

Appendix A

Figure 1. Athletic Field (a/k/a Old Ball Field).



Figure 2. Buford McCord Sports Park.



TABLE 1. Summary of US EPA August 1989 soil sampling at the Athletic Field, Wrigley Charcoal Site, Wrigley, Hickman County, TN.				
Parameter	Range of Concentrations of Detected Analytes			
	Surface Soil	Surface Soil Average	Subsurface Soil	Subsurface Soil Average
<i>Metals (mg/kg)</i>				
Aluminum	6,100 – 9,400	7550	2,600 – 5,400	3,575
Antimony	7.5J ¹ N ² – 35JN	17.3	16 – 27	21
Arsenic	8.5J – 17J	13.6	7.2 – 8.4	7.5
Barium	570J – 640J	610	220 – 370	288
Beryllium	ND ³	1	0.7 - 2.1	1.7
Cadmium	ND	ND	ND	ND
Calcium	6,300J – 20,000J	12,625	43,000 – 47,000	44,500
Chromium	8.6 – 56	27.7	2 – 22	14
Cobalt	8.9 – 81	41.5	5.5 – 120	61.6
Copper	840J – 69,000J	31,755	700 – 11,000	6,976
Iron	52,000 – 190,000	113,750	160,000 – 240,000	190,000
Lead	460 – 1,000	780	40 – 240	183
Magnesium	920 – 3,500	2065	720 – 5,000	2,255
Manganese	750J – 3,100J		1,900 – 2,900	2,300
Mercury	ND	ND	ND	ND
Nickel	19 – 23	21	11 – 13	12
Potassium	990 – 1,600	1,323	700 – 2,800	1,255
Selenium	1.2J – 8.3J	4.3	2.2 – 5.1	3.6
Silver	5.4J – 34J	19.2	2.5 – 31	10.5
Sodium	100 - 450	278	ND	ND
Thallium	ND	ND	ND	ND
Vanadium	21 – 39	28	21 – 37	29
Zinc	1,200 – 42,000	15,400	1,400 – 9,900	4,650
<i>Volatile Organic Compounds (µg/kg)</i>				
Toluene	8,100 – 41,000	22,525	8,900 – 11,000	9950
Xylenes, total	ND	ND	160J	--
<i>Semi-Volatile Organic Compounds (µg/kg)</i>				
Naphthalene	ND	ND	710J – 2,600J	--
Fluorene	ND	ND	420J – 620J	--
Pyrene	85J – 88J	--	460J	--
2-Methylnaphthalene	ND	ND	2,800J – 4,800J	--
Dibenzofuran	ND	ND	340J	--
Fluoranthene	21J – 74J	--	ND	ND
Benzyl butylphthlate	NND - 3,300	1098	ND	ND
Chrysene	36J – 52J	--	ND	ND

¹ J = estimated value

² N = presumptive evidence of presence of material

³ ND = Not Detected

TABLE 2. Summary of US EPA December 1990 soil sampling at the Athletic Field, Wrigley Charcoal Site, Wrigley, Hickman County, TN.				
Parameter	Range of Concentrations of Detected Analytes			
	Surface Soil	Surface Soil Average	Subsurface Soil	Subsurface Soil Average
<i>Inorganics (mg/kg)</i>				
Aluminum	9,800J ¹ – 18,000J	13,000	4,500J – 14,000J	8,200
Arsenic	ND – 10J	4.9	5.8J – 31J	15
Barium	100 – 170	155	74 – 740	300
Cadmium	ND – 4.1	1.9	ND – 11	4
Calcium	4,900J – 29,000J	13,800	9,000J – 59,000J	20,000
Chromium	22 – 33	26	12 – 27	18
Cobalt	7.9 – 44	21	6.5 – 33	27
Copper	18J – 560J	254	20J – 25,000J	5,000
Iron	18,000 – 86,000	64,000	23,000 – 140,000	82,000
Lead	23 – 84	59	18 – 450	180
Magnesium	670 – 1,200	975	610 – 1,600J	1,000
Manganese	340J – 850J	690	220J – 1,600J	1,200
Mercury	ND ²	ND	ND – 0.22	0.04
Nickel	8.4 – 12	9.4	8.4 – 16	11
Potassium	ND	ND	ND – 1,400	280
Selenium	ND – 3.2J	1.1	ND – 4.1J	1.5
Silver	ND – 5.8	2.3	ND – 10	3.4
Vanadium	28 – 36	32	8.6 – 43	18
Zinc	99 – 4,400	1800	93 – 6,400	2,800
<i>Volatile Organic Compounds (µg/kg)</i>				
Ethyl benzene	ND	ND	ND – 2J	<2
Toluene	ND – 1J	<1	ND – 2J	<2
<i>Dioxins/Furans (ng/kg)</i>				
		Surface Soil	Subsurface Soil	
1,2,3,4,7,8-Hexachlorodibenzodioxin		ND	NS ³	
1,2,3,6,7,8-Hexachlorodibenzodioxin		ND	NS	
1,2,3,7,8,9-Hexachlorodibenzodioxin		ND	NS	
1,2,3,4,6,7,8-Heptachlorodibenzodioxin		75 – 130	NS	
Heptachlorodibenzodioxin (total)		240J – 310J	NS	
Pentachlorodibenzodioxin (total)		ND	NS	
Hexachlorodibenzodioxin (total)		ND	NS	
Octachlorodibenzodioxin (total)		1,400 – 1,800	NS	
Hexachlorodibenzofuran (total)		ND	NS	
1,2,3,4,6,7,8-Hexachlorodibenzofuran		ND – 25	NS	
Heptachlorodibenzofuran (total)		ND – 53J	NS	
Octochlorodibenzofuran (total)		ND – 38J	NS	
Pentachlorodibenzofuran (total)		ND	NS	
TEQ (Toxic Equivalent values)		2.6 – 3.0	NS	

¹ J = Estimated Value ² ND = Material analyzed for but not detected ³ NS = Not Sampled

Parameter	AFSS23	AFSS24	AFSS25	AFSS26 (Dup25)
<i>Semi-Volatile Organic Compounds (µg/kg)</i>				
2,4-Dimethylphenol	390U ¹	1,200	170J ²	450U
2-Methylphenol	390U	1,300	64J	450U
3- and 4- Methylphenol	390U	2,500	120J	450U
Acetophenone	390U	60J	500U	450U
Benzo(a)pyrene	390UJ	450UJ	500UJ	45J
Benzo(b)fluoranthene	59J	450U	62J	62J
Benzo(k)fluoranthene	41J	450U	500U	53J
Chrysene	50J	450U	500U	54J
Fluoranthene	82J	450U	54J	75J
Indeno(1,2,3-cd)pyrene	40J	450U	500U	450U
Phenanthrene	390U	50J	500U	450U
Phenol	390U	1,400	53J	450U
Pyrene	61J	58J	57J	66J
<i>Pesticides (µg/kg)</i>				
Endrin Ketone	3.9U	6.6N ³	5.2U	4.4U
Gamma-Chlordane	2U	2.3U	2.6U	0.55JN
<i>Metals (mg/kg)</i>				
Aluminum	8,000	10,000	5,500	6,300
Arsenic	5.9	9.8	7.3	9.9
Antimony	0.68UJ	1.1J	1.1J	1.2J
Barium	68	240	160	140
Beryllium	0.38	0.89	0.66	0.54
Cadmium	0.07U	0.62	0.09U	0.24
Calcium	3,900J	13,000J	110,000J	97,000J
Chromium	18	20	14	15
Cobalt	4.2	16	20	10
Copper	19J	650J	500J	540J
Iron	20,000	58,000	64,000	40,000
Lead	30	95	85	77
Magnesium	500	860	2,200	1,600
Manganese	380J	980J	1,000J	840J
Nickel	7.4	12	8.9	9.5
Potassium	520J	1,200J	680J	790J
Selenium	0.77UJ	2.6J	3.3J	2.1J
Silver	0.85	5.3	4	2.8
Vanadium	21	30	19	16
Zinc	210	2,700	1,700	1,600

¹ U = Material was analyzed for but not detected. The number to the left of U represents the detection limit.

² J = Estimated value

³ N = Tentatively identified compound

TABLE 4. Results of US EPA June 2001 subsurface soil sampling (0 – 0.5 feet) at the Athletic Field, Wrigley Charcoal Site, Wrigley, Hickman County, TN.				
Parameter	AFSB23	AFSB24	AFSB25	AFSB26 (Dup25)
<i>Volatile Organic Compounds (µg/kg)</i>				
2-Hexanone	4.8U ¹ J ²	4.6UJ	1.8	4.6UJ
Benzene	1.9UJ	1.8UJ	0.94J	1.8UJ
<i>Semi-Volatile Organic Compounds (µg/kg)</i>				
3- and 4- Methylphenol	380U	54J	620U	630U
Benzo(a)anthracene	41J	470U	620U	630U
Benzo(b)fluoranthene	58J	470U	620U	630U
Chrysene	67J	470U	620U	630U
Fluoranthene	79J	470U	620U	630U
Phenanthrene	51J	49J	620U	630U
Pyrene	70J	470U	620U	630U
<i>Pesticide/PCB (µg/kg)</i>				
Endrin Ketone	3.8U	4.8	8.2U	6.3U
<i>Metals (mg/kg)</i>				
Aluminum	5,400	5,500	3,400	3,200
Arsenic	18	13	9.7	8.1
Antimony	1.1UJ	0.98UJ	1.3J	1.1UJ
Barium	370	820	380	330
Beryllium	0.93	0.76	1.3	1.2
Cadmium	0.11U	2.5	0.12U	0.11U
Calcium	31,000J	23,000J	73,000j	58,000J
Chromium	10	7.4	14	15
Cobalt	48	44	46	50
Copper	500J	500J	550J	600J
Iron	14,000	120,000	160,000	170,000
Lead	220	250	280	44
Magnesium	1,900	2,000	1,900	1,700
Manganese	1,800J	2,600J	1,900J	2,000J
Nickel	17	11	12	11
Potassium	2,600J	1,100J	840J	870J
Selenium	8.1U	7.6J	8.2J	7.2J
Silver	12	23	8.5	9.2
Sodium	330	329	171U	130U
Vanadium	12	9	16	19
Zinc	4,800	12,000	3,900	3,900

¹ U = Material was analyzed for but not detected. The number to the left of U represents the detection limit.

² J = Estimated value

TABLE 5. ATSDR soil comparison values and background concentrations of metals, Athletic Field, Wrigley Charcoal Site, Wrigley, Hickman County, Tennessee.				
Parameter	ATSDR Comparison Values			Background
	Pica Child	Child	Adult	
Metals (ppm) (mg/kg)				
Aluminum	4,000 I ¹	10,000 I	1,000,000 I	6,500-14,000
Antimony	NA ²	20 I	300 I	NA
Arsenic	NA	20 C ³	200 C	3.1-14
Barium	NA	4,000	50,000	15-72
Beryllium	NA	100 C	1,000 C	ND-2.6
Cadmium	NA	10 C	100 C	ND-2.3
Calcium	NA	NA	NA	43-800
Chromium	NA	200 – 80,000 ⁴	2,000 – 1,000,000	13-66
Cobalt	20 I	500 I	7,000 I	5.5-120
Copper	60 I	2,000 I	20,000I	ND-38
Iron				11,000-47,000
Lead	Based on statistical modeling to maintain blood lead level less than 10 µg/dL			
Magnesium				230-410
Manganese	NA	3,000 E	40,000 E	210-740
Mercury	4 I ⁵	100 I	1,000 I	ND
Nickel	NA	1,000 E	10,000 E	ND-47
Potassium				ND-990
Selenium	NA	300 C	4,000 C	ND
Silver	NA	300 E	4,000 E	ND
Sodium				ND
Thallium	NA	4 E ⁶	60 E	ND
Vanadium	6 I	200 I	2,000 I	18-54
Zinc	600 I	20,000 C	200,000 C	34-340

¹ I = intermediate exposure (15 days to 364 days)

² NA = not available

³ C = chronic exposure (1 year or more)

⁴ EPA comparison values. The lower number is for trivalent chromium; the higher number is for hexavalent chromium. Most chromium in soil is in the trivalent state.

⁵ Comparison value for mercuric chloride which may be more soluble from ingestion than the form of mercury in the soil.

⁶ Comparison value for thallium acetate which may not be the form of the thallium in soil.