TABLES

Table 3.1. Summary results for chemicals detected in on-site and background soil samples. Only compounds detected with on-site samples at frequency greater than 5% presented. "Prob.= background" is probability obstained with Wilcoxon-Rank Sum test. Note that value represented as mean concentration for TCDD TEQ is actually the maximum concentration with non-detects set to zero.

	On-Site					Background							
Parameter	Num. Of Samples	Freq. Of Detection	Max. Detection	Min. Detection	Mean	Num. Of Samples	Freq. Of Detection	Max. Detection	Min. Detection	Mean	Prob. = Background	COPC?	Reason for Rejection
Metals, mg/kg													
Aluminum	124	100%	24000.0	2000.0	8766.9	16	100%	17000.0	4500.0	9562.5	0.87	No	Not > Back
Antimony	124	24%	21.0	0.9	1.1	16	0%	N/A	N/A	0.5	0.59	No	Not > Back
Arsenic	124	100%	160.0	1.1	13.6	16	100%	9.6	5.1	7.1	0.54	No	Not > Back
Barium	124	100%	1500.0	24.0	182.8	16	100%	340.0	97.0	213.6	0.50	No	Not > Back
Beryllium	124	92%	5.8	0.4	0.7	16	94%	0.8	0.4	0.6	0.60	No	Not > Back
Cadmium	124	65%	11.0	0.2	0.7	16	50%	0.6	0.3	0.3	0.46	No	Not > Back
Calcium	124	100%	250000.0	860.0	41019.5	16	100%	14000.0	830.0	6220.6	**0.00**	**Yes**	
Chromium Total	124	100%	280.0	4.9	19.4	16	100%	17.0	8.0	12.2	**0.05**	**Yes**	
Cobalt	124	100%	300.0	0.9	10.3	16	100%	17.0	4.8	8.6	0.79	No	Not > Back
Copper	124	100%	1800.0	5.6	36.3	16	100%	13.0	7.6	11.1	**0.00**	**Yes**	
Iron	124	100%	61000.0	1600.0	14226.6	16	100%	26000.0	9700.0	16543.8	0.47	No	Not > Back
Lead	124	100%	1400.0	3.7	90.0	16	100%	81.0	12.0	48.9	0.35	No	Not > Back
Magnesium	124	100%	53000.0	93.0	5758.9	16	100%	5600.0	1600.0	3106.3	0.34	No	Not > Back
Manganese	124	100%	4400.0	41.0	739.1	16	100%	1100.0	240.0	647.5	0.53	No	Not > Back
Mercury	124	81%	3.4	0.0	0.2	16	56%	0.0	0.0	0.0	**0.01**	**Yes**	
Nickel	124	100%	300.0	5.3	24.5	16	100%	14.0	7.4	11.7	**0.00**	**Yes**	
Potassium	124	100%	8000.0	380.0	1787.2	16	100%	1100.0	460.0	753.1	**0.00**	**Yes**	
Selenium	124	65%	4.1	0.6	0.8	16	63%	1.0	0.6	0.6	**0.06**	**Yes**	
Silver	124	7%	2.0	0.6	0.4	16	0%	N/A	N/A	0.3	0.36	No	Not > Back
Sodium	124	32%	3300.0	120.0	369.6	16	19%	210.0	180.0	89.1	0.43	No	Not > Back
Thallium	124	6%	2.2	1.0	0.6	16	0%	N/A	N/A	0.5	0.56	No	Not > Back
Vanadium	124	100%	45.0	5.4	23.8	16	100%	39.0	16.0	26.8	0.61	No	Not > Back
Zinc	124	100%	1500.0	19.0	153.9	16	100%	310.0	33.0	155.8	0.97	No	Not > Back
PCB/Pesticides, ug/kg													
Aroclor-1254 (PCB-1254)	124	12%	540.0	21.0	35.1	**0**					No Data	**Yes**	Assumed > back
Aroclor-1260 (PCB-1260)	124	22%	560.0	3.6	39.8	0					No Data	**Yes**	Assumed > back
Total PCBs	124	100%	850.0	0.0	74.9	0					No Data	**Yes**	Assumed > back
4,4'-DDT	124	10%	25.0	1.4	2.0	0					No Data	**Yes**	Assumed > back
Endosulfan II	124	6%	4.2	0.2	1.0	0					No Data	**Yes**	Assumed > back
Endrin	124	9%	21.0	0.3	1.4	0					No Data	**Yes**	Assumed > back
Dioxins/Furans, ng/kg													
TCDD TEQ	2	100%	5.5		0.1						No Data	**Yes**	Assumed > back
SVOC, ug/kg													
Acenaphthene	124	15%	380.0	12.0	186.8	0					No Data	**Yes**	Assumed > back
Anthracene	124	17%	1100.0	27.0	212.4	0					No Data	**Yes**	Assumed > back
Benzo(a)anthracene	124	69%	6400.0	16.0	337.8	0					No Data	**Yes**	Assumed > back
Benzo(a)pyrene	124	67%	6600.0	16.0	368.3	0					No Data	**Yes**	Assumed > back
Benzo(b)fluoranthene	124	73%	7800.0	20.0	505.5	0					No Data	**Yes**	Assumed > back
Benzo(k)fluoranthene	124	44%	3200.0	25.0	283.2	0					No Data	**Yes**	Assumed > back
bis(2-Ethylhexyl)phthalate	124	19%	4700.0	79.0	263.8	0					No Data	**Yes**	Assumed > back
Butyl benzylphthalate	124	8%	220.0	29.0	205.8	0					No Data	**Yes**	Assumed > back
Carbazole	124	18%	910.0	22.0	197.4	0					No Data	**Yes**	Assumed > back
Chrysene	124	67%	8100.0	18.0	407.2	0					No Data	**Yes**	Assumed > back
Di-n-butylphthalate	124	16%	4300.0	26.0	306.5	0					No Data	**Yes**	Assumed > back
Fluoranthene	124	78%	8800.0	16.0	489.0	0					No Data	**Yes**	Assumed > back
Fluorene	124	14%	530.0	19.0	193.4	0					No Data	**Yes**	Assumed > back
Indeno(1,2,3-cd)pyrene	124	40%	5800.0	29.0	386.7	0					No Data	**Yes**	Assumed > back
Naphthalene	124	10%	100.0	25.0	200.9	0					No Data	**Yes**	Assumed > back
Pyrene	124	58%	38000.0	39.0	1438.9	0					No Data	**Yes**	Assumed > back
VOC, ug/kg													
Methylene chloride	124	80%	8.1	1.1	3.1	16	38%	23.0	N/A	3.2		No	Lab Contaminant
Tetrachloroethene	124	8%	34.0	1.6	3.5	16	0%	N/A	1.3	3.0		**Yes**	Site Use

Table 3.2. Estimation of Dioxin TEQ in Soil (Sample CB-01) and Groundwater (CB-01).

			Soil Sample CB-01, ng/kg						Groundwater CB-01, pg/l		
					ND = 1/2 DL		ND = 0			ND = 1/2 DL	
Congener	TEF	BEF	Conc.	Conc.	TEQ	TEQ	TEQ	TEQ	Conc.	TEQ	
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	0.0001	0.016	11 J	12 J	1.8E-05	1.9E-05	1.8E-05	1.9E-05	1.1 J	1.8E-06	1.8E-06
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	0.0001	0.012	4600	5600 J	5.5E-03	6.7E-03	5.5E-03	6.7E-03	4.7 J	5.6E-06	5.6E-06
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	0.01	0.39	5 U	5 U	9.8E-03	9.8E-03	0.0	0.0	50 U	9.8E-02	0.0
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	0.01	0.051	94	110 J	4.8E-02	5.6E-02	4.8E-02	5.6E-02	50 U	1.3E-02	0.0
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	0.01	0.011	5 U	5 U	2.8E-04	2.8E-04	0.0	0.0	50 U	2.8E-03	0.0
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	0.1	0.076	5 U	5 U	1.9E-02	1.9E-02	0.0	0.0	50 U	1.9E-01	0.0
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.1	0.31	5 U	5 U	7.8E-02	7.8E-02	0.0	0.0	50 U	7.8E-01	0.0
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.1	0.12	5 U	5 U	3.0E-02	3.0E-02	0.0	0.0	50 U	3.0E-01	0.0
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.1	0.19	5 U	5 U	4.8E-02	4.8E-02	0.0	0.0	50 U	4.8E-01	0.0
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.1	0.63	5 U	5 U	1.6E-01	1.6E-01	0.0	0.0	50 U	1.6E+00	0.0
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0.1	0.14	5 U	5 U	3.5E-02	3.5E-02	0.0	0.0	50 U	3.5E-01	0.0
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	0.05	0.22	5 U	5 U	2.8E-02	2.8E-02	0.0	0.0	50 U	2.8E-01	0.0
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	1	0.92	5 U	5 U	2.3E+00	2.3E+00	0.0	0.0	50 U	2.3E+01	0.0
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.1	0.67	5 U	5 U	1.7E-01	1.7E-01	0.0	0.0	0.37 Q J	2.5E-02	2.5E-02
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	0.5	1.6	5 U	5 U	2.0E+00	2.0E+00	0.0	0.0	50 U	2.0E+01	0.0
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	0.1	0.8	0.81 J	0.7 J	6.5E-02	5.6E-02	6.5E-02	5.6E-02	10 U	4.0E-01	0.0
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1	1	1 U	1 U	5.0E-01	5.0E-01	0.0	0.0	10 U	5.0E+00	0.0
Total TEQ, includes BEF					5.5E+00	5.5E+00	1.2E-01	1.2E-01		5.2E+01	2.5E-02

Table 3.3. Summary results for chemicals detected in sediments. Only compounds detected for on-site samples at frequency greater than 5% presented. "Prob.= background" is probability obstained with Wilcoxon-Rank Sum test. Due to insufficient number of background sediment samples, background analysis based on results of soil samples.

	On-Site					Background							
Parameter	Num. Of Samples	Freq. Of Detection	Max. Detection	Min. Detection	Mean	Num. Of Samples	Freq. Of Detection	Max. Detection	Min. Detection	Mean	Prob. = Background	COPC?	Reason for Rejection
Metals, mg/kg													
Aluminum	16	100%	13,000.0	660.0	5291.3	2	100%	3000.0	2500.0	2750.0	0.87 Soil	No	Not > Back
Antimony	16	6%	1.9	1.9	0.7	2	0%	N/A	N/A	0.5	0.59 Soil	No	Not > Back
Arsenic	16	100%	11.0	2.2	5.6	2	100%	5.8	3.5	4.7	0.54 Soil	No	Not > Back
Barium	16	100%	940.0	33.0	166.1	2	100%	130.0	58.0	94.0	0.50 Soil	No	Not > Back
Beryllium	16	44%	1.3	0.4	0.4	2	0%	N/A	N/A	0.2	0.60 Soil	No	Not > Back
Cadmium	16	44%	3.2	0.4	0.5	2	0%	N/A	N/A	0.1	0.46 Soil	No	Not > Back
Calcium	16	100%	22,000.0	570.0	8591.9	2	100%	5700.0	2100.0	3900.0	**0.00 Soil**	**Yes**	
Chromium Total	16	100%	48.0	8.6	16.1	2	100%	7.6	7.2	7.4	**0.05 Soil**	**Yes**	
Cobalt	16	100%	25.0	2.1	7.8	2	100%	5.6	4.1	4.9	0.79 Soil	No	Not > Back
Copper	16	94%	110.0	1.4	23.0	2	100%	4.3	4.3	4.3	**0.00 Soil**	**Yes**	
Iron	16	100%	23,000.0	4400.0	12037.5	2	100%	10000.0	6200.0	8100.0	0.47 Soil	No	Not > Back
Lead	16	100%	130.0	9.8	46.6	2	100%	35.0	15.0	25.0	0.35 Soil	No	Not > Back
Magnesium	16	100%	7,200.0	360.0	3375.6	2	100%	3400.0	1300.0	2350.0	0.34 Soil	No	Not > Back
Manganese	16	100%	5,600.0	77.0	807.9	2	100%	550.0	340.0	445.0	0.53 Soil	No	Not > Back
Mercury	16	50%	1.1	0.0	0.1	2	0%	N/A	N/A	0.0	**0.01 Soil**	**Yes**	
Nickel	16	100%	48.0	2.9	14.6	2	100%	8.6	4.8	6.7	**0.00 Soil**	**Yes**	
Potassium	16	81%	1,200.0	180.0	579.4	2	100%	340.0	250.0	295.0	**0.00 Soil**	**Yes**	
Selenium	16	50%	2.6	0.7	0.8	3	290%	2.9	2.9	0.5	**0.06 Soil**	**Yes**	
Vanadium	16	100%	33.0	9.5	20.6	2	100%	16.0	11.0	13.5	0.61 Soil	No	Not > Back
Zinc	16	100%	410.0	36.0	126.5	2	100%	140.0	23.0	81.5	0.97 Soil	No	Not > Back
PCB/Pesticides, ug/.kg													
Aroclor-1260 (PCB-1260)	16	13%	59.0	14.0	27.5	2	0%	N/A	N/A	21.3	No Data	Yes	Assumed > back
Endrin	16	6%	2.9	2.9	1.4	2	0%	N/A	N/A	1.1	No Data	Yes	Assumed > back
SVOC, ug/kg													
Acenaphthene	16	13%	580.0	12.0	271.4	2	0%	N/A	N/A	210.0	No Data	Yes	Assumed > back
Anthracene	16	13%	2,400.0	55.0	387.8	2	0%	N/A	N/A	210.0	No Data	Yes	Assumed > back
Benzo(a)anthracene	16	56%	20,000.0	62.0	1445.1	2	50%	41.0	41.0	128.0	No Data	Yes	Assumed > back
Benzo(a)pyrene	16	56%	26,000.0	71.0	1849.9	2	50%	29.0	29.0	122.0	No Data	Yes	Assumed > back
Benzo(b)fluoranthene	16	56%	48,000.0	140.0	3350.9	2	50%	39.0	39.0	127.0	No Data	Yes	Assumed > back
Benzo(k)fluoranthene	16	56%	17,000.0	47.0	1236.8	2	0%	N/A	N/A	210.0	No Data	Yes	Assumed > back
bis(2-Ethylhexyl)phthalate	16	19%	3,600.0	170.0	450.0	2	0%	N/A	N/A	210.0	No Data	Yes	Assumed > back
Carbazole	16	19%	3,500.0	37.0	423.4	2	0%	N/A	N/A	210.0	No Data	yes	Assumed > back
Chrysene	16	56%	26,000.0	82.0	1875.5	2	50%	33.0	33.0	124.0	No Data	Yes	Assumed > back
Dibenz(a,h)anthracene	16	6%	4,700.0	4700.0	541.9	2	0%	N/A	N/A	210.0	No Data	Yes	Assumed > back
Di-n-butylphthalate	16	6%	2,100.0	2100.0	379.4	2	0%	N/A	N/A	210.0	No Data	Yes	Assumed > back
Fluoranthene	16	63%	37,000.0	19.0	2675.3	2	50%	86.0	86.0	150.5	No Data	Yes	Assumed > back
Fluorene	16	13%	970.0	20.0	296.3	2	0%	N/A	N/A	210.0	No Data	Yes	Assumed > back
Indeno(1,2,3-cd)pyrene	16	50%	17,000.0	55.0	1266.3	2	0%	N/A	N/A	210.0	No Data	Yes	Assumed > back
Naphthalene	16	6%	250.0	250.0	263.8	2	0%	N/A	N/A	210.0	No Data	Yes	Assumed > back
Pyrene	16	56%	100,000.0	130.0	6666.6	2	50%	66.0	66.0	140.5	No Data	Yes	Assumed > back
VOC, ug/kg													
2-Butanone (Methyl Ethyl Ketone)	16	6%	14.0	14.0	8.3	2	0%	N/A	N/A	6.3			
Acetone	16	63%	53.0	11.0	20.7	2	50%	18.0	18.0	12.0		No	Lab contaminant
cis-1,2-Dichloroethene	16	19%	28.0	2.6	5.6	2	0%	N/A	N/A	3.2		Yes	Site use
Methylene chloride	16	44%	9.4	1.2	5.1	2	100%	10.0	1.3	5.7		No	Lab contaminant
Tetrachloroethene	16	13%	7.3	4.4	4.3	2	0%	N/A	N/A	3.2		Yes	Site Use
Toluene	16	19%	20.0	5.0	5.3	2	50%	9.5	9.5	6.3		Yes	
trans-1,2-Dichloroethene	16	6%	7.2	7.2	4.2	2	0%	N/A	N/A	3.2		Yes	Site Use
Trichloroethene	16	19%	11.0	1.6	4.2	2	0%	N/A	N/A	3.2		Yes	Site Use
Vinyl chloride	16	6%	22.0	22.0	8.8	2	0%	N/A	N/A	6.3		Yes	Site Use

Table 3.4. Summary results for chemicals detected in surface water. Only compounds detected for on-site samples at frequency greater than 5% presented. "Prob.= background" is probability obstained with Wilcoxon-Rank Sum test. Note that for compounds with only 1 detected concentration (=13% Freq. of Detection), the maximum concentrations equals the mininum detected concentration.

	On-Site					Background							
Parameter	Number of Samples	Freq. Of Detection	Max. Detection	Min. Detection	Mean Conc.	Number of Samples	Freq. Of Detection	Max. Detection	Min. Detection	Mean	Prob. = Background	COPC?	Reason for Rejection
Metal, ug/L													
Aluminum	8	75%	19000.0	100.0	2602.5	5	80%	500.0	100.0	226.0	0.94	**Yes**	See Text
Arsenic	8	13%	11.0	11.0	5.8	5	0%			5.0	1.00	**Yes**	See Text
Barium	8	100%	630.0	69.0	172.4	5	100%	140.0	70.0	92.6	0.36	**Yes**	See Text
Calcium	8	100%	66000.0	45000.0	52125.0	5	100%	68000.0	45000.0	54800.0	0.59	**Yes**	See Text
Chromium Total	8	13%	26.0	26.0	5.0	5	0%			2.0	1.00	**Yes**	See Text
Cobalt	8	13%	17.0	17.0	3.0	5	0%			1.0	1.00	**Yes**	See Text
Copper	8	13%	55.0	55.0	11.3	5	0%			5.0	1.00	**Yes**	See Text
Iron	8	63%	23000.0	150.0	3098.8	5	80%	660.0	110.0	268.0	0.97	**Yes**	See Text
Lead	8	13%	68.0	68.0	9.8	5	0%			1.5	1.00	**Yes**	See Text
Magnesium	8	100%	40000.0	28000.0	31500.0	5	100%	43000.0	28000.0	33600.0	0.43	**Yes**	See Text
Manganese	8	100%	1300.0	15.0	203.6	5	100%	380.0	16.0	112.8	0.75	**Yes**	See Text
Nickel	8	13%	31.0	31.0	6.1	5	0%			0.1	1.00	**Yes**	See Text
Potassium	8	100%	5000.0	1400.0	2512.5	5	100%	3600.0	1600.0	2.5	0.69	**Yes**	See Text
Sodium	8	100%	11000.0	7600.0	9487.5	5	100%	26000.0	7300.0	5.0	0.56	**Yes**	See Text
Vanadium	8	13%	45.0	45.0	10.0	5	0%			5.0	1.00	**Yes**	See Text
Zinc	8	38%	350.0	12.0	49.3	5	0%			5.0	0.39	**Yes**	See Text
SVOC, ug/L													
Fluoranthene	8	13%	1.0	1.0	4.4	5	0%	N/A	N/A	4.8		**Yes**	See Text
VOC,ug/L													
cis-1,2-Dichloroethene	8	25%	4.4	0.7	2.5	5	0%	N/A	N/A	2.5		**Yes**	Site use
Methylene chloride	8	50%	2.6	1.1	2.3	5	80%	3.3	1.1	2.2		No	Lab Contaminant
Tetrachloroethene	8	38%	2.1	0.7	2.0	5	0%	N/A	N/A	2.5		**Yes**	Site use
Trichloroethene	8	25%	0.8	0.6	2.1	5	0%	N/A	N/A	2.5		**Yes**	Site use

Table 3.5. Summary results for chemicals detected in groundwater. Only compounds detected for on-site samples at frequency greater than 5% presented. "Prob.= background" is probability obstained with Wilcoxon-Rank Sum test. Note that mean concentrations of TCDD TEQ is actually the maximum concentration with non-detects set equal to zero.

	On-site					Background							
Parameter	Number of Samples	Freq. Of Detection	Max. Detection	Min. Detection	Mean Conc.	Number of Samples	Freq. Of Detection	Max. Detection	Min. Detection	Mean	Prob. = Background	COPC?	Reason for Rejection
Metals, ug/L													
Aluminum	75	56%	16000	110	982	14	29%	1100	150	183	**0.06**	**Yes**	
Barium	75	100%	1300	27	199	14	100%	390	100	191	0.56	No	Not > Back
Barium (Dissolved)	10	100%	350	68	196	1	100%	150	150	150	0.56 T	No	Not > Back
Calcium	75	100%	260000	6700	67897	14	100%	110000	19000	65143	0.66	No	Not > Back
Calcium (Dissolved)	10	100%	95000	25000	56600	1	100%	72000	72000	72000	0.66 T	No	Not > Back
Chromium Total	75	13%	37	6	4	14	0%			2	0.28	No	Not > Back
Cobalt	75	31%	42	2	3	14	14%	2	2	1	0.32	No	Not > Back
Cobalt (Dissolved)	10	40%	6	2	2	1	0%			1	0.32 T	No	Not > Back
Copper	75	7%	39	19	7	14	7%	20	20	6	0.71	No	Not > Back
Iron	75	80%	38000	110	6047	14	79%	34000	230	6411	0.59	No	Not > Back
Iron (Dissolved)	10	70%	20000	450	5690	1	0%			50	0.59 T	No	Not > Back
Lead	75	20%	59	3	5	14	21%	8	3	2	0.87	No	Not > Back
Magnesium	75	100%	130000	2200	30916	14	93%	59000	9000	30107	0.58	No	Not > Back
Magnesium (Dissolved)	10	100%	46000	10000	27500	1	100%	36000	36000	36000	0.58 T	No	Not > Back
Manganese	75	100%	13000	1	1400	14	93%	3300	60	1217	0.81	No	Not > Back
Manganese (Dissolved)	10	100%	3200	4	1450	1	100%	19	19	19	0.81 T	No	Not > Back
Nickel	75	61%	150	5	13	14	14%	31	7	5	**0.02**	**Yes**	
Nickel (Dissolved)	10	60%	48	6	12	1	0%			3	**0.02 T**	**Yes**	
Potassium	75	89%	69000	1000	3469	14	86%	2700	1000	1486	**0.14**	**Yes**	
Potassium (Dissolved)	10	70%	11000	1100	2600	1	100%	2200	2200	2200	**0.14 T**	**Yes**	
Selenium	75	11%	10	5	3	14	0%			3	0.36	No	Not > Back
Sodium	75	100%	190000	3700	22943	14	100%	24000	6700	13121	0.22	No	Not > Back
Sodium (Dissolved)	10	100%	31000	3600	13940	1	100%	18000	18000	18000	0.22 T	No	Not > Back
Vanadium	75	8%	44	18	7	14	0%			5	0.46	No	Not > Back
Zinc	75	73%	650	7	49	14	50%	210	7	26	**0.08**	**Yes**	
Zinc (Dissolved)	10	60%	20	9	9	1	0%			3	**0.08 T**	**Yes**	
Dioxins/Furans, ng/kg													
TCDD TEQ	1	100%	52.48		0.02	0						No	See Text
SVOC, ug/L													
bis(2-Ethylhexyl)phthalate	34	15%	26	4	6	6	50%	9	4	6	0.38	No	Not > Back
Phenol	34	6%	10	2	5	6	0%			5	0.68	No	Not > Back
VOC, ug/L													
1,1,1-Trichloroethane	76	12%	85	2	43	14	0%			3		**Yes**	Site Use
1,1,2-Trichloroethane	76	7%	8	1	41	14	0%			3		**Yes**	Site Use
1,1-Dichloroethane	76	57%	610	1	73	14	0%			3		**Yes**	Site Use
1,1-Dichloroethene	77	55%	5100	1	147	14	0%			3		**Yes**	Site Use
1,2-Dichloroethane	76	11%	9	1	41	14	0%			3		**Yes**	Site Use
Chloroform (Trichloromethane)	76	7%	7	1	41	14	0%			3		**Yes**	Assumed > Back
cis-1,2-Dichloroethene	76	71%	19000	1	560	14	0%			3		**Yes**	Site Use
Methylene chloride	76	14%	1600	3	66	14	21%	4	3	3	0.85	No	Lab Contaminant
Tetrachloroethene	77	75%	200000	1	3472	14	0%			3		**Yes**	Site Use
trans-1,2-Dichloroethene	76	20%	700	5	54	14	0%			3		**Yes**	Site Use
Trichloroethene	76	75%	18000	1	964	14	0%			3		**Yes**	Site Use
Vinyl chloride	76	21%	1000	2	98	14	0%			5		**Yes**	Site Use

Table 3.6. Summary results for radionuclides detected in surface and subsurface (as deep as 3 feet) soils. Only radionuclides predicted to occur on site or detected for on-site samples at frequency greater than 5% presented. Concentrations in pCi/g. "Prob.= background" is probability obtained with Wilcoxon-Rank Sum test.

	On-site					Background							
Parameter	Number of Samples	Freq. Of Detection	Max. Detection	Min. Detection	Mean Conc.	Number of Samples	Freq. Of Detection	Max. Detection	Min. Detection	Mean	Prob. = Background	COPC?	Reason for Rejection
Actinium-228	157	61%	36.40	0.59	1.13	32	72%	1.83	0.68	0.83	0.22	**Yes**	Daughter
Bismuth-212	158	8%	41.60	1.36	0.67	32	9%	2.62	2.05	0.21	0.85	**Yes**	Daughter
Bismuth-214	159	81%	1.71	0.37	0.72	32	97%	1.15	0.53	0.81	0.73	No	Not > Back
Cesium-137	159	34%	1.79	0.12	0.12	32	9%	0.16	0.07	0.01	**0.00**	**Yes**	> Back
Lead-212	157	84%	41.20	0.18	1.33	32	100%	1.70	0.58	1.04	**0.14**	**Yes**	> Back, Daughter
Lead-214	159	89%	1.97	0.38	0.85	32	100%	1.21	0.58	0.90	0.79	No	Not > Back
Neptunium-237 (method 713R)	159	11%	2610.00	12.70	48.50	32	0%	N/A	N/A	0.00	**0.05**	**Yes**	> Back
Neptunium-237 (method 7134)	30	17%	0.04	0.01	0.00	32	6%	0.01	0.01	0.00	**0.18**	**Yes**	> Back
Plutonium 239/240	37	24%	0.03	0.003	0.003	31	6%	0.02	0.02	0.001	**0.06**	**Yes**	> Back
Potassium-40	157	88%	23.70	2.20	12.68	32	100%	16.50	8.13	12.65	**0.10**	No	Back > On-Site
Protactinium-234	157	13%	2200.00	30.50	49.67	32	0%	N/A	N/A	0.00	**0.03**	**Yes**	> Back, Daughter
Technetium-99	134	54%	17100.00	0.90	188.52	0						**Yes**	Site use
Thallium-208	157	65%	12.10	0.13	0.38	32	88%	0.59	0.16	0.31	**0.05**	**Yes**	> Back, Daughter
Thorium-228	8	100%	2.39	0.98	1.30	2	100%	1.32	1.14	1.23	0.72	No	Not > Back
Thorium-230	7	100%	1.71	0.92	1.13	0						No	
Thorium-234	155	48%	705.00	1.91	32.04	32	9%	4.03	2.20	0.30	**0.00**	**Yes**	> Back, Daughter
Uranium-234	3	100%	604.00	17.80	261.27	0						**Yes**	> Back, Site Use
Uranium-235 (method 713R)	156	33%	308.00	0.68	11.29	32	0%	N/A	N/A	0.00	**0.00**	**Yes**	> Back, Site Use
Uranium-235 (method 714R)	12	100%	23.10	0.02	2.50	32	91%	0.08	0.02	0.05	**0.06**	**Yes**	> Back, Site Use
Uranium-238	16	100%	74.30	0.37	8.55	32	100%	1.00	0.55	0.82	**0.03**	**Yes**	> Back, Site Use

Table 3.7. Summary results for radionuclides COPCs in on-site and background sediments. Concentrations in pCi/g.

	On-site					Background				
Parameter	Number of Samples	Freq. Of Detection	Max. Detection	Min. Detection	Mean Conc.	Number of Samples	Freq. Of Detection	Max. Detection	Min. Detection	Mean
Actinium-228	16	56%	4.63	0.58	0.73	2	50%	0.61	0.61	0.31
Bismuth-212	16	6%	7.09	7.09	0.44	2	0%	N/A	N/A	0.00
Cesium-137	16	19%	0.20	0.12	0.03	2	0%	N/A	N/A	0.00
Lead-212	15	93%	4.89	0.21	1.03	2	100%	0.53	0.14	0.34
Neptunium-237 (method 713R)	16	13%	60.30	0.03	3.77	2	0%	N/A	N/A	0.00
Neptunium-237 (method 714R)	4	50%	38.50	0.03	9.63	0				
Plutonium 239/240	4	0%	N/A	N/A	0.00	0				
Protactinium-234	16	19%	95.80	44.70	12.88	2	0%	N/A	N/A	0.00
Technetium-99	16	56%	284.00	1.36	37.75	2	0%	N/A	N/A	0.00
Thallium-208	16	50%	1.73	0.14	0.23	2	0%	N/A	N/A	0.00
Thorium-232	5	100%	5.07	0.55	1.59	0				
Thorium-234	16	25%	86.90	5.69	12.03	2	0%	N/A	N/A	0.00
Uranium-234	6	100%	937.00	2.80	201.14	0				
Uranium-235 (method 713R)	16	38%	37.30	0.18	4.10	2	0%	N/A	N/A	0.00
Uranium-235 (method 714R)	12	58%	41.70	0.02	4.18	2	50%	0.03	0.03	0.01

Table 3.8. Summary results for radionuclides COPCs in on-site and background surface water. Concentrations in pCi/L.

	On-site					Background				
Parameter	Number of Samples	Freq. Of Detection	Max. Detection	Min. Detection	Mean Conc.	Number of Samples	Freq. Of Detection	Max. Detection	Min. Detection	Mean
Technetium-99	8	0%	N/A	N/A	0.47	5	0%	N/A	N/A	0.00
Thorium-232	8	0%	N/A	N/A	0.01	5	0%	N/A	N/A	0.00
Uranium-234	1	100%	1.49	1.49	1.49	0				
Uranium-235	7	86%	0.14	0.03	0.07	5	20%	0.03	0.03	0.01
Uranium-238	8	100%	4.77	0.15	0.94	5	100%	0.74	0.22	0.36

Table 3.9. Summary results for radionuclides COPCs in on-site and background groundwater. Concentrations in pCi/L.

	On-site					Background				
Parameter	Number of Samples	Freq. Of Detection	Max. Detection	Min. Detection	Mean Conc.	Number of Samples	Freq. Of Detection	Max. Detection	Min. Detection	Mean
Neptunium-237 (Dissolved)	6	0%	N/A	N/A	0.00	2	0%	N/A	N/A	0.00
Plutonium 238 (Dissolved)	6	0%	N/A	N/A	0.00	2	0%	N/A	N/A	0.00
Plutonium 239/240 (Dissolved)	6	0%	N/A	N/A	0.00	2	0%	N/A	N/A	0.00
Technetium-99 (Dissolved)	12	17%	2080.00	14.80	174.57	3	0%	N/A	N/A	1.67
Uranium-234 (Dissolved)	13	85%	7.68	0.12	1.96	3	100%	12.50	1.41	5.89
Uranium-235 (Dissolved)	13	46%	0.25	0.03	0.04	3	67%	0.11	0.05	0.06
Uranium-238 (Dissolved)	13	77%	1.56	0.04	0.36	3	100%	1.18	0.45	0.83
Neptunium-237	24	4%	0.02	0.02	0.00	8	0%	N/A	N/A	0.00
Plutonium-238	24	0%	N/A	N/A	0.00	9	0%	N/A	N/A	0.00
Plutonium 239/240	24	0%	N/A	N/A	0.00	9	0%	N/A	N/A	0.00
Technetium-99	101	27%	5100.00	8.64	141.14	16	6%	44.10	44.10	4.36
Uranium-234	46	83%	7.91	0.05	1.04	11	64%	12.40	0.05	1.76
Uranium-235	94	31%	0.19	0.03	0.02	15	40%	0.07	0.02	0.02
Uranium-238	102	86%	26.60	0.04	0.82	16	75%	56.30	0.06	3.86

Table 4.1. Screening of Soil COPCs. Source codes for ESVs are as follows: "Nutrient", compound is macronutrient, assumed to be non-toxic; "EcoSSL", Ecological Soil Screening Level;"Dutch", soil screening levels from the Netherlands;"EPA V", screening values produ ced by EPA Region V. "Max SQ" and "Mean SQ" are maximum and mean concentrations divided by ESV.

Parameter	Max. Detection	Mean	ESV	Source	Max. SQ	Mean SQ	Retained?	Rationale
Metals, mg/kg								
Calcium	250000.0	41019.5		Nutrient	0.0	0.0	No	Nutrient
Chromium Total	280.0	19.4	26.0	EcoSSL	**10.8**	0.7	**Yes**	
Copper	1800.0	36.3	40.0	Dutch	**45.0**	0.9	**Yes**	
Mercury	3.4	0.2	2.2	Dutch	**1.5**	0.1	**Yes**	
Nickel	300.0	24.5	38.0	Dutch	**7.9**	0.6	**Yes**	
Potassium	8000.0	1787.2		Nutrient	0.0	0.0	No	Nutrient
Selenium	4.1	0.8	0.8	Dutch	**5.1**	1.0	**Yes**	
PCB/Pesticides, ug/kg								
Aroclor-1254 (PCB-1254)	540.0	35.1	0.33	EPA V	**1626.5**	**105.6**	**Yes**	
Aroclor-1260 (PCB-1260)	560.0	39.8	0.33	EPA V	**1686.7**	**120.0**	**Yes**	
Total PCBs	850.0	74.9	0.33	EPA V	**2560.2**	**225.6**	**Yes**	
4,4'-DDT	25.0	2.0	170.00	EPA V	0.1	0.0	No	SQ <1.0
Endosulfan II	4.2	1.0	119.27	EPA V	0.0	0.0	No	SQ <1.0
Endrin	21.0	1.4	10.10	EPA V	**2.1**	0.1	No	See Text
SVOC, ug/kg								
Acenaphthene	380.0	186.8	682.00	EPA V	0.6	0.3	No	SQ <1.0
Anthracene	1100.0	212.4	1480.00	EPA V	0.7	0.1	No	SQ <1.0
Benzo(a)anthracene	6400.0	337.8	5200.00	EPA V	**1.2**	0.1	**Yes**	
Benzo(a)pyrene	6600.0	368.3	1520.00	EPA V	**4.3**	0.2	**Yes**	
Benzo(b)fluoranthene	7800.0	505.5	5980.00	EPA V	**1.3**	0.1	**Yes**	
Benzo(k)fluoranthene	3200.0	283.2	148000.0	EPA V	0.0	0.0	No	SQ <1.0
bis(2-Ethylhexyl)phthalate	4700.0	263.8	925.00	EPA V	**5.1**	0.3	**Yes**	<5% ESV
Butyl benzylphthalate	220.0	205.8	238.89	EPA V	0.9	0.9	No	SQ <1.0
Carbazole	910.0	197.4	NV				No	SQ <1.0
Chrysene	8100.0	407.2	4730.00	EPA V	**1.7**	0.1	**Yes**	
Dibenz(a,h)anthracene	440.0	216.5	18400.00	EPA V	0.0	0.0	No	SQ <1.0
Di-n-butylphthalate	4300.0	306.5	150.00	EPA V	**28.7**	**2.0**	**Yes**	
Di-n-octyl phthalate	350.0	217.2	709000.00	EPA V	0.0	0.0	No	SQ <1.0
Fluoranthene	8800.0	489.0	122000.00	EPA V	0.1	0.0	No	SQ <1.0
Fluorene	530.0	193.4	122000.00	EPA V	0.0	0.0	No	SQ <1.0
Indeno(1,2,3-cd)pyrene	5800.0	386.7	109000.00	EPA V	0.1	0.0	No	SQ <1.0
Isophorone	200.0	217.2	139000.00	EPA V	0.0	0.0	No	SQ <1.0
Naphthalene	100.0	200.9	99.40	EPA V	1.0	**2.0**	No	SQ <1.0
Pyrene	38000.0	1438.9	78500.00	EPA V	0.5	0.0	No	SQ <1.0
VOC, ug/kg								
Tetrachloroethene	34.0	3.5	9920.00	EPA V	0.0	0.0	No	SQ <1.0

Table 4.2. Screening of Sediment COPCs. Source codes for ESVs are as follows: "Nutrient", compound is macronutrient, assumed to be non-toxic; "TEC", threshold effects concentration;"Dutch", sediment screening levels from the Netherlands;"EPA V", screening values prod uced by EPA Region V. "Max SQ" and "Mean SQ" are maximum and mean concentrations divided by ESV.

Parameter	Max. Detection	Mean	ESV	Source	Max. SQ	Mean SQ	Retained?	Rationale
Metals, mg/kg								
Calcium	22,000.0	8591.9	NV	Nutrient			No	Nutrient
Chromium Total	48.0	16.1	43.4	TEC	**1.1**	0.4	No	SQ about 1.0
Copper	110.0	23.0	31.6	TEC	**3.5**	0.7	Yes	
Mercury	1.1	0.1	0.2	TEC	**6.1**	0.6	Yes	
Nickel	48.0	14.6	22.7	TEC	**2.1**	0.6	Yes	
Potassium	1,200.0	579.4	NV	Nutrient			No	Nutrient
Selenium	2.6	0.8	2.9	Dutch	0.9	0.3	No	SQ <1.0
PCB/Pesticides, ug/.kg								
Aroclor-1260 (PCB-1260)	59.0	27.5	59.8	TEC	1.0	0.5	No	SQ <1.0
Endrin	2.9	1.4	10.0	EPA SQC	0.3	0.1	No	SQ <1.0
SVOC, ug/kg								
Acenaphthene	580.0	271.4	6.7	EPA V	**86.6**	**40.5**	Yes	
Anthracene	2,400.0	387.8	60.0	TEC	**40.0**	**6.5**	Yes	
Benzo(a)anthracene	20,000.0	1445.1	110.0	EPA V	**181.8**	**13.1**	Yes	
Benzo(a)pyrene	26,000.0	1849.9	150.0	TEC	**173.3**	**12.3**	Yes	
Benzo(b)fluoranthene	48,000.0	3350.9	10400.0	EPA V	**4.6**	0.3	Yes	
Benzo(k)fluoranthene	17,000.0	1236.8	240.0	EPA V	**70.8**	**5.2**	Yes	
bis(2-Ethylhexyl)phthalate	3,600.0	450.0	182.0	EPA V	**19.8**	**2.5**	Yes	
Carbazole	3,500.0	423.4	NV				No	No ESV
Chrysene	26,000.0	1875.5	170.0	TEC	**152.9**	**11.0**	Yes	
Dibenz(a,h)anthracene	4,700.0	541.9	33.0	TEC	**142.4**	**16.4**	Yes	
Di-n-butylphthalate	2,100.0	379.4	110.5	EPA V	**19.0**	**3.4**	Yes	
Fluoranthene	37,000.0	2675.3	420.0	TEC	**88.1**	**6.4**	Yes	
Fluorene	970.0	296.3	77.4	TEC	**12.5**	**3.8**	Yes	
Indeno(1,2,3-cd)pyrene	17,000.0	1266.3	200.0	EPA V	**85.0**	**6.3**	Yes	
Naphthalene	250.0	263.8	180.0	TEC	**1.4**	**1.5**	Yes	
Pyrene	100,000.0	6666.6	195.0	TEC	**512.8**	**34.2**	Yes	

Table 4.2 continued								
VOC, ug/kg								
2-Butanone (Methyl Ethyl Ketone)	14.0	8.3	137.0	EPA V	0.1	0.1	0.0	SQ ⊲.0
cis-1,2-Dichloroethene	28.0	5.6	654.0	EPA V	0.0	0.0	0.0	SQ ⊲.0
Tetrachloroethene	7.3	4.3	195.8	EPA V	0.0	0.0	0.0	SQ ⊲.0
Toluene	20.0	5.3	1220.0	EPA V	0.0	0.0	0.0	SQ ⊲.0
trans-1,2-Dichloroethene	7.2	4.2	208.9	EPA V	0.0	0.0	0.0	SQ ⊲.0
Trichloroethene	11.0	4.2	179.6	EPA V	0.1	0.0	0.0	SQ ⊲.0
Vinyl chloride	22.0	8.8	202.0	EPA V	0.1	0.0	0.0	SQ ⊲.0

Table 4.3. Screening of COPCs in Water. Source codes for ESVs are as follows: "Nutrient", compound is macronutrient, assumed to be non-toxic;"CSW", national chronic surface water criterion;"Missouri", chronic surface water from Missouri, "EPA V", screening values produced by EPA Region V. "Max SQ" and "Mean SQ" are maximum and mean concentrations divided by ESV. Hardness-based criteria estimated at 250 mg/l as $CaCO_3$.

Parameter	Max. Detection	Mean Conc.	ESV	Source	Max SQ	Mean SQ	Retained?	Rationale
Metal, ug/L								
Aluminum	19000.0	2602.5	87	CSW	**218.39**	**29.91**	Yes	See Text
Arsenic	11.0	5.8	20	Missouri	0.55	0.29	No	SQ <1.0
Barium	630.0	172.4	220	EPA V	**2.86**	0.78	Yes	SQ <1.0
Calcium	66000.0	52125.0	NA	Nutrient			No	SQ <1.0
Chromium Total	26.0	5.0	157	Missouri	0.17	0.03	No	SQ <1.0
Cobalt	17.0	3.0	24	EPA V	0.71	0.13	No	SQ <1.0
Copper	55.0	11.3	16	Missouri	**3.44**	0.70	Yes	SQ <1.0
Iron	23000.0	3098.8	1000	CSW	**23.00**	**3.10**	Yes	SQ <1.0
Lead	68.0	9.8	7	CSW	**9.71**	**1.40**	Yes	SQ <1.0
Magnesium	40000.0	31500.0	NA	Nutrient			No	SQ <1.0
Manganese	1300.0	203.6	4460	Michigan	0.29	0.05	No	SQ <1.0
Nickel	31.0	6.1	113	Missouri	0.27	0.05	No	SQ <1.0
Potassium	5000.0	2512.5	NA	Nutrient			No	SQ <1.0
Sodium	11000.0	9487.5	NA	Nutrient			No	SQ <1.0
Vanadium	45.0	10.0	12	EPA V	**3.75**	0.83	Yes	SQ <1.0
Zinc	350.0	49.3	233	Missouri	**1.50**	0.21	Yes	SQ <1.0
SVOC, ug/L								
Fluoranthene	1.0	4.4	8	EPA V	0.12	0.54	No	SQ <1.0
VOC,ug/L								
cis-1,2-Dichloroethene	4.4	2.5	78	EPA V*	0.06	0.03	No	SQ <1.0
Methylene chloride	2.6	2.3	430	EPA V	0.01	0.01	No	SQ <1.0
Tetrachloroethene	2.1	2.0	9	EPA V	0.24	0.23	No	SQ <1.0
Trichloroethene	0.8	2.1	47	EPA V	0.02	0.04	No	SQ <1.0

* Used ESV for trans-1,2-DCE

Table 4.4. Screening of COPCs in Groundwater. Source codes for ESVs are as follows: "Nutrient", compound is macronutrient, assumed to be non-toxic;"CSW", national chronic surface water criterion;"Missouri", chronic surface water from Missouri, "EPA V", screening val ues produced by EPA Region V. "Max SQ" and "Mean SQ" are maximum and mean concentrations divided by ESV. Hardness-based criteria estimated at 250 mg/l as $CaCO_3$.

Parameter	Max. Detection	Mean Conc.	ESV	Source	Max SQ	Mean SQ	Retained?	Rationale
Metals, ug/L								
Aluminum	16000	982	87	CSW	**183.9**	**11.3**	Yes	
Nickel	150	13	113	Missouri	1.3	0.1	No	SQ about 1.0
Nickel (Dissolved)	48	12	113	Missouri	0.4	0.1	No	SQ <1.0
Potassium	69000	3469		Nutrient			No	Nutrient
Potassium (Dissolved)	11000	2600		Nutrient			No	Nutrient
Zinc	650	49	233	Missouri	**2.8**	0.2	Yes	
Zinc (Dissolved)	20	9	233	Missouri	0.1	0.0	No	SQ <1.0
VOC, ug/L								
1,1,1-Trichloroethane	85	43	88	EPA V	1.0	0.5	No	SQ <1.0
1,1,2-Trichloroethane	8	41	650	EPA V	0.0	0.1	No	SQ <1.0
1,1-Dichloroethane	610	73	47	EPA V	**13.0**	**1.6**	Yes	
1,1-Dichloroethene	5100	147	78	EPA V	**65.4**	**1.9**	Yes	
1,2-Dichloroethane	9	41	190	EPA V	0.0	0.2	No	SQ <1.0
Chloroform (Trichloromethane)	7	41	79	EPA V	0.1	0.5	No	SQ <1.0
cis-1,2-Dichloroethene	19000	560	970	EPA V*	**19.6**	0.6	Yes	
Tetrachloroethene	200000	3472	45	EPA V	**4444.4**	**77.1**	Yes	
trans-1,2-Dichloroethene	700	54	310	EPA V	**2.3**	0.2	Yes	
Trichloroethene	18000	964	47	EPA V	**383.0**	**20.5**	Yes	
Vinyl chloride	1000	98	930	EPA V	1.1	0.1	No	SQ about 1.0

* Used ESV for trans-1,2-DCE

Table 4.5. Parameters for food chain models. " WW", "DW", and "BW" refer to wet weight, dry weight, and body weight. Parameters from EPA (1993a) except for bat, which were obtained from Baron et al. 1999.

Species	Body Weight, Kg.	Ecological guild	Contaminated Prey	Feeding Rate (kg WW / kw BW-day)	Drinking Rate (kg water / kw BW-day)	Soil Ingestion (kg DW / kg BW-day)
Brown Bat	0.007	Insectivore	Aquatic Insects	0.333	0.16	0.000
Tree Swallow	0.02	Insectivore	Aquatic Insects	0.755	0.23	0.000
Short-tailed Shrew	0.015	Primary Predator	Worms	0.53	0.223	0.009
Woodcock	0.2	Primary Predator	Worms	0.77	0.10	0.013
Red Fox	4.035	Top predator	Small mammals	0.1	0.085	0.001
Red-tailed hawk	1.2	Top predator	Small mammals	0.1	0.057	0.001
Mink	0.97	Piscivore	Fish	0.156	0.079	0.002
Great Blue Heron	2.2	Piscivore	Fish	0.18	0.045	0.002

Table 4.6. Toxicity Reference Values (TRV) and sources for food chain models. These TRVs are NOAELS (no observed adverse effects levels) . Mammal and bird TRVs for benzo(a)pyrene also applied to other high molecular weight PAHs (benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene), and pyrene (birds only).

Constituent	TRV for Mammals			TRV for Birds		
	Test Species	TRV, mg/kg/d	Source	Test Species	TRV, mg/kg/d	Source
Chromium	Rat	2.74E+03	a	Several	2.66E+00	c
Copper	Mink	1.17E+01	a	Chick (1-day old)	4.70E+01	a
Mercury	Mink	1.00E+00	a	Japanese quail	4.50E-01	a
Methylmercury	Mink	1.50E-01	a	Duck	2.30E-02	d
Nickel	Rat	4.00E+01	a	Mallard duckling	7.74E+01	a
Selenium	Rat	2.00E-01	a	Mallard duck	5.00E-01	a
Benzo(a)pyrene*	Mouse	1.00E+00	a	Chicken	4.00E+01	e
Bis(2-ethylhexyl) phthalate	Mouse	1.83E+01	a	Ringed dove	1.10E+00	a
Butylbenzyl phthalate	Rat	1.59E+02	b	Based on DNBP	1.10E-01	a
Diethylphthalate	Mouse	4.58E+03	a	Based on DNBP	1.10E-01	a
Di-n-butylphthalate	Mouse	5.50E+02	a	Ringed Dove	1.10E-01	a
Fluoranthene	Mouse	1.32E+01	b	Chicken	4.00E+01	e
Fluorene	Mouse	1.25E+01	b	Mallard duck	1.00E+03	f
Naphthalene	Rat	1.00E+00	b	Mallard duck	1.00E+03	f
Pyrene	Mouse	7.50E+01	b	Chicken	4.00E+01	e
Aroclor 1254	Oldfield mouse	6.80E-02	a	Ring-necked pheasant	1.80E-01	a
Endrin	Mouse	9.20E-02	a	Screech Owl	1.00E-02	a
2,3,7,8-TCDD TEQ	Rat	1.00E-06	a	pheasant	1.40E-05	a

a. Sample et al. 1996
b. IRIS EPA 1998
c. EPA 2005
d. EPA 1995
e. Rigdon and Neal 1963
f. Patton and Dieter 1980

Table 4.7. Estimation of chemical concentrations in terrestrial food chain. See text for methods used to estimate prey concentrations.

Constituent	Soil Maximum	Soil Mean	Worm Maximum	Worm Mean	Small Mammal Maximum	Small Mammal Mean
Chromium	280	19.4	13.7	0.95	3.63	0.51
Copper	1,800	36.29	6.2	2.20	5.69	3.24
Mercury	3.4	0.2	0.3	0.10	0.05	0.003
Nickel	300	24.5	50.9	4.16	2.79	0.87
Selenium	4.1	0.83	0.4	0.13	0.28	0.15
PCB	0.85	0.08	0.5	0.02	0.09	0.01
TCDD TEQ	5.49E-06	1.2E-07	3.3E-06	3.6E-08	1.0E-06	1.6E-08
Benzo(a)anthracene	6.40	0.34	0.6	0.03	0.06	0.003
Benzo(a)pyrene	6.60	0.37	0.7	0.04	0.07	0.004
Benzo(b)fluoranthene	7.80	0.51	0.8	0.05	0.08	0.005
Benzo(k)fluoranthene	3.20	0.28	0.3	0.03	0.03	0.003
Chrysene	8.10	0.41	0.8	0.04	0.08	0.004
Dibenz(a,h)anthracene	0.80	0.22	0.1	0.02	0.01	0.002
Fluoranthene	8.80	0.49	0.9	0.05	0.09	0.005
Indeno(1,2,3-cd)pyrene	5.80	0.39	0.6	0.04	0.06	0.004
Pyrene	38.00	1.44	3.8	0.14	0.38	0.014
bis(2-Ethylhexyl)phthalate	4.70	0.26	0.5	0.03	0.05	0.003
Butyl benzylphthalate	0.80	0.21	0.1	0.02	0.01	0.002
Di-n-butylphthalate	4.30	0.31	0.4	0.03	0.04	0.003
Di-n-octyl phthalate	0.80	0.22	0.1	0.02	0.01	0.002

Notes: Units in mg/kg, dry weight for soil and wet weight for biota

Table 4.8 Estimation of COPC concentrations in aquatic benthos. See text for methods used to estimate concentrations in benthos.

Constituent	Units		Maximum Value in Sediments		Mean Value in Sediments		Predicted Max. in Benthos		Predicted Mean in Benthos
Chromium	mg/kg		48		16.1		1.7		1.1
Copper	mg/kg		110		7.8		11.3		5.4
Mercury	mg/kg		1.1		0.11		0.055		0.03
Nickel	mg/kg		48		14.6		1.5		2.4
Endrin	mg/kg		2.9E-03		1.4E-03		5.2E-03		2.5E-03
PCB	mg/kg		5.9E-02		2.8E-02		6.5E-02		3.0E-02
Benzo(a)anthracene	mg/kg		20.0		1.4		5.8		0.4
Benzo(a)pyrene	mg/kg		26.0		1.8		7.5		0.5
Benzo(b)fluoranthene	mg/kg		48.0		3.4		13.9		1.0
Benzo(k)fluoranthene	mg/kg		17.0		1.2		4.9		0.4
Chrysene	mg/kg		26.0		1.9		7.5		0.5
Dibenz(a,h)anthracene	mg/kg		4.7		0.5		1.4		0.2
Fluoranthene	mg/kg		37.0		2.7		10.7		0.8
Indeno(1,2,3-cd)pyrene	mg/kg		17.0		1.3		4.9		0.4
Pyrene	mg/kg		100.0		6.7		29.0		1.9
bis(2-Ethylhexyl)phthalate	mg/kg		3.6		0.5		1.0		0.1
Di-n-butylphthalate	mg/kg		2.1		0.4		0.6		0.1

Notes: Units in mg/kg, dry weight for soil and wet weight for biota

Table 4.9. Assessment of risk to consumers of soil invertebrates: shrew and woodcock

Constituent	Toxicity Reference Value (mg/kg/day)	Feeding Rate (mg/kg/day)	Maximum Predicted Conc. In Biota	Mean Predicted Conc. In Biota	Max. Dose (mg/kg/day)	Mean Dose (mg/kg/day)	Max. SQ	Mean SQ
	Shrew							
Chromium	2740.0	0.53	13.71	0.95	9.8	0.97	0.0	0.0
Copper	11.7	0.53	6.18	2.20	19.5	2.04	**1.7**	0.2
Mercury	1.0	0.53	0.26	0.10	0.2	0.06	0.2	0.1
Nickel	40.0	0.53	50.88	4.16	29.7	2.79	0.7	0.1
Selenium	0.2	0.53	0.42	0.13	0.3	0.09	**1.3**	0.4
PCB	0.1	0.53	0.53	0.02	0.3	0.01	**4.2**	0.2
TCDD TEQ	1.0E-06	0.53	3.3E-06	3.6E-08	1.80E-06	2.2E-08	**1.8**	0.0
Benzo(a)anthracene	1.0	0.53	0.64	0.03	0.4	0.03	0.4	0.0
Benzo(a)pyrene	1.0	0.53	0.66	0.04	0.4	0.03	0.4	0.0
Benzo(b)fluoranthene	1.0	0.53	0.78	0.05	0.5	0.04	0.5	0.0
Benzo(k)fluoranthene	1.0	0.53	0.32	0.03	0.2	0.02	0.2	0.0
Chrysene	1.0	0.53	0.81	0.04	0.5	0.03	0.5	0.0
Dibenz(a,h)anthracene	1.0	0.53	0.08	0.02	0.0	0.02	0.0	0.0
Fluoranthene	13.2	0.53	0.88	0.05	0.5	0.04	0.0	0.0
Indeno(1,2,3-cd)pyrene	1.0	0.53	0.58	0.04	0.4	0.03	0.4	0.0
Pyrene	75.0	0.53	3.80	0.14	2.4	0.11	0.0	0.0
bis(2-Ethylhexyl)phthalate	18.3	0.53	0.47	0.03	0.3	0.02	0.0	0.0
Butyl benzylphthalate	159.0	0.53	0.08	0.02	0.0	0.02	0.0	0.0
Diethyl phthalate	4580.0	0.53	0.08	0.02	0.0	0.02	0.0	0.0
Di-n-butylphthalate	550.0	0.53	0.43	0.03	0.3	0.02	0.0	0.0
Di-n-octyl phthalate	13.0	0.53	0.08	0.02	0.0	0.02	0.0	0.0

Table 4.9. Assessment of risk to consumers of soil invertebrates: shrew and woodcock

Constituent	Toxicity Reference Value (mg/kg/day)	Feeding Rate (mg/kg/day)	Maximum Predicted Conc. In Biota	Mean Predicted Conc. In Biota	Max. Dose (mg/kg/day)	Mean Dose (mg/kg/day)	Max. SQ	Mean SQ
	Woodcock							
Chromium	2.7	0.77	13.7	0.9	14.2	1.20	**5.3**	0.4
Copper	47.0	0.77	6.2	2.2	28.2	2.57	0.6	0.1
Mercury	0.5	0.77	0.3	0.1	0.2	0.08	0.5	0.2
Nickel	77.4	0.77	50.9	4.2	43.1	3.79	0.6	0.0
Selenium	0.5	0.77	0.4	0.1	0.4	0.12	0.7	0.2
PCB	0.2	0.77	0.5	0.0	0.4	0.02	**2.3**	0.1
TCDD TEQ	1.4E-05	0.77	3.3E-06	3.6E-08	2.6E-06	3.1E-08	0.2	0.0
Benzo(a)anthracene	40.0	0.77	0.6	0.0	0.6	0.03	0.0	0.0
Benzo(a)pyrene	40.0	0.77	0.7	0.0	0.6	0.04	0.0	0.0
Benzo(b)fluoranthene	40.0	0.77	0.8	0.1	0.7	0.05	0.0	0.0
Benzo(k)fluoranthene	40.0	0.77	0.3	0.0	0.3	0.03	0.0	0.0
Chrysene	40.0	0.77	0.8	0.0	0.7	0.04	0.0	0.0
Dibenz(a,h)anthracene	40.0	0.77	0.1	0.0	0.1	0.02	0.0	0.0
Fluoranthene	40.0	0.77	0.9	0.0	0.8	0.05	0.0	0.0
Indeno(1,2,3-cd)pyrene	40.0	0.77	0.6	0.0	0.5	0.04	0.0	0.0
Pyrene	40.0	0.77	3.8	0.1	3.4	0.15	0.1	0.0
bis(2-Ethylhexyl)phthalate	1.1	0.77	0.5	0.0	0.4	0.03	0.4	0.0
Butyl benzylphthalate	0.1	0.77	0.1	0.0	0.1	0.02	0.7	0.2
Diethyl phthalate	0.1	0.77	0.1	0.0	0.1	0.02	0.7	0.2
Di-n-butylphthalate	0.1	0.77	0.4	0.0	0.4	0.03	**3.5**	0.3
Di-n-octyl phthalate	0.1	0.77	0.1	0.0	0.1	0.02	0.7	0.2

Table 4.10. Assessment of risk to consumers of adult aquatic insects: brown bat and tree swallow

Constituent	Toxicity Reference Value (mg/kg/day)	Feeding Rate (mg/kg/day)	Maximum Predicted Conc. in Biota	Mean Predicted Conc. in Biota	Max. Dose (mg/kg/day)	Mean Dose (mg/kg/day)	Max SQ	Mean SQ
	Brown Bat							
Chromium	2740.00	0.33	1.66	1.12	0.55	0.37	0.00	0.00
Copper	11.71	0.33	11.34	5.43	3.75	1.79	0.32	0.15
Mercury	0.15	0.33	0.06	0.03	0.02	0.01	0.12	0.06
Nickel	40.00	0.33	1.46	2.42	0.49	0.80	0.01	0.02
Endrin	0.09	0.33	5.2E-03	2.5E-03	0.00	0.00	0.02	0.01
PCB	0.07	0.33	0.06	0.03	0.02	0.01	0.31	0.15
Benzo(a)anthracene	1.00	0.33	5.80	0.42	1.91	0.14	**1.91**	0.14
Benzo(a)pyrene	1.00	0.33	7.54	0.54	2.49	0.18	**2.49**	0.18
Benzo(b)fluoranthene	1.00	0.33	13.92	0.97	4.59	0.32	**4.59**	0.32
Benzo(k)fluoranthene	1.00	0.33	4.93	0.36	1.63	0.12	**1.63**	0.12
Chrysene	1.00	0.33	7.54	0.54	2.49	0.18	**2.49**	0.18
Dibenz(a,h)anthracene	1.00	0.33	1.36	0.16	0.45	0.05	0.45	0.05
Fluoranthene	13.20	0.33	10.73	0.78	3.54	0.26	0.27	0.02
Indeno(1,2,3-cd)pyrene	1.00	0.33	4.93	0.37	1.63	0.12	**1.63**	0.12
Pyrene	75.00	0.33	29.00	1.93	9.57	0.64	0.13	0.01
bis(2-Ethylhexyl)phthalate	18.30	0.33	1.04	0.13	0.34	0.04	0.02	0.00
Di-n-butylphthalate	550.00	0.33	0.61	0.11	0.20	0.04	0.00	0.00

Table 4.10. Assessment of risk to consumers of adult aquatic insects: brown bat and tree swallow

Constituent	Toxicity Reference Value (mg/kg/day)	Feeding Rate (mg/kg/day)	Maximum Predicted Conc. in Biota	Mean Predicted Conc. in Biota	Max. Dose (mg/kg/day)	Mean Dose (mg/kg/day)	Max SQ	Mean SQ
	Tree Swallow							
Chromium	2.66	0.76	1.66	1.12	1.26	0.84	0.5	0.3
Copper	46.97	0.76	11.34	5.43	8.57	4.10	0.2	0.1
Mercury	0.02	0.76	0.06	0.03	0.04	0.02	**1.8**	0.9
Nickel	77.40	0.76	1.46	2.42	1.11	1.82	0.0	0.0
Endrin	0.01	0.76	0.01	0.00	0.00	0.00	0.4	0.2
PCB	0.18	0.76	0.06	0.03	0.05	0.02	0.3	0.1
Benzo(a)anthracene	40.00	0.76	5.80	0.42	4.38	0.32	0.1	0.0
Benzo(a)pyrene	40.00	0.76	7.54	0.54	5.69	0.41	0.1	0.0
Benzo(b)fluoranthene	40.00	0.76	13.92	0.97	10.51	0.73	0.3	0.0
Benzo(k)fluoranthene	40.00	0.76	4.93	0.36	3.72	0.27	0.1	0.0
Chrysene	40.00	0.76	7.54	0.54	5.69	0.41	0.1	0.0
Dibenz(a,h)anthracene	40.00	0.76	1.36	0.16	1.03	0.12	0.0	0.0
Fluoranthene	40.00	0.76	10.73	0.78	8.10	0.59	0.2	0.0
Indeno(1,2,3-cd)pyrene	40.00	0.76	4.93	0.37	3.72	0.28	0.1	0.0
Pyrene	40.00	0.76	29.00	1.93	21.90	1.46	0.5	0.0
bis(2-Ethylhexyl)phthalate	1.10	0.76	1.04	0.13	0.79	0.10	0.7	0.1
Butyl benzylphthalate	0.11	0.76	0.19	0.08	0.14	0.06	**1.3**	0.6
Diethyl phthalate	0.11	0.76	0.19	0.08	0.14	0.06	**1.3**	0.6
Di-n-butylphthalate	0.11	0.76	0.61	0.11	0.46	0.08	**4.2**	0.8

Table 4.11. Assessment of risk to top predators: fox and red-tailed hawk

Constituent	Toxicity Ref. Value (mg/kg/day)	Feeding Rate (mg/kg/day)	Max.Conc. Predicted in Biota	Mean Conc. Predicted In Biota	Max. Dose (mg/kg/day)	Mean Dose (mg/kg/day)	Max. SQ	Mean SQ
	Fox							
Chromium	2740.0	0.1	3.63	0.51	0.36	0.05	0.0	0.0
Copper	11.7	0.1	5.69	3.24	0.57	0.32	0.0	0.0
Mercury	1.0	0.1	0.05	0.00	0.00	0.00	0.0	0.0
Nickel	40.0	0.1	2.79	0.87	0.28	0.09	0.0	0.0
Selenium	0.2	0.1	0.28	0.15	0.03	0.02	0.1	0.1
PCB	0.1	0.1	0.09	0.01	0.01	0.00	0.1	0.0
TCDD TEQ	1.0E-06	0.1	0.00	0.00	0.00	0.00	0.1	0.0
Benzo(a)anthracene	1.0	0.1	0.06	0.00	0.01	0.00	0.0	0.0
Benzo(a)pyrene	1.0	0.1	0.07	0.00	0.01	0.00	0.0	0.0
Benzo(b)fluoranthene	1.0	0.1	0.08	0.01	0.01	0.00	0.0	0.0
Benzo(k)fluoranthene	1.0	0.1	0.03	0.00	0.00	0.00	0.0	0.0
Chrysene	1.0	0.1	0.08	0.00	0.01	0.00	0.0	0.0
Dibenz(a,h)anthracene	1.0	0.1	0.01	0.00	0.00	0.00	0.0	0.0
Fluoranthene	13.2	0.1	0.09	0.00	0.01	0.00	0.0	0.0
Indeno(1,2,3-cd)pyrene	1.0	0.1	0.06	0.00	0.01	0.00	0.0	0.0
Pyrene	75.0	0.1	0.38	0.01	0.04	0.00	0.0	0.0
bis(2-Ethylhexyl)phthalate	18.3	0.1	0.05	0.00	0.00	0.00	0.0	0.0
Butyl benzylphthalate	159.0	0.1	0.01	0.00	0.00	0.00	0.0	0.0
Diethyl phthalate	4580.0	0.1	0.01	0.00	0.00	0.00	0.0	0.0
Di-n-butylphthalate	550.0	0.1	0.04	0.00	0.00	0.00	0.0	0.0
	Redtail Hawk							
Chromium	2.7	0.1	3.6	0.5	0.36	0.05	0.1	0.0
Copper	47.0	0.1	5.7	3.2	0.57	0.32	0.0	0.0
Mercury	0.5	0.1	0.0	0.0	0.00	0.00	0.0	0.0
Nickel	77.4	0.1	2.8	0.9	0.28	0.09	0.0	0.0
Selenium	0.5	0.1	0.3	0.2	0.03	0.02	0.1	0.0
PCB	0.2	0.1	0.1	0.0	0.01	0.00	0.0	0.0
TCDD TEQ	1.4E-05	0.1	0.0	0.0	0.00	0.00	0.0	0.0
Benzo(a)anthracene	40.0	0.1	0.1	0.0	0.01	0.00	0.0	0.0
Benzo(a)pyrene	40.0	0.1	0.1	0.0	0.01	0.00	0.0	0.0
Benzo(b)fluoranthene	40.0	0.1	0.1	0.0	0.01	0.00	0.0	0.0
Benzo(k)fluoranthene	40.0	0.1	0.0	0.0	0.00	0.00	0.0	0.0
Chrysene	40.0	0.1	0.1	0.0	0.01	0.00	0.0	0.0
Dibenz(a,h)anthracene	40.0	0.1	0.0	0.0	0.00	0.00	0.0	0.0
Fluoranthene	40.0	0.1	0.1	0.0	0.01	0.00	0.0	0.0
Indeno(1,2,3-cd)pyrene	40.0	0.1	0.1	0.0	0.01	0.00	0.0	0.0
Pyrene	40.0	0.1	0.4	0.0	0.04	0.00	0.0	0.0
bis(2-Ethylhexyl)phthalate	1.1	0.1	0.0	0.0	0.00	0.00	0.0	0.0
Butyl benzylphthalate	0.1	0.1	0.0	0.0	0.00	0.00	0.0	0.0
Diethyl phthalate	0.1	0.1	0.0	0.0	0.00	0.00	0.0	0.0
Di-n-butylphthalate	0.1	0.1	0.0	0.0	0.00	0.00	0.0	0.0

Table 4.12. Assessment of risk to piscivorous wildlife: mink and Great Blue Heron

Constituent	Toxicity Reference Value, (mg/kg/day)		Feeding Rate, (mg/kg/day)		Max. Conc. Predicted in Fish		Mean Conc. Pedicted in Fish		Max. Dose, (mg/kg/day)		Mean. Dose, (mg/kg/day)		Max. SQ		Mean SQ
	Mink														
Methylmercury	0.15		0.16		0.07		0.03		0.01		0.01		0.07		0.03
Endrin	0.09		0.16		0.02		0.01		0.002		0.001		0.03		0.01
PCBs	0.07		0.16		0.19		0.09		0.030		0.014		0.45		0.21
Great Blue Heron															
Methylmercury	0.03		0.18		0.07		0.03		0.01		0.01		0.38		0.18
Endrin	0.01		0.18		0.02		0.01		0.003		0.001		0.28		0.13
PCBs	0.18		0.18		0.19		0.09		0.04		0.02		0.20		0.09

Table 4.13. Screening of Radionuclide COPCs in Aquatic Environments. All concentrations in pCi/g or pCi/L. BCG are biota concentration guides as developed by DOE (2002). Max and Mean quotients are the sum of quotients for sediment and surface water with the maximum and mean concentrations, respectively. "Est." refers to water column concentrations that were estimated with partitioning theory and measured sediment concentrations. See text.

	Sediment, pCi/g			Surface Water, pCi/L				
Parameter	Max. Detection	Mean Conc.	BCG	Max. Detection	Mean	BCG	Max Quotient	Mean Quotietn
Actinium-228	4.63	0.73	NV					
Bismuth-212	7.09	0.44	NV					
Cesium-137	0.20	0.03	3.13E+03	0.40 est.	0.06 est.	4.26E+01	0.009	0.001
Lead-212	4.89	1.03	NV					
Neptunium-237 (method 713R)	60.30	3.77	NV					
Neptunium-237 (method 714R)	38.50	9.63	NV					
Plutonium 239/240	N/A	0.00	6E+03					
Protactinium-234	95.80	12.88	NV					
Technetium-99	284.00	37.75	4.22E+04	0.00	0.47	6.67E+05	0.007	0.001
Thallium-208	1.73	0.23	NV					
Thorium-232	5.07	1.59	1E+03	0.00	0.01	2.78E+02	0.005	0.002
Thorium-234	86.90	12.03	NV	0.00	0.01			
Uranium-234	937.00	201.14	5.27E+03	1.49	1.49	2.02E+02	0.185	0.046
Uranium-235 (method 713R)	37.30	4.10	3.73E+03					
Uranium-235 (method 714R)	41.70	4.18	3.73E+03	0.14	0.07	2.18E+02	0.012	0.001
Uranium-238	84.60	10.39	2.49E+03	4.77	0.94	2.23E+02	0.055	0.008
Sum of Quotients							0.274	0.059
Screening Decision							Site Passes	Site Passes

Table 4.14. Screening of Radionuclide COPCs in Terrestrial Environments. All concentrations in pCi/g or pCi/L. BCG are biota concentration guides as developed by DOE (2002). Max and Mean quotients are the sum of quotients for sediment and surface water with the maximum and mean concentrations, respectively. "Est." refers to water column concentrations that were estimated with partitioning theory and measured sediment concentrations. See text. Quotients > 1.0 are bolded. According to DOE methods, the decision based on the mean quotient is most applicable.

	Soil, pCi/g			Surface Water, pCi/L				
Parameter	Max. Detection	Mean Conc.	BCG	Max. Detection	Mean	BCG	Max Quotient	Mean Quotient
Actinium-228	36.40	1.13	NV					
Bismuth-212	41.60	0.67	NV					
Cesium-137	1.79	0.12	2.08E+01	0.40 est.	0.06 est.	5.99E+05	0.086	0.006
Lead-212	41.20	1.33	NV					
Neptunium-237 (method 713R)	2610.00	48.50	NV					
Neptunium-237 (method 7134)	0.04	0.00	NV					
Plutonium 239/240	0.03	0.00	6.12E+03	0.00	0.00	2.00E+05	0.000	
Protactinium-234	2200.00	49.67	NV					
Technetium-99	17100.00	188.52	4.47E+03	0.00	0.47	1.55E+07	**3.826**	0.042
Thallium-208	12.10	0.38	NV					
Thorium-234	705.00	32.04	NV	0.00	0.01			
Uranium-234	604.00	261.27	5.13E+03	1.49	1.49	4.05E+05	0.118	0.051
Uranium-235 (method 713R)	308.00	11.29	2.84E+03	0.14	0.07	4.19E+05	0.109	0.004
Uranium-235 (method 714R)	23.10	2.50	2.84E+03			4.19E+05		
Uranium-238	74.30	8.55	1.58E+03	4.77	0.94	4.06E+05	0.047	0.005
Sum of Quotients							**4.18675**	0.108
Screening Decision							**Site Fails**	Site Passes

Table 5.1. Summary of Risk Screening. Listed below are COPC/Receptor combinations that could not be dismissed after initial screening. Note that no SQ values > 1.0 were obtained with surface water applied to surface water sp., sediments applied to fish-

	Surface Water COPCs/Fish		Sediment COPCs / Benthos		Sediment COPC / Insectivores		Groundwater COPCs/ Surface Water Sp.		Soil COPCs / Worm Eaters	
	Max SQ	Mean SQ	Max SQ	Mean SQ	Max SQ	Mean SQ	Max SQ	Mean SQ	Max SQ	Mean SQ
Metals										
Aluminum	**218.4**	**29.9**					**183.9**	**11.3**		
Barium	**2.9**	0.8								
Chromium			**1.1**	0.4					**5.3**	0.4
Copper	**3.4**	0.7	**3.5**	0.7					**1.7**	0.2
Iron	**23.0**	3.1								
Lead	**9.7**	1.4			**3.9**	**2.5**				
Mercury			**6.1**	0.6	0.1					
Nickel			**2.1**	0.6	0.0					
Selenium									**1.3**	0.4
Vanadium	**3.8**	0.8								
Zinc	**1.5**	0.2								
PCB/Pesticides/Dioxins										
PCB									**4.2**	0.2
TCDD TEQ									**1.8**	
SVOC										
Acenaphthene			**86.6**	**40.5**						
Anthracene			**40.0**	**6.5**						
Benzo(a)anthracene			**181.8**	**13.1**	**1.9**	0.1				
Benzo(a)pyrene			**173.3**	**12.3**	**2.5**	0.2				
Benzo(b)fluoranthene			**4.6**	0.3	**4.6**	0.3				
Benzo(k)fluoranthene			**70.8**	**5.2**	**1.6**	0.1				
bis(2-Ethylhexyl)phthalate			**19.8**	**2.5**						
Butyl benzylphthalate					**1.3**	0.6				
Chrysene			**152.9**	**11.0**	**2.5**	0.2				
Dibenz(a,h)anthracene			**142.4**	**16.4**						
Diethyl phthalate					**1.3**	0.6				
Di-n-butylphthalate			**19.0**	**3.4**	**4.2**	0.8			**3.5**	0.3
Fluoranthene			**88.1**	**6.4**						
Fluorene			**12.5**	**3.8**						
Indeno(1,2,3-cd)pyrene			**85.0**	**6.3**	**1.6**	0.1				
Naphthalene			**1.4**	**1.5**						
Pyrene			**512.8**	**34.2**						
VOC										
1,1-Dichloroethane							**13.0**	**1.6**		
1,1-Dichloroethene							**65.4**	**1.9**		
cis-1,2-Dichloroethene							**19.6**	0.6		
Tetrachloroethene							**4444.4**	**77.1**		
trans-1,2-Dichloroethene							**2.3**	0.2		
Trichloroethene							**383.0**	**20.5**		
Radionuclides										
Sum of Quotients					0.3	0.1			**4.2**	0.1

Table 5.2. Rescreening of Sediment COPCs vs. Conservative and Less Conservative ESVs. SQ values > 1.0 are bolded. Sources of Conservative ESVs are found in Table 4.2. Least Conservative ESVs are PEC values and Less Conservative ESVs are geomean of TEC and PEC values.

			Screening Against Most Conservative EVS			Screening Against Less Conservative ESV			Screeing Against Least Conservative ESV		
Parameter	95 UCL	Mean	Most Conservative ESV	Max. SQ.	Mean SQ	Less Conservative ESV	95% UCL SQ.	Mean SQ	Least Conservative ESV	95% UCL SQ.	Mean SQ
Metals, mg/kg											
Chromium Total	28	16	43	**1.1**	0.4	69.4	0.4	0.2	111	0.2	0.1
Copper	75	23	32	**3.5**	0.7	68.6	**1.1**	0.3	149	0.5	0.2
Mercury	0.4	0.1	0.2	**6.1**	0.6	0.4	0.9	0.3	1.1	0.4	0.1
Nickel	28	15	23	**2.1**	0.6	33.2	0.8	0.4	48.6	0.6	0.3
SVOC, ug/kg											
Acenaphthene	429	271	7	**86.6**	**40.5**	NA			NA		
Anthracene	986	388	60	**40.0**	**6.5**	225.2	**4.4**	**1.7**	845	**1.2**	0.5
Benzo(a)anthracene	6839	1445	110	**181.8**	**13.1**	339.9	**20.1**	**4.3**	1050	**6.5**	**1.4**
Benzo(a)pyrene	8870	1850	150	**173.3**	**12.3**	466.4	**19.0**	**4.0**	1450	**6.1**	**1.3**
Benzo(b)fluoranthene	16334	3351	10400	**4.6**	0.3	NA			NA		
Benzo(k)fluoranthene	5819	1237	240	**70.8**	**5.2**	NA			NA		
bis(2-Ethylhexyl)phthalate	1368	450	182	**19.8**	**2.5**				NA		
Carbazole	3500	423	NV								
Chrysene	8890	1876	170	**152.9**	**11.0**	468.3	**19.0**	**4.0**	1290	**6.9**	**1.5**
Dibenz(a,h)anthracene	1755	542	33	**142.4**	**16.4**	NA			NA		
Di-n-butylphthalate	892	379	111	**19.0**	**3.4**	NA			NA		
Fluoranthene	12664	2675	420	**88.1**	**6.4**	967.8	**13.1**	**2.8**	2230	**5.7**	**1.2**
Fluorene	531	296	77	**12.5**	**3.8**	203.7	**2.6**	**1.5**	536	1.0	0.6
Indeno(1,2,3-cd)pyrene	5842	1266	200	**85.0**	**6.3**	NA			NA		
Naphthalene	308	264	180	**1.4**	**1.5**	317.8	1.0	0.8	561	0.5	0.5
Pyrene	33797	6667	195	**512.8**	**34.2**	544.4	**62.1**	**12.2**	1520	**22.2**	**4.4**
Total PAH	77157	28461	1610	**47.9**	**17.7**	6058.7	**12.7**	**4.7**	22800	**3.4**	**1.2**

Table 5.3. Rescreening of COPCs in Water. Source codes for ESVs are as follows: "CSW", national chronic surface water criterion; "Missouri", chronic surface water from Missouri, "EPA V", screening values produced by EPA Region V. "Max SQ" and "Mean SQ" are maximum and mean concentrations divided by ESV. Hardness-based criteria estimated at 250 mg/l as $CaCO_3$.

Parameter	Max. wout SW-01	ESV	Source	Max SQ wout SW-01	Retained?	Rationale
Metal, ug/L						
Aluminum	980.0	87	CSW	**11.26**	No	See Text
Barium	140.0	220	EPA V	0.64	No	SQ < 1.0
Copper	10 U	16	Missouri	0.31	No	SQ < 1.0
Iron	1000.0	1000	CSW	1.00	No	SQ =< 1.0
Lead	3 U	7	CSW	0.21	No	SQ < 1.0
Vanadium	10 U	12	EPA V	0.42	No	SQ < 1.0
Zinc	17.0	233	Missouri	0.07	No	SQ < 1.0

Table 5.4. Wells with highest VOC concentrations in groundwater. Concentrations in ug/L.

Rank	cis-1,2-DCE	Well		PCE	Well		TCE	Well
1	19,000	BD-06		200,000	BD-02		18,000	BD-06
2	4,600	BD-08		14,000	FD-07		15,000	NB-72
3	3,700	NB-72		14,000	LF-09		4,000	BD-08
4	2,100	WS-30		3,300	BD-01		3,700	WS-30
5	1,400	FD-04		2,700	BD-03		3,600	NB-35
6	1,100	WS-29		2,600	NB-34		2,800	FD-04
7	920	NB-78		2,600	NB-74		1,900	FD-07
8	880	NB-64		2,500	NB-34		1,900	LF-09
9	870	NB-35		2,400	EP-20		1,900	NB-74
10	800	WS-14		2,200	WS-30		1,900	WS-31
11	770	WS-31		2,100	BD-06		1,800	FD-05
12	730	FD-05		2,100	BD-14		1,800	NB-80
13	600	BD-13		2,000	FD-01		1,400	NB-64
14	550	BP-22A		1,800	BD-08		1,100	BD-13
15	360	NB-74		1,400	BD-04		1,100	PL-04
16	340	BP-17		1,400	NB-54		1,000	BD-14
17	340	PL-04		1400	WS-14		990	BP-22A
18	290	NB-36		1200	NB-73		870	NB-78
19	280	FD-07		1100	BD-13		830	NB-31
20	280	NB-31		1000	FD-04		810	NB-36

Table 5.1. Summary of Risk Screening. Listed below are COPC/Receptor combinations that could not be dismissed after initial screening. Note that no SQ values > 1.0 were obtained with surface water applied to surface water sp., sediments applied to fish-

	Surface Water COPCs/Fish		Sediment COPCs / Benthos		Sediment COPC / Insectivores		Groundwater COPCs/ Surface Water Sp.		Soil COPCs / Worm Eaters	
	Max SQ	Mean SQ	Max SQ	Mean SQ	Max SQ	Mean SQ	Max SQ	Mean SQ	Max SQ	Mean SQ
Metals										
Aluminum	**218.4**	**29.9**					**183.9**	**11.3**		
Barium	**2.9**	0.8								
Chromium			**1.1**	0.4					**5.3**	0.4
Copper	**3.4**	0.7	**3.5**	0.7					**1.7**	0.2
Iron	**23.0**	3.1								
Lead	**9.7**	1.4			**3.9**	**2.5**				
Mercury			**6.1**	0.6	0.1					
Nickel			**2.1**	0.6	0.0					
Selenium									**1.3**	0.4
Vanadium	**3.8**	0.8								
Zinc	**1.5**	0.2								
PCB/Pesticides/Dioxins										
PCB									**4.2**	0.2
TCDD TEQ									**1.8**	
SVOC										
Acenaphthene			**86.6**	**40.5**						
Anthracene			**40.0**	**6.5**						
Benzo(a)anthracene			**181.8**	**13.1**	**1.9**	0.1				
Benzo(a)pyrene			**173.3**	**12.3**	**2.5**	0.2				
Benzo(b)fluoranthene			**4.6**	0.3	**4.6**	0.3				
Benzo(k)fluoranthene			**70.8**	**5.2**	**1.6**	0.1				
bis(2-Ethylhexyl)phthalate			**19.8**	**2.5**						
Butyl benzylphthalate					**1.3**	0.6				
Chrysene			**152.9**	**11.0**	**2.5**	0.2				
Dibenz(a,h)anthracene			**142.4**	**16.4**						
Diethyl phthalate					**1.3**	0.6				
Di-n-butylphthalate			**19.0**	**3.4**	**4.2**	0.8			**3.5**	0.3
Fluoranthene			**88.1**	**6.4**						
Fluorene			**12.5**	**3.8**						
Indeno(1,2,3-cd)pyrene			**85.0**	**6.3**	**1.6**	0.1				
Naphthalene			**1.4**	**1.5**						
Pyrene			**512.8**	**34.2**						
VOC										
1,1-Dichloroethane							**13.0**	**1.6**		
1,1-Dichloroethene							**65.4**	**1.9**		
cis-1,2-Dichloroethene							**19.6**	0.6		
Tetrachloroethene							**4444.4**	**77.1**		
trans-1,2-Dichloroethene							**2.3**	0.2		
Trichloroethene							**383.0**	**20.5**		
Radionuclides										
Sum of Quotients					0.3	0.1			**4.2**	0.1

Table 5.5. Rescreening of risk to consumers of soil invertebrates: shrew and woodcock

Constituent	Toxicity Reference Value (mg/kg/day)	Feeding Rate (mg/kg/day)	95% UCL Predicted Conc. In Biota	Mean Predicted Conc. In Biota	95% UCL Dose (mg/kg/day)	Mean Dose (mg/kg/day)	95% UCL SQ	Mean SQ
	Shrew							
Copper	11.7	0.53	2.69	2.20	2.1	2.04	0.2	0.2
Selenium	0.2	0.53	0.16	0.13	0.1	0.09	0.5	0.4
PCB	0.1	0.53	0.04	0.02	0.0	0.01	0.3	0.2
TCDD TEQ	1.0E-06	0.53	3.3E-06	3.6E-08	1.80E-06	2.2E-08	**1.8**	0.0
	Woodcock							
Chromium	2.7	0.77	1.2	0.9	1.3	1.20	0.5	0.4
PCB	0.2	0.77	0.0	0.0	0.0	0.02	0.2	0.1
Di-n-butylphthalate	0.1	0.77	0.0	0.0	0.0	0.03	0.2	0.3

Note that the 95% UCL for TCDD TEQ is the TEQ with all non-detects set equal to 1/2 the detection limit, and the mean is with NDs set to 0. See text for explantion.

Table 5.6. Rescreening of risk to consumers of adult aquatic insects: brown bat and tree swallow

Constituent	Toxicity Reference Value (mg/kg/day)	Feeding Rate (mg/kg/day)	95% UCL Predicted Conc. in Biota	Mean Predicted Conc. in Biota	95% UCL. Dose (mg/kg/day)	Mean Dose (mg/kg/day)	95% UCL SQ	Mean SQ
	Brown Bat							
Benzo(a)anthracene	1.00	0.33	1.98	0.42	0.65	0.14	0.7	0.1
Benzo(a)pyrene	1.00	0.33	2.57	0.54	0.85	0.18	0.8	0.2
Benzo(b)fluoranthene	1.00	0.33	4.74	0.97	1.56	0.32	**1.6**	0.3
Benzo(k)fluoranthene	1.00	0.33	1.69	0.36	0.56	0.12	0.6	0.1
Chrysene	1.00	0.33	2.58	0.54	0.85	0.18	0.9	0.2
Indeno(1,2,3-cd)pyrene	1.00	0.33	1.69	0.37	0.56	0.12	0.6	0.1
	Tree Swallow							
Mercury (Methyl)	0.02	0.76	0.02	0.02	0.02	0.01	0.7	0.5
Mercury (Divalent)	0.45	0.76	0.02	0.02	0.02	0.01	0.0	0.0
Di-n-butylphthalate	0.11	0.76	0.26	0.11	0.20	0.08	**1.8**	0.8

Table 5.7. Location of "Hot Spot" Soil Samples. "Hot spots" defined as locations at which concentrations are >10 times the mean. Note that chromium and mercury were elevated above background; risks from these metals considered directly

Sample Location	Metals at conc. >10 *mean
BD-10	Antimony, nickel, chromium
EP-01	Mercury
EP-02	Cadmium, copper, mercury
EP-6	Arsenic
EP-04	Mercury
A13	Lead
A23	Cobalt
A26	Antimony

Table 5.8. Total PAH concentrations (ug/kg) in sediment samples. Total PAH equal to sum of all PAH compounds with less than detection values set equal to zero. % HMW is the proportion of high molecular weight PAH (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene). The TEC SQ, PEC SQ and Geomean SQ are the total PAH divided by the TEC (1610 ug/kg), PEC (22,800 ug/kg) and geomean of these two values (5868 ug/kg), respectively.

Sample Location	Total PAH	% HMW	TEC SQ	Geomean SQ	PEC SQ
SW-07-SS	299,900	53%	**198.6**	**51.1**	**13.2**
SW-06-SS	10,600	54%	**7.0**	**1.8**	0.5
SW-05-SS	4,090	64%	**2.7**	0.7	0.2
SW-01-SS	2,713	61%	**1.8**	0.5	0.1
SW-03-SS	1,910	56%	**1.3**	0.3	0.1
SW-12	1,344	47%	0.9	0.2	0.1
SW-10	863	70%	0.6	0.1	0.0
SW-02-SS	740	65%	0.5	0.1	0.0
SW-04-SS	729	64%	0.5	0.1	0.0
SW-15	19	0%	0.0	0.0	0.0
SW-16	0		0.0	0.0	0.0
SW-14	0		0.0	0.0	0.0
SW-13	0		0.0	0.0	0.0
SW-11	0		0.0	0.0	0.0
SW-08-SS	0		0.0	0.0	0.0
SW-08-SS	0		0.0	0.0	0.0

APPENDIX A
ESTIMATION OF WORM UPTAKE FACTORS FOR PAHS

Beyer and Stafford measured uptake of PAHs by earthworms in dredge spoils. However, use of uptake factors from Beyer and Stafford (1993) is problematic because the worms were analyzed before they had purged their guts. Thus, a considerable amount of some chemicals measured in the worms was associated with the soil in the guts. Beyer and Stafford suggest that the amount of ingested soil can be estimated by the observed uptake factor for aluminum, because they concluded that measured aluminum is almost all associated with ingested soil[10]. Based on this qualitative assessment, these authors conclude that "virtually all of the PAHs in the earthworms were in ingested soil". The UF for aluminum was 0.34, which suggests that about 1/3 of the total dry weight mass of the worm with soil gut contents was soil. Based on this assumption, the relative concentration of the worm with gut contents can be estimated as

$$33\% * [Soil] + 67\% * UF_{worm} * [Soil] = UF_{w+s} * [Soil]$$

Where [Soil] is the concentration of the compound in soil, UF worm is the uptake factor for the worm itself, and UFw+s is the observed uptake factor for the worm and unpurged soil. The equation can be simplified by dividing by [Soil] to yield

$$UF_{worm} * [Soil] = (UF_{w+s} - .33) / 0.67$$

UF_{w+s} for individual and total PAH are reported in Beyer and Stafford. Thus, the UFworm for each compound can be easily calculated, as shown in Table A1 below. Notably, the estimated UF_{worm} for total PAHs is 0, suggesting rapid metabolism of PAHs by the worms. While there were some individual PAHs with UF_{worm} values above zero, Beyer and Stafford doubt that these differences are biologically significant. There was no relationship between UF_{worm} and molecular weight of the PAHs ($r = 0.27$, $p = 0.30$, Spearman-Rank Correlation), the latter potentially an indicator of biodegradability.

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[10]This supposition appears to be based on the common knowledge that aluminum if not readily incorporated into biological tissue. Data from Helmke et al. (1979) support this supposition. They estimated the bioaccumulation of a number of elements and found that several, including barium, chromium, iron, scandium, and thallium were not accumulated to any extent by earthworms. The authors note that except for barium, the elements having the lowest bioavailability "are ordinarily trivalent in soils and except for Fe, are generally biologically inert." Aluminum is also generally trivalent and also generally biologically inert.

Table A1. Observed uptake factor for PAHs and other chemicals in unpurged worms, from Beyer and Stafford, and calculated uptake factors for the worms themselves.

Compound	UF_{w+s}	UF_{worm}
Aluminum	0.34	0.01
PCB	2.70	3.54
DDE	2.70	3.54
Acenaphthene	0.30	0.0*
Acenaphthylene	0.22	0.0*
Anthracene	0.32	0.0*
Benz(a)anthracene	0.27	0.0*
Benzo(a)pyrene	0.34	0.01
Benzo(b)fluoranthene	0.21	0.0*
Benzo(g,h,i)perylene	0.15	0.0*
Benzo(k)fluoranthene	0.21	0.0*
Chrysene	0.44	0.16
Dibenz(a,h)anthracene	0.49	0.24
Fluoranthene	0.37	0.06
Fluorene	0.20	0.0*
Indeno(1,2,3-cd)pyrene	0.41	0.12
Napthalene	0.21	0.0*
Phenanthrene	0.28	0.0*
Pyrene	0.39	0.09
Total PAH	0.30	0.0*

* UF_{worm} was mathematically negative, and set to zero.

Bioaccumulation of PAHs by earthworms can also be estimated with data supplied by Talley et al. (2002), who also conducted bioaccumulation experiments with earthworms living in dried sediments. In these experiments, the worms were allowed to purge their guts for 24 hours; thus, these data provide a more direct indication of worm bioaccumulation.

As with the Beyer and Stafford data, the Talley et al. data demonstrate low rates of bioaccumulation of PAHs by worms (Table A2). On average, worms had about 7% of the PAH concentrations as soils, on a dry weight basis. Observed bioaccumulation varied by PAHs, and there was a marginally significant relationship between UF_{worm} and molecular weight of the PAHs ($r = 0.49$, $p = 0.052$, Spearman Rank Correlation). However, the UF_{worm} values estimated with these data showed no relationship with those estimated from the Beyer and Stafford data ($r = 0.27$, $p = 0.31$, Spearman Rank Correlation). On a dry weight worm to dry weight soil basis, UF_{worm} for total PAHs averaged 0.07. Worms are typically 83% water (EPA 1993), so a wet weight worm to dry weight soil UF would be approximately 0.01 on a wet weight worm to dry weight soil basis.

Table A2. PAH concentrations in soil and purged worms from Talley et al.
All concentrations as dry weight.

PAH	Soil Conc. mg/kg	Worm Conc. mg/kg	UF_{worm}
Acenaphthene	2.08	0.03	0.02
Acenaphthylene	0.28	0.01	0.04
Anthracene	3.19	0.03	0.01
Benz(a)anthracene	6.67	0.54	0.08
Benzo(a)pyrene	6.81	1.10	0.16
Benzo(b)fluoranthene	7.36	1.34	0.18
Benzo(g,h,i)perylene	5.28	0.35	0.07
Benzo(k)fluoranthene	6.11	0.63	0.10
Chrysene	9.58	1.07	0.11
Dibenz(a,h)anthracene	1.11	0.13	0.11
Fluoranthene	21.67	0.71	0.03
Fluorene	2.22	0.02	0.01
Indeno(1,2,3-cd)pyrene	5.28	0.47	0.09
Napthalene	1.39	0.03	0.02
Phenanthrene	15.28	0.10	0.01
Pyrene	17.50	1.60	0.09
Sum of PAH	111.81	8.17	0.07

A third study, for worms living in a variety of contaminated soils, was conducted by Krauss et al. (2000, 2001). These authors report Biota to Soil Accumulation Factors (BSAF) values. Most of the PAHs had BSAF values between 0.10 to 0.20, although three intermediate molecular weight PAHs (fluorene, anthracene, and phenanthrene) had BSAF values between 0.25 and about 0.5 (Table 3). These BSAF values are normalized to worm lipid, 1.2% of wet weight, and soil carbon, which averaged 3.4%. To make these values comparable to the other two analyses, these were converted to a dry weigh worm to dry weight soil UFworm. The effects of carbon and lipid were removed by multiplying by 3.4%/1.2%, and then these values were converted to dry weigh worm UF by dividing by 0.17%.

As can be seen (Table A3), values reported by Krauss et al. are considerably higher than those reported by the previous two analysts. These differences could be due to differences in texture or organic carbon. Dredged sediments might tend to be finer grained and have higher organic carbon than soils. In view of this uncertainty, the average UF_{worm} from Krauss et al. (0.47) was selected as the appropriate value to estimate earthworm concentrations. This value is equal to a wet weight worm to dry weight soil UF of 0.08. For simplicity and conservatism, a value of 0.10 was used in the food chain analyses.

Table A3. BSAF values for worms reported by Krauss et al. BSAF values are expressed on a lipid and organic carbon basis. The UF_{worm} is expressed on a dry weight worm to dry weight soil basis.

PAH	BSAF	UF_{worm}
Acenaphthene	0.23	0.29
Acenaphthylene	0.17	0.35
Anthracene	0.43	0.47
Benz(a)anthracene	0.18	1.06
Benzo(a)pyrene	0.21	0.63
Benzo(b + k)fluoranthene	0.17	0.88
Benzo(e)pyrene	0.23	0.37
Benzo(g,h,i)perylene	0.16	0.35
Chrysene	0.24	0.38
Dibenz(a,h)anthracene	0.17	0.50
Fluoranthene	0.18	0.35
Fluorene	0.51	0.43
Indeno(1,2,3-cd)pyrene	0.21	0.47
Napthalene	0.14	0.40
perylene	0.19	0.43
Phenanthrene	0.31	0.35
Pyrene	0.17	0.34
Average for all PAHs	0.23	0.47

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