
TABLES

TABLE 1

2009-2010 SOIL ANALYTICAL RESULTS ^{1,2}
 University of Portland River Campus Property
 Portland, Oregon

Area	Sample ID/ Location	Date	Depth (feet)	PCBs								PAHs																			
				Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs	1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(e)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Dibenzofuran	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	
				(µg/kg)								(µg/kg)																			
JSCS Screening Level ²				530	NE	NE	NE	1,500	300	200	0.39	NE	200	300	200	845	1,050	1,450	NE	300	13,000	1,290	1,300	NE	2,230	300	100	561	1,170	1,520	
EPA Regional Screening Level (RSL) ^{2,4}				carc/ non-carc.	n	c	c	c	c	c	c	c	c	n	n		n	c	c	c	c	c	c	n	n	n	c	c		n	
				Residential	390	140	140	220	220	220	220	220	22,000	31,000	340,000	NE	1,700,000	150	15	150	NE	1,500	15,000	15	7,800	230,000	230,000	150	3,600	NE	170,000
				Industrial	2,100	540	540	740	740	740	740	740	99,000	410,000	3,300,000	NE	17,000,000	2,100	210	2,100	NE	21,000	210,000	210	100,000	2,200,000	2,200,000	2,100	18,000	NE	1,700,000
2A1	PS-2A1(A)-COMPOSITE	10/21/09	0-1	3.9 U	3.9 U	5.9 U	3.9 U	3.9 U	16	15	31	6.2 J	11 J	44 U	44 U	4.9 J	19 J	53	28 J	66	49	58	10 J	44 U	31 J	44 U	58	5.3 J	21 J	58	
2A1	PSD-2A1(A)-COMPOSITE	10/28/09	0-1	3.9 U	3.9 U	3.9 U	3.9 U	5.8 U	13	12	25	16 J	35 J	46 U	4.6 J	6.9 J	50	28 J	23 J	24 J	23 J	60	46 U	46 U	73	7.3 J	20 J	16 J	50	78	
2A1	PST-2A1(A)-COMPOSITE	11/3/09	0-1	3.9 U	3.9 U	5.8 U	3.9 U	3.9 U	13	13	26	5.3 J	12 J	44 U	44 U	5.8 J	22 J	25 J	22 J	29 J	17 J	33 J	44 U	44 U	38 J	44 U	16 J	7.5 J	26 J	44	
2A1	PS-2A1(B)-COMPOSITE	10/21/09	1-5	3.9 U	3.9 U	3.9 U	3.9 U	5.2 J	10	15	25	11 J	18 J	46 U	7.4 J	83	60	56	46	46	46	100	12 J	46 U	88	5.1 J	32 J	12 J	74	120	
2A1	PS-2A1(C)-COMPOSITE	10/21/09	5-10	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	4.2	7.3	11.5	45 U	6.8 J	45 U	4.5 J	14 J	54	50	36 J	38 J	32 J	77	9.9 J	45 U	86	45 U	28 J	5.9 J	45	120	
2A1	PS-2A1(D)-COMPOSITE	10/21/09	10-14	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	4.3	4.3	48 U	48 U	6.7 J	48 U	20 J	32 J	24 J	20 J	19 J	18 J	52	6.2 J	5.7 J	67	9.5 J	15 J	4.8 J	67	71	
2B	DS-2B(1.5-2.5)-RC-2	10/20/09	1.5-2.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
2B	DS-2B(3.5-4.5)-RC-2	10/20/09	3.5-4.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
2B	DS-2B(1.5-2.5)-RC-4	10/20/09	1.5-2.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
2B	DS-2B(3.5-4.5)-RC-4	10/20/09	3.5-4.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
3B	PS-3B1(A)-COMPOSITE	10/27/2009	0-1	20 U	20 U	20 U	20 U	20 U	20 U	29	29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
3B	PS-3B2(A)-COMPOSITE	10/27/2009	0-1	46 U	46 U	46 U	46 U	69 U	100	190	290	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
3B	PS-3B3(A)-COMPOSITE	10/27/2009	0-1	19 U	19 U	19 U	19 U	93 U	150	210	360	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
3B	PS-3B4(A)-COMPOSITE	10/20/2009	0-1	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
5A	DS-5A(4.5-5.5)-RC-5	10/20/2009	4.5-5.5	--	--	--	--	--	--	--	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	7.4	13	8.9	19	8.9	11	5.0 U	5.0 U	12	5.0 U	12	6.4	12	17	
5A	DS-5A(7.5-8.5)-RC-5	10/20/2009	7.5-8.5	--	--	--	--	--	--	--	--	29	140	4.8 U	310	340	2,200	3,600	1,900	2,800	1,900	2,300	490	24	5,400	80	2,000	590	1,900	6,800	
5A	DS-5A(11-12)-RC-5	10/20/2009	11-12	--	--	--	--	--	--	--	--	17	66	6.1 U	160	140	1,400	2,300	1,200	1,800	1,200	1,600	260	15	3,200	29	1,300	290	490	4,300	
6D	PS-6D1(A)-COMPOSITE	10/27/2009	0-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
6D	PS-6D2(A)-COMPOSITE	10/27/2009	0-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
6D	PS-6D3(A)-COMPOSITE	10/30/2009	0-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
6D	MI-6D(B)	10/23/2006	1-5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
RS1A	PS-RS1A(A)-COMPOSITE	10/30/2009	0-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
RS1B	PS-RS1B(A)-COMPOSITE	10/30/2009	0-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
RS1C	PS-RS1C(A)-COMPOSITE	10/30/2009	0-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
RS1D	PS-RS1D(A)-COMPOSITE	10/30/2009	0-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
RS1	MI-RS-1-B	10/25/2006	1-5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
RS1	MI-RS-1-C	10/25/2006	5-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
RS3	MI-RS-3-B	10/25/2006	1-5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

TABLE 2

2010 GROUNDWATER ANALYTICAL RESULTS ¹

University of Portland, River Campus Property
Portland, Oregon

Location	RC-1	RC-2	RC-3	RC-6	RC-6	RC-7	RC-8	RC-9	RC-10	RC-10	RC-11	RC-12	RC-13	JSCS Screening Level ²	EPA Regional Screening Level (RSL) ²		
Sample ID	GW-2B-01	GW-2B-02	GW-5B-01	GW-6C-01	GW-6C-01X	GW-6C-02	GW-6C-03	GW-RS2-01	GW-6D1-01	GW-6D1-01X	GW-6D1-02	GW-6D1-03	GW-6D3-01		carc/ non-carc.	Tapwater	
Date	3/3/2010	3/3/2010	3/2/2010	3/2/2010	3/2/2010	3/2/2010	3/2/2010	3/2/2010	3/3/2010	3/3/2010	3/3/2010	3/3/2010	3/3/2010				
Analyte	Depth (feet)	15-20	15-20	14-19	14-19	14-19	12-17	15-20	9-14	12-17	12-17	10-15	12-17	12-17			
Pentachlorophenol (µg/L)		--	--	--	--	--	--	--	--	0.25 U	0.25 U	0.25 UJ	0.25 UJ	0.25 U	0.56	c	0.56
PAHs (µg/L)	1-Methylnaphthalene	0.010 UJ	0.010 UJ	0.010 UJ	0.010 UJ	0.010 UJ	0.011 J	0.12 J	0.010 UJ	--	--	--	--	--	NE	c	2.3
	2-Methylnaphthalene	0.011 J	0.010 UJ	0.010 UJ	0.010 UJ	0.010 UJ	0.022 J	0.095 J	0.014 J	--	--	--	--	--	0.2	n	150
	Acenaphthene	0.017 J	0.021 J	0.016 J	0.028 J	0.021 J	0.033 J	3.8 J	0.073 J	--	--	--	--	--	0.2	n	2,200
	Acenaphthylene	0.010 UJ	0.010 UJ	0.010 UJ	0.010 UJ	0.010 UJ	0.010 UJ	0.038 J	0.010 UJ	--	--	--	--	--	0.2		NE
	Anthracene	0.02 J	0.010 UJ	0.010 J	0.010 UJ	0.010 UJ	0.010 UJ	0.10 J	0.010 UJ	--	--	--	--	--	0.2	n	11,000
	Benzo(a)anthracene	0.012 J	0.011 J	0.010 UJ	0.010 UJ	0.010 UJ	0.010 UJ	0.036 J	0.033 J	--	--	--	--	--	0.018	c	0.029
	Benzo(a)pyrene	0.010 UJ	0.010 UJ	0.010 UJ	0.010 UJ	0.010 UJ	0.010 UJ	0.039 J	0.028 J	--	--	--	--	--	0.018	c	0.0029
	Benzo(b)fluoranthene	0.010 UJ	0.010 UJ	0.010 UJ	0.010 U	0.010 U	0.010 UJ	0.035 J	0.016 J	--	--	--	--	--	0.018	c	0.029
	Benzo(g,h,i)perylene	0.010 UJ	0.010 UJ	0.010 UJ	0.010 UJ	0.010 UJ	0.010 UJ	0.035 J	0.018 J	--	--	--	--	--	0.2		NE
	Benzo(k)fluoranthene	0.010 UJ	0.010 UJ	0.010 UJ	0.010 U	0.010 U	0.010 UJ	0.027 J	0.018 J	--	--	--	--	--	0.018	c	0.29
	Chrysene	0.017 J	0.012 J	0.010 UJ	0.010 U	0.010 U	0.013 J	0.06 J	0.05 J	--	--	--	--	--	0.018	c	2.9
	Dibenz(a,h)anthracene	0.010 UJ	0.010 UJ	0.010 UJ	0.010 U	0.010 U	0.010 UJ	0.010 UJ	0.010 UJ	--	--	--	--	--	0.018	c	0.0029
	Dibenzofuran	0.010 UJ	0.010 UJ	0.010 UJ	0.010 U	0.010 U	0.010 UJ	0.37 J	0.010 UJ	--	--	--	--	--	NE		NE
	Fluoranthene	0.048 J	0.02 J	0.022 J	0.020	0.015	0.022 J	0.25 J	0.051 J	--	--	--	--	--	0.2	n	1,500
	Fluorene	0.018 J	0.010 UJ	0.010 UJ	0.017	0.01	0.010 UJ	2.0 J	0.019 J	--	--	--	--	--	0.2	n	1,500
	Indeno(1,2,3-cd)pyrene	0.010 UJ	0.010 UJ	0.010 UJ	0.010 UJ	0.010 UJ	0.010 UJ	0.024 J	0.012 J	--	--	--	--	--	0.018	c	0.029
Naphthalene	0.02 J	0.019 J	0.018 J	0.012 J	0.010 J	0.057 J	0.28 J	0.034 J	--	--	--	--	--	0.2	c	0.14	
Phenanthrene	0.11 J	0.014 J	0.037 J	0.042 J	0.031 J	0.025 J	1.7 J	0.041 J	--	--	--	--	--	0.2		NE	
Pyrene	0.045 J	0.021 J	0.033 J	0.020	0.016	0.025 J	0.21 J	0.069 J	--	--	--	--	--	0.2	n	1,100	
Tributyltin (µg/L)		--	--	--	0.008 UJ	0.008 UJ	0.008 UJ	0.008 UJ	0.008 UJ	--	--	--	--	--	0.072	n	11
TPH (mg/L)	TPH-Diesel	--	--	--	0.25 UJ	0.25 UJ	0.25 UJ	0.25 UJ	0.25 UJ	--	--	--	--	--	0.09 ³		
	TPH-Motor Oil	--	--	--	0.50 UJ	0.50 UJ	0.50 UJ	0.55 J	0.50 UJ	--	--	--	--	--	0.29 ³		

Notes

1. Data qualifiers are as follows:

-- = not analyzed.

J = Value is an estimate.

U = Analyte was not detected at the laboratory reporting limit listed.

UJ = Analyte was not detected at the estimated reporting limit listed.

Shaded cells indicate results for detected analytes that exceed the lower of the indicated screening levels.

2. Results are compared against the JSCS screening level, and screening levels based on EPA Regional Screening Levels (RSLs) (EPA, 2009).

For carcinogens, the screening level is the EPA RSL supportive of tapwater (EPA, 2009). For non-carcinogens the screening level is given by the EPA tapwater

RSL (EPA, 2009) divided by 10 to reflect a cancer risk of 10⁻⁶ and a hazard quotient of 0.1. For further information see Section 3.0 in the Data Gaps Report (AMEC Geomatrix, 2010).

3. Screening levels for TPH fractions are Oregon risk-based concentration screening levels (DEQ, 2009). Neither JSCS screening level nor RSL is available for TPH fractions.

Abbreviations

µg/L = micrograms per liter

c = carcinogen

EPA = Environmental Protection Agency

JSCS = Joint Source Control Strategy

mg/L = milligrams per liter

n = non-carcinogen

NE = screening level not established

PAHs = polycyclic aromatic hydrocarbons

RSL = Regional Screening Level

TPH = total petroleum hydrocarbons

TABLE 3

AREA 1A RESULTS ^{1,2}
University of Portland River Campus Property
Portland, Oregon

Area	Sample ID/ Location	Date	Depth (feet)	TPH		PCBs								Metals							PAHs															
				Diesel (mg/kg)	Motor Oil (mg/kg)	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
JSCS Screening Level ²						530	NE	NE	NE	1,500	300	200	0.39	7	1	111 ⁶	149	17	49	459	300	200	845	1,050	1,450	NE	300	13,000	1,290	1,300	2,230	300	100	561	1,170	1,520
EPA Regional Screening Level (RSL) ^{2,3}						n	c	c	c	c	c	c	c	c	n	n	n	n	n	n	n		n	c	c	c		c	c	c	n	n	c	c		n
						390	140	140	220	220	220	220	220	7 ⁵	7	12,000 ⁶	310	40	150	2,300	340,000	NE	1,700,000	150	15	150	NE	1,500	15,000	15	230,000	230,000	150	3,600	NE	170,000
						2,100	540	540	740	740	740	740	740	7 ⁵	80	150,000 ⁶	4,100	80	2,000	31,000	3,300,000	NE	17,000,000	2,100	210	2,100	NE	21,000	210,000	210	2,200,000	2,200,000	2,100	18,000	NE	1,700,000
1A	MIS A	10/20/2006	0-1	57	170	ND	ND	ND	ND	ND	ND	ND	ND	1.6 J	ND	8.3	20.7	14	14.1	53	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1A	MIS B	10/20/2006	1-5	10	57	ND	ND	ND	ND	ND	ND	ND	ND	1.7	ND	10	19.6	15	15.6	54	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1A	MIS C	10/20/2006	5-10	6	11	ND	ND	ND	ND	ND	ND	ND	ND	1.6	ND	9.3	16.7	5	14.9	47	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes

- Data Qualifiers are as follows:
J = analyte was positively identified; result is an estimated concentration.
NE = screening level not established
ND = analyte not detected at or above laboratory reporting limit.
- Results are compared against screening levels based on EPA residential RSLs updated in December 2009 (EPA, 2009). No results in Area 1A exceeded the applicable screening levels.
- Screening levels are based on EPA residential Regional Screening Levels (RSLs). JSCS screening levels and EPA industrial RSLs are given for comparison.
For carcinogens, the screening level is the EPA residential RSL (EPA, 2009). For non-carcinogens the screening level is given by the EPA residential RSL (EPA, 2009) divided by 10 to reflect a cancer risk of 10⁻⁶ and a hazard quotient of 0.1. For further information see Section 3.0 in the text.
- Screening levels for TPH fractions are Oregon risk-based-concentration screening levels (DEQ, 2009). Neither JSCS screening levels nor RSLs are available for TPH fractions.
- Screening values for arsenic are background concentrations for arsenic in the Portland Harbor area given by Oregon DEQ in a memorandum dated October 28, 2002.
- Value shown is for Chromium(III).

Abbreviations

µg/kg = micrograms per kilogram
 carc. = carcinogen
 DEQ = Department of Environmental Quality
 EPA = U.S. Environmental Protection Agency
 JSCS = Joint Source Control Strategy
 mg/kg = milligrams per kilogram
 non-carc. = non-carcinogen
 PAHs = polycyclic aromatic hydrocarbons
 PCBs = polychlorinated biphenyls
 RSL = Regional Screening Level
 TPH = total petroleum hydrocarbons

TABLE 4
AREA 1B RESULTS ^{1,2}
 University of Portland River Campus Property
 Portland, Oregon

Area	Sample ID/ Location	Date	Depth (feet)	TPH		PCBs								Metals							PAHs															
				Diesel (mg/kg)	Motor Oil (mg/kg)	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
JSCS Screening Level²						530	NE	NE	NE	1,500	300	200	0.39	7	1	111 ⁶	149	17	49	459	300	200	845	1,050	1,450	NE	300	13,000	1,290	1,300	2,230	300	100	561	1,170	1,520
EPA Regional Screening Level (RSL)^{2,3}						n	c	c	c	c	c	c	c	c	n	n	n	n	n	n	n		n	c	c	c		c	c	c	n	n	c	c		n
						390	140	140	220	220	220	220	7 ⁵	7	12,000 ⁶	310	40	150	2,300	340,000	NE	1,700,000	150	15	150	NE	1,500	15,000	15	230,000	230,000	150	3,600	NE	170,000	
						2,100	540	540	740	740	740	740	7 ⁵	80	150,000 ⁶	4,100	80	2,000	31,000	3,300,000	NE	17,000,000	2,100	210	2,100	NE	21,000	210,000	210	2,200,000	2,200,000	2,100	18,000	NE	1,700,000	
1B	MIS A	10/26/2006	0-1	53 J	130 J	ND	ND	ND	ND	ND	ND	ND	1.5	ND	10	19.1	15	14.5	68	630 J	ND	1,500 J	1,400 J	1,400 J	990 J	460 J	840 J	1,400 J	48 J	4,300 J	850 J	450 J	410 J	6,600 J	3,500 J	
1B	MIS B	10/26/2006	1-5	28 J	94 J	ND	ND	ND	ND	ND	ND	ND	1.9	ND	10	19.4	19	14.1	68	1,000 J	40 J	2,400 J	2,100 J	2,100 J	1,600 J	640 J	1,100 J	2,200 J	76 J	5,900 J	1,400 J	640 J	810 J	11,000 J	5,800 J	
1B	MIS C	10/26/2006	5-10	15 J	38 J	ND	ND	ND	ND	ND	ND	ND	1.5	ND	10	15	5	14.2	49	120 J	ND	300 J	330 J	310 J	170 J	89 J	240 J	340 J	ND	970 J	160 J	78 J	ND	1,300 J	870 J	

Notes

- Data qualifiers are as follows:
 NE = screening level not established.
 J = analyte was positively identified; result is an estimated concentration.
 ND = analyte not detected at or above laboratory reporting limit.
- Results are compared against screening levels based on EPA residential RSLs updated in December 2009 (EPA, 2009).
 Yellow shading indicates result exceeds the applicable screening level.
- Screening levels are based on EPA residential Regional Screening Levels (RSLs). JSCS screening levels and EPA industrial RSLs are given for comparison.
 For carcinogens, the screening level is the EPA residential RSL (EPA, 2009). For non-carcinogens the screening level is given by the EPA residential RSL (EPA, 2009) divided by 10 to reflect a cancer risk of 10⁻⁶ and a hazard quotient of 0.1. For further information see Section 3.0 in the text.
- Screening levels for TPH fractions are Oregon risk-based-concentration screening levels (DEQ, 2009). Neither JSCS screening levels nor RSLs are available for TPH fractions.
- Screening values for arsenic are background concentrations for arsenic in the Portland Harbor area given by Oregon DEQ in a memorandum dated October 28, 2002.
- Value shown is for Chromium(III).

Abbreviations

µg/kg = micrograms per kilogram
 carc. = carcinogen
 DEQ = Department of Environmental Quality
 EPA = U.S. Environmental Protection Agency
 JSCS = Joint Source Control Strategy
 mg/kg = milligrams per kilogram
 non-carc. = non-carcinogen
 PAHs = polycyclic aromatic hydrocarbons
 PCBs = polychlorinated biphenyls
 TPH = total petroleum hydrocarbons

TABLE 5

AREA 1C RESULTS ^{1,2}

University of Portland River Campus Property
Portland, Oregon

Area	Sample ID/ Location	Date	Depth (feet)	TPH		PCBs								Metals							SVOCs/PAHs																
				Diesel (mg/kg)	Motor Oil (mg/kg)	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Pentachlorophenol	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
JSCS Screening Level ²						530	NE	NE	NE	1,500	300	200	0.39	7	1	111 ⁶	149	17	49	459	250	300	200	845	1,050	1,450	NE	300	13,000	1,290	1,300	2,230	300	100	561	1,170	1,520
EPA Regional Screening Level (RSL) ^{2,3}				carc./non-carc.		n	c	c	c	c	c	c	c	c	n	n	n	n	n	n	c	n		n	c	c	c		c	c	c	n	n	c	c	n	
				Residential		390	140	140	220	220	220	220	220	7 ⁵	7	12,000 ⁶	310	40	150	2,300	3,000	340,000	NE	1,700,000	150	15	150	NE	1,500	15,000	15	230,000	230,000	150	3,600	NE	170,000
				Industrial	3,200 ⁴	2,100	540	540	740	740	740	740	740	7 ⁵	80	150,000 ⁶	4,100	80	2,000	31,000	9,000	3,300,000	NE	17,000,000	2,100	210	2,100	NE	21,000	210,000	210	2,200,000	2,200,000	2,100	18,000	NE	1,700,000
1C	MIS A	10/25/2006	0-1	12	60	ND	ND	ND	ND	ND	ND	81	J	81	1.3	0.2	11	26.8	14	31.3	66	6.6	J	ND	ND	ND	ND	ND	ND	ND	ND	81	ND	ND	ND	ND	70
1C	MIS B	10/25/2006	1-5	7.1	40	ND	ND	ND	ND	ND	ND	ND	ND	1	ND	13	16.4	11	32.5	52	ND	ND	ND	ND	84	120	92	88	88	110	ND	200	ND	79	ND	120	190
1C	MIS C	10/25/2006	5-10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.5	ND	7	11.1	3	10.7	37	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes

- Data qualifiers are as follows:
NE = screening level not established.
J = analyte was positively identified; result is an estimated concentration.
ND = analyte not detected at or above laboratory reporting limit.
- Results are compared against screening levels based on EPA residential RSLs updated in December 2009 (EPA, 2009).
Yellow shading indicates result exceeds the applicable screening level.
- Screening levels are based on EPA residential Regional Screening Levels (RSLs). JSCS screening levels and EPA industrial RSLs are given for comparison.
For carcinogens, the screening level is the EPA residential RSL (EPA, 2009).
For non-carcinogens the screening level is given by the EPA residential RSL (EPA, 2009) divided by 10 to reflect a cancer risk of 10⁻⁶ and a hazard quotient of 0.1.
For further information see Section 3.0 in the text.
- Screening levels for TPH fractions are Oregon risk-based-concentration screening levels (DEQ, 2009). Neither JSCS screening levels nor RSLs are available for TPH fractions.
- Screening values for arsenic are background concentrations for arsenic in the Portland Harbor area given by Oregon DEQ in a memorandum dated October 28, 2002.
- Value shown is for Chromium(III).

Abbreviations

µg/kg = micrograms per kilogram
 carc. = carcinogen
 DEQ = Department of Environmental Quality
 EPA = U.S. Environmental Protection Agency
 JSCS = Joint Source Control Strategy
 mg/kg = milligrams per kilogram
 non-carc. = non-carcinogen
 PAHs = polycyclic aromatic hydrocarbons
 PCBs = polychlorinated biphenyls
 SVOCs = semivolatile organic compounds
 TPH = total petroleum hydrocarbons

TABLE 6

AREA 2A RESULTS ^{1,2}
University of Portland River Campus Property
Portland, Oregon

Area	Sample ID/ Location	Date	Depth (feet)	TPH		PCBs								Metals							PAHs															
				Diesel (mg/kg)	Motor Oil (mg/kg)	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
JSCS Screening Level ²						530	NE	NE	NE	1,500	300	200	0.39	7	1	111 ⁶	149	17	49	459	300	200	845	1,050	1,450	NE	300	13,000	1,290	1,300	2,230	300	100	561	1,170	1,520
EPA Regional Screening Level (RSL) ^{2,3}				carc./ non-carc.		n	c	c	c	c	c	c	c	c	n	n	n	n	n	n	n		n	c	c	c		c	c	c	n	n	c	c		n
				Residential		390	140	140	220	220	220	220	220	7 ⁵	7	12,000 ⁶	310	40	150	2,300	340,000	NE	1,700,000	150	15	150	NE	1,500	15,000	15	230,000	230,000	150	3,600	NE	170,000
				Industrial	3,200 ⁴	2,100	540	540	740	740	740	740	7 ⁵	80	150,000 ⁶	4,100	80	####	31,000	3,300,000	NE	17,000,000	2,100	210	2,100	NE	21,000	210,000	210	2,200,000	2,200,000	2,100	18,000	NE	1,700,000	
2A	MIS A	10/27/06	0-1	67 J	310 J	ND	ND	ND	ND	ND	ND	58 J	58	2.6	0.6	13	40.6	84	17.1	133	260 J	ND	420 J	510 J	560 J	370 J	240 J	380 J	610 J	ND	1,300 J	310 J	230 J	200 J	1,900 J	1,200 J
2A	MIS B	10/27/06	1-5	43 J	240 J	ND	ND	ND	ND	ND	ND	ND	ND	3	ND	12	35.3	29	17	115	ND	ND	ND	ND	ND	ND	ND	40 J	ND	51 J	ND	ND	ND	35 J	54 J	
2A	MIS C	10/27/06	5-10	5 J	18 J	ND	ND	ND	ND	ND	ND	ND	ND	2.6	ND	11	27.5	6	14.5	51	ND	ND	ND	40 J	ND	ND	ND	ND	38 J	ND	66 J	ND	ND	ND	66 J	
2A1	PS-2A1(A)	10/21/2009	0-1	--	--	3.9 U	3.9 U	5.9 U	3.9 U	3.9 U	16	15	31	2.6	0.2	12.9	37.4 J	56 J	20.4	111	44 U	44 U	4.9 J	19 J	53	28 J	66	49	58	10 J	31 J	44 U	58	5.3 J	21 J	58
2A1	PSD-2A1(A)	10/28/2009	0-1	--	--	3.9 U	3.9 U	3.9 U	3.9 U	5.8 U	13	12	25	2.7	0.2	12.5	44.7 J	89 J	19.9	108	46 U	4.6 J	6.9 J	50	28 J	23 J	24 J	23 J	60	46 U	73	7.3 J	20 J	16 J	50	78
2A1	PST-2A1(A)	11/3/2009	0-1	--	--	3.9 U	3.9 U	5.8 U	3.9 U	3.9 U	13	13	26	3.0	0.3	14.1	41.4 J	56 J	23.4	129	44 U	44 U	5.8 J	22 J	25 J	22 J	29 J	17 J	33 J	44 U	38 J	44 U	16 J	7.5 J	26 J	44
2A1	PS-2A1(B)	10/21/2009	1-5	--	--	3.9 U	3.9 U	3.9 U	3.9 U	5.2 J	10	15	25	--	--	--	--	50 J	--	--	46 U	7.4 J	83	60	56	46	46	46	100	12 J	88	5.1 J	32 J	12 J	74	120
2A1	PS-2A1(C)	10/21/2009	5-10	--	--	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	4.2	7.3	11.5	--	--	--	--	31 J	--	--	45 U	4.5 J	14 J	54	50	36 J	38 J	32 J	77	9.9 J	86	45 U	28 J	5.9 J	45	120
2A1	PS-2A1(D)	10/21/2009	10-14	--	--	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	4.3	4.3	--	--	--	--	12 J	--	--	6.7 J	48 U	20 J	32 J	24 J	20 J	19 J	18 J	52	6.2 J	67	9.5 J	15 J	4.8 J	67	71
WS-2A	WS-2A(9-10)-16	10/30/06	9-10	10,000	17,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	630 J	ND	ND	ND	ND	ND	ND	ND	1,600	ND	ND	2,900	ND	ND	ND	470

- Notes**
- Data qualifiers are as follows:
NE = screening level not established.
-- = not analyzed.
J = analyte was positively identified; result is an estimated concentration.
ND = analyte not detected at laboratory reporting limit.
U = analyte was not detected at the reporting limit indicated.
 - Results are compared against screening levels based on EPA residential RSLs updated in December 2009 (EPA, 2009).
Yellow shading indicates result exceeds the applicable screening level.
 - Screening levels are based on EPA residential Regional Screening Levels (RSLs). JSCS screening levels and EPA industrial RSLs are given for comparison.
For carcinogens, the screening level is the EPA residential RSL (EPA, 2009). For non-carcinogens the screening level is given by the EPA residential RSL (EPA, 2009) divided by 10 to reflect a cancer risk of 10⁻⁶ and a hazard quotient of 0.1. For further information see Section 3.0 in the text.
 - Screening levels for TPH fractions are Oregon risk-based-concentration screening levels (DEQ, 2009).
Neither JSCS screening levels nor RSLs are available for TPH fractions.
 - Screening values for arsenic are background concentrations for arsenic in the Portland Harbor area given by Oregon DEQ in a memorandum dated October 28, 2002.
 - Value shown is for Chromium(III).

- Abbreviations**
- µg/kg = micrograms per kilogram
 - carc. = carcinogen
 - DEQ = Department of Environmental Quality
 - EPA = U.S. Environmental Protection Agency
 - JSCS = Joint Source Control Strategy
 - mg/kg = milligrams per kilogram
 - non-carc. = non-carcinogen
 - PAHs = polycyclic aromatic hydrocarbons
 - PCBs = polychlorinated biphenyls
 - TPH = total petroleum hydrocarbons

TABLE 8
AREAS 3A RESULTS^{1,2}
 University of Portland River Campus Property
 Portland, Oregon

Area	Sample ID/ Location	Date	Depth (feet)	TPH		PCBs								Metals							PAHs															
				Diesel (mg/kg)	Motor Oil	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
JSCS Screening Level²						530	NE	NE	NE	1,500	300	200	0.39	7	1	111 ⁶	149	17	49	459	300	200	845	1,050	1,450	NE	300	13,000	1,290	1,300	2,230	300	100	561	1,170	1,520
EPA Regional Screening Level (RSL)^{2,3}						n	c	c	c	c	c	c	c	c	n	n	n	n	n	n	n	n	c	c	c	c	c	c	n	n	c	c	n			
						390	140	140	220	220	220	220	220	7 ⁵	7	12,000 ⁶	310	40	150	2,300	340,000	NE	1,700,000	150	15	150	NE	1,500	15,000	15	230,000	230,000	150	3,600	NE	170,000
						2,100	540	540	740	740	740	740	740	7 ⁵	80	150,000 ⁶	4,100	80	2,000	31,000	3,300,000	NE	17,000,000	2,100	210	2,100	NE	21,000	210,000	210	2,200,000	2,200,000	2,100	18,000	NE	1,700,000
3A	Area 3A MIS A	10/27/2006	0-1	25 J	110 J	ND	ND	ND	ND	ND	36 J	130 J	166	1.3 J	0.3	12	25.9	17	19.4	67	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3A	Area 3A MIS B	10/27/2006	1-5	5 J	21 J	ND	ND	ND	ND	ND	ND	ND	ND	1	ND	9	18.3	5	13.8	55	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3A	Area 3A MIS C	10/27/2006	5-10	6 J	13 J	ND	ND	ND	ND	ND	ND	ND	ND	1	ND	9	18	3	11.9	56	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WS-3A-2A	WS-3A(9.6-10)-2A	10/27/2006	9.6-10	4,800	2,200	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	120 NJ	ND	ND	ND	ND	ND	ND	110	ND	ND	370	ND	ND	720	ND	
WS-3A-2A	GP-139	8/10/2000	6.8	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
WS-3A-2A	GP-139	8/10/2000	10.8	960	1400	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

- Notes:
- Data qualifiers are as follows:
 NE = screening level not established.
 -- = not analyzed.
 J = analyte was positively identified; result is an estimated concentration.
 ND = analyte was not detected at or above laboratory reporting limit.
 NJ = the analyte is tentatively identified and the associated numerical value represents an approximate concentration.
 - Results are compared against screening levels based on EPA residential RSLs updated in December 2009 (EPA, 2009).
 Yellow shading indicates result exceeds the applicable screening level.
 - Screening levels are based on EPA residential Regional Screening Levels (RSLs). JSCS screening levels and EPA industrial RSLs are given for comparison.
 For carcinogens, the screening level is the EPA residential RSL (EPA, 2009). For non-carcinogens the screening level is given by the EPA residential RSL (EPA, 2009) divided by 10 to reflect a cancer risk of 10⁻⁶ and a hazard quotient of 0.1. For further information see Section 3.0 in the text.
 - Screening levels for TPH fractions are Oregon risk-based-concentration screening levels (DEQ, 2009). Neither JSCS screening levels nor RSLs are available for TPH fractions.
 - Screening values for arsenic are background concentrations for arsenic in the Portland Harbor area given by Oregon DEQ in a memorandum dated October 28, 2002.
 - Value shown is for Chromium(III).

- Abbreviations
- µg/kg = micrograms per kilogram
 - carc. = carcinogen
 - DEQ = Department of Environmental Quality
 - EPA = U.S. Environmental Protection Agency
 - JSCS = Joint Source Control Strategy
 - mg/kg = milligrams per kilogram
 - non-carc. = non-carcinogen
 - PAHs = polycyclic aromatic hydrocarbons
 - PCBs = polychlorinated biphenyls
 - RSL = Regional Screening Level
 - TPH = total petroleum hydrocarbons

TABLE 9

AREA 3B RESULTS^{1,2}
University of Portland River Campus Property
Portland, Oregon

Area	Sample ID/ Location	Date	Depth (feet)	TPH		PCBs							Metals							PAHs																
				Diesel (mg/kg)	Motor Oil (mg/kg)	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
JSCS Screening Level²						530	NE	NE	NE	####	300	200	0.39	7	1	111 ⁶	149	17	49	459	300	200	845	1,050	1,450	NE	300	13,000	1,290	1,300	2,230	300	100	561	1,170	1,520
EPA Regional Screening Level (RSL)^{2,3}						n	c	c	c	c	c	c	c	c	n	n	n	n	n	n	n		n	c	c	c		c	c	c	n	n	c	c		n
Residential						390	140	140	220	220	220	220	220	7 ⁵	7	12,000 ⁶	310	40	150	2,300	340,000	NE	1,700,000	150	15	150	NE	1,500	15,000	15	230,000	230,000	150	3,600	NE	170,000
Industrial				3,200 ⁴		2,100	540	540	740	740	740	740	740	7 ⁵	80	150,000 ⁶	4,100	80	2,000	31,000	3,300,000	NE	17,000,000	2,100	210	2,100	NE	21,000	210,000	210	2,200,000	2,200,000	2,100	18,000	NE	1,700,000
3B	Area 3B MIS A	10/30/2006	0-1	42 J	170	ND	ND	ND	ND	3.9	150	490	643.9	1.4	ND	9.3	26.3	15	14	57	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3B	Area 3B MIS B	10/30/2006	1-5	35 J	160	ND	ND	ND	ND	ND	ND	ND	ND	0.9	ND	10	24.2	16	15.8	59	ND	ND	ND	43 J	40 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3B	Area 3B MIS C	10/30/2006	5-10	18 J	66	ND	ND	ND	ND	ND	ND	ND	ND	0.9	ND	11	18.6	3	17	49	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3B1	PS-3B1(A)	10/27/2009	0-1	--	--	ND	ND	ND	ND	ND	ND	29	29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3B2	PS-3B2(A)	10/27/2009	0-1	--	--	ND	ND	ND	ND	ND	100	190	290	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3B3	PS-3B3(A)	10/27/2009	0-1	--	--	ND	ND	ND	ND	ND	150	210	360	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3B4	PS-3B4(A)	10/20/2009	0-1	--	--	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
WS-3B-3	WS-3B(4.5-5.0)-3	10/30/2006	4.5-5	64	330	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	99	ND	ND	ND	ND	65	
WS-3B-1	WS-3B(8.0-10.0)-1	10/30/2006	8-10	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	

Notes

- Data qualifiers are as follows:
NE = screening level not established.
-- = not analyzed.
J = analyte was positively identified; result is an estimated concentration.
ND = analyte was not detected at or above laboratory reporting limit.
- Results are compared against screening levels based on EPA residential RSLs updated in December 2009 (EPA, 2009).
Yellow shading indicates result exceeds the applicable screening level.
- Screening levels are based on EPA residential Regional Screening Levels (RSLs). JSCS screening levels and EPA industrial RSLs are given for comparison.
For carcinogens, the screening level is the EPA residential RSL (EPA, 2009). For non-carcinogens the screening level is given by the EPA residential RSL (EPA, 2009) divided by 10 to reflect a cancer risk of 10⁻⁶ and a hazard quotient of 0.1. For further information see Section 3.0 in the text.
- Screening levels for TPH fractions are Oregon risk-based-concentration screening levels (DEQ, 2009). Neither JSCS screening levels nor RSLs are available for TPH fractions.
- Screening values for arsenic are background concentrations for arsenic in the Portland Harbor area given by Oregon DEQ in a memorandum dated October 28, 2002.
- Value shown is for Chromium(III).

Abbreviations

- µg/kg = micrograms per kilogram
- carc. = carcinogen
- DEQ = Department of Environmental Quality
- EPA = U.S. Environmental Protection Agency
- JSCS = Joint Source Control Strategy
- mg/kg = milligrams per kilogram
- non-carc. = non-carcinogen
- PAHs = polycyclic aromatic hydrocarbons
- PCBs = polychlorinated biphenyls
- RSL = Regional Screening Level
- TPH = total petroleum hydrocarbons

TABLE 10

AREA 4 RESULTS ^{1,2}
 University of Portland River Campus Property
 Portland, Oregon

Area	Sample ID/ Location	Date	Depth (feet)	TPH		PCBs								Metals							PAHs													Dioxins (TEQ)			
				Diesel (mg/kg)	Motor Oil (mg/kg)	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene		Naphthalene	Phenanthrene	Pyrene
JSCS Screening Level ²						530	NE	NE	NE	1,500	300	200	0.39	7	1	111	149	17	49	459	300	200	845	1,050	1,450	NE	300	13,000	1,290	1,300	2,230	300	100	561	1,170	1,520	0.0091
EPA Regional Screening Level (RSL) ^{2,3}				carc./non-carc.		n	c	c	c	c	c	c	c	n	n	n	n	n	n	n	n		n	c	c	c		c	c	c	n	n	c	c		n	c
				Residential		390	140	140	220	220	220	220	7 ⁵	7	12,000 ⁶	310	40	150	2,300	340,000	NE	1,700,000	150	15	150	NE	1,500	15,000	15	230,000	230,000	150	3,600	NE	170,000	4.5	
				Industrial	3,200 ⁴	2,100	540	540	740	740	740	740	7 ⁵	80	150,000 ⁶	4,100	80	2,000	31,000	3,300,000	NE	17,000,000	2,100	210	2,100	NE	21,000	210,000	210	2,200,000	2,200,000	2,100	18,000	NE	1,700,000	18	
4	MIS A	10/12/2006	0-1	29	140	ND	ND	ND	ND	ND	ND	ND	2.9	ND	18.1	45.3	36	16.6 J	92	ND	ND	ND	ND	ND	63	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.25
4	MIS B	10/12/2006	1-5	29 J	400	ND	ND	ND	ND	ND	ND	ND	3	ND	15	31.7	36 J	18.7	95	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--
4	MIS B DUP	10/12/2006	1-5	--	--	--	--	--	--	--	--	--	2.6	ND	11.2	35.8	12 J	18.9	125	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
4	MIS C	10/12/2006	5-10	9	40	ND	ND	ND	ND	ND	ND	ND	2.3	ND	14	22.8	15	19	72	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--

Notes:

- Data qualifiers are as follows:
 NE = screening level not established.
 -- = not analyzed.
 ND = analyte was not detected at or above laboratory reporting limit.
- Results are compared against screening levels based on EPA residential RSLs updated in December 2009 (EPA, 2009). No results in Area 1A exceeded the applicable screening levels.
- Screening levels are based on EPA residential Regional Screening Levels (RSLs). JSCS screening levels and EPA industrial RSLs are given for comparison.
 For carcinogens, the screening level is the EPA residential RSL (EPA, 2009). For non-carcinogens the screening level is given by the EPA residential RSL (EPA, 2009) divided by 10 to reflect a cancer risk of 10⁻⁶ and a hazard quotient of 0.1. For further information see Section 3.0 in the text.
- Screening levels for TPH fractions are Oregon risk-based-concentration screening levels (DEQ, 2009). Neither JSCS screening levels nor RSLs are available for TPH fractions.
- Screening values for arsenic are background concentrations for arsenic in the Portland Harbor area given by Oregon DEQ in a memorandum dated October 28, 2002.
- Value shown is for Chromium(III).

Abbreviations

- µg/kg = micrograms per kilogram
- carc. = carcinogen
- DEQ = Department of Environmental Quality
- EPA = U.S. Environmental Protection Agency
- JSCS = Joint Source Control Strategy
- mg/kg = milligrams per kilogram
- non-carc. = non-carcinogen
- PAHs = polycyclic aromatic hydrocarbons
- PCBs = polychlorinated biphenyls
- RSL = Regional Screening Level
- TPH = total petroleum hydrocarbons

TABLE 11

AREA 5A RESULTS^{1,2}
University of Portland River Campus Property
Portland, Oregon

Area	Location	Date	Depth (feet)	TPH		PCBs							Tributyltin	Metals							PAHs					
				Diesel (mg/kg)	Motor Oil (mg/kg)	Aroclor 1016 (µg/kg)	Aroclor 1221 (µg/kg)	Aroclor 1232 (µg/kg)	Aroclor 1242 (µg/kg)	Aroclor 1248 (µg/kg)	Aroclor 1254 (µg/kg)	Aroclor 1260 (µg/kg)		Total PCBs (µg/kg)	Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Zinc (mg/kg)	Acenaphthene (µg/kg)	Acenaphthylene (µg/kg)	Anthracene (µg/kg)	Benzo(a)anthracene (µg/kg)	Benzo(a)pyrene (µg/kg)
JSCS Screening Level ²						530	NE	NE	NE	1,500	300	200	0.39	2.3	7	1	111 ⁶	149	17	49	459	300	200	845	1,050	1,450
EPA Regional Screening Level (RSL) ^{2,3}				carc./ non-carc.		n	c	c	c	c	c	c	c	n	c	n	n	n	n	n	n	n		n	c	c
				Residential		390	140	140	220	220	220	220	220	1,800	7 ⁵	7	12,000 ⁶	310	40	150	2,300	340,000	NE	1,700,000	150	15
				Industrial	3,200 ⁴	2,100	540	540	740	740	740	740	740	18,000	7 ⁵	80	150,000 ⁶	4,100	80	2,000	31,000	3,300,000	NE	17,000,000	2,100	210
5A	Area 5A MIS A	10/17/2006	0-1	84 J	340	ND	ND	ND	ND	ND	ND	ND	ND	ND	2 J	0.2	17 J	37 J	52 J	18.2 J	90 J	ND	ND	ND	ND	ND
5A	Area 5A MIS B	10/17/2006	1-5	110 J	390	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.4	ND	14.2	38.8	32	18.4	73	ND	ND	ND	ND	ND
5A	Area 5A MIS C	10/17/2006	5-10	26 J	96	ND	ND	ND	ND	ND	ND	ND	ND	ND	2	ND	12.5	20.2	24	16.6	65	ND	ND	ND	ND	ND
A5-11	GP-82	6/11/1999	0.5	24	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	5.9	2.2	2.7	7
A5-11	GP-82	6/11/1999	5	45	81	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	380	14,000	12,000	36,000	75,000
A5-11	GP-153	8/10/2000	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	0.5	ND	0.9	1
A5-11	GP-154	8/10/2000	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND
A5-11	GP-154	8/10/2000	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND
A5-11	GP-155	8/10/2000	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND
A5-11	GP-155	8/10/2000	8.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND
A5-11	GP-156	8/10/2000	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND
A5-11	GP-156	8/10/2000	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	100	120	100	60	120
A5-11	DP-A5-36	11/30/2005	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	159	204.5
A5-11	DP-A5-36	11/30/2005	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	92	52.6
A5-11	DP-A5-37	11/30/2005	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND
A5-11	DP-A5-37	11/30/2005	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,158.50	61,000	39,630	390,000	610,000
A5-11	DP-A5-37	11/30/2005	11.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	253	260
A5-11	DP-A5-38	11/30/2005	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	103	110
A5-11	DP-A5-38	11/30/2005	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND
A5-11	RC-5	10/20/2009	4.5-5.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.0 U	5.0 U	5.0 U	7.4	13
A5-11	RC-5	10/20/2009	7.5-8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.8 U	310	340	2,200	3,600
A5-11	RC-5	10/20/2009	11-12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.1 U	160	140	1,400	2,300
A5-12A/B	GP-88	6/2/1999	0.5	79	ND	ND	ND	ND	ND	ND	360	ND	360	--	0.9	--	--	--	--	--	--	ND	ND	ND	ND	ND
A5-12A/B	GP-88	6/2/1999	5	25	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	2.4	--	--	--	--	--	--	ND	ND	ND	ND	ND
A5-12A/B	GP-88	6/2/1999	12	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	15	--	--	--	--	--	--	--	--	--	--	--
A5-12A/B	GP-89	6/3/1999	0.5	6,400	860	ND	ND	ND	ND	ND	440	ND	440	--	1.5	--	--	--	--	--	--	ND	ND	ND	ND	ND
A5-12A/B	GP-89	6/3/1999	5	36	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	1.8	--	--	--	--	--	--	ND	ND	ND	ND	ND
A5-12A/B	GP-89	6/3/1999	15	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	1.6	--	--	--	--	--	--	--	--	--	--	--
A5-12A/B	GP-160	8/9/2000	0.5	230	660	ND	ND	ND	ND	ND	1,300	ND	1,300	--	--	--	--	--	--	--	--	--	--	--	--	--
A5-12A/B	GP-160	8/9/2000	3.5	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
A5-12A/B	GP-160	8/9/2000	6	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
A5-12A/B	GP-162	8/7/2000	0.5	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--
A5-12A/B	GP-161	8/7/2000	0.5	--	--	ND	ND	ND	ND	ND	700	ND	700	--	--	--	--	--	--	--	--	--	--	--	--	--
A5-12A/B	DP-A5-39	11/30/2005	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE 11

AREA 5A RESULTS^{1,2}
University of Portland River Campus Property
Portland, Oregon

Area	Location	Date	Depth (feet)	TPH		PCBs								Tributyltin	Metals							PAHs				
				Diesel (mg/kg)	Motor Oil (mg/kg)	Aroclor 1016 (µg/kg)	Aroclor 1221 (µg/kg)	Aroclor 1232 (µg/kg)	Aroclor 1242 (µg/kg)	Aroclor 1248 (µg/kg)	Aroclor 1254 (µg/kg)	Aroclor 1260 (µg/kg)	Total PCBs (µg/kg)		Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Zinc (mg/kg)	Acenaphthene (µg/kg)	Acenaphthylene (µg/kg)	Anthracene (µg/kg)	Benzo(a)anthracene (µg/kg)	Benzo(a)pyrene (µg/kg)
JSCS Screening Level ²						530	NE	NE	NE	1,500	300	200	0.39	2.3	7	1	111 ⁶	149	17	49	459	300	200	845	1,050	1,450
EPA Regional Screening Level (RSL) ^{2,3}				carc./ non-carc.		n	c	c	c	c	c	c	c	n	c	n	n	n	n	n	n	n		n	c	c
				Residential		390	140	140	220	220	220	220	220	1,800	7 ⁵	7	12,000 ⁶	310	40	150	2,300	340,000	NE	1,700,000	150	15
				Industrial	3,200 ⁴	2,100	540	540	740	740	740	740	740	18,000	7 ⁵	80	150,000 ⁶	4,100	80	2,000	31,000	3,300,000	NE	17,000,000	2,100	210
A5-12A/B	DP-A5-40	11/30/2005	3	1800	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--
A5-12A/B	DP-A5-40	11/30/2005	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--
A5-12A/B	DP-A5-41	11/30/2005	1	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--
A5-12A/B	DP-A5-41	11/30/2005	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--
A5-12A/B	DP-A5-42	11/30/2005	1	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--
A5-12A/B	DP-A5-42	11/30/2005	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--
A5-12A/B	DP-A5-43	11/30/2005	1	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--
A5-12A/B	DP-A5-43	11/30/2005	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--
A5-12A/B	DP-A5-44	11/30/2005	1	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--
A5-12A/B	DP-A5-44	11/30/2005	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--
A5-12A/B	DP-A5-45	11/30/2005	12	--	--	--	--	--	--	--	--	--	--	--	1.51	--	--	--	--	--	--	--	--	--	--	--
A5-12A/B	DP-A5-45	11/30/2005	14	--	--	--	--	--	--	--	--	--	--	--	2.61	--	--	--	--	--	--	--	--	--	--	--
A5-12A/B	DP-A5-46	11/30/2005	12	--	--	--	--	--	--	--	--	--	--	--	3.41	--	--	--	--	--	--	--	--	--	--	--
A5-12A/B	DP-A5-46	11/30/2005	15	--	--	--	--	--	--	--	--	--	--	--	3.3	--	--	--	--	--	--	--	--	--	--	--
A5-12A/B	DP-A5-47	11/30/2005	12	--	--	--	--	--	--	--	--	--	--	--	1.78	--	--	--	--	--	--	--	--	--	--	--
A5-12A/B	DP-A5-47	11/30/2005	14	--	--	--	--	--	--	--	--	--	--	--	27.8	--	--	--	--	--	--	--	--	--	--	--
WS-5A-15	WS-5A(5-8)-15	10/18/2006	5-8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE 11

AREA 5A RESULTS^{1,2}
University of Portland River Campus Property
Portland, Oregon

Area	Location	Date	Depth (feet)	PAHs (Continued)										VOCs						Dioxins (TEQ) ⁷		
				Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	1,2,4-Trimethylbenzene	2-Butanone	Acetone	Methylene Chloride	n-Butylbenzene		sec-Butylbenzene	
				(µg/kg)										(µg/kg)						(pg/g)		
JSCS Screening Level ²				NE	300	13,000	1,290	1,300	2,230	300	100	561	1,170	1,520	NE	NE	NE	NE	NE	NE	0.0091	
EPA Regional Screening Level (RSL) ^{2,3}				carc./ non-carc.	c	c	c	c	n	n	c	c	n	n	n	n	c			c		
				Residential	150	NE	1,500	15,000	15	230,000	230,000	150	3,600	NE	170,000	6,200	2,800,000	6,100,000	11,000	NE	NE	4.5
				Industrial	2,100	NE	21,000	210,000	210	2,200,000	2,200,000	2,100	18,000	NE	1,700,000	26,000	20,000,000	63,000,000	53,000	NE	NE	18
5A	Area 5A MIS A	10/17/2006	0-1	ND	ND	ND	ND	ND	64	ND	ND	ND	ND	ND	--	--	--	--	--	6.78		
5A	Area 5A MIS B	10/17/2006	1-5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--		
5A	Area 5A MIS C	10/17/2006	5-10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--		
A5-11	GP-82	6/11/1999	0.5	9.4	8.7	2.7	4	ND	4.3	ND	6.8	3.1	2.5	4.9	--	--	--	--	--	--		
A5-11	GP-82	6/11/1999	5	65,000	38,000	26,000	43,000	6,800	79,000	6,700	30,000	9,400	51,000	120,000	--	--	--	--	--	--		
A5-11	GP-153	8/10/2000	5	1.3	--	1	ND	ND	3.8	ND	ND	ND	1	3.4	--	--	--	--	--	--		
A5-11	GP-154	8/10/2000	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--		
A5-11	GP-154	8/10/2000	9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--		
A5-11	GP-155	8/10/2000	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--		
A5-11	GP-155	8/10/2000	8.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--		
A5-11	GP-156	8/10/2000	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--		
A5-11	GP-156	8/10/2000	10	69	110	45	64	ND	390	95	100	660	560	340	--	--	--	--	--	--		
A5-11	DP-A5-36	11/30/2005	4	159	113.6	125	170	ND	261	ND	136	ND	ND	329.5	--	--	--	--	--	--		
A5-11	DP-A5-36	11/30/2005	8	52.6	52.6	65.79	157.89	ND	130	ND	ND	ND	ND	170	--	--	--	--	--	--		
A5-11	DP-A5-37	11/30/2005	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	65.9	--	--	--	--	--	--		
A5-11	DP-A5-37	11/30/2005	8	490,000	420,000	280,000	400,000	65,500	920,000	4,597	490,000	40,000	94,000	1,200,000	--	--	--	--	--	--		
A5-11	DP-A5-37	11/30/2005	11.5	140	230	210	428.57	ND	837	ND	164.8	ND	ND	1,110	--	--	--	--	--	--		
A5-11	DP-A5-38	11/30/2005	4	57.47	103	103	126	ND	229	ND	103	ND	ND	275.86	--	--	--	--	--	--		
A5-11	DP-A5-38	11/30/2005	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--		
A5-11	RC-5	10/20/2009	4.5-5.5	8.9	19	8.9	11	5.0 U	12	5.0 U	12	6.4	12	17	--	--	--	--	--	--		
A5-11	RC-5	10/20/2009	7.5-8.5	1,900	2,800	1,900	2,300	490	5,400	80	2,000	590	1,900	6,800	--	--	--	--	--	--		
A5-11	RC-5	10/20/2009	11-12	1,200	1,800	1,200	1,600	260	3,200	29	1,300	290	490	4,300	--	--	--	--	--	--		
A5-12A/B	GP-88	6/2/1999	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--		
A5-12A/B	GP-88	6/2/1999	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--		
A5-12A/B	GP-88	6/2/1999	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
A5-12A/B	GP-89	6/3/1999	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--		
A5-12A/B	GP-89	6/3/1999	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--		
A5-12A/B	GP-89	6/3/1999	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
A5-12A/B	GP-160	8/9/2000	0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
A5-12A/B	GP-160	8/9/2000	3.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
A5-12A/B	GP-160	8/9/2000	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
A5-12A/B	GP-162	8/7/2000	0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
A5-12A/B	GP-161	8/7/2000	0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
A5-12A/B	DP-A5-39	11/30/2005	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		

TABLE 11

AREA 5A RESULTS^{1,2}
University of Portland River Campus Property
Portland, Oregon

Area	Location	Date	Depth (feet)	PAHs (Continued)										VOCs						Dioxins (TEQ) ⁷		
				Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	1,2,4-Trimethylbenzene	2-Butanone	Acetone	Methylene Chloride	n-Butylbenzene		sec-Butylbenzene	
				(µg/kg)										(µg/kg)						(pg/g)		
JSCS Screening Level ²				NE	300	13,000	1,290	1,300	2,230	300	100	561	1,170	1,520	NE	NE	NE	NE	NE	NE	0.0091	
EPA Regional Screening Level (RSL) ^{2,3}				carc./ non-carc.	c	c	c	c	n	n	c	c	n	n	n	n	c			c		
				Residential	150	NE	1,500	15,000	15	230,000	230,000	150	3,600	NE	170,000	6,200	2,800,000	6,100,000	11,000	NE	NE	4.5
				Industrial	2,100	NE	21,000	210,000	210	2,200,000	2,200,000	2,100	18,000	NE	1,700,000	26,000	20,000,000	63,000,000	53,000	NE	NE	18
A5-12A/B	DP-A5-40	11/30/2005	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
A5-12A/B	DP-A5-40	11/30/2005	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
A5-12A/B	DP-A5-41	11/30/2005	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
A5-12A/B	DP-A5-41	11/30/2005	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
A5-12A/B	DP-A5-42	11/30/2005	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
A5-12A/B	DP-A5-42	11/30/2005	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
A5-12A/B	DP-A5-43	11/30/2005	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
A5-12A/B	DP-A5-43	11/30/2005	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
A5-12A/B	DP-A5-44	11/30/2005	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
A5-12A/B	DP-A5-44	11/30/2005	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
A5-12A/B	DP-A5-45	11/30/2005	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
A5-12A/B	DP-A5-45	11/30/2005	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
A5-12A/B	DP-A5-46	11/30/2005	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
A5-12A/B	DP-A5-46	11/30/2005	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
A5-12A/B	DP-A5-47	11/30/2005	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
A5-12A/B	DP-A5-47	11/30/2005	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
WS-5A-15	WS-5A(5-8)-15	10/18/2006	5-8	--	--	--	--	--	--	--	--	--	--	120 N	350	330	510 J	79 N	63 N	--		

Notes

- Data qualifiers are as follows:
NE = screening level not established.
-- = not analyzed.
ND = analyte was not detected at or above laboratory reporting limit.
J = analyte was positively identified; result is an estimated concentration.
U = analyte was not detected at the reporting limit indicated.
- Results are compared against screening levels based on EPA residential RSLs updated in December 2009 (EPA, 2009).
Yellow shading indicates result exceeds the applicable screening level.
- Screening levels are based on EPA residential Regional Screening Levels (RSLs). JSCS screening levels and EPA industrial RSLs are given for comparison. For carcinogens, the screening level is the EPA residential RSL (EPA, 2009). For non-carcinogens the screening level is given by the EPA residential RSL (EPA, 2009) divided by 10 to reflect a cancer risk of 10⁻⁶ and a hazard quotient of 0.1. For further information see Section 3.0 in the text.
- Screening levels for TPH fractions are Oregon risk-based-concentration screening levels (DEQ, 2009). Neither JSCS screening levels nor RSLs are available for TPH fractions.
- Screening values for arsenic are background concentrations for arsenic in the Portland Harbor area given by Oregon DEQ in a memorandum dated October 28, 2002.
- Value shown is for Chromium(III).
- Total dioxins is calculated as 2,3,7,8-TCDD toxicity equivalent quotient (TEQ) based on WHO 2005 TEFs (Van den Berg et al., 2006).

Abbreviations

- µg/kg = micrograms per kilogram
- 2,3,7,8-TCDD = 2,3,7,8-tetrachlorodibenzo-p-dioxin
- carc. = carcinogen
- EPA = U.S. Environmental Protection Agency
- JSCS = Joint Source Control Strategy
- mg/kg = milligrams per kilogram
- non-carc. = non-carcinogen
- PAHs = polycyclic aromatic hydrocarbons
- PCBs = polychlorinated biphenyls
- pg/g = picograms per gram
- RSL = Regional Screening Level
- TEF = toxicity equivalent factor
- TEQ = toxicity equivalent quotient
- TPH = total petroleum hydrocarbons
- WHO = World Health Organization

TABLE 12

AREA 5B RESULTS ^{1,2}

University of Portland River Campus Property
Portland, Oregon

Area	Sample ID/ Location	Date	Depth (feet)	TPH		PCBs							Metals							
				Diesel (mg/kg)	Motor Oil	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc
JSCS Screening Level ²						530	NE	NE	NE	1,500	300	200	0.39	7	1	111 ⁷	149	17	49	459
EPA Regional Screening Level (RSL) ^{2,4}				carc./ non-carc.		n	c	c	c	c	c	c	c	c	n	n	n	n	n	n
				Residential		390	140	140	220	220	220	220	220	7 ⁶	7	12,000 ⁷	310	40	150	2,300
				Industrial		2,100	540	540	740	740	740	740	740	7 ⁶	80	150,000 ⁷	4,100	80	2,000	31,000
5B	MIS A	10/13/2006	0-1	79 J	270	ND	ND	ND	ND	ND	81	78	159	2.6	0.3	12	32.2	32 J	18.2	73
5B	MIS B	10/13/2006	1-5	30 J	120	ND	ND	ND	ND	ND	ND	ND	ND	1.1	ND	5.1	9.4	10	7.5	31
5B	MIS C	10/13/2006	5-10	26 J	77	ND	ND	ND	ND	ND	ND	ND	ND	2.3	ND	20.3	19.3	13	23.5	58

TABLE 12

AREA 5B RESULTS ^{1,2}

University of Portland River Campus Property
Portland, Oregon

Area	Sample ID/ Location	Date	Depth (feet)	PAHs															Dioxins (TEQ) ³		
				Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene		Pyrene	
JSCS Screening Level ²				300	200	845	1,050	1,450	NE	300	13,000	1,290	1,300	2,230	300	100	561	1,170	1,520	0.0091	
EPA Regional Screening Level (RSL) ^{2,4}				carc./ non-carc.	n	n	c	c	c		c	c	c	n	n	c	c		n	c	
				Residential	340,000	NE	1,700,000	150	15	150	NE	1,500	15,000	15	230,000	230,000	150	3,600	NE	170,000	4.5
				Industrial	3,300,000	NE	17,000,000	2,100	210	2,100	NE	21,000	210,000	210	2,200,000	2,200,000	2,100	18,000	NE	1,700,000	18
5B	MIS A	10/13/2006	0-1	ND	ND	ND	51 J	60 J	82	46 J	59 J	83	ND	110	ND	ND	ND	58 J	130	10.99	
5B	MIS B	10/13/2006	1-5	ND	ND	ND	62 J	62 J	65	ND	49 J	72	ND	98	ND	ND	ND	ND	100	--	
5B	MIS C	10/13/2006	5-10	ND	ND	ND	39 J	39 J	ND	ND	ND	49 J	ND	69	ND	ND	ND	55 J	85	--	

Notes

- Data qualifiers are as follows:
NE = screening level not established.
-- = not analyzed.
J = analyte was positively identified; result is an estimated concentration.
ND = analyte was not detected at or above laboratory reporting limit.
- Results are compared against screening levels based on EPA residential RSLs updated in December 2009 (EPA, 2009).
Yellow shading indicates result exceeds the applicable screening level.
- Total dioxins is calculated as 2,3,7,8-TCDD toxicity equivalent quotient (TEQ) based on WHO 2005 TEFs (Van den Berg et al., 2006).
- Screening levels are based on EPA residential Regional Screening Levels (RSLs). JSCS screening levels and EPA industrial RSLs are given for comparison. For carcinogens, the screening level is the EPA residential RSL (EPA, 2009). For non-carcinogens the screening level is given by the EPA residential RSL (EPA, 2009) divided by 10 to reflect a cancer risk of 10⁻⁶ and a hazard quotient of 0.1. For further information see Section 3.0 in the text.
- Screening levels for TPH fractions are Oregon risk-based-concentration screening levels (DEQ, 2009). Neither JSCS screening levels nor RSLs are available for TPH fractions.
- Screening values for arsenic are background concentrations for arsenic in the Portland Harbor area given by Oregon DEQ in a memorandum dated October 28, 2002.
- Value shown is for Chromium(III).

Abbreviations

µg/kg = micrograms per kilogram
2,3,7,8-TCDD = 2,3,7,8-tetrachlorodibenzo-p-dioxin
carc. = carcinogen
EPA = U.S. Environmental Protection Agency
JSCS = Joint Source Control Strategy
mg/kg = milligrams per kilogram
non-carc. = non-carcinogen
PAHs = polycyclic aromatic hydrocarbons
PCBs = polychlorinated biphenyls
pg/g = picograms per gram
RSL = Regional Screening Level
TEF = toxicity equivalent factor
TEQ = toxicity equivalent quotient
TPH = total petroleum hydrocarbons
WHO = World Health Organization

TABLE 14

AREA 6B RESULTS ^{1,2}
 University of Portland River Campus Property
 Portland, Oregon

Area	Sample ID/ Location	Date	Depth (feet)	TPH		PCBs							Metals							PAHs								
				Diesel	Motor Oil	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene				
				(mg/kg)		(µg/kg)							(mg/kg)							(µg/kg)								
JSCS Screening Level²						530	NE	NE	NE	1,500	300	200	0.39	7	1	111 ⁷	149	17	49	459	300	200	845	1,050				
EPA Regional Screening Level (RSL)^{2,4}				carc./ non-carc.		n	c	c	c	c	c	c	c	c	n	n	n	n	n	n	n	n	n	c				
						Residential		390	140	140	220	220	220	220	220	220	220	7 ⁶	7	12,000 ⁷	310	40	150	2,300	340,000	NE	1,700,000	150
						Industrial		2,100	540	540	740	740	740	740	740	740	740	7 ⁶	80	150,000 ⁷	4,100	80	2,000	31,000	3,300,000	NE	17,000,000	2,100
6B	MIS A	10/23/2006	0-1	40	150	ND	ND	ND	ND	ND	ND	29 J	29	2.9	0.3	15.9	30.5 J	36	17.8	98	ND	64	ND	190				
6B	MIS B	10/23/2006	1-5	24	76	ND	ND	ND	ND	ND	ND	ND	ND	2.2	ND	10.4	19.8	9	16.5	64	ND	ND	ND	ND				
6B	MIS C	10/23/2006	5-10	9	20	ND	ND	ND	ND	ND	ND	ND	ND	2.1	ND	10.4	14.4	3	15.9	48	ND	ND	ND	ND				
WS-6B-8A	WS-6B(7-10)-8A	10/23/2006	7-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--				

TABLE 14

AREA 6B RESULTS ^{1,2}
 University of Portland River Campus Property
 Portland, Oregon

Area	Sample ID/ Location	Date	Depth (feet)	PAHs (Continued)											VOCs					Dioxins (TEQ) ³		
				Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	2-Butanone	Acetone	Methylene Chloride	n-Butylbenzene		sec-Butylbenzene	
				(µg/kg)											(µg/kg)						(pg/g)	
JSCS Screening Level ²				1,450	NE	300	13,000	1,290	1,300	2,230	300	100	561	1,170	1,520	NE	NE	NE	NE	NE	0.0091	
EPA Regional Screening Level (RSL) ^{2,4}				carc./ non-carc.	c	c	c	c	c	n	n	c	c	n	n	n	c			c		
				Residential	15	150	NE	1,500	15,000	15	230,000	230,000	150	3,600	NE	170,000	2,800,000	6,100,000	11,000	--	--	4.5
				Industrial	210	2,100	NE	21,000	210,000	210	2,200,000	2,200,000	2,100	18,000	NE	1,700,000	20,000,000	63,000,000	53,000	--	--	18
6B	MIS A	10/23/2006	0-1	280	360	300	180	270	77	440	ND	220	ND	290	400	--	--	--	--	--	3.15	
6B	MIS B	10/23/2006	1-5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	
6B	MIS C	10/23/2006	5-10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	
WS-6B-8A	WS-6B(7-10)-8A	10/23/2006	7-10	--	--	--	--	--	--	--	--	--	--	--	430	400	320 J	470	160	--		

Notes

- Data qualifiers are as follows:
 NE = screening level not established.
 -- = not analyzed.
 J = analyte was positively identified; result is an estimated concentration.
 ND = analyte was not detected at or above laboratory reporting limit.
- Results are compared against screening levels based on EPA residential RSLs updated in December 2009 (EPA, 2009).
 Yellow shading indicates result exceeds the applicable screening level.
- Total dioxins is calculated as 2,3,7,8-TCDD toxicity equivalent quotient (TEQ) based on WHO 2005 TEFs (Van den Berg et al., 2006).
- Screening levels are based on EPA residential Regional Screening Levels (RSLs). JSCS screening levels and EPA industrial RSLs are given for comparison. For carcinogens, the screening level is the EPA residential RSL (EPA, 2009). For non-carcinogens the screening level is given by the EPA residential RSL (EPA, 2009) divided by 10 to reflect a cancer risk of 10⁻⁶ and a hazard quotient of 0.1. For further information see Section 3.0 in the text.
- Screening levels for TPH fractions are Oregon risk-based-concentration screening levels (DEQ, 2009). Neither JSCS screening levels nor RSLs are available for TPH fractions.
- Screening values for arsenic are background concentrations for arsenic in the Portland Harbor area given by Oregon DEQ in a memorandum dated October 28, 2002.
- Value shown is for Chromium(III).

Abbreviations

- µg/kg = micrograms per kilogram
- 2,3,7,8-TCDD = 2,3,7,8-tetrachlorodibenzo-p-dioxin
- carc. = carcinogen
- EPA = U.S. Environmental Protection Agency
- JSCS = Joint Source Control Strategy
- mg/kg = milligrams per kilogram
- non-carc. = non-carcinogen
- PAHs = polycyclic aromatic hydrocarbons
- PCBs = polychlorinated biphenyls
- pg/g = picograms per gram
- RSL = Regional Screening Level
- TEF = toxicity equivalent factor
- TEQ = toxicity equivalent quotient
- TPH = total petroleum hydrocarbons
- VOCs = volatile organic compounds
- WHO = World Health Organization

TABLE 15

AREA 6C RESULTS^{1,2}
University of Portland River Campus Property
Portland, Washington

Area	Location	Date	Depth (feet)	TPH		PCBs								Tributyltin	Metals							PAHs														Dioxins (TEQ) ³		
				Diesel (mg/kg)	Motor Oil (mg/kg)	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs		Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene		Phenanthrene	Pyrene
JSCS Screening Level²						530	NE	NE	NE	1,500	300	200	0.39	2.3	7	1	111 ⁷	149	17	49	459	300	200	845	1,050	1,450	NE	300	13,000	1,290	1,300	2,230	300	100	561	1,170	1,520	0.0091
EPA Regional Screening Level (RSL)^{2,4}						n	c	c	c	c	c	c	n	c	n	n	n	n	n	n	n	n		n	c	c	c	c	c	n	n	c	c		n	c		
Residential						390	140	140	220	220	220	220	18	7 ⁶	7	12,000 ⁷	310	40	150	2,300	340,000	NE	1,700,000	150	15	150	NE	1,500	15,000	15	230,000	230,000	150	3,600	NE	170,000	4.5	
Industrial				3,200 ⁵		2,100	540	540	740	740	740	180	7 ⁶	80	150,000 ⁷	4,100	80	2,000	31,000	3,300,000	NE	17,000,000	2,100	210	2,100	NE	21,000	210,000	210	2,200,000	2,200,000	2,100	18,000	NE	1,700,000	18		
6C	MIS A	10/25/2006	0-1	26 J	210	ND	ND	ND	ND	ND	91 J	91	ND	3.8	0.2	19	55	89	16	222	ND	ND	ND	50 J	67 J	42 J	ND	59 J	70 J	ND	88 J	ND	ND	ND	36 J	80 J	3.67	
6C	MIS B	10/25/2006	1-5	22 J	170	ND	ND	ND	ND	ND	23 J	23	ND	4.1	ND	26	77.2	13	21.4	330	ND	ND	ND	ND	ND	ND	ND	36 J	ND	50 J	ND	ND	ND	40 J	42 J	--		
6C	MIS C	10/25/2006	5-10	69 J	470	ND	ND	ND	ND	ND	ND	ND	ND	4.8	ND	18	86.5	32	17.3	100	33 J	ND	43 J	72 J	67 J	50 J	ND	56 J	82 J	ND	210 J	ND	ND	170 J	160 J	--		
A6-14B	GP-126	6/1/1999	0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	3.9	5.4	21	16	ND	ND	ND	36	ND	35	ND	ND	7.9	41	--		
A6-14B	GP-126	6/1/1999	5	--	--	ND	ND	ND	ND	ND	850	850	--	--	--	--	--	--	--	--	18	11	20	24	52	51	ND	29	32	ND	120	15	22	25	93	73	--	
A6-14B	GP-126	6/1/1999	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	5.2	6.7	20	28	22	20	7.1	14	ND	21	ND	16	5.2	22	28	--	
A6-14B	GP-171	8/8/2000	0.5	--	--	ND	ND	ND	ND	ND	190	190	--	--	--	--	--	--	--	--	ND	ND	ND	22	ND	ND	ND	22	ND	37	ND	ND	20	33	--			
A6-14B	GP-171	8/8/2000	5	--	--	ND	ND	ND	ND	ND	150	150	--	--	--	--	--	--	--	--	42	27	29	77	79	88	64	31	90	ND	150	35	79	160	150	170	--	
A6-14B	GP-171	8/8/2000	6.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	85	64	42	110	140	170	130	45	130	ND	270	50	140	95	210	470	--	
A6-14B	GP-172	8/8/2000	0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	290	290	670	860	690	730	790	660	1,100	ND	740	570	ND	ND	670	790	--	
A6-14B	GP-172	8/8/2000	5	--	--	ND	ND	ND	ND	ND	1,300	1,300	--	--	--	--	--	--	--	--	120	220	180	440	600	500	470	230	530	790	890	120	530	300	460	1,000	--	
A6-14B	GP-172	8/8/2000	7.3	--	--	ND	ND	ND	ND	ND	150	150	--	--	--	--	--	--	--	--	ND	33	ND	73	47	84	40	31	140	ND	220	53	ND	40	320	240	--	
A6-14B	GP-173	8/8/2000	0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	23	--		
A6-14B	GP-173	8/8/2000	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	420	46	120	73	100	87	79	27	91	ND	200	160	85	25	96	230	--	
A6-14B	GP-173	8/8/2000	7.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6,200	880	3,000	3,200	3,500	2,800	2,200	940	3,100	230	9,800	3,600	2,600	610	16,000	11,000	--	
A6-14B	DP-A6-51	12/1/2005	5	--	--	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
A6-14B	DP-A6-51	12/1/2005	8	--	--	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
A6-14B	DP-A6-52	12/1/2005	5	--	--	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
A6-14B	DP-A6-52	12/1/2005	8	--	--	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	56	ND	ND	ND	ND	ND	67.4	--	
A6-14B	DP-A6-52	12/1/2005	12	--	--	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	ND	58.8	ND	105.9	ND	ND	ND	70.6	105.9	--		
A6-14B	DP-A6-53	12/1/2005	5	--	--	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
A6-14B	DP-A6-53	12/1/2005	8	--	--	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes

- Data qualifiers are as follows:
NE = screening level not established.
-- = not analyzed.
J = analyte was positively identified; result is an estimated concentration.
ND = analyte was not detected at or above laboratory reporting limit.
- Results are compared against screening levels based on EPA residential RSLs updated in December 2009 (EPA, 2009).
Yellow shading indicates result exceeds the applicable screening level.
- Total dioxins is calculated as 2,3,7,8-TCDD toxicity equivalent quotient (TEQ) based on WHO 2005 TEFs (Van den Berg et al., 2006).
- Screening levels are based on EPA residential Regional Screening Levels (RSLs). JSCS screening levels and EPA industrial RSLs are given for comparison. For carcinogens, the screening level is the EPA residential RSL (EPA, 2009). For non-carcinogens the screening level is given by the EPA residential RSL (EPA, 2009) divided by 10 to reflect a cancer risk of 10⁻⁶ and a hazard quotient of 0.1. For further information see Section 3.0 in the text.
- Screening levels for TPH fractions are Oregon risk-based-concentration screening levels (DEQ, 2009). Neither JSCS screening levels nor RSLs are available for TPH fractions.
- Screening values for arsenic are background concentrations for arsenic in the Portland Harbor area given by Oregon DEQ in a memorandum dated October 28, 2002.
- Value shown is for Chromium(III).

Abbreviations

- µg/kg = micrograms per kilogram
- 2,3,7,8-TCDD = 2,3,7,8-tetrachlorodibenzo-p-dioxin
- carc. = carcinogen
- EPA = U.S. Environmental Protection Agency
- JSCS = Joint Source Control Strategy
- mg/kg = milligrams per kilogram
- non-carc. = non-carcinogen
- PAHs = polycyclic aromatic hydrocarbons
- PCBs = polychlorinated biphenyls
- pg/g = picograms per gram
- RSL = Regional Screening Level
- TEF = toxicity equivalent factor
- TEQ = toxicity equivalent quotient
- TPH = total petroleum hydrocarbons
- WHO = World Health Organization

TABLE 16

AREA 6D RESULTS ^{1,2}
 University of Portland River Campus Property
 Portland, Oregon

Area	Sample ID/ Location	Date	Depth (feet)	TPH			PCBs							Metals							SVOCs/PAHs										
				Diesel (mg/kg)	Motor Oil (mg/kg)	Gasoline (mg/kg)	Aroclor 1016 (µg/kg)	Aroclor 1221 (µg/kg)	Aroclor 1232 (µg/kg)	Aroclor 1242 (µg/kg)	Aroclor 1248 (µg/kg)	Aroclor 1254 (µg/kg)	Aroclor 1260 (µg/kg)	Total PCBs (µg/kg)	Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Zinc (mg/kg)	Pentachlorophenol (µg/kg)	Acenaphthene (µg/kg)	Acenaphthylene (µg/kg)	Anthracene (µg/kg)	Benzo(a)anthracene (µg/kg)	Benzo(a)pyrene (µg/kg)	Benzo(b)fluoranthene (µg/kg)	Benzo(g,h,i)perylene (µg/kg)	Benzo(k)fluoranthene (µg/kg)	Chrysene (µg/kg)
JSCS Screening Level²							530	NE	NE	NE	1,500	300	200	0.39	7	1	111 ⁶	149	17	49	459	250	300	200	845	1,050	1,450	NE	300	13,000	1,290
EPA Regional Screening Level (RSL)^{2,3}							n	c	c	c	c	c	c	c	c	n	n	n	n	n	n	c	n		n	c	c	c		c	c
				carc./ non-carc.			390	140	140	220	220	220	220	220	7 ⁵	7	12,000 ⁶	310	40	150	2,300	3,000	340,000	NE	1,700,000	150	15	150	NE	1,500	15,000
				Residential			2,100	540	540	740	740	740	740	740	7 ⁵	80	150,000 ⁶	4,100	80	2,000	31,000	9,000	3,300,000	NE	17,000,000	2,100	210	2,100	NE	21,000	210,000
				Industrial	3,200 ⁴	28 ⁴	2,100	540	540	740	740	740	740	740	7 ⁵	80	150,000 ⁶	4,100	80	2,000	31,000	9,000	3,300,000	NE	17,000,000	2,100	210	2,100	NE	21,000	210,000
6D	MIS A	10/23/2006	0-1	50	200	--	ND	ND	ND	ND	ND	ND	33 J	33	2.9 J	0.3	17	60.5 J	32	17	230 J	11 J	ND	ND	ND	160	150	180	130	130	240
6D	MIS B	10/23/2006	1-5	160	300	--	ND	ND	ND	ND	ND	ND	ND	ND	2.2	ND	11.5	23.2	13	17.4	73	--	ND	ND	ND	ND	ND	ND	ND	ND	79
6D	MIS C	10/23/2006	5-10	210	430	--	ND	ND	ND	ND	ND	ND	ND	ND	1.9	ND	11.7	15.9	9	17.3	58	--	ND	ND	ND	ND	ND	ND	ND	ND	64
WS-6D-8	WS-6D-(2-2.5)-8	10/24/2006	2-2.5	13,000	24,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	840 J	
WS-6D-13A	WS-6D-(4.5-5)-13A	10/25/2006	4.5-5	5,300	14,000	3,100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	670 J	150 NJ	420 J	220 J	290 NJ	260 NJ	86 J	320 NJ	380 J	
WS-6D-13B	WS-6D-(4.5-5)-13B	10/25/2006	4.5-5	790	1,300	5,400	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
WS-6D-14B	WS-6D-(9-10)-14B	10/24/2006	9-10	6,100	2,400	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,100 J	280 NJ	780 J	120 J	110 J	71 J	ND	60 J	130 J	
WS-6D-6	WS-6D-(9.5-10)-6	10/25/2006	9.5-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE 16

AREA 6D RESULTS ^{1,2}
University of Portland River Campus Property
Portland, Oregon

Area	Sample ID/ Location	Date	Depth (feet)	SVOCs/PAHs (Continued)							VOCs																	
				Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	1,2,4-Trimethylbenzene	1,2-Dichlorobenzene	1,3,5 Trimethylbenzene	1,4-Dichlorobenzene	2-Butanone	4-Isopropyltoluene	Acetone	Ethylbenzene	Isopropylbenzene	m,p-Xylene	Methylene Chloride	Naphthalene	n-Butylbenzene	n-Propylbenzene	o-Xylene	sec-Butylbenzene	Toluene	
				(µg/kg)							(µg/kg)																	
JSCS Screening Level ²				1,300	2,230	300	100	561	1,170	1,520	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE		
EPA Regional Screening Level (RSL) ^{2,3}				carc./ non-carc.	c	n	n	c	c	n	n	n	n	c	n	n	c	n	c	c	n	n	n	n	n			
				Residential	15	230,000	230,000	150	3,600	NE	170,000	6,200	190,000	78,000	2,400	2,800,000	NE	6,100,000	5,400	NE	34,000	11,000	3,600	NE	340,000	380,000	NE	500,000
				Industrial	210	2,200,000	2,200,000	2,100	18,000	NE	1,700,000	26,000	980,000	1,000,000	12,000	20,000,000	NE	63,000,000	27,000	NE	1,700,000	53,000	18,000	NE	2,100,000	1,900,000	NE	4,500,000
6D	MIS A	10/23/2006	0-1	ND	280	ND	100	ND	150	280	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
6D	MIS B	10/23/2006	1-5	ND	74	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
6D	MIS C	10/23/2006	5-10	ND	76	ND	ND	ND	ND	63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
WS-6D-8	WS-6D-(2-2.5)-8	10/24/2006	2-2.5	ND	190 J	ND	ND	270 J	400 J	230 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
WS-6D-13A	WS-6D-(4.5-5)-13A	10/25/2006	4.5-5	ND	780 J	1,200 J	ND	5,500 J	3,200 J	920 J	28,000	3,600	6,100	1,300	510	5,400 J	540	18,000	4,700	58,000	330 J	2,900	2,400 N	3,900	24,000	2,000	3,800	
WS-6D-13B	WS-6D-(4.5-5)-13B	10/25/2006	4.5-5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
WS-6D-14B	WS-6D-(9-10)-14B	10/24/2006	9-10	ND	370 J	3,000 J	ND	390 NJ	5,800 J	340 J	4,100 J	800	610	340	440	780 J	330	91 N	260	480	320 J	ND	820	820	290 N	460	ND	
WS-6D-6	WS-6D-(9.5-10)-6	10/25/2006	9.5-10	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	100 J	150	ND	ND	ND	48 J	ND	ND	ND	ND	ND		

Notes

- Data qualifiers are as follows:
NE = screening level not established.
-- = not analyzed.
J = analyte was positively identified; result is an estimated concentration.
N = analyte is tentatively identified.
ND = analyte was not detected at or above laboratory reporting limit.
NJ = analyte is tentatively identified and the associated value represents the approximate concentration.
- Screening levels are based on EPA residential Regional Screening Levels (RSLs). JSCS screening levels and EPA industrial RSLs are given for comparison. For carcinogens, the screening level is the EPA residential RSL (EPA, 2009). For non-carcinogens the screening level is given by the EPA residential RSL (EPA, 2009) divided by 10 to reflect a cancer risk of 10⁻⁶ and a hazard quotient of 0.1. For further information see Section 3.0 in the text.
- Screening levels for TPH fractions are Oregon risk-based-concentration screening levels (DEQ, 2009). Neither JSCS screening levels nor RSLs are available for TPH fractions.
- Screening values for arsenic are background concentrations for arsenic in the Portland Harbor area given by Oregon DEQ in a memorandum dated October 28, 2002.
- Value shown is for Chromium(III).

Abbreviations

- µg/kg = micrograms per kilogram
- carc. = carcinogen
- DEQ = Department of Environmental Quality
- EPA = U.S. Environmental Protection Agency
- JSCS = Joint Source Control Strategy
- mg/kg = milligrams per kilogram
- non-carc. = non-carcinogen
- PAHs = polycyclic aromatic hydrocarbons
- PCBs = polychlorinated biphenyls
- SVOCs = semivolatile organic compounds
- TPH = total petroleum hydrocarbons
- VOCs = volatile organic compounds

TABLE 17

AREA 6D DIOXIN RESULTS ¹
 University of Portland River Campus Property
 Portland, Oregon

Sample ID/Location		MI-6D(A)		PS-6D1(A)		PS-6D2(A)		PS-6D3(A)		MI-6D(B)	
Date		10/23/2006		10/27/2009		10/27/2009		10/30/2009		10/23/2006	
Depth (feet)		0-1		0-1		0-1		0-1		1-5	
Analyte	WHO TEFs ²	Result (pg/g)	TEQ ³	Result (pg/g)	TEQ ³	Result (pg/g)	TEQ ³	Result (pg/g)	TEQ ³	Result (pg/g)	TEQ ³
2,3,7,8-TCDD	1	0.24 U	0.24	0.94 J	0.94	0.35 U	0.18	0.61 J	0.61	0.14 UJ	0.07
1,2,3,7,8-PeCDD	1	4 J	4	9.2	9.2	2.4 U	1.2	5	5	0.64 UJ	0.32
1,2,3,4,7,8-HxCDD	0.1	6.4	0.64	18	1.8	4.1 J	0.41	8.4	0.84	0.86 UJ	0.043
1,2,3,6,7,8-HxCDD	0.1	40	4	89	8.9	15	1.5	55	5.5	3.4 J	0.34
1,2,3,7,8,9-HxCDD	0.1	19	1.9	44	4.4	9.6	0.96	20	2	2.1 UJ	0.105
1,2,3,4,6,7,8-HpCDD	0.01	820	8.2	1,400	14	270	2.7	780	7.8	62 J	0.62
OCDD	0.0003	6,700 J	2.01	8,900 J	2.67	1,900	0.57	5,100 J	1.53	480 J	0.144
2,3,7,8-TCDF	0.1	1.4	0.14	2.3	0.23	1.4	0.14	1.9	0.19	0.55 NJ	0.055
1,2,3,7,8-PeCDF	0.03	1.15 U	0.035	5	0.15	1.3 U	0.02	4.1 J	0.12	0.18 UJ	0.0027
2,3,4,7,8-PeCDF	0.3	3 J	0.9	6.5	1.95	1.8 U	0.27	5.2	1.56	0.52 UJ	0.078
1,2,3,4,7,8-HxCDF	0.1	11	1.1	25	2.5	5.2	0.52	19	1.9	1.3 UJ	0.065
1,2,3,6,7,8-HxCDF	0.1	4.3	0.43	9.4	0.94	2.8 J	0.28	6.1	0.61	0.75 UJ	0.0375
2,3,4,6,7,8-HxCDF	0.1	3.9	0.39	7.3	0.73	2.2 U	0.11	3.5 J	0.35	0.65 UJ	0.0325
1,2,3,7,8,9-HxCDF	0.1	0.18 U	0.018	0.84 U	0.04	0.22 U	0.01	0.85 U	0.04	0.14 UJ	0.007
1,2,3,4,6,7,8-HpCDF	0.01	79	0.79	120	1.2	34	0.34	79	0.79	6.4 J	0.064
1,2,3,4,7,8,9-HpCDF	0.01	4.7 J	0.047	9	0.09	2.3 U	0.01	6.6	0.07	0.53 UJ	0.00265
OCDF	0.0003	130	0.039	190	0.06	91	0.03	160	0.05	10 J	0.003
Total TEQ⁴ (pg/g)			24.88		49.8		9.24		29		1.98935

Notes

1. Data qualifiers are as follows:

J = analyte detected at a concentration between method detection limit and method reporting limit, or estimated due to exceeding quality control elements.

NJ = the analyte is tentatively identified and the associated numerical value represents an approximate concentration.

U = analyte not detected at or below reported method detection limit.

UJ = the associated analyte is considered not detected at or greater than the estimated concentration listed.

2. WHO TEF = World Health Organization 2,3,7,8-TCDD Toxicity Equivalency Factors for dioxin congeners (Van den Burg et al., 2006).

3. TEQ for each congener is calculated by multiplying analytical results by the TEF. TEQs for nondetected results were conservatively calculated using a value of one half the detection limit for all congeners.

4. Total TEQ is 2,3,7,8-TCDD toxicity equivalent for all congeners.

EPA (2009) RSL for residential receptors for 2,3,7,8-TCDD is 4.5 pg/g.

EPA (2009) RSL for industrial receptors for 2,3,7,8-TCDD is 18 pg/g. JSCS Upland Soil/Stormwater Sediment screening level is 0.0091 pg/g (DEQ, 2007).

EPA December 2009 proposed PRG for residential receptors for 2,3,7,8-TCDD is 72 pg/g.

Abbreviations

2,3,7,8-TCDD = 2,3,7,8-tetrachlorodibenzo-p-dioxin

pg/g = picograms per gram

TEQ = 2,3,7,8-TCDD Toxicity Equivalents

EPA = U.S. Environmental Protection Agency

RSL = Regional Screening Level

WHO = World Health Organization

JSCS = Joint Source Control Strategy

TEF = toxicity equivalent factor

TABLE 18
AREA RS-1 RESULTS ^{1,2}
 University of Portland River Campus Property
 Portland, Oregon

Area	Sample ID/ Location	Date	Depth (feet)	TPH		PCBs								Tributyltin	Metals							PAHs															
				Diesel (mg/kg)	Motor Oil (mg/kg)	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs		(µg/kg)	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	(mg/kg)	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene
JSCS Screening Level²				3,200 ⁴		530	NE	NE	NE	1,500	300	200	0.39	2.3	7	1	111 ⁶	149	17	49	459	300	200	845	1,050	1,450	NE	300	13,000	1,290	1,300	2,230	300	100	561	1,170	1,520
EPA Regional Screening Level (RSL)^{2,3}				carc./ non-carc.		n	c	c	c	c	c	c	c	n	c	n	n	n	n	n	n	n	n	n	c	c	c	c	c	c	n	n	c	c	n	n	
				Residential	NE	NE	390	140	140	220	220	220	220	1,800	7 ⁵	7	12,000 ⁶	310	40	150	2,300	340,000	NE	1,700,000	150	15	150	NE	1,500	15,000	15	230,000	230,000	150	3,600	NE	170,000
				Industrial	NE	NE	2,100	540	540	740	740	740	740	18,000	7 ⁵	80	150,000 ⁶	4,100	80	2,000	31,000	3,300,000	NE	17,000,000	2,100	210	2,100	NE	21,000	210,000	210	2,200,000	2,200,000	2,100	18,000	NE	1,700,000
RS-1	MIS A	10/25/2006	0-1	22	110	ND	ND	ND	ND	ND	ND	28 J	28	4.2 J	3.8 J	ND	14 J	39.7 J	23	15.5	94	ND	ND	41 J	40 J	48 J	57 J	ND	ND	53 J	ND	81	48	ND	ND	50 J	76
RS-1	MIS B	10/25/2006	1-5	91	370	ND	ND	ND	ND	ND	35	33 J	68	12 J	3.6	ND	15	71.3	22	16.8	107	42 J	80	74	220	280	230	130	290	290	ND	620	75	120	62 J	500	530
RS-1	MIS C	10/25/2006	5-10	76	350	ND	ND	ND	ND	ND	39	30 J	69	13 J	3.2	ND	14	36.6	16	24.2	89	63 J	130	170	460	520	520	200	450	540	ND	1,300	120	210	82 J	950	1,100
WS-RS-1-24	WS-RS-1(5-6)-24	10/25/2006	5-6	370	890	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	77	74	270	280	240	190	320	400	ND	800	100	150	ND	500	600

Notes

- Data qualifiers are as follows:
 -- = Not analyzed.
 J = analyte was positively identified; result is an estimated concentration.
 ND = analyte was not detected at or above laboratory reporting limit.
 NE = Screening level not established.
- Results are compared against JSCS screening levels (DEQ, 2006).
 Yellow shading indicates result exceeds JSCS screening level. Screening levels based on EPA RSLs (EPA, 2009) are shown for comparison.
- RSLs shown are based on EPA Regional Screening Levels (RSLs) updated in December 2009 (EPA, 2009). For carcinogens, the screening level is the EPA RSL (EPA, 2009). For non-carcinogens the screening level is given by the EPA RSL (EPA, 2009) divided by 10 to reflect a cancer risk of 10⁻⁶ and a hazard quotient of 0.1. For further information see Section 3.0 in the text.
- Screening levels for TPH fractions are Oregon risk-based-concentration screening levels (DEQ, 2009). Neither JSCS screening levels nor RSLs are available for TPH fractions.
- Screening values for arsenic are background concentrations for arsenic in the Portland Harbor area given by Oregon DEQ in a memorandum dated October 28, 2002.
- Value shown is for Chromium(III).

Abbreviations

- µg/kg = micrograms per kilogram
- carc. = carcinogen
- DEQ = Department of Environmental Quality
- EPA = U.S. Environmental Protection Agency
- JSCS = Joint Source Control Strategy
- mg/kg = milligrams per kilogram
- non-carc. = non-carcinogen
- PAHs = polycyclic aromatic hydrocarbons
- PCBs = polychlorinated biphenyls
- TPH = total petroleum hydrocarbons

TABLE 19

AREAS RS-1 AND RS-3 DIOXIN RESULTS ¹

University of Portland River Campus Property
Portland, Oregon

Sample ID/Location		MI-RS1(A)		PS-RS1A(A)-COMPOSITE		PS-RS1B(A)-COMPOSITE		PS-RS1C(A)-COMPOSITE		PS-RS1D(A)-COMPOSITE		MI-RS-1-B		MI-RS-1-C		MI-RS-3-B	
Date		10/25/2006		10/30/2009		10/30/2009		10/30/2009		10/30/2009		10/25/2006		10/25/2006		10/25/2006	
Depth (feet)		0-1		0-1		0-1		0-1		0-1		1-5		5-10		1-5	
Analyte	WHO TEFs ²	Result (pg/g)	TEQ ³	Result (pg/g)	TEQ ³	Result (pg/g)	TEQ ³	Result (pg/g)	TEQ ³	Result (pg/g)	TEQ ³	Result (pg/g)	TEQ ³	Result (pg/g)	TEQ ³	Result (pg/g)	TEQ ³
2,3,7,8-TCDD	1	0.145 U	0.145	0.5 U	0.25	0.35 U	0.175	0.33 U	0.165	0.4 U	0.2	0.33 UJ	0.165	0.33 UJ	0.165	0.12 U	0.06
1,2,3,7,8-PeCDD	1	3.3 J	3.3	3.3 U	1.65	2.3 U	1.15	1.2 U	0.6	2.6 J	2.6	0.5 UJ	0.25	0.83 UJ	0.415	0.18 U	0.09
1,2,3,4,7,8-HxCDD	0.1	3.1 J	0.31	5.9	0.59	3.1 J	0.31	1.5 U	0.075	4.3 U	0.215	1.2 J	0.06	1.1 UJ	0.055	0.58 U	0.029
1,2,3,6,7,8-HxCDD	0.1	76	7.6	28	2.8	13	1.3	8.4	0.84	51	5.1	4.1 J	0.41	12 J	1.2	1.5 U	0.075
1,2,3,7,8,9-HxCDD	0.1	15	1.5	14	1.4	8.6	0.86	4.2 U	0.21	16	1.6	2.4 J	0.24	3.7 J	0.37	0.77 U	0.0385
1,2,3,4,6,7,8-HpCDD	0.01	400	4	340	3.4	210	2.1	130	1.3	1100	11	92 J	0.92	140 J	1.4	43	0.43
OCDD	0.0003	1,700	0.51	2,300	0.69	1,600	0.48	1,200	0.36	13,000 J	3.9	980 J	0.294	1,100 J	0.33	520	0.156
2,3,7,8-TCDF	0.1	10	1	2.4	0.24	0.88 J	0.088	1	0.1	5	0.5	0.76 J	0.076	1.3 J	0.13	0.7 J	0.07
1,2,3,7,8-PeCDF	0.03	3.8 J	0.114	1.7 U	0.0255	0.77 U	0.0116	0.75 U	0.0113	2.2 U	0.033	0.46 UJ	0.0069	0.75 UJ	0.0113	0.18 U	0.0027
2,3,4,7,8-PeCDF	0.3	6.1	1.83	2.9 J	0.87	0.94 U	0.141	0.99 U	0.1485	4 J	1.2	0.76 UJ	0.114	1.1 UJ	0.165	0.4 U	0.06
1,2,3,4,7,8-HxCDF	0.1	5.9	0.59	7.7	0.77	3.3 J	0.33	2.9 J	0.29	10	1	2 UJ	0.1	2.8 J	0.28	1.8 U	0.09
1,2,3,6,7,8-HxCDF	0.1	6	0.6	4.2 J	0.42	1.9 U	0.095	1.4 U	0.07	4.3 J	0.43	0.88 UJ	0.044	1.5 UJ	0.075	0.8 U	0.04
2,3,4,6,7,8-HxCDF	0.1	6.7	0.67	2.7 U	0.135	1.7 U	0.085	1.1 U	0.055	3.9 J	0.39	0.61 UJ	0.0305	1.1 UJ	0.055	0.47 U	0.0235
1,2,3,7,8,9-HxCDF	0.1	0.195 U	0.0195	0.25 U	0.0125	0.14 U	0.007	0.15 U	0.0075	0.47 U	0.024	0.09 UJ	0.0045	0.095 UJ	0.0048	0.084 U	0.0042
1,2,3,4,6,7,8-HpCDF	0.01	170	1.7	62	0.62	26	0.26	15	0.15	100	1	18 J	0.18	40 J	0.4	13	0.13
1,2,3,4,7,8,9-HpCDF	0.01	4.5 J	0.045	3.3 J	0.033	2 U	0.01	1.2 U	0.006	12	0.12	1.1 UJ	0.0055	1.6 UJ	0.008	0.2 U	0.001
OCDF	0.0003	140	0.042	100	0.03	84	0.0252	52	0.0156	850	0.255	38 J	0.0114	70	0.021	29	0.0087
Total TEQ⁴ (pg/g)			23.831		13.936		7.4278		4.4039		29.57		2.9118		5.085		1.3086

Notes

1. Data qualifiers are as follows:

J = analyte detected at a concentration between method detection limit and method reporting limit, or estimated due to exceeding QC elements.

U = analyte not detected at or below reported method detection limit.

UJ = the associated analyte is considered not detected at or greater than the estimated concentration listed.

2. WHO TEF = World Health Organization 2,3,7,8-TCDD Toxicity Equivalency Factors for dioxin congeners (Van den Burg et al., 2006).

3. TEQ for each congener is calculated by multiplying analytical results by the TEF. TEQs for nondetected results were conservatively calculated using a value of one half the detection limit for all congeners.

4. Total TEQ is 2,3,7,8-TCDD Toxicity equivalent for all congeners.

Yellow shading indicates total TEQ is greater than the JSCS Upland Soil/Sediment screening level of 0.0091 pg/g (DEQ, 2007).

EPA RSL for industrial receptors for 2,3,7,8-TCDD is 18 pg/g; EPA RSL for residential receptors for 2,3,7,8-TCDD is 4.5 pg/g (EPA, 2009).

EPA December 2009 proposed PRG for residential receptors for 2,3,7,8-TCDD is 72 pg/g.

Abbreviations

2,3,7,8-TCDD = 2,3,7,8-tetrachlorodibenzo-p-dioxin

DEQ = Department of Environmental Quality

EPA = U.S. Environmental Protection Agency

JSCS = Joint Source Control Strategy

pg/g = picograms per gram

RSL = Regional Screening Level

TEF = toxicity equivalent factor

TEQ = 2,3,7,8-TCDD Toxicity Equivalents

WHO = World Health Organization

TABLE 20

AREA RS-2 RESULTS ^{1,2}
University of Portland River Campus Property
Portland, Oregon

Area	Location	Date	Depth (feet)	TPH		PCBs							Tributyltin	Metals							PAHs													Dioxins (TEQ) ³				
				Diesel	Motor Oil	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260		Total PCBs	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene		Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
				(mg/kg)	(mg/kg)	(µg/kg)								(µg/kg)	(mg/kg)							(µg/kg)													(pg/g)			
JSCS Screening Level ²				3,200 ⁵	530	NE	NE	NE	1500	300	200	0.39	2.3	7	1	111	149	17	49	459	300	200	845	1,050	1,450	NE	300	13,000	1,290	1,300	2,230	300	100	561	1,170	1,520	0.009	
EPA Regional Screening Level (RSL) ^{2,4}				carc./non-carc.	n	c	c	c	c	c	c	n	c	n	n	n	n	n	n	n	n	n	c	c	c	c	c	c	n	n	c	c	n	n	c	n	c	
				Residential	NE	NE	390	140	140	220	220	220	220	1,800	7 ⁶	7	12,000 ⁷	310	40	150	2,300	340,000	NE	1,700,000	150	15	150	NE	1,500	15,000	15	230,000	230,000	150	3,600	NE	170,000	4.5
				Industrial	NE	NE	2,100	540	540	740	740	740	18,000	7 ⁶	80	150,000 ⁷	4100	80	2000	31,000	3,300,000	NE	17,000,000	2,100	210	2,100	NE	21,000	210,000	210	2,200,000	2,200,000	2,100	18,000	NE	1,700,000	18	
RS-2	Area RS-2 MIS A	10/19/2006	0-1	57 J	260 J	ND	ND	ND	ND	72 J	120 J	192	6.1 J	2.2	0.3	15	33.8	33	17.7	115	ND	ND	ND	33 J	49 J	ND	51 J	48 J	47 J	ND	48 J	ND	ND	ND	ND	59 J	3.04	
RS-2	Area RS-2 MIS B	10/19/2006	1-5	30 J	110 J	ND	ND	ND	ND	ND	ND	ND	ND	2.3	ND	13	28.8	13	16.2	98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	
RS-2	Area RS-2 MIS C	10/19/2006	5-10	42 J	280 J	ND	ND	ND	ND	ND	ND	ND	26 J	2.4	ND	14	40.8	10	22.2	63	ND	ND	ND	ND	ND	ND	ND	32 J	ND	33 J	ND	ND	ND	ND	40 J	--		
A5-13	DP-A5-48	12/1/2005	0.5	--	--	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
A5-13	DP-A5-49	12/1/2005	0.5	--	--	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
A5-13	GP-79	6/2/1999	0.5	470	430	ND	ND	ND	300	ND	ND	2,100	2,400	--	2.1	--	--	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	23	ND	ND	ND	17	22	--	--		
A5-13	GP-79	6/2/1999	2	820	460	ND	ND	ND	ND	ND	ND	ND	--	1.4	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	
A5-13	GP-79	6/2/1999	4.5	38	76	ND	ND	ND	ND	ND	ND	ND	--	1.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
A5-13	GP-150	8/9/2000	0.5	--	--	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
A5-13	GP-151	8/9/2000	0.5	--	--	ND	ND	ND	ND	200	ND	200	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
A5-13	GP-152	8/9/2000	0.5	--	--	ND	ND	ND	ND	ND	120	120	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes

- Data qualifiers are as follows:
-- = Not analyzed.
J = analyte was positively identified; result is an estimated concentration.
ND = analyte was not detected at or above laboratory reporting limit.
NE = Screening level not established.
- Results are compared against JSCS screening levels (DEQ, 2006).
Yellow shading indicates result exceeds JSCS screening level. Screening levels based on EPA RSLs (EPA, 2009) are shown for comparison.
- Total dioxins is calculated as 2,3,7,8-TCDD toxicity equivalent quotient (TEQ) based on WHO 2005 TEFs (Van den Berg et al., 2006).
- RSLs shown are based on EPA Regional Screening Levels (RSLs) updated in December 2009 (EPA, 2009). For carcinogens, the screening level is the EPA RSL (EPA, 2009). For non-carcinogens, the screening level is given by the EPA RSL (EPA, 2009) divided by 10 to reflect a cancer risk of 10⁻⁶ and a hazard quotient of 0.1. For further information see Section 3.0 in the text.
- Screening levels for TPH fractions are Oregon risk-based-concentration screening levels (DEQ, 2009). Neither JSCS screening levels nor RSLs are available for TPH fractions.
- Screening values for arsenic are background concentrations for arsenic in the Portland Harbor area given by Oregon DEQ in a memorandum dated October 28, 2002.
- Value shown is for Chromium(III).

Abbreviations

- µg/kg = micrograms per kilogram
- 2,3,7,8-TCDD = 2,3,7,8-tetrachlorodibenzo-p-dioxin
- carc. = carcinogen
- EPA = U.S. Environmental Protection Agency
- JSCS = Joint Source Control Strategy
- mg/kg = milligrams per kilogram
- non-carc. = non-carcinogen
- PAHs = polycyclic aromatic hydrocarbons
- PCBs = polychlorinated biphenyls
- pg/g = picograms per gram
- RSL = Regional Screening Level
- TEF = toxicity equivalent factor
- TEQ = toxicity equivalent quotient
- TPH = total petroleum hydrocarbons
- WHO = World Health Organization

