

APPENDIX G

Human Health Risk Assessment Tables

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Table G-1. SRC and COPC Screening for Surface Soil (0-1 ft bgs ISM Samples) at Load Line 10

Analyte (mg/kg)	CAS Number	Freq of Detect	Minimum Detect	Maximum Detect	Average Result	Background Criteria ^a	SRC? (yes/no)	SRC Justification	Screening FWCUG ^b (HQ= 0.1 or Risk=10 ⁻⁶)			Risk Screening Level	Screening Level Source ^c	COPC? (yes/no)	COPC Justification	Station at Max Detect	Date Collected at Max Detect
									RA	RC	NGT						
Metals																	
Aluminum	7429-90-5	73/ 73	7000	22000	10600	17700	Yes	Exceeds background	52923	7380	3496	3496	NGT	Yes	Exceeds screening level	L10ss-002M	11/16/2004
Antimony	7440-36-0	25/ 68	0.11	2.5	1.98	0.96	Yes	Exceeds background	13.6	2.82	175	2.82	RC	No	Below risk screening criteria	L10ss-009M	11/17/2004
Arsenic	7440-38-2	73/ 73	4.9	20	11.8	15.4	Yes	Exceeds background	0.425	0.524	2.78	0.425	RA	Yes	Exceeds screening level	L10ss-053M	8/9/2007
Barium	7440-39-3	73/ 73	44.7	190	68.3	88.4	Yes	Exceeds background	8966	1413	351	351	NGT	No	Below risk screening criteria	L10ss-002M	11/16/2004
Beryllium	7440-41-7	52/ 73	0.54	5.3	0.742	0.88	Yes	Exceeds background	--	--	--	16	RSL	No	Below risk screening criteria	L10ss-002M	11/16/2004
Cadmium	7440-43-9	37/ 73	0.06	0.89	0.306	0	Yes	Exceeds background	22.3	6.41	10.9	6.41	RC	No	Below risk screening criteria	L10ss-003M	11/16/2004
Calcium	7440-70-2	73/ 73	290	100000	7560	15800	No	Essential nutrient	--	--	--	1000000	RDA	No	Essential nutrient	L10ss-002M	11/16/2004
Chromium ^d	7440-47-3	73/ 73	12	33	20.2	17.4	Yes	Exceeds background	90.4	19.9	1.64	1.64	NGT	Yes	Exceeds screening level	L10ss-007M	11/17/2004
Cobalt	7440-48-4	73/ 73	2.9	14.7	8.47	10.4	Yes	Exceeds background	803	131	7.03	7.03	NGT	Yes	Exceeds screening level	L10ss-083M	4/13/2010
Copper	7440-50-8	73/ 73	9.1	42	19.5	17.7	Yes	Exceeds background	2714	311	25368	311	RC	No	Below risk screening criteria	L10ss-007M	11/17/2004
Cyanide	57-12-5	13/ 37	0.19	1.3	0.31	0	Yes	Exceeds background	--	--	--	2.2	RSL	No	Below risk screening criteria	L10ss-002M	11/16/2004
Iron	7439-89-6	73/ 73	14000	28000	20700	23100	No	Essential nutrient	19010	2313	184370	180000	RDA	No	Essential nutrient	L10ss-028M	11/18/2004
Lead	7439-92-1	73/ 73	15	430	50.6	26.1	Yes	Exceeds background	--	--	--	400	RSL	Yes	Exceeds screening level	L10ss-003M	11/16/2004
Magnesium	7439-95-4	73/ 73	1700	23000	3230	3030	No	Essential nutrient	--	--	--	1000000	RDA	No	Essential nutrient	L10ss-002M	11/16/2004
Manganese	7439-96-5	73/ 73	250	1400	583	1450	No	Below background	1482	293	35.1	35.1	NGT	No	Below background	L10ss-002M	11/16/2004
Mercury	7439-97-6	58/ 73	0.014	0.1	0.0388	0.036	Yes	Exceeds background	16.5	2.27	172	2.27	RC	No	Below risk screening criteria	L10ss-059M	8/8/2007
Nickel	7440-02-0	73/ 73	10	37.4	21.9	21.1	Yes	Exceeds background	1346	155	12639	155	RC	No	Below risk screening criteria	L10ss-059M	8/8/2007
Potassium	7440-09-7	59/ 73	680	1900	930	927	No	Essential nutrient	--	--	--	1000000	RDA	No	Essential nutrient	L10ss-002M	11/16/2004
Selenium	7782-49-2	47/ 73	0.45	1.8	0.702	1.4	Yes	Exceeds background	--	--	--	39	RSL	No	Below risk screening criteria	L10ss-002M	11/16/2004
Silver	7440-22-4	4/ 73	0.032	0.038	0.546	0	Yes	Exceeds background	324	38.6	3105	38.6	RC	No	Below risk screening criteria	L10ss-079M	4/13/2010
Sodium	7440-23-5	52/ 73	32	960	182	123	No	Essential nutrient	--	--	--	1000000	RDA	No	Essential nutrient	L10ss-002M	11/16/2004
Thallium	7440-28-0	19/ 73	0.15	0.23	0.47	0	Yes	Exceeds background	4.76	0.612	47.7	0.612	RC	No	Below risk screening criteria	L10ss-022M	11/18/2004
Vanadium	7440-62-2	73/ 73	9	24.4	18.2	31.1	No	Below background	156	44.9	2304	44.9	RC	No	Below background	L10ss-089M	4/13/2010
Zinc	7440-66-6	73/ 73	53	220	87.6	61.8	Yes	Exceeds background	19659	2321	187269	2321	RC	No	Below risk screening criteria	L10ss-003M	11/16/2004
Explosives																	
2,6-Dinitrotoluene	606-20-2	1/ 73	0.14	0.14	0.111	--	Yes	Detected organic	0.769	1.1	13.6	0.769	RA	No	Below risk screening criteria	L10ss-008M	11/17/2004
3-Nitrotoluene	99-08-1	1/ 73	0.025	0.025	0.109	--	Yes	Detected organic	--	--	--	0.61	RSL	No	Below risk screening criteria	L10ss-080M	4/13/2010
Nitrocellulose	9004-70-0	2/ 9	2.2	4	1.4	--	Yes	Detected organic	--	--	--	18000000	RSL	No	Below risk screening criteria	L10ss-052M	8/9/2007
Nitroglycerin	55-63-0	1/ 40	0.6	0.6	0.254	--	Yes	Detected organic	81.6	52.5	982	52.5	RC	No	Below risk screening criteria	L10ss-057M	8/8/2007
Tetryl	479-45-8	4/ 73	0.023	0.035	0.155	--	Yes	Detected organic	--	--	--	24	RSL	No	Below risk screening criteria	L10ss-080M	4/13/2010
Semi-volatile Organic Compounds																	
2-Methylnaphthalene	91-57-6	5/ 10	0.011	0.41	0.326	--	Yes	Detected organic	238	30.6	2384	30.6	RC	No	Below risk screening criteria	L10ss-080M	4/13/2010
Acenaphthene	83-32-9	11/ 22	0.0072	1.6	0.235	--	Yes	Detected organic	--	--	--	340	RSL	No	Below risk screening criteria	L10ss-080M	4/13/2010
Acenaphthylene ^e	208-96-8	3/ 22	0.0076	0.064	0.148	--	Yes	Detected organic	--	--	--	170	RSL	No	Below risk screening criteria	L10ss-091M	4/13/2010
Anthracene	120-12-7	15/ 22	0.0073	2.4	0.303	--	Yes	Detected organic	--	--	--	1700	RSL	No	Below risk screening criteria	L10ss-080M	4/13/2010
Benz(a)anthracene	56-55-3	20/ 22	0.0084	3.5	0.555	--	Yes	Detected organic	0.221	0.65	4.77	0.221	RA	Yes	Exceeds screening level	L10ss-080M	4/13/2010
Benzenemethanol	100-51-6	1/ 7	2.1	2.1	0.814	--	Yes	Detected organic	--	--	--	610	RSL	No	Below risk screening criteria	L10ss-027M	11/19/2004
Benzo(a)pyrene	50-32-8	20/ 22	0.0094	3.3	0.48	--	Yes	Detected organic	0.022	0.065	0.477	0.022	RA	Yes	Exceeds screening level	L10ss-080M	4/13/2010
Benzo(b)fluoranthene	205-99-2	22/ 22	0.018	4.5	0.733	--	Yes	Detected organic	0.221	0.65	4.77	0.221	RA	Yes	Exceeds screening level	L10ss-080M	4/13/2010
Benzo(ghi)perylene ^e	191-24-2	18/ 22	0.0083	2	0.315	--	Yes	Detected organic	--	--	--	170	RSL	No	Below risk screening criteria	L10ss-080M	4/13/2010
Benzo(k)fluoranthene	207-08-9	17/ 22	0.0076	1.5	0.281	--	Yes	Detected organic	2.21	6.5	47.7	2.21	RA	No	Below risk screening criteria	L10ss-080M	4/13/2010
Carbazole	86-74-8	2/ 10	0.29	1.4	0.477	--	Yes	Detected organic	69.4	44.6	835	44.6	RC	No	Below risk screening criteria	L10ss-080M	4/13/2010
Chrysene	218-01-9	21/ 22	0.011	3.4	0.549	--	Yes	Detected organic	22.1	65	477	22.1	RA	No	Below risk screening criteria	L10ss-080M	4/13/2010
Di-n-butyl phthalate	84-74-2	1/ 10	0.03	0.03	0.543	--	Yes	Detected organic	--	--	--	610	RSL	No	Below risk screening criteria	L10ss-092M	4/13/2010
Dibenz(a,h)anthracene	53-70-3	11/ 22	0.01	0.5	0.174	--	Yes	Detected organic	0.022	0.065	0.477	0.022	RA	Yes	Exceeds screening level	L10ss-080M	4/13/2010
Dibenzofuran	132-64-9	3/ 10	0.018	0.97	0.413	--	Yes	Detected organic	119	15.3	1192	15.3	RC	No	Below risk screening criteria	L10ss-080M	4/13/2010
Diethyl phthalate	84-66-2	1/ 10	0.025	0.025	0.522	--	Yes	Detected organic	--	--	--	4900	RSL	No	Below risk screening criteria	L10ss-092M	4/13/2010

Table G-1. SRC and COPC Screening for Surface Soil (0-1 ft bgs ISM Samples) at Load Line 10

Analyte (mg/kg)	CAS Number	Freq of Detect	Minimum Detect	Maximum Detect	Average Result	Background Criteria ^a	SRC? (yes/no)	SRC Justification	Screening FWCUG ^b (HQ= 0.1 or Risk=10 ⁻⁶)			Risk Screening Level	Screening Level Source ^c	COPC? (yes/no)	COPC Justification	Station at Max Detect	Date Collected at Max Detect
									RA	RC	NGT						
Fluoranthene	206-44-0	22/ 22	0.021	12	1.74	--	Yes	Detected organic	276	163	5087	163	RC	No	Below risk screening criteria	L10ss-080M	4/13/2010
Fluorene	86-73-7	15/ 22	0.0083	1.7	0.239	--	Yes	Detected organic	737	243	11458	243	RC	No	Below risk screening criteria	L10ss-080M	4/13/2010
Indeno(1,2,3-cd)pyrene	193-39-5	18/ 22	0.0073	1.8	0.3	--	Yes	Detected organic	0.221	0.65	4.77	0.221	RA	Yes	Exceeds screening level	L10ss-080M	4/13/2010
Naphthalene	91-20-3	17/ 22	0.0092	1.2	0.21	--	Yes	Detected organic	368	122	1541	122	RC	No	Below risk screening criteria	L10ss-080M	4/13/2010
Phenanthrene ^e	85-01-8	21/ 22	0.016	11	1.38	--	Yes	Detected organic	--	--	--	170	RSL	No	Below risk screening criteria	L10ss-080M	4/13/2010
Phenol	108-95-2	1/ 10	0.18	0.18	0.567	--	Yes	Detected organic	--	--	--	1800	RSL	No	Below risk screening criteria	L10ss-027M	11/19/2004
Pyrene	129-00-0	22/ 22	0.014	8	1.2	--	Yes	Detected organic	207	122	3815	122	RC	No	Below risk screening criteria	L10ss-080M	4/13/2010
Pesticides/PCBs																	
Heptachlor epoxide	1024-57-3	1/ 10	0.025	0.025	0.00926	--	Yes	Detected organic	0.152	0.098	1.48	0.098	RC	No	Below risk screening criteria	L10ss-092M	4/13/2010
PCB-1254	11097-69-1	1/ 10	0.024	0.024	0.0271	--	Yes	Detected organic	0.203	0.12	3.46	0.12	RC	No	Below risk screening criteria	L10ss-080M	4/13/2010
alpha-Chlordane	5103-71-9	1/ 10	0.3	0.3	0.0375	--	Yes	Detected organic	--	--	--	1.6	RSL	No	Below risk screening criteria	L10ss-092M	4/13/2010
gamma-Chlordane	5103-74-2	1/ 10	0.23	0.23	0.0285	--	Yes	Detected organic	--	--	--	1.6	RSL	No	Below risk screening criteria	L10ss-092M	4/13/2010
Volatile Organic Compounds																	
Acetone	67-64-1	1/ 12	0.016	0.016	0.0107	--	Yes	Detected organic	--	--	--	6100	RSL	No	Below risk screening criteria	L10ss-092M	4/13/2010
Carbon disulfide	75-15-0	1/ 12	0.00061	0.00061	0.00283	--	Yes	Detected organic	--	--	--	82	RSL	No	Below risk screening criteria	L10ss-060D	8/9/2007
Methylene chloride	75-09-2	4/ 12	0.00096	0.0013	0.00413	--	Yes	Detected organic	--	--	--	36	RSL	No	Below risk screening criteria	L10ss-088M	4/13/2010

^aBackground criteria for 0-1 ft bgs from final facility-wide background values for RVAAP, published in the *Final Phase II Remedial Investigation Report for Winklepeck Burning Grounds at Ravenna Army Ammunition Plant, Ravenna, Ohio* (USACE 2001).

^bFacility-wide Clean-up Goals (FWCUG) for Resident Adult (RA), Resident Child (RC), and National Guard Trainee (NGT) from *Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (USACE 2010).

^cScreening Level Source:
NGT = FWCUG for National Guard Trainee.
RDA = Concentration associated with recommended daily allowance of essential nutrient.
RA = FWCUG for Resident Adult.
RC = FWCUG for Resident Child.
RSL = USEPA Residential Regional Screening Level.

^dFWCUG is the most conservative (smallest) of the FWCUGs for hexavalent and trivalent chromium.

^eNo reference dose or cancer potency factors are available for these PAHs, therefore, the RSL value for pyrene was used (NDEP 2006).

bgs = Below ground surface.

CAS = Chemical Abstract Service.

COPC = Chemical of Potential Concern.

HQ = Hazard Quotient.

ISM = Incremental Sampling Methodology.

PAH = Polycyclic Aromatic Hydrocarbon.

PCB = Polychlorinated Biphenyl.

SRC = Site-related Contaminant.

USEPA = United States Environmental Protection Agency.

--=No value available.

Bold = Chemical is a COPC.

Table G-2. SRC and COPC Screening for Subsurface Soil (1-13 ft bgs Discrete Samples) at Load Line 10

Analyte (mg/kg)	CAS Number	Freq of Detect	Minimum Detect	Maximum Detect	Average Result	Background Criteria ^a	SRC? (yes/no)	SRC Justification	Screening FWCUG ^b (HQ= 0.1 or Risk=10 ⁻⁶)			Risk Screening Level	Screening Level Source ^c	COPC? (yes/no)	COPC Justification	Station at Max Detect	Date Collected at Max Detect
									RA	RC	NGT						
Metals																	
Aluminum	7429-90-5	20/ 20	3340	12900	8600	19500	No	Below background	52923	7380	3496	3496	NGT	No	Below background	L10sb-074	3/16/2010
Antimony	7440-36-0	16/ 19	0.082	27.1	1.6	0.96	Yes	Exceeds background	13.6	2.82	175	2.82	RC	Yes	Exceeds screening level	L10sb-066	3/16/2010
Arsenic	7440-38-2	20/ 20	6.2	19	13.7	19.8	No	Below background	0.425	0.524	2.78	0.425	RA	No	Below background	L10sb-067	3/17/2010
Barium	7440-39-3	20/ 20	16.5	151	46	124	Yes	Exceeds background	8966	1413	351	351	NGT	No	Below risk screening criteria	L10sb-071	3/16/2010
Beryllium	7440-41-7	20/ 20	0.25	1.2	0.471	0.88	Yes	Exceeds background	--	--	--	16	RSL	No	Below risk screening criteria	L10sb-071	3/16/2010
Cadmium	7440-43-9	18/ 20	0.032	0.37	0.0919	0	Yes	Exceeds background	22.3	6.41	10.9	6.41	RC	No	Below risk screening criteria	L10sb-071	3/16/2010
Calcium	7440-70-2	20/ 20	541	63300	8770	35500	No	Essential nutrient	--	--	--	1000000	RDA	No	Essential nutrient	L10sb-071	3/16/2010
Chromium ^d	7440-47-3	20/ 20	6.4	15.5	12.1	27.2	No	Below background	90.4	19.9	1.64	1.64	NGT	No	Below background	L10sb-072	3/16/2010
Cobalt	7440-48-4	20/ 20	3.8	15.8	8.61	23.2	No	Below background	803	131	7.03	7.03	NGT	No	Below background	L10sb-067	3/17/2010
Copper	7440-50-8	20/ 20	9.5	24.9	18.2	32.3	No	Below background	2714	311	25368	311	RC	No	Below background	L10sb-071	3/16/2010
Iron	7439-89-6	20/ 20	14500	30000	22900	35200	No	Essential nutrient	19010	2313	184370	180000	RDA	No	Essential nutrient	L10sb-067	3/17/2010
Lead	7439-92-1	20/ 20	8.4	79.4	22.5	19.1	Yes	Exceeds background	--	--	--	400	RSL	No	Below risk screening criteria	L10sb-066	3/16/2010
Magnesium	7439-95-4	20/ 20	1770	7770	3560	8790	No	Essential nutrient	--	--	--	1000000	RDA	No	Essential nutrient	L10sb-067	3/17/2010
Manganese	7439-96-5	20/ 20	221	1020	441	3030	No	Below background	1482	293	35.1	35.1	NGT	No	Below background	L10sb-071	3/16/2010
Mercury	7439-97-6	4/ 20	0.017	0.031	0.0509	0.044	No	Below background	16.5	2.27	172	2.27	RC	No	Below background	L10sb-073	3/16/2010
Nickel	7440-02-0	20/ 20	11.3	26	19.2	60.7	No	Below background	1346	155	12639	155	RC	No	Below background	L10sb-067	3/17/2010
Potassium	7440-09-7	20/ 20	652	1580	1030	3350	No	Essential nutrient	--	--	--	1000000	RDA	No	Essential nutrient	L10sb-067	3/17/2010
Selenium	7782-49-2	20/ 20	0.58	5.7	1.25	1.5	Yes	Exceeds background	--	--	--	39	RSL	No	Below risk screening criteria	L10sb-074	3/16/2010
Silver	7440-22-4	9/ 20	0.006	0.02	0.0243	0	Yes	Exceeds background	324	38.6	3105	38.6	RC	No	Below risk screening criteria	L10sb-066	3/16/2010
Sodium	7440-23-5	20/ 20	28.6	231	54.5	145	No	Essential nutrient	--	--	--	1000000	RDA	No	Essential nutrient	L10sb-071	3/16/2010
Thallium	7440-28-0	19/ 20	0.08	0.18	0.124	0.91	No	Below background	4.76	0.612	47.7	0.612	RC	No	Below background	L10sb-067	3/17/2010
Vanadium	7440-62-2	20/ 20	6.8	23	14.2	37.6	No	Below background	156	44.9	2304	44.9	RC	No	Below background	L10sb-074	3/16/2010
Zinc	7440-66-6	20/ 20	49.6	322	74.3	93.3	Yes	Exceeds background	19659	2321	187269	2321	RC	No	Below risk screening criteria	L10sb-071	3/16/2010
Explosives																	
1,3,5-Trinitrobenzene	99-35-4	1/ 20	0.037	0.037	0.119	--	Yes	Detected organic	1528	225	16542	225	RC	No	Below risk screening criteria	L10sb-074	3/16/2010
2-Amino-4,6-Dinitrotoluene	35572-78-2	1/ 20	0.04	0.04	0.119	--	Yes	Detected organic	12.8	1.54	124	1.54	RC	No	Below risk screening criteria	L10sb-070	3/16/2010
4-Amino-2,6-Dinitrotoluene	19406-51-0	3/ 20	0.022	0.16	0.116	--	Yes	Detected organic	12.8	1.54	124	1.54	RC	No	Below risk screening criteria	L10sb-071	3/16/2010
PETN	78-11-5	3/ 20	0.029	0.75	0.263	--	Yes	Detected organic	--	--	--	12	RSL	No	Below risk screening criteria	L10sb-071	3/16/2010
Semi-volatile Organic Compounds																	
Acenaphthene	83-32-9	5/ 20	0.014	2.6	0.161	--	Yes	Detected organic	--	--	--	340	RSL	No	Below risk screening criteria	L10sb-071	3/16/2010
Anthracene	120-12-7	5/ 20	0.025	3.1	0.189	--	Yes	Detected organic	--	--	--	1700	RSL	No	Below risk screening criteria	L10sb-071	3/16/2010
Benz(a)anthracene	56-55-3	8/ 20	0.0077	5.5	0.353	--	Yes	Detected organic	0.221	0.65	4.77	0.221	RA	Yes	Exceeds screening level	L10sb-071	3/16/2010
Benzo(a)pyrene	50-32-8	7/ 20	0.0098	4.9	0.313	--	Yes	Detected organic	0.022	0.065	0.477	0.022	RA	Yes	Exceeds screening level	L10sb-071	3/16/2010
Benzo(b)fluoranthene	205-99-2	7/ 20	0.012	6.2	0.41	--	Yes	Detected organic	0.221	0.65	4.77	0.221	RA	Yes	Exceeds screening level	L10sb-071	3/16/2010
Benzo(g,h,i)perylene ^e	191-24-2	8/ 20	0.0087	3.2	0.206	--	Yes	Detected organic	--	--	--	170	RSL	No	Below risk screening criteria	L10sb-071	3/16/2010
Benzo(k)fluoranthene	207-08-9	6/ 20	0.017	3	0.188	--	Yes	Detected organic	2.21	6.5	47.7	2.21	RA	Yes	Exceeds screening level	L10sb-071	3/16/2010
Bis(2-ethylhexyl)phthalate	117-81-7	4/ 4	0.024	0.033	0.0278	--	Yes	Detected organic	--	--	--	35	RSL	No	Below risk screening criteria	L10sb-073	3/16/2010
Carbazole	86-74-8	1/ 4	0.063	0.063	0.0381	--	Yes	Detected organic	69.4	44.6	835	44.6	RC	No	Below risk screening criteria	L10sb-073	3/16/2010
Chrysene	218-01-9	7/ 20	0.013	5.5	0.35	--	Yes	Detected organic	22.1	65	477	22.1	RA	No	Below risk screening criteria	L10sb-071	3/16/2010
Di-n-butyl phthalate	84-74-2	1/ 4	0.027	0.027	0.154	--	Yes	Detected organic	--	--	--	610	RSL	No	Below risk screening criteria	L10sb-073	3/16/2010
Dibenz(a,h)anthracene	53-70-3	6/ 20	0.0098	0.77	0.058	--	Yes	Detected organic	0.022	0.065	0.477	0.022	RA	Yes	Exceeds screening level	L10sb-071	3/16/2010
Dibenzofuran	132-64-9	1/ 4	0.023	0.023	0.153	--	Yes	Detected organic	119	15.3	1192	15.3	RC	No	Below risk screening criteria	L10sb-073	3/16/2010
Fluoranthene	206-44-0	9/ 20	0.009	16	1.02	--	Yes	Detected organic	276	163	5087	163	RC	No	Below risk screening criteria	L10sb-071	3/16/2010
Fluorene	86-73-7	5/ 20	0.0094	2.1	0.13	--	Yes	Detected organic	737	243	11458	243	RC	No	Below risk screening criteria	L10sb-071	3/16/2010
Indeno(1,2,3-cd)pyrene	193-39-5	8/ 20	0.011	2.8	0.185	--	Yes	Detected organic	0.221	0.65	4.77	0.221	RA	Yes	Exceeds screening level	L10sb-071	3/16/2010
Naphthalene	91-20-3	3/ 20	0.012	0.69	0.0565	--	Yes	Detected organic	368	122	1541	122	RC	No	Below risk screening criteria	L10sb-071	3/16/2010

Table G-2. SRC and COPC Screening for Subsurface Soil (1-13 ft bgs Discrete Samples) at Load Line 10

Analyte (mg/kg)	CAS Number	Freq of Detect	Minimum Detect	Maximum Detect	Average Result	Background Criteria ^a	SRC? (yes/no)	SRC Justification	Screening FWCUG ^b (HQ= 0.1 or Risk=10 ⁻⁶)			Risk Screening Level	Screening Level Source ^c	COPC? (yes/no)	COPC Justification	Station at Max Detect	Date Collected at Max Detect
									RA	RC	NGT						
Phenanthrene ^e	85-01-8	7/ 20	0.014	13	0.801	--	Yes	Detected organic	--	--	--	170	RSL	No	Below risk screening criteria	L10sb-071	3/16/2010
Pyrene	129-00-0	8/ 20	0.016	11	0.698	--	Yes	Detected organic	207	122	3815	122	RC	No	Below risk screening criteria	L10sb-071	3/16/2010
Volatile Organic Compounds																	
2-Butanone	78-93-3	1/ 4	0.0028	0.0028	0.0097	--	Yes	Detected organic	--	--	--	2800	RSL	No	Below risk screening criteria	L10sb-073	3/16/2010
Bromomethane	74-83-9	1/ 4	0.0013	0.0013	0.00256	--	Yes	Detected organic	--	--	--	0.73	RSL	No	Below risk screening criteria	L10sb-073	3/16/2010

^aBackground criteria for >1 ft bgs from final facility-wide background values for RVAAP, published in the *Final Phase II Remedial Investigation Report for Winklepeck Burning Grounds at Ravenna Army Ammunition Plant, Ravenna, Ohio* (USACE 2001).

^bFacility-wide Clean-up Goals (FWCUG) for Resident Adult (RA), Resident Child (RC), and National Guard Trainee (NGT) from *Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (USACE 2010).

^cScreening Level Source:
NGT = FWCUG for National Guard Trainee.
RDA = Concentration associated with recommended daily allowance of essential nutrient.
RA = FWCUG for Resident Adult.
RC = FWCUG for Resident Child.
RSL = USEPA Residential Regional Screening Level.

^dFWCUG is the most conservative (smallest) of the FWCUGs for hexavalent and trivalent chromium.

^eNo reference dose or cancer potency factors are available for these PAHs, therefore, the RSL value for pyrene was used (NDEP 2006).

bgs = Below ground surface.

CAS = Chemical Abstract Service.

COPC = Chemical of Potential Concern.

HQ = Hazard Quotient.

PAH = Polycyclic Aromatic Hydrocarbon.

SRC = Site-related Contaminant.

USEPA = United States Environmental Protection Agency.

--=No value available.

Bold = Chemical is a COPC.

Table G-3. SRC and COPC Screening for Sediment at Load Line 10

Analyte (mg/kg)	CAS Number	Freq of Detect	Minimum Detect	Maximum Detect	Average Result	Background Criteria ^a	SRC? (yes/no)	SRC Justification	Screening FWCUG ^b (HQ= 0.1 or Risk=10 ⁻⁶)			Risk Screening Level	Screening Level Source ^c	COPC? (yes/no)	COPC Justification	Station at Max Detect	Date Collected at Max Detect
									RA	RC	NGT						
Metals																	
Aluminum	7429-90-5	1/ 1	8600	8600	8600	13900	No	Below background	52923	7380	3496	3496	NGT	No	Below background	L10sd-094	02/18/10
Antimony	7440-36-0	1/ 1	0.12	0.12	0.12	0	Yes	Exceeds background	13.6	2.82	175	2.82	RC	No	Below risk screening criteria	L10sd-094	02/18/10
Arsenic	7440-38-2	1/ 1	8	8	8	19.5	No	Below background	0.425	0.524	2.78	0.425	RA	No	Below background	L10sd-094	02/18/10
Barium	7440-39-3	1/ 1	65.9	65.9	65.9	123	No	Below background	8966	1413	351	351	NGT	No	Below background	L10sd-094	02/18/10
Beryllium	7440-41-7	1/ 1	0.66	0.66	0.66	0.38	Yes	Exceeds background	--	--	--	16	RSL	No	Below risk screening criteria	L10sd-094	02/18/10
Cadmium	7440-43-9	1/ 1	0.52	0.52	0.52	0	Yes	Exceeds background	22.3	6.41	10.9	6.41	RC	No	Below risk screening criteria	L10sd-094	02/18/10
Calcium	7440-70-2	1/ 1	1860	1860	1860	5510	No	Essential nutrient	--	--	--	1000000	RDA	No	Essential nutrient	L10sd-094	02/18/10
Chromium ^d	7440-47-3	1/ 1	11.6	11.6	11.6	18.1	No	Below background	90.4	19.9	1.64	1.64	NGT	No	Below background	L10sd-094	02/18/10
Cobalt ^e	7440-48-4	1/ 1	6.5	6.5	6.5	9.1	No	Below background	803	131	7.03	7.03	NGT	No	Below background	L10sd-094	02/18/10
Copper	7440-50-8	1/ 1	12.4	12.4	12.4	27.6	No	Below background	2714	311	25368	311	RC	No	Below background	L10sd-094	02/18/10
Iron	7439-89-6	1/ 1	16200	16200	16200	28200	No	Essential nutrient	19010	2313	184370	180000	RDA	No	Essential nutrient	L10sd-094	02/18/10
Lead	7439-92-1	1/ 1	21.7	21.7	21.7	27.4	No	Below background	--	--	--	400	RSL	No	Below background	L10sd-094	02/18/10
Magnesium	7439-95-4	1/ 1	1550	1550	1550	2760	No	Essential nutrient	--	--	--	1000000	RDA	No	Essential nutrient	L10sd-094	02/18/10
Manganese	7439-96-5	1/ 1	351	351	351	1950	No	Below background	1482	293	35.1	35.1	NGT	No	Below background	L10sd-094	02/18/10
Mercury	7439-97-6	1/ 1	0.049	0.049	0.049	0.059	No	Below background	16.5	2.27	172	2.27	RC	No	Below background	L10sd-094	02/18/10
Nickel	7440-02-0	1/ 1	13.3	13.3	13.3	17.7	No	Below background	1346	155	12639	155	RC	No	Below background	L10sd-094	02/18/10
Potassium	7440-09-7	1/ 1	519	519	519	1950	No	Essential nutrient	--	--	--	1000000	RDA	No	Essential nutrient	L10sd-094	02/18/10
Selenium	7782-49-2	1/ 1	1	1	1	1.7	No	Below background	--	--	--	39	RSL	No	Below background	L10sd-094	02/18/10
Sodium	7440-23-5	1/ 1	29.8	29.8	29.8	112	No	Essential nutrient	--	--	--	1000000	RDA	No	Essential nutrient	L10sd-094	02/18/10
Thallium	7440-28-0	1/ 1	0.17	0.17	0.17	0.89	No	Below background	4.76	0.612	47.7	0.612	RC	No	Below background	L10sd-094	02/18/10
Vanadium	7440-62-2	1/ 1	18.2	18.2	18.2	26.1	No	Below background	156	44.9	2304	44.9	RC	No	Below background	L10sd-094	02/18/10
Zinc	7440-66-6	1/ 1	94.1	94.1	94.1	532	No	Below background	19659	2321	187269	2321	RC	No	Below background	L10sd-094	02/18/10
Explosives																	
Nitroguanidine	556-88-7	1/ 1	0.32	0.32	0.32	--	Yes	Detected organic	--	--	--	610	RSL	No	Below risk screening criteria	L10sd-094	02/18/10
Semi-volatile Organic Compounds																	
3+4-Methylphenol ^f	15831-10-4	1/ 1	0.032	0.032	0.032	--	Yes	Detected organic	--	--	--	610	RSL	No	Below risk screening criteria	L10sd-094	02/18/10
Benz(a)anthracene	56-55-3	1/ 1	0.01	0.01	0.01	--	Yes	Detected organic	0.221	0.65	4.77	0.221	RA	No	Below risk screening criteria	L10sd-094	02/18/10
Benzo(a)pyrene	50-32-8	1/ 1	0.012	0.012	0.012	--	Yes	Detected organic	0.022	0.065	0.477	0.022	RA	No	Below risk screening criteria	L10sd-094	02/18/10
Benzo(b)fluoranthene	205-99-2	1/ 1	0.021	0.021	0.021	--	Yes	Detected organic	0.221	0.65	4.77	0.221	RA	No	Below risk screening criteria	L10sd-094	02/18/10
Chrysene	218-01-9	1/ 1	0.015	0.015	0.015	--	Yes	Detected organic	--	--	--	15	RSL	No	Below risk screening criteria	L10sd-094	02/18/10
Fluoranthene	206-44-0	1/ 1	0.02	0.02	0.02	--	Yes	Detected organic	--	--	--	230	RSL	No	Below risk screening criteria	L10sd-094	02/18/10
Pyrene	129-00-0	1/ 1	0.013	0.013	0.013	--	Yes	Detected organic	--	--	--	170	RSL	No	Below risk screening criteria	L10sd-094	02/18/10
Volatile Organic Compounds																	
Toluene	108-88-3	1/ 1	0.00042	0.00042	0.00042	--	Yes	Detected organic	--	--	--	500	RSL	No	Below risk screening criteria	L10sd-094	02/18/10

^aBackground criteria for sediment from final facility-wide background values for RVAAP, published in the *Final Phase II Remedial Investigation Report for Winklepeck Burning Grounds at Ravenna Army Ammunition Plant, Ravenna, Ohio* (USACE 2001).

^bFacility-wide Clean-up Goals (FWCUG) for Resident Adult (RA), Resident Child (RC), and National Guard Trainee (NGT) from *Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (USACE 2010).

^cScreening Level Source:

NGT = FWCUG for National Guard Trainee.

RDA = Concentration associated with recommended daily allowance of essential nutrient.

RA = FWCUG for Resident Adult.

RF = FWCUG for Resident Child.

RSL = USEPA Residential Regional Screening Level.

^dFWCUG is the most conservative (smallest) of the FWCUGs for hexavalent and trivalent chromium.

^eNo FWCUG available for cobalt in sediment. Value is FWCUG for cobalt in soil.

^fScreening value is the RSL for cresols.

bgs = Below ground surface.

CAS = Chemical Abstract Service.

COPC = Chemical of Potential Concern.

HQ = Hazard Quotient.

SRC = Site-related Contaminant.

USEPA = United States Environmental Protection Agency.

--=No value available

Bold = Chemical is a COPC.

Table G-4. SRC and COPC Screening for Surface Water at Load Line 10

Analyte (mg/L)	CAS Number	Freq of Detect	Minimum Detect	Maximum Detect	Average Result	Background Criteria ^a	SRC? (yes/no)	SRC Justification	Screening CUG ^b (HQ= 0.1 or Risk=10 ⁻⁶)			Risk Screening Level	Screening Level Source ^c	COPC? (yes/no)	COPC Justification	Station at Max Detect	Date Collected at Max Detect
									RA	RC	NGT						
Metals																	
Aluminum	7429-90-5	1/ 1	1.35	1.35	1.35	3.37	No	Below background	63.895	14.827	73.445	14.827	RC	No	Below background	L10sw-094	3/9/2010
Antimony	7440-36-0	1/ 1	0.00026	0.00026	0.00026	0	Yes	Exceeds background	0.0171	0.0049	0.0065	0.00491	RC	No	Below risk screening criteria	L10sw-094	3/9/2010
Arsenic	7440-38-2	1/ 1	0.00087	0.00087	0.00087	0.0032	No	Below background	0.0011	0.0012	0.0042	0.0011	RA	No	Below background	L10sw-094	3/9/2010
Barium	7440-39-3	1/ 1	0.017	0.017	0.017	0.0475	No	Below background	12.131	2.901	10.64	2.901	RC	No	Below background	L10sw-094	3/9/2010
Calcium	7440-70-2	1/ 1	17.8	17.8	17.8	41.4	No	Essential nutrient	--	--	--	500	RDA	No	Essential nutrient	L10sw-094	3/9/2010
Chromium ^d	7440-47-3	1/ 1	0.0016	0.0016	0.0016	0	Yes	Exceeds background	0.0903	0.0303	0.0245	0.0245	NGT	No	Below risk screening criteria	L10sw-094	3/9/2010
Cobalt	7440-48-4	1/ 1	0.00027	0.00027	0.00027	0	Yes	Exceeds background	--	--	--	0.00047	RSL	No	Below risk screening criteria	L10sw-094	3/9/2010
Copper	7440-50-8	1/ 1	0.003	0.003	0.003	0.0079	No	Below background	2.788	0.614	7.199	0.614	RC	No	Below background	L10sw-094	3/9/2010
Iron	7439-89-6	1/ 1	1.32	1.32	1.32	2.56	No	Essential nutrient	20	4.527	31.296	18	RDA	No	Essential nutrient	L10sw-094	3/9/2010
Lead	7439-92-1	1/ 1	0.0012	0.0012	0.0012	0	Yes	Exceeds background	--	--	--	0.015	RSL	No	Below risk screening criteria	L10sw-094	3/9/2010
Magnesium	7439-95-4	1/ 1	2.68	2.68	2.68	10.8	No	Essential nutrient	--	--	--	200	RDA	No	Essential nutrient	L10sw-094	3/9/2010
Manganese	7439-96-5	1/ 1	0.0183	0.0183	0.0183	0.391	No	Below background	2.476	0.633	1.449	0.633	RC	No	Below background	L10sw-094	3/9/2010
Nickel	7440-02-0	1/ 1	0.0015	0.0015	0.0015	0	Yes	Exceeds background	1.445	0.312	8.258	0.312	RC	No	Below risk screening criteria	L10sw-094	3/9/2010
Potassium	7440-09-7	1/ 1	1.61	1.61	1.61	3.17	No	Essential nutrient	--	--	--	1750	RDA	No	Essential nutrient	L10sw-094	3/9/2010
Sodium	7440-23-5	1/ 1	0.742	0.742	0.742	21.3	No	Essential nutrient	--	--	--	1200	RDA	No	Essential nutrient	L10sw-094	3/9/2010
Vanadium	7440-62-2	1/ 1	0.0023	0.0023	0.0023	0	Yes	Exceeds background	0.211	0.0706	0.0572	0.0572	NGT	No	Below risk screening criteria	L10sw-094	3/9/2010
Pesticides/PCBs																	
beta-BHC	319-85-7	1/ 1	0.0000095	0.0000095	0.0000095	--	Yes	Detected organic	0.0009	0.001	0.0102	0.000946	RA	No	Below risk screening criteria	L10sw-094	3/9/2010

^aBackground criteria for surface water from final facility-wide background values for RVAAP, published in the *Final Phase II Remedial Investigation Report for Winklepeck Burning Grounds at Ravenna Army Ammunition Plant, Ravenna, Ohio* (USACE 2001).

^bFacility-wide Clean-up Goals (FWCUG) for Resident Adult (RA), Resident Child (RC), and National Guard Trainee (NGT) from *Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (USACE 2010).

^cScreening Level Source:

NGT = FWCUG for National Guard Trainee.
RDA = Concentration associated with recommended daily allowance of essential nutrient.
RA = FWCUG for Resident Adult.
RC = FWCUG for Resident Child.
RSL = USEPA Tap Water Regional Screening Level.

^dFWCUG is the most conservative (smallest) of the FWCUGs for hexavalent and trivalent chromium.

CAS = Chemical Abstract Service.
COPC = Chemical of Potential Concern.

HQ = Hazard Quotient.

PCB = Polychlorinated Biphenyl.

SRC = Site-related Contaminant.

USEPA = United States Environmental Protection Agency.

--=No value available.

Bold = Chemical is a COPC.

Table G-5. COC Screening for Surface Soil (0-1 ft bgs ISM Samples) at Load Line 10 Unrestricted Land Use Receptor: Resident (Adult and Child)

Sample ID	Date	Analyte (mg/kg)		Aluminum	Arsenic ^c	Chromium ^d	Cobalt	Lead	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene
		CAS Number		7429-90-5	7440-38-2	7440-47-3	7440-48-4	7439-92-1	56-55-3	50-32-8	205-99-2	53-70-3	193-39-5
		Resident FWCUG ^a :											
		HQ=1		73798 RC	20.2 RC	81473 RC	1313 RC	400 RSL	--	--	--	--	--
		Risk=10 ⁻³		--	4.25 RA	--	8030 RA		2.21 RA	0.221 RA	2.21 RA	0.221 RA	2.21 RA
		Background Criteria ^b		17700	15.4	17.4	10.4	26.1	--	--	--	--	--
		Depth (ft)	Station	Result Exceeds FWCUG?	Result Exceeds FWCUG?	Result Exceeds FWCUG?	Result Exceeds FWCUG?	Result Exceeds FWCUG?	Result Exceeds FWCUG?	Result Exceeds FWCUG?	Result Exceeds FWCUG?	Result Exceeds FWCUG?	Result Exceeds FWCUG?
L10ss-001M-SO	11/16/2004	0.0 - 1.0	L10ss-001M	12000 No	7.3 No	14 No	4.4 No	22 No	NR	NR	NR	NR	NR
L10ss-002M-SO	11/16/2004	0.0 - 1.0	L10ss-002M	22000 No	4.9 No	12 No	2.9 No	120 No	NR	NR	NR	NR	NR
L10ss-003M-SO	11/16/2004	0.0 - 1.0	L10ss-003M	11000 No	11 No	21 No	8.9 No	430 Yes	NR	NR	NR	NR	NR
L10ss-004M-SO	11/17/2004	0.0 - 1.0	L10ss-004M	10000 No	12 No	18 No	8.1 No	52 No	NR	NR	NR	NR	NR
L10ss-005M-SO	11/17/2004	0.0 - 1.0	L10ss-005M	12000 No	12 No	23 No	8.6 No	51 No	NR	NR	NR	NR	NR
L10ss-006M-SO	11/17/2004	0.0 - 1.0	L10ss-006M	13000 No	11 No	22 No	8.3 No	100 No	NR	NR	NR	NR	NR
L10ss-007M-SO	11/17/2004	0.0 - 1.0	L10ss-007M	8200 No	12 No	33 No	8.2 No	91 No	NR	NR	NR	NR	NR
L10ss-008M-SO	11/17/2004	0.0 - 1.0	L10ss-008M	11000 No	9.5 No	26 No	5.2 No	70 No	NR	NR	NR	NR	NR
L10ss-009M-SO	11/17/2004	0.0 - 1.0	L10ss-009M	9500 No	13 No	19 No	8.8 No	74 No	NR	NR	NR	NR	NR
L10ss-010M-SO	11/16/2004	0.0 - 1.0	L10ss-010M	9600 No	14 No	17 No	9.2 No	45 No	0.04 No	0.047 No	0.063 No	<0.035U No	0.022J No
L10ss-011M-SO	11/16/2004	0.0 - 1.0	L10ss-011M	8000 No	18 No	19 No	7.6 No	60 No	NR	NR	NR	NR	NR
L10ss-012M-SO	11/17/2004	0.0 - 1.0	L10ss-012M	8100 No	14 No	19 No	8 No	41 No	NR	NR	NR	NR	NR
L10ss-013M-SO	11/16/2004	0.0 - 1.0	L10ss-013M	7700 No	11 No	18 No	6.1 No	53 No	NR	NR	NR	NR	NR
L10ss-014M-SO	11/16/2004	0.0 - 1.0	L10ss-014M	9000 No	13 No	17 No	8.8 No	47 No	NR	NR	NR	NR	NR
L10ss-015M-SO	11/17/2004	0.0 - 1.0	L10ss-015M	7000 No	10 No	29 No	6.6 No	72 No	NR	NR	NR	NR	NR
L10ss-016M-SO	11/17/2004	0.0 - 1.0	L10ss-016M	9100 No	11 No	22 No	6.8 No	55 No	NR	NR	NR	NR	NR
L10ss-017M-SO	11/17/2004	0.0 - 1.0	L10ss-017M	9000 No	9.3 No	15 No	6.8 No	40 No	NR	NR	NR	NR	NR
L10ss-018M-SO	11/17/2004	0.0 - 1.0	L10ss-018M	8300 No	10 No	21 No	8.3 No	65 No	NR	NR	NR	NR	NR
L10ss-019M-SO	11/17/2004	0.0 - 1.0	L10ss-019M	11000 No	11 No	27 No	7 No	83 No	NR	NR	NR	NR	NR
L10ss-020M-SO	11/17/2004	0.0 - 1.0	L10ss-020M	9700 No	12 No	19 No	7.9 No	26 No	NR	NR	NR	NR	NR
L10ss-021M-SO	11/18/2004	0.0 - 1.0	L10ss-021M	10000 No	15 No	22 No	8.8 No	38 No	0.018J No	0.022J No	0.033J No	<0.034U No	0.014J No
L10ss-022M-SO	11/18/2004	0.0 - 1.0	L10ss-022M	11000 No	10 No	19 No	7.4 No	55 No	NR	NR	NR	NR	NR
L10ss-023M-SO	11/18/2004	0.0 - 1.0	L10ss-023M	11000 No	11 No	24 No	8.8 No	60 No	NR	NR	NR	NR	NR
L10ss-024M-SO	11/17/2004	0.0 - 1.0	L10ss-024M	12000 No	14 No	19 No	11 No	17 No	NR	NR	NR	NR	NR
L10ss-025M-SO	11/16/2004	0.0 - 1.0	L10ss-025M	12000 No	11 No	18 No	10 No	25 No	NR	NR	NR	NR	NR
L10ss-026M-SO	11/16/2004	0.0 - 1.0	L10ss-026M	12000 No	13 No	18 No	10 No	32 No	NR	NR	NR	NR	NR
L10ss-027M-SO	11/19/2004	0.0 - 1.0	L10ss-027M	13000 No	13 No	20 No	13 No	21 No	0.032 No	0.038 No	0.047 No	<0.032U No	0.022J No
L10ss-028M-SO	11/18/2004	0.0 - 1.0	L10ss-028M	14000 No	16 No	19 No	8.9 No	23 No	NR	NR	NR	NR	NR
L10ss-029M-SO	11/17/2004	0.0 - 1.0	L10ss-029M	12000 No	15 No	18 No	8 No	26 No	NR	NR	NR	NR	NR
L10ss-030M-SO	11/16/2004	0.0 - 1.0	L10ss-030M	11000 No	14 No	20 No	8.3 No	25 No	NR	NR	NR	NR	NR
L10ss-031M-SO	11/16/2004	0.0 - 1.0	L10ss-031M	12000 No	12 No	19 No	7.6 No	33 No	NR	NR	NR	NR	NR
L10ss-032M-SO	11/18/2004	0.0 - 1.0	L10ss-032M	12000 No	12 No	18 No	8.3 No	25 No	NR	NR	NR	NR	NR
L10ss-033M-SO	11/18/2004	0.0 - 1.0	L10ss-033M	12000 No	8.4 No	24 No	11 No	21 No	<0.037U No	0.012J No	0.02J No	<0.037U No	<0.037U No
L10ss-034M-SO	11/17/2004	0.0 - 1.0	L10ss-034M	14000 No	11 No	24 No	11 No	15 No	NR	NR	NR	NR	NR
L10ss-035M-SO	11/18/2004	0.0 - 1.0	L10ss-035M	11000 No	7.6 No	15 No	11 No	21 No	NR	NR	NR	NR	NR
L10ss-036M-SO	11/17/2004	0.0 - 1.0	L10ss-036M	12000 No	13 No	23 No	10 No	19 No	NR	NR	NR	NR	NR
L10ss-040M-SO	11/19/2004	0.0 - 1.0	L10ss-040M	11000 No	12 No	18 No	9.9 No	22 No	NR	NR	NR	NR	NR
L10ss-040MU-SO	8/9/2007	0.0 - 1.0	L10ss-040MU	9490 No	12.5 No	21 No	9.1 No	21.1 No	NR	NR	NR	NR	NR
L10ss-041M-SO	8/9/2007	0.0 - 1.0	L10ss-041M	10100 No	12.1 No	16.8 No	8.3 No	27.7 No	NR	NR	NR	NR	NR
L10ss-042M-SO	8/8/2007	0.0 - 1.0	L10ss-042M	8990 No	12.1 No	28.8 No	7.6 No	76.6 No	NR	NR	NR	NR	NR
L10ss-043M-SO	8/8/2007	0.0 - 1.0	L10ss-043M	10100 No	12.7 No	18.6 No	7.5 No	49 No	NR	NR	NR	NR	NR
L10ss-044M-SO	8/8/2007	0.0 - 1.0	L10ss-044M	8860 No	13.9 No	18.7 No	8 No	42.5J No	NR	NR	NR	NR	NR
L10ss-045M-SO	8/8/2007	0.0 - 1.0	L10ss-045M	8150 No	12.4 No	19.6 No	7.9 No	91.6 No	NR	NR	NR	NR	NR
L10ss-046M-SO	8/8/2007	0.0 - 1.0	L10ss-046M	8470 No	13.7 No	19.1 No	7.7 No	62.7 No	NR	NR	NR	NR	NR
L10ss-047M-SO	8/9/2007	0.0 - 1.0	L10ss-047M	7260 No	13.3 No	18.3 No	6.6 No	58.4 No	NR	NR	NR	NR	NR
L10ss-048M-SO	8/8/2007	0.0 - 1.0	L10ss-048M	10600 No	11.5 No	21.6 No	8.5 No	34.6 No	NR	NR	NR	NR	NR

Table G-5. COC Screening for Surface Soil (0-1 ft bgs ISM Samples) at Load Line 10 Unrestricted Land Use Receptor: Resident (Adult and Child)

Sample ID	Date	Analyte (mg/kg)		Aluminum	Arsenic ^c	Chromium ^d	Cobalt	Lead	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene
		CAS Number		7429-90-5	7440-38-2	7440-47-3	7440-48-4	7439-92-1	56-55-3	50-32-8	205-99-2	53-70-3	193-39-5
		Resident FWCUG ^a :											
		HQ=1		73798 RC	20.2 RC	81473 RC	1313 RC	400 RSL	--	--	--	--	--
		Risk=10 ⁻³		--	4.25 RA	--	8030 RA		2.21 RA	0.221 RA	2.21 RA	0.221 RA	2.21 RA
		Background Criteria ^b		17700	15.4	17.4	10.4	26.1	--	--	--	--	--
		Depth (ft)	Station	Result Exceeds FWCUG?	Result Exceeds FWCUG?	Result Exceeds FWCUG?	Result Exceeds FWCUG?	Result Exceeds FWCUG?	Result Exceeds FWCUG?	Result Exceeds FWCUG?	Result Exceeds FWCUG?	Result Exceeds FWCUG?	Result Exceeds FWCUG?
L10ss-049M-SO	8/8/2007	0.0 - 1.0	L10ss-049M	8130 No	13.8 No	22.1 No	7.6 No	102 No	NR	NR	NR	NR	NR
L10ss-050M-SO	8/9/2007	0.0 - 1.0	L10ss-050M	8780 No	11.2 No	21 No	7.6 No	77.6 No	NR	NR	NR	NR	NR
L10ss-051M-SO	8/9/2007	0.0 - 1.0	L10ss-051M	8080 No	10.1 No	17.4 No	7 No	48.4 No	2.4 Yes	2 Yes	2.6 Yes	<1.6U No	<1.6U No
L10ss-052M-SO	8/9/2007	0.0 - 1.0	L10ss-052M	9020 No	10.1 No	16.8 No	5.8 No	80 No	NR	NR	NR	NR	NR
L10ss-053M-SO	8/9/2007	0.0 - 1.0	L10ss-053M	9910 No	20 Yes	17.7 No	9.1 No	41.9 No	1.6 No	<1.6U No	1.8 No	<1.6U No	<1.6U No
L10ss-054M-SO	8/9/2007	0.0 - 1.0	L10ss-054M	9720 No	9.9 No	26.4 No	6.4 No	28.1 No	NR	NR	NR	NR	NR
L10ss-055M-SO	8/9/2007	0.0 - 1.0	L10ss-055M	8890 No	11 No	24.3 No	7.1 No	64 No	NR	NR	NR	NR	NR
L10ss-056M-SO	8/9/2007	0.0 - 1.0	L10ss-056M	8460 No	12.1 No	15.8 No	8 No	45.7 No	<2.2U No	<2.2U No	2.3 Yes	<2.2U No	<2.2U No
L10ss-057M-SO	8/8/2007	0.0 - 1.0	L10ss-057M	9300 No	12 No	19.1 No	9.1 No	114 No	NR	NR	NR	NR	NR
L10ss-058M-SO	8/8/2007	0.0 - 1.0	L10ss-058M	7940 No	11.4 No	18.2 No	7.5 No	63.4 No	NR	NR	NR	NR	NR
L10ss-059M-SO	8/8/2007	0.0 - 1.0	L10ss-059M	9120 No	11.6 No	21.5 No	8.2 No	124 No	NR	NR	NR	NR	NR
L10ss-060M-SO	8/8/2007	0.0 - 1.0	L10ss-060M	7590 No	12.7 No	22.9 No	7.5 No	22.5 No	NR	NR	NR	NR	NR
L10ss-079M-5536-SO	4/13/2010	0.0 - 1.0	L10ss-079M	11400 No	10.6 No	18.7 No	8.4 No	29.4J No	0.065 No	0.064 No	0.1 No	0.012 No	0.042 No
L10ss-080M-5537-SO	4/13/2010	0.0 - 1.0	L10ss-080M	13800 No	12.9 No	22.6 No	12.7 No	25.6J No	3.5 Yes	3.3 Yes	4.5 Yes	0.5J Yes	1.8 No
L10ss-081M-5538-SO	4/13/2010	0.0 - 1.0	L10ss-081M	11800 No	11.8 No	18.8 No	9.6 No	31.5J No	0.26 No	0.22 No	0.33 No	0.037 No	0.14 No
L10ss-082M-5539-SO	4/13/2010	0.0 - 1.0	L10ss-082M	12300 No	10.1 No	17.8 No	9.2 No	15.9J No	0.034 No	0.034 No	0.048 No	<0.0068U No	0.021 No
L10ss-083M-5540-SO	4/13/2010	0.0 - 1.0	L10ss-083M	10300 No	11.8 No	17.9 No	14.7 No	20J No	0.15 No	0.13 No	0.21 No	0.023 No	0.082 No
L10ss-084M-5541-SO	4/13/2010	0.0 - 1.0	L10ss-084M	12900 No	10.4 No	19.8 No	10.1 No	15.5J No	0.0084 No	0.0094 No	0.018 No	<0.0068U No	0.0073 No
L10ss-085M-5542-SO	4/13/2010	0.0 - 1.0	L10ss-085M	11500 No	11.1 No	19.2 No	9 No	17.1J No	0.025 No	0.026 No	0.043 No	<0.0068U No	0.017 No
L10ss-086M-5543-SO	4/13/2010	0.0 - 1.0	L10ss-086M	12400 No	11.1 No	20.2 No	9.2 No	16.8J No	0.027 No	0.029 No	0.045 No	<0.0068U No	0.018 No
L10ss-087M-5544-SO	4/13/2010	0.0 - 1.0	L10ss-087M	11700 No	10.3 No	17.9 No	10.4 No	18.9J No	0.072 No	0.07 No	0.11 No	0.01 No	0.04 No
L10ss-088M-5545-SO	4/13/2010	0.0 - 1.0	L10ss-088M	13200 No	11.7 No	21.8 No	8.9 No	27.2J No	1.1 No	0.92 Yes	1.2 No	0.15J No	0.55 No
L10ss-089M-5546-SO	4/13/2010	0.0 - 1.0	L10ss-089M	13400 No	11.8 No	20.1 No	9.9 No	23J No	0.22 No	0.21 No	0.29 No	0.032 No	0.12 No
L10ss-090M-5547-SO	4/13/2010	0.0 - 1.0	L10ss-090M	12900 No	12 No	21.6 No	9.1 No	35.3J No	0.37 No	0.33 Yes	0.51 No	0.054 No	0.2 No
L10ss-091M-5548-SO	4/13/2010	0.0 - 1.0	L10ss-091M	12400 No	12.1 No	20.8 No	8.5 No	23.3J No	0.51 No	0.46 Yes	0.66 No	0.079 No	0.25 No
L10ss-092M-5549-SO	4/13/2010	0.0 - 1.0	L10ss-092M	11200 No	10.2 No	20.3 No	7.8 No	21.3J No	0.11 No	0.19 No	0.34 No	0.058 No	0.18 No
L10ss-093M-5550-SO	4/13/2010	0.0 - 1.0	L10ss-093M	10600 No	10.7 No	19.2 No	9.3 No	20.9J No	0.54 No	0.55 Yes	0.85 No	0.1 No	0.35 No

^aFacility-wide Clean-up Goals (FWCUG) for Resident Adult (RA) and Resident Child (RC) from *Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (USACE 2010). The lower of the two values for the RFA and RFC are presented as identified.

^bBackground criteria for 0-1 ft bgs from final facility-wide background values for RVAAP, published in the *Final Phase II Remedial Investigation Report for Winklepeck Burning Grounds at Ravenna Army Ammunition Plant, Ravenna, Ohio* (USACE 2001).

^cSince Resident Farmer FWCUG for arsenic is less than the background concentration, background is used as the CUG for comparison.

^dUsing the lines of evidence presented in Section 7.2.4.1, FWCUGs for trivalent chromium were identified as being appropriate for use at Load Line 10.

Data Qualifiers:

J= Indicates that the analyte was positively identified, but the associated numerical value is an approximate concentration of the analyte in the sample.

U= Not detected

UJ=Nnot detected and reporting limit estimated

bgs = Below ground surface.

CAS = Chemical Abstract Service.

COC = Chemical of Concern.

HQ = Hazard Quotient.

ISM = Incremental Sampling Method.

NR = Not reported.

-- = No value available.

Bold = Concentration exceeds FWCUG in this sample.

Table G-6. Sum-of Ratios for COPC Screening for Surface Soil (0-1 ft bgs ISM Samples) at Load Line 10 Unrestricted Land Use Receptor: Resident (Adult and Child)

Sample ID	Date	Analyte (mg/kg)		Aluminum		Chromium		Cobalt		Sum of Ratios
		CAS Number		7429-90-5		7440-47-3		7440-48-4		
		Resident FWCUG ^a :								
		Critical Effect or Target Organ		Neurotoxicity in Offspring		NOAEL		Not specified		Neurotoxicity in Offspring
		HQ=1		73,798		81,473		1313		
		Background Criteria ^b		17700		17.4		10.4		
		Depth (ft)	Station	Result	Ratio	Result	Ratio	Result	Ratio	(Al, Cr, Co)
L10ss-001M-SO	11/16/2004	0.0 - 1.0	L10ss-001M	12000	NA	14	NA	4.4	NA	NA
L10ss-002M-SO	11/16/2004	0.0 - 1.0	L10ss-002M	22000	3.0E-01	12	NA	2.9	NA	3.0E-01
L10ss-003M-SO	11/16/2004	0.0 - 1.0	L10ss-003M	11000	NA	21	2.6E-04	8.9	NA	2.6E-04
L10ss-004M-SO	11/17/2004	0.0 - 1.0	L10ss-004M	10000	NA	18	2.2E-04	8.1	NA	2.2E-04
L10ss-005M-SO	11/17/2004	0.0 - 1.0	L10ss-005M	12000	NA	23	2.8E-04	8.6	NA	2.8E-04
L10ss-006M-SO	11/17/2004	0.0 - 1.0	L10ss-006M	13000	NA	22	2.7E-04	8.3	NA	2.7E-04
L10ss-007M-SO	11/17/2004	0.0 - 1.0	L10ss-007M	8200	NA	33	4.1E-04	8.2	NA	4.1E-04
L10ss-008M-SO	11/17/2004	0.0 - 1.0	L10ss-008M	11000	NA	26	3.2E-04	5.2	NA	3.2E-04
L10ss-009M-SO	11/17/2004	0.0 - 1.0	L10ss-009M	9500	NA	19	2.3E-04	8.8	NA	2.3E-04
L10ss-010M-SO	11/16/2004	0.0 - 1.0	L10ss-010M	9600	NA	17	NA	9.2	NA	NA
L10ss-011M-SO	11/16/2004	0.0 - 1.0	L10ss-011M	8000	NA	19	2.3E-04	7.6	NA	2.3E-04
L10ss-012M-SO	11/17/2004	0.0 - 1.0	L10ss-012M	8100	NA	19	2.3E-04	8	NA	2.3E-04
L10ss-013M-SO	11/16/2004	0.0 - 1.0	L10ss-013M	7700	NA	18	2.2E-04	6.1	NA	2.2E-04
L10ss-014M-SO	11/16/2004	0.0 - 1.0	L10ss-014M	9000	NA	17	NA	8.8	NA	NA
L10ss-015M-SO	11/17/2004	0.0 - 1.0	L10ss-015M	7000	NA	29	3.6E-04	6.6	NA	3.6E-04
L10ss-016M-SO	11/17/2004	0.0 - 1.0	L10ss-016M	9100	NA	22	2.7E-04	6.8	NA	2.7E-04
L10ss-017M-SO	11/17/2004	0.0 - 1.0	L10ss-017M	9000	NA	15	NA	6.8	NA	NA
L10ss-018M-SO	11/17/2004	0.0 - 1.0	L10ss-018M	8300	NA	21	2.6E-04	8.3	NA	2.6E-04
L10ss-019M-SO	11/17/2004	0.0 - 1.0	L10ss-019M	11000	NA	27	3.3E-04	7	NA	3.3E-04
L10ss-020M-SO	11/17/2004	0.0 - 1.0	L10ss-020M	9700	NA	19	2.3E-04	7.9	NA	2.3E-04
L10ss-021M-SO	11/18/2004	0.0 - 1.0	L10ss-021M	10000	NA	22	2.7E-04	8.8	NA	2.7E-04
L10ss-022M-SO	11/18/2004	0.0 - 1.0	L10ss-022M	11000	NA	19	2.3E-04	7.4	NA	2.3E-04
L10ss-023M-SO	11/18/2004	0.0 - 1.0	L10ss-023M	11000	NA	24	2.9E-04	8.8	NA	2.9E-04
L10ss-024M-SO	11/17/2004	0.0 - 1.0	L10ss-024M	12000	NA	19	2.3E-04	11	8.4E-03	8.6E-03
L10ss-025M-SO	11/16/2004	0.0 - 1.0	L10ss-025M	12000	NA	18	2.2E-04	10	NA	2.2E-04
L10ss-026M-SO	11/16/2004	0.0 - 1.0	L10ss-026M	12000	NA	18	2.2E-04	10	NA	2.2E-04
L10ss-027M-SO	11/19/2004	0.0 - 1.0	L10ss-027M	13000	NA	20	2.5E-04	13	9.9E-03	1.0E-02
L10ss-028M-SO	11/18/2004	0.0 - 1.0	L10ss-028M	14000	NA	19	2.3E-04	8.9	NA	2.3E-04
L10ss-029M-SO	11/17/2004	0.0 - 1.0	L10ss-029M	12000	NA	18	2.2E-04	8	NA	2.2E-04
L10ss-030M-SO	11/16/2004	0.0 - 1.0	L10ss-030M	11000	NA	20	2.5E-04	8.3	NA	2.5E-04
L10ss-031M-SO	11/16/2004	0.0 - 1.0	L10ss-031M	12000	NA	19	2.3E-04	7.6	NA	2.3E-04
L10ss-032M-SO	11/18/2004	0.0 - 1.0	L10ss-032M	12000	NA	18	2.2E-04	8.3	NA	2.2E-04
L10ss-033M-SO	11/18/2004	0.0 - 1.0	L10ss-033M	12000	NA	24	2.9E-04	11	8.4E-03	8.7E-03
L10ss-034M-SO	11/17/2004	0.0 - 1.0	L10ss-034M	14000	NA	24	2.9E-04	11	8.4E-03	8.7E-03
L10ss-035M-SO	11/18/2004	0.0 - 1.0	L10ss-035M	11000	NA	15	NA	11	8.4E-03	8.4E-03
L10ss-036M-SO	11/17/2004	0.0 - 1.0	L10ss-036M	12000	NA	23	2.8E-04	10	NA	2.8E-04
L10ss-040M-SO	11/19/2004	0.0 - 1.0	L10ss-040M	11000	NA	18	2.2E-04	9.9	NA	2.2E-04
L10ss-040MU-SO	8/9/2007	0.0 - 1.0	L10ss-040MU	9490	NA	21	2.6E-04	9.1	NA	2.6E-04
L10ss-041M-SO	8/9/2007	0.0 - 1.0	L10ss-041M	10100	NA	16.8	NA	8.3	NA	NA
L10ss-042M-SO	8/8/2007	0.0 - 1.0	L10ss-042M	8990	NA	28.8	3.5E-04	7.6	NA	3.5E-04
L10ss-043M-SO	8/8/2007	0.0 - 1.0	L10ss-043M	10100	NA	18.6	2.3E-04	7.5	NA	2.3E-04
L10ss-044M-SO	8/8/2007	0.0 - 1.0	L10ss-044M	8860	NA	18.7	2.3E-04	8	NA	2.3E-04
L10ss-045M-SO	8/8/2007	0.0 - 1.0	L10ss-045M	8150	NA	19.6	2.4E-04	7.9	NA	2.4E-04
L10ss-046M-SO	8/8/2007	0.0 - 1.0	L10ss-046M	8470	NA	19.1	2.3E-04	7.7	NA	2.3E-04

Table G-6. Sum-of Ratios for COPC Screening for Surface Soil (0-1 ft bgs ISM Samples) at Load Line 10 Unrestricted Land Use Receptor: Resident (Adult and Child)

Sample ID	Date	Analyte (mg/kg)		Aluminum		Chromium		Cobalt		Sum of Ratios
		CAS Number		7429-90-5		7440-47-3		7440-48-4		
		Resident FWCUG ^a :								
		Critical Effect or Target Organ		Neurotoxicity in Offspring		NOAEL		Not specified		Neurotoxicity in Offspring
		HQ=1		73,798		81,473		1313		
		Background Criteria ^b		17700		17.4		10.4		
		Depth (ft)	Station	Result	Ratio	Result	Ratio	Result	Ratio	(Al, Cr, Co)
L10ss-047M-SO	8/9/2007	0.0 - 1.0	L10ss-047M	7260	NA	18.3	2.2E-04	6.6	NA	2.2E-04
L10ss-048M-SO	8/8/2007	0.0 - 1.0	L10ss-048M	10600	NA	21.6	2.7E-04	8.5	NA	2.7E-04
L10ss-049M-SO	8/8/2007	0.0 - 1.0	L10ss-049M	8130	NA	22.1	2.7E-04	7.6	NA	2.7E-04
L10ss-050M-SO	8/9/2007	0.0 - 1.0	L10ss-050M	8780	NA	21	2.6E-04	7.6	NA	2.6E-04
L10ss-051M-SO	8/9/2007	0.0 - 1.0	L10ss-051M	8080	NA	17.4	NA	7	NA	NA
L10ss-052M-SO	8/9/2007	0.0 - 1.0	L10ss-052M	9020	NA	16.8	NA	5.8	NA	NA
L10ss-053M-SO	8/9/2007	0.0 - 1.0	L10ss-053M	9910	NA	17.7	2.2E-04	9.1	NA	2.2E-04
L10ss-054M-SO	8/9/2007	0.0 - 1.0	L10ss-054M	9720	NA	26.4	3.2E-04	6.4	NA	3.2E-04
L10ss-055M-SO	8/9/2007	0.0 - 1.0	L10ss-055M	8890	NA	24.3	3.0E-04	7.1	NA	3.0E-04
L10ss-056M-SO	8/9/2007	0.0 - 1.0	L10ss-056M	8460	NA	15.8	NA	8	NA	NA
L10ss-057M-SO	8/8/2007	0.0 - 1.0	L10ss-057M	9300	NA	19.1	2.3E-04	9.1	NA	2.3E-04
L10ss-058M-SO	8/8/2007	0.0 - 1.0	L10ss-058M	7940	NA	18.2	2.2E-04	7.5	NA	2.2E-04
L10ss-059M-SO	8/8/2007	0.0 - 1.0	L10ss-059M	9120	NA	21.5	2.6E-04	8.2	NA	2.6E-04
L10ss-060M-SO	8/8/2007	0.0 - 1.0	L10ss-060M	7590	NA	22.9	2.8E-04	7.5	NA	2.8E-04
L10ss-079M-5536-SO	4/13/2010	0.0 - 1.0	L10ss-079M	11400	NA	18.7	2.3E-04	8.4	NA	2.3E-04
L10ss-080M-5537-SO	4/13/2010	0.0 - 1.0	L10ss-080M	13800	NA	22.6	2.8E-04	12.7	9.7E-03	9.9E-03
L10ss-081M-5538-SO	4/13/2010	0.0 - 1.0	L10ss-081M	11800	NA	18.8	2.3E-04	9.6	NA	2.3E-04
L10ss-082M-5539-SO	4/13/2010	0.0 - 1.0	L10ss-082M	12300	NA	17.8	2.2E-04	9.2	NA	2.2E-04
L10ss-083M-5540-SO	4/13/2010	0.0 - 1.0	L10ss-083M	10300	NA	17.9	2.2E-04	14.7	1.1E-02	1.1E-02
L10ss-084M-5541-SO	4/13/2010	0.0 - 1.0	L10ss-084M	12900	NA	19.8	2.4E-04	10.1	NA	2.4E-04
L10ss-085M-5542-SO	4/13/2010	0.0 - 1.0	L10ss-085M	11500	NA	19.2	2.4E-04	9	NA	2.4E-04
L10ss-086M-5543-SO	4/13/2010	0.0 - 1.0	L10ss-086M	12400	NA	20.2	2.5E-04	9.2	NA	2.5E-04
L10ss-087M-5544-SO	4/13/2010	0.0 - 1.0	L10ss-087M	11700	NA	17.9	2.2E-04	10.4	NA	2.2E-04
L10ss-088M-5545-SO	4/13/2010	0.0 - 1.0	L10ss-088M	13200	NA	21.8	2.7E-04	8.9	NA	2.7E-04
L10ss-089M-5546-SO	4/13/2010	0.0 - 1.0	L10ss-089M	13400	NA	20.1	2.5E-04	9.9	NA	2.5E-04
L10ss-090M-5547-SO	4/13/2010	0.0 - 1.0	L10ss-090M	12900	NA	21.6	2.7E-04	9.1	NA	2.7E-04
L10ss-091M-5548-SO	4/13/2010	0.0 - 1.0	L10ss-091M	12400	NA	20.8	2.6E-04	8.5	NA	2.6E-04
L10ss-092M-5549-SO	4/13/2010	0.0 - 1.0	L10ss-092M	11200	NA	20.3	2.5E-04	7.8	NA	2.5E-04
L10ss-093M-5550-SO	4/13/2010	0.0 - 1.0	L10ss-093M	10600	NA	19.2	2.4E-04	9.3	NA	2.4E-04

^aFacility-wide Clean-up Goals (FWCUG) for Resident Farmer from *Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (USACE 2010).

^bBackground criteria for 0-1 ft bgs from final facility-wide background values for RVAAP, published in the *Final Phase II Remedial Investigation Report for Winklepeck Burning Grounds at Ravenna Army Ammunition Plant, Ravenna, Ohio* (USACE 2001).

bgs = Below ground surface.

CAS = Chemical Abstract Service.

COC = Chemical of Concern.

HQ = Hazard Quotient.

ISM = Incremental Sampling Method.

NA = Not applicable, the result for this sample is not included in sum of ratios (SOR) because the reported concentration is less than background screening value.

-- = No value available.

Bold = SOR is greater than 1 for this sample.

Table G-7. Sum-of-Ratios for Carcinogens COC Screening for Surface Soil (0-1 ft bgs ISM Samples) at Load Line 10 Unrestricted Land Use Receptor: Resident (Adult and Child)

Sample ID	Date	Analyte (mg/kg)		Cobalt		Benz(a)anthracene		Benzo(a)pyrene		Benzo(b)fluoranthene		Dibenz(a,h)anthracene		Indeno(1,2,3-cd)pyrene		Sum of Ratios
		CAS Number		7440-48-4		56-55-3		50-32-8		205-99-2		53-70-3		193-39-5		
		Resident FWCUG ^a :														
		Risk=10 ⁻³		8030		2.21		0.221		2.21		0.221		2.21		
		Background Criteria ^b		10.4		--		--		--		--		--		
Depth (ft)	Station	Result	Ratio	Result	Ratio	Result	Ratio	Result	Ratio	Result	Ratio	Result	Ratio	Result	Ratio	
L10ss-001M-SO	11/16/2004	0.0 - 1.0	L10ss-001M	4.4	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-002M-SO	11/16/2004	0.0 - 1.0	L10ss-002M	2.9	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-003M-SO	11/16/2004	0.0 - 1.0	L10ss-003M	8.9	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-004M-SO	11/17/2004	0.0 - 1.0	L10ss-004M	8.1	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-005M-SO	11/17/2004	0.0 - 1.0	L10ss-005M	8.6	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-006M-SO	11/17/2004	0.0 - 1.0	L10ss-006M	8.3	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-007M-SO	11/17/2004	0.0 - 1.0	L10ss-007M	8.2	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-008M-SO	11/17/2004	0.0 - 1.0	L10ss-008M	5.2	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-009M-SO	11/17/2004	0.0 - 1.0	L10ss-009M	8.8	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-010M-SO	11/16/2004	0.0 - 1.0	L10ss-010M	9.2	NA	0.04	2.E-02	0.047	2.E-01	0.063	3.E-02	<0.035U	--	0.022	1.E-02	3.E-01
L10ss-011M-SO	11/16/2004	0.0 - 1.0	L10ss-011M	7.6	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-012M-SO	11/17/2004	0.0 - 1.0	L10ss-012M	8	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-013M-SO	11/16/2004	0.0 - 1.0	L10ss-013M	6.1	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-014M-SO	11/16/2004	0.0 - 1.0	L10ss-014M	8.8	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-015M-SO	11/17/2004	0.0 - 1.0	L10ss-015M	6.6	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-016M-SO	11/17/2004	0.0 - 1.0	L10ss-016M	6.8	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-017M-SO	11/17/2004	0.0 - 1.0	L10ss-017M	6.8	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-018M-SO	11/17/2004	0.0 - 1.0	L10ss-018M	8.3	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-019M-SO	11/17/2004	0.0 - 1.0	L10ss-019M	7	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-020M-SO	11/17/2004	0.0 - 1.0	L10ss-020M	7.9	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-021M-SO	11/18/2004	0.0 - 1.0	L10ss-021M	8.8	NA	0.018	8.E-03	0.022	1.E-01	0.033	1.E-02	<0.034U	--	0.014	6.E-03	1.E-01
L10ss-022M-SO	11/18/2004	0.0 - 1.0	L10ss-022M	7.4	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-023M-SO	11/18/2004	0.0 - 1.0	L10ss-023M	8.8	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-024M-SO	11/17/2004	0.0 - 1.0	L10ss-024M	11	1.E-03	NR	--	NR	--	NR	--	NR	--	NR	--	1.E-03
L10ss-025M-SO	11/16/2004	0.0 - 1.0	L10ss-025M	10	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-026M-SO	11/16/2004	0.0 - 1.0	L10ss-026M	10	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-027M-SO	11/19/2004	0.0 - 1.0	L10ss-027M	13	2.E-03	0.032	1.E-02	0.038	2.E-01	0.047	2.E-02	<0.032U	--	0.022	1.E-02	2.E-01
L10ss-028M-SO	11/18/2004	0.0 - 1.0	L10ss-028M	8.9	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-029M-SO	11/17/2004	0.0 - 1.0	L10ss-029M	8	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-030M-SO	11/16/2004	0.0 - 1.0	L10ss-030M	8.3	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-031M-SO	11/16/2004	0.0 - 1.0	L10ss-031M	7.6	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-032M-SO	11/18/2004	0.0 - 1.0	L10ss-032M	8.3	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-033M-SO	11/18/2004	0.0 - 1.0	L10ss-033M	11	1.E-03	<0.037U	--	0.012	5.E-02	0.02	9.E-03	<0.037U	--	<0.037U	--	6.E-02
L10ss-034M-SO	11/17/2004	0.0 - 1.0	L10ss-034M	11	1.E-03	NR	--	NR	--	NR	--	NR	--	NR	--	1.E-03
L10ss-035M-SO	11/18/2004	0.0 - 1.0	L10ss-035M	11	1.E-03	NR	--	NR	--	NR	--	NR	--	NR	--	1.E-03
L10ss-036M-SO	11/17/2004	0.0 - 1.0	L10ss-036M	10	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-040M-SO	11/19/2004	0.0 - 1.0	L10ss-040M	9.9	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-040MU-SO	8/9/2007	0.0 - 1.0	L10ss-040MU	9.1	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-041M-SO	8/9/2007	0.0 - 1.0	L10ss-041M	8.3	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-042M-SO	8/8/2007	0.0 - 1.0	L10ss-042M	7.6	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-043M-SO	8/8/2007	0.0 - 1.0	L10ss-043M	7.5	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-044M-SO	8/8/2007	0.0 - 1.0	L10ss-044M	8	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-045M-SO	8/8/2007	0.0 - 1.0	L10ss-045M	7.9	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-046M-SO	8/8/2007	0.0 - 1.0	L10ss-046M	7.7	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-047M-SO	8/9/2007	0.0 - 1.0	L10ss-047M	6.6	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA

Table G-7. Sum-of-Ratios for Carcinogens COC Screening for Surface Soil (0-1 ft bgs ISM Samples) at Load Line 10 Unrestricted Land Use Receptor: Resident (Adult and Child)

Sample ID	Date	Analyte (mg/kg)		Cobalt		Benz(a)anthracene		Benzo(a)pyrene		Benzo(b)fluoranthene		Dibenz(a,h)anthracene		Indeno(1,2,3-cd)pyrene		Sum of Ratios
		CAS Number		7440-48-4		56-55-3		50-32-8		205-99-2		53-70-3		193-39-5		
		Resident FWCUG ^a :														
		Risk=10 ⁻³		8030		2.21		0.221		2.21		0.221		2.21		
		Background Criteria ^b		10.4		--		--		--		--		--		
Depth (ft)	Station	Result	Ratio	Result	Ratio	Result	Ratio	Result	Ratio	Result	Ratio	Result	Ratio	Result	Ratio	
L10ss-048M-SO	8/8/2007	0.0 - 1.0	L10ss-048M	8.5	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-049M-SO	8/8/2007	0.0 - 1.0	L10ss-049M	7.6	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-050M-SO	8/9/2007	0.0 - 1.0	L10ss-050M	7.6	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-051M-SO	8/9/2007	0.0 - 1.0	L10ss-051M	7	NA	2.4	1.E+00	2	9.E+00	2.6	1.E+00	<1.6U	--	<1.6U	--	1.E+01
L10ss-052M-SO	8/9/2007	0.0 - 1.0	L10ss-052M	5.8	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-053M-SO	8/9/2007	0.0 - 1.0	L10ss-053M	9.1	NA	1.6	7.E-01	<1.6U	--	1.8	8.E-01	<1.6U	--	<1.6U	--	2.E+00
L10ss-054M-SO	8/9/2007	0.0 - 1.0	L10ss-054M	6.4	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-055M-SO	8/9/2007	0.0 - 1.0	L10ss-055M	7.1	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-056M-SO	8/9/2007	0.0 - 1.0	L10ss-056M	8	NA	<2.2U	--	<2.2U	--	2.3	1.E+00	<2.2U	--	<2.2U	--	1.E+00
L10ss-057M-SO	8/8/2007	0.0 - 1.0	L10ss-057M	9.1	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-058M-SO	8/8/2007	0.0 - 1.0	L10ss-058M	7.5	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-059M-SO	8/8/2007	0.0 - 1.0	L10ss-059M	8.2	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-060M-SO	8/8/2007	0.0 - 1.0	L10ss-060M	7.5	NA	NR	--	NR	--	NR	--	NR	--	NR	--	NA
L10ss-079M-5536-SO	4/13/2010	0.0 - 1.0	L10ss-079M	8.4	NA	0.065	3.E-02	0.064	3.E-01	0.1	5.E-02	0.012	5.E-02	0.042	2.E-02	4.E-01
L10ss-080M-5537-SO	4/13/2010	0.0 - 1.0	L10ss-080M	12.7	2.E-03	3.5	2.E+00	3.3	1.E+01	4.5	2.E+00	0.5	2.E+00	1.8	8.E-01	2.E+01
L10ss-081M-5538-SO	4/13/2010	0.0 - 1.0	L10ss-081M	9.6	NA	0.26	1.E-01	0.22	1.E+00	0.33	1.E-01	0.037	2.E-01	0.14	6.E-02	1.E+00
L10ss-082M-5539-SO	4/13/2010	0.0 - 1.0	L10ss-082M	9.2	NA	0.034	2.E-02	0.034	2.E-01	0.048	2.E-02	<0.0068U	--	0.021	1.E-02	2.E-01
L10ss-083M-5540-SO	4/13/2010	0.0 - 1.0	L10ss-083M	14.7	2.E-03	0.15	7.E-02	0.13	6.E-01	0.21	1.E-01	0.023	1.E-01	0.082	4.E-02	9.E-01
L10ss-084M-5541-SO	4/13/2010	0.0 - 1.0	L10ss-084M	10.1	NA	0.0084	4.E-03	0.0094	4.E-02	0.018	8.E-03	<0.0068U	--	0.0073	3.E-03	6.E-02
L10ss-085M-5542-SO	4/13/2010	0.0 - 1.0	L10ss-085M	9	NA	0.025	1.E-02	0.026	1.E-01	0.043	2.E-02	<0.0068U	--	0.017	8.E-03	2.E-01
L10ss-086M-5543-SO	4/13/2010	0.0 - 1.0	L10ss-086M	9.2	NA	0.027	1.E-02	0.029	1.E-01	0.045	2.E-02	<0.0068U	--	0.018	8.E-03	2.E-01
L10ss-087M-5544-SO	4/13/2010	0.0 - 1.0	L10ss-087M	10.4	1.E-03	0.072	3.E-02	0.07	3.E-01	0.11	5.E-02	0.01	5.E-02	0.04	2.E-02	5.E-01
L10ss-088M-5545-SO	4/13/2010	0.0 - 1.0	L10ss-088M	8.9	NA	1.1	5.E-01	0.92	4.E+00	1.2	5.E-01	0.15	7.E-01	0.55	2.E-01	6.E+00
L10ss-089M-5546-SO	4/13/2010	0.0 - 1.0	L10ss-089M	9.9	NA	0.22	1.E-01	0.21	1.E+00	0.29	1.E-01	0.032	1.E-01	0.12	5.E-02	1.E+00
L10ss-090M-5547-SO	4/13/2010	0.0 - 1.0	L10ss-090M	9.1	NA	0.37	2.E-01	0.33	1.E+00	0.51	2.E-01	0.054	2.E-01	0.2	9.E-02	2.E+00
L10ss-091M-5548-SO	4/13/2010	0.0 - 1.0	L10ss-091M	8.5	NA	0.51	2.E-01	0.46	2.E+00	0.66	3.E-01	0.079	4.E-01	0.25	1.E-01	3.E+00
L10ss-092M-5549-SO	4/13/2010	0.0 - 1.0	L10ss-092M	7.8	NA	0.11	5.E-02	0.19	9.E-01	0.34	2.E-01	0.058	3.E-01	0.18	8.E-02	1.E+00
L10ss-093M-5550-SO	4/13/2010	0.0 - 1.0	L10ss-093M	9.3	NA	0.54	2.E-01	0.55	2.E+00	0.85	4.E-01	0.1	5.E-01	0.35	2.E-01	4.E+00

^aFacility-wide Clean-up Goals (FWCUG) for Resident Farmer from *Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (USACE 2010).

^bBackground criteria for 0-1 ft bgs from final facility-wide background values for RVAAP, published in the *Final Phase II Remedial Investigation Report for Winklepeck Burning Grounds at Ravenna Army Ammunition Plant, Ravenna, Ohio* (USACE 2001).

Data Qualifiers:

J= Indicates that the analyte was positively identified, but the associated numerical value is an approximate concentration of the analyte in the sample.

U= Not detected.

UJ = Not detected and reporting limit estimated.

bgs = Below ground surface.

CAS = Chemical Abstract Service.

COC = Chemical of Concern.

HQ = Hazard Quotient.

ISM = Incremental Sampling Method.

NA = Not applicable, the cobalt result for this sample is not included in sum of ratios (SOR) because the reported concentration is less than background screening value.

NR = Not reported.

-- = No value available.

Bold = SOR is greater than 1 for this sample.

Table G-8. Percent Contribution to Sum-of-Ratios for Carcinogens COC Screening for Surface Soil (0-1 ft bgs ISM Samples) at Load Line 10 Unrestricted Land Use Receptor: Resident (Adult and Child)																							
Sample ID	Date	Analyte (mg/kg)		Cobalt			Benz(a)anthracene			Benzo(a)pyrene			Benzo(b)fluoranthene			Dibenz(a,h)anthracene			Indeno(1,2,3-cd)pyrene			Sum of Ratios	
		CAS Number		7440-48-4			56-55-3			50-32-8			205-99-2			53-70-3			193-39-5				
		Resident FWCUG ^a :																					
		Risk=10 ⁻⁵		8030			2.21			0.221			2.21			0.221			2.21				
		Background Criteria ^b		10.4			--			--			--			--			--				
Depth (ft)	Station	Result	Ratio	Contribution	Result	Ratio	Contribution	Result	Ratio	Contribution	Result	Ratio	Contribution	Result	Ratio	Contribution	Result	Ratio	Contribution	Result	Ratio	Contribution	
L10ss-051M-SO	8/9/2007	0.0 - 1.0	L10ss-051M	7	NA	--	2.4	1.1	10%	2	9.0	80%	2.6	1.2	10%	<1.6U	--	<1.6U		--		11	
L10ss-053M-SO	8/9/2007	0.0 - 1.0	L10ss-053M	9.1	NA	--	1.6	0.72	47%	<1.6U	--		1.8	0.81	53%	<1.6U	--	<1.6U		--		2	
L10ss-080M-5537-SO	4/13/2010	0.0 - 1.0	L10ss-080M	12.7	0.0016	0.007%	3.5	1.6	7%	3.3	15	69%	4.5	2.0	9%	0.5	2.3	10%	1.8	0.81	4%	22	
L10ss-088M-5545-SO	4/13/2010	0.0 - 1.0	L10ss-088M	8.9	NA	--	1.1	0.50	8%	0.92	4.2	68%	1.2	0.54	9%	0.15	0.68	11%	0.55	0.25	4%	6	
L10ss-090M-5547-SO	4/13/2010	0.0 - 1.0	L10ss-090M	9.1	NA	--	0.37	0.17	8%	0.33	1.5	67%	0.51	0.23	10%	0.054	0.24	11%	0.2	0.090	4%	2	
L10ss-091M-5548-SO	4/13/2010	0.0 - 1.0	L10ss-091M	8.5	NA	--	0.51	0.23	7%	0.46	2.1	68%	0.66	0.30	10%	0.079	0.36	12%	0.25	0.11	4%	3	
L10ss-093M-5550-SO	4/13/2010	0.0 - 1.0	L10ss-093M	9.3	NA	--	0.54	0.24	7%	0.55	2.5	67%	0.85	0.38	10%	0.1	0.45	12%	0.35	0.16	4%	4	

^aFacility-wide Clean-up Goals (FWCUG) for Resident Farmer from *Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (USACE 2010).
^bBackground criteria for 0-1 ft bgs from final facility-wide background values for RVAAP, published in the *Final Phase II Remedial Investigation Report for Winklepeck Burning Grounds at Ravenna Army Ammunition Plant, Ravenna, Ohio* (USACE 2001).

Data Qualifiers:
U = Not detected.
bgs = Below ground surface.
CAS = Chemical Abstract Service.
COC = Chemical of Concern.
HQ = Hazard Quotient.
ISM = Incremental Sampling Method.
NA = Not applicable, the cobalt result for this sample is not included in sum of ratios (SOR) because the reported concentration is less than background screening value.
NR = Not reported.
-- = No value available.
Bold = SOR is greater than 1 for this sample.

Table G-9. COC Screening for Subsurface Soil (1-13 ft bgs Discrete Samples) at Load Line 10 Non-Production Area Unrestricted Land Use Receptor: Resident (Adult and Child)

Analyte (mg/kg)	CAS Number	Freq of Detect	Minimum Detect	Maximum Detect	Average Result	UCL 95	Dist.	EPC	Resident Farmer FWCUG ^a				Background Criteria ^b	Exceeds FWCUG?/COC?	COC Justification
									HQ=1	Source	Risk=10 ⁻⁵	Source			
Antimony	7440-36-0	1 / 4	0.1	0.1	0.1	--	X	0.1	28.2	RC	—	--	0.96	No/No	EPC below FWCUG
Benz(a)anthracene	56-55-3	0 / 4	--	--	--	--	--	--	--	--	2.21	RA	—	No/No	Not detected at this EU
Benzo(a)pyrene	50-32-8	0 / 4	--	--	--	--	--	--	--	--	0.221	RA	—	No/No	Not detected at this EU
Benzo(b)fluoranthene	205-99-2	0 / 4	--	--	--	--	--	--	--	--	2.21	RA	—	No/No	Not detected at this EU
Benzo(k)fluoranthene	207-08-9	0 / 4	--	--	--	--	--	--	--	--	22.1	RA	—	No/No	Not detected at this EU
Dibenz(a,h)anthracene	53-70-3	0 / 4	--	--	--	--	--	--	--	--	0.221	RA	—	No/No	Not detected at this EU
Indeno(1,2,3-cd)pyrene	193-39-5	0 / 4	--	--	--	--	--	--	--	--	2.21	RA	—	No/No	Not detected at this EU

^aFacility-wide Clean-up Goals (FWCUG) for Resident Adult (RA) and Resident Child (RC) from *Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (USACE 2010).

^bBackground criteria for >1 ft bgs from final facility-wide background values for RVAAP, published in the *Final Phase II Remedial Investigation Report for Winklepeck Burning Grounds at Ravenna Army Ammunition Plant, Ravenna, Ohio* (USACE 2001).

UCL 95 = 95% upper confidence limit of the mean.

Dist: X = No discernable distribution.

bgs = Below ground surface.

CAS = Chemical Abstract Service.

COC = Chemical of Concern.

EPC = Exposure Point Concentration.

HQ = Hazard Quotient.

UCL = Upper Confidence Limit.

-- = No value available.

Bold = EPC exceeds FWCUG.

Table G-10. COC Screening for Subsurface Soil (1-13 ft bgs Discrete Samples) at Load Line 10 Former Production Area Unrestricted Land Use Receptor: Resident (Adult and Child)

Analyte (mg/kg)	CAS Number	Freq of Detect	Minimum Detect	Maximum Detect	Average Result	UCL 95	Dist.	EPC	Resident Farmer FWCUG ^a				Background Criteria ^b	Exceeds FWCUG?/COC?	COC Justification
									HQ=1	Source	Risk=10 ⁻⁵	Source			
Antimony	7440-36-0	15/ 15	0.082	27.1	1.97	5.13	X	5.13	28.2	RC	—	--	0.96	No/No	EPC below FWCUG
Benz(a)anthracene	56-55-3	8/ 16	0.0077	5.5	0.437	1.04	X	1.04	--	--	2.21	RA	—	No/No	EPC below FWCUG
Benzo(a)pyrene	50-32-8	7/ 16	0.0098	4.9	0.386	0.923	D	0.923	--	--	0.221	RA	—	Yes/Yes	EPC exceeds FWCUG
Benzo(b)fluoranthene	205-99-2	7/ 16	0.012	6.2	0.508	1.19	D	1.19	--	--	2.21	RA	—	No/No	EPC below FWCUG
Benzo(k)fluoranthene	207-08-9	6/ 16	0.017	3	0.231	0.558	D	0.558	--	--	22.1	RA	—	No/No	EPC below FWCUG
Dibenz(a,h)anthracene	53-70-3	6/ 16	0.0098	0.77	0.0683	0.154	D	0.154	--	--	0.221	RA	—	No/No	EPC below FWCUG
Indeno(1,2,3-cd)pyrene	193-39-5	8/ 16	0.011	2.8	0.227	0.534	X	0.534	--	--	2.21	RA	—	No/No	EPC below FWCUG

^aFacility-wide Clean-up Goals (FWCUG) for Resident Adult (RA) and Resident Child (RC) from *Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (USACE 2010).

^bBackground criteria for >1 ft bgs from final facility-wide background values for RVAAP, published in the *Final Phase II Remedial Investigation Report for Winklepeck Burning Grounds at Ravenna Army Ammunition Plant, Ravenna, Ohio* (USACE 2001).

UCL 95 = 95% upper confidence limit of the mean.

Dist.: N = Normal distribution.

 L= Lognormal distribution.

 D = Fewer than 5 or 50% detects.

 X = No discernable distribution.

bgs = Below ground surface.

CAS = Chemical Abstract Service.

COC = Chemical of Concern.

EPC = Exposure Point Concentration.

HQ = Hazard Quotient.

UCL = Upper Confidence Limit.

-- = No value available.

Bold = EPC exceeds FWCUG.

Table G-11. Sum-of-Ratios for Carcinogens COC Screening for Subsurface Soil (1-13 ft bgs Discrete Samples) at Load Line 10 Former Production Area Unrestricted Land Use Receptor: Resident (Adult and Child)

Analyte (mg/kg)	CAS Number	Freq of Detect	Resident FWCUG ^a : Risk=1E-5	Background Criteria ^b	EPC	Ratio	Percent contribution to SOR > 1
Benz(a)anthracene	56-55-3	8/ 16	2.21	—	1.04	0.5	8%
Benzo(a)pyrene	50-32-8	7/ 16	0.221	—	0.92	4.2	68%
Benzo(b)fluoranthene	205-99-2	7/ 16	2.21	--	1.19	0.5	9%
Benzo(k)fluoranthene	207-08-9	6/ 16	22.1	—	0.56	0.0	0.4%
Dibenz(a,h)anthracene	53-70-3	6/ 16	0.221	—	0.15	0.7	11%
Indeno(1,2,3-cd)pyrene	193-39-5	8/ 16	2.21	—	0.53	0.2	4%
Sum of Ratios						6	

^aFacility-wide Clean-up Goals (FWCUG) for Resident from *Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (USACE 2010).
^bBackground criteria for subsurface soil (>1 ft bgs) from final facility-wide background values for RVAAP, published in the *Final Phase II Remedial Investigation Report for Winklepeck Burning*
bgs = Below ground surface.
CAS = Chemical Abstract Service.
COC = Chemical of Concern.
EPC = Exposure Point Concentration.
-- = No value available.
Bold = EPC exceeds FWCUG.