U.S. Department of Energy

Portsmouth Gaseous Diffusion Plant

Annual Site Environmental Data 2019

U.S. Department of Energy
Portsmouth Gaseous Diffusion Plant
Annual Site Environmental Data – 2019
Piketon, Ohio

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By
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TABLES

ACRONYMS AND ABBREVIATIONS

#/100 mL	number per 100 mL
ACP	American Centrifuge Plant
°C	degrees Celsius
Ci	curie
cm	centimeter
DOE	U.S. Department of Energy
DUF_6	depleted uranium hexafluoride
FBP	Fluor-BWXT Portsmouth LLC
°F	degrees Fahrenheit
g	gram
GPD	gallons per day
in.	inch
kg	kilogram
L	liter
m	meter
m^3	cubic meter
µg	microgram
mg	milligram
MCS	Mid-America Conversion Services, LLC
MGD	million gallons per day
mrem	millirem
ng	nanogram
NPDES	National Pollutant Discharge Elimination System
Ohio EPA	Ohio Environmental Protection Agency
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
VOC	volatile organic compound

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1. INTRODUCTION

Environmental monitoring at the Department of Energy (DOE) Portsmouth Gaseous Diffusion Plant (PORTS) is conducted throughout the year. Monitoring demonstrates the site is a safe place to work, plant operations do not adversely affect neighboring communities, and activities comply with federal and state regulations.

This document is a compilation of the environmental monitoring data for calendar year 2019 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 – 2019* (DOE 2020).

The DOE has established a total public annual dose limit of 100 millirem (mrem)/year above background in DOE Order 458.1, *Radiation Protection of the Public and the Environment*. This annual dose limit is also subject to the concept of "as low as reasonably achievable[1]. Radiological monitoring data presented in this Data Report and discussed in the *Annual Site Environmental Report for 2019* indicate that the maximum annual dose a member of the public could receive from radionuclides released by PORTS in 2019 or detected by environmental monitoring programs in 2019 is 0.95 mrem/year and is considered as low as reasonably achievable.

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. Emissions of non-radiological air pollutants are controlled by air emission permits issued by Ohio Environmental Protection Agency (Ohio EPA). The *Portsmouth Gaseous Diffusion Plant Annual Site Environmental Report – 2019* (DOE 2020) provides more information about non-radiological chemicals released from PORTS or detected by PORTS monitoring programs during 2019.

[1] "As low as reasonably achievable" is an approach to radiation protection to manage and control releases of radioactive material to the environment, the workforce, and members of the public so that levels are as low as reasonable, taking into account societal, environmental, technical, economic, and public policy considerations. As low as reasonably achievable is not a specific release or dose limit, but a process that has the goal of optimizing control and managing release of radioactive material to the environment and doses so they are as far below the applicable limits as reasonably achievable. This approach optimizes radiation protection.

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2. ENVIRONMENTAL MONITORING

This section provides environmental monitoring data collected in 2019 by DOE contractors Fluor-BWXT Portsmouth LLC (FBP) and Mid-America Conversion Services, LLC (MCS). Data collected by Centrus for NPDES outfalls associated with the American Centrifuge Plant (ACP) are also reported in this section.

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Table 2.1. Radionuclide concentrations in FBP and Centrus NPDES outfall water samples – 2019

NPDES outfall[a]	Parameter[b]	Number of samples[c]	Minimum[d]	Maximum[d]	Average[e]
		FBP Outfalls			
001	Americium-241	4(4)	< 0.0166	< 0.0559	
	Neptunium-237	4(4)	0	< 0.0434	
	Plutonium-238	4(4)	0	< 0.0105	
	Plutonium-239/240	4(4)	< 0.0207	< 0.031	
	Technetium-99	12(4)	< 0.973	71.2	
	Uranium	12(0)	0.302	6.09	2.78
	Uranium-233/234	12(0)	0.669	10.7	5.00
	Uranium-235/236	12(5)	< 0.0522	0.562	
	Uranium-238	12(0)	0.0932	1.97	0.892
002	Americium-241	4(4)	< 0.0141	< 0.0345	
	Neptunium-237	4(4)	0	< 0.014	
	Plutonium-238	4(4)	0	< 0.00577	
	Plutonium-239/240	4(4)	< 0.00577	< 0.0209	
	Technetium-99	12(12)	0	< 4.46	
	Uranium	12(0)	0.245	0.959	0.677
	Uranium-233/234	12(0)	0.306	0.841	0.590
	Uranium-235/236	12(12)	< 0.0166	< 0.0629	
	Uranium-238	12(1)	< 0.0799	0.312	0.221
003	Americium-241	4(4)	< 0.0207	< 0.0499	
	Neptunium-237	4(4)	0	< 0.00924	
	Plutonium-238	4(4)	0	< 0.0227	
	Plutonium-239/240	4(4)	< 0.00756	< 0.0457	
	Technetium-99	12(0)	62.6	496	127
	Uranium	12(0)	0.599	5.39	2.34
	Uranium-233/234	12(0)	0.518	4.46	1.86
	Uranium-235/236	12(9)	< 0.0114	0.199	
	Uranium-238	12(0)	0.195	1.78	0.772
004	Americium-241	1(1)	< 0.0405		
	Neptunium-237	1(1)	< 0.0185		
	Plutonium-238	1(1)	0		
	Plutonium-239/240	1(1)	< 0.0074		
	Technetium-99	1(1)	0		
	Uranium	1(1)	< 0.372		
	Uranium-233/234	1(0)	0.262		
	Uranium-235/236	1(1)	< 0.0371		
	Uranium-238	1(0)	0.119		

Table 2.1. Radionuclide concentrations in FBP and Centrus NPDES outfall water samples – 2019 (continued)

NPDES outfall[a]	Parameter[b]	Number of samples[c]	Minimum[d]	Maximum[d]	Average[e]
		FBP Outfalls			
005	Americium-241	4(4)	< 0.00413	< 0.0356	
	Neptunium-237	4(4)	0	< 0.00909	
	Plutonium-238	4(4)	0	< 0.0108	
	Plutonium-239/240	4(4)	< 0.00538	< 0.044	
	Technetium-99	12(12)	0	< 2.81	
	Uranium	12(9)	< 0.0178	0.402	
	Uranium-233/234	12(5)	< 0.0378	0.184	
	Uranium-235/236	12(12)	0	< 0.0257	
	Uranium-238	12(8)	< 0.00596	0.136	
009	Americium-241	4(4)	< 0.0138	< 0.039	
	Neptunium-237	4(4)	0	< 0.0135	
	Plutonium-238	4(4)	0	< 0.0189	
	Plutonium-239/240	4(4)	< 0.0126	< 0.0279	
	Technetium-99	12(12)	0	< 3.64	
	Uranium	12(0)	1.3	6.23	3.24
	Uranium-233/234	12(0)	0.554	2.78	1.34
	Uranium-235/236	12(10)	< 0.0295	0.116	
	Uranium-238	12(0)	0.431	2.08	1.08
010	Americium-241	4(4)	0	< 0.023	
	Neptunium-237	4(4)	0	< 0.00922	
	Plutonium-238	4(4)	0	< 0.0126	
	Plutonium-239/240	4(4)	< 0.0104	< 0.0361	
	Technetium-99	12(11)	0	6.27	
	Uranium	12(1)	< 0.199	2.2	1.41
	Uranium-233/234	12(0)	0.161	2.38	0.939
	Uranium-235/236	12(11)	< 0.00566	0.143	
	Uranium-238	12(1)	< 0.0627	0.730	0.466
011	Americium-241	4(4)	< 0.0226	< 0.0303	
	Neptunium-237	4(4)	0	< 0.00467	
	Plutonium-238	4(4)	0	< 0.0168	
	Plutonium-239/240	4(4)	0	< 0.022	
	Technetium-99	12(12)	0	< 3.51	
	Uranium	12(0)	0.333	3.35	2.45
	Uranium-233/234	12(0)	0.252	1.42	1.13
	Uranium-235/236	12(12)	< 0.0291	< 0.0889	
	Uranium-238	12(0)	0.108	1.12	0.814
015	Americium-241	4(4)	< 0.00895	< 0.0377	
	Neptunium-237	4(4)	0	< 0.00938	
	Plutonium-238	4(4)	< 0.00578	< 0.0133	
	Plutonium-239/240	4(4)	0	< 0.0321	
	Technetium-99	12(12)	0	< 3.85	
	Uranium	12(0)	0.331	1.44	0.786
	Uranium-233/234	12(0)	0.188	0.795	0.420
	Uranium-235/236	12(12)	< 0.00592	< 0.0506	
	Uranium-238	12(0)	0.108	0.478	0.260

Table 2.1. Radionuclide concentrations in FBP and Centrus NPDES outfall water samples – 2019 (continued)

NPDES outfall[a]	Parameter[b]	Number of samples[c]	Minimum[d]	Maximum[d]	Average[e]
		FBP Outfalls			
608	Americium-241	4(4)	< 0.0137	< 0.0359	
	Neptunium-237	4(4)	0	< 0.00879	
	Plutonium-238	4(4)	0	< 0.0315	
	Plutonium-239/240	4(4)	0	< 0.0267	
	Technetium-99	12(0)	38.1	215	125
	Uranium	12(0)	0.439	1.18	0.773
	Uranium-233/234	12(0)	0.26	0.513	0.369
	Uranium-235/236	12(12)	0	< 0.0709	
	Uranium-238	12(0)	0.141	0.389	0.255
610	Americium-241	1(1)	< 0.0249		
	Neptunium-237	1(1)	< 0.00849		
	Plutonium-238	1(1)	0		
	Plutonium-239/240	1(1)	< 0.0328		
	Technetium-99	2(2)	< 1.75	< 3.08	
	Uranium	2(0)	1.04	2.15	1.60
	Uranium-233/234	2(0)	1.56	2.29	1.93
	Uranium-235/236	2(1)	< 0.0493	0.148	
	Uranium-238	2(0)	0.342	0.698	0.520
611	Americium-241	4(4)	0	< 0.0275	
	Neptunium-237	4(4)	< 0.00719	< 0.0175	
	Plutonium-238	4(4)	0	< 0.0171	
	Plutonium-239/240	4(4)	0	< 0.026	
	Technetium-99	12(0)	208	757	511
	Uranium	12(0)	3.43	7.04	4.83
	Uranium-233/234	12(0)	2.77	7.57	4.40
	Uranium-235/236	12(0)	0.181	0.463	0.270
	Uranium-238	12(0)	1.12	2.29	1.58
		Centrus Outfalls			
012	Americium-241	4(4)	< 0.017	< 0.059	
	Neptunium-237	4(4)	< 0.05	< 0.081	
	Plutonium-238	4(4)	< 0.049	< 0.07	
	Plutonium-239/240	4(4)	< 0.049	< 0.098	
	Technetium-99	52(52)	< 6.43	< 11.5	
	Uranium	52(0)	0.36	2.41	1.06
013	Americium-241	4(4)	< 0.049	< 0.093	
	Neptunium-237	4(4)	< 0.045	< 0.092	
	Plutonium-238	4(4)	< 0.046	< 0.075	
	Plutonium-239/240	4(4)	< 0.05	< 0.075	
	Technetium-99	52(52)	< 6.15	< 11.6	
	Uranium	52(0)	0.33	2.2	0.99

[a]FBP internal NPDES Outfalls 608, 610, and 611 discharge to NPDES Outfall 003 (X-6619 Sewage Treatment Plant).
[b]Uranium is reported in µg/L; all other radionuclides are reported in pCi/L.
[c]Number in parentheses is the number of samples that were below the detection limit.
[d]Minimum or maximum 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.
[e]Averages 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.

Table 2.2. FBP NPDES permit summary – 2019

Effluent characteristics		Monitoring requirements		Discharge limitations	
Parameter	Units	Measurement frequency	Sampling type	Concentration/Loading[a]	
				Monthly	Daily
FBP Outfall 001 (X-230J7 East Holding Pond)					
Cadmium, total recoverable	µg/L	1/quarter	24-hr composite		
Chlorine, total residual	mg/L	1/week	Grab	0.05	0.05
Copper, total recoverable	µg/L	1/quarter	24-hr composite		
Flow rate	MGD	Daily	24-hr total		
Fluoride, total	mg/L	1/quarter	24-hr composite		
Mercury, total (low level)	ng/L	1/month	Grab	25	1700
Oil & grease	mg/L	1/week	Grab	10	15
pH	SU	1/week	Grab		6.5–9.0
Precipitation, total	in.	Daily	24-hr total		
Dissolved solids, total (Residue, total filterable)	mg/L	1/week	24-hr composite		
Silver, total recoverable	µg/L	1/month	24-hr composite		
Total suspended solids[b]	mg/L	1/week	24-hr composite	20	45
Zinc, total recoverable	µg/L	1/quarter	24-hr composite		
FBP Outfall 002 (X-230K South Holding Pond)					
Cadmium, total recoverable	µg/L	1/quarter	24-hr composite		
Flow rate	MGD	Daily	24-hr total		
Fluoride, total	mg/L	1/quarter	24-hr composite		
Mercury, total (low level)	ng/L	1/quarter	Grab		
pH	SU	1/week	Grab		6.5–9.0
Nitrogen, ammonia (NH_3)	mg/L	1/month	24-hr composite		
Oil & grease	mg/L	1/week	Grab		10
Selenium, total recoverable	µg/L	1/month	24-hr composite		5.0
Silver, total recoverable	µg/L	1/quarter	24-hr composite		
Thallium, total recoverable	µg/L	1/quarter	24-hr composite		
Total suspended solids[b]	mg/L	1/week	24-hr composite	20	45
FBP Outfall 003 (X-6619 Sewage Treatment Plant)					
Acute toxicity, *Ceriodaphnia dubia*	TUa	1/quarter	24-hr composite		
Acute toxicity, *Pimephales promelas*	TUa	1/quarter	24-hr composite		
Carbonaceous biochemical oxygen demand, 5-day	mg/L	1/week	24-hr composite	10 (15.1)	15 (22.7)
Copper, total recoverable	µg/L	1/quarter	24-hr composite		
E. coli[c]	#/100 mL	1/week	Grab	126	284
Flow rate	MGD	Daily	24-hr total		
Mercury, total	ng/L	1/month	Grab	66 (0.000099)	1700 (0.0025)

Table 2.2. FBP NPDES permit summary – 2019 (continued)

Effluent characteristics		Monitoring requirements		Discharge limitations	
Parameter	Units	Measurement frequency	Sampling type	Concentration/Loading[a]	
				Monthly	Daily
FBP Outfall 003 (X-6619 Sewage Treatment Plant)					
Nitrogen, ammonia (NH_3)	mg/L	1/2 weeks	24-hr composite		
Nitrite plus nitrate	mg/L	1/quarter	24-hr composite		
Oil & grease	mg/L	1/quarter	Grab		
pH	SU	3/week	Grab		6.5–9.0
Silver, total recoverable	µg/L	1/quarter	24-hr composite		
Thallium, total recoverable	µg/L	1/quarter	24-hr composite		
Total suspended solids	mg/L	1/week	24-hr composite	12 (18.2)	18 (27.3)
Zinc, total recoverable	µg/L	1/quarter	24-hr composite		
FBP Outfall 004 (Cooling Tower Blowdown)					
Acute toxicity, *Ceriodaphnia dubia*	TUa	1/quarter	24-hr composite		
Acute toxicity, *Pimephales promelas*	TUa	1/quarter	24-hr composite		
Chlorine, total residual	mg/L	1/week	Grab		0.05
Copper, total recoverable	µg/L	1/month	24-hr composite		66 (0.160)
Dissolved solids, total (Residue, total filterable)	mg/L	1/month	24-hr composite	3500 (8480)	4000 (9690)
Flow rate	MGD	Daily	24-hr total		
Mercury, total	ng/L	1/quarter	Grab		
Oil & grease	mg/L	1/month	Grab	15	20
pH	SU	1/month	Grab		6.5–9.0
Total suspended solids	mg/L	1/month	24-hr composite	18 (43)	27 (65)
Zinc, total recoverable	µg/L	1/quarter	24-hr composite		
FBP Outfall 005 (X-611B Lime Sludge Lagoons)					
Flow rate	MGD	3/week	24-hr total (estimate)		
Lead, total recoverable	µg/L	1/month	Grab		
Mercury, total	ng/L	1/month	Grab		
pH	SU	1/week	Grab		6.5–10.0
Selenium, total recoverable	µg/L	1/month	Grab		5
Total suspended solids[b]	mg/L	1/week	Grab	10	15
FBP Outfall 009 (X-230L North Holding Pond)					
Bis(2-ethylhexyl)phthalate	µg/L	1/month	Composite	8.4	1105
Copper, total recoverable	µg/L	1/month	Grab		
Flow rate	MGD	Daily	24-hr total		
Fluoride, total	mg/L	1/quarter	Grab		
Mercury, total	ng/L	1/quarter	Grab		
Oil & grease	mg/L	1/month	Grab	10	15
pH	SU	1/week	Grab		6.5–9.0

Table 2.2. FBP NPDES permit summary – 2019 (continued)

Effluent characteristics		Monitoring requirements		Discharge limitations	
Parameter	Units	Measurement frequency	Sampling type	Concentration/Loading[a]	
				Monthly	Daily
FBP Outfall 009 (X-230L North Holding Pond)					
Silver, total recoverable	µg/L	1/month	Grab	1.3	2.7
Total suspended solids[b]	mg/L	1/week	Grab	30	45
Zinc, total recoverable	µg/L	1/quarter	Grab		
FBP Outfall 010 (X-230J5 Northwest Holding Pond)					
Flow rate	MGD	Daily	24-hr total		
Lead, total recoverable	µg/L	1/month	24-hr composite		
Mercury, total	ng/L	1/quarter	Grab		
Oil & grease	mg/L	1/month	Grab	10	15
pH	SU	1/2 weeks	Grab		6.5–9.0
Precipitation, total	in.	Daily	24-hr total		
Selenium, total recoverable	µg/L	1/month	24-hr composite		
Total suspended solids[b]	mg/L	1/2 weeks	24-hr composite	30	45
Zinc, total recoverable	µg/L	1/month	24-hr composite		
FBP Outfall 011 (X-230J6 Northeast Holding Pond)					
Cadmium, total recoverable	µg/L	1/quarter	Grab		
Chlorine, total residual	mg/L	1/2 weeks	Grab	0.05	0.05
Copper, total recoverable	µg/L	1/month	Grab		
Flow rate	MGD	Daily	24-hr total		
Fluoride, total	mg/L	1/quarter	Grab		
Oil & grease	mg/L	1/2 weeks	Grab	10	15
pH	SU	1/2 weeks	Grab		6.5–9.0
Precipitation, total	in.	Daily	24-hr total		
Selenium, total recoverable	µg/L	1/month	Grab		5.6
Thallium, total recoverable	µg/L	1/quarter	Grab		
Total suspended solids[b]	mg/L	1/2 weeks	Grab	30	45
Zinc, total recoverable	µg/L	1/month	Grab		
FBP Outfall 015 (X-624 Groundwater Treatment Facility)					
Arsenic, total recoverable	µg/L	1/quarter	Grab		
Barium, total recoverable	µg/L	1/quarter	Grab		
Flow rate	MGD	Daily	24-hr total		
PCBs	µg/L	1/quarter	Grab		*d*
pH	SU	1/2 weeks	Grab		6.5–9.0
Silver, total recoverable	µg/L	1/month	Grab	1.3	6.8
Trichloroethene	µg/L	1/2 weeks	Grab	10	10

Table 2.2. FBP NPDES permit summary – 2019 (continued)

Effluent characteristics		Monitoring requirements		Discharge limitations	
Parameter	Units	Measurement frequency	Sampling type	Concentration/Loading[a]	
				Monthly	Daily
FBP Outfall 602 (X-621 Coal Pile Runoff Treatment Facility)					
Flow rate	MGD	Daily	24-hr total (estimate)		
Iron, total[b]	µg/L	1/2 weeks	Grab	3500	7000
Manganese, total[b]	µg/L	1/2 weeks	Grab	2000	4000
pH	SU	1/2 weeks	Grab		6.0–10.0
Precipitation, total	in.	Daily	24-hr total		
Total suspended solids[b]	mg/L	1/2 weeks	Grab	35	50
FBP Outfall 604 (X-700 Biodenitrification Facility)					
Copper, total	µg/L	1/month	24-hr composite		
Iron, total	µg/L	1/month	24-hr composite		
Flow rate	MGD	Daily	24-hr total estimate		
Nickel, total	µg/L	1/month	24-hr composite		
Nitrogen, nitrate	mg/L	1/month	24-hr composite		
pH	SU	1/month	Grab		6.5–9.0
Zinc, total	µg/L	1/month	24-hr composite		
FBP Outfall 605 (X-705 Microfiltration Treatment System)					
Chromium, hexavalent	µg/L	1/month	Grab		
Chromium, total	µg/L	1/month	24-hr composite		
Copper, total	µg/L	1/month	24-hr composite		
Flow rate	MGD	Daily	24-hr total		
Nickel, total	µg/L	1/month	24-hr composite		
Nitrogen, ammonia (NH_3)	mg/L	1/month	24-hr composite		
Nitrogen, nitrate	mg/L	1/month	24-hr composite		
Nitrogen, nitrite	mg/L	1/month	24-hr composite		
Nitrogen, Kjeldahl	mg/L	1/month	24-hr composite		
Oil & grease	mg/L	1/month	Grab		
pH	SU	1/month	Grab		6.5–10.0
Sulfate (SO_4)	mg/L	1/month	24-hr composite		
Total suspended solids	mg/L	1/month	24-hr composite	20	30
Trichloroethene	µg/L	1/month	Grab		
Zinc, total	µg/L	1/month	24-hr composite		
FBP Outfall 608 (X-622 Groundwater Treatment Facility)					
Flow rate	MGD	Daily	24-hr total		
pH	SU	1/2 weeks	Grab		
trans-1,2-dichloroethene	µg/L	1/2 weeks	Grab	25	66
Trichloroethene	µg/L	1/2 weeks	Grab	10	10

Table 2.2. FBP NPDES permit summary – 2019 (continued)

Effluent characteristics		Monitoring requirements		Discharge limitations	
Parameter	Units	Measurement frequency	Sampling type	Concentration/Loading[a]	
				Monthly	Daily
FBP Outfall 610 (X-623 Groundwater Treatment Facility)					
Flow rate	MGD	Daily	24-hr total		
pH	SU	1/2 weeks	Grab		
trans-1,2-dichloroethene	µg/L	1/2 weeks	Grab	25	66
Trichloroethene	µg/L	1/2 weeks	Grab	10	10
FBP Outfall 611 (X-627 Groundwater Treatment Facility)					
Flow rate	MGD	Daily	24-hr total		
pH	SU	1/2 weeks	Grab		
Trichloroethene	µg/L	1/2 weeks	Grab	10	10
FBP Monitoring Station 801 (Upstream Monitoring)					
48-hr acute toxicity, *Ceriodaphnia dubia*	% affected	1/quarter	Grab		
96-hr acute toxicity, *Pimephales promelas*	% affected	1/quarter	Grab		
FBP Monitoring Station 902 (Downstream Farfield Monitoring)					
Water temperature	°C	2/week	24-hr maximum	27.8[c]	29.4[c]
FBP Monitoring Station 903 (Downstream Farfield Monitoring)					
Water temperature	°C	2/week	24-hr maximum	27.8[c]	29.4[c]

[a]If provided in the permit, the loading limit, in kg/day or kg/month, is provided in parentheses.
[b]Limitations do not apply if flow increases as a result of a precipitation or snow melt event and conditions specified in the permit are met.
[c]Summer only (May through October).
[d]No detectable PCBs.

Table 2.3. MCS NPDES permit summary – 2019

Effluent characteristics		Monitoring requirements		Discharge limitations	
Parameter	Units	Measurement frequency	Sampling type	Concentration	
				Monthly	Daily
MCS Outfall 001[a]					
Biochemical oxygen demand, 5-day	mg/L	1/week	24-hr composite		
Chlorine, total residual	mg/L	Daily	Grab		0.05
Residue, total filterable	mg/L	1/week	24-hr composite		1500
Flow rate	GPD	Daily	24-hr total estimate		
Nitrogen, ammonia	mg/L	1/week	24-hr composite		
Oil and grease, total	mg/L	1/month	Grab		
pH	SU	Daily	Grab		6.5–9.0
Phosphorus, total	mg/L	1/week	24-hr composite		
Total suspended solids[b]	mg/L	1/week	24-hr composite	30	45
Water temperature	°F	Daily	Maximum	*c*	*c*
MCS Outfall 602					
Flow rate	GPD	Daily	24-hr total estimate		
pH	SU	Daily	Grab		

[a]These monitoring requirements and limits apply only when process water is being discharged through the outfall.
[b]Limitations do not apply if flow increases as a result of a precipitation or snow melt event and conditions specified in the permit are met.
[c]Maximum daily and monthly average limits vary according to month.

Table 2.4. FBP NPDES discharge summary and compliance rates – 2019

Parameter	NPDES compliance rate (%)[a]	Number of measurements[b]	Concentration (and loading if applicable) Minimum	Maximum	Average[c]	Units
Outfall 001 (X-230J7 East Holding Pond)						
Cadmium, total recoverable	-	4(3)	< 0.088	0.095		µg/L
Chlorine, total residual	100	48(34)	< 0.02	0.04		mg/L
monthly average	100	12	0	0.03		mg/L
Copper, total recoverable	-	4(0)	0.86	2.4	1.3	µg/L
Flow rate	-	365	0.110	2.76	0.718	MGD
Fluoride, total	-	4(1)	0.11	0.18		mg/L
Mercury, total (low level)	100	12(0)	3.56	8.78	6.22	ng/L
monthly average[d]	100	12	3.56	8.78	6.22	ng/L
Oil & grease	100	48(44)	1.6	4.4		mg/L
monthly average[d]	100	12	0	1.1		mg/L
pH	100	48	7.12	8.87	8.09	SU
Precipitation, total	-	365	0	2.50	0.15	in.
Residue, total filterable	-	48(0)	140	640	257	mg/L
Silver, total recoverable	-	12(10)	0.0125	0.026		µg/L
Total suspended solids	100	48(8)	1	26		mg/L
monthly average[d]	100	12	0.50	14		mg/L
Zinc, total recoverable	-	4(0)	10	52	30	µg/L
Outfall 002 (X-230K South Holding Pond)						
Cadmium, total recoverable	-	4(4)	< 0.088	< 0.088		µg/L
Flow rate	-	365	0.035	2.59	0.666	MGD
Fluoride, total	-	4(1)	0.0995	0.205		mg/L
Mercury, total (low level)	-	4(0)	0.884	5.66	2.88	ng/L
Nitrogen, ammonia (NH_3)	-	12(4)	< 0.022	0.23		mg/L
Oil & grease	100	48(43)	0.90	3.6		mg/L
pH	100	48	7.48	8.84	8.06	SU
Selenium, total recoverable	100	12(10)	< 1	2.55		µg/L
Silver, total recoverable	-	4(4)	< 0.02	< 0.045		µg/L
Thallium, total recoverable	-	4(3)	0.038	< 0.066		µg/L
Total suspended solids	100	48(4)	< 1.1	44	8.9	mg/L
monthly average[d]	92	12	2.6	25	8.9	mg/L
Outfall 003 (X-6619 Sewage Treatment Plant)						
Acute toxicity, *Ceriodaphnia dubia*	-	4(4)	< 1	< 1		TUa
Acute toxicity, *Pimephales promelas*	-	4(4)	< 1	< 1		TUa
Carbonaceous biochemical oxygen demand, 5-day	100	48(37)	< 5.0	11.05		mg/L
monthly average[d]	100	12	0	5.4		mg/L
Carbonaceous biochemical oxygen demand, 5-day (loading)	100	48	0	12		kg/day
monthly average[d]	100	12	0	6.6		kg/day
Copper, total recoverable	-	4(0)	2.1	3.4	2.8	µg/L
E. coli[b]	100	24(11)	0.5	119		#/100 mL
Flow rate	-	365	0.138	0.666	0.316	MGD
Mercury, total (low level)	100	14(0)	3.12	30.3	10.8	ng/L
monthly average[d]	100	12	3.12	30.3	11.0	ng/L

Table 2.4. FBP NPDES discharge summary and compliance rates – 2019 (continued)

Parameter	NPDES compliance rate (%)[a]	Number of measurements[b]	Concentration (and loading if applicable) Minimum	Maximum	Average[c]	Units
Outfall 003 (X-6619 Sewage Treatment Plant)						
Mercury, total (low level) (loading)	100	14	0.00000245	0.0000618	0.0000157	kg/day
monthly average[d]	100	12	0.00000420	0.0000409	0.0000136	kg/day
Nitrite plus nitrate (NH_3)	-	4(0)	4.95	9.3	8.0	mg/L
Nitrogen, ammonia	-	24(5)	< 0.022	2.3		mg/L
Oil & grease	-	5(5)	< 1.7	< 2		mg/L
pH	100	199	7.20	8.93	7.75	SU
Silver, total recoverable	-	4(4)	< 0.02	< 0.045		µg/L
Thallium, total recoverable	-	4(4)	< 0.066	< 0.066		µg/L
Total suspended solids	98	48(19)	0.6	29		mg/L
monthly average[d]	92	12	0	17		mg/L
Total suspended solids (loading)	96	48	0	37		kg/day
monthly average[d]	92	12	0	25		kg/day
Zinc, total recoverable	-	4(0)	20	27	24	µg/L
Outfall 004 (Cooling Tower Blowdown)						
Acute toxicity, *Ceriodaphnia dubia*	-	Not collected. Outfall discharged only in December 2019.				TUa
Acute toxicity, *Pimephales promelas*	-	Not collected. Outfall discharged only in December 2019.				TUa
Chlorine, total residual	100	2(2)	< 0.02	< 0.02		mg/L
Copper, total recoverable	100	1(0)	47			µg/L
Copper, total recoverable (loading)	100	1	0.0073			kg/day
Flow rate	-	16	0.017	0.043	0.036	MGD
Mercury, total (low level)	-					ng/L
Oil & grease	100	1(1)	< 1.7			mg/L
monthly average[d]	100	1	0			mg/L
pH	100	1	7.15			SU
Residue, total filterable	100	1(0)	908			mg/L
monthly average[d]	100	1	908			mg/L
Residue, total filterable (loading)	100	1	141			kg/day
monthly average[d]	100	1	125			kg/day
Total suspended solids	100	1(0)	3.4			mg/L
monthly average[d]	100	1	3.4			mg/L
Total suspended solids (loading)	100	1	0.53			kg/day
monthly average[d]	100	1	0.47			kg/day
Zinc, total recoverable	-	Not collected				µg/L
Outfall 005 (X-611B Lime Sludge Lagoons)						
Flow rate	-	277	0	4.712	1.707	MGD
Lead, total recoverable	-	12(3)	0.22	0.73		µg/L
Mercury, total (low level)	-	12(3)	< 0.2	3.61		ng/L
pH	100	45	7.59	9.60	8.93	SU
Selenium, total recoverable	-	12(11)	< 1	2.25		µg/L
Total suspended solids	76	46(3)	< 1.1	47	12	mg/L
monthly average[d]	50	12	2.7	24	12	mg/L

Table 2.4. FBP NPDES discharge summary and compliance rates – 2019 (continued)

Parameter	NPDES compliance rate (%)[a]	Number of measurements[b]	Concentration (and loading if applicable) Minimum	Maximum	Average[c]	Units
Outfall 009 (X-230L North Holding Pond)						
Bis(2-ethylhexyl)phthalate	100	12(11)	< 0.57	2.4		µg/L
monthly average[d]	100	12	0	2.4		µg/L
Copper, total recoverable	-	12(4)	< 0.71	12		µg/L
Flow rate	-	365	0.438	3.983	1.567	MGD
Fluoride, total	-	4(0)	0.13	0.25	0.19	mg/L
Mercury, total	-	4(0)	1.28	2.19	1.57	ng/L
Oil & grease	100	12(9)	< 1.7	2.4		mg/L
monthly average[d]	100	12	0	2.4		mg/L
pH	100	48	7.64	8.37	7.94	SU
Silver, total recoverable	100	12(9)	0.015	0.053		µg/L
monthly average[d]	100	12	0	0.053		µg/L
Total suspended solids	96	48(0)	1.6	138	18.5	mg/L
monthly average[d]	83	12	5.7	120	24	mg/L
Zinc, total recoverable	-	4(0)	14	72	32	µg/L
Outfall 010 (X-230J5 Northwest Holding Pond)						
Flow rate	-	365	0.057	1.227	0.513	MGD
Lead, total recoverable	-	12(0)	0.25	2.6	0.79	µg/L
Mercury, total	-	4(0)	1.46	2.67	2.27	ng/L
Oil & grease	100	12(11)	< 1.7	2.0		mg/L
monthly average[d]	100	12	0	2.0		mg/L
pH	100	26	7.00	8.21	7.75	SU
Precipitation, total	-	365	0	2.5	0.15	in.
Selenium, total recoverable	-	12(11)	1.0	2.2		µg/L
Total suspended solids	96	24(0)	1.6	46	14	mg/L
monthly average[d]	92	12	6.4	46	15	mg/L
Zinc, total recoverable	-	12(0)	9.9	50	33	µg/L
Outfall 011 (X-230J6 Northeast Holding Pond)						
Cadmium, total recoverable	-	4(4)	< 0.088	< 0.088		µg/L
Chlorine, total residual	100	24(16)	< 0.02	0.04		mg/L
monthly average[d]	100	12	0	0.04		mg/L
Copper, total recoverable	-	12(0)	0.74	10	2.6	µg/L
Flow rate	-	365	0.005	0.401	0.060	MGD
Fluoride, total	-	4(0)	0.17	0.26	0.21	mg/L
Oil & grease	100	24(22)	1.6	3.4		mg/L
monthly average[d]	100	12	0	1.7		mg/L
pH	100	29	7.22	8.51	8.00	SU
Precipitation, total	-	365	0	2.5	0.15	in.
Selenium, total recoverable	-	12(8)	< 1	2.25		µg/L
Thallium, total recoverable	100	4(2)	< 0.066	0.18		µg/L
Total suspended solids	100	24(8)	< 1.1	10		mg/L
monthly average[d]	100	12	0	10		mg/L
Zinc, total recoverable	-	12(0)	11	50	28	µg/L

Table 2.4. FBP NPDES discharge summary and compliance rates – 2019 (continued)

Parameter	NPDES compliance rate (%)[a]	Number of measurements[b]	Concentration (and loading if applicable) Minimum	Maximum	Average[c]	Units
Outfall 015 (X-624 Groundwater Treatment Facility)						
Arsenic, total recoverable	-	4(3)	< 0.5	0.51		µg/L
Barium, total recoverable	-	4(0)	26	53	38	µg/L
Flow rate	-	152	0.0001	0.0181	0.002	MGD
PCBs	100	4(4)	< 0.094	< 0.11		µg/L
pH	100	25	7.47	8.29	7.74	SU
Silver, total recoverable	-	12(12)	< 0.02	< 0.045		µg/L
Trichloroethene	100	24(15)	< 0.16	1.15		µg/L
monthly average[d]	100	12	0	0.575		µg/L
Outfall 602 (X-621 Coal Pile Runoff Treatment Facility)						
Flow rate	-	47	0.002	0.219	0.102	MGD
Iron, total	100	15(0)	27	470	187	µg/L
monthly average[d]	100	11	27	470	196	µg/L
Manganese, total	100	15(0)	33	360	206	µg/L
monthly average[d]	100	11	33	360	203	µg/L
pH	100	15	8.09	9.41	8.75	SU
Precipitation, total	-	335	0	2.08	0.16	in.
Total suspended solids	100	15(0)	11	28	16	mg/L
monthly average[d]	100	11	12	28	17	mg/L
Outfall 604 (X-700 Biodenitrification Facility)						
Copper, total	-	11(3)	< 0.71	4.4		µg/L
Flow rate	-	114	0.0019	0.0106	0.0104	MGD
Iron, total	-	11(0)	25	680	157	µg/L
Nickel, total	-	11(0)	0.49	1.7	0.88	µg/L
Nitrogen, nitrate	-	11(0)	2.06	38.7	14.3	mg/L
pH	100	12	7.40	8.96	7.90	SU
Zinc, total	-	11(1)	2.0	18	7.1	µg/L
Outfall 605 (X-705 Microfiltration Treatment System)[e]						
Outfall 608 (X-622 Groundwater Treatment Facility)						
Flow rate	-	355	0.0033	0.102	0.058	MGD
pH	-	24	7.70	8.23	7.96	SU
Trichloroethene	100	24(1)	< 0.333	4.35	2.35	µg/L
monthly average[d]	100	12	0.96	3.43	2.35	µg/L
1,2-*trans*-dichloroethene	100	24(24)	< 0.15	< 0.333		µg/L
monthly average[d]	100	12	0	0		µg/L
Outfall 610 (X-623 Groundwater Treatment Facility)						
Flow rate	-	2	0.00385	0.00504	0.00445	MGD
pH	-	2	7.64	8.00	7.82	SU
Trichloroethene	100	2(1)	< 0.16	0.73		µg/L
monthly average[d]	100	2	0	0.73		µg/L
1,2-*trans*-dichloroethene	100	2(2)	< 0.15	< 0.15		µg/L
monthly average[d]	100	2	0	0		µg/L

Table 2.4. FBP NPDES discharge summary and compliance rates – 2019 (continued)

Parameter	NPDES compliance rate (%)[a]	Number of measurements[b]	Concentration (and loading if applicable) Minimum	Maximum	Average[c]	Units
Outfall 611 (X-627 Groundwater Treatment Facility)						
Flow rate	-	365	0.021	0.0465	0.032	MGD
pH	-	24	7.70	8.55	8.04	SU
Trichloroethene	92	24(9)	< 0.16	14.1		µg/L
monthly average[d]	92	12	0	14.1		µg/L
Monitoring Station 801 (Upstream Monitoring)						
48-hr acute toxicity, *Ceriodaphnia dubia*	-	4(4)	0	0		% affected
96-hr acute toxicity, *Pimephales promelas*	-	4(3)	0	35		% affected
Monitoring Station 902 (Downstream Farfield Monitoring)						
Water temperature	100	99	0.65	27.46	16.80	°C
monthly average	100	12	5.35	26.29	16.45	°C
Monitoring Station 903 (Downstream Farfield Monitoring)						
Water temperature	100	100	1.85	27.92	16.19	°C
monthly average	100	12	5.77	25.81	15.95	°C

[a]Compliance rates are provided only for those parameters with a limit specified in the NPDES permit (many parameters require monitoring only). At all outfalls except Outfalls 003, 004, and 605, permit limitations do not apply to total suspended solids if flow increases as a result of precipitation or snow melt and conditions set in the permit are met. Sample results for total suspended solids that are elevated due to precipitation (and not subject to permit limitations) are not reported in this table, although they are included in the total number of samples reported for each outfall.
[b]Number in parentheses is the number of samples that were below the detection limit.
[c]Averages 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 assumed to be zero for calculating the average for the parameter.
[d]To compute the monthly average, parameters that were undetected were assumed to be zero. Exceedances due to flow increases from precipitation or snow melt (see footnote a) were not included in the monthly average calculation.
[e]The X-705 Microfiltration Treatment System (Outfall 605) did not operate in 2019.

Table 2.5. MCS NPDES discharge summary and compliance rates – 2019

Parameter	NPDES compliance rate (%)	Number of measurements	Result			Units
			Minimum	Maximum	Average	
		Outfall 001[a]				
		Outfall 602				
Flow rate	-	365	431	16,177	5414	GPD
pH	100	253	6.16	8.64	7.28	SU

[a]This outfall was not used for process water discharges in 2019; therefore, monitoring was not required.

Table 2.6. Centrus NPDES discharge monitoring results – 2019

Parameter	Number of samples[a]	Concentration			Unit
		Minimum	Maximum	Average[b]	
Outfall 012 (X-230M Southwest Holding Pond)					
Cadmium	4(0)	0.30	1.5	0.93	µg/L
Chlorine	24(4)	0	0.05		mg/L
Copper	4(2)	< 0.71	2.0		µg/L
Flow rate	365	0.0007	1.624	0.297	MGD
Iron	4(0)	180	1300	605	µg/L
Mercury	8(0)	1.07	4.48	2.55	ng/L
Oil and grease	23(21)	< 1.6	2.0		mg/L
PCBs, total	1(1)	< 0.092			µg/L
pH	24	7.24	8.56	8.15	SU
Selenium	4(4)	< 1	< 1		µg/L
Silver	4(3)	< 0.02	0.035		µg/L
Total suspended solids	24(4)	< 1.1	26		mg/L
Thallium	4(4)	< 0.066	< 0.066		µg/L
Trichloroethene	4(3)	< 0.16	0.32		µg/L
Outfall 013 (X-230N West Holding Pond)					
Antimony	4(3)	0.67	< 0.68		µg/L
Arsenic	4(1)	< 0.5	0.95		µg/L
Barium	8(0)	16	31	24	µg/L
Cadmium	8(2)	< 0.088	0.60		µg/L
Chlorine	24(3)	0	0.05	0.02	mg/L
Copper	12(2)	< 0.71	2.8		µg/L
Flow rate	365	0.0141	1.618	0.236	MGD
Mercury	8(0)	1.06	4.24	2.31	ng/L
Oil and grease	23(21)	< 1.6	3.3		mg/L
PCBs, total	1(1)	< 0.098			µg/L
pH	24	7.92	8.53	8.24	SU
Total suspended solids	24(8)	< 1.1	11		mg/L
Thallium	4(4)	< 0.066	< 0.066		µg/L
Zinc	12(0)	12	35	23	µg/L
Outfall 613 (X-6002 Particulate Separator)					
Chlorine	13(2)	0	0.05	0.03	mg/L
Flow rate	47	0.0003	0.022	0.0009	MGD
Total suspended solids	13(9)	< 1.1	29		mg/L

[a]Number in parentheses is the number of samples that were below the detection limit.
[b]Averages 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 2.7. Radionuclides in surface water runoff samples from FBP and MCS cylinder storage yards – 2019

Sample location	Parameter	Unit	Number of samples[a]	Minimum[b]	Maximum	Average[c]
			FBP cylinder storage yards			
X745-B1	Alpha activity	pCi/L	10(5)	< 2.33	1430	
	Beta activity	pCi/L	10(4)	< 1.39	1330	
	Uranium	µg/L	10(0)	0.11	13.4	3.01
X745-B2	Alpha activity	pCi/L	10(2)	< 1.37	99	
	Beta activity	pCi/L	10(2)	< 2.52	101	
	Uranium	µg/L	10(0)	1.53	146	43.0
X745-B3	Alpha activity	pCi/L	10(2)	0	96.1	
	Beta activity	pCi/L	10(1)	< 1.82	107	48.5
	Uranium	µg/L	10(0)	0.408	6.64	1.47
X745-D1	Alpha activity	pCi/L	11(7)	< 0.314	165	
	Beta activity	pCi/L	11(5)	< 0.355	231	
	Uranium	µg/L	11(1)	< 0.067	52.5	6.98
X745-F1	Alpha activity	pCi/L	11(8)	< 0.428	33.7	
	Beta activity	pCi/L	11(6)	< 0.754	17	
	Uranium	µg/L	11(1)	< 0.067	6.44	1.53
X745-F2	Alpha activity	pCi/L	11(8)	< 0.183	15.4	
	Beta activity	pCi/L	11(6)	< 1.18	30.7	
	Uranium	µg/L	11(0)	< 0.078	14.5	4.20
X745-F3	Alpha activity	pCi/L	11(10)	< 1.3	15.7	
	Beta activity	pCi/L	11(7)	< 1.49	14.6	
	Uranium	µg/L	11(0)	0.419	3.94	1.77
			MCS cylinder storage yards			
X745-C1	Alpha activity	pCi/L	12(7)	0	11.4	
	Beta activity	pCi/L	12(1)	< 0.761	6.54	3.81
	Uranium	µg/L	12(1)	< 0.40	4.01	1.93
X745-C2	Alpha activity	pCi/L	12(7)	< 0.075	8.362	
	Beta activity	pCi/L	12(2)	< 0.649	6.97	
	Uranium	µg/L	12(2)	< 0.40	10.5	
X745-C3	Alpha activity	pCi/L	12(10)	< 0.252	5.01	
	Beta activity	pCi/L	12(2)	< 0.0759	8.851	
	Uranium	µg/L	12(3)	< 0.40	3.34	
X745-C4	Alpha activity	pCi/L	12(9)	0	5.98	
	Beta activity	pCi/L	12(4)	< 0.777	16.155	
	Uranium	µg/L	12(2)	< 0.40	8.32	
X745-E1	Alpha activity	pCi/L	12(10)	0	2.985	
	Beta activity	pCi/L	12(1)	< 2.01	16.411	5.84
	Uranium	µg/L	12(2)	< 0.40	2.66	

Table 2.7. Radionuclides in surface water runoff samples from FBP and MCS cylinder storage yards – 2019 (continued)

Sample location	Parameter	Unit	Number of samples[a]	Minimum[b]	Maximum	Average[c]
MCS cylinder storage yards (continued)						
X745-G1A	Alpha activity	pCi/L	12(10)	< 0.233	< 3.26	
	Beta activity	pCi/L	12(1)	< 0.819	7.78	3.31
	Uranium	µg/L	12(0)	0.75	3.9	2.4
X745-G2	Alpha activity	pCi/L	12(8)	0	7.08	
	Beta activity	pCi/L	12(3)	0	10.103	
	Uranium	µg/L	12(1)	< 0.4	3.2	1.7

[a]Number in parentheses is the number of samples that were below the detection limit.
[b]Minimum 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.
[c]Averages 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.

Table 2.8. Drainage basin monitoring of surface water and sediment for MCS cylinder storage yards – 2019

Location	Parameter[a]	First quarter[b]			Second quarter[b]		
		SW-F	SW-UF	Sed	SW-F	SW-UF	Sed
UDS X01	Total PCB	0.081U	0.087U	45	0.082U	0.34J	13U
RM-8	Total PCB	0.082U	0.092U	220	0.080U	0.082U	230
UDS X02	Total PCB	0.081U	0.087U	71	0.084U	0.084U	12U
RM-10	Total PCB	0.083U	0.082U	31J	0.081U	0.085U	120J

Location	Parameter[a]	Third quarter[b]			Fourth quarter[b]		
		SW-F	SW-UF	Sed	SW-F	SW-UF	Sed
UDS X01	Total PCB	0.080U	0.087U	36J	0.0316U	0.0314U	1.49U
RM-8	Total PCB	0.080U	0.081U	81	0.0314U	0.319U	29.7[c]
UDS X02	Total PCB	0.080U	0.081U	3.2U	0.0342U	0.0324U	7.77U
RM-10	Total PCB	0.080U	0.081U	14J	0.0319U	0.0322U	11.4J[c]

[a]Results for surface water (SW) are reported in µg/L; results for sediment (Sed) are reported in µg/kg.
[b]Abbreviations and data qualifiers are as follows: SW-F – filtered surface water. SW-UF – unfiltered surface water. Sed – sediment. ns – not sampled. J – the reported value is an estimated concentration greater than or equal to the method detection limit but less than the reporting limit. U – undetected.
[c]Reported as Aroclor-1260

Table 2.9. Ambient air monitoring program summary for radionuclides and fluoride – 2019

Sampling Location	Parameter[a]	No. of measurements[b]	Minimum[c, d]	Maximum[c, d]	Average[c, e]
		On-site air samplers			
A8	Americium-241	4(4)	1.3E-06	4.2E-06	
	Fluoride	50(34)	0.0011	0.039	
	Neptunium-237	4(4)	0	0	
	Plutonium-238	4(4)	0	2.4E-06	
	Plutonium-239/240	4(4)	1.9E-06	4.1E-06	
	Technetium-99	12(4)	7.7E-06	7.5E-04	
	Uranium	12(10)	4.5E-05	1.4E-03	
	Uranium-233/234	12(11)	2.2E-05	4.8E-04	
	Uranium-235/236	12(11)	0	2.9E-05	
	Uranium-238	12(10)	1.5E-05	4.6E-04	
A10	Americium-241	4(4)	6.1E-07	5.5E-06	
	Fluoride	48(31)	0.0037	0.44	
	Neptunium-237	4(4)	0	6.4E-07	
	Plutonium-238	4(4)	0	7.7E-07	
	Plutonium-239/240	4(4)	7.7E-07	4.1E-06	
	Technetium-99	12(4)	5.6E-05	1.0E-03	
	Uranium	12(7)	4.8E-05	5.6E-03	
	Uranium-233/234	12(7)	2.1E-05	1.7E-03	
	Uranium-235/236	12(11)	1.0E-06	8.1E-05	
	Uranium-238	12(7)	1.6E-05	1.9E-03	
A29	Americium-241	4(4)	3.8E-06	5.9E-06	
	Fluoride	46(23)	0.0063	0.023	
	Neptunium-237	4(4)	0	1.1E-06	
	Plutonium-238	4(4)	6.7E-07	1.9E-06	
	Plutonium-239/240	4(4)	2.0E-06	3.7E-06	
	Technetium-99	12(5)	7.9E-05	1.0E-03	
	Uranium	12(11)	3.3E-05	3.4E-04	
	Uranium-233/234	12(10)	9.1E-06	1.3E-04	
	Uranium-235/236	12(12)	0	1.2E-05	
	Uranium-238	12(11)	1.1E-05	1.1E-04	
A36	Americium-241	4(4)	0	4.3E-06	
	Fluoride	45(24)	0.0040	0.062	
	Neptunium-237	4(4)	0	1.2E-06	
	Plutonium-238	4(4)	7.1E-07	3.9E-06	
	Plutonium-239/240	4(4)	2.6E-06	6.2E-06	
	Technetium-99	12(2)	1.1E-04	2.4E-03	
	Uranium	12(6)	7.7E-05	8.4E-04	
	Uranium-233/234	12(6)	2.3E-05	5.8E-04	
	Uranium-235/236	12(9)	1.5E-06	2.2E-05	
	Uranium-238	12(6)	2.6E-05	2.8E-04	
A36 (duplicate (station rad only)	Americium-241	4(4)	5.9E-07	3.6E-06	
	Neptunium-237	4(4)	0	7.7E-07	
	Plutonium-238	4(4)	6.5E-07	7.0E-06	
	Plutonium-239/240	4(4)	2.2E-06	6.0E-06	
	Technetium-99	12(2)	9.4E-05	3.7E-03	

Table 2.9. Ambient air monitoring program summary for radionuclides and fluoride – 2019 (continued)

Sampling Location	Parameter[a]	No. of measurements[b]	Minimum[c, d]	Maximum[c, d]	Average[c, e]
		On-site air samplers			
A36 (duplicate (station)	Uranium	12(5)	1.6E-05	9.7E-04	
	Uranium-233/234	12(4)	1.1E-05	2.9E-04	
	Uranium-235/236	12(11)	1.1E-06	1.6E-05	
	Uranium-238	12(5)	5.2E-06	3.2E-04	
A40A	Fluoride	39(25)	0.0010	0.020	
T7	Americium-241	4(4)	2.5E-06	5.7E-06	
	Neptunium-237	4(4)	0	1.2E-06	
	Plutonium-238	4(4)	0	2.0E-06	
	Plutonium-239/240	4(4)	7.0E-07	4.7E-06	
	Technetium-99	12(8)	5.5E-05	6.2E-04	
	Uranium	12(9)	4.5E-05	4.1E-04	
	Uranium-233/234	12(9)	1.4E-05	1.6E-04	
	Uranium-235/236	12(12)	5.1E-07	6.2E-06	
	Uranium-238	12(9)	1.5E-05	1.4E-04	
		Off-site air samplers			
A3	Americium-241	4(4)	6.8E-07	4.2E-06	
	Fluoride	44(16)	0.00077	0.043	
	Neptunium-237	4(4)	0	1.1E-06	
	Plutonium-238	4(4)	0	1.5E-06	
	Plutonium-239/240	4(4)	1.7E-06	3.4E-06	
	Technetium-99	12(7)	3.5E-05	3.3E-03	
	Uranium	12(11)	2.2E-05	2.1E-04	
	Uranium-233/234	12(9)	1.4E-05	1.6E-04	
	Uranium-235/236	12(12)	0	9.4E-06	
	Uranium-238	12(10)	6.8E-06	1.8E-04	
A6	Americium-241	4(4)	2.0E-06	8.5E-06	
	Fluoride	44(27)	0.0060	0.019	
	Neptunium-237	4(4)	0	1.3E-06	
	Plutonium-238	4(4)	0	2.1E-06	
	Plutonium-239/240	4(4)	1.4E-06	5.0E-06	
	Technetium-99	12(7)	0	9.4E-04	
	Uranium	12(12)	3.3E-05	2.0E-04	
	Uranium-233/234	12(11)	1.4E-05	6.4E-05	
	Uranium-235/236	12(12)	4.9E-07	5.8E-06	
	Uranium-238	12(12)	1.1E-05	6.8E-05	
A9	Americium-241	4(4)	1.8E-06	6.7E-06	
	Fluoride	36(23)	0.0078	0.024	
	Neptunium-237	4(4)	0	0	
	Plutonium-238	4(4)	0	7.1E-07	
	Plutonium-239/240	4(4)	0	4.5E-06	
	Technetium-99	12(9)	5.2E-05	6.3E-04	
	Uranium	12(10)	4.7E-05	2.1E-04	
	Uranium-233/234	12(11)	2.1E-05	6.7E-04	
	Uranium-235/236	12(12)	1.1E-06	7.9E-06	
	Uranium-238	12(11)	1.5E-05	7.0E-05	

Table 2.9. Ambient air monitoring program summary for radionuclides and fluoride – 2019 (continued)

Sampling Location	Parameter[a]	No. of measurements[b]	Minimum[c, d]	Maximum[c, d]	Average[c, e]
A12	Americium-241	4(4)	6.4E-07	4.4E-06	
	Fluoride	45(15)	0.0063	0.046	
	Neptunium-237	4(4)	0	6.0E-07	
	Plutonium-238	4(4)	0	3.2E-06	
	Plutonium-239/240	4(4)	6.5E-07	5.8E-06	
	Technetium-99	12(6)	6.4E-05	1.0E-03	
	Uranium	12(9)	3.7E-05	2.2E-04	
	Uranium-233/234	12(9)	2.0E-05	8.2E-05	
	Uranium-235/236	12(12)	1.0E-06	7.0E-06	
	Uranium-238	12(9)	1.2E-05	7.3E-05	
A15	Americium-241	4(4)	3.3E-06	5.1E-06	
	Fluoride	52(33)	0.0056	0.038	
	Neptunium-237	4(4)	0	1.2E-06	
	Plutonium-238	4(4)	0	1.7E-06	
	Plutonium-239/240	4(4)	7.3E-07	2.9E-06	
	Technetium-99	12(7)	6.8E-05	2.4E-03	
	Uranium	12(12)	3.3E-05	1.7E-04	
	Uranium-233/234	12(11)	1.7E-05	6.0E-05	
	Uranium-235/236	12(12)	0	6.7E-06	
	Uranium-238	12(12)	1.1E-05	5.5E-05	
A23	Americium-241	4(4)	6.2E-07	8.9E-06	
	Fluoride	40(18)	0.0038	0.024	
	Neptunium-237	4(4)	0	1.8E-06	
	Plutonium-238	4(4)	0	8.8E-07	
	Plutonium-239/240	4(4)	1.3E-06	4.4E-06	
	Technetium-99	12(2)	1.0E-04	1.2E-03	
	Uranium	12(10)	2.7E-05	8.9E-04	
	Uranium-233/234	12(11)	1.8E-05	2.6E-04	
	Uranium-235/236	12(12)	4.8E-07	1.5E-05	
	Uranium-238	12(10)	8.9E-06	3.0E-04	
A24	Americium-241	4(4)	1.3E-06	6.1E-06	
	Fluoride	43(14)	0.0074	0.16	
	Neptunium-237	4(4)	0	0	
	Plutonium-238	4(4)	0	7.1E-07	
	Plutonium-239/240	4(4)	2.1E-06	5.9E-06	
	Technetium-99	12(4)	5.2E-05	1.5E-03	
	Uranium	12(9)	7.0E-05	8.2E-04	
	Uranium-233/234	12(6)	2.4E-05	3.0E-04	
	Uranium-235/236	12(11)	5.3E-07	1.6E-05	
	Uranium-238	12(8)	2.3E-05	2.7E-04	

Table 2.9. Ambient air monitoring program summary for radionuclides and fluoride – 2019 (continued)

Sampling Location	Parameter[a]	No. of measurements[b]	Minimum[c, d]	Maximum[c, d]	Average[c, e]
A28	Americium-241	4(4)	2.3E-06	6.6E-06	
	Fluoride	52(26)	0.0070	0.032	
	Neptunium-237	4(4)	0	1.2E-06	
	Plutonium-238	4(4)	0	3.6E-06	
	Plutonium-239/240	4(4)	2.4E-06	4.5E-06	
	Technetium-99	12(9)	7.7E-06	9.9E-04	
	Uranium	12(12)	3.5E-05	1.7E-04	
	Uranium-233/234	12(12)	1.2E-05	5.2E-05	
	Uranium-235/236	12(12)	0	5.0E-06	
	Uranium-238	12(12)	1.2E-05	5.7E-05	
A37 (background)	Americium-241	4(4)	1.2E-06	5.9E-06	
	Fluoride	49(22)	0.0069	0.020	
	Neptunium-237	4(4)	0	4.6E-06	
	Plutonium-238	4(4)	0	1.8E-06	
	Plutonium-239/240	4(4)	0	4.4E-06	
	Technetium-99	12(9)	0	5.6E-04	
	Uranium	12(12)	3.9E-05	1.4E-04	
	Uranium-233/234	12(12)	1.1E-05	5.2E-05	
	Uranium-235/236	12(12)	5.2E-07	4.3E-06	
	Uranium-238	12(12)	1.3E-05	4.7E-05	
A41A	Americium-241	4(4)	0	5.5E-06	
	Fluoride	44(9)	0.0086	0.032	
	Neptunium-237	4(4)	0	1.9E-06	
	Plutonium-238	4(4)	0	1.4E-06	
	Plutonium-239/240	4(4)	1.4E-06	3.3E-06	
	Technetium-99	12(5)	2.7E-05	2.3E-03	
	Uranium	12(11)	5.0E-05	1.7E-04	
	Uranium-233/234	12(11)	1.5E-05	1.3E-04	
	Uranium-235/236	12(12)	4.9E-07	6.9E-06	
	Uranium-238	12(11)	1.6E-05	5.6E-05	

[a]All parameters are measured in pCi/m^3 with the exception of uranium and fluoride which are measured in $\mu g/m^3$.
[b]Radiological 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 value for the undetected result.
[c]Results 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).
Ambient concentrations of uranium and uranium isotopes reported in 2019 may be slightly elevated and should be considered estimated. Uranium and uranium isotopes were detected in quality control samples associated with the ambient air samples and subsequently in unused filters obtained from the manufacturer that are placed at the ambient air stations to collect samples. The presence of uranium and uranium isotopes in the unused filters may have caused slightly elevated analytical results for uranium and uranium isotopes. Levels of these constituents in ambient air are calculated based on the analytical results and therefore may be slightly elevated as well. Reported minimum and maximum values include these estimated results.
[d]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.
[e]Averages are 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 the value of the undetected result to calculate the average for the parameter.

Table 2.10. External radiation monitoring program (mrem) – 2019

Location	First quarter	Second quarter	Third quarter	Fourth quarter	Cumulative annual whole body dose[a]
Off-site locations					
A12	23	25	23	23	94
A15	23	26	24	25	98
A23	22	25	24	24	95
A24	23	25	24	26	98
A28	22	23	23	23	91
A3	21	21	23	22	87
A6	22	26	23	25	96
A9	22	26	25	24	97
On-site locations					
A29	23	25	25	25	98
A36	20	24	22	23	89
A40A	23	24	25	24	96
A8	24	28	26	27	105
UPOLE-1404A	21	24	22	24	91
UPOLE-518	19	25	21	22	87
UPOLE-862	29	37	33	33	132
UPOLE-874	140	163	145	160	608
UPOLE-906	20	24	22	20	86
UPOLE-933	21	23	21	22	87
X-230J2	24	25	23	24	96

[a]The annual occupational whole body dose limit set by Title 10 of the *Code of Federal Regulations* Part 20 is 5000 mrem.

Table 2.11. External radiation monitoring (mrem) at locations near on-site cylinder storage yards – 2019

Location	First quarter	Second quarter	Third quarter	Fourth quarter	Cumulative annual whole body dose[a]
UPOLE-41	125	162	132	151	570
UPOLE-868	308	322	303	305	1238
UPOLE-874	153	169	164	156	642
UPOLE-882	228	263	248	250	989
UPOLE-890	60	72	79	67	278

[a]The annual occupational whole body dose limit set by Title 10 of the *Code of Federal Regulations* Part 20 is 5000 mrem.

Table 2.12. Settleable solids monitoring results – 2019

Sampling location	Parameter[a]	Unit	Results[b] Second quarter		Fourth quarter	
Little Beaver Creek						
EDD-SW01 (FBP Outfalls 001 & 015)	Settleable solids	mg/L	4.4J		4U	
	Suspended solids	mg/L	4.4J		4U	
FBP Outfall 005	Settleable solids	mg/L	9.2		8J	
	Suspended solids	mg/L	14.4		64.4	
FBP Outfall 009	Settleable solids	mg/L	4U		52	
	Suspended solids	mg/L	14		133	
	Alpha activity	pCi/g			8.86J	
	Beta activity	pCi/g			1.34UJ	
	Beta/gamma activity	pCi/g			188U	
FBP Outfall 011	Settleable solids	mg/L	4U	4U[c]	4U	4U[c]
	Suspended solids	mg/L	4U	4U[c]	4U	4U[c]
Big Run Creek						
FBP Outfall 002	Settleable solids	mg/L	4U		4U	
	Suspended solids	mg/L	5.2J		9.2J	
Scioto River						
ACP NPDES Outfall 012	Settleable solids	mg/L	4U		4U	
	Suspended solids	mg/L	4U		4U	
WDD-SW03 (FBP Outfall 010 & ACP Outfall 013)	Settleable solids	mg/L	11.2		4U	4U[c]
	Suspended solids	mg/L	11.2		4U	4U[c]
FBP Outfall 003	Settleable solids	mg/L	22.8		4U	
	Suspended solids	mg/L	30.4		4U	
FBP Outfall 004	Settleable solids	mg/L	4U	4U[c]	4U	
	Suspended solids	mg/L	4U	4U[c]	6.4J	
Background locations						
RW-6 (Scioto River)	Settleable solids	mg/L	15.6		4U	
	Suspended solids	mg/L	50		4U	
RW-5 (Big Beaver Creek)	Settleable solids	mg/L	4U		9.6J	
	Suspended solids	mg/L	10.4		9.6J	
LBC-SW12 (Little Beaver Creek)	Settleable solids	mg/L	4U		4U	
	Suspended solids	mg/L	4U		4U	

[a]Suspended solids are the solids in a water sample (such as silt or clay particles) that can be trapped by a filter. Settleable solids are a component of suspended solids defined as the particles that settle out of suspension in water within a defined time period.
[b]Abbreviations and data qualifiers are as follows: J – estimated. U – undetected.
[c]This result is for the duplicate sample collected from this location. A duplicate sample is a sample collected from the same location at the same time and using the same sampling device (if possible) as the regular sample.

Table 2.13. Local surface water monitoring program results – 2019

Location	Parameter[a]	Second quarter[b,c]	Fourth quarter[b,c]
Scioto River	Americium-241	0.009U	0.0224U
RW-1A	Neptunium-237	0.0193U	0.00505U
(downstream)	Plutonium-238	-0.011U	0.013U
	Plutonium-239/240	0.022U	0.0195UJ
	Technetium-99	1.52U	0.325U
	Uranium	1.58	0.0777UJ
	Uranium-233/234	0.672	0.0352UJ
	Uranium-235/236	0.0336U	0.00626UJ
	Uranium-238	0.527	0.0252UJ
Scioto River	Americium-241	-0.00477U	0.0242U
RW-6	Neptunium-237	0U	0U
(upstream)	Plutonium-238	-0.00538U	0.0356U
	Plutonium-239/240	0.0215U	0.0178UJ
	Technetium-99	3.06U	0.913U
	Uranium	1.94	1.18J
	Uranium-233/234	0.726	0.452J
	Uranium-235/236	0.0291U	0.0485UJ
	Uranium-238	0.646	0.39
Little Beaver	Americium-241	0U	0.0111U
Creek	Neptunium-237	-0.00487U	0U
RW-7	Plutonium-238	0.00571U	0.0126U
(downstream)	Plutonium-239/240	0.00572U	0.0188UJ
	Technetium-99	5.3UJ	3.79UJ
	Uranium	1.43	0.807J
	Uranium-233/234	1.62	0.948J
	Uranium-235/236	0.0918UJ	0.0469UJ
	Uranium-238	0.467	0.264
RW-8	Americium-241	0.00968U	-0.00576U
(downstream)	Neptunium-237	0.00907U	0.00619U
	Plutonium-238	-0.0119U	0.00615U
	Plutonium-239/240	0U	0UJ
	Technetium-99	2.13U	2.19U
	Uranium	1.09	0.644J
	Uranium-233/234	1.01	0.445J
	Uranium-235/236	0.0342U	0.0445UJ
	Uranium-238	0.362	0.209
RW-12	Americium-241	0.0385UJ	0.0552UJ
(upstream)	Neptunium-237	0.00884U	0.00539U
	Plutonium-238	0.0122U	-0.0124U
	Plutonium-239/240	0.0182U	0.00618UJ
	Technetium-99	3.42U	1.59U
	Uranium	0.12U	0.133UJ
	Uranium-233/234	0.0687UJ	0.101J
	Uranium-235/236	0.0228U	0.0133UJ
	Uranium-238	0.0367UJ	0.0427UJ

Table 2.13. Local surface water monitoring program results – 2019 (continued)

Location	Parameter[a]	Second quarter[b,c]		Fourth quarter[b,c]	
Big Beaver Creek RW-13 (downstream)	Americium-241	0.0198U	0.0286U[d]	0.0205U	0.0178U[d]
	Neptunium-237	0.00911U	0.00963U[d]	0.0109U	0U[d]
	Plutonium-238	0.00559U	-0.00541U[d]	0.0319U	0.022U[d]
	Plutonium-239/240	0.028U	0.0108U[d]	0.024UJ	0.0367UJ[d]
	Technetium-99	3.42U	1.85U[d]	5.34UJ	3.89UJ[d]
	Uranium	0.807J	0.66J[d]	1.09J	0.851J[d]
	Uranium-233/234	0.775	0.814[d]	1.12J	1.03J[d]
	Uranium-235/236	0.0517UJ	0.0715UJ[d]	0.0699UJ	0.0563UJ[d]
	Uranium-238	0.263	0.211[d]	0.356	0.277[d]
RW-5 (upstream)	Americium-241	0.0449U	0.0149U[d]	0.0185U	0.0553U[d]
	Neptunium-237	0.017U	0.00522U[d]	0.0165U	0.0184U[d]
	Plutonium-238	0.011U	0.00563U[d]	0U	0.00664U[d]
	Plutonium-239/240	0.0165U	0.0338U[d]	0UJ	0.0199UJ[d]
	Technetium-99	2.95U	0.962U[d]	3.56U	4.01UJ[d]
	Uranium	0.16UJ	0.228UJ[d]	1.3J	1.17J[d]
	Uranium-233/234	0.105	0.0749UJ[d]	1.11J	1.07J[d]
	Uranium-235/236	0.00596U	0.0117U[d]	0.0875UJ	0.0787UJ[d]
	Uranium-238	0.0527UJ	0.0749UJ[d]	0.422	0.38[d]
Big Run Creek RW-2 (downstream)	Americium-241	0.00928U		0.0278U	
	Neptunium-237	0.00882U		0.0107U	
	Plutonium-238	-0.0107U		0.0262U	
	Plutonium-239/240	0.00537U		0.0262UJ	
	Technetium-99	2.91U		-1.68U	
	Uranium	0.318J		0.182UJ	
	Uranium-233/234	0.152		0.122J	
	Uranium-235/236	0.0177U		0.0197UJ	
	Uranium-238	0.104		0.0582UJ	
RW-3 (downstream)	Americium-241	0.0192U		0.0175U	
	Neptunium-237	0U		0U	
	Plutonium-238	-0.0104U		0.00646U	
	Plutonium-239/240	0.0261U		0.0129UJ	
	Technetium-99	4.68U		0.883U	
	Uranium	0.907J		1.14J	
	Uranium-233/234	0.75		0.847J	
	Uranium-235/236	0.0433U		0.0277UJ	
	Uranium-238	0.298		0.379	

Table 2.13. Local surface water monitoring program results – 2019 (continued)

Location	Parameter[a]	Second quarter[b,c]	Fourth quarter[b,c]
Big Run Creek (continued)	Americium-241	0.00956U	0.027U
	Neptunium-237	0.025U	0.00985U
RW-33 (upstream)	Plutonium-238	-0.00551U	0.0062U
	Plutonium-239/240	0.0275U	0.0186UJ
	Technetium-99	0.411U	-0.656U
	Uranium	0.0566U	0.116UJ
	Uranium-233/234	0.0272U	0.0651UJ
	Uranium-235/236	0.00565U	0.00675UJ
	Uranium-238	0.0182U	0.038U
Background creeks	Americium-241	0.0196U	0.0267U
RW-10N	Neptunium-237	0U	0U
	Plutonium-238	-0.0123U	0.01U
	Plutonium-239/240	0.0123U	0.0301UJ
	Technetium-99	1.51U	0.524U
	Uranium	0.248J	0.219UJ
	Uranium-233/234	0.122	0.102UJ
	Uranium-235/236	0.0113U	0.0238UJ
	Uranium-238	0.0815UJ	0.07UJ
RW-10S	Americium-241	0.0359U	0.0651UJ
	Neptunium-237	-0.00467U	0.0049U
	Plutonium-238	0U	0.0264U
	Plutonium-239/240	0.0292U	0.00661UJ
	Technetium-99	2.18U	0.598U
	Uranium	0.146UJ	0.207UJ
	Uranium-233/234	0.104	0.12J
	Uranium-235/236	0.0117U	0.0071UJ
	Uranium-238	0.0472UJ	0.0685UJ
RW-10E	Americium-241	0.0331U	0.0198U
	Neptunium-237	0.00493U	0.01U
	Plutonium-238	-0.00587U	0U
	Plutonium-239/240	0.0117U	0.0235UJ
	Technetium-99	1.63U	-0.338U
	Uranium	-0.0165U	0.168UJ
	Uranium-233/234	0.0372UJ	0.091UJ
	Uranium-235/236	-0.00579U	0.00629UJ
	Uranium-238	-0.00466U	0.0556UJ

Table 2.13. Local surface water monitoring program results – 2019 (continued)

Location	Parameter[a]	Second quarter[b,c]	Fourth quarter[b,c]
Background creeks	Americium-241	0.0205U	0.0207U
RW-10W	Neptunium-237	-0.00936U	0U
	Plutonium-238	0.00604U	0.00569U
	Plutonium-239/240	0.0121U	0.00569UJ
	Technetium-99	1.21U	-0.928U
	Uranium	0.148UJ	0.19UJ
	Uranium-233/234	0.0423U	0.0485UJ
	Uranium-235/236	0.0175U	0.00603UJ
	Uranium-238	0.047UJ	0.0631UJ

[a]Results are reported in µg/L (uranium) and pCi/L (all other parameters).
[b]Abbreviations and data qualifiers are as follows: U – undetected. J – the reported result is estimated.
[c]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.
[d]This result is for the duplicate sample collected from this location. A duplicate sample is a sample collected from the same location at the same time and using the same sampling device (if possible) as the regular sample.

Table 2.14. Sediment monitoring program results – 2019

Parameter	Unit	Location/results[a,b]			
		Scioto River and outfalls that discharge to the Scioto River			
		RM-6 Upstream @ Piketon	*RM-1A Downstream @ Lucasville*	*RM-9 Outfall 012*	*RM-10 Outfall 010/Outfall 013*
Aluminum	mg/kg	7270D	3670D	6730D	5570D
Americium-241	pCi/g	-0.00166U	0.00168U	0.00632U	0.00186U
Antimony	mg/kg	0.0848DJ	0.0912DJ	0.204DJ	0.103DJ
Arsenic	mg/kg	11.5	9.2	32.9	28
Barium	mg/kg	83.5D	37.7D	79.9D	86.2D
Beryllium	mg/kg	0.467D	0.27D	0.779D	0.914D
Cadmium	mg/kg	0.462D	0.204D	0.953D	0.233D
Calcium	mg/kg	38700D	45600D	803D	5540D
Chromium	mg/kg	12.8D	11.4D	22.1D	28.7D
Copper	mg/kg	19.4	10.5	18.5	14.4
Iron	mg/kg	19300D	14600D	49900D	41800D
Lead	mg/kg	14.2DJ	7.83	20.5D	18.9DJ
Magnesium	mg/kg	18600D	18000D	958D	3390D
Manganese	mg/kg	518D	345D	891D	1230D
Mercury	mg/kg	0.0345J	0.016J	0.0309J	0.0203J
Neptunium-237	pCi/g	0.000437U	0.00169U	0.00187U	0.00114U
Nickel	mg/kg	21.7D	13.5D	38.2D	20.8D
Plutonium-238	pCi/g	0.00215UJ	0.000557U	0.000798UJ	0.00239UJ
Plutonium-239/240	pCi/g	0.003UJ	0.00501U	0.00637UJ	0.00319U
PCB, total	µg/kg	19U	19.6U	19.4U	71.6
Selenium	mg/kg	0.274DJ	0.226DJ	0.157DJ	0.18DJ
Silicon	mg/kg	560D	436D	511D	423D
Silver	mg/kg	0.247U	0.246U	0.249U	0.247U
Technetium-99	pCi/g	0.0117U	0.00569U	-0.00307U	0.249
Thallium	mg/kg	0.278D	0.141D	0.243D	0.123D
Uranium	µg/g	1.13J	0.813J	1.75J	1.73J
Uranium-233/234	pCi/g	0.372	0.226	0.6	0.81
Uranium-235/236	pCi/g	0.0194J	0.0164J	0.0353J	0.0341J
Uranium-238	pCi/g	0.378	0.271	0.581	0.575
Zinc	mg/kg	75.2D	48.5D	103D	117D

Table 2.14. Sediment monitoring program results – 2019 (continued)

Parameter	Unit	Location/results[a,b]		
			Little Beaver Creek	
		RM-12 Upstream	*RM-11 X-230J7 Discharge*	*RM-11 X-230J7 Discharge (duplicate sample)*
Aluminum	mg/kg	6530D	7050D	7000D
Americium-241	pCi/g	0.00399U	0.0128UJ	0.00826U
Antimony	mg/kg	0.079DJ	1DJ	0.741DJ
Arsenic	mg/kg	33	39.6	30.4
Barium	mg/kg	62.3D	82.6D	86.8D
Beryllium	mg/kg	0.983D	0.626D	0.591D
Cadmium	mg/kg	0.0841D	0.849D	0.844D
Calcium	mg/kg	2100D	14700D	16000D
Chromium	mg/kg	31.7D	35.1D	27.5D
Copper	mg/kg	15.4	57.1	61.6
Iron	mg/kg	44800D	37700D	32900D
Lead	mg/kg	26.5D	41.2D	36.2D
Magnesium	mg/kg	1450D	8300D	8530D
Manganese	mg/kg	1060D	442D	647D
Mercury	mg/kg	0.0215J	0.734	0.557
Neptunium-237	pCi/g	0U	0.0145UJ	0.00646U
Nickel	mg/kg	16.4D	30.2D	29.6D
Plutonium-238	pCi/g	0UJ	0.0034UJ	0.00468UJ
Plutonium-239/240	pCi/g	0.00526UJ	0.0486J	0.0243J
PCB, total	µg/kg	19.9U	380	368
Selenium	mg/kg	0.24DJ	3.62DJ	3.84DJ
Silicon	mg/kg	472D	541D	572D
Silver	mg/kg	0.247U	0.255J	0.248U
Technetium-99	pCi/g	0.0617U	15.6	14.1
Thallium	mg/kg	0.091DJ	0.733D	0.733D
Uranium	µg/g	0.915J	7.47J	7.59J
Uranium-233/234	pCi/g	0.386	11.7	12
Uranium-235/236	pCi/g	0.0174J	0.551J	0.585J
Uranium-238	pCi/g	0.305	2.42	2.46
Zinc	mg/kg	63.2D	614D	636D

Table 2.14. Sediment monitoring program results – 2019 (continued)

Parameter	Unit	Location/results[a,b]	
		Little Beaver Creek	
		RM-8 Downstream @ Outfall 009 Discharge	*RM-7 Downstream @ Confluence*
Aluminum	mg/kg	7410D	4590D
Americium-241	pCi/g	0.00142U	0.00407UJ
Antimony	mg/kg	0.283DJ	0.136DJ
Arsenic	mg/kg	46.4	19.1
Barium	mg/kg	90.4D	62.8D
Beryllium	mg/kg	1.06D	0.513D
Cadmium	mg/kg	1.02D	0.393D
Calcium	mg/kg	3260D	5640D
Chromium	mg/kg	48.8D	28.8D
Copper	mg/kg	25.1	12.8
Iron	mg/kg	74300D	30000D
Lead	mg/kg	30.6D	13.8DJ
Magnesium	mg/kg	2060D	3000D
Manganese	mg/kg	1370D	669D
Mercury	mg/kg	0.0756J	0.0207J
Neptunium-237	pCi/g	0.0409	0.0263
Nickel	mg/kg	56.6D	27D
Plutonium-238	pCi/g	0UJ	0U
Plutonium-239/240	pCi/g	0.0293J	0.00956UJ
PCB, total	µg/kg	259	33.1
Selenium	mg/kg	0.384DJ	0.169DJ
Silicon	mg/kg	521D	539D
Silver	mg/kg	0.373U	0.248U
Technetium-99	pCi/g	8.83	9.12
Thallium	mg/kg	0.485D	0.142D
Uranium	µg/g	7.82J	2.18J
Uranium-233/234	pCi/g	9.22J	2.7
Uranium-235/236	pCi/g	0.487J	0.138J
Uranium-238	pCi/g	2.55J	0.71
Zinc	mg/kg	204D	84.2D

Table 2.14. Sediment monitoring program results – 2019 (continued)

Parameter	Unit	Location/results[a,b]			
		Big Beaver Creek			
		RM-15 Upstream	*RM-5 Confluence with Little Beaver Creek*	*RM-5 Confluence with Little Beaver Creek (duplicate sample)*	*RM-13 Downstream*
Aluminum	mg/kg	5340D	5440D	6010D	4860D
Americium-241	pCi/g	0U	0.0017U	0.00245U	0.000552U
Antimony	mg/kg	0.0794DJ	0.0841DJ	0.0532DJ	0.0629DJ
Arsenic	mg/kg	7.81	8.22	8.06	9.38
Barium	mg/kg	59.1D	68.3D	63.5D	57.6D
Beryllium	mg/kg	0.324D	0.362D	0.407D	0.474D
Cadmium	mg/kg	0.258D	0.184D	0.169D	0.231D
Calcium	mg/kg	7950D	62900D	29900D	7530D
Chromium	mg/kg	13.5D	15.9D	17.9D	17.2D
Copper	mg/kg	12.5	11	11.5	13.2
Iron	mg/kg	15100D	14500D	16100D	16900D
Lead	mg/kg	12.1DJ	23.5D	21.5D	13.8DJ
Magnesium	mg/kg	3630D	34300D	15300D	3630D
Manganese	mg/kg	470D	481D	682D	481D
Mercury	mg/kg	0.0245J	0.0149J	0.0115J	0.0196J
Neptunium-237	pCi/g	0U	-0.000465U	0.000524U	0.00434UJ
Nickel	mg/kg	15.6D	13.2D	16.9D	16.6D
Plutonium-238	pCi/g	0.000872UJ	-0.000626U	0.00156UJ	0.000646U
Plutonium-239/240	pCi/g	0.00698UJ	0.00188U	0UJ	0.00323UJ
PCB, total	µg/kg	20U	19.4U	19.9U	19.6U
Selenium	mg/kg	0.23DJ	0.193DJ	0.148DJ	0.261DJ
Silicon	mg/kg	552D	619D	580D	493D
Silver	mg/kg	0.249U	0.248U	0.248U	0.248U
Technetium-99	pCi/g	-0.0415U	0.0216U	0.0978U	1.24
Thallium	mg/kg	0.138D	0.108D	0.133D	0.123D
Uranium	µg/g	0.798J	0.723J	0.615J	0.951J
Uranium-233/234	pCi/g	0.247	0.257	0.222	0.485
Uranium-235/236	pCi/g	0.0112J	0.0147J	0.0143J	0.0281J
Uranium-238	pCi/g	0.267	0.241	0.205	0.315
Zinc	mg/kg	52.1D	48.1D	44.6D	50.6D

Table 2.14. Sediment monitoring program results – 2019 (continued)

Parameter	Unit	Location/results[a,b]		
			Big Run Creek	
		RM-33 Upstream	*RM-3 Downstream*	*RM-2 Downstream @ Wakefield*
Aluminum	mg/kg	7580D	7630D	8350D
Americium-241	pCi/g	0.00595UJ	0.00417U	0U
Antimony	mg/kg	0.177DJ	0.0888DJ	0.149DJ
Arsenic	mg/kg	36.6	16.3	35.5
Barium	mg/kg	81.1D	104D	89.4D
Beryllium	mg/kg	0.907D	0.61D	1.18D
Cadmium	mg/kg	0.315D	0.293D	0.969D
Calcium	mg/kg	1750D	2930D	4900D
Chromium	mg/kg	28.2D	17.1D	27.6D
Copper	mg/kg	18.7	14.2	25
Iron	mg/kg	46700D	25100D	47500D
Lead	mg/kg	30D	19.1DJ	32.1D
Magnesium	mg/kg	1280D	1790D	2820D
Manganese	mg/kg	1090D	1510D	1120D
Mercury	mg/kg	0.0268J	0.0352J	0.0481J
Neptunium-237	pCi/g	0U	-0.000767U	0.000717U
Nickel	mg/kg	24.4D	19.6D	40.6D
Plutonium-238	pCi/g	0.000861UJ	0.00337U	0.00189UJ
Plutonium-239/240	pCi/g	0.00687UJ	0.0101UJ	0.00659UJ
PCB, total	µg/kg	19.1U	19.7U	19.7U
Selenium	mg/kg	0.405DJ	0.525DJ	0.407DJ
Silicon	mg/kg	532D	519D	506D
Silver	mg/kg	0.372U	0.248U	0.373U
Technetium-99	pCi/g	0.0789U	0.308UJ	0.131U
Thallium	mg/kg	0.216D	0.294D	0.204D
Uranium	µg/g	1.91J	2.01J	1.58J
Uranium-233/234	pCi/g	0.669	1.08	0.772
Uranium-235/236	pCi/g	0.0296J	0.0655J	0.0357J
Uranium-238	pCi/g	0.637	0.665	0.524
Zinc	mg/kg	80D	89.6D	158D

Table 2.14. Sediment monitoring program results – 2019 (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	5400D	7070D	1660D	7240D
Americium-241	pCi/g	0.00393U	0.00411U	0.00357U	0.00104U
Antimony	mg/kg	0.0582DJ	0.134DJ	0.0497DJU	0.232DJ
Arsenic	mg/kg	9.9	43	2.28	19.7
Barium	mg/kg	63.8D	86.9D	22.9D	81.5D
Beryllium	mg/kg	0.505D	1.02D	0.159D	0.819D
Cadmium	mg/kg	0.479D	0.111D	0.0497DU	2.09D
Calcium	mg/kg	17800D	1940D	280D	2350D
Chromium	mg/kg	18.1D	56.9D	17.1D	15.1D
Copper	mg/kg	15.2	14.3	3.49	19.8
Iron	mg/kg	19600D	65200D	5960D	26900D
Lead	mg/kg	18.7DJ	32.7D	3.99	17.1DJ
Magnesium	mg/kg	9990D	1040D	202D	1700D
Manganese	mg/kg	575D	1670D	163D	801D
Mercury	mg/kg	0.0197J	0.0203J	0.0056U	0.036J
Neptunium-237	pCi/g	0.000948U	0.00178U	0.000412U	0U
Nickel	mg/kg	21.7D	17.9D	3.45	49.3D
Plutonium-238	pCi/g	0.00149U	-0.00115U	-0.000525U	0.00174UJ
Plutonium-239/240	pCi/g	0.0052U	0.00287U	0.00367U	0.00348UJ
PCB, total	µg/kg	20U	19.6U	20U	19.8U
Selenium	mg/kg	0.263DJ	0.209DJ	0.0995DJU	0.476DJ
Silicon	mg/kg	462D	616D	366D	504D
Silver	mg/kg	0.247U	0.373U	0.248U	0.246U
Technetium-99	pCi/g	-0.00762U	-0.0986U	0.0329U	-0.00504U
Thallium	mg/kg	0.145D	0.088DJ	0.0497DU	0.401D
Uranium	µg/g	0.762J	1.4J	0.265J	2.62J
Uranium-233/234	pCi/g	0.243	0.53	0.0871	0.865
Uranium-235/236	pCi/g	0.0141J	0.0264J	0.00606UJ	0.0438J
Uranium-238	pCi/g	0.254	0.466	0.0881	0.873
Zinc	mg/kg	77.4D	64.2D	10.1	143D

[a]Abbreviations and data qualifiers are as follows: D – the result is reported from a dilution. J – the reported result is estimated. U – undetected.
[b]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.

Table 2.15. Soil and biota (vegetation) monitoring at ambient air monitoring stations – 2019

Parameter[a]	Location/results[b,c]			
	A8 – On site at northwest boundary		*T7 – On site near X-230L North Holding Pond*	
	Vegetation	Soil	Vegetation	Soil
Americium-241	0.00307U	0.00158U	0.00101U	0.00807UJ
Neptunium-237	0U	0.00137U	0U	0.00433UJ
Plutonium-238	0.000354U	0U	0.00074U	-0.00145U
Plutonium-239/240	0.00106U	0.000572U	0.00259U	0.0121
Technetium-99	0.0149U	0.0289U	0.041U	-0.0259U
Uranium	0.0179J	4.59J	0.00918UJ	0.952J
Uranium-233/234	0.00533UJ	1.54	0.00805J	0.356
Uranium-235/236	0.00039UJ	0.0925J	0.000417UJ	0.0206J
Uranium-238	0.00596J	1.53	0.00302UJ	0.317
	A10 – On site on northwest segment of Perimeter Road		*A29 – On site at OVEC*	
	Vegetation	Soil	Vegetation	Soil
Americium-241	0.00115U	0.00322U	0.00306U	0.00491U
Neptunium-237	-0.000295U	0.000417U	0U	0.00108U
Plutonium-238	0.00226U	0.00116U	0.000557U	0.00236U
Plutonium-239/240	0.000755U	0.00116U	0.00167U	0.0151
Technetium-99	0.0923U	0.0222U	-0.0497U	-0.00219U
Uranium	0.0184UJ	0.74J	0.00212UJ	0.776J
Uranium-233/234	0.0121J	0.304	0.00205UJ	0.249
Uranium-235/236	-0.000457UJ	0.0189J	0.00128UJ	0.0141J
Uranium-238	0.00624UJ	0.246	0.000513U	0.259
	A36 – On site at X-611 Water Treatment Plant		*A6 – North of PORTS in Piketon*	
	Vegetation	Soil	Vegetation	Soil
Americium-241	0.000794U	0.00639U	0.000979U	0.00367U
Neptunium-237	0U	0.000816U	0U	-0.000372U
Plutonium-238	0.000848U	0.0027U	0.000717U	0.00044U
Plutonium-239/240	0.000847U	0.0135	0.000717U	0.0106
Technetium-99	-0.0474U	0.0747U	0.0227U	0.0129U
Uranium	0.00389UJ	0.894J	0.0666J	1.04J
Uranium-233/234	0.00475UJ	0.497	0.0914J	0.239
Uranium-235/236	0.00136UJ	0.024J	0.00325UJ	0.0163J
Uranium-238	0.0011U	0.297	0.0219	0.346

Table 2.15. Soil and biota (vegetation) monitoring at ambient air monitoring stations – 2019 (continued)

Parameter[a]	Location/results[b,c]			
	A24 – North of PORTS at Schuster Road		*A41A - North of PORTS at Zahns Corner*	
	Vegetation	Soil	Vegetation	Soil
Americium-241	0.00182U	0.00604UJ	0.00216U	0.0018U
Neptunium-237	0.000321U	0.000789U	0.000924U	0.000768U
Plutonium-238	0U	0.000451U	0.000329U	-0.000992U
Plutonium-239/240	0.000799U	0.0126	0.000987U	0.000992U
Technetium-99	0U	-0.0279U	-0.0302U	0.00764U
Uranium	0.00323UJ	0.805J	0.00638UJ	1.02J
Uranium-233/234	0.00272UJ	0.277	0.00328UJ	0.398
Uranium-235/236	0.000422UJ	0.0162J	0.00037UJ	0.0159J
Uranium-238	0.00102U	0.268	0.00208U	0.34
	A23 – Northeastern PORTS boundary		*A12 – Eastern PORTS boundary*	
	Vegetation	Soil	Vegetation	Soil
Americium-241	0.00344UJ	0.00231U	0.00418UJ	0.00529UJ
Neptunium-237	0U	0.000419U	0U	-0.000379U
Plutonium-238	-0.00229U	0.00124U	-0.00133U	0.000509U
Plutonium-239/240	0.000458U	0.00746UJ	0.000664U	0.00864UJ
Technetium-99	-0.0591U	-0.00464U	0U	-0.0105U
Uranium	0.00115UJ	0.701J	0.00958UJ	0.887J
Uranium-233/234	0.00388UJ	0.25	0.00334UJ	0.336
Uranium-235/236	0.000403UJ	0.00939UJ	0.00727UJ	0.0204J
Uranium-238	0.000324U	0.234	0.00209U	0.295
	A15 – Southeast of PORTS on Loop Road		*A3 – Southern PORTS boundary*	
	Vegetation	Soil	Vegetation	Soil
Americium-241	0.000654U	0.00181U	0.00103U	0.00697UJ
Neptunium-237	0U	0.00205U	0.000795U	0U
Plutonium-238	0.00215U	-0.000496U	-0.0009U	0.00183U
Plutonium-239/240	0.000715U	0.00794UJ	0.00045U	0.016
Technetium-99	0.0305U	-0.0195U	0.0136U	-0.0455U
Uranium	0.00357UJ	0.825J	0.00874UJ	0.749J
Uranium-233/234	0.00226UJ	0.283	0.00376UJ	0.402
Uranium-235/236	0.000468UJ	0.0131J	0.000779UJ	0.0208J
Uranium-238	0.00113U	0.275	0.00282UJ	0.248

Table 2.15. Soil and biota (vegetation) monitoring at ambient air monitoring stations – 2019 (continued)

Parameter[a]	Location/results[b,c]			
	A9 – South of PORTS		*A28 – Southwest of PORTS on Camp Creek Road*	
	Vegetation	Soil	Vegetation	Soil
Americium-241	0.00129U	0.0159	0U	0.00286U
Neptunium-237	-0.000476U	0.000495U	0.000284U	0.00088U
Plutonium-238	-0.000304U	0.00486UJ	0.00031U	0.00218U
Plutonium-239/240	0.00122U	0.0331J	0.00124U	0.0074UJ
Technetium-99	0.0691U	0.0709U	-0.00756U	-0.0214U
Uranium	0.0169J	0.875J	0.0231J	0.876J
Uranium-233/234	0.00773J	0.263	0.0086J	0.365
Uranium-235/236	0.00077UJ	0.0122J	0.000792UJ	0.0179J
Uranium-238	0.00557UJ	0.292	0.00764J	0.292
	A37 – Background station near Otway			
	Vegetation	Soil		
Americium-241	0.00157U	0.00276U		
Neptunium-237	0.000312U	0U		
Plutonium-238	0UJ	0.00113U		
Plutonium-239/240	0UJ	0.00679UJ		
Technetium-99	-0.116U	0.00984U		
Uranium	0.0163UJ	1.02J		
Uranium-233/234	0.00797J	0.393		
Uranium-235/236	0.000397UJ	0.0223J		
Uranium-238	0.00542UJ	0.338		
	Duplicate vegetation samples		*Duplicate soil samples*	
	A15	T7	A37	T7
Americium-241	0.00116U	0.000381U	0.00187U	0.00973UJ
Neptunium-237	0U	0U	0.000819U	0.000463U
Plutonium-238	-0.000364U	-0.000776U	0.000477U	0.00156U
Plutonium-239/240	0.00109U	0.00194U	0.00954J	0.0141
Technetium-99	-0.0715U	-0.0111U	0.0498U	-0.00828U
Uranium	0.00451UJ	0.0127UJ	1.24J	0.987J
Uranium-233/234	0.00189UJ	0.00449UJ	0.456	0.382
Uranium-235/236	-0.000392UJ	0.00086UJ	0.0174J	0.0188J
Uranium-238	0.00158U	0.00415UJ	0.414	0.329

[a]All parameters are measured in pCi/g with the exception of uranium which is measured in µg/g.
[b]Abbreviations and data qualifiers are as follows: U – undetected. J – the reported result is estimated.
[c]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.

Table 2.16. Biota (fish) monitoring program results – 2019

Parameter	Unit	Location/fish/results[a,b]		
		Big Beaver Creek (RW-15) large mouth bass	*Big Beaver Creek (RW-15) large mouth bass (duplicate sample)*	*Big Beaver Creek (RW-13) small mouth bass*
Americium-241	pCi/g	0.00237U	0.000413U	0.00119U
Neptunium-237	pCi/g	0U	0.00119U	0U
Plutonium-238	pCi/g	0.00042U	0.000434U	0.000828U
Plutonium-239/240	pCi/g	0.00294U	0.00347UJ	0.000414U
PCB, total	µg/kg	41.7J	412J	5.6U
Technetium-99	pCi/g	-0.237U	-0.0996U	-0.173U
Uranium	µg/g	0.00272UJ	0.00427UJ	0.00392UJ
Uranium-233/234	pCi/g	-0.000767UJ	0.00143UJ	0.00618UJ
Uranium-235/236	pCi/g	0.000955UJ	0UJ	0.000513UJ
Uranium-238	pCi/g	0.000767U	0.00143U	0.00124U
		Little Beaver Creek (RW-8) large mouth bass		
Americium-241	pCi/g	0.000839U		
Neptunium-237	pCi/g	0.00037U		
Plutonium-238	pCi/g	0.00171U		
Plutonium-239/240	pCi/g	0U		
PCB, total	µg/kg	130		
Technetium-99	pCi/g	-0.154U		
Uranium	µg/g	0.00354UJ		
Uranium-233/234	pCi/g	0.00397UJ		
Uranium-235/236	pCi/g	0UJ		
Uranium-238	pCi/g	0.00119U		

[a]Abbreviations and data qualifiers are as follows: U – undetected. J – the reported result is estimated.
[b]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.

Table 2.17. Biota (crops) monitoring program results – 2019

Parameter	Unit	Location/crop/results[a,b]		
		Off-site #2 corn	*Off-site #2 tomatoes*	*Off-site #5 corn*
Americium-241	pCi/g	0.0041UJ	0.0017U	0.000461U
Neptunium-237	pCi/g	0.000372U	0U	0U
Plutonium-238	pCi/g	0.000468U	0U	0.000492U
Plutonium-239/240	pCi/g	0.00281U	0.00435UJ	0.00148U
Technetium-99	pCi/g	0.0502U	0.108U	0.0601U
Uranium	µg/g	-0.000878UJ	0.00293UJ	0.000554UJ
Uranium-233/234	pCi/g	0.00144U	0.00148U	0U
Uranium-235/236	pCi/g	0.0012UJ	0UJ	0.0012UJ
Uranium-238	pCi/g	-0.000481U	0.000984U	0U
		Off-site #5 tomatoes	*Off-site #5 blackberries*	*Off-site #6 corn*
Americium-241	pCi/g	0.00126U	0U	0.00183U
Neptunium-237	pCi/g	0.00132U	0.000375U	0.000731U
Plutonium-238	pCi/g	0U	0.000505U	0U
Plutonium-239/240	pCi/g	0.00221U	0.00101U	0.00201U
Technetium-99	pCi/g	0.0967U	0.0529U	-0.00924U
Uranium	µg/g	0.00137UJ	0.00273UJ	0.00451UJ
Uranium-233/234	pCi/g	0.000461U	0.00138U	0U
Uranium-235/236	pCi/g	0UJ	0UJ	0UJ
Uranium-238	pCi/g	0.000461U	0.000917U	0.00152U
		Off-site #6 peppers	*Off-site #6 tomatoes*	*Off-site #6 tomatoes (duplicate sample)*
Americium-241	pCi/g	0.00208U	0.000473U	0.00164U
Neptunium-237	pCi/g	0U	-0.00036U	0U
Plutonium-238	pCi/g	-0.000619U	0.00188U	0.00419U
Plutonium-239/240	pCi/g	0.00186U	0.00125U	0.000698U
Technetium-99	pCi/g	0.129U	0.00695U	0.0834U
Uranium	µg/g	0.000000161UJ	0.00285UJ	0.00184UJ
Uranium-233/234	pCi/g	0.000999U	0.00108U	0U
Uranium-235/236	pCi/g	0UJ	0.00268UJ	0UJ
Uranium-238	pCi/g	0U	0.000539U	0.00062U

Table 2.17. Biota (crops) monitoring program results – 2019 (continued)

Parameter	Unit	Location/crop/results[a,b]
		Off-site #8 tomatoes
Americium-241	pCi/g	0.000459U
Neptunium-237	pCi/g	0U
Plutonium-238	pCi/g	-0.00119U
Plutonium-239/240	pCi/g	0.00179U
Technetium-99	pCi/g	0.101U
Uranium	µg/g	0.00492UJ
Uranium-233/234	pCi/g	0.00104U
Uranium-235/236	pCi/g	0.000644UJ
Uranium-238	pCi/g	0.00155U

[a]Abbreviations and data qualifiers are as follows: U – undetected. J – the reported result is estimated.
[b]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.

Table 2.18. Biota (deer) monitoring program results – 2019

Parameter	Unit	August (8/6/2019)[a,b]	August (8/14/2019)[a,b]	August (8/14/2019)[a,b] *(duplicate sample)*
		kidney		
Americium-241	pCi/g	0.00286U	0.00093U	
Neptunium-237	pCi/g	0U	0U	
Plutonium-238	pCi/g	-0.000999U	-0.000958U	
Plutonium-239/240	pCi/g	0.004UJ	0.000479U	
Technetium-99	pCi/g	0.028U	0.0226U	
Uranium	µg/g	0.000000274U	0.0000000882U	
Uranium-233/234	pCi/g	0.0017U	0.000549U	
Uranium-235/236	pCi/g	0U	0U	
Uranium-238	pCi/g	0U	0U	
		liver		
Americium-241	pCi/g	0.00128U	0.000952U	
Neptunium-237	pCi/g	0U	0U	
Plutonium-238	pCi/g	-0.00204U	0.00108U	
Plutonium-239/240	pCi/g	0.00255U	0.00108U	
Technetium-99	pCi/g	0.0419U	-0.0121U	
Uranium	µg/g	0.00354U	-0.000411U	
Uranium-233/234	pCi/g	0.00488UJ	0U	
Uranium-235/236	pCi/g	0.000674U	-0.000888U	
Uranium-238	pCi/g	0.00108U	0U	
		muscle		
Americium-241	pCi/g	0.00251U	0.00218U	0.00437U
Neptunium-237	pCi/g	0.000742U	0.000399U	0.000388U
Plutonium-238	pCi/g	0U	0U	0.000974U
Plutonium-239/240	pCi/g	0.000981U	0.001U	0.000974U
Technetium-99	pCi/g	-0.00404U	-0.00928U	-0.0041U
Uranium	µg/g	0.000267U	0.0022U	0.000281U
Uranium-233/234	pCi/g	0.00185U	0U	0.000488U
Uranium-235/236	pCi/g	0.000576U	0.00175U	0.000607U
Uranium-238	pCi/g	0U	0.000469U	0U

Table 2.18. Biota (deer) monitoring program results – 2019 (continued)

Parameter	Unit	September 2019[a,b]
	kidney	
Americium-241	pCi/g	0U
Neptunium-237	pCi/g	0.000374U
Plutonium-238	pCi/g	0U
Plutonium-239/240	pCi/g	0.00124U
Technetium-99	pCi/g	-0.0238U
Uranium	µg/g	-0.000507UJ
Uranium-233/234	pCi/g	0.00163U
Uranium-235/236	pCi/g	0.00152UJ
Uranium-238	pCi/g	-0.000407U
	liver	
Americium-241	pCi/g	0.002U
Neptunium-237	pCi/g	0U
Plutonium-238	pCi/g	0.000572U
Plutonium-239/240	pCi/g	0.00172U
Technetium-99	pCi/g	0.1U
Uranium	µg/g	0.000285UJ
Uranium-233/234	pCi/g	0.000495U
Uranium-235/236	pCi/g	0.000615UJ
Uranium-238	pCi/g	0U
	muscle	
Americium-241	pCi/g	0.00172U
Neptunium-237	pCi/g	0.000325U
Plutonium-238	pCi/g	-0.000635U
Plutonium-239/240	pCi/g	0U
Technetium-99	pCi/g	0.0487U
Uranium	µg/g	0.00296UJ
Uranium-233/234	pCi/g	0.0011U
Uranium-235/236	pCi/g	-0.000686UJ
Uranium-238	pCi/g	0.0011U

[a]Abbreviations and data qualifiers are as follows: U – undetected.
J – the reported result is estimated.
[b]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.

Table 2.19. Biota (off-site dairy) monitoring program results – 2019

Parameter	Unit	Milk[a,b]	Milk[a,b] *(duplicate sample)*	Eggs[a,b]
Americium-241	pCi/g	0.000877U	-0.000433U	0.000444U
Neptunium-237	pCi/g	0.000396U	0U	0U
Plutonium-238	pCi/g	0.000487U	0U	-0.000987U
Plutonium-239/240	pCi/g	0.00146U	0.00197U	0.00197U
Technetium-99	pCi/g	0.0407U	-0.0743U	-0.0094U
Uranium	µg/g	0.00225U	0.00283U	0.00447U
Uranium-233/234	pCi/g	0.00143U	0.00333U	0.00329U
Uranium-235/236	pCi/g	0.00178U	0U	0.000585U
Uranium-238	pCi/g	0.000478U	0.000952U	0.00141U

[a]Abbreviations and data qualifiers are as follows: U – undetected. J – the reported result is estimated.
[b]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.

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3. DOSE

This section provides summary tables of air emissions and dose assessments completed by DOE for compliance with 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 – 2019
- Table 3.2. Predicted radiation doses from airborne releases at PORTS – 2019
- Table 3.3. Dose calculations for ambient air monitoring stations – 2019.

Table 3.1. Emissions (Ci/year) from DOE air emission sources – 2019

Radionuclide	Group 1[a]	Group 2[b]	Group 3[c]	DUF_6 facility[d]
Americium-241	2.671E-11	-	2.233E-05	-
Neptunium-237	4.460E-07	-	2.411E-05	-
Plutonium-238	6.365E-07	-	8.253E-06	-
Plutonium-239/240	2.149E-07	-	1.604E-04	-
Technetium-99	5.243E-05	1.416E-03	7.358E-02	-
Uranium-233/234	2.447E-08	1.083E-04	6.764E-03	1.54E-06
Uranium-235	2.359E-05	1.284E-05	3.170E-04	7.03E-08
Uranium-238	1.842E-05	1.088E-04	1.267E-03	3.77E-06
Thorium-228	2.924E-11	1.015E-07	4.217E-06	-
Thorium-230	1.558E-09	4.493E-07	1.091E-05	-
Thorium-231	6.215E-10	1.284E-05	1.767E-04	2.31E-07
Thorium-232	5.922E-12	3.322E-06	3.615E-06	-
Thorium-234	3.969E-09	1.088E-04	6.833E-04	2.11E-05
Protactinium-234m	0	1.088E-04	6.833E-04	2.11E-05
Total	9.577E-05	1.880E-03	8.371E-02	4.781E-05

[a]Group 1 consists of the X-710 Vents and X-622 Groundwater Treatment Facility.
[b]Group 2 consists of the X-344A Gulper Vent and X-344A Cold Trap Vent.
[c]Group 3 consists of the X-330 Vents, X-333 Vents, X-705 Vents, X-623 Groundwater Treatment Facility, X-624 Groundwater Treatment Facility, and X-627 Groundwater Treatment Facility.
[d]DUF_6 – depleted uranium hexafluoride.

Note: 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).

Table 3.2. Predicted radiation doses from airborne releases at PORTS – 2019

Effective dose to:	
Maximally exposed individual (mrem/year)	0.16
Population[a] (person-rem/year)	3.0

[a]Population within 50 miles (80 kilometers) of plant site.

Table 3.3. Dose calculations for ambient air monitoring stations – 2019

Station	Parameter[a]	Dose[b] (mrem/year)	Total dose for station[c]
A3	Americium-241	1.7E-03	
	Neptunium-237	2.5E-04	
	Plutonium-238	6.6E-04	
	Plutonium-239/240	1.7E-03	
	Technetium-99	3.3E-02	
	Uranium-233/234	9.6E-03	
	Uranium-235/236	3.6E-04	
	Uranium-238	9.0E-03	0.056
A6	Americium-241	3.5E-03	
	Neptunium-237	2.9E-04	
	Plutonium-238	9.6E-04	
	Plutonium-239/240	2.4E-03	
	Technetium-99	9.4E-03	
	Uranium-233/234	3.7E-03	
	Uranium-235/236	2.2E-04	
	Uranium-238	1.7E-03	0.020
A8	Americium-241	1.7E-03	
	Neptunium-237	0	
	Plutonium-238	1.1E-03	
	Plutonium-239/240	2.0E-03	
	Technetium-99	7.6E-03	
	Uranium-233/234	2.8E-02	
	Uranium-235/236	2.2E-03	
	Uranium-238	2.2E-02	0.065
A9	Americium-241	2.7E-03	
	Neptunium-237	0	
	Plutonium-238	3.2E-04	
	Plutonium-239/240	2.2E-03	
	Technetium-99	6.3E-03	
	Uranium-233/234	3.9E-02	
	Uranium-235/236	3.0E-04	
	Uranium-238	3.4E-03	0.051

Table 3.3. Dose calculations for ambient air monitoring stations – 2019 (continued)

Station	Parameter[a]	Dose[b] (mrem/year)	Total dose for station
A10	Americium-241	2.2E-03	
	Neptunium-237	1.4E-04	
	Plutonium-238	3.4E-04	
	Plutonium-239/240	2.0E-03	
	Technetium-99	1.0E-02	
	Uranium-233/234	9.8E-02	
	Uranium-235/236	6.1E-03	
	Uranium-238	9.1E-02	0.21
A12	Americium-241	1.8E-03	
	Neptunium-237	1.3E-04	
	Plutonium-238	1.5E-03	
	Plutonium-239/240	2.8E-03	
	Technetium-99	1.0E-02	
	Uranium-233/234	4.8E-03	
	Uranium-235/236	2.6E-04	
	Uranium-238	3.6E-03	0.030
A15	**Americium-241**	2.1E-03	
	Neptunium-237	2.6E-04	
	Plutonium-238	7.4E-04	
	Plutonium-239/240	1.4E-03	
	Technetium-99	2.4E-02	
	Uranium-233/234	3.5E-03	
	Uranium-235/236	2.5E-04	
	Uranium-238	1.3E-03	0.034
A23	Americium-241	3.6E-03	
	Neptunium-237	4.0E-04	
	Plutonium-238	4.0E-04	
	Plutonium-239/240	2.2E-03	
	Technetium-99	1.2E-02	
	Uranium-233/234	1.5E-02	
	Uranium-235/236	5.6E-04	
	Uranium-238	1.4E-02	0.049
A24	Americium-241	2.5E-03	
	Neptunium-237	0	
	Plutonium-238	3.2E-04	
	Plutonium-239/240	2.9E-03	
	Technetium-99	1.5E-02	
	Uranium-233/234	1.7E-02	
	Uranium-235/236	1.2E-03	
	Uranium-238	1.3E-02	0.053

Table 3.3. Dose calculations for ambient air monitoring stations – 2019 (continued)

Station	Parameter[a]	Dose[b] (mrem/year)	Total dose for station
A28	Americium-241	2.7E-03	
	Neptunium-237	2.7E-04	
	Plutonium-238	1.6E-03	
	Plutonium-239/240	2.2E-03	
	Technetium-99	9.9E-03	
	Uranium-233/234	1.5E-03	
	Uranium-235/236	1.9E-04	
	Uranium-238	1.4E-03	0.020
A29	Americium-241	2.4E-03	
	Neptunium-237	2.5E-04	
	Plutonium-238	8.4E-04	
	Plutonium-239/240	1.8E-03	
	Technetium-99	1.0E-02	
	Uranium-233/234	7.5E-03	
	Uranium-235/236	4.7E-04	
	Uranium-238	5.4E-03	0.026
A36	Americium-241	1.8E-03	
	Neptunium-237	2.7E-04	
	Plutonium-238	1.7E-03	
	Plutonium-239/240	3.0E-03	
	Technetium-99	2.4E-02	
	Uranium-233/234	3.4E-02	
	Uranium-235/236	1.6E-03	
	Uranium-238	1.4E-02	0.080
A37	Americium-241	0	
	Neptunium-237	0	
	Plutonium-238	0	
	Plutonium-239/240	0	
	Technetium-99	0	
	Uranium-233/234	0	
	Uranium-235/236	0	
	Uranium-238	0	0[c]
A41A	Americium-241	2.2E-03	
	Neptunium-237	4.3E-04	
	Plutonium-238	6.2E-04	
	Plutonium-239/240	1.6E-03	
	Technetium-99	2.3E-02	
	Uranium-233/234	7.7E-03	
	Uranium-235/236	2.6E-04	
	Uranium-238	2.7E-03	0.038

Table 3.3. Dose calculations for ambient air monitoring stations – 2019 (continued)

Station	Parameter[a]	Dose[b] (mrem/year)	Total dose for station
T7	Americium-241	2.3E-03	
	Neptunium-237	2.8E-04	
	Plutonium-238	9.0E-04	
	Plutonium-239/240	2.3E-03	
	Technetium-99	6.2E-03	
	Uranium-233/234	9.3E-03	
	Uranium-235/236	2.4E-04	
	Uranium-238	6.7E-03	0.028

[a]Parameters listed in **bold** type were detected at least once in the samples collected in 2019 (see Table 2.9).
[b]The 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).
[c]The dose is assumed to be 0 for transuranics, technetium-99, and uranium-235/236 because these radionuclides were not detected or are not typically expected to be present at this background location. This assumption is made so that in comparisons with monitoring stations nearer to PORTS, the dose associated with levels of these radionculides at the background station is not overestimated.

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4. GROUNDWATER

This section summarizes analytical results for routine groundwater monitoring at PORTS in 2019 at the following locations:

- X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility
- Peter Kiewit (PK) Landfill
- Quadrant I Groundwater Investigative (5-Unit) Area
- X-749A Classified Materials Disposal Facility
- Quadrant II Groundwater Investigative (7-Unit) Area
- X-701B Former Holding Pond
- X-633 Former Recirculating Cooling Water Complex
- X-616 Former Chromium Sludge Surface Impoundments
- X-740 Former Waste Oil Handling Facility
- X-611A Former Lime Sludge Lagoons
- X-735 Landfills
- X-734 Landfills
- X-533 Former Switchyard Complex
- X-344C Former 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 2019. Sampling for radionuclides is not part of the monitoring programs for PK Landfill, X-633 Former Recirculating Cooling Water Complex, X-616 Former Chromium Sludge Surface Impoundments, X-740 Former Waste Oil Handling Facility, X-611A Former Lime Sludge Lagoons, X-533 Former Switchyard Complex, and X-344C Former Hydrogen Fluoride Storage Building.

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

Acetone was frequently detected in both environmental and blank samples (field and trip blanks) collected in 2019. Acetone is a common laboratory contaminant that is not typically detected in the PORTS groundwater plumes. Detections of acetone can be 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.

Other VOCs were detected in more than two trip and/or field blanks during 2019. These VOCs are 1,2-dichloroethane, 1,2-dichloropropane, 2-butanone, bromomethane, carbon disulfide, m,p-xylenes, and TCE. 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 (such as vials for VOC samples), and storage areas after samples are collected (such as refrigerators or sample shipping containers).

The primary purpose of the groundwater data is to determine the nature and extent of contamination in groundwater and associated surface water at PORTS. Data collected in 2019 meet this purpose.

Complete groundwater monitoring results for sampling completed as required by the *Integrated Groundwater Monitoring Plan* (DOE 2017) are provided in the *2019 Groundwater Monitoring Report for the Portsmouth Gaseous Diffusion Plant* (DOE 2020). The *2019 Groundwater Monitoring Report for the Portsmouth Gaseous Diffusion Plant* also provides the following information not included in this Data Report:

- Results for special studies conducted during 2019 at the X-633 Former Recirculating Cooling Water Complex and X-630 Former Recirculating Cooling Water Complex.

- Results for duplicate samples (samples collected from the same location, at the same time, and from the same sampling device as the regular sample), which are collected at a frequency of one per 20 sampling locations per groundwater monitoring area. Duplicate samples are analyzed for the same parameters as the regular sample associated with the sampling location.

The following tables are included in this section:

- Table 4.1. VOCs detected at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2019

- Table 4.2. Results for radionuclides at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2019

- Table 4.3. VOCs detected at the PK Landfill – 2019

- Table 4.4. VOCs detected at the Quadrant I Groundwater Investigative (5-Unit) Area – 2019

- Table 4.5. Results for radionuclides at the Quadrant I Groundwater Investigative (5-Unit) Area – 2019

- Table 4.6. VOCs detected at the X-749A Classified Materials Disposal Facility – 2019

- Table 4.7. Results for radionuclides at the X-749A Classified Materials Disposal Facility – 2019

- Table 4.8. VOCs detected at the Quadrant II Groundwater Investigative (7-Unit) Area – 2019

- Table 4.9. Results for radionuclides at the Quadrant II Groundwater Investigative (7-Unit) Area – 2019

- Table 4.10. VOCs detected at the X-701B Former Holding Pond – 2019

- Table 4.11. Results for radionuclides at the X-701B Former Holding Pond – 2019

- Table 4.12. Results for chromium at the X-633 Former Recirculating Cooling Water Complex – 2019

- Table 4.13. VOCs detected at the X-616 Former Chromium Sludge Surface Impoundments – 2019
- Table 4.14. Results for chromium at the X-616 Former Chromium Sludge Surface Impoundments – 2019
- Table 4.15. VOCs detected at the X-740 Former Waste Oil Handling Facility – 2019
- Table 4.16. Results for beryllium and chromium at the X-611A Former Lime Sludge Lagoons – 2019
- Table 4.17. VOCs detected at the X-735 Landfills – 2019
- Table 4.18. Results for radionuclides at the X-735 Landfills – 2019
- Table 4.19. VOCs detected at the X-734 Landfills – 2019
- Table 4.20. Results for radionuclides at the X-734 Landfills – 2019
- Table 4.21. Results for cadmium and nickel at the X-533 Former Switchyard Complex – 2019
- Table 4.22. VOCs detected at the X-344C Former Hydrogen Fluoride Storage Building – 2019
- Table 4.23. VOCs detected at surface water monitoring locations – 2019
- Table 4.24. Results for radionuclides at surface water monitoring locations – 2019.

Tables for VOCs and radionuclides detected at exit pathway monitoring location F-29B are not provided because none were detected. Results for exit pathway monitoring locations sampled during 2019 (that are part of the monitoring programs for other areas) are provided in the tables for their respective monitoring areas as follows:

- Tables 4.1 and 4.2: VOCs and/or radionuclides detected at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility (wells X749-14B, X749-44G, X749-45G, X749-64B, X749-68G, X749-96G, X749-97G, and X749-98G).
- Table 4.11: Results for radionuclides at X-701B Former Holding Pond area well X701-48G (VOCs were not detected in well X701-48G in 2019).
- Tables 4.23 and 4.24: VOCs and/or 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
B	The analyte was detected in the laboratory blank sample.
D	The reported result is from a dilution.
J	The reported value is estimated.
Q	One or more quality control criteria failed.
U	Undetected

Table 4.1. VOCs detected at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2019

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
F-27G	1,1-Dichloroethane	µg/L			0.84 J	
	cis-1,2-Dichloroethene	µg/L			0.78 J	
PK-07G	Trichloroethene	µg/L			0.39 J	
PK-08G	cis-1,2-Dichloroethene	µg/L			0.18 J	
	Trichloroethene	µg/L			11	
PK-09G	cis-1,2-Dichloroethene	µg/L			7.8 D	
	Trichloroethene	µg/L			360 DJ	
STSW-101G	1,1,1-Trichloroethane	µg/L		1.9		1.87
	1,1-Dichloroethane	µg/L		9.3		9.23
	1,1-Dichloroethene	µg/L		20		20.5
	1,2-Dichloroethane	µg/L		1.9		1.79
	Chloroform	µg/L		0.6 J		0.62 J
	cis-1,2-Dichloroethene	µg/L		4.4		4.51
	Tetrachloroethene	µg/L		0.76 J		0.41 J
	Trichloroethene	µg/L		23		23.7
STSW-102G	1,1,1-Trichloroethane	µg/L		2.9		2.91
	1,1-Dichloroethane	µg/L		41		33.3
	1,1-Dichloroethene	µg/L		24		21.1
	1,2-Dichloroethane	µg/L		12		11.3
	Chloroform	µg/L		1.5		1.5
	cis-1,2-Dichloroethene	µg/L		12		10.4
	trans-1,2-Dichloroethene	µg/L		0.15 J		0.333 U
	Trichloroethene	µg/L		100		75.1
WP-03G	Trichloroethene	µg/L	0.17 J	0.16 U	0.16 U	0.333 U
X120-03G	Trichloroethene	µg/L			0.71 J	
X120-05G	Trichloroethene	µg/L			2.8	
X120-08G	1,1,1-Trichloroethane	µg/L			2.4	
	1,1,2-Trichloroethane	µg/L			0.39 J	
	1,1-Dichloroethane	µg/L			6.5	
	1,1-Dichloroethene	µg/L			24	
	Chloroform	µg/L			0.69 J	
	cis-1,2-Dichloroethene	µg/L			0.7 J	
	Tetrachloroethene	µg/L			0.2 J	
	Trichloroethene	µg/L			13	
X120-09G	1,1,1-Trichloroethane	µg/L			2.1	
	1,1-Dichloroethane	µg/L			4.7	
	1,1-Dichloroethene	µg/L			18	
	1,2-Dichloroethane	µg/L			0.59 J	
	Chloroform	µg/L			0.48 J	
	cis-1,2-Dichloroethene	µg/L			0.58 J	
	Trichloroethene	µg/L			10	
X120-10G	1,1,1-Trichloroethane	µg/L			1.9	
	1,1,2-Trichloroethane	µg/L			0.62 J	
	1,1-Dichloroethane	µg/L			9.3	
	1,1-Dichloroethene	µg/L			25	
	1,2-Dichloroethane	µg/L			0.79 J	
	2-Butanone	µg/L			3 J	
	Acetone	µg/L			5.3 J	
	Chloroform	µg/L			0.74 J	
	cis-1,2-Dichloroethene	µg/L			0.66 J	

Table 4.1. VOCs detected at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X120-10G	Trichloroethene	µg/L			6.1	
X120-11G	1,1-Dichloroethene	µg/L		0.5 DJ		0.53 J
	Acetone	µg/L		5 DJ		1.74 U
	Carbon disulfide	µg/L		0.91 DJ		1.67 U
	cis-1,2-Dichloroethene	µg/L		4.9 D		9.91
	Trichloroethene	µg/L		240 D		163
X749-04G	Trichloroethene	µg/L			180 D	
X749-05G	1,1-Dichloroethane	µg/L			0.26 J	
	Carbon tetrachloride	µg/L			0.2 J	
	Chloroform	µg/L			0.51 J	
	cis-1,2-Dichloroethene	µg/L			0.68 J	
	Tetrachloroethene	µg/L			1.4	
	Trichloroethene	µg/L			110	
X749-06G	1,1,1-Trichloroethane	µg/L		17 D		17.9
	1,1,2-Trichloroethane	µg/L		2.7 U		2.5
	1,1-Dichloroethane	µg/L		100 D		134
	1,1-Dichloroethene	µg/L		83 D		91.6
	1,2-Dichloroethane	µg/L		1.3 U		2.74
	Chloroform	µg/L		9.9 DJ		13.1
	cis-1,2-Dichloroethene	µg/L		26 D		39.2
	Tetrachloroethene	µg/L		9.9 DJ		13.4
	Trichloroethene	µg/L		400 D		504
	Vinyl chloride	µg/L		1 U		0.5 J
X749-07G	1,1,1-Trichloroethane	µg/L		9.5		8.63
	1,1-Dichloroethane	µg/L		23		16.5
	1,1-Dichloroethene	µg/L		20		16.2
	1,2-Dichloroethane	µg/L		10		7.83
	Chloroform	µg/L		1.2		1.13
	cis-1,2-Dichloroethene	µg/L		5.2		5.65
	Dichlorodifluoromethane	µg/L		0.56 J		
	Tetrachloroethene	µg/L		0.89 J		0.46 J
	Trichloroethene	µg/L		78 J		57.8
X749-08G	1,1,1-Trichloroethane	µg/L		1.3		4.23
	1,1-Dichloroethane	µg/L		0.27 J		0.83 J
	1,1-Dichloroethene	µg/L		1.2		4.07
	cis-1,2-Dichloroethene	µg/L		0.39 J		0.99 J
	Trichloroethene	µg/L		2.8		7.56
X749-09GA	1,1,1-Trichloroethane	µg/L		5.2		2.13
	1,1-Dichloroethane	µg/L		1.1		0.333 U
	1,1-Dichloroethene	µg/L		3.9		0.78 J
	1,2-Dichloroethane	µg/L		0.3 J		0.333 U
	Chloromethane	µg/L		0.51 J		0.333 U
	cis-1,2-Dichloroethene	µg/L		0.99 J		0.333 U
	Trichloroethene	µg/L		12		3.25
X749-10GA	1,1-Dichloroethane	µg/L		0.9 J		0.83 J
	1,1-Dichloroethene	µg/L		2.5		2.07
	cis-1,2-Dichloroethene	µg/L		0.9 J		0.96 J
X749-13G	1,1,1-Trichloroethane	µg/L		1.8		1.56
	1,1-Dichloroethane	µg/L		0.49 J		0.41 J
	1,1-Dichloroethene	µg/L		2.7		2.21

Table 4.1. VOCs detected at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-13G	cis-1,2-Dichloroethene	µg/L		0.46 J		0.44 J
	Trichloroethene	µg/L		5.5		4.29
X749-20G	1,1,1-Trichloroethane	µg/L			0.19 J	
	1,1-Dichloroethane	µg/L			0.68 J	
	1,1-Dichloroethene	µg/L			0.59 J	
	cis-1,2-Dichloroethene	µg/L			0.73 J	
	Trichloroethene	µg/L			6.1	
X749-21G	1,4-Dichlorobenzene	µg/L		0.16 J		0.333 U
	Carbon disulfide	µg/L		0.21 J		1.67 U
	Trichloroethene	µg/L		0.59 J		0.71 J
X749-22G	1,1,1-Trichloroethane	µg/L		0.43 J		0.333 U
	1,1-Dichloroethane	µg/L		4.2		2.75
	1,1-Dichloroethene	µg/L		5.7		4.11
	cis-1,2-Dichloroethene	µg/L		1.8		1.42
	Trichloroethene	µg/L		0.28 J		0.333 U
	Vinyl chloride	µg/L		0.1 U		0.54 J
X749-26G	1,1,1-Trichloroethane	µg/L		0.94 J		1.2
	1,1-Dichloroethane	µg/L		2.5		4.59
	1,1-Dichloroethene	µg/L		2.6		5.29
	1,2-Dichloroethane	µg/L		1		2.02
	Chloroform	µg/L		0.19 J		0.35 J
	cis-1,2-Dichloroethene	µg/L		0.44 J		1.08
	Trichloroethene	µg/L		5.7		9.66
X749-27G	1,1,1-Trichloroethane	µg/L		28 D		19.8
	1,1-Dichloroethane	µg/L		170 D		121
	1,1-Dichloroethene	µg/L		220 D		183
	1,2-Dichloroethane	µg/L		120 D		62.1
	Chloroform	µg/L		17 D		12.6
	cis-1,2-Dichloroethene	µg/L		29 D		21.8
	Tetrachloroethene	µg/L		1.3 DJ		1.33 U
	Trichloroethene	µg/L		270 D		191
X749-28G	1,1,1-Trichloroethane	µg/L			4.2 J	
	1,1,2-Trichloroethane	µg/L			0.27 J	
	1,1-Dichloroethane	µg/L			5.8 J	
	1,1-Dichloroethene	µg/L			20	
	1,2-Dichloroethane	µg/L			0.89 J	
	Chloroform	µg/L			0.99 J	
	cis-1,2-Dichloroethene	µg/L			0.92 J	
	Tetrachloroethene	µg/L			0.34 J	
	Trichloroethene	µg/L			37 J	
X749-29G	1,1,1-Trichloroethane	µg/L			0.16 J	
	1,1-Dichloroethene	µg/L			0.26 J	
	Trichloroethene	µg/L			6.3	
X749-30G	1,1-Dichloroethene	µg/L			0.8 J	
	Chloroform	µg/L			0.4 J	
	cis-1,2-Dichloroethene	µg/L			2.2	
	Trichloroethene	µg/L			110	
X749-33G	1,1,1-Trichloroethane	µg/L		10		6.15
	1,1,2-Trichloroethane	µg/L		0.75 J		0.44 J
	1,1-Dichloroethane	µg/L		37		21.9

Table 4.1. VOCs detected at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-33G	1,1-Dichloroethene	µg/L		58		32.6
	1,2-Dichloroethane	µg/L		18 J		9.05
	Chloroform	µg/L		4.2		2.38
	cis-1,2-Dichloroethene	µg/L		6.5		3.07
	Tetrachloroethene	µg/L		1.4		0.82 J
	Trichloroethene	µg/L		100 J		64.7
X749-35G	1,1,1-Trichloroethane	µg/L			40	
	1,1,2-Trichloroethane	µg/L			0.27 J	
	1,1-Dichloroethane	µg/L			9.4	
	1,1-Dichloroethene	µg/L			30	
	Chloroform	µg/L			0.29 J	
	cis-1,2-Dichloroethene	µg/L			9.8	
	trans-1,2-Dichloroethene	µg/L			0.22 J	
	Trichloroethene	µg/L			76	
	Vinyl chloride	µg/L			0.67 J	
X749-36G	1,1,1-Trichloroethane	µg/L			0.52 J	
	1,1-Dichloroethane	µg/L			1.4	
	1,1-Dichloroethene	µg/L			4.9	
	1,2-Dichloroethane	µg/L			0.25 J	
	Chloroform	µg/L			0.18 J	
	cis-1,2-Dichloroethene	µg/L			0.31 J	
	Trichloroethene	µg/L			4.6	
X749-37G	1,1,1-Trichloroethane	µg/L		0.68 J		0.94 J
	1,1-Dichloroethane	µg/L		4.2		4.21
	1,1-Dichloroethene	µg/L		9.7		10.6
	1,2-Dichloroethane	µg/L		0.13 U		0.39 J
	cis-1,2-Dichloroethene	µg/L		1.8		1.51
	Tetrachloroethene	µg/L		0.26 J		0.333 U
	Trichloroethene	µg/L		9.9		9.59
X749-38G	1,1,1-Trichloroethane	µg/L		3.7		2.82
	1,1,2-Trichloroethane	µg/L		0.45 J		0.333 U
	1,1-Dichloroethane	µg/L		11		9.85
	1,1-Dichloroethene	µg/L		28		24
	1,2-Dichloroethane	µg/L		1.2		1.11
	Chloroform	µg/L		0.83 J		0.68 J
	cis-1,2-Dichloroethene	µg/L		5.5		4.47
	Tetrachloroethene	µg/L		0.69 J		0.53 J
	Trichloroethene	µg/L		34		27.6
X749-40G	1,1-Dichloroethene	µg/L			0.93 J	
	Chloroform	µg/L			0.34 J	
	cis-1,2-Dichloroethene	µg/L			0.3 J	
	Trichloroethene	µg/L			9	
X749-41G	Trichloroethene	µg/L		450 D		366
X749-42G	1,1,1-Trichloroethane	µg/L		0.22 J		0.333 U
	1,1-Dichloroethane	µg/L		0.53 J		0.36 J
	1,1-Dichloroethene	µg/L		1.8		1.25
	Trichloroethene	µg/L		4.1		3.1
X749-43G	1,1-Dichloroethane	µg/L			0.27 J	
	1,1-Dichloroethene	µg/L			0.91 J	
	1,2-Dichloroethane	µg/L			0.13 J	

Table 4.1. VOCs detected at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-43G	Trichloroethene	µg/L			0.55 J	
X749-44G	1,1-Dichloroethane	µg/L	0.25 J	0.22 U	0.22 U	0.333 U
	1,2-Dichloroethane	µg/L	0.13 U	0.13 U	0.2 J	0.333 U
	Chloromethane	µg/L	0.34 J	0.3 U	0.3 U	0.333 U
	Trichloroethene	µg/L	0.71 J	0.24 J	0.36 J	0.333 U
X749-45G	1,1-Dichloroethane	µg/L	6.2	5.3	2.5	0.85 J
	1,1-Dichloroethene	µg/L	5.2	4	2.1	0.57 J
	1,2-Dichloroethane	µg/L	1.6	1.5	0.74 J	0.333 U
	Chloromethane	µg/L	0.3 U	0.48 J	0.3 U	0.333 U
	cis-1,2-Dichloroethene	µg/L	6.9	4.9	1.8	0.61 J
	Trichloroethene	µg/L	16	16	7.3	2.74
X749-50B	1,1-Dichloroethane	µg/L			0.84 J	
	cis-1,2-Dichloroethene	µg/L			0.33 J	
	Trichloroethene	µg/L			0.32 J	
X749-54B	1,1-Dichloroethane	µg/L		3.1		2.62
	Trichloroethene	µg/L		1.8 J		15
X749-60B	Carbon disulfide	µg/L			0.66 J	
X749-67G	1,1,1-Trichloroethane	µg/L	1.9	4	5.4 D	4.05
	1,1,2-Trichloroethane	µg/L	0.27 U	0.27 J	0.54 QU	0.333 U
	1,1-Dichloroethane	µg/L	25	58	56 D	46.5
	1,1-Dichloroethene	µg/L	21	39	42 D	31.6
	1,2-Dichloroethane	µg/L	7.2	17	18 D	15.9
	Acetone	µg/L	1.9 U	1.9 U	9.4 DJ	1.74 U
	Carbon disulfide	µg/L	0.27 J	0.38 J	0.33 U	1.67 U
	Chloroform	µg/L	0.98 J	2.5	3.3 D	2.26
	cis-1,2-Dichloroethene	µg/L	14	24	28 D	21.3
	trans-1,2-Dichloroethene	µg/L	0.15 U	0.29 J	0.3 U	0.333 U
	Trichloroethene	µg/L	67	160	150 D	109
	Vinyl chloride	µg/L	0.1 U	0.22 J	0.2 U	0.333 U
X749-97G	1,1-Dichloroethane	µg/L	1.6	1.2	0.59 J	0.333 U
	1,1-Dichloroethene	µg/L	0.65 J	0.45 J	0.25 J	0.333 U
	1,2-Dichloroethane	µg/L	0.13 U	0.4 J	0.3 J	0.333 U
	cis-1,2-Dichloroethene	µg/L	0.93 J	0.62 J	0.17 J	0.333 U
	Trichloroethene	µg/L	3.1	2.3	1.1	0.333 U
X749-99M	1,2-Dichloroethane	µg/L			0.19 J	
	Trichloroethene	µg/L			0.19 J	
X749-101M	1,2-Dichloroethane	µg/L			0.14 J	
X749-102G	1,1-Dichloroethane	µg/L	0.4 J	0.22 U	0.22 J	0.333 U
	1,1-Dichloroethene	µg/L	0.38 J	0.24 J	0.26 J	0.35 J
	1,2-Dichloroethane	µg/L	0.13 U	0.19 J	0.13 U	0.333 U
	Trichloroethene	µg/L	0.55 J	0.48 J	0.35 J	0.41 J
X749-103G	1,1-Dichloroethane	µg/L	0.22 U	0.22 U	0.22 U	0.42 J
	1,1-Dichloroethene	µg/L	0.23 U	0.23 U	0.33 J	0.64 J
	1,2-Dichloroethane	µg/L	0.13 U	0.23 J	0.21 J	0.333 U
	Carbon disulfide	µg/L	0.27 J	0.17 U	0.17 U	1.67 U
	Trichloroethene	µg/L	0.49 J	0.22 J	0.4 J	0.7 J
X749-104G	Bromomethane	µg/L		0.23 J		0.337 U
X749-106G	1,1,1-Trichloroethane	µg/L		7.7 J		6.33
	1,1,2-Trichloroethane	µg/L		0.86 J		0.62 J
	1,1-Dichloroethane	µg/L		16 J		12.1

Table 4.1. VOCs detected at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-106G	1,1-Dichloroethene	µg/L		48 J		34.7
	1,2-Dichloroethane	µg/L		1.3 J		1.17
	Chloroform	µg/L		1.4 J		1.09
	cis-1,2-Dichloroethene	µg/L		3.2 J		2.38
	Tetrachloroethene	µg/L		0.75 J		0.6 J
	Trichloroethene	µg/L		35 J		26.3
X749-107G	1,1,1-Trichloroethane	µg/L		8.6		6.96
	1,1,2-Trichloroethane	µg/L		1.1		0.78 J
	1,1-Dichloroethane	µg/L		20		14.9
	1,1-Dichloroethene	µg/L		60		44.4
	1,2-Dichloroethane	µg/L		1.6		1.52
	Chloroform	µg/L		1.7		1.36
	Chloromethane	µg/L		0.4 J		0.333 U
	cis-1,2-Dichloroethene	µg/L		3.7		2.89
	Tetrachloroethene	µg/L		0.77 J		0.65 J
	Trichloroethene	µg/L		43		34.6
X749-108G	1,1,1-Trichloroethane	µg/L		25		22.5
	1,1,2-Trichloroethane	µg/L		1.5		1.21
	1,1-Dichloroethane	µg/L		28		23.4
	1,1-Dichloroethene	µg/L		82		68.3
	1,2-Dichloroethane	µg/L		2.2		2.32
	Chloroform	µg/L		2.7		2.59
	Chloromethane	µg/L		0.34 J		0.333 U
	cis-1,2-Dichloroethene	µg/L		4.5		3.62
	Tetrachloroethene	µg/L		1.4		1.09
	Trichloroethene	µg/L		74		63.6
X749-109G	1,1,1-Trichloroethane	µg/L		0.16 U		0.34 J
	1,1-Dichloroethane	µg/L		1.6		1.71
	1,1-Dichloroethene	µg/L		2.6		2.31
	cis-1,2-Dichloroethene	µg/L		0.73 J		0.87 J
	Trichloroethene	µg/L		4.4		3.84
X749-110G	1,1,1-Trichloroethane	µg/L		0.86 J		1.05
	1,1-Dichloroethane	µg/L		1.9		2.22
	1,1-Dichloroethene	µg/L		3.2		4.8
	1,2-Dichloroethane	µg/L		0.7 UJ		0.63 J
	Chloroform	µg/L		0.17 J		0.333 U
	cis-1,2-Dichloroethene	µg/L		1.8		2.67
	trans-1,2-Dichloroethene	µg/L		0.15 J		0.333 U
	Trichloroethene	µg/L		9.5		10.3
X749-113G	1,1,1-Trichloroethane	µg/L		14		10.5
	1,1-Dichloroethane	µg/L		22		15.9
	1,1-Dichloroethene	µg/L		34		24.1
	1,2-Dichloroethane	µg/L		11		9.03
	Chloroform	µg/L		2.1		1.62
	cis-1,2-Dichloroethene	µg/L		3.2		2.62
	Tetrachloroethene	µg/L		0.41 J		0.34 J
	Trichloroethene	µg/L		48		34.3
X749-114G	1,1,1-Trichloroethane	µg/L			0.18 J	
	Benzene	µg/L			0.17 J	
	cis-1,2-Dichloroethene	µg/L			1.2	

Table 4.1. VOCs detected at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-115G	cis-1,2-Dichloroethene	µg/L			4.7 D	
	Trichloroethene	µg/L			150 D	
X749-117G	Chloroform	µg/L			0.86 J	
	cis-1,2-Dichloroethene	µg/L			0.23 J	
	Tetrachloroethene	µg/L			0.61 J	
	Trichloroethene	µg/L			68	
X749-118G	1,1-Dichloroethane	µg/L			0.99 J	
	1,1-Dichloroethene	µg/L			0.25 J	
	4-Methyl-2-pentanone	µg/L			6.3	
	Chloroform	µg/L			0.25 J	
	cis-1,2-Dichloroethene	µg/L			11	
	Tetrachloroethene	µg/L			1.2	
	Trichloroethene	µg/L			81	
X749-119G	Chloroform	µg/L			1.2	
	cis-1,2-Dichloroethene	µg/L			0.32 J	
	Trichloroethene	µg/L			14	
X749-120G	1,1,1-Trichloroethane	µg/L			450 D	
	1,1,2-Trichloroethane	µg/L			67 DJ	
	1,1-Dichloroethane	µg/L			4400 D	
	1,1-Dichloroethene	µg/L			2500 D	
	1,2-Dichloroethane	µg/L			57 DJ	
	Chloroform	µg/L			230 D	
	cis-1,2-Dichloroethene	µg/L			1200 D	
	Tetrachloroethene	µg/L			210 D	
	Trichloroethene	µg/L			6100 D	
	Vinyl chloride	µg/L			22 DJ	
X749-121G	1,1,1-Trichloroethane	µg/L			47 D	
	1,1,2-Trichloroethane	µg/L			1.4 DJ	
	1,1-Dichloroethane	µg/L			12 D	
	1,1-Dichloroethene	µg/L			240 D	
	1,2-Dichloroethane	µg/L			1.7 DJ	
	Chloroethane	µg/L			2.8 DJ	
	Chloroform	µg/L			1.2 DJ	
	cis-1,2-Dichloroethene	µg/L			9.5 D	
	Trichloroethene	µg/L			69 D	
	Vinyl chloride	µg/L			0.92 DJ	
X749-122G	1,1,1-Trichloroethane	µg/L			280 D	
	1,1-Dichloroethane	µg/L			73 D	
	1,1-Dichloroethene	µg/L			290 D	
	Benzene	µg/L			5.4 DJ	
	Chloroform	µg/L			3.4 DJ	
	cis-1,2-Dichloroethene	µg/L			51 D	
	Trichloroethene	µg/L			850 D	
X749-BG9G	1,2-Dichloroethane	µg/L		0.17 J		0.333 U
	Carbon disulfide	µg/L		0.39 J		1.67 U
	Trichloroethene	µg/L		0.34 J		0.333 U
X749-PZ02G	1,4-Dichlorobenzene	µg/L		0.18 J		0.333 U
	Carbon disulfide	µg/L		0.22 J		1.67 U
	Trichloroethene	µg/L		0.27 J		0.333 U
X749-PZ04G	1,1,1-Trichloroethane	µg/L	0.16 U	0.49 J	0.18 J	0.333 U

Table 4.1. VOCs detected at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-PZ04G	1,1-Dichloroethane	µg/L	6.9	6	2.9	1.6
	1,1-Dichloroethene	µg/L	3.8	2.9	1.7	0.75 J
	1,2-Dichloroethane	µg/L	1.8	1.8	0.92 J	0.42 J
	Chloromethane	µg/L	0.8 J	0.3 U	0.3 U	0.333 U
	cis-1,2-Dichloroethene	µg/L	1.8	1.7	0.85 J	0.48 J
	Trichloroethene	µg/L	13	13	6.6	3.63
X749-PZ06G	1,1,1-Trichloroethane	µg/L		7.1		6.9
	1,1,2-Trichloroethane	µg/L		0.86 J		0.74 J
	1,1-Dichloroethane	µg/L		23		17.1
	1,1-Dichloroethene	µg/L		75		54.9
	1,2-Dichloroethane	µg/L		1.9		1.64
	Chloroform	µg/L		1.7		1.45
	cis-1,2-Dichloroethene	µg/L		3.5		2.95
	Tetrachloroethene	µg/L		0.2 U		0.46 J
	Trichloroethene	µg/L		48		38.5
X749-PZ07G	Trichloroethene	µg/L			0.33 J	
X749-PZ08G	1,1-Dichloroethane	µg/L		0.7 J		
	1,1-Dichloroethene	µg/L		0.37 J		
	Chloroform	µg/L		0.18 J		
	cis-1,2-Dichloroethene	µg/L		1.7 J		
	Trichloroethene	µg/L		2.7 J		
X749-PZ09G	1,1,1-Trichloroethane	µg/L		1.4		
	1,1-Dichloroethane	µg/L		2.7		
	1,1-Dichloroethene	µg/L		7.1		
	Bromomethane	µg/L		0.67 J		
	cis-1,2-Dichloroethene	µg/L		16		
	trans-1,2-Dichloroethene	µg/L		0.17 J		
	Trichloroethene	µg/L		32		
	Vinyl chloride	µg/L		0.32 J		
X749-PZ10G	1,1,1-Trichloroethane	µg/L		6.4 D		6.81
	1,1-Dichloroethane	µg/L		1.1 U		0.54 J
	1,1-Dichloroethene	µg/L		100 D		83.4
	1,2-Dichloroethane	µg/L		0.65 U		0.45 J
	Acetone	µg/L		10 DJ		1.74 U
	Chloroform	µg/L		24 D		25.7
	cis-1,2-Dichloroethene	µg/L		0.75 U		0.58 J
	Trichloroethene	µg/L		430 DJ		355
X749-PZ11G	1,1,1-Trichloroethane	µg/L		5.7		
	1,1-Dichloroethane	µg/L		4.6		
	1,1-Dichloroethene	µg/L		4.5		
	cis-1,2-Dichloroethene	µg/L		17		
	trans-1,2-Dichloroethene	µg/L		0.55 J		
	Trichloroethene	µg/L		61		
	Vinyl chloride	µg/L		1.2		
X749-PZ12G	1,1,1-Trichloroethane	µg/L		3.7		
	1,1-Dichloroethane	µg/L		29		
	1,1-Dichloroethene	µg/L		30		
	1,2-Dichloroethane	µg/L		0.45 J		
	Benzene	µg/L		0.66 J		
	cis-1,2-Dichloroethene	µg/L		8.1		

Table 4.1. VOCs detected at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-PZ12G	trans-1,2-Dichloroethene	µg/L		0.57 J		
	Trichloroethene	µg/L		4.7		
	Vinyl chloride	µg/L		1		
X749-PZ13G	1,1,1-Trichloroethane	µg/L		17		
	1,1-Dichloroethane	µg/L		45		
	1,1-Dichloroethene	µg/L		78		
	1,2-Dichloroethane	µg/L		1.4		
	Benzene	µg/L		3		
	Chloroform	µg/L		0.47 J		
	cis-1,2-Dichloroethene	µg/L		18		
	trans-1,2-Dichloroethene	µg/L		0.65 J		
	Trichloroethene	µg/L		47		
	Vinyl chloride	µg/L		1.3		
X749-WPW	1,1,1-Trichloroethane	µg/L		48 D		3.4
	1,1-Dichloroethane	µg/L		61 D		7.7
	1,1-Dichloroethene	µg/L		110 D		10
	1,2-Dichloroethane	µg/L		9.7 D		2.1
	Benzene	µg/L		2.9 DJ		0.16 U
	Chloroform	µg/L		12 D		0.61 J
	cis-1,2-Dichloroethene	µg/L		110 D		7.6
	Tetrachloroethene	µg/L		1.9 DJ		0.2 U
	trans-1,2-Dichloroethene	µg/L		1.2 DJ		0.15 U
	Trichloroethene	µg/L		470 D		28
	Vinyl chloride	µg/L		2.2 DJ		0.1 U

Table 4.2. Results for radionuclides at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2019

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
STSW-101G	Technetium-99	pCi/L		0.442 U		
	Uranium	µg/L		0.113 U		
	Uranium-233/234	pCi/L		0.0855 U		
	Uranium-235/236	pCi/L		-0.0214 U		
	Uranium-238	pCi/L		0.0413 U		
STSW-102G	Technetium-99	pCi/L		14.3		
	Uranium	µg/L		3.06		
	Uranium-233/234	pCi/L		1.16		
	Uranium-235/236	pCi/L		0.0273 U		
	Uranium-238	pCi/L		1.02		
WP-01G	Technetium-99	pCi/L		0.442 U		
	Uranium	µg/L		0.223		
	Uranium-233/234	pCi/L		0.169		
	Uranium-235/236	pCi/L		0.0169 U		
	Uranium-238	pCi/L		0.0723 U		
WP-02G	Technetium-99	pCi/L		-1.36 U		
	Uranium	µg/L		0.0886 U		
	Uranium-233/234	pCi/L		0.0375 U		
	Uranium-235/236	pCi/L		0.0151 U		
	Uranium-238	pCi/L		0.0274 U		
WP-03G	Technetium-99	pCi/L		-0.791 U		
	Uranium	µg/L		0.0488 U		
	Uranium-233/234	pCi/L		0.0378 U		
	Uranium-235/236	pCi/L		0.0313 U		
	Uranium-238	pCi/L		0.0115 U		
WP-04G	Technetium-99	pCi/L		-1.39 U		
	Uranium	µg/L		0.137 U		
	Uranium-233/234	pCi/L		0.0557 U		
	Uranium-235/236	pCi/L		0.013 U		
	Uranium-238	pCi/L		0.0439 U		
WP-05G	Technetium-99	pCi/L		-0.127 U		
	Uranium	µg/L		0.125		
	Uranium-233/234	pCi/L		0.113 U		
	Uranium-235/236	pCi/L		0.00664 U		
	Uranium-238	pCi/L		0.0411 U		
WP-06G	Technetium-99	pCi/L		-0.373 U		
	Uranium	µg/L		0.364		
	Uranium-233/234	pCi/L		0.158		
	Uranium-235/236	pCi/L		0.00138 U		
	Uranium-238	pCi/L		0.122 U		
WP-07G	Technetium-99	pCi/L		-0.814 U		
	Uranium	µg/L		0.0448 U		
	Uranium-233/234	pCi/L		0.0759 U		
	Uranium-235/236	pCi/L		0.00136 U		
	Uranium-238	pCi/L		0.0148 U		
X120-08G	Technetium-99	pCi/L			0.872 U	
	Uranium	µg/L			0.122 U	
	Uranium-233/234	pCi/L			-0.0115 U	
	Uranium-235/236	pCi/L			0.0184 U	
	Uranium-238	pCi/L			0.038 U	

Table 4.2. Results for radionuclides at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-06G	Technetium-99	pCi/L		13		
	Uranium	µg/L		0.173		
	Uranium-233/234	pCi/L		0.149		
	Uranium-235/236	pCi/L		0.00132 U		
	Uranium-238	pCi/L		0.0579 U		
X749-07G	Americium-241	pCi/L		-0.0011 U		
	Neptunium-237	pCi/L		0.0377 U		
	Plutonium-238	pCi/L		-0.016 U		
	Plutonium-239/240	pCi/L		0 U		
	Technetium-99	pCi/L		14.9		
	Uranium	µg/L		0.317		
	Uranium-233/234	pCi/L		0.152 U		
	Uranium-235/236	pCi/L		0.0248 U		
	Uranium-238	pCi/L		0.103 U		
X749-08G	Americium-241	pCi/L		0.00039 U		
	Neptunium-237	pCi/L		0.0292 U		
	Plutonium-238	pCi/L		0.0135 U		
	Plutonium-239/240	pCi/L		-0.0046 U		
	Technetium-99	pCi/L		17.8		
	Uranium	µg/L		0.782		
	Uranium-233/234	pCi/L		0.366		
	Uranium-235/236	pCi/L		0.0329 U		
	Uranium-238	pCi/L		0.257		
X749-10GA	Americium-241	pCi/L		-0.011 U		
	Neptunium-237	pCi/L		0.026 U		
	Plutonium-238	pCi/L		0.0285 U		
	Plutonium-239/240	pCi/L		0.0108 U		
	Technetium-99	pCi/L		0.0714 U		
	Uranium	µg/L		0.0382 U		
	Uranium-233/234	pCi/L		0.182		
	Uranium-235/236	pCi/L		0.00595 U		
	Uranium-238	pCi/L		0.0119 U		
X749-13G	Technetium-99	pCi/L		0.124 U		
	Uranium	µg/L		0.799		
	Uranium-233/234	pCi/L		0.268		
	Uranium-235/236	pCi/L		-0.007 U		
	Uranium-238	pCi/L		0.269		
X749-14B	Americium-241	pCi/L		0.00712 U		
	Neptunium-237	pCi/L		0 U		
	Plutonium-238	pCi/L		0.042 U		
	Plutonium-239/240	pCi/L		-0.0077 U		
	Technetium-99	pCi/L		0.731 U		
	Uranium	µg/L		0.0685 U		
	Uranium-233/234	pCi/L		0.189		
	Uranium-235/236	pCi/L		0.00701 U		
	Uranium-238	pCi/L		0.0219 U		
X749-20G	Technetium-99	pCi/L			25.5	
	Uranium	µg/L			1.08	
	Uranium-233/234	pCi/L			0.417	
	Uranium-235/236	pCi/L			0.017 U	

Table 4.2. Results for radionuclides at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-20G	Uranium-238	pCi/L			0.36	
X749-26G	Technetium-99	pCi/L		2 U		
	Uranium	µg/L		0.206 UJ		
	Uranium-233/234	pCi/L		0.153 UJ		
	Uranium-235/236	pCi/L		-0.0209 U		
	Uranium-238	pCi/L		0.0724 UJ		
X749-27G	Technetium-99	pCi/L		97.5		
	Uranium	µg/L		0.0909 UJ		
	Uranium-233/234	pCi/L		0.133 UJ		
	Uranium-235/236	pCi/L		0.0215 UJ		
	Uranium-238	pCi/L		0.0272 U		
X749-28G	Technetium-99	pCi/L			3.11 U	
	Uranium	µg/L			0.0728 U	
	Uranium-233/234	pCi/L			0.134 U	
	Uranium-235/236	pCi/L			-0.000767 U	
	Uranium-238	pCi/L			0.0246 U	
X749-33G	Technetium-99	pCi/L		15.5		
	Uranium	µg/L		0.0732 UJ		
	Uranium-233/234	pCi/L		0.081 UJ		
	Uranium-235/236	pCi/L		0.00705 UJ		
	Uranium-238	pCi/L		0.0235 UJ		
X749-37G	Technetium-99	pCi/L		-1.44 U		
	Uranium	µg/L		9.29 J		
	Uranium-233/234	pCi/L		3.32		
	Uranium-235/236	pCi/L		0.0955 UJ		
	Uranium-238	pCi/L		3.11		
X749-44G	Americium-241	pCi/L		-0.022 U		
	Neptunium-237	pCi/L		-0.0251 U		
	Plutonium-238	pCi/L		0.00294 U		
	Plutonium-239/240	pCi/L		0.0315 U		
	Technetium-99	pCi/L		-0.399 U		
	Uranium	µg/L		0.201		
	Uranium-233/234	pCi/L		0.15 U		
	Uranium-235/236	pCi/L		-0.0039 U		
	Uranium-238	pCi/L		0.068 U		
X749-45G	Americium-241	pCi/L		-0.0151 U		
	Neptunium-237	pCi/L		0.0675 U		
	Plutonium-238	pCi/L		0.0139 U		
	Plutonium-239/240	pCi/L		0.0286 U		
	Technetium-99	pCi/L		-0.241 U		
	Uranium	µg/L		0.114 U		
	Uranium-233/234	pCi/L		0.0799 U		
	Uranium-235/236	pCi/L		0.0193 U		
	Uranium-238	pCi/L		0.0351 U		
X749-54B	Technetium-99	pCi/L		-1.12 U		
	Uranium	µg/L		0.0917 U		
	Uranium-233/234	pCi/L		0.103 U		
	Uranium-235/236	pCi/L		-0.007 U		
	Uranium-238	pCi/L		0.0319 U		
X749-64B	Americium-241	pCi/L			-0.0117 U	

Table 4.2. Results for radionuclides at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-64B	Neptunium-237	pCi/L			0.0221 U	
	Plutonium-238	pCi/L			0.0165 U	
	Plutonium-239/240	pCi/L			0.0181 U	
	Technetium-99	pCi/L			-1.19 U	
	Uranium	µg/L			1.43	
	Uranium-233/234	pCi/L			2.15	
	Uranium-235/236	pCi/L			0.0368 U	
	Uranium-238	pCi/L			0.475	
X749-67G	Technetium-99	pCi/L		19		
	Uranium	µg/L		0.519		
	Uranium-233/234	pCi/L		0.178		
	Uranium-235/236	pCi/L		0.025 U		
	Uranium-238	pCi/L		0.171		
X749-68G	Americium-241	pCi/L			-0.0418 U	
	Neptunium-237	pCi/L			-0.0113 U	
	Plutonium-238	pCi/L			0.0239 U	
	Plutonium-239/240	pCi/L			0.0548 U	
	Technetium-99	pCi/L			0.68 U	
	Uranium	µg/L			0.0483 U	
	Uranium-233/234	pCi/L			0.0814 U	
	Uranium-235/236	pCi/L			0.0118 U	
	Uranium-238	pCi/L			0.0144 U	
X749-96G	Americium-241	pCi/L		-0.0028 U		
	Neptunium-237	pCi/L		0.0592 U		
	Plutonium-238	pCi/L		0.0245 U		
	Plutonium-239/240	pCi/L		-0.0039 U		
	Technetium-99	pCi/L		1.01 U		
	Uranium	µg/L		0.0654 U		
	Uranium-233/234	pCi/L		0.161		
	Uranium-235/236	pCi/L		0.019 U		
	Uranium-238	pCi/L		0.019 U		
X749-97G	Americium-241	pCi/L		-0.0158 U		
	Neptunium-237	pCi/L		0.0272 U		
	Plutonium-238	pCi/L		0.00302 U		
	Plutonium-239/240	pCi/L		0.0108 U		
	Technetium-99	pCi/L		0 U		
	Uranium	µg/L		0.0527 U		
	Uranium-233/234	pCi/L		0.18		
	Uranium-235/236	pCi/L		0.00682 U		
	Uranium-238	pCi/L		0.0166 U		
X749-98G	Americium-241	pCi/L		0.00537 U		
	Neptunium-237	pCi/L		0 U		
	Plutonium-238	pCi/L		0 U		
	Plutonium-239/240	pCi/L		0.0134 U		
	Technetium-99	pCi/L		-0.342 U		
	Uranium	µg/L		0.044 U		
	Uranium-233/234	pCi/L		0.108 U		
	Uranium-235/236	pCi/L		-0.0008 U		
	Uranium-238	pCi/L		0.0149 U		
X749-106G	Technetium-99	pCi/L		-1.2 U		

Table 4.2. Results for radionuclides at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-106G	Uranium	µg/L		0.0859 U		
	Uranium-233/234	pCi/L		0.0498 U		
	Uranium-235/236	pCi/L		0.00607 U		
	Uranium-238	pCi/L		0.0279 U		
X749-108G	Technetium-99	pCi/L		0.548 U		
	Uranium	µg/L		0.173		
	Uranium-233/234	pCi/L		0.105		
	Uranium-235/236	pCi/L		0.0197 U		
	Uranium-238	pCi/L		0.0552 U		
X749-109G	Technetium-99	pCi/L		-0.307 U		
	Uranium	µg/L		1.5		
	Uranium-233/234	pCi/L		0.487		
	Uranium-235/236	pCi/L		0.0298 U		
	Uranium-238	pCi/L		0.5		
X749-110G	Technetium-99	pCi/L		-1.32 U		
	Uranium	µg/L		1.58		
	Uranium-233/234	pCi/L		0.604		
	Uranium-235/236	pCi/L		0.0346 U		
	Uranium-238	pCi/L		0.527		
X749-113G	Technetium-99	pCi/L		5.84		
	Uranium	µg/L		0.344		
	Uranium-233/234	pCi/L		0.145		
	Uranium-235/236	pCi/L		0.0086 U		
	Uranium-238	pCi/L		0.114 U		
X749-120G	Technetium-99	pCi/L			95.7	
	Uranium	µg/L			0.425	
	Uranium-233/234	pCi/L			0.182	
	Uranium-235/236	pCi/L			0.00651 U	
	Uranium-238	pCi/L			0.142 U	
X749-121G	Technetium-99	pCi/L			444	
	Uranium	µg/L			0.822	
	Uranium-233/234	pCi/L			0.344	
	Uranium-235/236	pCi/L			0.0127 U	
	Uranium-238	pCi/L			0.274	
X749-PZ02G	Technetium-99	pCi/L		0.588 U		
	Uranium	µg/L		0.143 U		
	Uranium-233/234	pCi/L		0.178		
	Uranium-235/236	pCi/L		-0.0102 U		
	Uranium-238	pCi/L		0.0497 U		
X749-PZ04G	Technetium-99	pCi/L		-0.308 U		
	Uranium	µg/L		0.206		
	Uranium-233/234	pCi/L		0.0923 U		
	Uranium-235/236	pCi/L		0.00555 U		
	Uranium-238	pCi/L		0.0685 U		
X749-PZ09G	Technetium-99	pCi/L		86.3		
	Uranium	µg/L		8.91		
	Uranium-233/234	pCi/L		2.91		
	Uranium-235/236	pCi/L		0.0495 U		
	Uranium-238	pCi/L		2.99		
X749-PZ10G	Technetium-99	pCi/L		18.2		

Table 4.2. Results for radionuclides at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-PZ10G	Uranium	µg/L		0.148		
	Uranium-233/234	pCi/L		0.176		
	Uranium-235/236	pCi/L		0.00445 U		
	Uranium-238	pCi/L		0.0489 U		
X749-PZ11G	Technetium-99	pCi/L		-1.54 U		
	Uranium	µg/L		3.82		
	Uranium-233/234	pCi/L		1.41		
	Uranium-235/236	pCi/L		0.065 U		
	Uranium-238	pCi/L		1.27		
X749-PZ12G	Technetium-99	pCi/L		0.784 U		
	Uranium	µg/L		0.199		
	Uranium-233/234	pCi/L		0.148		
	Uranium-235/236	pCi/L		0.0178 U		
	Uranium-238	pCi/L		0.0641 U		
X749-PZ13G	Technetium-99	pCi/L		0.0975 U		
	Uranium	µg/L		0.629		
	Uranium-233/234	pCi/L		0.325		
	Uranium-235/236	pCi/L		0.0229 U		
	Uranium-238	pCi/L		0.208		
X749-WPW	Americium-241	pCi/L		-0.0042 U		
	Neptunium-237	pCi/L		-0.0226 U		
	Plutonium-238	pCi/L		0.00518 U		
	Plutonium-239/240	pCi/L		0.032 U		
	Technetium-99	pCi/L		440		
	Uranium	µg/L		1.12		
	Uranium-233/234	pCi/L		0.617		
	Uranium-235/236	pCi/L		0.0225 U		
	Uranium-238	pCi/L		0.372		

Table 4.3 VOCs detected at PK Landfill – 2019

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
MH GW-4	Acetone	µg/L			3.5 J	
	Carbon disulfide	µg/L			0.66 J	
	cis-1,2-Dichloroethene	µg/L			0.87 J	
	m,p-Xylenes	µg/L			0.25 J	
	Trichloroethene	µg/L			0.53 J	
MH GW-5	2-Butanone	µg/L				3.8 J
PK-10G	cis-1,2-Dichloroethene	µg/L		0.18 J		0.333 U
	Trichloroethene	µg/L		0.8 J		0.94 J
PK-11G	Trichloroethene	µg/L		0.18 J		0.333 U
PK-14G	Acetone	µg/L		1.9 U		3.87 J
PK-17B	1,1-Dichloroethane	µg/L		3.5		3.67
	1,1-Dichloroethene	µg/L		0.53 J		1.1
	Benzene	µg/L		0.22 J		0.42 J
	Chlorobenzene	µg/L		0.8 J		2.09
	cis-1,2-Dichloroethene	µg/L		49		57.4
	trans-1,2-Dichloroethene	µg/L		1.8		2.15
	Trichloroethene	µg/L		0.94 J		0.96 J
	Vinyl chloride	µg/L		21		20.9
PK-19B	1,1-Dichloroethane	µg/L		0.24 J		0.44 J
	Acetone	µg/L		3.9 J		1.74 U
	Carbon disulfide	µg/L		0.33 J		1.67 U
	Chloroethane	µg/L		2.1		1.55
PK-21B	1,1-Dichloroethane	µg/L		130		116
	1,1-Dichloroethene	µg/L		1.1		1.39
	1,2-Dichloroethane	µg/L		0.57 J		0.333 U
	Benzene	µg/L		0.69 J		0.75 J
	cis-1,2-Dichloroethene	µg/L		9.8		9.42
	Trichloroethene	µg/L		0.25 J		0.333 U
	Vinyl chloride	µg/L		15		12.2
PK-PL6	1,1,1-Trichloroethane	µg/L	0.71 UJ	2	0.57 J	0.32 J
	1,1-Dichloroethane	µg/L	0.99 J	4.2	2.9	0.32 J
	1,1-Dichloroethene	µg/L	0.33 UJ	1.3 J	0.36 J	0.23 U
	Carbon disulfide	µg/L	0.17 U	0.17 U	0.28 J	0.17 U
	cis-1,2-Dichloroethene	µg/L	0.39 UJ	1.3	1.1	0.15 U
	Trichloroethene	µg/L	0.55 UJ	1.8	0.61 J	0.24 J
PK-PL6A	1,1,1-Trichloroethane	µg/L	1.1 UJ	2.5	1.6	0.93 J
	1,1-Dichloroethane	µg/L	1.6 UJ	5.5	6.1	3.7
	1,1-Dichloroethene	µg/L	0.61 UJ	1.8	1	0.38 J
	Carbon disulfide	µg/L	0.17 U	0.3 J	0.17 U	0.17 U
	cis-1,2-Dichloroethene	µg/L	0.44 UJ	1.6	2.2	1.2
	Trichloroethene	µg/L	0.86 UJ	2.3	1.5	0.73 J
	Vinyl chloride	µg/L	0.1 U	0.1 U	0.35 J	0.1 U

Table 4.4. VOCs detected at the Quadrant I Groundwater Investigative (5-Unit) Area – 2019

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X230K-14G	cis-1,2-Dichloroethene	µg/L			0.4 J	
	Trichloroethene	µg/L			4.8	
X230K-15G	cis-1,2-Dichloroethene	µg/L			0.21 J	
	Trichloroethene	µg/L			1.3	
X231A-01G	1,1-Dichloroethane	µg/L			0.43 J	
	cis-1,2-Dichloroethene	µg/L			0.21 J	
	Trichloroethene	µg/L			2.1	
X231A-02G	1,1,1-Trichloroethane	µg/L			3.1 D	
	1,1,2-Trichloroethane	µg/L			0.74 DJ	
	1,1-Dichloroethane	µg/L			7.5 D	
	1,1-Dichloroethene	µg/L			75 D	
	Chloroform	µg/L			1.3 DJ	
	cis-1,2-Dichloroethene	µg/L			9.7 D	
	Tetrachloroethene	µg/L			0.45 DJ	
	Trichloroethene	µg/L			200 D	
X231A-04G	1,1-Dichloroethene	µg/L			0.43 J	
	cis-1,2-Dichloroethene	µg/L			2.7	
	Trichloroethene	µg/L			18	
	Trichlorofluoromethane	µg/L			0.34 J	
X231B-02G	1,1-Dichloroethane	µg/L	0.88 U		0.35 J	
	1,1-Dichloroethene	µg/L	25 D		39 J	
	Chloroform	µg/L	1.2 DJ		1.8	
	cis-1,2-Dichloroethene	µg/L	6.1 D		6.7	
	trans-1,2-Dichloroethene	µg/L	0.6 U		1.3	
	Trichloroethene	µg/L	110 D		100 J	
X231B-03G	1,1,1-Trichloroethane	µg/L	2.5 DJ		1	
	1,1,2-Trichloroethane	µg/L	1.1 U		0.47 J	
	1,1-Dichloroethane	µg/L	4.6 D		1.8	
	1,1-Dichloroethene	µg/L	77 D		78	
	Chloroform	µg/L	0.64 U		0.25 J	
	cis-1,2-Dichloroethene	µg/L	5.4 D		3.6	
	trans-1,2-Dichloroethene	µg/L	0.6 U		0.29 J	
	Trichloroethene	µg/L	94 D		84	
X231B-06G	1,1,1-Trichloroethane	µg/L	2.4		0.58 J	
	1,1-Dichloroethane	µg/L	3.2		0.85 J	
	1,1-Dichloroethene	µg/L	4.4		9.1	
	Acetone	µg/L	5 J		1.9 U	
	cis-1,2-Dichloroethene	µg/L	0.15 U		0.25 J	
	Trichloroethene	µg/L	0.54 J		8.4	
X231B-07G	Chloroform	µg/L	3.5 DJ			
	cis-1,2-Dichloroethene	µg/L	20 D			
	Trichloroethene	µg/L	160 D			
X231B-11G	1,1,1-Trichloroethane	µg/L	1.1			
	1,1-Dichloroethene	µg/L	5.2			
	Trichloroethene	µg/L	0.77 J			
X231B-12G	1,1,1-Trichloroethane	µg/L			0.92 J	
	1,1-Dichloroethene	µg/L			7.4	
	Trichloroethene	µg/L			2.4	
	Trichlorofluoromethane	µg/L			0.34 J	
X231B-14G	1,1,1-Trichloroethane	µg/L			0.54 J	

Table 4.4. VOCs detected at the Quadrant I Groundwater Investigative (5-Unit) Area – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X231B-14G	1,1-Dichloroethane	µg/L			0.91 J	
	1,1-Dichloroethene	µg/L			16	
	Chloroform	µg/L			0.53 J	
	cis-1,2-Dichloroethene	µg/L			6.3	
	Trichloroethene	µg/L			81	
X231B-15G	1,1-Dichloroethene	µg/L			0.98 J	
	Chloroform	µg/L			0.48 J	
	Trichloroethene	µg/L			0.36 J	
X231B-16G	1,1,1-Trichloroethane	µg/L			0.9 J	
	1,1-Dichloroethene	µg/L			2.4	
	Carbon disulfide	µg/L			0.68 J	
	Chloroform	µg/L			0.54 J	
	Trichloroethene	µg/L			0.34 J	
X231B-20G	1,1-Dichloroethene	µg/L			11	
	Chloroform	µg/L			0.89 J	
	cis-1,2-Dichloroethene	µg/L			0.32 J	
	Trichloroethene	µg/L			36	
	Trichlorofluoromethane	µg/L			2.3	
X231B-23G	Trichloroethene	µg/L			1.3	
X231B-24B	Trichloroethene	µg/L	15			
X231B-29G	Chloroform	µg/L	0.16 J			
	cis-1,2-Dichloroethene	µg/L	0.26 J			
	Trichloroethene	µg/L	12			
X231B-36G	Acetone	µg/L			73 DJ	
	Chloroform	µg/L			2.8 DJ	
	Trichloroethene	µg/L			850 D	
X231B-37G	1,1-Dichloroethane	µg/L			0.95 J	
	1,1-Dichloroethene	µg/L			0.91 J	
	Benzene	µg/L			0.16 J	
	cis-1,2-Dichloroethene	µg/L			9.9	
	trans-1,2-Dichloroethene	µg/L			0.76 J	
	Trichloroethene	µg/L			7	
X231B-38G	1,1,1-Trichloroethane	µg/L	0.2 J			
	1,1-Dichloroethene	µg/L	0.44 J			
	1,2-Dichlorobenzene	µg/L	0.17 J			
	Trichloroethene	µg/L	0.21 J			
X326-09G	1,1-Dichloroethene	µg/L	340 DJ		330 DJ	
	Chloroform	µg/L	320 DJ		300 DJ	
	cis-1,2-Dichloroethene	µg/L	250 DJ		230 DJ	
	Trichloroethene	µg/L	33000 D		30000 D	
X326-10G	1,1-Dichloroethene	µg/L			12	
	cis-1,2-Dichloroethene	µg/L			0.92 J	
	Trichloroethene	µg/L			9.4	
X622-PZ01G	Benzene	µg/L			0.18 J	
	cis-1,2-Dichloroethene	µg/L			12	
	trans-1,2-Dichloroethene	µg/L			0.8 J	
	Trichloroethene	µg/L			5.6	
X622-PZ02G	1,1,1-Trichloroethane	µg/L			0.79 DJ	
	1,1-Dichloroethane	µg/L			1.2 DJ	
	1,1-Dichloroethene	µg/L			18 D	

Table 4.4. VOCs detected at the Quadrant I Groundwater Investigative (5-Unit) Area – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X622-PZ02G	Acetone	µg/L			4 DJ	
	Chloroform	µg/L			1 DJ	
	cis-1,2-Dichloroethene	µg/L			8.2 D	
	Trichloroethene	µg/L			180 D	
	Trichlorofluoromethane	µg/L			2.1 DJ	
X622-PZ03G	1,1,1-Trichloroethane	µg/L			0.44 J	
	1,1-Dichloroethane	µg/L			1.1	
	1,1-Dichloroethene	µg/L			3.1	
	Chloroform	µg/L			0.23 J	
	cis-1,2-Dichloroethene	µg/L			2.8	
	Trichloroethene	µg/L			160	
	Trichlorofluoromethane	µg/L			2.1	
X626-07G	1,1-Dichloroethene	µg/L	380 D		370 D	
	cis-1,2-Dichloroethene	µg/L	7.5 U		6.3 DJ	
	Trichloroethene	µg/L	1400 D		1600 D	
X710-01G	cis-1,2-Dichloroethene	µg/L	0.37 J			
	Trichloroethene	µg/L	21			
X760-02G	Acetone	µg/L	8.6 J			
	Trichloroethene	µg/L	0.39 J			
X760-03G	cis-1,2-Dichloroethene	µg/L			0.57 J	
	Trichloroethene	µg/L			72	
X760-07G	Chloroform	µg/L			0.34 DJ	
	cis-1,2-Dichloroethene	µg/L			5.6 D	
	Trichloroethene	µg/L			300 D	
X770-17GA	cis-1,2-Dichloroethene	µg/L	3 U		2 DJ	
	Trichloroethene	µg/L	450 DJ		510 D	

Table 4.5. Results for radionuclides at the Quadrant I Groundwater Investigative (5-Unit) Area – 2019

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X231A-01G	Technetium-99	pCi/L			23.9	
	Uranium	µg/L			23.6	
	Uranium-233/234	pCi/L			27.4	
	Uranium-235/236	pCi/L			1.3	
	Uranium-238	pCi/L			7.72	
X231A-02G	Technetium-99	pCi/L			3.68	
	Uranium	µg/L			0.251	
	Uranium-233/234	pCi/L			0.128 U	
	Uranium-235/236	pCi/L			-0.00414 U	
	Uranium-238	pCi/L			0.0851 U	
X231A-04G	Technetium-99	pCi/L			-0.557 U	
	Uranium	µg/L			0.269	
	Uranium-233/234	pCi/L			0.201	
	Uranium-235/236	pCi/L			0.0168 U	
	Uranium-238	pCi/L			0.0878 U	
X231B-02G	Technetium-99	pCi/L			47.5	
	Uranium	µg/L			0.339	
	Uranium-233/234	pCi/L			0.0881 U	
	Uranium-235/236	pCi/L			0.0341 U	
	Uranium-238	pCi/L			0.109 U	
X231B-03G	Americium-241	pCi/L			-0.0419 U	
	Neptunium-237	pCi/L			0.00943 U	
	Plutonium-238	pCi/L			0.0257 U	
	Plutonium-239/240	pCi/L			0.0144 U	
	Technetium-99	pCi/L			2.27 U	
	Uranium	µg/L			0.42	
	Uranium-233/234	pCi/L			0.188	
	Uranium-235/236	pCi/L			-0.00215 U	
	Uranium-238	pCi/L			0.142	
X231B-06G	Americium-241	pCi/L			-0.00536 U	
	Neptunium-237	pCi/L			0.0483 U	
	Plutonium-238	pCi/L			-0.00683 U	
	Plutonium-239/240	pCi/L			0.00607 U	
	Technetium-99	pCi/L			42.2	
	Uranium	µg/L			8.58	
	Uranium-233/234	pCi/L			13.6	
	Uranium-235/236	pCi/L			0.68	
	Uranium-238	pCi/L			2.78	
X326-09G	Technetium-99	pCi/L			0.536 U	
	Uranium	µg/L			0.217	
	Uranium-233/234	pCi/L			0.142 U	
	Uranium-235/236	pCi/L			0.0161 U	
	Uranium-238	pCi/L			0.0703 U	
X626-07G	Technetium-99	pCi/L			-1.18 U	
	Uranium	µg/L			1.57	
	Uranium-233/234	pCi/L			0.921	
	Uranium-235/236	pCi/L			0.0722 U	
	Uranium-238	pCi/L			0.518	

Table 4.6 VOCs detected at the X-749A Classified Materials Disposal Facility – 2019

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749A-07G	Bromomethane	µg/L		0.39 J		
X749A-12G	1,1-Dichloroethane	µg/L		0.26 J		
	Bromomethane	µg/L		0.25 J		
	cis-1,2-Dichloroethene	µg/L		3.7		
	Trichloroethene	µg/L		4.5		
X749A-14G	m,p-Xylenes	µg/L		0.24 J		
X749A-17G	1,1,1-Trichloroethane	µg/L		0.37 J		
	1,1-Dichloroethane	µg/L		0.31 J		
	1,1-Dichloroethene	µg/L		7.1		
	Carbon disulfide	µg/L		0.41 J		
X749A-18G	Carbon disulfide	µg/L		0.39 J		
	cis-1,2-Dichloroethene	µg/L		0.23 J		
	Trichloroethene	µg/L		7.4		
X749A-19G	1,2-Dichloroethane	µg/L		0.13 J		
	Chloromethane	µg/L		0.59 J		
	cis-1,2-Dichloroethene	µg/L		2.3		
	Trichloroethene	µg/L		13		

Table 4.7 Results for radionuclides at the X-749A Classified Materials Disposal Facility – 2019

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749A-02G	Technetium-99	pCi/L		0.73 U		
	Uranium	µg/L		0.219		
	Uranium-233/234	pCi/L		0.144 U		
	Uranium-235/236	pCi/L		0.029 U		
	Uranium-238	pCi/L		0.069 U		
X749A-03G	Technetium-99	pCi/L		3 U		
	Uranium	µg/L		0.362		
	Uranium-233/234	pCi/L		0.256		
	Uranium-235/236	pCi/L		0.0346 U		
	Uranium-238	pCi/L		0.116		
X749A-04G	Technetium-99	pCi/L		-1.47 U		
	Uranium	µg/L		0.0538 U		
	Uranium-233/234	pCi/L		0.0844 U		
	Uranium-235/236	pCi/L		-0.0022 U		
	Uranium-238	pCi/L		0.0184 U		
X749A-07G	Technetium-99	pCi/L		-1.11 U		
	Uranium	µg/L		6.82		
	Uranium-233/234	pCi/L		2.32		
	Uranium-235/236	pCi/L		0.0931 U		
	Uranium-238	pCi/L		2.28		
X749A-12G	Technetium-99	pCi/L		-0.0901 U		
	Uranium	µg/L		0.059 U		
	Uranium-233/234	pCi/L		0.0762 U		
	Uranium-235/236	pCi/L		-0.0118 U		
	Uranium-238	pCi/L		0.0217 U		
X749A-14G	Technetium-99	pCi/L		0.732 U		
	Uranium	µg/L		0.143 U		
	Uranium-233/234	pCi/L		0.0825 U		
	Uranium-235/236	pCi/L		0.0563 U		
	Uranium-238	pCi/L		0.0392 U		
X749A-16G	Technetium-99	pCi/L		8.03		
	Uranium	µg/L		0.0956 U		
	Uranium-233/234	pCi/L		0.0805 U		
	Uranium-235/236	pCi/L		0.00828 U		
	Uranium-238	pCi/L		0.0308 U		
X749A-17G	Technetium-99	pCi/L		-1.06 U		
	Uranium	µg/L		0.177		
	Uranium-233/234	pCi/L		0.0543 U		
	Uranium-235/236	pCi/L		-0.0035 U		
	Uranium-238	pCi/L		0.06 U		
X749A-18G	Technetium-99	pCi/L		-0.327 U		
	Uranium	µg/L		0.324		
	Uranium-233/234	pCi/L		0.0609 U		
	Uranium-235/236	pCi/L		-0.0045 U		
	Uranium-238	pCi/L		0.11 U		
X749A-19G	Technetium-99	pCi/L		0.274 U		
	Uranium	µg/L		0.206		
	Uranium-233/234	pCi/L		0.0733 U		
	Uranium-235/236	pCi/L		0.00589 U		
	Uranium-238	pCi/L		0.0684 U		

Table 4.8. VOCs detected at the Quadrant II Groundwater Investigative (7-Unit) Area – 2019

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X700-02G	1,1-Dichloroethene	µg/L	170 D			
	cis-1,2-Dichloroethene	µg/L	2100 D			
	Trichloroethene	µg/L	4400 D			
	Vinyl chloride	µg/L	100 D			
X700-03G	Chloromethane	µg/L	0.69 J		0.3 U	
X700-04G	cis-1,2-Dichloroethene	µg/L	9300 DJ			
	Trichloroethene	µg/L	630 D			
	Vinyl chloride	µg/L	5100 DJQ			
X700-05G	cis-1,2-Dichloroethene	µg/L	43000 D			
	Trichloroethene	µg/L	160000 D			
X700-06G	Trichloroethene	µg/L	1000000 D			
X701-26G	Chloroform	µg/L	0.23 J		0.18 J	
	Chloromethane	µg/L	0.42 J		0.3 U	
	Tetrachloroethene	µg/L	1.2		1.1	
	Trichloroethene	µg/L	3.8		1.1	
X701-27G	1,1,1-Trichloroethane	µg/L	0.67 J		0.85 J	
	1,1-Dichloroethane	µg/L	0.41 J		0.45 J	
	1,1-Dichloroethene	µg/L	0.89 J		1.2	
	cis-1,2-Dichloroethene	µg/L	4.2		5.9	
	trans-1,2-Dichloroethene	µg/L	0.15 U		0.21 J	
	Trichloroethene	µg/L	13		25	
X701-28GA	Acetone	µg/L	6.1 J			
	Chloromethane	µg/L	0.46 J			
X701-45G	1,1-Dichloroethane	µg/L	0.22 J			
	Carbon disulfide	µg/L	0.64 J			
	Chloromethane	µg/L	0.36 J			
	cis-1,2-Dichloroethene	µg/L	0.94 J			
	Trichloroethene	µg/L	17			
X701-68G	cis-1,2-Dichloroethene	µg/L	270 D			
	trans-1,2-Dichloroethene	µg/L	1.9 DJ			
	Trichloroethene	µg/L	140 D			
X701-69G	cis-1,2-Dichloroethene	µg/L	180 D			
	trans-1,2-Dichloroethene	µg/L	3.2 DJ			
	Trichloroethene	µg/L	610 DJ			
X701-70G	cis-1,2-Dichloroethene	µg/L	650 D			
	Trichloroethene	µg/L	2100 D			
	Vinyl chloride	µg/L	14 DJ			
X701-117GA	cis-1,2-Dichloroethene	µg/L	1500 D			
	Trichloroethene	µg/L	1500 D			
X705-01GA	Chloroform	µg/L	12 J			
	Chloromethane	µg/L	0.43 J			
	Tetrachloroethene	µg/L	0.29 J			
	Trichloroethene	µg/L	23 J			
X705-02G	1,1-Dichloroethene	µg/L	0.36 J			
	cis-1,2-Dichloroethene	µg/L	0.45 J			
	Trichloroethene	µg/L	20			
X705-03G	1,1-Dichloroethane	µg/L	1.1			
	1,1-Dichloroethene	µg/L	5.4			
	Chloromethane	µg/L	0.44 J			
	cis-1,2-Dichloroethene	µg/L	5.2			

Table 4.8. VOCs detected at the Quadrant II Groundwater Investigative (7-Unit) Area – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X705-03G	Tetrachloroethene	µg/L	0.66 J			
	trans-1,2-Dichloroethene	µg/L	0.29 J			
	Trichloroethene	µg/L	24			
X705-04G	1,1-Dichloroethane	µg/L	0.3 J			
	1,1-Dichloroethene	µg/L	0.52 J			
	Bromodichloromethane	µg/L	0.3 J			
	Carbon tetrachloride	µg/L	9.5			
	Chloroform	µg/L	180 D			
	Chloromethane	µg/L	0.48 J			
	Tetrachloroethene	µg/L	1.7			
	Trichloroethene	µg/L	19			
X705-06G	1,1-Dichloroethene	µg/L	0.6 J			
	Chloroform	µg/L	1.8			
	Chloromethane	µg/L	0.32 J			
	cis-1,2-Dichloroethene	µg/L	1.1			
	Tetrachloroethene	µg/L	7.9			
	Trichloroethene	µg/L	22 J			
X705-07G	Chloroform	µg/L	0.3 J			
	Chloromethane	µg/L	0.43 J			
	Trichloroethene	µg/L	5.5			
X705-08G	Trichlorofluoromethane	µg/L	8.8			
X705-10B	Acetone	µg/L	3.6 J			
	Chloromethane	µg/L	0.34 J			
X720-01G	cis-1,2-Dichloroethene	µg/L	1300 D			
	Trichloroethene	µg/L	8100 DJ			
X720-08G	1,1-Dichloroethene	µg/L	51 DJ			
	cis-1,2-Dichloroethene	µg/L	17 DJ			
	Tetrachloroethene	µg/L	20 DJ			
	Trichloroethene	µg/L	5000 D			
X720-09G	1,1,1-Trichloroethane	µg/L	3600 DJ			
	1,1-Dichloroethene	µg/L	11000 D			
	Acetone	µg/L	11000 DJ			
	cis-1,2-Dichloroethene	µg/L	1700 DJ			
	Toluene	µg/L	900 DJ			
	Trichloroethene	µg/L	390000 D			

Table 4.9. Results for radionuclides at the Quadrant II Groundwater Investigative (7-Unit) Area – 2019

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X700-02G	Technetium-99	pCi/L	15.5			
	Uranium	µg/L	2.24			
	Uranium-233/234	pCi/L	0.785			
	Uranium-235/236	pCi/L	0.0458 U			
	Uranium-238	pCi/L	0.745			
X700-04G	Technetium-99	pCi/L	11.7			
	Uranium	µg/L	7.52 J			
	Uranium-233/234	pCi/L	3.37			
	Uranium-235/236	pCi/L	0.179 J			
	Uranium-238	pCi/L	2.5			
X700-05G	Technetium-99	pCi/L	0.425 U			
	Uranium	µg/L	1.81 J			
	Uranium-233/234	pCi/L	0.771			
	Uranium-235/236	pCi/L	0.0558 UJ			
	Uranium-238	pCi/L	0.601			
X700-06G	Technetium-99	pCi/L	14.1			
	Uranium	µg/L	8.56			
	Uranium-233/234	pCi/L	4.26			
	Uranium-235/236	pCi/L	0.189			
	Uranium-238	pCi/L	2.85			
X701-26G	Technetium-99	pCi/L	29.1			
	Uranium	µg/L	4.53			
	Uranium-233/234	pCi/L	2.54			
	Uranium-235/236	pCi/L	0.13 U			
	Uranium-238	pCi/L	1.5			
X701-68G	Technetium-99	pCi/L	17.9			
	Uranium	µg/L	3.73			
	Uranium-233/234	pCi/L	1.46			
	Uranium-235/236	pCi/L	0.0756 U			
	Uranium-238	pCi/L	1.24			
X701-69G	Technetium-99	pCi/L	-1.05 U			
	Uranium	µg/L	5.93			
	Uranium-233/234	pCi/L	2.44			
	Uranium-235/236	pCi/L	0.117 U			
	Uranium-238	pCi/L	1.97			
X701-70G	Technetium-99	pCi/L	7.1			
	Uranium	µg/L	2.16			
	Uranium-233/234	pCi/L	1.02			
	Uranium-235/236	pCi/L	0.0506 U			
	Uranium-238	pCi/L	0.717			
X705-01GA	Americium-241	pCi/L	-0.00368 U			
	Neptunium-237	pCi/L	0.00714 U			
	Plutonium-238	pCi/L	0.00966 U			
	Plutonium-239/240	pCi/L	0.00619 U			
	Technetium-99	pCi/L	144			
	Uranium	µg/L	1.22 J			
	Uranium-233/234	pCi/L	0.825			
	Uranium-235/236	pCi/L	0.0288 UJ			
	Uranium-238	pCi/L	0.406			
X705-02G	Technetium-99	pCi/L	0.814 U			

Table 4.9. Results for radionuclides at the Quadrant II Groundwater Investigative (7-Unit) Area – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X705-02G	Uranium	µg/L	3.62 J			
	Uranium-233/234	pCi/L	1.24			
	Uranium-235/236	pCi/L	0.097 UJ			
	Uranium-238	pCi/L	1.2			
X705-07G	Technetium-99	pCi/L	64.2			
	Uranium	µg/L	1.29 J			
	Uranium-233/234	pCi/L	0.829			
	Uranium-235/236	pCi/L	0.077 U			
	Uranium-238	pCi/L	0.423			
X720-01G	Technetium-99	pCi/L	0.438 U			
	Uranium	µg/L	24.5			
	Uranium-233/234	pCi/L	7.36			
	Uranium-235/236	pCi/L	0.355			
	Uranium-238	pCi/L	8.19			
X720-08G	Technetium-99	pCi/L	197			
	Uranium	µg/L	3.25			
	Uranium-233/234	pCi/L	1.8			
	Uranium-235/236	pCi/L	0.0848 U			
	Uranium-238	pCi/L	1.08			
X720-09G	Technetium-99	pCi/L	1.13 U			
	Uranium	µg/L	9.37			
	Uranium-233/234	pCi/L	8.6			
	Uranium-235/236	pCi/L	0.485			
	Uranium-238	pCi/L	3.07			

Table 4.10. VOCs detected at the X-701B Former Holding Pond – 2019

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
LBC-PZ03G	cis-1,2-Dichloroethene	µg/L	83 DJ			
	trans-1,2-Dichloroethene	µg/L	0.55 J			
	Trichloroethene	µg/L	13			
LBC-PZ06G	m,p-Xylenes	µg/L	0.34 U		0.27 J	
	Trichloroethene	µg/L	0.77 J		1.7	
LBC-PZ07G	cis-1,2-Dichloroethene	µg/L			0.48 J	
X230J7-01GA	1,1,2-Trichloroethane	µg/L	0.3 J		1.1 JU	
	1,1-Dichloroethene	µg/L	0.25 J		0.92 U	
	Carbon disulfide	µg/L	0.45 U		1.7 DJ	
	Chloroform	µg/L	0.22 J		0.64 JU	
	cis-1,2-Dichloroethene	µg/L	1.7		2.5 DJ	
	Tetrachloroethene	µg/L	0.21 J		0.8 U	
	Trichloroethene	µg/L	270 D		300 DJ	
X230J7-02GA	1,1,2-Trichloroethane	µg/L	0.29 J		2.7 U	
	1,1-Dichloroethene	µg/L	0.25 J		2.3 U	
	Acetone	µg/L	3 J		19 U	
	Carbon disulfide	µg/L	0.45 U		4.5 DJ	
	Chloroform	µg/L	0.24 J		1.6 U	
	cis-1,2-Dichloroethene	µg/L	21		42 D	
	Tetrachloroethene	µg/L	0.37 J		2 U	
	trans-1,2-Dichloroethene	µg/L	0.51 J		3.2 DJ	
	Trichloroethene	µg/L	260 D		570 D	
	Vinyl chloride	µg/L	0.76 J		1 U	
X230J7-03GA	1,1,2,2-Tetrachloroethane	µg/L	0.61 J		8.4 U	
	1,1,2-Trichloroethane	µg/L	1.3		11 U	
	1,1-Dichloroethene	µg/L	0.93 J		9.2 U	
	Acetone	µg/L	3.8 J		76 U	
	Chloroform	µg/L	0.3 J		6.4 U	
	cis-1,2-Dichloroethene	µg/L	120 D		130 D	
	Tetrachloroethene	µg/L	2.1		8 U	
	trans-1,2-Dichloroethene	µg/L	6		8.9 DJ	
	Trichloroethene	µg/L	1100 D		2300 D	
	Vinyl chloride	µg/L	2.6		4 U	
X230J7-04GA	Trichloroethene	µg/L			12	
X237-EPW	cis-1,2-Dichloroethene	µg/L			5500 D	
	trans-1,2-Dichloroethene	µg/L			34 DJ	
	Trichloroethene	µg/L			4600 D	
X237-WPW	cis-1,2-Dichloroethene	µg/L			2600 D	
	Tetrachloroethene	µg/L			180 DJ	
	Trichloroethene	µg/L			35000 D	
	Vinyl chloride	µg/L			320 DJ	
X701-01G	1,1-Dichloroethene	µg/L	0.86 DJ		4.3 D	
	Acetone	µg/L	3.8 U		32 DJ	
	Chloroform	µg/L	0.32 U		0.7 DJ	
	cis-1,2-Dichloroethene	µg/L	23 D		72 D	
	trans-1,2-Dichloroethene	µg/L	0.83 DJ		3.1 DJ	
	Trichloroethene	µg/L	120 D		370 D	
	Vinyl chloride	µg/L	0.2 U		3.1 DJ	
X701-02G	1,1-Dichloroethene	µg/L	0.32 J		0.32 J	
	Acetone	µg/L	4.4 J		1.9 U	

Table 4.10. VOCs detected at the X-701B Former Holding Pond – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-02G	cis-1,2-Dichloroethene	µg/L	3.5		3.5	
	trans-1,2-Dichloroethene	µg/L	0.15 U		0.16 J	
	Trichloroethene	µg/L	13		14	
X701-06G	1,1-Dichloroethane	µg/L	0.66 J		1.1 U	
	1,1-Dichloroethene	µg/L	5.7		6.7 D	
	Chloroform	µg/L	0.27 J		0.8 U	
	cis-1,2-Dichloroethene	µg/L	26		43 D	
	trans-1,2-Dichloroethene	µg/L	0.91 J		1.3 DJ	
	Trichloroethene	µg/L	200 D		260 D	
	Vinyl chloride	µg/L	0.63 J		0.5 U	
X701-15G	1,1-Dichloroethene	µg/L	0.23 U		2.2 DJ	
	Acetone	µg/L	1.9 U		73 D	
	Chloroform	µg/L	0.16 U		0.83 DJ	
	cis-1,2-Dichloroethene	µg/L	120 D		920 D	
	trans-1,2-Dichloroethene	µg/L	1.8		8.2 D	
	Trichloroethene	µg/L	2.8		6.2 D	
	Vinyl chloride	µg/L	0.1 U		15 D	
X701-16G	Acetone	µg/L	3.3 J		1.9 U	
	cis-1,2-Dichloroethene	µg/L	0.15 U		0.29 J	
	Trichloroethene	µg/L	0.49 J		0.56 UJ	
X701-19G	Acetone	µg/L	2.3 J		1.9 U	
	Trichloroethene	µg/L	1.2		2.1	
X701-20G	1,1,1-Trichloroethane	µg/L	16 DJ		80 U	
	1,1,2,2-Tetrachloroethane	µg/L	170 D		110 U	
	1,1,2-Trichloroethane	µg/L	66 DJ		140 U	
	Acetone	µg/L	190 U		1000 DJ	
	cis-1,2-Dichloroethene	µg/L	870 D		590 D	
	Tetrachloroethene	µg/L	120 D		100 U	
	trans-1,2-Dichloroethene	µg/L	60 DJ		75 U	
	Trichloroethene	µg/L	52000 DJ		42000 D	
X701-21G	1,1,1-Trichloroethane	µg/L	3 DJ		32 U	
	1,1,2,2-Tetrachloroethane	µg/L	11 D		110 DJ	
	1,1,2-Trichloroethane	µg/L	2.8 DJ		54 U	
	1,1-Dichloroethene	µg/L	1.2 DJ		46 U	
	Acetone	µg/L	9.5 U		390 DJ	
	cis-1,2-Dichloroethene	µg/L	190 D		450 D	
	Tetrachloroethene	µg/L	5.9 D		120 DJ	
	trans-1,2-Dichloroethene	µg/L	18 D		71 DJ	
	Trichloroethene	µg/L	1700 D		25000 D	
	Vinyl chloride	µg/L	4.6 DJ		20 U	
X701-23G	cis-1,2-Dichloroethene	µg/L			0.73 J	
	Trichloroethene	µg/L			10	
X701-24G	1,1,1-Trichloroethane	µg/L	0.17 J		8 U	
	1,1,2,2-Tetrachloroethane	µg/L	0.34 J		11 U	
	1,1,2-Trichloroethane	µg/L	2.6		14 U	
	1,1-Dichloroethane	µg/L	0.25 J		11 U	
	1,1-Dichloroethene	µg/L	4.3		12 U	
	Chloromethane	µg/L	0.62 J		15 U	
	cis-1,2-Dichloroethene	µg/L	1700 D		1700 D	
	Tetrachloroethene	µg/L	0.55 J		10 U	

Table 4.10. VOCs detected at the X-701B Former Holding Pond – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-24G	trans-1,2-Dichloroethene	µg/L	7.3		12 DJ	
	Trichloroethene	µg/L	920 D		2800 D	
	Vinyl chloride	µg/L	19		22 DJ	
X701-25G	Acetone	µg/L	2.6 J		1.9 U	
	Trichloroethene	µg/L	0.31 J		0.47 J	
X701-30G	Trichloroethene	µg/L	0.75 J		3.2 J	
	Trichlorofluoromethane	µg/L	0.29 JU		1 J	
X701-42G	1,1,1-Trichloroethane	µg/L			7.5 DJ	
	1,1,2,2-Tetrachloroethane	µg/L			18 D	
	1,1,2-Trichloroethane	µg/L			5 DJ	
	Carbon disulfide	µg/L			1.9 DJ	
	cis-1,2-Dichloroethene	µg/L			420 D	
	Tetrachloroethene	µg/L			12 D	
	trans-1,2-Dichloroethene	µg/L			53 D	
	Trichloroethene	µg/L			3600 D	
	Vinyl chloride	µg/L			12 D	
X701-61B	1,2-Dimethylbenzene	µg/L			0.2 J	
	Acetone	µg/L			26	
	m,p-Xylenes	µg/L			2.6	
	Trichloroethene	µg/L			4	
X701-66G	1,1-Dichloroethene	µg/L	2.3 DJ		2.8 DJ	
	Carbon disulfide	µg/L	1.8 U		0.9 DJ	
	Chloroform	µg/L	0.64 U		0.93 DJ	
	cis-1,2-Dichloroethene	µg/L	140 DJ		190 D	
	Tetrachloroethene	µg/L	3.6 DJ		4.1 DJ	
	trans-1,2-Dichloroethene	µg/L	2.5 DJ		3.2 DJ	
	Trichloroethene	µg/L	1400 DJ		1700 D	
	Vinyl chloride	µg/L	6.9 D		12 D	
X701-77G	Acetone	µg/L			210 D	
	Chloroform	µg/L			3.7 DJ	
	cis-1,2-Dichloroethene	µg/L			39 D	
	Tetrachloroethene	µg/L			6.1 DJ	
	Trichloroethene	µg/L			2300 D	
X701-79G	1,1,2-Trichloroethane	µg/L			0.28 J	
	1,1-Dichloroethene	µg/L			0.23 J	
	Chloroform	µg/L			0.18 J	
	cis-1,2-Dichloroethene	µg/L			5.1	
	Tetrachloroethene	µg/L			0.32 J	
	Trichloroethene	µg/L			370 D	
X701-127G	1,1,2,2-Tetrachloroethane	µg/L	66 DJ		62 DJ	
	1,1,2-Trichloroethane	µg/L	48 DJ		54 U	
	Benzene	µg/L	43 DJ		32 U	
	cis-1,2-Dichloroethene	µg/L	510 D		410 D	
	Tetrachloroethene	µg/L	47 DJ		43 DJ	
	Toluene	µg/L	45 DJ		34 U	
	trans-1,2-Dichloroethene	µg/L	18 DJ		30 U	
	Trichloroethene	µg/L	28000 D		27000 D	
X701-128G	1,1,1-Trichloroethane	µg/L	3.1		16 U	
	1,1,2,2-Tetrachloroethane	µg/L	5.9		21 U	
	1,1,2-Trichloroethane	µg/L	14 J		27 U	

Table 4.10. VOCs detected at the X-701B Former Holding Pond – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-128G	1,1-Dichloroethane	µg/L	0.71 J		22 U	
	1,1-Dichloroethene	µg/L	5.7		23 U	
	1,2-Dichloroethane	µg/L	0.5 J		13 U	
	Acetone	µg/L	1.9 U		360 DJ	
	Benzene	µg/L	0.17 J		16 U	
	Carbon tetrachloride	µg/L	0.65 J		19 U	
	Chloroform	µg/L	1.8		16 U	
	cis-1,2-Dichloroethene	µg/L	230 DJ		130 D	
	Tetrachloroethene	µg/L	26 J		20 U	
	trans-1,2-Dichloroethene	µg/L	7.1		15 U	
	Trichloroethene	µg/L	17000 DJ		9800 D	
	Vinyl chloride	µg/L	2.3		10 U	
X701-130G	1,1-Dichloroethene	µg/L			49 DJ	
	Chloroform	µg/L			110 DJ	
	cis-1,2-Dichloroethene	µg/L			300 D	
	Tetrachloroethene	µg/L			150 DJ	
	Trichloroethene	µg/L			69000 D	
X701-141G	Acetone	µg/L			4.2 DJ	
	cis-1,2-Dichloroethene	µg/L			2.4 D	
	Trichloroethene	µg/L			140 D	
X701-142G	1,1,2,2-Tetrachloroethane	µg/L	1.9 DJ		11 U	
	1,1,2-Trichloroethane	µg/L	12 D		14 U	
	1,1-Dichloroethene	µg/L	4.7 DJ		12 U	
	1,2-Dichloroethane	µg/L	0.65 JU		7.8 DJ	
	cis-1,2-Dichloroethene	µg/L	2000 D		3000 D	
	Methylene chloride	µg/L	2.3 DJ		47 U	
	trans-1,2-Dichloroethene	µg/L	30 D		39 DJ	
	Trichloroethene	µg/L	2100 D		4000 D	
	Vinyl chloride	µg/L	30 DJ		34 DJ	
X701-143G	1,1-Dichloroethene	µg/L	0.23 U		4.7 DJ	
	2-Butanone	µg/L	2 U		10 DJ	
	Acetone	µg/L	1.9 U		94 D	
	Chloroform	µg/L	0.16 U		0.83 DJ	
	cis-1,2-Dichloroethene	µg/L	150 D		840 D	
	trans-1,2-Dichloroethene	µg/L	2		4.4 DJ	
	Trichloroethene	µg/L	0.83 J		72 D	
	Vinyl chloride	µg/L	20		420 D	
X701-144G	Acetone	µg/L	12			
	cis-1,2-Dichloroethene	µg/L	18			
	trans-1,2-Dichloroethene	µg/L	0.62 J			
	Trichloroethene	µg/L	0.16 J			
	Vinyl chloride	µg/L	27			
X701-BW2G	cis-1,2-Dichloroethene	µg/L			530 D	
	Trichloroethene	µg/L			28000 D	
X701-BW3G	1,1-Dichloroethane	µg/L			0.57 J	
	1,1-Dichloroethene	µg/L			1.3	
	Chloroform	µg/L			0.18 J	
	cis-1,2-Dichloroethene	µg/L			96	
	Tetrachloroethene	µg/L			0.5 J	
	trans-1,2-Dichloroethene	µg/L			0.59 J	

Table 4.10. VOCs detected at the X-701B Former Holding Pond – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-BW3G	Trichloroethene	µg/L			210 D	
	Vinyl chloride	µg/L			9.8	
X701-BW4G	Acetone	µg/L	9.7 J		1.9 U	
	Chloromethane	µg/L	0.33 J		0.3 U	
	cis-1,2-Dichloroethene	µg/L	7		11	
	trans-1,2-Dichloroethene	µg/L	0.36 J		0.58 J	
	Trichloroethene	µg/L	1.2		1.6	
	Vinyl chloride	µg/L	0.25 J		0.6 J	
X701-EW121G	1,1,2,2-Tetrachloroethane	µg/L	84 DJ		84 U	
	1,1,2-Trichloroethane	µg/L	52 DJ		110 U	
	cis-1,2-Dichloroethene	µg/L	420 D		280 DJ	
	Tetrachloroethene	µg/L	77 DJ		80 U	
	trans-1,2-Dichloroethene	µg/L	42 DJ		60 U	
	Trichloroethene	µg/L	40000 D		29000 D	
X701-EW122G	1,1,1-Trichloroethane	µg/L	44 DJ		64 U	
	1,1,2,2-Tetrachloroethane	µg/L	320 D		330 DJ	
	1,1,2-Trichloroethane	µg/L	60 DJ		110 U	
	Acetone	µg/L	190 U		1800 DJ	
	cis-1,2-Dichloroethene	µg/L	550 D		740 D	
	Tetrachloroethene	µg/L	190 D		260 DJ	
	trans-1,2-Dichloroethene	µg/L	78 DJ		130 DJ	
	Trichloroethene	µg/L	55000 D		67000 D	
X701-IRMPZ03G	1,1,2-Trichloroethane	µg/L	1.4		5.4 U	
	1,1-Dichloroethene	µg/L	1.4		4.6 U	
	Chloroform	µg/L	0.29 J		3.2 U	
	cis-1,2-Dichloroethene	µg/L	480 D		880 D	
	trans-1,2-Dichloroethene	µg/L	4.8		6.9 DJ	
	Trichloroethene	µg/L	360 D		1500 D	
	Vinyl chloride	µg/L	1.1		2 U	
X701-IRMPZ05G	1,1,1-Trichloroethane	µg/L	0.62 J			
	1,1,2,2-Tetrachloroethane	µg/L	1.6			
	1,1,2-Trichloroethane	µg/L	4.5			
	1,1-Dichloroethene	µg/L	7.9			
	Acetone	µg/L	4.8 J			
	Chloroform	µg/L	0.5 J			
	cis-1,2-Dichloroethene	µg/L	1900 D			
	Methylene chloride	µg/L	1.8 J			
	Tetrachloroethene	µg/L	1.9			
	trans-1,2-Dichloroethene	µg/L	13			
	Trichloroethene	µg/L	1400 D			
	Vinyl chloride	µg/L	2.5			
X701-IRMPZ06G	Acetone	µg/L	4.3 J		26 D	
	cis-1,2-Dichloroethene	µg/L	140 D		300 D	
	trans-1,2-Dichloroethene	µg/L	9.1		16 D	
	Trichloroethene	µg/L	8.4		2.6 D	
	Vinyl chloride	µg/L	1.2		12 D	
X701-IRMPZ07G	1,1,1-Trichloroethane	µg/L	10 D			
	1,1,2,2-Tetrachloroethane	µg/L	95 D			
	1,1,2-Trichloroethane	µg/L	62 D			
	1,1-Dichloroethane	µg/L	2.1 DJ			

Table 4.10. VOCs detected at the X-701B Former Holding Pond – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-IRMPZ07G	1,1-Dichloroethene	µg/L	23 D			
	1,2-Dichloroethane	µg/L	2.2 DJ			
	Carbon tetrachloride	µg/L	1.2 DJ			
	Chloroform	µg/L	6.1 D			
	Chloromethane	µg/L	2.4 DJ			
	cis-1,2-Dichloroethene	µg/L	6000 D			
	Tetrachloroethene	µg/L	79 D			
	Toluene	µg/L	1.2 DJ			
	trans-1,2-Dichloroethene	µg/L	66 D			
	Trichloroethene	µg/L	48000 D			
	Vinyl chloride	µg/L	350 DJ			
X701-IRMPZ08G	1,1,1-Trichloroethane	µg/L	0.53 J		0.32 U	
	1,1,2,2-Tetrachloroethane	µg/L	6		2 D	
	1,1,2-Trichloroethane	µg/L	4		2.1 D	
	1,1-Dichloroethene	µg/L	2.7		2.7 D	
	1,2-Dichloroethane	µg/L	0.21 J		0.43 DJ	
	Chloroform	µg/L	0.37 J		0.32 U	
	cis-1,2-Dichloroethene	µg/L	1200 D		830 D	
	Tetrachloroethene	µg/L	2.1		1.5 DJ	
	trans-1,2-Dichloroethene	µg/L	7.1		7 D	
	Trichloroethene	µg/L	1900 D		880 D	
	Vinyl chloride	µg/L	0.18 J		3.7 D	
X701-TC01G	1,1,1-Trichloroethane	µg/L	48 D		160 U	
	1,1,2,2-Tetrachloroethane	µg/L	11 DJ		210 U	
	1,1-Dichloroethene	µg/L	36 DJ		230 U	
	cis-1,2-Dichloroethene	µg/L	6200 D		9100 D	
	Tetrachloroethene	µg/L	18 DJ		200 U	
	trans-1,2-Dichloroethene	µg/L	82 D		360 DJ	
	Trichloroethene	µg/L	9700 D		42000 D	
	Vinyl chloride	µg/L	130 D		100 U	
X701-TC03G	1,1,1-Trichloroethane	µg/L	51 DJ		32 U	
	1,1,2,2-Tetrachloroethane	µg/L	49 DJ		42 U	
	cis-1,2-Dichloroethene	µg/L	5600 DJ		3500 D	
	trans-1,2-Dichloroethene	µg/L	400 DJ		300 D	
	Trichloroethene	µg/L	22000 D		11000 D	
	Vinyl chloride	µg/L	41 DJ		20 U	
X701-TC05G	1,1,1-Trichloroethane	µg/L	66 D		32 U	
	1,1,2,2-Tetrachloroethane	µg/L	95 D		58 DJ	
	Acetone	µg/L	140 DJ		380 U	
	Chloromethane	µg/L	47 DJ		60 U	
	cis-1,2-Dichloroethene	µg/L	2200 D		2000 D	
	Tetrachloroethene	µg/L	27 DJ		94 DJ	
	trans-1,2-Dichloroethene	µg/L	350 D		330 D	
	Trichloroethene	µg/L	13000 D		18000 D	
X701-TC10G	1,1,1-Trichloroethane	µg/L	8.3 DJ		8 U	
	1,1,2,2-Tetrachloroethane	µg/L	4.2 DJ		11 U	
	1,1,2-Trichloroethane	µg/L	6.9 DJ		14 U	
	1,1-Dichloroethane	µg/L	4.4 DJ		11 U	
	1,1-Dichloroethene	µg/L	13 D		16 DJ	
	Carbon disulfide	µg/L	4.5 U		12 DJ	

Table 4.10. VOCs detected at the X-701B Former Holding Pond – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-TC10G	cis-1,2-Dichloroethene	µg/L	1100 D		620 D	
	Tetrachloroethene	µg/L	17 D		22 DJ	
	trans-1,2-Dichloroethene	µg/L	21 D		15 DJ	
	Trichloroethene	µg/L	7500 D		7000 D	
	Vinyl chloride	µg/L	25 D		16 DJ	
X701-TC17G	1,1,1-Trichloroethane	µg/L	21 D		13 DJ	
	1,1,2,2-Tetrachloroethane	µg/L	15 D		11 U	
	1,1,2-Trichloroethane	µg/L	9.1 DJ		14 U	
	Acetone	µg/L	300 D		290 DJ	
	Benzene	µg/L	2.4 DJ		8 U	
	Carbon disulfide	µg/L	4.5 U		12 DJ	
	Chloroform	µg/L	20 D		15 DJ	
	Chloromethane	µg/L	38 D		57 DJ	
	cis-1,2-Dichloroethene	µg/L	180 D		86 D	
	Tetrachloroethene	µg/L	38 D		28 DJ	
	trans-1,2-Dichloroethene	µg/L	11 D		10 DJ	
	Trichloroethene	µg/L	11000 D		5100 D	
X701-TC22G	cis-1,2-Dichloroethene	µg/L	490 DJ		480 DJ	
	m,p-Xylenes	µg/L	340 U		240 DJ	
	Tetrachloroethene	µg/L	320 DJ		470 DJ	
	Trichloroethene	µg/L	70000 D		60000 D	
X701-TC28G	1,1,1-Trichloroethane	µg/L	180 D		110 DJ	
	1,1,2,2-Tetrachloroethane	µg/L	89 D		84 JU	
	1,1,2-Trichloroethane	µg/L	37 DJ		110 JU	
	Acetone	µg/L	120 DJ		760 JU	
	Carbon tetrachloride	µg/L	42 DJ		76 JU	
	Chloroform	µg/L	21 DJ		64 JU	
	cis-1,2-Dichloroethene	µg/L	390 D		380 DJ	
	Tetrachloroethene	µg/L	920 D		480 DJ	
	trans-1,2-Dichloroethene	µg/L	36 DJ		60 JU	
	Trichloroethene	µg/L	180000 D		98000 D	
X701-TC48G	1,1,1-Trichloroethane	µg/L	4.6 D		4.2	
	1,1,2,2-Tetrachloroethane	µg/L	12 D		11	
	1,1,2-Trichloroethane	µg/L	13 D		14	
	1,1-Dichloroethane	µg/L	0.94 DJ		1.2	
	1,2-Dichloroethane	µg/L	0.33 U		0.85 J	
	2-Butanone	µg/L	86 D		75	
	4-Methyl-2-pentanone	µg/L	2.5 U		2.6 J	
	Acetone	µg/L	600 D		590	
	Benzene	µg/L	2.5 D		2.8	
	Bromomethane	µg/L	1.8 DJ		0.21 U	
	Carbon disulfide	µg/L	1.2 DJ		0.64 J	
	Carbon tetrachloride	µg/L	0.48 U		0.22 J	
	Chloroform	µg/L	4.7 D		4.6	
	Chloromethane	µg/L	29 D		24	
	cis-1,2-Dichloroethene	µg/L	51 D		52	
	Methylene chloride	µg/L	0.8 U		1.9 J	
	Tetrachloroethene	µg/L	18 D		13	
	Toluene	µg/L	0.43 U		0.23 J	
	trans-1,2-Dichloroethene	µg/L	6.7 D		6.8	

Table 4.10. VOCs detected at the X-701B Former Holding Pond – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-TC48G	Trichloroethene	µg/L	2200 D		1900 D	
X701-TC54G	1,1,1-Trichloroethane	µg/L	83 D		160 U	
	1,1,2,2-Tetrachloroethane	µg/L	510 D		520 DJ	
	1,1,2-Trichloroethane	µg/L	50 D		270 U	
	1,2-Dichloroethane	µg/L	6.5 U		140 DJ	
	Acetone	µg/L	260 DJ		1900 U	
	Chloroform	µg/L	20 DJ		160 U	
	cis-1,2-Dichloroethene	µg/L	260 D		250 DJ	
	Tetrachloroethene	µg/L	290 D		200 U	
	trans-1,2-Dichloroethene	µg/L	41 DJ		150 U	
	Trichloroethene	µg/L	67000 D		48000 D	
X701-TC61G	1,1,1-Trichloroethane	µg/L	120 D		320 U	
	1,1,2,2-Tetrachloroethane	µg/L	510 D		420 U	
	1,1,2-Trichloroethane	µg/L	53 D		540 U	
	Acetone	µg/L	360 DJ		3800 U	
	Carbon tetrachloride	µg/L	26 DJ		380 U	
	Chloroform	µg/L	14 DJ		320 U	
	cis-1,2-Dichloroethene	µg/L	820 D		730 DJ	
	m,p-Xylenes	µg/L	17 U		490 DJ	
	Tetrachloroethene	µg/L	480 D		400 U	
	trans-1,2-Dichloroethene	µg/L	130 D		300 U	
	Trichloroethene	µg/L	110000 D		87000 D	
X701-TC67G	1,1,1-Trichloroethane	µg/L	5.5 DJ		16 U	
	1,1,2,2-Tetrachloroethane	µg/L	7.6 DJ		21 U	
	1,1,2-Trichloroethane	µg/L	5.9 DJ		27 U	
	Chloroform	µg/L	4.7 DJ		16 U	
	cis-1,2-Dichloroethene	µg/L	120 D		81 DJ	
	Tetrachloroethene	µg/L	26 D		20 U	
	trans-1,2-Dichloroethene	µg/L	7.9 DJ		15 U	
	Trichloroethene	µg/L	8500 D		5500 D	
X744G-02G	1,1-Dichloroethene	µg/L	0.23 U		0.41 J	
	cis-1,2-Dichloroethene	µg/L	1.7		2	
	Trichloroethene	µg/L	29		31	
	Trichlorofluoromethane	µg/L	3		3.3	
X744G-03G	cis-1,2-Dichloroethene	µg/L	0.88 J		0.82 J	
	Trichloroethene	µg/L	10		9.8	
	Trichlorofluoromethane	µg/L	0.29 U		0.91 J	

Table 4.11. Results for radionuclides at the X-701B Former Holding Pond – 2019

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
LBC-PZ03G	Technetium-99	pCi/L	-0.584 U			
	Uranium	µg/L	0.373			
	Uranium-233/234	pCi/L	0.338			
	Uranium-235/236	pCi/L	0.118 U			
	Uranium-238	pCi/L	0.107 U			
LBC-PZ06G	Technetium-99	pCi/L	-0.658 U			
	Uranium	µg/L	0.0267 U			
	Uranium-233/234	pCi/L	0.126 U			
	Uranium-235/236	pCi/L	0.0254 U			
	Uranium-238	pCi/L	0.00502 U			
X230J7-01GA	Technetium-99	pCi/L	15.1			
	Uranium	µg/L	0.182			
	Uranium-233/234	pCi/L	0.139 U			
	Uranium-235/236	pCi/L	0.00368 U			
	Uranium-238	pCi/L	0.0605 U			
X230J7-02GA	Technetium-99	pCi/L	181			
	Uranium	µg/L	0.221			
	Uranium-233/234	pCi/L	0.176			
	Uranium-235/236	pCi/L	0.0344 U			
	Uranium-238	pCi/L	0.0688 U			
X230J7-03GA	Americium-241	pCi/L	-0.00304 U			
	Neptunium-237	pCi/L	-0.0169 U			
	Plutonium-238	pCi/L	0.00272 U			
	Plutonium-239/240	pCi/L	0 U			
	Technetium-99	pCi/L	116			
	Uranium	µg/L	0.404			
	Uranium-233/234	pCi/L	0.176			
	Uranium-235/236	pCi/L	0.00508 U			
	Uranium-238	pCi/L	0.135			
X230J7-04GA	Technetium-99	pCi/L			-1.66 U	
	Uranium	µg/L			0.108 U	
	Uranium-233/234	pCi/L			0.101 U	
	Uranium-235/236	pCi/L			0.0281 U	
	Uranium-238	pCi/L			0.0319 U	
X701-01G	Technetium-99	pCi/L	-0.717 U			
	Uranium	µg/L	4.88			
	Uranium-233/234	pCi/L	3.04			
	Uranium-235/236	pCi/L	0.0725 U			
	Uranium-238	pCi/L	1.63			
X701-02G	Technetium-99	pCi/L	0.562 U			
	Uranium	µg/L	0.355			
	Uranium-233/234	pCi/L	0.28			
	Uranium-235/236	pCi/L	0.0229 U			
	Uranium-238	pCi/L	0.116			
X701-06G	Technetium-99	pCi/L	16.4			
	Uranium	µg/L	2.79			
	Uranium-233/234	pCi/L	1.93			
	Uranium-235/236	pCi/L	0.0971 U			
	Uranium-238	pCi/L	0.924			
X701-15G	Technetium-99	pCi/L	-0.478 U			

Table 4.11. Results for radionuclides at the X-701B Former Holding Pond – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-15G	Uranium	µg/L	0.112			
	Uranium-233/234	pCi/L	0.113 U			
	Uranium-235/236	pCi/L	0.00757 U			
	Uranium-238	pCi/L	0.0364 U			
X701-16G	Technetium-99	pCi/L	-0.338 U			
	Uranium	µg/L	0.294			
	Uranium-233/234	pCi/L	0.389			
	Uranium-235/236	pCi/L	0.0491 U			
	Uranium-238	pCi/L	0.0911 U			
X701-18G	Technetium-99	pCi/L			-0.716 U	
	Uranium	µg/L			0.213	
	Uranium-233/234	pCi/L			0.117 U	
	Uranium-235/236	pCi/L			0.00629 U	
	Uranium-238	pCi/L			0.0707 U	
X701-19G	Technetium-99	pCi/L	1.25 U			
	Uranium	µg/L	0.00682 U			
	Uranium-233/234	pCi/L	0.0662 U			
	Uranium-235/236	pCi/L	0.0126 U			
	Uranium-238	pCi/L	0.000331 U			
X701-20G	Americium-241	pCi/L	-0.00312 U		-0.00168 U	
	Neptunium-237	pCi/L	0.059 U		0.169 U	
	Plutonium-238	pCi/L	0.000811 U		-0.00559 U	
	Plutonium-239/240	pCi/L	0.0109 U		0.00771 U	
	Technetium-99	pCi/L	219		143	
	Uranium	µg/L	0.174		0.165	
	Uranium-233/234	pCi/L	0.0977		0.0979	
	Uranium-235/236	pCi/L	0.00295 U		0.00918 U	
	Uranium-238	pCi/L	0.0579		0.0539 U	
X701-21G	Technetium-99	pCi/L	396			
	Uranium	µg/L	0.23			
	Uranium-233/234	pCi/L	0.0655 U			
	Uranium-235/236	pCi/L	0.0075 U			
	Uranium-238	pCi/L	0.0762 U			
X701-23G	Technetium-99	pCi/L			20.3	
	Uranium	µg/L			0.0782 U	
	Uranium-233/234	pCi/L			0.0608 U	
	Uranium-235/236	pCi/L			0.0227 U	
	Uranium-238	pCi/L			0.0227 U	
X701-24G	Americium-241	pCi/L	0.00354 U			
	Neptunium-237	pCi/L	0 U			
	Plutonium-238	pCi/L	0.0127 U			
	Plutonium-239/240	pCi/L	-0.00246 U			
	Technetium-99	pCi/L	-0.954 U			
	Uranium	µg/L	0.254			
	Uranium-233/234	pCi/L	0.193			
	Uranium-235/236	pCi/L	0.00264 U			
	Uranium-238	pCi/L	0.0848			
X701-25G	Technetium-99	pCi/L	-1.6 U			
	Uranium	µg/L	0.169			
	Uranium-233/234	pCi/L	0.221 U			

Table 4.11. Results for radionuclides at the X-701B Former Holding Pond – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-25G	Uranium-235/236	pCi/L	0.0475 U			
	Uranium-238	pCi/L	0.0495 U			
X701-30G	Technetium-99	pCi/L	1.64 U			
	Uranium	µg/L	0.441			
	Uranium-233/234	pCi/L	0.239			
	Uranium-235/236	pCi/L	0.0143 U			
	Uranium-238	pCi/L	0.146			
X701-31G	Technetium-99	pCi/L			0.657 U	
	Uranium	µg/L			0.446	
	Uranium-233/234	pCi/L			0.226	
	Uranium-235/236	pCi/L			0.0094 U	
	Uranium-238	pCi/L			0.148 U	
X701-38G	Technetium-99	pCi/L			0.118 U	
	Uranium	µg/L			0.165	
	Uranium-233/234	pCi/L			0.0885	
	Uranium-235/236	pCi/L			0.028 U	
	Uranium-238	pCi/L			0.0513 U	
X701-42G	Technetium-99	pCi/L			400	
	Uranium	µg/L			0.202	
	Uranium-233/234	pCi/L			0.166 U	
	Uranium-235/236	pCi/L			0.0128 U	
	Uranium-238	pCi/L			0.0659 U	
X701-48G	Americium-241	pCi/L			-0.00488 U	
	Neptunium-237	pCi/L			0.00574 U	
	Plutonium-238	pCi/L			0 U	
	Plutonium-239/240	pCi/L			0.0166 U	
	Technetium-99	pCi/L			-0.936 U	
	Uranium	µg/L			0.157 U	
	Uranium-233/234	pCi/L			0.0939 U	
	Uranium-235/236	pCi/L			0.000414 U	
	Uranium-238	pCi/L			0.0525 U	
X701-58B	Technetium-99	pCi/L			-1.5 U	
	Uranium	µg/L			0.0548 U	
	Uranium-233/234	pCi/L			0.216	
	Uranium-235/236	pCi/L			-0.0055 U	
	Uranium-238	pCi/L			0.0192 U	
X701-61B	Technetium-99	pCi/L			1.01 U	
	Uranium	µg/L			0.114 UJ	
	Uranium-233/234	pCi/L			0.167 UJ	
	Uranium-235/236	pCi/L			-0.00386 U	
	Uranium-238	pCi/L			0.039 U	
X701-66G	Americium-241	pCi/L	-0.00188 U		-0.03 U	
	Neptunium-237	pCi/L	-0.00757 U		-0.0198 U	
	Plutonium-238	pCi/L	0.0112 U		0.0098 U	
	Plutonium-239/240	pCi/L	-0.00366 U		0.0175 U	
	Technetium-99	pCi/L	78.3		96.2	
	Uranium	µg/L	0.733		0.86	
	Uranium-233/234	pCi/L	0.267		0.305	
	Uranium-235/236	pCi/L	0.0168 U		0.0332 U	
	Uranium-238	pCi/L	0.244		0.284	

Table 4.11. Results for radionuclides at the X-701B Former Holding Pond – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-77G	Technetium-99	pCi/L			19.8	
	Uranium	µg/L			0.154	
	Uranium-233/234	pCi/L			0.0577 U	
	Uranium-235/236	pCi/L			0.00537 U	
	Uranium-238	pCi/L			0.051 U	
X701-79G	Technetium-99	pCi/L			29.6	
	Uranium	µg/L			0.0978 U	
	Uranium-233/234	pCi/L			0.03 U	
	Uranium-235/236	pCi/L			0.0181 U	
	Uranium-238	pCi/L			0.03 U	
X701-127G	Americium-241	pCi/L	-0.00624 U		-0.0182 U	
	Neptunium-237	pCi/L	-0.0556 U		0.0663 U	
	Plutonium-238	pCi/L	0.00755 U		0.0327 U	
	Plutonium-239/240	pCi/L	0 U		0.0127 U	
	Technetium-99	pCi/L	73.4		94.2	
	Uranium	µg/L	0.279		0.119	
	Uranium-233/234	pCi/L	0.135		0.0805 U	
	Uranium-235/236	pCi/L	0 U		0.000744 U	
	Uranium-238	pCi/L	0.0939 U		0.0399 U	
X701-128G	Americium-241	pCi/L	-0.0131 U			
	Neptunium-237	pCi/L	-0.00739 U			
	Plutonium-238	pCi/L	-0.00441 U			
	Plutonium-239/240	pCi/L	0.0135 U			
	Technetium-99	pCi/L	35.3			
	Uranium	µg/L	0.311			
	Uranium-233/234	pCi/L	0.178			
	Uranium-235/236	pCi/L	-0.00213 U			
	Uranium-238	pCi/L	0.105			
X701-130G	Technetium-99	pCi/L			637	
	Uranium	µg/L			2.7	
	Uranium-233/234	pCi/L			4.33	
	Uranium-235/236	pCi/L			0.164	
	Uranium-238	pCi/L			0.88	
X701-BW1G	Technetium-99	pCi/L			1.1 U	
	Uranium	µg/L			0.226	
	Uranium-233/234	pCi/L			0.2	
	Uranium-235/236	pCi/L			0.0345 U	
	Uranium-238	pCi/L			0.0704 U	
X701-BW2G	Technetium-99	pCi/L			1310	
	Uranium	µg/L			0.165	
	Uranium-233/234	pCi/L			0.0878 U	
	Uranium-235/236	pCi/L			-0.00349 U	
	Uranium-238	pCi/L			0.0559 U	
X701-BW3G	Technetium-99	pCi/L			76.8	
	Uranium	µg/L			0.15 U	
	Uranium-233/234	pCi/L			0.0782 U	
	Uranium-235/236	pCi/L			-0.000942 U	
	Uranium-238	pCi/L			0.0504 U	
X701-BW4G	Technetium-99	pCi/L	120			
	Uranium	µg/L	0.157			

Table 4.11. Results for radionuclides at the X-701B Former Holding Pond – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-BW4G	Uranium-233/234	pCi/L	0.078 U			
	Uranium-235/236	pCi/L	0.0214 U			
	Uranium-238	pCi/L	0.0496 U			
X701-EW121G	Technetium-99	pCi/L	128		86.2	
	Uranium	µg/L	0.382		0.221	
	Uranium-233/234	pCi/L	0.131		0.0959 U	
	Uranium-235/236	pCi/L	0.0264 U		-0.00256 U	
	Uranium-238	pCi/L	0.124 U		0.0746 U	
X701-EW122G	Technetium-99	pCi/L	314		275	
	Uranium	µg/L	0.69		0.836	
	Uranium-233/234	pCi/L	0.204		0.265	
	Uranium-235/236	pCi/L	0.0271 U		0.0302 U	
	Uranium-238	pCi/L	0.228		0.276	
X701-IRMPZ06G	Technetium-99	pCi/L	-0.358 U			
	Uranium	µg/L	1.26			
	Uranium-233/234	pCi/L	0.427			
	Uranium-235/236	pCi/L	0.0433 U			
	Uranium-238	pCi/L	0.415			
X701-TC01G	Americium-241	pCi/L	-0.00798 U		-0.0136 U	
	Neptunium-237	pCi/L	-0.026 U		0.0285 U	
	Plutonium-238	pCi/L	0.00575 U		0.003 U	
	Plutonium-239/240	pCi/L	0 U		0.0283 U	
	Technetium-99	pCi/L	164		453	
	Uranium	µg/L	9.55		11.4	
	Uranium-233/234	pCi/L	5.24		6.27	
	Uranium-235/236	pCi/L	0.256		0.349	
	Uranium-238	pCi/L	3.17		3.78	
X701-TC03G	Americium-241	pCi/L	-0.001 U		-0.0262 U	
	Neptunium-237	pCi/L	0.0478 U		0.163 UJ	
	Plutonium-238	pCi/L	-0.0013 U		0.00271 U	
	Plutonium-239/240	pCi/L	0.015 U		0.0159 U	
	Technetium-99	pCi/L	519		488	
	Uranium	µg/L	5.28		5.72 J	
	Uranium-233/234	pCi/L	1.92		1.92	
	Uranium-235/236	pCi/L	0.0939		0.115 UJ	
	Uranium-238	pCi/L	1.76		1.9	
X701-TC05G	Americium-241	pCi/L	-0.00279 U		-0.00766 U	
	Neptunium-237	pCi/L	0.0158 U		0.145 UJ	
	Plutonium-238	pCi/L	0.0174 U		0.0186 U	
	Plutonium-239/240	pCi/L	0.0292 U		0.0145 U	
	Technetium-99	pCi/L	576		408	
	Uranium	µg/L	29.4		13.4	
	Uranium-233/234	pCi/L	11.1		4.68	
	Uranium-235/236	pCi/L	0.394		0.244	
	Uranium-238	pCi/L	9.81		4.48	
X701-TC10G	Americium-241	pCi/L	0.000929 U		-0.0232 U	
	Neptunium-237	pCi/L	0.00781 U		0.197 U	
	Plutonium-238	pCi/L	0 U		0.0248 U	
	Plutonium-239/240	pCi/L	-0.00389 U		0.0321 U	
	Technetium-99	pCi/L	101		91.2	

Table 4.11. Results for radionuclides at the X-701B Former Holding Pond – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-TC10G	Uranium	µg/L	1.78		2.46	
	Uranium-233/234	pCi/L	0.659		0.953	
	Uranium-235/236	pCi/L	0.0354 U		0.0559 U	
	Uranium-238	pCi/L	0.593		0.817	
X701-TC17G	Americium-241	pCi/L	-0.0116 U		0.0064 U	
	Neptunium-237	pCi/L	-0.0162 U		0.0973 U	
	Plutonium-238	pCi/L	0.00894 U		0.00608 U	
	Plutonium-239/240	pCi/L	0.00196 U		0.0292 U	
	Technetium-99	pCi/L	284		274	
	Uranium	µg/L	35.8		52.1	
	Uranium-233/234	pCi/L	13.5		19.6	
	Uranium-235/236	pCi/L	0.549		0.873	
	Uranium-238	pCi/L	11.9		17.4	
X701-TC22G	Americium-241	pCi/L	0.00321 U		-0.0341 U	
	Neptunium-237	pCi/L	-0.0776 U		0.042 U	
	Plutonium-238	pCi/L	0.014 U		0.0279 U	
	Plutonium-239/240	pCi/L	-0.00133 U		0.0173 U	
	Technetium-99	pCi/L	354		226	
	Uranium	µg/L	1.66		4.48 J	
	Uranium-233/234	pCi/L	0.706		1.56	
	Uranium-235/236	pCi/L	0.0398 U		0.064 UJ	
	Uranium-238	pCi/L	0.552		1.5	
X701-TC28G	Americium-241	pCi/L	-0.00621 U		0.0462 U	
	Neptunium-237	pCi/L	0.0245 U		0.202 U	
	Plutonium-238	pCi/L	0.00457 U		0.0371 U	
	Plutonium-239/240	pCi/L	-0.00771 U		0.0159 U	
	Technetium-99	pCi/L	272		266	
	Uranium	µg/L	12.5		11.6	
	Uranium-233/234	pCi/L	4.54		4.89	
	Uranium-235/236	pCi/L	0.225		0.21	
	Uranium-238	pCi/L	4.16		3.88	
X701-TC48G	Americium-241	pCi/L	0.0012 U		-0.022 U	
	Neptunium-237	pCi/L	0 U		0.0262 U	
	Plutonium-238	pCi/L	0.00564 U		0.0296 U	
	Plutonium-239/240	pCi/L	0.00172 U		0.0283 U	
	Technetium-99	pCi/L	375		305	
	Uranium	µg/L	72.5		74.6	
	Uranium-233/234	pCi/L	26.3		27.5	
	Uranium-235/236	pCi/L	1.21		1.25	
	Uranium-238	pCi/L	24.2		24.9	
X701-TC54G	Americium-241	pCi/L	-0.00627 U		0.00307 U	
	Neptunium-237	pCi/L	-0.0202 U		0.0708 U	
	Plutonium-238	pCi/L	0.00173 U		0.0186 U	
	Plutonium-239/240	pCi/L	0.0141 U		0.00595 U	
	Technetium-99	pCi/L	349		314	
	Uranium	µg/L	2.46		2.97 J	
	Uranium-233/234	pCi/L	0.875		0.817	
	Uranium-235/236	pCi/L	0.0758		0.0697 UJ	
	Uranium-238	pCi/L	0.815		0.988	
X701-TC61G	Americium-241	pCi/L	-0.00471 U		-0.00791 U	

Table 4.11. Results for radionuclides at the X-701B Former Holding Pond – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-TC61G	Neptunium-237	pCi/L	-0.0141 U		0.145 UJ	
	Plutonium-238	pCi/L	0.0152 U		0.0428 U	
	Plutonium-239/240	pCi/L	-0.00207 U		0.015 U	
	Technetium-99	pCi/L	341		317	
	Uranium	µg/L	1.06		0.984 J	
	Uranium-233/234	pCi/L	0.342		0.325 UJ	
	Uranium-235/236	pCi/L	0.0341 U		0.00542 U	
	Uranium-238	pCi/L	0.35		0.33	
X701-TC67G	Americium-241	pCi/L	-0.00573 U		-0.0321 U	
	Neptunium-237	pCi/L	-0.00746 U		0.11 U	
	Plutonium-238	pCi/L	0.00339 U		0.00622 U	
	Plutonium-239/240	pCi/L	0.0265 U		0.0071 U	
	Technetium-99	pCi/L	66.9		68.7	
	Uranium	µg/L	0.32		0.2 UJ	
	Uranium-233/234	pCi/L	0.155		0.149 UJ	
	Uranium-235/236	pCi/L	0 U		0.0087 U	
	Uranium-238	pCi/L	0.107		0.0658 U	

Table 4.12. Results for chromium at the X-633 Former Recirculating Cooling Water Complex – 2019

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X633-07G	Chromium	µg/L		590 J		530
X633-PZ04G	Chromium	µg/L		42		95

Table 4.13. VOCs detected at the X-616 Former Chromium Sludge Surface Impoundments – 2019

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X616-05G	Trichlorofluoromethane	µg/L	0.48 J			
X616-09G	1,1,1-Trichloroethane	µg/L	3		3.6	
	1,1-Dichloroethane	µg/L	3.3		3.6	
	1,1-Dichloroethene	µg/L	36		44	
	1,2-Dichloroethane	µg/L	0.13 U		0.16 J	
	cis-1,2-Dichloroethene	µg/L	3.6		2.8	
	Trichloroethene	µg/L	28		33	
	Trichlorofluoromethane	µg/L	0.84 J		1.2 J	
X616-13G	1,1,1-Trichloroethane	µg/L	3.6		3.9	
	1,1-Dichloroethane	µg/L	1.2		1.3	
	1,1-Dichloroethene	µg/L	34		36	
	cis-1,2-Dichloroethene	µg/L	0.67 J		0.73 J	
	Trichloroethene	µg/L	21		24	
	Trichlorofluoromethane	µg/L	10		9.3	
X616-14G	1,1,1-Trichloroethane	µg/L	1.4		1.4	
	1,1-Dichloroethane	µg/L	0.4 J		0.34 J	
	1,1-Dichloroethene	µg/L	11		10	
	Trichloroethene	µg/L	3.6		3.8	
	Trichlorofluoromethane	µg/L	1.5 J		1.8 J	
X616-16G	1,1-Dichloroethene	µg/L	0.36 J			
	cis-1,2-Dichloroethene	µg/L	0.62 J			
	Trichloroethene	µg/L	0.81 J			
X616-19B	Trichloroethene	µg/L	0.5 J			
X616-20B	1,1,1-Trichloroethane	µg/L	0.49 J		0.16 U	
	1,1-Dichloroethane	µg/L	0.73 J		1.1	
	1,1-Dichloroethene	µg/L	10		14	
	cis-1,2-Dichloroethene	µg/L	0.69 J		0.93 J	
	Methylene chloride	µg/L	1 J		0.94 U	
	Trichloroethene	µg/L	20		26	
X616-24B	Trichloroethene	µg/L	0.89 J			
X616-25G	cis-1,2-Dichloroethene	µg/L	0.47 J		0.46 J	
	Trichloroethene	µg/L	1.1		1.1	
X616-26G	Acetone	µg/L	4.9 J			
X616-28B	1,1,1-Trichloroethane	µg/L	1.2			
	1,1-Dichloroethene	µg/L	0.94 J			
	Carbon disulfide	µg/L	0.43 J			
	Trichloroethene	µg/L	0.8 J			

Table 4.14. Results for chromium at the X-616 Former Chromium Sludge Surface Impoundments – 2019

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X616-02G	Chromium	µg/L	0.5 U			
X616-05G	Chromium	µg/L	360			
X616-09G	Chromium	µg/L	4			
X616-10G	Chromium	µg/L	0.5 U			
X616-13G	Chromium	µg/L	0.72 J			
X616-14G	Chromium	µg/L	0.5 U			
X616-16G	Chromium	µg/L	0.68 J			
X616-17G	Chromium	µg/L	9.8			
X616-19B	Chromium	µg/L	8.4			
X616-20B	Chromium	µg/L	3.2			
X616-21G	Chromium	µg/L	1.5 J			
X616-22G	Chromium	µg/L	0.55 J			
X616-24B	Chromium	µg/L	1.7 J			
X616-25G	Chromium	µg/L	1.6 J			
X616-26G	Chromium	µg/L	50			
X616-28B	Chromium	µg/L	1.7 J			

Table 4.15. VOCs detected at the X-740 Former Waste Oil Handling Facility – 2019

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X740-02G	1,1,1-Trichloroethane	µg/L		1.4		
	1,1-Dichloroethane	µg/L		1.8		
	1,1-Dichloroethene	µg/L		3.2		
	Chloromethane	µg/L		0.3 J		
	Trichloroethene	µg/L		4.9		
X740-03G	1,1-Dichloroethane	µg/L		3.8 DJ		
	1,1-Dichloroethene	µg/L		59 D		
	1,2-Dichloroethane	µg/L		5.9 D		
	Chloroethane	µg/L		3 DJ		
	Chloroform	µg/L		0.93 DJ		
	cis-1,2-Dichloroethene	µg/L		360 D		
	trans-1,2-Dichloroethene	µg/L		0.94 DJ		
	Trichloroethene	µg/L		3.4 DJ		
	Vinyl chloride	µg/L		8.5 D		
X740-04G	1,1,1-Trichloroethane	µg/L		0.43 J		
	1,1-Dichloroethene	µg/L		0.57 J		
	Trichloroethene	µg/L		4.5		
X740-06G	Chloromethane	µg/L		0.79 J		
X740-08G	1,1,1-Trichloroethane	µg/L		0.68 J		
	1,1-Dichloroethane	µg/L		11		
	1,1-Dichloroethene	µg/L		1.7		
	cis-1,2-Dichloroethene	µg/L		11		
	trans-1,2-Dichloroethene	µg/L		2.9		
	Trichloroethene	µg/L		6.6		
	Vinyl chloride	µg/L		0.11 J		
X740-09B	1,1,1-Trichloroethane	µg/L		5.5 DJ		
	1,1-Dichloroethane	µg/L		23 D		
	1,1-Dichloroethene	µg/L		330 D		
	1,2-Dichloroethane	µg/L		53 D		
	Acetone	µg/L		34 DJ		
	Chloroform	µg/L		2.7 DJ		
	cis-1,2-Dichloroethene	µg/L		1600 D		
	Tetrachloroethene	µg/L		8.5 DJ		
	trans-1,2-Dichloroethene	µg/L		3.6 DJ		
	Trichloroethene	µg/L		390 D		
	Vinyl chloride	µg/L		8 DJ		
X740-10G	1,1-Dichloroethane	µg/L		0.75 J		
	1,1-Dichloroethene	µg/L		5.5		
	1,2-Dichloroethane	µg/L		1		
	cis-1,2-Dichloroethene	µg/L		29		
	Tetrachloroethene	µg/L		0.46 J		
	Trichloroethene	µg/L		17		
X740-11G	1,1,1-Trichloroethane	µg/L		0.79 J		
	1,1-Dichloroethane	µg/L		0.35 J		
	1,1-Dichloroethene	µg/L		6.2		
	1,2-Dichloroethane	µg/L		1.8		
	Chloroform	µg/L		0.2 J		
	Trichloroethene	µg/L		25		
X740-14B	1,1-Dichloroethene	µg/L		0.28 J		
	1,2-Dichloroethane	µg/L		0.16 J		

Table 4.15. VOCs detected at the X-740 Former Waste Oil Handling Facility – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X740-14B	Acetone	µg/L		2 J		
	Trichloroethene	µg/L		3.2		
X740-18G	1,1-Dichloroethene	µg/L		2.3		
	1,2-Dichloroethane	µg/L		0.4 J		
	Acetone	µg/L		12		
	Chloroethane	µg/L		0.42 J		
	Chloromethane	µg/L		0.37 J		
	cis-1,2-Dichloroethene	µg/L		12		
	trans-1,2-Dichloroethene	µg/L		0.19 J		
	Vinyl chloride	µg/L		8.6		
X740-19G	1,1-Dichloroethene	µg/L		0.5 J		
	1,2-Dichloroethane	µg/L		0.27 J		
	cis-1,2-Dichloroethene	µg/L		3.6		
	Tetrachloroethene	µg/L		0.33 J		
	Trichloroethene	µg/L		3.1		
X740-20G	cis-1,2-Dichloroethene	µg/L		0.57 J		
	Trichloroethene	µg/L		1.1		
X740-21G	Trichloroethene	µg/L		1.6		
X740-22G	1,1,1-Trichloroethane	µg/L		0.71 J		
	1,1-Dichloroethane	µg/L		0.46 J		
	1,1-Dichloroethene	µg/L		5.3		
	1,2-Dichloroethane	µg/L		1.3		
	Carbon disulfide	µg/L		0.39 J		
	cis-1,2-Dichloroethene	µg/L		7.1		
	Tetrachloroethene	µg/L		1.3		
	Trichloroethene	µg/L		40		
X740-PZ10G	Bromomethane	µg/L		0.24 J		
	Trichloroethene	µg/L		2.5		
X740-PZ12G	1,1,1-Trichloroethane	µg/L		0.96 J		
	1,1-Dichloroethane	µg/L		0.5 J		
	1,1-Dichloroethene	µg/L		3.1		
	1,2-Dichloroethane	µg/L		1.7		
	Chloroform	µg/L		0.25 J		
	cis-1,2-Dichloroethene	µg/L		0.26 J		
	Tetrachloroethene	µg/L		0.74 J		
	Trichloroethene	µg/L		43		
X740-PZ14G	1,1,1-Trichloroethane	µg/L		0.57 J		
	1,1-Dichloroethane	µg/L		0.42 J		
	1,1-Dichloroethene	µg/L		6.6		
	1,2-Dichloroethane	µg/L		1.7		
	Chloroform	µg/L		0.18 J		
	cis-1,2-Dichloroethene	µg/L		2.1		
	Tetrachloroethene	µg/L		0.78 J		
	Trichloroethene	µg/L		47		
X740-PZ17G	Chloromethane	µg/L		0.43 JQ		
	Trichloroethene	µg/L		0.94 J		

Table 4.16. Results for beryllium and chromium at the X-611A Former Lime Sludge Lagoons – 2019

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
F-07G	Beryllium	µg/L	0.3 J		1.3	
	Chromium	µg/L	12		17	
F-08B	Beryllium	µg/L	0.08 U		0.08 U	
	Chromium	µg/L	0.5 J		0.5 U	
X611-01B	Beryllium	µg/L	0.08 JU		0.17 J	
	Chromium	µg/L	6.2		2.8	
X611-02BA	Beryllium	µg/L	0.08 U		0.08 U	
	Chromium	µg/L	0.61 J		0.5 U	
X611-03G	Beryllium	µg/L	0.08 U		0.08 U	
	Chromium	µg/L	2.6		0.5 U	
X611-04BA	Beryllium	µg/L	0.34 J		0.21 J	
	Chromium	µg/L	0.77 J		0.5 U	

Table 4.17. VOCs detected at the X-735 Landfills – 2019

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X735-01GA	Chloromethane	µg/L		0.45 J		
X735-02GA	1,1-Dichloroethane	µg/L		0.3 J		
	Chloromethane	µg/L		0.48 J		
X735-03GA	Chloromethane	µg/L		0.42 JQ		
X735-04GA	Chloromethane	µg/L		0.3 JQ		
X735-17B	1,2-Dichloroethane	µg/L		0.15 J		
	Chloromethane	µg/L		0.41 J		
X735-18B	Acetone	µg/L		1.9 J		
	Chloromethane	µg/L		0.48 J		
	Trichloroethene	µg/L		0.43 J		
X735-21G	Chloromethane	µg/L		0.63 JQ		
	cis-1,2-Dichloroethene	µg/L		0.15 J		
X737-06G	Chloromethane	µg/L		0.35 J		
X737-07B	Chloromethane	µg/L		0.71 J		

Table 4.18. Results for radionuclides at the X-735 Landfills – 2019

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X735-01GA	Technetium-99	pCi/L		-0.42 U		
	Uranium	µg/L		0.0257 U		
	Uranium-233/234	pCi/L		0.0908 U		
	Uranium-235/236	pCi/L		0.00349 U		
	Uranium-238	pCi/L		0.00808 U		
X735-02GA	Technetium-99	pCi/L		0.882 U		
	Uranium	µg/L		0.0104 U		
	Uranium-233/234	pCi/L		0.0662 U		
	Uranium-235/236	pCi/L		0.00496 U		
	Uranium-238	pCi/L		0.00274 U		
X735-03GA	Technetium-99	pCi/L		1.34 U		
	Uranium	µg/L		0.244		
	Uranium-233/234	pCi/L		0.108 U		
	Uranium-235/236	pCi/L		0.0198 U		
	Uranium-238	pCi/L		0.0791 U		
X735-04GA	Technetium-99	pCi/L		2.4 U		
	Uranium	µg/L		0.135 U		
	Uranium-233/234	pCi/L		0.109 U		
	Uranium-235/236	pCi/L		0.0399 U		
	Uranium-238	pCi/L		0.0391 U		
X735-05GA	Technetium-99	pCi/L		-0.54 U		
	Uranium	µg/L		0.215		
	Uranium-233/234	pCi/L		0.186		
	Uranium-235/236	pCi/L		-0.0044 U		
	Uranium-238	pCi/L		0.0731 U		
X735-06GAA	Technetium-99	pCi/L		1.04 U		
	Uranium	µg/L		0.202		
	Uranium-233/234	pCi/L		0.229		
	Uranium-235/236	pCi/L		0.0117 U		
	Uranium-238	pCi/L		0.066 U		
X735-13GA	Technetium-99	pCi/L		0.693 U		
	Uranium	µg/L		0.081 U		
	Uranium-233/234	pCi/L		0.0584 U		
	Uranium-235/236	pCi/L		0.0103 U		
	Uranium-238	pCi/L		0.0256 U		
X735-16B	Technetium-99	pCi/L		0.129 U		
	Uranium	µg/L		0.175		
	Uranium-233/234	pCi/L		0.148 U		
	Uranium-235/236	pCi/L		0.0322 U		
	Uranium-238	pCi/L		0.0537 U		
X735-17B	Technetium-99	pCi/L		1.92 U		
	Uranium	µg/L		0.404		
	Uranium-233/234	pCi/L		0.239		
	Uranium-235/236	pCi/L		0.0451 U		
	Uranium-238	pCi/L		0.129 U		
X735-18B	Technetium-99	pCi/L		0.689 U		
	Uranium	µg/L		0.103 U		
	Uranium-233/234	pCi/L		0.111 U		
	Uranium-235/236	pCi/L		0.0273 U		
	Uranium-238	pCi/L		0.0302 U		

Table 4.18. Results for radionuclides at the X-735 Landfills – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X735-19G	Technetium-99	pCi/L		-0.0202 U		
	Uranium	µg/L		0.205		
	Uranium-233/234	pCi/L		0.247		
	Uranium-235/236	pCi/L		0.0262 U		
	Uranium-238	pCi/L		0.0648 U		
X735-20B	Technetium-99	pCi/L		0.126 U		
	Uranium	µg/L		0.149 U		
	Uranium-233/234	pCi/L		0.0539 U		
	Uranium-235/236	pCi/L		-0.0043 U		
	Uranium-238	pCi/L		0.0506 U		
X735-21G	Technetium-99	pCi/L		-0.566 U		
	Uranium	µg/L		0.849		
	Uranium-233/234	pCi/L		0.475		
	Uranium-235/236	pCi/L		0.0297 U		
	Uranium-238	pCi/L		0.281		
X737-05B	Technetium-99	pCi/L		0.318 U		
	Uranium	µg/L		0.156		
	Uranium-233/234	pCi/L		0.152 U		
	Uranium-235/236	pCi/L		0.0287 U		
	Uranium-238	pCi/L		0.0479 U		
X737-06G	Technetium-99	pCi/L		-0.428 U		
	Uranium	µg/L		0.189		
	Uranium-233/234	pCi/L		0.131 U		
	Uranium-235/236	pCi/L		0.0558 U		
	Uranium-238	pCi/L		0.0549 U		
X737-07B	Technetium-99	pCi/L		-0.258 U		
	Uranium	µg/L		0.181		
	Uranium-233/234	pCi/L		0.226		
	Uranium-235/236	pCi/L		0.0929 U		
	Uranium-238	pCi/L		0.0465 U		
X737-09G	Technetium-99	pCi/L		0.11 U		
	Uranium	µg/L		0.0375 U		
	Uranium-233/234	pCi/L		0.149 U		
	Uranium-235/236	pCi/L		0.0265 U		
	Uranium-238	pCi/L		0.00847 U		

Table 4.19. VOCs detected at the X-734 Landfills – 2019

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
RSY-02B	1,2-Dichloroethane	µg/L		0.24 J		0.13 U
	Chloromethane	µg/L		1.1 J		0.3 U
X734-02B	1,2-Dichloroethane	µg/L		0.2 J		0.13 U
X734-05B	Benzene	µg/L		0.16 U		0.58 J
X734-14G	1,2-Dichloroethane	µg/L		0.19 J		0.13 U
	Chloromethane	µg/L		0.55 J		0.3 U
X734-15G	1,2-Dichloroethane	µg/L		0.14 J		0.13 U
X734-16G	Bromomethane	µg/L		0.21 U		0.49 JQ
	Chloromethane	µg/L		0.3 U		3.9
X734-20G	1,2-Dichloroethane	µg/L		0.13 J		0.13 U
	Chloromethane	µg/L		1.1 J		0.3 U
X734-23G	cis-1,2-Dichloroethene	µg/L		6.8		5.5
	trans-1,2-Dichloroethene	µg/L		0.15 U		0.3 J
	Vinyl chloride	µg/L		1.5		1.9

Table 4.20. Results for radionuclides at the X-734 Landfills – 2019

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
RSY-02B	Americium-241	pCi/L		-0.0119 U		
	Neptunium-237	pCi/L		-0.0125 U		
	Plutonium-238	pCi/L		0.0138 U		
	Plutonium-239/240	pCi/L		0.00387 U		
	Technetium-99	pCi/L		-0.273 U		
	Uranium	µg/L		0.169		
	Uranium-233/234	pCi/L		0.181		
	Uranium-235/236	pCi/L		0.0303 U		
	Uranium-238	pCi/L		0.0521 U		
X734-01G	Americium-241	pCi/L		-0.0157 U		
	Neptunium-237	pCi/L		-0.0768 U		
	Plutonium-238	pCi/L		0.00762 U		
	Plutonium-239/240	pCi/L		-0.0019 U		
	Technetium-99	pCi/L		-0.2 U		
	Uranium	µg/L		0.172		
	Uranium-233/234	pCi/L		0.132 U		
	Uranium-235/236	pCi/L		-0.0035 U		
	Uranium-238	pCi/L		0.0584 U		
X734-02B	Americium-241	pCi/L		-0.0149 U		
	Neptunium-237	pCi/L		0.0246 U		
	Plutonium-238	pCi/L		0.0111 U		
	Plutonium-239/240	pCi/L		0.00556 U		
	Technetium-99	pCi/L		-0.405 U		
	Uranium	µg/L		0.0782 U		
	Uranium-233/234	pCi/L		0.136 U		
	Uranium-235/236	pCi/L		0.00706 U		
	Uranium-238	pCi/L		0.0252 U		
X734-03G	Americium-241	pCi/L		-0.0098 U		
	Neptunium-237	pCi/L		0.0544 U		
	Plutonium-238	pCi/L		0.00741 U		
	Plutonium-239/240	pCi/L		0.0148 U		
	Technetium-99	pCi/L		-0.698 U		
	Uranium	µg/L		4.04		
	Uranium-233/234	pCi/L		2.14		
	Uranium-235/236	pCi/L		0.164		
	Uranium-238	pCi/L		1.33		
X734-04G	Americium-241	pCi/L		0.0097 U		
	Neptunium-237	pCi/L		0.0709 U		
	Plutonium-238	pCi/L		0.0476 U		
	Plutonium-239/240	pCi/L		0.0222 U		
	Technetium-99	pCi/L		-0.304 U		
	Uranium	µg/L		2.25		
	Uranium-233/234	pCi/L		0.982		
	Uranium-235/236	pCi/L		0.0529 U		
	Uranium-238	pCi/L		0.748		
X734-05B	Americium-241	pCi/L		-0.0166 U		
	Neptunium-237	pCi/L		-0.0126 U		
	Plutonium-238	pCi/L		0.0365 U		
	Plutonium-239/240	pCi/L		-0.018 U		
	Technetium-99	pCi/L		0.567 U		

Table 4.20. Results for radionuclides at the X-734 Landfills – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X734-05B	Uranium	µg/L		0.29		
	Uranium-233/234	pCi/L		0.315		
	Uranium-235/236	pCi/L		0.00949 U		
	Uranium-238	pCi/L		0.0958 U		
X734-06G	Americium-241	pCi/L		-0.0106 U		
	Neptunium-237	pCi/L		0.00465 U		
	Plutonium-238	pCi/L		-0.0017 U		
	Plutonium-239/240	pCi/L		0.0087 U		
	Technetium-99	pCi/L		-0.415 U		
	Uranium	µg/L		0.00788 U		
	Uranium-233/234	pCi/L		0.165 U		
	Uranium-235/236	pCi/L		0.0219 U		
	Uranium-238	pCi/L		-0.0008 U		
X734-10G	Americium-241	pCi/L		-0.0257 U		
	Neptunium-237	pCi/L		0.0152 U		
	Plutonium-238	pCi/L		0.0261 U		
	Plutonium-239/240	pCi/L		0 U		
	Technetium-99	pCi/L		0.347 U		
	Uranium	µg/L		0.692		
	Uranium-233/234	pCi/L		0.237		
	Uranium-235/236	pCi/L		0.0334 U		
	Uranium-238	pCi/L		0.227		
X734-14G	Americium-241	pCi/L		-0.0179 U		
	Neptunium-237	pCi/L		-0.0234 U		
	Plutonium-238	pCi/L		0.0381 U		
	Plutonium-239/240	pCi/L		0.00366 U		
	Technetium-99	pCi/L		0.923 U		
	Uranium	µg/L		0.919		
	Uranium-233/234	pCi/L		0.526		
	Uranium-235/236	pCi/L		0.0525 U		
	Uranium-238	pCi/L		0.301		
X734-15G	Americium-241	pCi/L		-0.0181 U		
	Neptunium-237	pCi/L		-0.0388 U		
	Plutonium-238	pCi/L		0.00404 U		
	Plutonium-239/240	pCi/L		0.0185 U		
	Technetium-99	pCi/L		-0.417 U		
	Uranium	µg/L		0.0686 U		
	Uranium-233/234	pCi/L		0.0386 U		
	Uranium-235/236	pCi/L		-0.0033 U		
	Uranium-238	pCi/L		0.0235 U		
X734-16G	Americium-241	pCi/L		-0.0016 U		
	Neptunium-237	pCi/L		0.0367 U		
	Plutonium-238	pCi/L		0.0186 U		
	Plutonium-239/240	pCi/L		0.0146 U		
	Technetium-99	pCi/L		-0.339 U		
	Uranium	µg/L		0.313		
	Uranium-233/234	pCi/L		0.159		
	Uranium-235/236	pCi/L		0.0294 U		
	Uranium-238	pCi/L		0.101 U		
X734-18G	Americium-241	pCi/L		-0.0073 U		

Table 4.20. Results for radionuclides at the X-734 Landfills – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X734-18G	Neptunium-237	pCi/L		-0.0218 U		
	Plutonium-238	pCi/L		0.0132 U		
	Plutonium-239/240	pCi/L		0.0283 U		
	Technetium-99	pCi/L		-0.379 U		
	Uranium	µg/L		1.95		
	Uranium-233/234	pCi/L		0.999		
	Uranium-235/236	pCi/L		0.0571 U		
	Uranium-238	pCi/L		0.647		
X734-20G	Americium-241	pCi/L		-0.0231 U		
	Neptunium-237	pCi/L		0.00757 U		
	Plutonium-238	pCi/L		0.00337 U		
	Plutonium-239/240	pCi/L		0.032 U		
	Technetium-99	pCi/L		-0.417 U		
	Uranium	µg/L		0.242		
	Uranium-233/234	pCi/L		0.272		
	Uranium-235/236	pCi/L		0.00283 U		
	Uranium-238	pCi/L		0.081 U		
X734-22G	Americium-241	pCi/L		0.00143 U		
	Neptunium-237	pCi/L		0.034 U		
	Plutonium-238	pCi/L		0.00748 U		
	Plutonium-239/240	pCi/L		0.00747 U		
	Technetium-99	pCi/L		0.025 U		
	Uranium	µg/L		1.31		
	Uranium-233/234	pCi/L		0.774		
	Uranium-235/236	pCi/L		0.0575 U		
	Uranium-238	pCi/L		0.432		
X734-23G	Americium-241	pCi/L		-0.0059 U		
	Neptunium-237	pCi/L		0.0212 U		
	Plutonium-238	pCi/L		0.0198 U		
	Plutonium-239/240	pCi/L		0.0363 U		
	Technetium-99	pCi/L		1.57 U		
	Uranium	µg/L		0.0496 U		
	Uranium-233/234	pCi/L		0.0534 U		
	Uranium-235/236	pCi/L		0.00277 U		
	Uranium-238	pCi/L		0.0162 U		

Table 4.21. Results for cadmium and nickel at the X-533 Former Switchyard Complex – 2019

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
F-03G	Cadmium	µg/L		50		45
	Nickel	µg/L		540		440 J
TCP-01G	Cadmium	µg/L		13		10
	Nickel	µg/L		160		140
X533-03G	Cadmium	µg/L		25		40
	Nickel	µg/L		330 J		450

Table 4.22. VOCs detected at the X-344C Former Hydrogen Fluoride Storage Building – 2019

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X344C-01G	Carbon disulfide	µg/L	0.28 J			
	cis-1,2-Dichloroethene	µg/L	1			
	Trichloroethene	µg/L	0.73 J			

Table 4.23. VOCs detected at surface water monitoring locations – 2019

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
BRC-SW01	Acetone	µg/L	1.9 U	21 UJ	7.1 J	14.5
	Bromodichloromethane	µg/L	0.17 U	0.44 J	0.17 U	0.333 U
	Chloroform	µg/L	0.16 J	0.16 U	0.16 U	0.333 U
BRC-SW02	Acetone	µg/L	1.9 U	1.9 U	1.9 U	6.56
BRC-SW05	Acetone	µg/L	1.9 U	1.9 U	1.9 U	3.67 J
EDD-SW01	1,1,2,2-Tetrachloroethane	µg/L	0.21 U	0.21 U	0.21 U	0.85 J
	1,1,2-Trichloroethane	µg/L	0.27 U	0.27 U	0.27 U	0.61 J
	1,1-Dichloroethene	µg/L	0.23 U	0.23 U	0.23 U	0.89 J
	Acetone	µg/L	6.1 J	1.9 U	1.9 U	3.16 J
	Bromodichloromethane	µg/L	0.17 U	0.17 J	1.5	0.9 J
	Chloroform	µg/L	0.16 U	0.21 J	1.9	0.333 U
	cis-1,2-Dichloroethene	µg/L	3	1.4	0.35 J	350
	Dibromochloromethane	µg/L	0.17 U	0.48 J	1.3	1.1
	trans-1,2-Dichloroethene	µg/L	0.15 U	0.15 U	0.15 U	1.6
	Trichloroethene	µg/L	7.4	3.3	0.87 J	271
LBC-SW01	Acetone	µg/L	5.9 J	1.9 U	1.9 U	2.71 J
	Bromodichloromethane	µg/L	0.17 U	0.17 U	1.1	0.333 U
	Chloroform	µg/L	0.16 U	0.16 U	1.3	0.333 U
	Chloromethane	µg/L	0.34 J	0.3 U	0.3 U	0.333 U
	cis-1,2-Dichloroethene	µg/L	9.4	12	1.3	22.4
	Dibromochloromethane	µg/L	0.17 U	0.36 J	0.99 J	0.333 U
	Trichloroethene	µg/L	20	14	1.3	17.4
LBC-SW02	Acetone	µg/L	6.9 J	1.9 U	1.9 U	3.65 J
	Bromodichloromethane	µg/L	0.17 U	0.17 U	0.53 J	0.333 U
	Chloroform	µg/L	0.16 U	0.16 U	0.6 J	0.333 U
	cis-1,2-Dichloroethene	µg/L	5.1	4.5	0.53 J	6.99
	Dibromochloromethane	µg/L	0.17 U	0.17 U	0.48 J	0.333 U
	Trichloroethene	µg/L	10	5.9	0.6 J	5.05
LBC-SW03	Acetone	µg/L	1.9 U	1.9 U	1.9 U	3.93 J
	cis-1,2-Dichloroethene	µg/L	0.94 J	0.15 U	0.15 U	0.333 U
	Dibromochloromethane	µg/L	0.17 U	0.17 U	0.17 U	1.07
	Trichloroethene	µg/L	1.7	0.17 J	0.16 U	0.333 U
LBC-SW04	Acetone	µg/L	9.1 J	1.9 U	1.9 U	3.38 J
	Bromodichloromethane	µg/L	0.17 U	0.17 U	0.17 U	0.94 J
	cis-1,2-Dichloroethene	µg/L	0.38 J	0.15 U	0.15 U	0.333 U
	Dibromochloromethane	µg/L	0.17 U	0.17 U	0.17 U	1.2
	Trichloroethene	µg/L	0.68 J	0.16 U	0.16 U	0.333 U
NHP-SW01	Acetone	µg/L	9.8 J	1.9 U	1.9 U	4.87 J
	Bromodichloromethane	µg/L	0.17 U	0.61 J	0.9 J	2.3
	Bromoform	µg/L	0.46 U	0.46 U	0.46 U	3.98
	Chloroform	µg/L	0.16 U	0.62 J	1.3	1.23
	Chloromethane	µg/L	0.35 J	0.3 U	0.3 U	0.333 U
	Dibromochloromethane	µg/L	0.17 U	1	0.89 J	2.76
UND-SW01	1,1-Dichloroethene	µg/L	0.23 U	0.23 U	0.27 J	0.333 U
	cis-1,2-Dichloroethene	µg/L	0.15 J	0.22 J	0.5 J	0.333 U
	Trichloroethene	µg/L	2.1	3.3	6.5	1.95
WDD-SW02	Bromodichloromethane	µg/L	0.17 U	0.17 U	1.4	0.333 U
	Bromoform	µg/L	0.46 U	0.46 U	0.76 J	0.333 U
	Chloroform	µg/L	0.16 U	0.16 U	2.7	0.333 U
	Dibromochloromethane	µg/L	0.17 U	0.17 U	1.1	0.333 U

Table 4.24. Results for radionuclides at surface water monitoring locations – 2019

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
BRC-SW01	Americium-241	pCi/L		-0.0125 U		-0.00318 U
	Neptunium-237	pCi/L		0.00653 U		-0.00826 U
	Plutonium-238	pCi/L		0.0165 U		0.0775 U
	Plutonium-239/240	pCi/L		0.0165 U		0 U
	Technetium-99	pCi/L	-0.358 U	0.958 U	-0.0155 U	-0.676 U
	Uranium	µg/L	1.24	2.06	0.215 UJ	1.23 J
	Uranium-233/234	pCi/L	1.84	1.97	0.391	0.979
	Uranium-235/236	pCi/L	0.131 U	0.103 UJ	0.00609 U	0.0643 UJ
	Uranium-238	pCi/L	0.397	0.676	0.0714 U	0.404
BRC-SW02	Americium-241	pCi/L		0.00237 U		-0.0199 U
	Neptunium-237	pCi/L		0.0443 U		0.064 UJ
	Plutonium-238	pCi/L		0.0238 U		0.0126 U
	Plutonium-239/240	pCi/L		0.00421 U		0.00351 U
	Technetium-99	pCi/L	-0.873 U	-0.84 U	-0.794 U	-0.794 U
	Uranium	µg/L	0.628	0.82 J	0.381 UJ	0.705 J
	Uranium-233/234	pCi/L	0.35	0.659	0.355	0.49 J
	Uranium-235/236	pCi/L	0.0419 U	0.00357 U	0.0284 U	0.0193 U
	Uranium-238	pCi/L	0.204	0.275	0.124 UJ	0.234 J
BRC-SW05	Americium-241	pCi/L		-0.0128 U		-0.00901 U
	Neptunium-237	pCi/L		0.0375 U		0.0777 U
	Plutonium-238	pCi/L		0.0319 U		0.0194 U
	Plutonium-239/240	pCi/L		0.0187 U		0.0284 U
	Technetium-99	pCi/L	0.0728 U	-1.33 U	0.0588 U	-1.78 U
	Uranium	µg/L	0.69	0.898 J	0.495 UJ	1.01 J
	Uranium-233/234	pCi/L	0.57	0.738	0.297	0.528 J
	Uranium-235/236	pCi/L	0.0672 U	0.0132 U	0.0193 U	0.026 U
	Uranium-238	pCi/L	0.221	0.3	0.163 UJ	0.335
EDD-SW01	Americium-241	pCi/L		0.00892 U		-0.0186 U
	Neptunium-237	pCi/L		0.056 U		0.121 UJ
	Plutonium-238	pCi/L		0.00155 UJ		0.00391 U
	Plutonium-239/240	pCi/L		0.00873 UJ		0.0697 UJ
	Technetium-99	pCi/L	72.7	6.92	-0.426 U	20
	Uranium	µg/L	6.26	1 J	0.384 UJ	2.53 J
	Uranium-233/234	pCi/L	10.1	1.86	0.778	4.66
	Uranium-235/236	pCi/L	0.601	0.0543 UJ	0.0653 UJ	0.165 UJ
	Uranium-238	pCi/L	2.01	0.328	0.119 UJ	0.825
LBC-SW01	Americium-241	pCi/L		-0.0077 U		-0.0133 U
	Neptunium-237	pCi/L		0.0214 U		0.056 U
	Plutonium-238	pCi/L		0.00433 U		0.0601 UJ
	Plutonium-239/240	pCi/L		0.00433 U		0.0144 U
	Technetium-99	pCi/L	4.76	5.28 J	0.639 U	7.15
	Uranium	µg/L	0.76	0.924 J	0.407 UJ	1.35 J
	Uranium-233/234	pCi/L	1.3	1.44	0.797	2.52
	Uranium-235/236	pCi/L	0.0816	0.0438 UJ	0.018 U	0.127 UJ
	Uranium-238	pCi/L	0.243	0.304	0.134 UJ	0.434
LBC-SW02	Americium-241	pCi/L		-0.0081 U		-0.0176 U
	Neptunium-237	pCi/L		-0.0077 U		0.0374 U
	Plutonium-238	pCi/L		0.0187 UJ		0.081 U
	Plutonium-239/240	pCi/L		-0.0012 U		0.00361 U
	Technetium-99	pCi/L	2.79 U	3 UJ	2.76 UJ	6.99

Table 4.24. Results for radionuclides at surface water monitoring locations – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
LBC-SW02	Uranium	µg/L	0.875	0.473 J	0.558 UJ	1.39
	Uranium-233/234	pCi/L	0.856	0.776	0.992	2.31
	Uranium-235/236	pCi/L	0.0386 U	0.0434 UJ	0.0466 U	0.0509 U
	Uranium-238	pCi/L	0.288	0.152 J	0.18 UJ	0.46
LBC-SW03	Americium-241	pCi/L		-0.0065 U		-0.0167 U
	Neptunium-237	pCi/L		0.0215 U		0.023 U
	Plutonium-238	pCi/L		0.00802 U		0.0254 U
	Plutonium-239/240	pCi/L		0.012 U		0.0396 UJ
	Technetium-99	pCi/L	0.00927 U	1.74 U	1.39 U	-1.11 U
	Uranium	µg/L	0.644	1.08 J	0.239 UJ	0.769 J
	Uranium-233/234	pCi/L	0.848	1.18	0.583	0.734
	Uranium-235/236	pCi/L	0.106 U	0.077 UJ	0.0382 U	0.0194 U
	Uranium-238	pCi/L	0.2	0.351	0.0744 UJ	0.255
LBC-SW04	Americium-241	pCi/L		0.00436 U		-0.0113 U
	Neptunium-237	pCi/L		0.0149 U		0 U
	Plutonium-238	pCi/L		-0.0012 U		0.0283 U
	Plutonium-239/240	pCi/L		0.00519 U		0.0386 UJ
	Technetium-99	pCi/L	1.52 U	-0.0343 U	0.868 U	-0.579 U
	Uranium	µg/L	1.29	1.87 J	0.605 UJ	1.99 J
	Uranium-233/234	pCi/L	0.973	1.98	0.64	1.07
	Uranium-235/236	pCi/L	0.0688 U	0.0885 J	0.00999 U	0.0938 UJ
	Uranium-238	pCi/L	0.421	0.615	0.202 UJ	0.653
NHP-SW01	Americium-241	pCi/L		-0.0081 U		-0.019 U
	Neptunium-237	pCi/L		0.00669 U		0.0227 U
	Plutonium-238	pCi/L		0.00183 U		0.0233 U
	Plutonium-239/240	pCi/L		-0.0015 U		-0.0126 U
	Technetium-99	pCi/L	-0.883 U	0.692 U	-0.976 U	-0.397 U
	Uranium	µg/L	4.99	3.53 J	2.62	2.84 J
	Uranium-233/234	pCi/L	2.03	1.38	0.808	1.11
	Uranium-235/236	pCi/L	0.21	0.0722 UJ	0.0332 U	0.0722 UJ
	Uranium-238	pCi/L	1.64	1.18	0.877	0.944
UND-SW01	Americium-241	pCi/L		-0.0083 U		-0.0235 U
	Neptunium-237	pCi/L		0.0141 U		0.0841 U
	Plutonium-238	pCi/L		0.00788 U		0.00875 U
	Plutonium-239/240	pCi/L		0.0184 U		0.0187 U
	Technetium-99	pCi/L	-0.731 U	-1.37 U	-1.32 U	-0.306 U
	Uranium	µg/L	2.01	1.54	1.65	2.34
	Uranium-233/234	pCi/L	1.02	0.76	0.485	0.96
	Uranium-235/236	pCi/L	0.0306 U	0.0272 U	0.0238 U	0.0516 U
	Uranium-238	pCi/L	0.671	0.512	0.551	0.779
UND-SW02	Americium-241	pCi/L		-0.0025 U		0.00646 U
	Neptunium-237	pCi/L		0 U		0.0589 U
	Plutonium-238	pCi/L		-0.0098 U		0.036 U
	Plutonium-239/240	pCi/L		-0.0056 U		0.0302 U
	Technetium-99	pCi/L	-0.248 U	-0.756 U	-0.631 U	-1.34 U
	Uranium	µg/L	1.73	0.604 J	1.04	1.36
	Uranium-233/234	pCi/L	0.757	0.315 UJ	0.522	0.42
	Uranium-235/236	pCi/L	0.062 U	0.0235 U	0.039 U	0.0103 U
	Uranium-238	pCi/L	0.57	0.199 J	0.343	0.457
WDD-SW01	Americium-241	pCi/L		-0.0028 U		-0.0287 U

Table 4.24. Results for radionuclides at surface water monitoring locations – 2019 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
WDD-SW01	Neptunium-237	pCi/L		0.0735 UJ		0.0525 U
	Plutonium-238	pCi/L		0.0078 U		0.0544 U
	Plutonium-239/240	pCi/L		0.0078 U		0.0339 U
	Technetium-99	pCi/L	-0.643 U	0.221 U	-0.61 U	4.64 U
	Uranium	µg/L	1.94	1.71 J	0.671	2.21
	Uranium-233/234	pCi/L	1.3	0.821	0.452	1.4
	Uranium-235/236	pCi/L	0.108 U	0.0648 UJ	0.0184 U	0.0966
	Uranium-238	pCi/L	0.635	0.566	0.223	0.726
WDD-SW02	Americium-241	pCi/L		0.00411 U		-0.034 U
	Neptunium-237	pCi/L		0.0134 U		0.0495 U
	Plutonium-238	pCi/L		0.0107 U		0.0493 U
	Plutonium-239/240	pCi/L		0.00241 U		0.0208 U
	Technetium-99	pCi/L	-0.293 U	-0.644 U	-0.696 U	-2.03 U
	Uranium	µg/L	1.78	2.31 J	0.425	1.5
	Uranium-233/234	pCi/L	1.19	1.63	0.314	0.776
	Uranium-235/236	pCi/L	0.0702 U	0.0896 J	0.0313 U	0.0589 U
	Uranium-238	pCi/L	0.586	0.764	0.138 U	0.494
WDD-SW03	Americium-241	pCi/L		-0.0044 U		-0.0319 U
	Neptunium-237	pCi/L		0.0501 U		0.00663 U
	Plutonium-238	pCi/L		0.0148 U		0.025 U
	Plutonium-239/240	pCi/L		0.00271 U		0.0153 U
	Technetium-99	pCi/L	-0.445 U	-0.352 U	0.926 U	1.23 U
	Uranium	µg/L	1.73	1.22 J	0.614	1.84
	Uranium-233/234	pCi/L	1.06	0.59	0.424	1.36
	Uranium-235/236	pCi/L	0.147	0.0344 UJ	0.019 U	0.0319 U
	Uranium-238	pCi/L	0.558	0.403	0.203	0.613

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