. VOCs detected at the Quadrant I Groundwater Investigative Area – 2010 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749A-18G	cis-1,2-Dichloroethene	µg/L		0.22 J		
	Methylene chloride	µg/L		0.83 J		
	Trichloroethene	µg/L		3.9		
X749A-19G	1,1-Dichloroethene	µg/L		0.24 J		
	cis-1,2-Dichloroethene	µg/L		4.9		
	Methylene chloride	µg/L		0.37 BJ		
X760-03G	Trichloroethene	µg/L		28		
	cis-1,2-Dichloroethene	µg/L			7.9	
	Trichloroethene	µg/L			380	
X760-07G	1,1-Dichloroethene	µg/L			0.75 J	
	Chloroform	µg/L			0.49 J	
	cis-1,2-Dichloroethene	µg/L			8.8	
X770-17GA	Trichloroethene	µg/L			460	
	cis-1,2-Dichloroethene	µg/L			0.66 J	
	Trichloroethene	µg/L			180	
X770-MW05G	1,1-Dichloroethene	µg/L			0.64 J	
	Chloroform	µg/L			0.5 J	
	cis-1,2-Dichloroethene	µg/L			8.8	
	trans-1,2-Dichloroethene	µg/L			0.38 J	
	Trichloroethene	µg/L			550	

Table 4.4. Results for radionuclides at the Quadrant I Groundwater Investigative Area – 2010

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X231A-01G	Americium-241	pCi/L		3.362E-05 U		
	Neptunium-237	pCi/L		-0.03321 U		
	Plutonium-238	pCi/L		1.656E-05 U		
	Plutonium-239/240	pCi/L		-0.01656 U		
	Technetium-99	pCi/L		20.5		
	Uranium	µg/L		35.69		
	Uranium-233/234	pCi/L		13.68		
	Uranium-235	pCi/L		0.7504		
	Uranium-236	pCi/L		9.221E-06 U		
	Uranium-238	pCi/L		11.92		
X231B-06G	Americium-241	pCi/L		0.02072 U		
	Neptunium-237	pCi/L		0.007558 U		
	Plutonium-238	pCi/L		0.01506 U		
	Plutonium-239/240	pCi/L		0.01506 U		
	Technetium-99	pCi/L		61.5		
	Uranium	µg/L		2.131		
	Uranium-233/234	pCi/L		1.599		
	Uranium-235	pCi/L		0.1091		
	Uranium-236	pCi/L		7.53E-06 U		
	Uranium-238	pCi/L		0.7062		
X231B-36G	Americium-241	pCi/L		0 U		
	Neptunium-237	pCi/L		0.007808 U		
	Plutonium-238	pCi/L		-0.007771 U		
	Plutonium-239/240	pCi/L		0.01557 U		
	Technetium-99	pCi/L		-1.87 U		
	Uranium	µg/L		0.7264		
	Uranium-233/234	pCi/L		0.1538		
	Uranium-235	pCi/L		1.722E-05 U		
	Uranium-236	pCi/L		0 U		
	Uranium-238	pCi/L		0.2441		
X231B-37G	Americium-241	pCi/L		0.01666 U		
	Neptunium-237	pCi/L		7.065E-06 U		
	Plutonium-238	pCi/L		0.01414 U		
	Plutonium-239/240	pCi/L		1.409E-05 U		
	Technetium-99	pCi/L		-2.59 U		
	Uranium	µg/L		0.3456		
	Uranium-233/234	pCi/L		0.1819		
	Uranium-235	pCi/L		0 U		
	Uranium-236	pCi/L		-0.008042 U		
	Uranium-238	pCi/L		0.1162		
X626-07G	Americium-241	pCi/L		0.008928 U		
	Neptunium-237	pCi/L		0.01521 U		
	Plutonium-238	pCi/L		0.01517 U		
	Plutonium-239/240	pCi/L		0.007585 U		
	Technetium-99	pCi/L		0.618 U		
	Uranium	µg/L		0.2133		
	Uranium-233/234	pCi/L		0.1174		
	Uranium-235	pCi/L		0 U		
	Uranium-236	pCi/L		0.01445 U		
	Uranium-238	pCi/L		0.07161		

Table 4.5. VOCs detected at the Quadrant II Groundwater Investigative Area – 2010

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X700-02G	1,1,1-Trichloroethane	µg/L	13			
	1,1,2-Trichloroethane	µg/L	2.9 J			
	1,1-Dichloroethane	µg/L	11			
	1,1-Dichloroethene	µg/L	110			
	1,2-Dichloroethane	µg/L	4.1 J			
	Chloroform	µg/L	1.4 J			
	cis-1,2-Dichloroethene	µg/L	47			
	trans-1,2-Dichloroethene	µg/L	1.2 J			
	Trichloroethene	µg/L	7400			
					1.2	
X701-26G	1,1-Dichloroethene	µg/L			0.23 J	
	Bromodichloromethane	µg/L			1.3	
	Chloroform	µg/L			0.78 J	
	Chloromethane	µg/L			0.35 BJ	
	Methylene chloride	µg/L			5.2	
	Tetrachloroethene	µg/L			0.67 J	
	Trichloroethene	µg/L			0.93 J	
X701-27G	1,1,1-Trichloroethane	µg/L			0.38 J	
	1,1-Dichloroethane	µg/L			0.53 J	
	1,1-Dichloroethene	µg/L			3.1	
	cis-1,2-Dichloroethene	µg/L			0.29 J	
	Methylene chloride	µg/L			0.44 J	
X701-69G	Trichloroethene	µg/L			1.6	
	cis-1,2-Dichloroethene	µg/L			250	
	Methylene chloride	µg/L			3.6 J	
	trans-1,2-Dichloroethene	µg/L			8.8 J	
	Trichloroethene	µg/L			1300	
X705-04G	1,1-Dichloroethene	µg/L	2.5			
	Bromodichloromethane	µg/L	1.5 J			
	Carbon disulfide	µg/L	1 J			
	Carbon tetrachloride	µg/L	14			
	Chloroform	µg/L	400			
	Tetrachloroethene	µg/L	2.2			
	Toluene	µg/L	0.35 J			
	Trichloroethene	µg/L	98			
	1,1,1-Trichloroethane	µg/L	440			
X720-01G	1,1-Dichloroethene	µg/L	470			
	Chloroform	µg/L	20 J			
	cis-1,2-Dichloroethene	µg/L	28 J			
	Methylene chloride	µg/L	43 J			
	Trichloroethene	µg/L	50000			
X720-08G	1,1-Dichloroethene	µg/L	110			
	cis-1,2-Dichloroethene	µg/L	14 J			
	Tetrachloroethene	µg/L	6.8 J			
	Trichloroethene	µg/L	6400			

Table 4.6. VOCs detected at the X-701B Holding Pond – 2010

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
LBC-PZ03G	cis-1,2-Dichloroethene	µg/L	22			
	trans-1,2-Dichloroethene	µg/L	0.35 J			
	Trichloroethene	µg/L	28			
LBC-PZ06G	Methylene chloride	µg/L	0.35 J			
X230J7-01GA	1,1-Dichloroethene	µg/L	0.35 J		0.4 J	
	Acetone	µg/L	1.9 U		1.9 BJ	
	Chloroform	µg/L	0.16 J		0.16 U	
	cis-1,2-Dichloroethene	µg/L	0.9 J		0.97 J	
	Methylene chloride	µg/L	0.32 U		0.33 BJ	
	Trichloroethene	µg/L	250		240	
	Acetone	µg/L	3.8 U		5.3 BJ	
X230J7-02GA	Chloroform	µg/L	0.4 J		0.32 U	
	cis-1,2-Dichloroethene	µg/L	2.6 J		2.7	
	Methylene chloride	µg/L	0.65 BJ		0.77 BJ	
	Tetrachloroethene	µg/L	0.63 J		0.49 J	
	Trichloroethene	µg/L	540		640	
	1,1,2-Trichloroethane	µg/L	1.3 U		0.66 J	
X230J7-03GA	1,1-Dichloroethene	µg/L	1.2 J		1.5 J	
	Acetone	µg/L	7.6 U		6.8 BJ	
	cis-1,2-Dichloroethene	µg/L	520		950	
	Methylene chloride	µg/L	1.4 BJ		0.86 BJ	
	Tetrachloroethene	µg/L	1.5 J		0.85 J	
	trans-1,2-Dichloroethene	µg/L	17		32	
	Trichloroethene	µg/L	1700		930	
	Vinyl chloride	µg/L	17		24	
	Methylene chloride	µg/L			0.39 J	
X700-03G	cis-1,2-Dichloroethene	µg/L			0.36 J	
X701-01G	1,1-Dichloroethene	µg/L	0.5 J		0.23 U	
	cis-1,2-Dichloroethene	µg/L	5.4		1.1	
	Methylene chloride	µg/L	0.32 U		0.49 J	
	Trichloroethene	µg/L	26		6.4	
X701-15G	Acetone	µg/L	2.9 J		7.6 U	
	cis-1,2-Dichloroethene	µg/L	34		430	
	Methylene chloride	µg/L	0.32 U		3.7 J	
	trans-1,2-Dichloroethene	µg/L	0.74 J		5	
	Trichloroethene	µg/L	1.7 J		9.3	
X701-19G	Acetone	µg/L	5.4 BJ		3 BJ	
	Methylene chloride	µg/L	0.44 BJ		0.34 BJ	
	Trichloroethene	µg/L	1.2 J		0.16 U	
X701-20G	1,1,1-Trichloroethane	µg/L	23 J		64 U	
	1,1,2-Trichloroethane	µg/L	140		110 U	
	1,1-Dichloroethene	µg/L	43 J		92 U	
	Chloroform	µg/L	11 J		64 U	
	cis-1,2-Dichloroethene	µg/L	2700		2400	
	Methylene chloride	µg/L	16 U		190 J	
	Tetrachloroethene	µg/L	83 J		86 J	
	Trichloroethene	µg/L	130000		100000	
	Vinyl chloride	µg/L	35 J		160 U	
X701-21G	1,2-Dichlorobenzene	µg/L			0.19 J	
	cis-1,2-Dichloroethene	µg/L			1	

Table 4.6. VOCs detected at the X-701B Holding Pond – 2010 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-21G	Trichloroethene	µg/L			33	
X701-23G	Trichloroethene	µg/L			0.63 J	
X701-24G	1,1,2-Trichloroethane	µg/L	4.8 J		6.7 J	
	1,1-Dichloroethene	µg/L	1.5 J		2.4 J	
	Acetone	µg/L	20 J		21 J	
	cis-1,2-Dichloroethene	µg/L	340		590	
	Methylene chloride	µg/L	3.4 BJ		3.9 J	
	Tetrachloroethene	µg/L	2.4 J		2.3 J	
	trans-1,2-Dichloroethene	µg/L	4.1 J		11	
	Trichloroethene	µg/L	3500		3600	
	Vinyl chloride	µg/L	4 J		15	
X701-25G	Chloromethane	µg/L	0.3 U		0.3 J	
	Methylene chloride	µg/L	0.32 U		0.39 J	
	Trichloroethene	µg/L	0.16 U		0.16 J	
X701-30G	cis-1,2-Dichloroethene	µg/L	0.28 J		0.27 J	
	Methylene chloride	µg/L	0.34 BJ		0.32 U	
	Trichloroethene	µg/L	6.6		6.6	
	Trichlorofluoromethane	µg/L	2		1.6 J	
X701-48G	Methylene chloride	µg/L			0.41 J	
X701-58B	Benzene	µg/L			0.61 J	
X701-61B	1,2-Dimethylbenzene	µg/L			0.49 J	
	M + P Xylene	µg/L			4.4	
X701-127G	1,1,1-Trichloroethane	µg/L	15 J		64 U	
	1,1,2-Trichloroethane	µg/L	110		110 U	
	1,1-Dichloroethene	µg/L	37 J		92 U	
	Acetone	µg/L	190 J		760 U	
	Chloroform	µg/L	8.8 J		64 U	
	cis-1,2-Dichloroethene	µg/L	1500		1800	
	Methylene chloride	µg/L	260		130 U	
	Tetrachloroethene	µg/L	46 J		80 U	
	Trichloroethene	µg/L	77000		100000	
	Vinyl chloride	µg/L	26 J		160 U	
X701-128G	1,1,2-Trichloroethane	µg/L	26 J		11 U	
	1,1-Dichloroethene	µg/L	9.7 J		9.2 U	
	Acetone	µg/L	87 J		140 BJ	
	cis-1,2-Dichloroethene	µg/L	160		64	
	Methylene chloride	µg/L	16 J		19 BJ	
	Tetrachloroethene	µg/L	19 J		8 U	
	Trichloroethene	µg/L	22000		9800	
X744G-01G	Acetone	µg/L	8.9 J		1.9 U	
	Methylene chloride	µg/L	0.32 U		0.32 BJ	
	Trichloroethene	µg/L	0.27 J		0.16 U	
X744G-02G	cis-1,2-Dichloroethene	µg/L	0.88 J		0.73 J	
	Trichloroethene	µg/L	13		11	
	Trichlorofluoromethane	µg/L	2.3		1.3 J	
X744G-03G	cis-1,2-Dichloroethene	µg/L	0.55 J		0.36 J	
	Methylene chloride	µg/L	0.32 U		0.33 J	
	Trichloroethene	µg/L	5.7		5	

Table 4.7. Results for radionuclides at the X-701B Holding Pond – 2010

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
LBC-PZ03G	Technetium-99	pCi/L	-0.851 U			
	Uranium	µg/L	0.0663 U			
	Uranium-233/234	pCi/L	0.03719 U			
	Uranium-235	pCi/L	9.2E-06 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.02226 U			
LBC-PZ06G	Technetium-99	pCi/L	-1.78 U			
	Uranium	µg/L	0.198			
	Uranium-233/234	pCi/L	0.09847			
	Uranium-235	pCi/L	0.01012 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.06551			
X230J7-01GA	Americium-241	pCi/L	0.01728 U			
	Neptunium-237	pCi/L	0.00756 U			
	Plutonium-238	pCi/L	0.00754 U			
	Plutonium-239/240	pCi/L	0.00756 U			
	Technetium-99	pCi/L	-2.69 U			
	Uranium	µg/L	0.262			
	Uranium-233/234	pCi/L	0.1856			
	Uranium-235	pCi/L	-0.0091 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.0889			
X230J7-02GA	Americium-241	pCi/L	9.2E-06 U			
	Neptunium-237	pCi/L	7.1E-06 U			
	Plutonium-238	pCi/L	0.00708 U			
	Plutonium-239/240	pCi/L	-0.0071 U			
	Technetium-99	pCi/L	35.8			
	Uranium	µg/L	0.226			
	Uranium-233/234	pCi/L	0.0759			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0.00701 U			
	Uranium-238	pCi/L	0.07574			
X230J7-03GA	Americium-241	pCi/L	8.8E-06 U			
	Neptunium-237	pCi/L	0.00725 U			
	Plutonium-238	pCi/L	0.00723 U			
	Plutonium-239/240	pCi/L	0.00723 U			
	Technetium-99	pCi/L	18.9			
	Uranium	µg/L	0.13			
	Uranium-233/234	pCi/L	0.0655			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.04357			
X230J7-04GA	Technetium-99	pCi/L		5.44 U		
	Uranium	µg/L		0.1192 U		
	Uranium-233/234	pCi/L		-0.01567 U		
	Uranium-235	pCi/L		0.009682 U		
	Uranium-236	pCi/L		0 U		
	Uranium-238	pCi/L		0.03919 U		
X700-03G	Technetium-99	pCi/L		-1.28 U		
	Uranium	µg/L		0.2899		

Table 4.7. Results for radionuclides at the X-701B Holding Pond – 2010 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X700-03G	Uranium-233/234	pCi/L			0.2115	
	Uranium-235	pCi/L			0 U	
	Uranium-236	pCi/L			0 U	
	Uranium-238	pCi/L			0.09742	
X701-01G	Technetium-99	pCi/L	-6.19 U			
	Uranium	µg/L	1.63			
	Uranium-233/234	pCi/L	1.186			
	Uranium-235	pCi/L	0.03956 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.5441			
X701-15G	Americium-241	pCi/L	0.018 U			
	Neptunium-237	pCi/L	0 U			
	Plutonium-238	pCi/L	8.3E-06 U			
	Plutonium-239/240	pCi/L	0 U			
	Technetium-99	pCi/L	-4.74 U			
	Uranium	µg/L	0.0826 U			
	Uranium-233/234	pCi/L	0.05728			
	Uranium-235	pCi/L	-0.0088 U			
	Uranium-236	pCi/L	-0.0079 U			
	Uranium-238	pCi/L	0.02858 U			
X701-16G	Technetium-99	pCi/L	-2.43 U			
	Uranium	µg/L	0.143 U			
	Uranium-233/234	pCi/L	0.09615			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0.00888 U			
	Uranium-238	pCi/L	0.04799 U			
X701-18G	Technetium-99	pCi/L			-5.97 U	
	Uranium	µg/L			0.1661	
	Uranium-233/234	pCi/L			0.05503 U	
	Uranium-235	pCi/L			0.009696 U	
	Uranium-236	pCi/L			0.008706 U	
	Uranium-238	pCi/L			0.05491	
X701-19G	Technetium-99	pCi/L	-0.671 U			
	Uranium	µg/L	3.8E-06 U			
	Uranium-233/234	pCi/L	0.02378 U			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0 U			
X701-20G	Americium-241	pCi/L	0.02052 U		0 U	
	Neptunium-237	pCi/L	0.01498 U		0.006544 U	
	Plutonium-238	pCi/L	0.02988 U		0.02608 U	
	Plutonium-239/240	pCi/L	-0.0075 U		0.01956 U	
	Technetium-99	pCi/L	105		63.2	
	Uranium	µg/L	0.0459 U		0.2303	
	Uranium-233/234	pCi/L	0.01547 U		0.06209	
	Uranium-235	pCi/L	0 U		0 U	
	Uranium-236	pCi/L	0 U		-0.008587 U	
	Uranium-238	pCi/L	0.01543 U		0.07744	
X701-21G	Technetium-99	pCi/L			149	
	Uranium	µg/L			0.2497	

Table 4.7. Results for radionuclides at the X-701B Holding Pond – 2010 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-21G	Uranium-233/234	pCi/L			0.07719	
	Uranium-235	pCi/L			-0.009513 U	
	Uranium-236	pCi/L			0 U	
	Uranium-238	pCi/L			0.08475	
X701-23G	Technetium-99	pCi/L			4.55 U	
	Uranium	µg/L			0.07122 U	
	Uranium-233/234	pCi/L			0.03989	
	Uranium-235	pCi/L			0 U	
	Uranium-236	pCi/L			0.008836 U	
X701-24G	Uranium-238	pCi/L			0.02388 U	
	Americium-241	pCi/L	0.00886 U			
	Neptunium-237	pCi/L	0 U			
	Plutonium-238	pCi/L	0.02148 U			
	Plutonium-239/240	pCi/L	0.01432 U			
	Technetium-99	pCi/L	2.19 U			
	Uranium	µg/L	0.172			
	Uranium-233/234	pCi/L	0.1001			
	Uranium-235	pCi/L	0.00882 U			
	Uranium-236	pCi/L	0 U			
X701-25G	Uranium-238	pCi/L	0.05707			
	Technetium-99	pCi/L	-4.26 U			
	Uranium	µg/L	-0.0236 U			
	Uranium-233/234	pCi/L	0.01586 U			
	Uranium-235	pCi/L	0 U			
X701-30G	Uranium-236	pCi/L	-0.0088 U			
	Uranium-238	pCi/L	-0.0079 U			
	Technetium-99	pCi/L	2.08 U			
	Uranium	µg/L	0.217			
	Uranium-233/234	pCi/L	0.1241			
X701-31G	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.07287			
	Americium-241	pCi/L			0.0000082 U	
	Neptunium-237	pCi/L			0 U	
	Plutonium-238	pCi/L			0.02215 U	
	Plutonium-239/240	pCi/L			0 U	
	Technetium-99	pCi/L			-7.15 U	
	Uranium	µg/L			0.05802 U	
	Uranium-233/234	pCi/L			0.08484 U	
X701-48G	Uranium-235	pCi/L			0 U	
	Uranium-236	pCi/L			-0.007218 U	
	Uranium-238	pCi/L			0.01953 U	
	Technetium-99	pCi/L			-1.5 U	
	Uranium	µg/L			0.07876 U	
	Uranium-233/234	pCi/L			0.0442	
	Uranium-235	pCi/L			0 U	
X701-58B	Uranium-236	pCi/L			0 U	
	Uranium-238	pCi/L			0.02647 U	
	Technetium-99	pCi/L			-3.68 U	
	Uranium	µg/L			0.4309	

Table 4.7. Results for radionuclides at the X-701B Holding Pond – 2010 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-58B	Uranium-233/234	pCi/L			0.5074	
	Uranium-235	pCi/L			0.03682 U	
	Uranium-236	pCi/L			0 U	
	Uranium-238	pCi/L			0.1415	
X701-61B	Technetium-99	pCi/L			-7.61 U	
	Uranium	µg/L			0.2054	
	Uranium-233/234	pCi/L			0.0951	
	Uranium-235	pCi/L			0 U	
X701-127G	Uranium-236	pCi/L			0 U	
	Uranium-238	pCi/L			0.06901	
	Americium-241	pCi/L	0.00947 U		0 U	
	Neptunium-237	pCi/L	0.00713 U		0.007721 U	
X701-128G	Plutonium-238	pCi/L	0.0071 U		0.01541 U	
	Plutonium-239/240	pCi/L	0.0142 U		-0.01538 U	
	Technetium-99	pCi/L	37.6		26.7	
	Uranium	µg/L	0.169		0.1545	
	Uranium-233/234	pCi/L	0.04272 U		0.03774	
	Uranium-235	pCi/L	0 U		-0.009302 U	
	Uranium-236	pCi/L	0 U		0 U	
	Uranium-238	pCi/L	0.05679		0.05273	
	Americium-241	pCi/L	8.6E-06 U			
	Neptunium-237	pCi/L	0.01453 U			
	Plutonium-238	pCi/L	0 U			
	Plutonium-239/240	pCi/L	0.00725 U			

Table 4.8. Results for chromium at the X-633 Pumphouse/Cooling Towers Area – 2010

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X633-07G	Chromium	µg/L		250		1300
X633-PZ04G	Chromium	µg/L		14		21

Table 4.9. VOCs detected at the X-616 Chromium Sludge Surface Impoundments – 2010

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X616-05G	Trichloroethene	µg/L	0.37 J			
X616-09G	1,1,1-Trichloroethane	µg/L	5.2			
	1,1-Dichloroethane	µg/L	2.6			
	1,1-Dichloroethene	µg/L	29			
	1,2-Dichloroethane	µg/L	0.16 J			
	cis-1,2-Dichloroethene	µg/L	2.1			
	Trichloroethene	µg/L	19			
X616-16G	cis-1,2-Dichloroethene	µg/L	2			
	Trichloroethene	µg/L	2.4			
X616-20B	1,1-Dichloroethane	µg/L	0.56 J			
	1,1-Dichloroethene	µg/L	0.54 J			
	cis-1,2-Dichloroethene	µg/L	0.35 J			
	Trichloroethene	µg/L	13			
X616-25G	cis-1,2-Dichloroethene	µg/L	0.75 J			
	Trichloroethene	µg/L	1.6			
X616-28B	1,1,1-Trichloroethane	µg/L	1.4			
	1,1-Dichloroethene	µg/L	1.2			
	Trichloroethene	µg/L	0.46 J			

Table 4.10. Results for chromium at the X-616 Chromium Sludge Surface Impoundments – 2010

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X616-05G	Chromium	µg/L	74			
X616-25G	Chromium	µg/L	3.4			

Table 4.11. VOCs detected at the X-740 Waste Oil Handling Facility – 2010

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X740-02G	1,1,1-Trichloroethane	µg/L				5.3
	1,1-Dichloroethane	µg/L				3.6
	1,1-Dichloroethene	µg/L				6.4
	Methylene chloride	µg/L				0.72 BJ
	Trichloroethene	µg/L				6.6
X740-03G	1,1,1-Trichloroethane	µg/L		47		100
	1,1-Dichloroethane	µg/L		18		37
	1,1-Dichloroethene	µg/L		400		900
	1,2-Dichloroethane	µg/L		65		120
	Acetone	µg/L		31 J		38 U
	Chloroform	µg/L		5 J		11 J
	cis-1,2-Dichloroethene	µg/L		5.9 J		14 J
	Methylene chloride	µg/L		3.2 U		10 BJ
	Tetrachloroethene	µg/L		89		170
	Trichloroethene	µg/L	2300			4700
X740-09B	1,1,1-Trichloroethane	µg/L	28			9.7
	1,1-Dichloroethane	µg/L		9.7		15
	1,1-Dichloroethene	µg/L	260			380
	1,2-Dichloroethane	µg/L		58		56
	Chloroform	µg/L		4.6 J		2.8 J
	cis-1,2-Dichloroethene	µg/L		2.7 J		7.1
	Methylene chloride	µg/L		1.6 U		4.8 BJ
	Tetrachloroethene	µg/L		32		39
	Trichloroethene	µg/L	1300			1600
X740-10G	1,1,1-Trichloroethane	µg/L		3.7		11
	1,1-Dichloroethane	µg/L		2.4		5.3
	1,1-Dichloroethene	µg/L		20		62
	1,2-Dichloroethane	µg/L		3.9		12
	Chloroform	µg/L		0.34 J		1
	cis-1,2-Dichloroethene	µg/L		1		2.2
	Methylene chloride	µg/L		1.8 J		0.32 U
	Tetrachloroethene	µg/L		1.8		5.8
	Trichloroethene	µg/L		100		290
X740-14B	1,1,1-Trichloroethane	µg/L		0.19 J		
	1,1-Dichloroethane	µg/L		0.27 J		
	1,1-Dichloroethene	µg/L		2.2		
	1,2-Dichloroethane	µg/L		0.7 J		
	Trichloroethene	µg/L		6.8		
X740-18G	1,1,1-Trichloroethane	µg/L				6.6
	1,1-Dichloroethane	µg/L				5.3
	1,1-Dichloroethene	µg/L				47
	1,2-Dichloroethane	µg/L				14
	Benzene	µg/L				0.19 J
	Chloroform	µg/L				1
	cis-1,2-Dichloroethene	µg/L				6.1
	Tetrachloroethene	µg/L				6.8
	trans-1,2-Dichloroethene	µg/L				0.16 J
	Trichloroethene	µg/L				290
X740-19G	1,1,1-Trichloroethane	µg/L				11
	1,1-Dichloroethane	µg/L				3.2

Table 4.11. VOCs detected at the X-740 Waste Oil Handling Facility – 2010 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X740-19G	1,1-Dichloroethene	µg/L				76
	1,2-Dichloroethane	µg/L				14
	Chloroform	µg/L				1.2
	cis-1,2-Dichloroethene	µg/L				2
	Tetrachloroethene	µg/L				8.6
	Trichloroethene	µg/L				380
X740-20G	1,1,1-Trichloroethane	µg/L				0.91 J
	1,1-Dichloroethane	µg/L				0.42 J
	1,1-Dichloroethene	µg/L				6.5
	1,2-Dichloroethane	µg/L				1.4
	Chloroform	µg/L				0.16 J
	Tetrachloroethene	µg/L				0.48 J
X740-21G	Trichloroethene	µg/L				35
	1,1,1-Trichloroethane	µg/L				2
	1,1-Dichloroethane	µg/L				0.94 J
	1,1-Dichloroethene	µg/L				16
	1,2-Dichloroethane	µg/L				3.1
	Acetone	µg/L				6 J
X740-22G	Chloroform	µg/L				0.42 J
	cis-1,2-Dichloroethene	µg/L				0.26 J
	Tetrachloroethene	µg/L				1
	Trichloroethene	µg/L				71
	1,1,1-Trichloroethane	µg/L				8.8
	1,1-Dichloroethane	µg/L				3.2
X740-23M	1,1-Dichloroethene	µg/L				70
	1,2-Dichloroethane	µg/L				14
	Chloroform	µg/L				1.3
	cis-1,2-Dichloroethene	µg/L				1
	Tetrachloroethene	µg/L				6.1
	Trichloroethene	µg/L				370
X740-PZ10G	1,1-Dichloroethane	µg/L				0.29 J
	Trichloroethene	µg/L				0.18 J
X740-PZ12G	1,1,1-Trichloroethane	µg/L	0.73 J			
	1,1-Dichloroethane	µg/L	0.29 J			
	1,1-Dichloroethene	µg/L	1.2			
	1,2-Dichloroethane	µg/L	0.47 J			
	Chloroform	µg/L	0.16 J			
	Tetrachloroethene	µg/L	0.37 J			
X740-PZ14G	Trichloroethene	µg/L	15			
	1,1,1-Trichloroethane	µg/L	2.3			3.1
	1,1-Dichloroethane	µg/L	0.77 J			0.87 J
	1,1-Dichloroethene	µg/L	14			17
	1,2-Dichloroethane	µg/L	4.9			4.6
	Chloroform	µg/L	0.44 J			0.48 J
X740-PZ14G	cis-1,2-Dichloroethene	µg/L	0.16 J			0.15 U
	Methylene chloride	µg/L	2			0.32 U
	Tetrachloroethene	µg/L	0.97 J			1.9
	Trichloroethene	µg/L	87			100
X740-PZ14G	1,1,1-Trichloroethane	µg/L	7			
	1,1-Dichloroethane	µg/L	2.4			

Table 4.11. VOCs detected at the X-740 Waste Oil Handling Facility – 2010 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X740-PZ14G	1,1-Dichloroethene	µg/L		60		
	1,2-Dichloroethane	µg/L		15		
	Chloroform	µg/L		1.3		
	cis-1,2-Dichloroethene	µg/L		0.72 J		
	Methylene chloride	µg/L		0.38 BJ		
	Tetrachloroethene	µg/L		2		
	Trichloroethene	µg/L		240		
	1,1,1-Trichloroethane	µg/L		0.28 J		
X740-PZ17G	1,1-Dichloroethene	µg/L		1.3		
	Methylene chloride	µg/L		2.7		
	Trichloroethene	µg/L		6.2		

Table 4.12. Results for beryllium and chromium at the X-611A Former Lime Sludge Lagoons – 2010

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
F-07G	Beryllium	µg/L	4.9		1.3	
	Chromium	µg/L	12		1.2 B	
F-08B	Beryllium	µg/L	0.08 U		0.08 U	
	Chromium	µg/L	0.5 U		0.5 U	
X611-01B	Beryllium	µg/L	0.08 U		0.08 U	
	Chromium	µg/L	19		19	
X611-02BA	Beryllium	µg/L	0.08 U		0.08 U	
	Chromium	µg/L	1.3 B		1.5 B	
X611-03G	Beryllium	µg/L	0.32 B		0.08 U	
	Chromium	µg/L	10		0.5 U	
X611-04BA	Beryllium	µg/L	0.58 B		0.68 B	
	Chromium	µg/L	0.9 B		0.5 U	

Table 4.13. VOCs detected at the X-735 Landfills – 2010

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X735-02GA	Benzene	µg/L		0.29 J		
X735-04GA	Methylene chloride	µg/L		1.2 BJ		
X735-19G	Methylene chloride	µg/L		0.63 BJ		
X735-20B	Methylene chloride	µg/L		0.43 BJ		
	Trichloroethene	µg/L		0.2 J		
X737-07B	Methylene chloride	µg/L		0.45 BJ		
X737-08B	Chloromethane	µg/L		0.3 J		
	Methylene chloride	µg/L		1.2 BJ		
X737-09G	Methylene chloride	µg/L		0.43 BJ		

Table 4.14. VOCs detected at the X-734 Landfills – 2010

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X734-01G	Trichloroethene	µg/L		0.16 U	0.38 J	0.16 U
X734-02B	Trichloroethene	µg/L		9	0.16 U	0.16 U
X734-03G	1,1-Dichloroethane	µg/L		0.31 J	0.22 U	0.22 U
X734-05B	1,2-Dimethylbenzene	µg/L		0.31 J		0.28 J
	Acetone	µg/L		1.9 U		5.3 J
	Benzene	µg/L		2.1		2
	Ethylbenzene	µg/L		0.42 J		0.38 J
	Toluene	µg/L		0.7 J		0.55 J
X734-10G	Trichloroethene	µg/L		0.2 J		0.16 U
X734-16G	Acetone	µg/L		3.6 J	20	
	Carbon disulfide	µg/L		0.45 U	0.52 J	
	cis-1,2-Dichloroethene	µg/L		0.19 J	0.15 U	
	Trichloroethene	µg/L		9.6	0.16 U	
X734-18G	Trichloroethene	µg/L		8.2	0.16 U	0.16 U
X734-23G	2-Butanone	µg/L		2 U		3.5 J
	Acetone	µg/L		1.9 U		1.9 J
	cis-1,2-Dichloroethene	µg/L		5.5		2.8
	trans-1,2-Dichloroethene	µg/L		0.3 J		0.15 U
	Vinyl chloride	µg/L		1.4		0.85 J

Table 4.15. Results for cadmium, cobalt, and nickel at the X-533 Switchyard Area – 2010

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
F-03G	Cadmium	µg/L		36		51
	Cobalt	µg/L		72		200
	Nickel	µg/L		440		1200
TCP-01G	Cadmium	µg/L		15		37
	Cobalt	µg/L		46		55
	Nickel	µg/L		190		180
X533-03G	Cadmium	µg/L		13		15
	Cobalt	µg/L		39		43
	Nickel	µg/L		220		240

Table 4.16. VOCs detected at the Former X-344C Hydrogen Fluoride Storage Building – 2010

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X344C-01G	cis-1,2-Dichloroethene	µg/L	2.2			
	trans-1,2-Dichloroethene	µg/L	0.22 J			

Table 4.17. VOCs detected at surface water monitoring locations – 2010

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
BRC-SW01	Acetone	µg/L	1.9 U	4.2 BJ	4 J	3.8 J
	Bromodichloromethane	µg/L	2.4	8.1	2.3	1.7
	Bromoform	µg/L	1.3 J	3.9	0.73 J	1.6
	Chlorobenzene	µg/L	0.17 U	0.17 U	0.17 U	0.18 J
	Chloroform	µg/L	2.9	11	4.6	1.5
	Dibromochloromethane	µg/L	2.9	7.6	2.1	2.7
	Methylene chloride	µg/L	0.32 U	2.5	0.39 BJ	0.32 U
BRC-SW02	2-Butanone	µg/L	1.8 U	2 U	2 U	2.3 J
	Acetone	µg/L	1.9 U	95 B	14	93
	Chloromethane	µg/L	0.3 U	0.3 U	0.88 J	0.3 U
	Methylene chloride	µg/L	0.32 U	3.3	0.32 BJ	0.32 U
	Toluene	µg/L	0.17 U	0.17 U	0.17 U	0.17 J
EDD-SW01	Acetone	µg/L	1.9 U	1.9 U	2.5 J	1.9 U
	Bromodichloromethane	µg/L	2.3	1.3	3.3	2.5
	Bromoform	µg/L	1.4 J	0.19 U	0.66 J	2.4
	Chloroform	µg/L	2.5	2.2	3.8	1.4
	cis-1,2-Dichloroethene	µg/L	0.51 J	0.37 J	0.25 J	0.16 J
	Dibromochloromethane	µg/L	3.1	1.5	3.3	4.6
	Methylene chloride	µg/L	0.32 U	1.9 J	0.39 BJ	0.32 U
	Trichloroethene	µg/L	1.3 J	0.66 J	0.41 J	0.35 J
LBC-SW01	Acetone	µg/L	1.9 U	1.9 U	2.6 J	1.9 U
	Bromodichloromethane	µg/L	0.8 J	0.77 J	2.7	2.1
	Bromoform	µg/L	0.45 J	0.19 U	0.58 J	2.2
	Chloroform	µg/L	0.92 J	1.3	3.1	1.2
	cis-1,2-Dichloroethene	µg/L	0.33 J	0.34 J	0.26 J	0.15 U
	Dibromochloromethane	µg/L	1 J	0.88 J	2.8	4
	Methylene chloride	µg/L	0.33 J	2.8	0.39 BJ	0.32 U
	Trichloroethene	µg/L	0.57 J	0.66 J	0.4 J	0.28 J
LBC-SW02	Bromodichloromethane	µg/L	0.59 J	0.51 J	1.3	1.1
	Bromoform	µg/L	0.35 J	0.19 U	0.34 J	1.4
	Chloroform	µg/L	0.65 J	0.89 J	1.4	0.63 J
	cis-1,2-Dichloroethene	µg/L	0.23 J	0.18 J	0.15 U	0.15 U
	Dibromochloromethane	µg/L	0.79 J	0.61 J	1.5	2.4
	Methylene chloride	µg/L	0.32 U	1.8 J	0.35 BJ	0.32 U
	Trichloroethene	µg/L	0.39 J	0.41 J	0.16 J	0.16 U
LBC-SW03	Acetone	µg/L	1.9 U	3.1 J	2.1 J	1.9 U
	Bromodichloromethane	µg/L	0.26 J	0.17 U	0.17 U	0.17 U
	Bromoform	µg/L	0.19 U	0.19 U	0.19 U	0.37 J
	Chloroform	µg/L	0.27 J	0.23 J	0.16 U	0.16 U
	Chloromethane	µg/L	0.3 U	0.3 U	0.35 J	0.3 U
	Dibromochloromethane	µg/L	0.37 J	0.17 U	0.25 J	0.43 J
	Methylene chloride	µg/L	0.32 U	0.32 U	0.36 BJ	0.32 U
LBC-SW04	Chloromethane	µg/L	0.3 U	0.3 U	0.6 J	0.3 U
	Methylene chloride	µg/L	0.32 U	0.32 U	0.37 BJ	0.32 U
NHP-SW01	Chloroform	µg/L	0.18 J	0.16 U	0.16 U	0.16 U
	Chloromethane	µg/L	0.3 U	0.3 U	0.6 J	0.3 U
UND-SW01	Methylene chloride	µg/L	0.32 U	2.1	0.35 BJ	0.32 U
	1,1-Dichloroethane	µg/L	0.16 U	0.22 U	0.22 U	0.26 J
	1,1-Dichloroethene	µg/L	0.14 U	0.32 J	0.26 J	0.35 J
	Chloromethane	µg/L	0.3 U	0.3 U	0.87 J	0.3 U

Table 4.17. VOCs detected at surface water monitoring locations – 2010 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
UND-SW01	cis-1,2-Dichloroethene	µg/L	0.15 U	0.3 J	0.46 J	0.69 J
	Methylene chloride	µg/L	0.32 U	1.2 J	0.33 BJ	0.32 U
	Trichloroethene	µg/L	1.6 J	5.3	5.7	6.5
UND-SW02	Chloromethane	µg/L	0.3 U	0.3 U	0.87 J	0.3 U
	Methylene chloride	µg/L	0.32 U	2.9	0.33 BJ	0.32 U
WDD-SW01	Bromodichloromethane	µg/L	0.43 J	0.37 J	0.41 J	1.1
	Bromoform	µg/L	0.19 U	0.19 U	0.91 J	1.3
	Chloroform	µg/L	0.65 J	0.25 J	0.21 J	0.56 J
	Chloromethane	µg/L	0.3 U	0.3 U	0.7 J	0.3 U
	Dibromochloromethane	µg/L	0.36 J	0.52 J	1	2
	Methylene chloride	µg/L	0.32 U	0.32 U	0.36 BJ	0.32 U
	Acetone	µg/L	1.9 U	1.9 U	3.1 J	1.9 U
WDD-SW02	Methylene chloride	µg/L	0.32 U	2.4	0.45 BJ	0.32 U
	Acetone	µg/L	1.9 U	1.9 U	6.5 J	1.9 U
WDD-SW03	Bromodichloromethane	µg/L	0.23 J	0.17 U	0.17 U	0.17 U
	Bromoform	µg/L	0.19 U	0.19 U	0.19 U	0.24 J
	Chloroform	µg/L	0.34 J	0.16 U	0.16 U	0.16 U
	Chloromethane	µg/L	0.3 U	0.3 U	0.8 J	0.3 U
	Dibromochloromethane	µg/L	0.21 J	0.17 U	0.17 U	0.28 J
	Methylene chloride	µg/L	0.32 U	2	0.41 BJ	0.32 U

Table 4.18. Results for radionuclides at surface water monitoring locations – 2010

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
BRC-SW01	Americium-241	pCi/L		0.0094 U		0.008589 U
	Neptunium-237	pCi/L		0.01711 U		0.02282 U
	Plutonium-238	pCi/L		-0.0170 U		0.02275 U
	Plutonium-239/240	pCi/L		-0.0085 U		0.01518 U
	Technetium-99	pCi/L	-1.25 U	-2.13 U	0.576 U	-4.36 U
	Uranium	µg/L	1.75	0.268	1.492	0.3667
	Uranium-233/234	pCi/L	1.629	0.4218	0.5453	0.2438
	Uranium-235	pCi/L	0.03961 U	0.01001 U	0.05935	0.0167 U
	Uranium-236	pCi/L	0.00889 U	-0.009 U	0 U	0.015 U
	Uranium-238	pCi/L	0.5848	0.08906	0.4962	0.1216
BRC-SW02	Americium-241	pCi/L		2.7E-05 U		0.03098 U
	Neptunium-237	pCi/L		-0.0437 U		-0.04379 U
	Plutonium-238	pCi/L		0.01746 U		0.007294 U
	Plutonium-239/240	pCi/L		-0.0087 U		0.01457 U
	Technetium-99	pCi/L	-5.22 U	4.47 U	-1.72 U	-2.65 U
	Uranium	µg/L	0.96	1.06	0.4936	0.3517
	Uranium-233/234	pCi/L	0.9153	1.24	0.4306	0.5142
	Uranium-235	pCi/L	0.04261 U	0.0481	0 U	0.009061 U
	Uranium-236	pCi/L	0 U	0.00864 U	0 U	0.008136 U
	Uranium-238	pCi/L	0.3189	0.3502	0.1659	0.1173
EDD-SW01	Americium-241	pCi/L		0.02647 U		0.01025 U
	Neptunium-237	pCi/L		-0.0182 U		-0.01528 U
	Plutonium-238	pCi/L		9.1E-06 U		0.007627 U
	Plutonium-239/240	pCi/L		0 U		7.62E-06 U
	Technetium-99	pCi/L	26.1	4.72 U	4.4 U	-3.47 U
	Uranium	µg/L	2.32	0.895	0.2891 U	0.2004
	Uranium-233/234	pCi/L	3.478	1.15	0.5675	0.3037
	Uranium-235	pCi/L	0.1369	0.02764 U	9.992E-06 U	8.32E-06 U
	Uranium-236	pCi/L	0.05737	-0.0083 U	1.794E-05 U	-0.00747 U
	Uranium-238	pCi/L	0.768	0.2982	0.09712 U	0.06737
LBC-SW01	Americium-241	pCi/L		0.02518 U		0.03914 U
	Neptunium-237	pCi/L		-0.0591 U		0.00778 U
	Plutonium-238	pCi/L		0.01475 U		0.02327 U
	Plutonium-239/240	pCi/L		0.00738 U		7.75E-06 U
	Technetium-99	pCi/L	6.86 U	2.84 U	2.03 U	-0.499 U
	Uranium	µg/L	1.23	0.351	0.2244	0.304
	Uranium-233/234	pCi/L	1.593	0.8667	0.3519	0.2661
	Uranium-235	pCi/L	0.1197	8.5E-06 U	0.02019 U	0 U
	Uranium-236	pCi/L	0.00896 U	0.02304 U	0.01813 U	0 U
	Uranium-238	pCi/L	0.4035	0.1176	0.07349	0.1021
LBC-SW02	Americium-241	pCi/L		0.02637 U		0.02421 U
	Neptunium-237	pCi/L		-0.0169 U		0 U
	Plutonium-238	pCi/L		0.00843 U		7.55E-06 U
	Plutonium-239/240	pCi/L		0 U		0 U
	Technetium-99	pCi/L	4.32 U	1.87 U	7.36 U	-0.344 U
	Uranium	µg/L	0.955	0.526	0.285	0.3824
	Uranium-233/234	pCi/L	1.398	0.7324	0.518	0.4521
	Uranium-235	pCi/L	0.1187	0.05314	0.01936 U	0.01743 U
	Uranium-236	pCi/L	0.0082 U	0 U	8.685E-06 U	0.007823 U
	Uranium-238	pCi/L	0.3101	0.172	0.094	0.1269

Table 4.18. Results for radionuclides at surface water monitoring locations – 2010 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
LBC-SW03	Americium-241	pCi/L		-0.0272 U		0.05058 U
	Neptunium-237	pCi/L		-0.0468 U		0.007103 U
	Plutonium-238	pCi/L		0.01868 U		0.007098 U
	Plutonium-239/240	pCi/L		0.00934 U		0.007083 U
	Technetium-99	pCi/L	6.43 U	3.55 U	5.82 U	0.117 U
	Uranium	µg/L	1.07	0.729	0.4683	0.5361
	Uranium-233/234	pCi/L	1.365	1.014	0.5577	0.4651
	Uranium-235	pCi/L	0.08912	0.05733 U	0.02613 U	0.01765 U
	Uranium-236	pCi/L	0.00889 U	0.00859 U	0 U	0.007925 U
	Uranium-238	pCi/L	0.3525	0.2396	0.155	0.1785
LBC-SW04	Americium-241	pCi/L		-0.0086 U		0.02308 U
	Neptunium-237	pCi/L		-0.0099 U		0.000016 U
	Plutonium-238	pCi/L		0 U		0.01598 U
	Plutonium-239/240	pCi/L		0.01972 U		-0.00797 U
	Technetium-99	pCi/L	8.61 U	5.08 U	6.64 U	0.873 U
	Uranium	µg/L	1.26	1.02	0.447	0.5262
	Uranium-233/234	pCi/L	1.265	0.9444	0.6954	0.6457
	Uranium-235	pCi/L	0.04787	0 U	0.009233 U	0.01732 U
	Uranium-236	pCi/L	0 U	9.0E-06 U	0.01656 U	0.02332 U
	Uranium-238	pCi/L	0.4183	0.3413	0.1492	0.1751
NHP-SW01	Americium-241	pCi/L		0.02704 U		0.0177 U
	Neptunium-237	pCi/L		-0.0889 U		7.34E-06 U
	Plutonium-238	pCi/L		0 U		0.01467 U
	Plutonium-239/240	pCi/L		3E-05 U		0.01465 U
	Technetium-99	pCi/L	-1.74 U	13.1	0.681 U	-4.77 U
	Uranium	µg/L	5.21	2.81	1.998	3.935
	Uranium-233/234	pCi/L	2.261	0.9536	0.9426	1.387
	Uranium-235	pCi/L	0.1872	0.07778	0.01861 U	0.05785 U
	Uranium-236	pCi/L	0.00841 U	0.01746 U	0.008353 U	-0.00741 U
	Uranium-238	pCi/L	1.734	0.936	0.6698	1.317
UND-SW01	Americium-241	pCi/L		0.03469 U		0 U
	Neptunium-237	pCi/L		0.00786 U		0.0205 U
	Plutonium-238	pCi/L		0.02351 U		0.02724 U
	Plutonium-239/240	pCi/L		0 U		6.81E-06 U
	Technetium-99	pCi/L	-6 U	2.14 U	-0.581 U	-2.98 U
	Uranium	µg/L	2.57	1.66	2.356	1.568
	Uranium-233/234	pCi/L	1.216	0.6972	0.9818	0.5185
	Uranium-235	pCi/L	0.04969	0.06271	0.03079 U	0.02593 U
	Uranium-236	pCi/L	0 U	0 U	0 U	0.007761 U
	Uranium-238	pCi/L	0.8603	0.5508	0.7889	0.5245
UND-SW02	Americium-241	pCi/L		9.4E-06 U		0.03376 U
	Neptunium-237	pCi/L		7.4E-06 U		0.009962 U
	Plutonium-238	pCi/L		0.00734 U		0.009944 U
	Plutonium-239/240	pCi/L		0.00734 U		-0.00992 U
	Technetium-99	pCi/L	-1.41 U	-2.28 U	0.208 U	-0.62 U
	Uranium	µg/L	1.74	2.1	0.9475	1.491
	Uranium-233/234	pCi/L	0.749	0.7852	0.5185	0.7226
	Uranium-235	pCi/L	0 U	0.02741 U	0.01909 U	0.03241 U
	Uranium-236	pCi/L	0.01728 U	0 U	0 U	-0.00727 U
	Uranium-238	pCi/L	0.584	0.7023	0.3167	0.4982

Table 4.18. Results for radionuclides at surface water monitoring locations – 2010 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
WDD-SW01	Americium-241	pCi/L		-0.0207 U		0.01803 U
	Neptunium-237	pCi/L		-0.0245 U		0.00778 U
	Plutonium-238	pCi/L		0.00817 U		0.007758 U
	Plutonium-239/240	pCi/L		0.00818 U		0.007766 U
	Technetium-99	pCi/L	0.635 U	1.78 U	0.961 U	-3.82 U
	Uranium	µg/L	3.04	2.37	0.8868	1.269
	Uranium-233/234	pCi/L	2.448	1.352	0.4701	0.4969
	Uranium-235	pCi/L	0.05941	0.01962 U	0.009665 U	0.02665 U
	Uranium-236	pCi/L	0.01778 U	0 U	0 U	0 U
	Uranium-238	pCi/L	1.017	0.7936	0.2971	0.424
WDD-SW02	Americium-241	pCi/L		-0.0122 U		-0.01085 U
	Neptunium-237	pCi/L		-0.0076 U		-0.01635 U
	Plutonium-238	pCi/L		0.0152 U		0.01632 U
	Plutonium-239/240	pCi/L		0.0152 U		0.03265 U
	Technetium-99	pCi/L	-0.484 U	-0.0595 U	0.849 U	-3.6 U
	Uranium	µg/L	3.56	2.58	2.738	2.458
	Uranium-233/234	pCi/L	1.767	1.535	1.167	1.181
	Uranium-235	pCi/L	0.07098	0.04139 U	0.04964	0.07854
	Uranium-236	pCi/L	-0.0091 U	0 U	0.01784 U	0.007836 U
	Uranium-238	pCi/L	1.19	0.8622	0.9156	0.819
WDD-SW03	Americium-241	pCi/L		0.01013 U		9.71E-06 U
	Neptunium-237	pCi/L		-0.0242 U		-0.02226 U
	Plutonium-238	pCi/L		-0.0080 U		-0.0074 U
	Plutonium-239/240	pCi/L		0.02417 U		0.00742 U
	Technetium-99	pCi/L	-5.06 U	-0.846 U	2.54 U	-0.272 U
	Uranium	µg/L	3.08	1.99	1.006	1.209
	Uranium-233/234	pCi/L	2.34	1.044	0.6027	0.4259
	Uranium-235	pCi/L	0.05734	0.04879	0.01771 U	0.01668 U
	Uranium-236	pCi/L	0.00858 U	0 U	0 U	0.02246 U
	Uranium-238	pCi/L	1.028	0.6631	0.3365	0.4048

Table 4.19. Results for radionuclides at exit pathway monitoring locations – 2010

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
F-29B	Americium-241	pCi/L			0 U	
	Neptunium-237	pCi/L			0.01277 U	
	Plutonium-238	pCi/L			0.02546 U	
	Plutonium-239/240	pCi/L			0.006371 U	
	Technetium-99	pCi/L			-0.339 U	
	Uranium	µg/L			0.1412	
	Uranium-233/234	pCi/L			0.03959	
	Uranium-235	pCi/L			0 U	
	Uranium-236	pCi/L			0.00877 U	
	Uranium-238	pCi/L			0.04741	

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