

APPENDIX G

Human Health Risk Assessment Tables

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Table G-1. SRC and COPC Screening for Shallow Surface Soil (0-1 ft bgs Discrete Samples) at the Pond Bank Exposure Unit

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						
Inorganic Chemicals																	
Aluminum	7429-90-5	24/ 24	6450	19200	11900	17700	Yes	Exceeds background	52923	7380	3496	3496	NGT	Yes	Exceeds screening level	ULCPss-005	7/18/2001
Antimony	7440-36-0	10/ 17	0.086	0.46	0.22	0.96	No	Below background	13.6	2.82	175	2.82	RC	No	Below background	ULCPss-004	7/17/2001
Arsenic	7440-38-2	24/ 24	4.2	28.4	11.1	15.4	Yes	Exceeds background	0.425	0.524	2.78	0.425	RA	Yes	Exceeds screening level	ULCPsd-010	8/21/2001
Barium	7440-39-3	24/ 24	35.2	90.4	61	88.4	Yes	Exceeds background	8966	1413	351	351	NGT	No	Below risk screening criteria	ULCPss-001	7/17/2001
Beryllium	7440-41-7	24/ 24	0.36	0.86	0.524	0.88	No	Below background	--	--	--	16	RSL	No	Below background	ULCPss-005	7/18/2001
Cadmium	7440-43-9	19/ 24	0.053	0.49	0.135	0	Yes	Exceeds background	22.3	6.41	10.9	6.41	RC	No	Below risk screening criteria	ULCPsd-010	8/21/2001
Calcium	7440-70-2	24/ 24	195	4040	1310	15800	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	ULCPss-002	7/17/2001
Chromium ^d	7440-47-3	24/ 24	9.6	24.8	15.4	17.4	Yes	Exceeds background	90.4	19.9	1.64	1.64	NGT	Yes	Exceeds screening level	ULCPss-005	7/18/2001
Chromium, hexavalent	18540-29-9	1/ 1	1	1	1	--	Yes	Exceeds background	90.4	19.9	1.64	1.64	NGT	No	Below risk screening criteria	ULCPsd-010	8/21/2001
Cobalt	7440-48-4	24/ 24	4.5	16.4	8.9	10.4	Yes	Exceeds background	803	131	7.03	7.03	NGT	Yes	Exceeds screening level	CPCsb-032	3/24/2010
Copper	7440-50-8	24/ 24	4.2	23.9	14.1	17.7	Yes	Exceeds background	2714	311	25368	311	RC	No	Below risk screening criteria	ULCPss-005	7/18/2001
Cyanide	57-12-5	4/ 11	0.31	1.2	0.292	0	Yes	Exceeds background	--	--	--	0.27	RSL	Yes	Exceeds screening level	ULCPsd-010	8/21/2001
Iron	7439-89-6	24/ 24	13400	44000	23000	23100	No	Essential Nutrient	19010	2313	184370	180000	RDA	No	Essential Nutrient	ULCPss-005	7/18/2001
Lead	7439-92-1	24/ 24	10.6	31.3	18.7	26.1	Yes	Exceeds background	--	--	--	400	RSL	No	Below risk screening criteria	CPCss-042	2/23/2010
Magnesium	7439-95-4	24/ 24	1340	4310	2560	3030	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	ULCPss-005	7/18/2001
Manganese	7439-96-5	24/ 24	78.6	667	281	1450	No	Below background	1482	293	35.1	35.1	NGT	No	Below background	CPCsb-034	3/29/2010
Mercury	7439-97-6	21/ 24	0.021	0.074	0.043	0.036	Yes	Exceeds background	16.5	2.27	172	2.27	RC	No	Below risk screening criteria	CPCss-043	2/23/2010
Nickel	7440-02-0	24/ 24	8.6	27.2	17	21.1	Yes	Exceeds background	1346	155	12639	155	RC	No	Below risk screening criteria	ULCPss-008	7/18/2001
Nitrate/Nitrite (NO3/NO2-N)	14797-55-8	1/ 11	1.4	1.4	0.545	--	Yes	Exceeds background	114196	12487	1E+06	12487	RC	No	Below risk screening criteria	ULCPss-001	7/17/2001
Potassium	7440-09-7	24/ 24	508	2220	1020	927	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	ULCPss-005	7/18/2001
Selenium	7782-49-2	21/ 24	0.48	1.4	0.813	1.4	Yes	Exceeds background	--	--	--	39	RSL	No	Below risk screening criteria	CPCsb-031	3/24/2010
Silver	7440-22-4	9/ 24	0.032	0.45	0.0996	0	Yes	Exceeds background	324	38.6	3105	38.6	RC	No	Below risk screening criteria	ULCPss-001	7/17/2001
Sodium	7440-23-5	24/ 24	38.4	159	74	123	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	ULCPss-008	7/18/2001
Thallium	7440-28-0	14/ 24	0.11	0.25	0.173	0	Yes	Exceeds background	4.76	0.612	47.7	0.612	RC	No	Below risk screening criteria	ULCPss-001	7/17/2001
Vanadium	7440-62-2	24/ 24	14.1	35.3	20.9	31.1	Yes	Exceeds background	156	44.9	2304	44.9	RC	No	Below risk screening criteria	ULCPss-004	7/17/2001
Zinc	7440-66-6	24/ 24	47.7	121	63.9	61.8	Yes	Exceeds background	19659	2321	187269	2321	RC	No	Below risk screening criteria	ULCPsd-010	8/21/2001
Explosives																	
Nitrocellulose	9004-70-0	3/ 3	1.2	1.5	1.4	--	Yes	Detected organic	--	--	--	19000000	RSL	No	Below risk screening criteria	CPCsb-035	3/29/2010
Pesticide/PCB																	
beta-BHC	319-85-7	1/ 3	0.0035	0.0035	0.00193	--	Yes	Detected organic	0.77	0.496	7.42	0.496	RC	No	Below risk screening criteria	CPCsb-035	3/29/2010

Table G-1. SRC and COPC Screening for Surface Soil (0-1 ft bgs Discrete Samples) at the Pond Bank Exposure Unit (continued)

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						
Semi-volatile Organic Compounds																	
2-Methylnaphthalene	91-57-6	1/ 14	0.0091	0.0091	0.293	--	Yes	Detected organic	238	30.6	2384	30.6	RC	No	Below risk screening criteria	CPCsb-035	3/29/2010
Acenaphthylene ^e	208-96-8	1/ 14	0.012	0.012	0.0459	--	Yes	Detected organic	--	--	--	180	RSL	No	Below risk screening criteria	CPCsb-035	3/29/2010
Benz(a)anthracene	56-55-3	3/ 14	0.017	0.066	0.0484	--	Yes	Detected organic	0.221	0.65	4.77	0.221	RA	No	Below risk screening criteria	CPCss-042	2/23/2010
Benzenemethanol	100-51-6	1/ 13	0.44	0.44	0.337	--	Yes	Detected organic	--	--	--	630	RSL	No	Below risk screening criteria	CPCss-038	2/23/2010
Benzo(a)pyrene	50-32-8	3/ 14	0.014	0.057	0.0482	--	Yes	Detected organic	0.022	0.065	0.477	0.022	RA	Yes	Exceeds screening level	CPCss-042	2/23/2010
Benzo(b)fluoranthene	205-99-2	2/ 14	0.021	0.059	0.0506	--	Yes	Detected organic	0.221	0.65	4.77	0.221	RA	No	Below risk screening criteria	CPCsb-035	3/29/2010
Benzo(ghi)perylene ^e	191-24-2	1/ 14	0.031	0.031	0.0519	--	Yes	Detected organic	--	--	--	180	RSL	No	Below risk screening criteria	CPCsb-035	3/29/2010
Benzo(k)fluoranthene	207-08-9	1/ 14	0.028	0.028	0.0499	--	Yes	Detected organic	2.21	6.5	47.7	2.21	RA	No	Below risk screening criteria	CPCsb-035	3/29/2010
Benzoic acid	65-85-0	1/ 13	17	17	2.05	--	Yes	Detected organic	--	--	--	25000	RSL	No	Below risk screening criteria	CPCss-038	2/23/2010
Bis(2-ethylhexyl)phthalate	117-81-7	1/ 14	0.23	0.23	0.304	--	Yes	Detected organic	--	--	--	39	RSL	No	Below risk screening criteria	CPCss-039	2/23/2010
Chrysene	218-01-9	2/ 14	0.014	0.048	0.0462	--	Yes	Detected organic	22.1	65	477	22.1	RA	No	Below risk screening criteria	CPCsb-035	3/29/2010
Di-n-butyl phthalate	84-74-2	2/ 14	0.021	0.027	0.27	--	Yes	Detected organic	--	--	--	630	RSL	No	Below risk screening criteria	CPCsb-034	3/29/2010
Fluoranthene	206-44-0	7/ 14	0.012	0.11	0.0549	--	Yes	Detected organic	276	163	5087	163	RC	No	Below risk screening criteria	CPCss-042	2/23/2010
Indeno(1,2,3-cd)pyrene	193-39-5	1/ 14	0.026	0.026	0.0494	--	Yes	Detected organic	0.221	0.65	4.77	0.221	RA	No	Below risk screening criteria	CPCsb-035	3/29/2010
Phenanthrene ^e	85-01-8	4/ 14	0.0095	0.093	0.0506	--	Yes	Detected organic	--	--	--	180	RSL	No	Below risk screening criteria	CPCss-042	2/23/2010
Pyrene	129-00-0	7/ 14	0.011	0.079	0.0517	--	Yes	Detected organic	207	122	3815	122	RC	No	Below risk screening criteria	CPCss-042	2/23/2010

^aBackground criteria for soil 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 Cleanup Goals (FWCUGs) 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 = United States Environmental Protection Agency Residential Regional Screening Level

^dFWCUGs are 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

-- = 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 the Pond Bank Exposure Unit

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						
Inorganic Chemicals																	
Aluminum	7429-90-5	6/ 6	7120	11000	9920	19500	No	Below background	52923	7380	3496	3496	NGT	No	Below background	CPCsb-032	3/24/2010
Antimony	7440-36-0	3/ 5	0.084	0.13	0.182	0.96	No	Below background	13.6	2.82	175	2.82	RC	No	Below background	CPCsb-032	3/24/2010
Arsenic	7440-38-2	6/ 6	9.7	17.9	14.6	19.8	No	Below background	0.425	0.524	2.78	0.425	RA	No	Below background	CPCsb-032	3/24/2010
Barium	7440-39-3	6/ 6	38.1	63.2	52.5	124	No	Below background	8966	1413	351	351	NGT	No	Below background	CPCsb-032	3/24/2010
Beryllium	7440-41-7	6/ 6	0.41	0.61	0.522	0.88	No	Below background	--	--	--	16	RSL	No	Below background	CPCsb-032	3/24/2010
Cadmium	7440-43-9	6/ 6	0.032	0.18	0.069	0	Yes	Exceeds background	22.3	6.41	10.9	6.41	RC	No	Below risk screening criteria	CPCsb-035	3/29/2010
Calcium	7440-70-2	6/ 6	1080	8240	4310	35500	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	CPCsb-032	3/24/2010
Chromium ^d	7440-47-3	6/ 6	10.5	18.5	15.1	27.2	No	Below background	90.4	19.9	1.64	1.64	NGT	No	Below background	CPCsb-032	3/24/2010
Cobalt	7440-48-4	6/ 6	6.6	14.1	10.9	23.2	No	Below background	803	131	7.03	7.03	NGT	No	Below background	CPCsb-035	3/29/2010
Copper	7440-50-8	6/ 6	12.8	23	19.3	32.3	No	Below background	2714	311	25368	311	RC	No	Below background	CPCsb-035	3/29/2010
Iron	7439-89-6	6/ 6	21300	33600	27900	35200	No	Essential Nutrient	19010	2313	184370	180000	RDA	No	Essential Nutrient	CPCsb-032	3/24/2010
Lead	7439-92-1	6/ 6	10.9	23.3	13.8	19.1	Yes	Exceeds background	--	--	--	400	RSL	No	Below risk screening criteria	CPCsb-035	3/29/2010
Magnesium	7439-95-4	6/ 6	2110	7120	3960	8790	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	CPCsb-032	3/24/2010
Manganese	7439-96-5	6/ 6	181	541	340	3030	No	Below background	1482	293	35.1	35.1	NGT	No	Below background	CPCsb-035	3/29/2010
Mercury	7439-97-6	1/ 6	0.022	0.022	0.0545	0.044	No	Below background	16.5	2.27	172	2.27	RC	No	Below background	CPCsb-035	3/29/2010
Nickel	7440-02-0	6/ 6	14.6	31.7	24.4	60.7	No	Below background	1346	155	12639	155	RC	No	Below background	CPCsb-032	3/24/2010
Potassium	7440-09-7	6/ 6	856	2190	1440	3350	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	CPCsb-032	3/24/2010
Selenium	7782-49-2	6/ 6	0.88	1.6	1.15	1.5	Yes	Exceeds background	--	--	--	39	RSL	No	Below risk screening criteria	CPCsb-032	3/24/2010
Silver	7440-22-4	2/ 6	0.013	0.029	0.0126	0	Yes	Exceeds background	324	38.6	3105	38.6	RC	No	Below risk screening criteria	CPCsb-032	3/24/2010
Sodium	7440-23-5	6/ 6	40.8	110	61.2	145	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	CPCsb-032	3/24/2010
Thallium	7440-28-0	6/ 6	0.093	0.17	0.144	0.91	No	Below background	4.76	0.612	47.7	0.612	RC	No	Below background	CPCsb-032	3/24/2010
Vanadium	7440-62-2	6/ 6	12.1	17.9	16.4	37.6	No	Below background	156	44.9	2304	44.9	RC	No	Below background	CPCsb-035	3/29/2010
Zinc	7440-66-6	6/ 6	57.2	65.4	61.3	93.3	No	Below background	19659	2321	187269	2321	RC	No	Below background	CPCsb-035	3/29/2010
Explosives																	
Nitrocellulose	9004-70-0	1/ 2	1.6	1.6	2.35	--	Yes	Detected organic	--	--	--	23000000	RSL	No	Below risk screening criteria	CPCsb-035	3/29/2010

Table G-2. SRC and COPC Screening for Subsurface Soil (1-13 ft bgs Discrete Samples) at the Pond Bank Exposure Unit (continued)

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						
Semi-volatile Organic Compounds																	
2-Methylnaphthalene	91-57-6	2/ 6	0.0091	0.014	0.138	--	Yes	Detected organic	238	30.6	2384	30.6	RC	No	Below risk screening criteria	CPCsb-032	3/24/2010
Benz(a)anthracene	56-55-3	1/ 6	0.047	0.047	0.033	--	Yes	Detected organic	0.221	0.65	4.77	0.221	RA	No	Below risk screening criteria	CPCsb-035	3/29/2010
Benzo(a)pyrene	50-32-8	1/ 6	0.066	0.066	0.0362	--	Yes	Detected organic	0.022	0.065	0.477	0.022	RA	Yes	Exceeds screening level	CPCsb-035	3/29/2010
Benzo(b)fluoranthene	205-99-2	1/ 6	0.08	0.08	0.0385	--	Yes	Detected organic	0.221	0.65	4.77	0.221	RA	No	Below risk screening criteria	CPCsb-035	3/29/2010
Benzo(ghi)perylene ^e	191-24-2	1/ 6	0.06	0.06	0.0352	--	Yes	Detected organic	--	--	--	180	RSL	No	Below risk screening criteria	CPCsb-035	3/29/2010
Benzo(k)fluoranthene	207-08-9	1/ 6	0.03	0.03	0.0302	--	Yes	Detected organic	2.21	6.5	47.7	2.21	RA	No	Below risk screening criteria	CPCsb-035	3/29/2010
Chrysene	218-01-9	1/ 6	0.063	0.063	0.0357	--	Yes	Detected organic	22.1	65	477	22.1	RA	No	Below risk screening criteria	CPCsb-035	3/29/2010
Dibenz(a,h)anthracene	53-70-3	1/ 6	0.021	0.021	0.0287	--	Yes	Detected organic	0.022	0.065	0.477	0.022	RA	No	Below risk screening criteria	CPCsb-035	3/29/2010
Di-n-butyl phthalate	84-74-2	1/ 6	0.019	0.019	0.17	--	Yes	Detected organic	--	--	--	630	RSL	No	Below risk screening criteria	CPCsb-032	3/24/2010
Fluoranthene	206-44-0	1/ 6	0.11	0.11	0.0435	--	Yes	Detected organic	276	163	5087	163	RC	No	Below risk screening criteria	CPCsb-035	3/29/2010
Indeno(1,2,3-cd)pyrene	193-39-5	1/ 6	0.037	0.037	0.0313	--	Yes	Detected organic	0.221	0.65	4.77	0.221	RA	No	Below risk screening criteria	CPCsb-035	3/29/2010
Phenanthrene ^e	85-01-8	2/ 6	0.014	0.051	0.0312	--	Yes	Detected organic	--	--	--	180	RSL	No	Below risk screening criteria	CPCsb-035	3/29/2010
Pyrene	129-00-0	1/ 6	0.088	0.088	0.0398	--	Yes	Detected organic	207	122	3815	122	RC	No	Below risk screening criteria	CPCsb-035	3/29/2010

^aBackground criteria for soil >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 Cleanup Goals (FWCUGs) 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 = United States Environmental Protection Agency Residential Regional Screening Level

^dFWCUGs are 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

-- = No value available

Bold = Chemical is a COPC

Table G-3. SRC and COPC Screening for Sediment

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						
Backwater Area Exposure Unit (Discrete Samples)																	
Inorganic Chemicals																	
Aluminum	7429-90-5	14/ 14	6620	18600	12500	13900	Yes	Exceeds background	52923	7380	3496	3496	NGT	Yes	Exceeds screening level	ULCPsd-013	08/20/01
Antimony	7440-36-0	11/ 14	0.24	2.1	0.607	0	Yes	Exceeds background	13.6	2.82	175	2.82	RC	No	Below risk screening criteria	CPCsd-047	04/01/10
Arsenic	7440-38-2	14/ 14	3.5	16.7	10.2	19.5	No	Below background	0.425	0.524	2.78	0.425	RA	No	Below background	CPCsd-047	04/01/10
Barium	7440-39-3	14/ 14	53.8	151	99.5	123	Yes	Exceeds background	8966	1413	351	351	NGT	No	Below risk screening criteria	CPCsd-047	04/01/10
Beryllium	7440-41-7	14/ 14	0.34	1.1	0.782	0.38	Yes	Exceeds background	--	--	--	16	RSL	No	Below risk screening criteria	ULCPsd-004	08/22/01
Cadmium	7440-43-9	14/ 14	0.11	2.3	0.972	0	Yes	Exceeds background	22.3	6.41	10.9	6.41	RC	No	Below risk screening criteria	CPCsd-047	04/01/10
Calcium	7440-70-2	14/ 14	1180	15400	3790	5510	No	Essential Nutrient				1000000	RDA	No	Essential Nutrient	ULCPsd-015	08/17/01
Chromium ^d	7440-47-3	14/ 14	9.9	56.5	23.3	18.1	Yes	Exceeds background	90.4	19.9	1.64	1.64	NGT	Yes	Exceeds screening level	ULCPsd-009	08/21/01
Cobalt	7440-48-4	14/ 14	5.4	22.8	13.6	9.1	Yes	Exceeds background	--	--	--	2.3	RSL	Yes	Exceeds screening level	CPCsd-047	04/01/10
Copper	7440-50-8	14/ 14	10.9	62.3	28.2	27.6	Yes	Exceeds background	2714	311	25368	311	RC	No	Below risk screening criteria	CPCsd-047	04/01/10
Cyanide	57-12-5	3/ 12	0.1	0.55	0.224	0	Yes	Exceeds background	--	--	--	0.27	RSL	Yes	Exceeds screening level	ULCPsd-009	08/21/01
Iron	7439-89-6	14/ 14	12700	36100	21400	28200	No	Essential Nutrient	19010	2313	184370	180000	RDA	No	Essential Nutrient	CPCsd-047	04/01/10
Lead	7439-92-1	14/ 14	14.2	57.9	29.6	27.4	Yes	Exceeds background	--	--	--	400	RSL	No	Below risk screening criteria	ULCPsd-009	08/21/01
Magnesium	7439-95-4	14/ 14	1170	3830	2230	2760	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	ULCPsd-015	08/17/01
Manganese	7439-96-5	14/ 14	179	999	520	1950	No	Below background	1482	293	35.1	35.1	NGT	No	Below background	CPCsd-047	04/01/10
Mercury	7439-97-6	13/ 14	0.031	0.11	0.0816	0.059	Yes	Exceeds background	16.5	2.27	172	2.27	RC	No	Below risk screening criteria	ULCPsd-005	08/22/01
Nickel	7440-02-0	14/ 14	9.4	35.5	20.5	17.7	Yes	Exceeds background	1346	155	12639	155	RC	No	Below risk screening criteria	CPCsd-047	04/01/10
Nitrate/Nitrite (NO3/NO2-N)	14797-55-8	1/ 12	2.2	2.2	0.804	--	Yes	Detected no background	--	--	--	13000	RSL	No	Below risk screening criteria	ULCPsd-016	08/17/01
Potassium	7440-09-7	14/ 14	541	1740	1140	1950	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	CPCsd-047	04/01/10
Selenium	7782-49-2	8/ 14	0.26	2.7	0.5	1.7	Yes	Exceeds background	--	--	--	39	RSL	No	Below risk screening criteria	CPCsd-047	04/01/10
Silver	7440-22-4	13/ 14	0.51	23	5.7	0	Yes	Exceeds background	324	38.6	3105	38.6	RC	No	Below risk screening criteria	ULCPsd-007	08/21/01
Sodium	7440-23-5	14/ 14	55.2	239	140	112	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	ULCPsd-009	08/21/01
Thallium	7440-28-0	1/ 14	0.16	0.16	0.196	0.89	No	Below background	4.76	0.612	47.7	0.612	RC	No	Below background	CPCsd-048	04/01/10
Vanadium	7440-62-2	14/ 14	11.7	30	19.9	26.1	Yes	Exceeds background	156	44.9	2304	44.9	RC	No	Below risk screening criteria	ULCPsd-013	08/20/01
Zinc	7440-66-6	14/ 14	74.8	418	179	532	No	Below background	19659	2321	187269	2321	RC	No	Below background	ULCPsd-007	08/21/01
Explosives																	
2,4,6-Trinitrotoluene	118-96-7	6/ 14	0.049	0.32	0.0811	--	Yes	Detected organic	21.1	3.65	249	3.65	RC	No	Below risk screening criteria	ULCPsd-005	08/22/01
2,6-Dinitrotoluene	606-20-2	1/ 14	0.16	0.16	0.0483	--	Yes	Detected organic	--	--	--	0.36	RSL	No	Below risk screening criteria	ULCPsd-005	08/22/01
Nitrocellulose	9004-70-0	4/ 4	2.5	10.4	4.75	--	Yes	Detected organic	--	--	--	19000000	RSL	No	Below risk screening criteria	CPCsd-047	04/01/10
Tetryl	479-45-8	1/ 14	0.024	0.024	0.0294	--	Yes	Detected organic	--	--	--	16	RSL	No	Below risk screening criteria	CPCsd-047	04/01/10
Pesticide/PCB																	
PCB-1254	11097-69-1	2/ 4	0.046	0.047	0.0568	--	Yes	Detected organic	0.203	0.12	3.46	0.12	RC	No	Below risk screening criteria	ULCPsd-006	08/22/01
Semi-volatile Organic Compounds																	
Anthracene	120-12-7	2/ 5	0.074	0.22	0.0956	--	Yes	Detected organic	--	--	--	1800	RSL	No	Below risk screening criteria	ULCPsd-015	09/27/01
Benz(a)anthracene	56-55-3	3/ 5	0.058	0.83	0.274	--	Yes	Detected organic	0.221	0.65	4.77	0.221	RA	Yes	Exceeds screening level	ULCPsd-015	09/27/01
Benzo(a)pyrene	50-32-8	4/ 5	0.063	0.89	0.323	--	Yes	Detected organic	0.022	0.065	0.477	0.022	RA	Yes	Exceeds screening level	ULCPsd-015	09/27/01
Benzo(b)fluoranthene	205-99-2	3/ 5	0.1	0.86	0.338	--	Yes	Detected organic	0.221	0.65	4.77	0.221	RA	Yes	Exceeds screening level	ULCPsd-015	09/27/01
Benzo(ghi)perylene ^e	191-24-2	3/ 5	0.05	0.49	0.22	--	Yes	Detected organic	--	--	--	180	RSL	No	Below risk screening criteria	ULCPsd-015	09/27/01
Benzo(k)fluoranthene	207-08-9	3/ 5	0.044	0.8	0.265	--	Yes	Detected organic	2.21	6.5	47.7	2.21	RA	No	Below risk screening criteria	ULCPsd-015	09/27/01
Bis(2-ethylhexyl)phthalate	117-81-7	1/ 5	0.16	0.16	0.165	--	Yes	Detected organic	--	--	--	39	RSL	No	Below risk screening criteria	CPCsd-047	04/01/10
Chrysene	218-01-9	4/ 5	0.06	0.93	0.338	--	Yes	Detected organic	--	--	--	16	RSL	No	Below risk screening criteria	ULCPsd-015	09/27/01
Dibenz(a,h)anthracene	53-70-3	1/ 5	0.066	0.066	0.095	--	Yes	Detected organic	0.022	0.065	0.477	0.022	RA	Yes	Exceeds screening level	CPCsd-047	04/01/10
Fluoranthene	206-44-0	3/ 5	0.11	1.8	0.61	--	Yes	Detected organic	--	--	--	240	RSL	No	Below risk screening criteria	ULCPsd-015	09/27/01
Fluorene	86-73-7	1/ 5	0.053	0.053	0.0844	--	Yes	Detected organic	--	--	--	240	RSL	No	Below risk screening criteria	CPCsd-047	04/01/10
Indeno(1,2,3-cd)pyrene	193-39-5	3/ 5	0.04	0.48	0.192	--	Yes	Detected organic	0.221	0.65	4.77	0.221	RA	Yes	Exceeds screening level	ULCPsd-015	09/27/01
Phenanthrene ^e	85-01-8	3/ 5	0.034	0.91	0.285	--	Yes	Detected organic	--	--	--	180	RSL	No	Below risk screening criteria	ULCPsd-015	09/27/01
Pyrene	129-00-0	3/ 5	0.084	1.9	0.604	--	Yes	Detected organic	--	--	--	180	RSL	No	Below risk screening criteria	ULCPsd-015	09/27/01

Table G-3. SRC and COPC Screening for Sediment (continued)

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						
Volatile Organic Compounds																	
2-Butanone	78-93-3	3/ 5	0.03	0.055	0.0256	--	Yes	Detected organic	--	--	--	2700	RSL	No	Below risk screening criteria	CPCsd-047	04/01/10
Acetone	67-64-1	5/ 5	0.02	0.19	0.12	--	Yes	Detected organic	--	--	--	6100	RSL	No	Below risk screening criteria	CPCsd-047	04/01/10
Methylene chloride	75-09-2	1/ 5	0.048	0.048	0.0145	--	Yes	Detected organic	--	--	--	35	RSL	No	Below risk screening criteria	ULCPsd-006	08/22/01
Upper Cobbs Pond Exposure Unit (Discrete Samples)																	
Inorganic Chemicals																	
Aluminum	7429-90-5	5/ 5	13400	21400	16500	13900	Yes	Exceeds background	52923	7380	3496	3496	NGT	Yes	Exceeds screening level	ULCPsd-017	08/17/01
Antimony	7440-36-0	5/ 5	0.21	1.9	0.78	0	Yes	Exceeds background	13.6	2.82	175	2.82	RC	No	Below risk screening criteria	CPCsd-046	03/25/10
Arsenic	7440-38-2	5/ 5	5.1	18.8	12.3	19.5	No	Below background	0.425	0.524	2.78	0.425	RA	No	Below background	CPCsd-046	03/25/10
Barium	7440-39-3	5/ 5	58.7	157	106	123	Yes	Exceeds background	8966	1413	351	351	NGT	No	Below risk screening criteria	CPCsd-046	03/25/10
Beryllium	7440-41-7	5/ 5	0.44	1.3	0.842	0.38	Yes	Exceeds background	--	--	--	16	RSL	No	Below risk screening criteria	ULCPsd-017	08/17/01
Cadmium	7440-43-9	3/ 5	0.15	2.3	0.95	0	Yes	Exceeds background	22.3	6.41	10.9	6.41	RC	No	Below risk screening criteria	CPCsd-046	03/25/10
Calcium	7440-70-2	5/ 5	771	5440	2780	5510	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	ULCPsd-017	08/17/01
Chromium, hexavalent	18540-29-9	1/ 5	10.6	10.6	2.73	--	Yes	Exceeds background	90.4	19.9	1.64	1.64	NGT	Yes	Exceeds screening level	ULCPsd-018	08/16/01
Chromium ^d	7440-47-3	6/ 6	19.9	91.6	50.8	18.1	Yes	Exceeds background	90.4	19.9	1.64	1.64	NGT	Yes	Exceeds screening level	CPCsd-046	03/25/10
Cobalt	7440-48-4	5/ 5	5.9	19.3	13.3	9.1	Yes	Exceeds background	--	--	--	2.3	RSL	Yes	Exceeds screening level	ULCPsd-017	08/17/01
Copper	7440-50-8	5/ 5	14.1	106	57.1	27.6	Yes	Exceeds background	2714	311	25368	311	RC	No	Below risk screening criteria	ULCPsd-017	08/17/01
Iron	7439-89-6	5/ 5	18300	41800	30300	28200	No	Essential Nutrient	19010	2313	184370	180000	RDA	No	Essential Nutrient	CPCsd-046	03/25/10
Lead	7439-92-1	5/ 5	13.1	52.4	27.7	27.4	Yes	Exceeds background	--	--	--	400	RSL	No	Below risk screening criteria	CPCsd-046	03/25/10
Magnesium	7439-95-4	5/ 5	2370	3690	3150	2760	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	ULCPsd-019	08/16/01
Manganese	7439-96-5	5/ 5	138	712	438	1950	No	Below background	1482	293	35.1	35.1	NGT	No	Below background	CPCsd-046	03/25/10
Mercury	7439-97-6	5/ 5	0.014	0.15	0.0662	0.059	Yes	Exceeds background	16.5	2.27	172	2.27	RC	No	Below risk screening criteria	CPCsd-046	03/25/10
Nickel	7440-02-0	5/ 5	13.1	41.1	28.7	17.7	Yes	Exceeds background	1346	155	12639	155	RC	No	Below risk screening criteria	CPCsd-046	03/25/10
Potassium	7440-09-7	5/ 5	1060	2100	1730	1950	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	ULCPsd-017	08/17/01
Selenium	7782-49-2	3/ 5	0.22	2.9	0.839	1.7	Yes	Exceeds background	--	--	--	39	RSL	No	Below risk screening criteria	CPCsd-046	03/25/10
Silver	7440-22-4	3/ 5	0.55	11	3.81	0	Yes	Exceeds background	324	38.6	3105	38.6	RC	No	Below risk screening criteria	ULCPsd-017	08/17/01
Sodium	7440-23-5	5/ 5	82.7	340	156	112	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	ULCPsd-017	08/17/01
Thallium	7440-28-0	2/ 5	0.24	0.37	0.237	0.89	No	Below background	4.76	0.612	47.7	0.612	RC	No	Below background	CPCsd-046	03/25/10
Vanadium	7440-62-2	5/ 5	23.3	33.4	27.8	26.1	Yes	Exceeds background	156	44.9	2304	44.9	RC	No	Below risk screening criteria	ULCPsd-018	08/16/01
Zinc	7440-66-6	5/ 5	71.3	479	240	532	No	Below background	19659	2321	187269	2321	RC	No	Below background	ULCPsd-017	08/17/01
Explosives																	
1,3-Dinitrobenzene	99-65-0	1/ 5	0.036	0.036	0.0144	--	Yes	Detected organic	--	--	--	0.63	RSL	No	Below risk screening criteria	CPCsd-046	03/25/10
2,4,6-Trinitrotoluene	118-96-7	2/ 5	0.087	0.15	0.0575	--	Yes	Detected organic	21.1	3.65	249	3.65	RC	No	Below risk screening criteria	CPCsd-046	03/25/10
4-Amino-2,6-Dinitrotoluene	19406-51-0	1/ 1	0.12	0.12	0.12	--	Yes	Detected organic	12.8	1.54	124	1.54	RC	No	Below risk screening criteria	CPCsd-046	03/25/10
HMX	2691-41-0	1/ 5	0.083	0.083	0.0606	--	Yes	Detected organic	1909	359	23464	359	RC	No	Below risk screening criteria	CPCsd-046	03/25/10
Nitrocellulose	9004-70-0	2/ 2	2	5.7	3.85	--	Yes	Detected organic	--	--	--	19000000	RSL	No	Below risk screening criteria	CPCsd-046	03/25/10
Tetryl	479-45-8	1/ 5	0.019	0.019	0.021	--	Yes	Detected organic	--	--	--	16	RSL	No	Below risk screening criteria	CPCsd-046	03/25/10
Semi-volatile Organic Compounds																	
Benz(a)anthracene	56-55-3	1/ 2	0.078	0.078	0.0615	--	Yes	Detected organic	0.221	0.65	4.77	0.221	RA	No	Below risk screening criteria	CPCsd-046	03/25/10
Benzo(a)pyrene	50-32-8	1/ 2	0.12	0.12	0.0845	--	Yes	Detected organic	0.022	0.065	0.477	0.022	RA	Yes	Exceeds screening level	CPCsd-046	03/25/10
Benzo(b)fluoranthene	205-99-2	1/ 2	0.19	0.19	0.14	--	Yes	Detected organic	0.221	0.65	4.77	0.221	RA	No	Below risk screening criteria	CPCsd-046	03/25/10
Benzo(ghi)perylene ^e	191-24-2	1/ 2	0.11	0.11	0.12	--	Yes	Detected organic	--	--	--	180	RSL	No	Below risk screening criteria	CPCsd-046	03/25/10
Benzo(k)fluoranthene	207-08-9	1/ 2	0.067	0.067	0.081	--	Yes	Detected organic	2.21	6.5	47.7	2.21	RA	No	Below risk screening criteria	CPCsd-046	03/25/10
Chrysene	218-01-9	1/ 2	0.11	0.11	0.072	--	Yes	Detected organic	--	--	--	16	RSL	No	Below risk screening criteria	CPCsd-046	03/25/10
Fluoranthene	206-44-0	1/ 2	0.22	0.22	0.15	--	Yes	Detected organic	--	--	--	240	RSL	No	Below risk screening criteria	CPCsd-046	03/25/10
Indeno(1,2,3-cd)pyrene	193-39-5	1/ 2	0.09	0.09	0.0925	--	Yes	Detected organic	0.221	0.65	4.77	0.221	RA	No	Below risk screening criteria	CPCsd-046	03/25/10
Phenanthrene ^e	85-01-8	1/ 2	0.07	0.07	0.065	--	Yes	Detected organic	--	--	--	180	RSL	No	Below risk screening criteria	CPCsd-046	03/25/10
Pyrene	129-00-0	1/ 2	0.18	0.18	0.15	--	Yes	Detected organic	--	--	--	180	RSL	No	Below risk screening criteria	CPCsd-046	03/25/10

Table G-3. SRC and COPC Screening for Sediment (continued)

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						
Pesticide/PCB																	
PCB-1254	11097-69-1	1/ 2	0.032	0.032	0.0685	--	Yes	Detected organic	0.203	0.12	3.46	0.12	RC	No	Below risk screening criteria	ULCPsd-020	08/16/01
Volatile Organic Compounds																	
2-Butanone	78-93-3	2/ 2	0.022	0.033	0.0275	--	Yes	Detected organic	--	--	--	2700	RSL	No	Below risk screening criteria	CPCsd-046	03/25/10
Acetone	67-64-1	2/ 2	0.088	0.091	0.0895	--	Yes	Detected organic	--	--	--	6100	RSL	No	Below risk screening criteria	CPCsd-046	03/25/10
Upper Cobbs Pond Exposure Unit ISM Samples)																	
Inorganic Chemicals																	
Aluminum	7429-90-5	1/ 1	9030	9030	9030	13900	No	Below background	52923	7380	3496	3496	NGT	No	Below background	Uppercobb Pond	06/23/03
Antimony	7440-36-0	1/ 1	1	1	1	0	Yes	Exceeds background	13.6	2.82	175	2.82	RC	No	Below risk screening criteria	Uppercobb Pond	06/23/03
Arsenic	7440-38-2	1/ 1	6.5	6.5	6.5	19.5	No	Below background	0.425	0.524	2.78	0.425	RA	No	Below background	Uppercobb Pond	06/23/03
Barium	7440-39-3	1/ 1	78.9	78.9	78.9	123	No	Below background	8966	1413	351	351	NGT	No	Below background	Uppercobb Pond	06/23/03
Beryllium	7440-41-7	1/ 1	0.48	0.48	0.48	0.38	Yes	Exceeds background	--	--	--	16	RSL	No	Below risk screening criteria	Uppercobb Pond	06/23/03
Cadmium	7440-43-9	1/ 1	0.6	0.6	0.6	0	Yes	Exceeds background	22.3	6.41	10.9	6.41	RC	No	Below risk screening criteria	Uppercobb Pond	06/23/03
Calcium	7440-70-2	1/ 1	1960	1960	1960	5510	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	Uppercobb Pond	06/23/03
Chromium	7440-47-3	1/ 1	18.6	18.6	18.6	18.1	Yes	Exceeds background	90.4	19.9	1.64	1.64	NGT	Yes	Exceeds screening level	Uppercobb Pond	06/23/03
Cobalt	7440-48-4	1/ 1	7.7	7.7	7.7	9.1	No	Below background	--	--	--	2.3	RSL	No	Below background	Uppercobb Pond	06/23/03
Iron	7439-89-6	1/ 1	16200	16200	16200	28200	No	Essential Nutrient	19010	2313	184370	180000	RDA	No	Essential Nutrient	Uppercobb Pond	06/23/03
Lead	7439-92-1	1/ 1	17.8	17.8	17.8	27.4	No	Below background	--	--	--	400	RSL	No	Below background	Uppercobb Pond	06/23/03
Magnesium	7439-95-4	1/ 1	1530	1530	1530	2760	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	Uppercobb Pond	06/23/03
Manganese	7439-96-5	1/ 1	383	383	383	1950	No	Below background	1482	293	35.1	35.1	NGT	No	Below background	Uppercobb Pond	06/23/03
Mercury	7439-97-6	1/ 1	0.048	0.048	0.048	0.059	No	Below background	16.5	2.27	172	2.27	RC	No	Below background	Uppercobb Pond	06/23/03
Nickel	7440-02-0	1/ 1	14.4	14.4	14.4	17.7	No	Below background	1346	155	12639	155	RC	No	Below background	Uppercobb Pond	06/23/03
Potassium	7440-09-7	1/ 1	858	858	858	1950	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	Uppercobb Pond	06/23/03
Selenium	7782-49-2	1/ 1	1.1	1.1	1.1	1.7	No	Below background	--	--	--	39	RSL	No	Below background	Uppercobb Pond	06/23/03
Silver	7440-22-4	1/ 1	1.1	1.1	1.1	0	Yes	Exceeds background	324	38.6	3105	38.6	RC	No	Below risk screening criteria	Uppercobb Pond	06/23/03
Sodium	7440-23-5	1/ 1	106	106	106	112	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	Uppercobb Pond	06/23/03
Vanadium	7440-62-2	1/ 1	15.6	15.6	15.6	26.1	No	Below background	156	44.9	2304	44.9	RC	No	Below background	Uppercobb Pond	06/23/03
Zinc	7440-66-6	1/ 1	153	153	153	532	No	Below background	19659	2321	187269	2321	RC	No	Below background	Uppercobb Pond	06/23/03
Nitrate/Nitrite (NO3/NO2-N)	14797-55-8	1/ 1	5.3	5.3	5.3	--	Yes	Exceeds background	--	--	--	13000	RSL	No	Below risk screening criteria	Uppercobb Pond	06/23/03
Ammonia	7664-41-7	1/ 1	69	69	69	--	Yes	Exceeds background	--	--	--	--	--	Yes	Detected and no screening criteria	Uppercobb Pond	06/23/03
Total Phosphorus as P	7723-14-0	1/ 1	270	270	270	--	Yes	Exceeds background	--	--	--	1000000	RDA	No	Below risk screening criteria	Uppercobb Pond	06/23/03
Semi-volatile Organic Compounds																	
Bis(2-ethylhexyl)phthalate	117-81-7	1/ 1	0.84	0.84	0.84	--	Yes	Detected organic	--	--	--	39	RSL	No	Below risk screening criteria	Uppercobb Pond	06/23/03
Butyl benzyl phthalate	85-68-7	1/ 1	0.16	0.16	0.16	--	Yes	Detected organic	--	--	--	290	RSL	No	Below risk screening criteria	Uppercobb Pond	06/23/03
Di-n-butyl phthalate	84-74-2	1/ 1	2.7	2.7	2.7	--	Yes	Detected organic	--	--	--	630	RSL	No	Below risk screening criteria	Uppercobb Pond	06/23/03
Lower Cobbs Pond Exposure Unit (Discrete Samples)																	
Inorganic Chemicals																	
Aluminum	7429-90-5	8/ 8	8920	16400	12800	13900	Yes	Exceeds background	52923	7380	3496	3496	NGT	Yes	Exceeds screening level	ULCPsd-026	08/14/01
Antimony	7440-36-0	1/ 8	1.4	1.4	0.328	0	Yes	Exceeds background	13.6	2.82	175	2.82	RC	No	Below risk screening criteria	CPCsd-045	04/01/10
Arsenic	7440-38-2	8/ 8	5.1	34.3	14.9	19.5	Yes	Exceeds background	0.425	0.524	2.78	0.425	RA	Yes	Exceeds screening level	ULCPsd-026	08/14/01
Barium	7440-39-3	8/ 8	51.3	149	84.8	123	Yes	Exceeds background	8966	1413	351	351	NGT	No	Below risk screening criteria	CPCsd-045	04/01/10
Beryllium	7440-41-7	8/ 8	0.42	0.93	0.679	0.38	Yes	Exceeds background	--	--	--	16	RSL	No	Below risk screening criteria	CPCsd-045	04/01/10
Cadmium	7440-43-9	6/ 8	0.1	1.5	0.536	0	Yes	Exceeds background	22.3	6.41	10.9	6.41	RC	No	Below risk screening criteria	CPCsd-045	04/01/10
Calcium	7440-70-2	8/ 8	699	7360	2670	5510	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	ULCPsd-024	08/14/01
Chromium, hexavalent	18540-29-9	2/ 6	5	5.7	2.12	--	Yes	Exceeds background	90.4	19.9	1.64	1.64	NGT	Yes	Exceeds screening level	ULCPsd-021	08/15/01
Chromium ^d	7440-47-3	8/ 8	11.9	150	59	18.1	Yes	Exceeds background	90.4	19.9	1.64	1.64	NGT	Yes	Exceeds screening level	ULCPsd-023	08/15/01
Cobalt	7440-48-4	8/ 8	8.6	21.3	12	9.1	Yes	Exceeds background	--	--	--	2.3	RSL	Yes	Exceeds screening level	ULCPsd-025	07/25/01
Copper	7440-50-8	8/ 8	12.4	149	56.6	27.6	Yes	Exceeds background	2714	311	25368	311	RC	No	Below risk screening criteria	ULCPsd-023	08/15/01

Table G-3. SRC and COPC Screening for Sediment (continued)

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						
Cyanide	57-12-5	1/ 6	0.4	0.4	0.225	0	Yes	Exceeds background	--	--	--	0.27	RSL	Yes	Exceeds screening level	ULCPsd-024	08/14/01
Iron	7439-89-6	8/ 8	15800	32200	23800	28200	No	Essential Nutrient	19010	2313	184370	180000	RDA	No	Essential Nutrient	ULCPsd-025	07/25/01
Lead	7439-92-1	8/ 8	12.3	60.4	29.4	27.4	Yes	Exceeds background	--	--	--	400	RSL	No	Below risk screening criteria	ULCPsd-024	08/14/01
Magnesium	7439-95-4	8/ 8	2140	3240	2610	2760	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	ULCPsd-025	07/25/01
Manganese	7439-96-5	8/ 8	217	966	502	1950	No	Below background	1482	293	35.1	35.1	NGT	No	Below background	ULCPsd-025	07/25/01
Mercury	7439-97-6	7/ 8	0.016	0.093	0.0538	0.059	Yes	Exceeds background	16.5	2.27	172	2.27	RC	No	Below risk screening criteria	ULCPsd-021	08/15/01
Nickel	7440-02-0	8/ 8	15.3	30.2	20.4	17.7	Yes	Exceeds background	1346	155	12639	155	RC	No	Below risk screening criteria	CPCsd-045	04/01/10
Potassium	7440-09-7	8/ 8	673	1860	1390	1950	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	ULCPsd-026	08/14/01
Selenium	7782-49-2	4/ 8	0.45	2.2	0.72	1.7	Yes	Exceeds background	--	--	--	39	RSL	No	Below risk screening criteria	CPCsd-045	04/01/10
Silver	7440-22-4	5/ 8	0.052	2.4	0.852	0	Yes	Exceeds background	324	38.6	3105	38.6	RC	No	Below risk screening criteria	ULCPsd-021	08/15/01
Sodium	7440-23-5	8/ 8	47.3	190	119	112	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	ULCPsd-022	08/15/01
Thallium	7440-28-0	2/ 8	0.13	0.41	0.179	0.89	No	Below background	4.76	0.612	47.7	0.612	RC	No	Below background	CPCsd-045	04/01/10
Vanadium	7440-62-2	8/ 8	15.3	32.2	22.5	26.1	Yes	Exceeds background	156	44.9	2304	44.9	RC	No	Below risk screening criteria	ULCPsd-026	08/14/01
Zinc	7440-66-6	8/ 8	44.6	275	141	532	No	Below background	19659	2321	187269	2321	RC	No	Below background	ULCPsd-021	08/15/01
<i>Explosives</i>																	
HMX	2691-41-0	1/ 8	0.017	0.017	0.0596	--	Yes	Detected organic	1909	359	23464	359	RC	No	Below risk screening criteria	CPCsd-044	03/29/10
Nitrocellulose	9004-70-0	1/ 1	7.8	7.8	7.8	--	Yes	Detected organic	--	--	--	19000000	RSL	No	Below risk screening criteria	CPCsd-045	04/01/10
Tetryl	479-45-8	1/ 8	0.022	0.022	0.0344	--	Yes	Detected organic	--	--	--	16	RSL	No	Below risk screening criteria	CPCsd-045	04/01/10
<i>Semi-volatile Organic Compounds</i>																	
Benz(a)anthracene	56-55-3	2/ 3	0.021	0.045	0.0437	--	Yes	Detected organic	0.221	0.65	4.77	0.221	RA	No	Below risk screening criteria	CPCsd-045	04/01/10
Benzo(a)pyrene	50-32-8	2/ 3	0.02	0.052	0.0473	--	Yes	Detected organic	0.022	0.065	0.477	0.022	RA	Yes	Exceeds screening level	CPCsd-045	04/01/10
Benzo(b)fluoranthene	205-99-2	2/ 3	0.038	0.075	0.081	--	Yes	Detected organic	0.221	0.65	4.77	0.221	RA	No	Below risk screening criteria	CPCsd-045	04/01/10
Benzo(ghi)perylene ^e	191-24-2	2/ 3	0.014	0.045	0.0813	--	Yes	Detected organic	--	--	--	180	RSL	No	Below risk screening criteria	CPCsd-045	04/01/10
Benzo(k)fluoranthene	207-08-9	1/ 3	0.013	0.013	0.0993	--	Yes	Detected organic	2.21	6.5	47.7	2.21	RA	No	Below risk screening criteria	CPCsd-044	03/29/10
Chrysene	218-01-9	2/ 3	0.027	0.052	0.0423	--	Yes	Detected organic	--	--	--	16	RSL	No	Below risk screening criteria	CPCsd-045	04/01/10
Di-n-butyl phthalate	84-74-2	1/ 3	0.022	0.022	0.352	--	Yes	Detected organic	--	--	--	630	RSL	No	Below risk screening criteria	CPCsd-044	03/29/10
Fluoranthene	206-44-0	2/ 3	0.042	0.095	0.084	--	Yes	Detected organic	--	--	--	240	RSL	No	Below risk screening criteria	CPCsd-045	04/01/10
Indeno(1,2,3-cd)pyrene	193-39-5	2/ 3	0.014	0.042	0.0637	--	Yes	Detected organic	0.221	0.65	4.77	0.221	RA	No	Below risk screening criteria	CPCsd-045	04/01/10
Phenanthrene ^e	85-01-8	1/ 3	0.014	0.014	0.0813	--	Yes	Detected organic	--	--	--	180	RSL	No	Below risk screening criteria	CPCsd-044	03/29/10
Pyrene	129-00-0	2/ 3	0.032	0.083	0.095	--	Yes	Detected organic	--	--	--	180	RSL	No	Below risk screening criteria	CPCsd-045	04/01/10
<i>Volatile Organic Compounds</i>																	
2-Butanone	78-93-3	2/ 2	0.025	0.047	0.036	--	Yes	Detected organic	--	--	--	2700	RSL	No	Below risk screening criteria	CPCsd-045	04/01/10
Acetone	67-64-1	2/ 2	0.076	0.17	0.123	--	Yes	Detected organic	--	--	--	6100	RSL	No	Below risk screening criteria	CPCsd-045	04/01/10
Carbon disulfide	75-15-0	1/ 2	0.0033	0.0033	0.0029	--	Yes	Detected organic	--	--	--	77	RSL	No	Below risk screening criteria	CPCsd-045	04/01/10
Lower Cobbs Pond Exposure Unit (ISM Samples)																	
<i>Inorganic Chemicals</i>																	
Aluminum	7429-90-5	1/ 1	15400	15400	15400	13900	Yes	Exceeds background	52923	7380	3496	3496	NGT	Yes	Exceeds screening level	Lowcobb Pond	06/23/03
Ammonia	7664-41-7	1/ 1	61	61	61	--	Yes	Exceeds background	--	--	--	--	--	Yes	Detected and no screening criteria	Lowcobb Pond	06/23/03
Antimony	7440-36-0	1/ 1	1.3	1.3	1.3	0	Yes	Exceeds background	13.6	2.82	175	2.82	RC	No	Below risk screening criteria	Lowcobb Pond	06/23/03
Arsenic	7440-38-2	1/ 1	10.2	10.2	10.2	19.5	No	Below background	0.425	0.524	2.78	0.425	RA	No	Below background	Lowcobb Pond	06/23/03
Barium	7440-39-3	1/ 1	116	116	116	123	No	Below background	8966	1413	351	351	NGT	No	Below background	Lowcobb Pond	06/23/03
Beryllium	7440-41-7	1/ 1	0.83	0.83	0.83	0.38	Yes	Exceeds background	--	--	--	16	RSL	No	Below risk screening criteria	Lowcobb Pond	06/23/03
Cadmium	7440-43-9	1/ 1	1.2	1.2	1.2	0	Yes	Exceeds background	22.3	6.41	10.9	6.41	RC	No	Below risk screening criteria	Lowcobb Pond	06/23/03
Calcium	7440-70-2	1/ 1	2550	2550	2550	5510	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	Lowcobb Pond	06/23/03
Chromium	7440-47-3	1/ 1	121	121	121	18.1	Yes	Exceeds background	90.4	19.9	1.64	1.64	NGT	Yes	Exceeds screening level	Lowcobb Pond	06/23/03
Cobalt	7440-48-4	1/ 1	12	12	12	9.1	Yes	Exceeds background	--	--	--	2.3	RSL	Yes	Exceeds screening level	Lowcobb Pond	06/23/03
Lead	7439-92-1	1/ 1	34.2	34.2	34.2	27.4	Yes	Exceeds background	--	--	--	400	RSL	No	Below risk screening criteria	Lowcobb Pond	06/23/03
Magnesium	7439-95-4	1/ 1	2600	2600	2600	2760	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	Lowcobb Pond	06/23/03

Table G-3. SRC and COPC Screening for Sediment (continued)

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						
Manganese	7439-96-5	1/ 1	602	602	602	1950	No	Below background	1482	293	35.1	35.1	NGT	No	Below background	Lowcobb Pond	06/23/03
Mercury	7439-97-6	1/ 1	0.1	0.1	0.1	0.059	Yes	Exceeds background	16.5	2.27	172	2.27	RC	No	Below risk screening criteria	Lowcobb Pond	06/23/03
Nickel	7440-02-0	1/ 1	24.6	24.6	24.6	17.7	Yes	Exceeds background	1346	155	12639	155	RC	No	Below risk screening criteria	Lowcobb Pond	06/23/03
Nitrate/Nitrite (NO3/NO2-N)	14797-55-8	1/ 1	8.5	8.5	8.5	--	Yes	Exceeds background	--	--	--	13000	RSL	No	Below risk screening criteria	Lowcobb Pond	06/23/03
Potassium	7440-09-7	1/ 1	1640	1640	1640	1950	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	Lowcobb Pond	06/23/03
Selenium	7782-49-2	1/ 1	1.6	1.6	1.6	1.7	No	Below background	--	--	--	39	RSL	No	Below background	Lowcobb Pond	06/23/03
Silver	7440-22-4	1/ 1	1.5	1.5	1.5	0	Yes	Exceeds background	324	38.6	3105	38.6	RC	No	Below risk screening criteria	Lowcobb Pond	06/23/03
Sodium	7440-23-5	1/ 1	203	203	203	112	No	Essential Nutrient	--	--	--	1000000	RDA	No	Essential Nutrient	Lowcobb Pond	06/23/03
Total Phosphorus as P	7723-14-0	1/ 1	360	360	360	--	Yes	Exceeds background	--	--	--	1000000	RDA	No	Below risk screening criteria	Lowcobb Pond	06/23/03
Vanadium	7440-62-2	1/ 1	24.5	24.5	24.5	26.1	No	Below background	156	44.9	2304	44.9	RC	No	Below background	Lowcobb Pond	06/23/03
Zinc	7440-66-6	1/ 1	259	259	259	532	No	Below background	19659	2321	187269	2321	RC	No	Below background	Lowcobb Pond	06/23/03
Semi-volatile Organic Compounds																	
Di-n-butyl phthalate	84-74-2	1/ 1	1.035	1.035	1.04	--	Yes	Detected organic	--	--	--	630	RSL	No	Below risk screening criteria	Lowcobb Pond	06/23/03

^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 Cleanup Goals (FWCUGs) 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 = United States Environmental Protection Agency Residential Regional Screening Level

^dFWCUGs are 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

Table G-4. SRC and COPC Screening for Surface Water

Analyte (mg/L)	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						
Backwater Area Exposure Unit																	
Inorganic Chemicals																	
Aluminum	7429-90-5	4/ 4	0.26	2.52	1.15	3.37	No	Below background	63.895	14.827	73.445	14.827	RC	No	Below background	ULCPsw-002	07/25/01
Antimony	7440-36-0	2/ 4	0.00096	0.001	0.00119	0	Yes	Exceeds background	0.0171	0.0049	0.0065	0.00491	RC	No	Below risk screening criteria	CPCsw-048	04/01/10
Arsenic	7440-38-2	4/ 4	0.0009	0.0104	0.00415	0.0032	Yes	Exceeds background	0.0011	0.0012	0.0042	0.0011	RA	Yes	Exceeds screening level	ULCPsw-001	07/26/01
Barium	7440-39-3	4/ 4	0.0198	0.382	0.141	0.0475	Yes	Exceeds background	12.131	2.901	10.64	2.901	RC	No	Below risk screening criteria	ULCPsw-002	07/25/01
Beryllium	7440-41-7	2/ 4	0.000053	0.000064	0.0001	0	Yes	Exceeds background	--	--	--	0.0025	RSL	No	Below risk screening criteria	CPCsw-047	04/01/10
Cadmium	7440-43-9	2/ 4	0.000057	0.000062	0.00011	0	Yes	Exceeds background	0.0151	0.0051	0.0041	0.00408	NGT	No	Below risk screening criteria	CPCsw-047	04/01/10
Calcium	7440-70-2	4/ 4	21.6	67.7	37.4	41.4	No	Essential Nutrient	--	--	--	500	RDA	No	Essential Nutrient	ULCPsw-002	07/25/01
Chromium ^d	7440-47-3	4/ 4	0.00056	0.0067	0.00297	0	Yes	Exceeds background	0.0903	0.0303	0.0245	0.0245	NGT	No	Below risk screening criteria	ULCPsw-002	07/25/01
Cobalt	7440-48-4	4/ 4	0.00039	0.0107	0.00423	0	Yes	Exceeds background	--	--	--	0.0006	RSL	Yes	Exceeds screening level	ULCPsw-001	07/26/01
Copper	7440-50-8	3/ 4	0.0019	0.0088	0.00355	0.0079	Yes	Exceeds background	2.788	0.614	7.199	0.614	RC	No	Below risk screening criteria	ULCPsw-002	07/25/01
Iron	7439-89-6	4/ 4	0.846	16.3	7.64	2.56	No	Essential Nutrient	20	4.527	31.296	18	RDA	No	Essential Nutrient	ULCPsw-002	07/25/01
Lead	7439-92-1	2/ 4	0.00032	0.00047	0.0007	0	Yes	Exceeds background	--	--	--	0.015	RSL	No	Below risk screening criteria	CPCsw-047	04/01/10
Magnesium	7439-95-4	4/ 4	3.25	11.2	6.1	10.8	No	Essential Nutrient	--	--	--	200	RDA	No	Essential Nutrient	ULCPsw-002	07/25/01
Manganese	7439-96-5	4/ 4	0.132	15.8	6.16	0.391	Yes	Exceeds background	2.476	0.633	1.449	0.633	RC	Yes	Exceeds screening level	ULCPsw-002	07/25/01
Nickel	7440-02-0	4/ 4	0.0019	0.0067	0.0037	0	Yes	Exceeds background	1.445	0.312	8.258	0.312	RC	No	Below risk screening criteria	ULCPsw-002	07/25/01
Potassium	7440-09-7	4/ 4	1.39	15.7	6.1	3.17	No	Essential Nutrient	--	--	--	1750	RDA	No	Essential Nutrient	ULCPsw-002	07/25/01
Selenium	7782-49-2	3/ 4	0.00023	0.0104	0.00335	0	Yes	Exceeds background	--	--	--	0.01	RSL	Yes	Exceeds screening level	ULCPsw-002	07/25/01
Silver	7440-22-4	1/ 4	0.0017	0.0017	0.0006	0	Yes	Exceeds background	0.348	0.0768	0.9	0.0768	RC	No	Below risk screening criteria	ULCPsw-002	07/25/01
Sodium	7440-23-5	4/ 4	1.6	12.9	5.93	21.3	No	Essential Nutrient	--	--	--	1200	RDA	No	Essential Nutrient	ULCPsw-002	07/25/01
Sulfate ^e	14808-79-8	1/ 2	29	29	15.1	--	Yes	Detected no background	--	--	--	--	--	Yes	Detected and no screening criteria	ULCPsw-001	07/26/01
Sulfide ^e	18496-25-8	1/ 2	2.3	2.3	1.28	--	Yes	Detected no background	--	--	--	--	--	Yes	Detected and no screening criteria	ULCPsw-002	07/25/01
Thallium	7440-28-0	1/ 4	0.00046	0.00046	0.00087	0	Yes	Exceeds background	0.0058	0.0012	0.0292	0.00124	RC	No	Below risk screening criteria	CPCsw-047	04/01/10
Vanadium	7440-62-2	3/ 4	0.00051	0.005	0.00385	0	Yes	Exceeds background	0.211	0.0706	0.0572	0.0572	NGT	No	Below risk screening criteria	ULCPsw-001	07/26/01
Zinc	7440-66-6	4/ 4	0.0101	0.109	0.0403	0.042	Yes	Exceeds background	21.002	4.617	58.216	4.617	RC	No	Below risk screening criteria	ULCPsw-002	07/25/01
Explosives																	
4-Amino-2,6-Dinitrotoluene	19406-51-0	2/ 2	0.000043	0.00007	5.7E-05	--	Yes	Detected organic	0.0146	0.0031	0.131	0.00313	RC	No	Below risk screening criteria	CPCsw-048	04/01/10
Volatile Organic Compounds																	
Acetone	67-64-1	1/ 3	0.003	0.003	0.00433	--	Yes	Detected organic	--	--	--	1.4	RSL	No	Below risk screening criteria	ULCPsw-002	07/25/01
Chloromethane	74-87-3	1/ 3	0.0007	0.0007	0.00057	--	Yes	Detected organic	--	--	--	0.019	RSL	No	Below risk screening criteria	ULCPsw-002	07/25/01
Toluene	108-88-3	1/ 3	0.001	0.001	0.00067	--	Yes	Detected organic	--	--	--	0.11	RSL	No	Below risk screening criteria	ULCPsw-002	07/25/01

Table G-4. SRC and COPC Screening for Surface Water (continued)

Analyte (mg/L)	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						
Upper Cobbs Pond Exposure Unit																	
Inorganic Chemicals																	
Aluminum	7429-90-5	5/ 5	0.0916	0.332	0.185	3.37	No	Below background	63.895	14.827	73.445	14.827	RC	No	Below background	CPCsw-046	03/25/10
Antimony	7440-36-0	1/ 5	0.00094	0.00094	0.00215	0	Yes	Exceeds background	0.0171	0.0049	0.0065	0.00491	RC	No	Below risk screening criteria	CPCsw-046	03/25/10
Arsenic	7440-38-2	2/ 5	0.00078	0.0025	0.00464	0.0032	No	Below background	0.0011	0.0012	0.0042	0.0011	RA	No	Below background	ULCPsw-004	07/24/01
Barium	7440-39-3	5/ 5	0.0138	0.0226	0.0168	0.0475	No	Below background	12.131	2.901	10.64	2.901	RC	No	Below background	ULCPsw-003	07/24/01
Calcium	7440-70-2	5/ 5	13.2	24.3	19.6	41.4	No	Essential Nutrient	--	--	--	500	RDA	No	Essential Nutrient	Uppercobb Pond	06/23/03
Chromium ^d	7440-47-3	2/ 5	0.00059	0.001	0.00108	0	Yes	Exceeds background	0.0903	0.0303	0.0245	0.0245	NGT	No	Below risk screening criteria	Uppercobb Pond	06/23/03
Copper	7440-50-8	3/ 5	0.0019	0.0051	0.00248	0.0079	No	Below background	2.788	0.614	7.199	0.614	RC	No	Below background	Uppercobb Pond	06/23/03
Iron	7439-89-6	5/ 5	0.419	1.3	0.918	2.56	No	Essential Nutrient	20	4.527	31.296	18	RDA	No	Essential Nutrient	Uppercobb Pond	06/23/03
Lead	7439-92-1	3/ 5	0.00039	0.0033	0.00158	0	Yes	Exceeds background	--	--	--	0.015	RSL	No	Below risk screening criteria	Uppercobb Pond	06/23/03
Magnesium	7439-95-4	5/ 5	1.75	4.41	3.36	10.8	No	Essential Nutrient	--	--	--	200	RDA	No	Essential Nutrient	ULCPsw-003	07/24/01
Manganese	7439-96-5	5/ 5	0.0772	0.528	0.216	0.391	Yes	Exceeds background	2.476	0.633	1.449	0.633	RC	No	Below risk screening criteria	ULCPsw-003	07/24/01
Nickel	7440-02-0	1/ 5	0.0019	0.0019	0.00178	0	Yes	Exceeds background	1.445	0.312	8.258	0.312	RC	No	Below risk screening criteria	CPCsw-046	03/25/10
Nitrate/Nitrite (NO3/NO2-N)	N599	2/ 4	0.1	0.18	0.087	--	Yes	Exceeds background	115.16	24.892	584.94	24.892	RC	No	Below risk screening criteria	Uppercobb Pond	08/05/03
Total Phosphorus as P	7723-14-0	2/ 2	0.06	0.24	0.15	--	No	Essential Nutrient	--	--	--	500	RDA	No	Essential Nutrient	Uppercobb Pond	06/23/03
Potassium	7440-09-7	5/ 5	0.894	1.57	1.26	3.17	No	Essential Nutrient	--	--	--	1750	RDA	No	Essential Nutrient	Uppercobb Pond	06/23/03
Selenium	7782-49-2	1/ 5	0.00024	0.00024	0.00243	0	Yes	Exceeds background	--	--	--	0.01	RSL	No	Below risk screening criteria	CPCsw-046	03/25/10
Sodium	7440-23-5	5/ 5	1.41	3.68	2.42	21.3	No	Essential Nutrient	--	--	--	1200	RDA	No	Essential Nutrient	ULCPsw-003	07/24/01
Sulfate ^e	14808-79-8	2/ 2	13	13	13	--	Yes	Exceeds background	--	--	--	--	--	Yes	Detected and no screening criteria.	ULCPsw-003	07/24/01
Sulfide ^e	18496-25-8	2/ 2	0.7	0.7	0.7	--	Yes	Exceeds background	--	--	--	--	--	Yes	Detected and no screening criteria.	ULCPsw-003	07/24/01
Vanadium	7440-62-2	1/ 5	0.00089	0.00089	0.00104	0	Yes	Exceeds background	0.211	0.0706	0.0572	0.0572	NGT	No	Below risk screening criteria	CPCsw-046	03/25/10
Zinc	7440-66-6	4/ 5	0.0041	0.0115	0.00984	0.042	No	Below background	21.002	4.617	58.216	4.617	RC	No	Below background	ULCPsw-003	07/24/01
Explosives																	
4-Amino-2,6-Dinitrotoluene	19406-51-0	2/ 3	0.000072	0.00024	0.00015	--	Yes	Detected organic	0.0146	0.0031	0.131	0.00313	RC	No	Below risk screening criteria	Uppercobb Pond	08/05/03
Semi-volatile Organic Compounds																	
Bis(2-ethylhexyl)phthalate	117-81-7	2/ 3	0.0019	0.002	0.00313	--	Yes	Detected organic	0.0035	0.0093	0.0068	0.00349	RA	No	Below risk screening criteria	Uppercobb Pond	08/05/03
Di-n-butyl phthalate	84-74-2	2/ 3	0.0018	0.0046	0.0038	--	Yes	Detected organic	--	--	--	0.09	RSL	No	Below risk screening criteria	Uppercobb Pond	06/23/03

Table G-4. SRC and COPC Screening for Surface Water (continued)

Analyte (mg/L)	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						
Lower Cobbs Pond Exposure Unit																	
Inorganic Chemicals																	
Aluminum	7429-90-5	7/ 7	0.114	0.377	0.218	3.37	No	Below background	63.895	14.827	73.445	14.827	RC	No	Below background	ULCPsw-007	07/24/01
Antimony	7440-36-0	4/ 7	0.00073	0.0034	0.00163	0	Yes	Exceeds background	0.0171	0.0049	0.0065	0.00491	RC	No	Below risk screening criteria	Lowcobb Pond	06/23/03
Arsenic	7440-38-2	4/ 7	0.00078	0.0024	0.00371	0.0032	No	Below background	0.0011	0.0012	0.0042	0.0011	RA	No	Below background	ULCPsw-006	07/24/01
Barium	7440-39-3	7/ 7	0.0117	0.0228	0.0141	0.0475	No	Below background	12.131	2.901	10.64	2.901	RC	No	Below background	ULCPsw-007	07/24/01
Beryllium	7440-41-7	1/ 7	0.000034	0.000034	0.0002	0	Yes	Exceeds background	--	--	--	0.0025	RSL	No	Below risk screening criteria	CPCsw-045	04/01/10
Cadmium	7440-43-9	1/ 7	0.000043	0.000043	0.00039	0	Yes	Exceeds background	0.0151	0.0051	0.0041	0.00408	NGT	No	Below risk screening criteria	CPCsw-045	04/01/10
Calcium	7440-70-2	7/ 7	10.9	38.7	20.4	41.4	No	Essential Nutrient	--	--	--	500	RDA	No	Essential Nutrient	ULCPsw-007	07/24/01
Chromium ^d	7440-47-3	2/ 7	0.00053	0.0011	0.00128	0	Yes	Exceeds background	0.0903	0.0303	0.0245	0.0245	NGT	No	Below risk screening criteria	Lowcobb Pond	06/23/03
Cobalt	7440-48-4	1/ 7	0.00015	0.00015	0.00069	0	Yes	Exceeds background	--	--	--	0.0006	RSL	No	Below risk screening criteria	CPCsw-045	04/01/10
Copper	7440-50-8	4/ 7	0.0016	0.0029	0.0018	0.0079	No	Below background	2.788	0.614	7.199	0.614	RC	No	Below background	Lowcobb Pond	06/23/03
Iron	7439-89-6	7/ 7	0.294	1.35	0.69	2.56	No	Essential Nutrient	20	4.527	31.296	18	RDA	No	Essential Nutrient	Lowcobb Pond	06/23/03
Lead	7439-92-1	3/ 7	0.00029	0.0029	0.0015	0	Yes	Exceeds background	--	--	--	0.015	RSL	No	Below risk screening criteria	Lowcobb Pond	08/05/03
Magnesium	7439-95-4	7/ 7	1.55	6.71	3.6	10.8	No	Essential Nutrient	--	--	--	200	RDA	No	Essential Nutrient	ULCPsw-007	07/24/01
Manganese	7439-96-5	7/ 7	0.0915	0.654	0.215	0.391	Yes	Exceeds background	2.476	0.633	1.449	0.633	RC	Yes	Exceeds screening level	ULCPsw-007	07/24/01
Nickel	7440-02-0	2/ 7	0.0014	0.0016	0.00161	0	Yes	Exceeds background	1.445	0.312	8.258	0.312	RC	No	Below risk screening criteria	CPCsw-044	03/29/10
Nitrate/Nitrite (NO3/NO2-N)		2/ 5	0.1	0.13	0.0664	--	Yes	Exceeds background	115.16	24.892	584.94	24.892	RC	No	Below risk screening criteria	Lowcobb Pond	06/23/03
Potassium	7440-09-7	7/ 7	0.497	1.61	1.23	3.17	No	Essential Nutrient	--	--	--	1750	RDA	No	Essential Nutrient	Lowcobb Pond	08/05/03
Selenium	7782-49-2	1/ 7	0.00032	0.00032	0.00245	0	Yes	Exceeds background	--	--	--	0.01	RSL	No	Below risk screening criteria	CPCsw-045	04/01/10
Sodium	7440-23-5	7/ 7	1.37	4.4	2.52	21.3	No	Essential Nutrient	--	--	--	1200	RDA	No	Essential Nutrient	ULCPsw-007	07/24/01
Sulfate ^e	14808-79-8	3/ 3	14	19	16.3	--	Yes	Exceeds background	--	--	--	--	--	Yes	Detected and no screening criteria.	ULCPsw-007	07/24/01
Sulfide ^e	18496-25-8	1/ 3	0.7	0.7	0.4	--	Yes	Exceeds background	--	--	--	--	--	Yes	Detected and no screening criteria.	ULCPsw-007	07/24/01
Thallium	7440-28-0	1/ 7	0.00035	0.00035	0.00348	0	Yes	Exceeds background	0.0058	0.0012	0.0292	0.00124	RC	No	Below risk screening criteria	CPCsw-045	04/01/10
Total Phosphorus as P	7723-14-0	2/ 2	0.1	0.12	0.11	--	No	Essential Nutrient	--	--	--	500	RDA	No	Essential Nutrient	Lowcobb Pond	06/23/03
Vanadium	7440-62-2	5/ 7	0.00063	0.003	0.00196	0	Yes	Exceeds background	0.211	0.0706	0.0572	0.0572	NGT	No	Below risk screening criteria	ULCPsw-006	07/24/01
Zinc	7440-66-6	5/ 7	0.0027	0.0139	0.0111	0.042	No	Below background	21.002	4.617	58.216	4.617	RC	No	Below background	ULCPsw-006	07/24/01
Explosives																	
4-Amino-2,6-Dinitrotoluene	19406-51-0	1/ 4	0.00029	0.00029	0.00014	--	Yes	Detected organic	0.0146	0.0031	0.131	0.00313	RC	No	Below risk screening criteria	Lowcobb Pond	08/05/03
Semi-volatile Organic Compounds																	
Benzenemethanol	100-51-6	1/ 2	0.0049	0.0049	0.00495	--	Yes	Detected organic	--	--	--	0.2	RSL	No	Below risk screening criteria	CPCsw-045	04/01/10
Bis(2-ethylhexyl)phthalate	117-81-7	2/ 4	0.0022	0.0029	0.00378	--	Yes	Detected organic	0.0035	0.0093	0.0068	0.00349	RA	No	Below risk screening criteria	Lowcobb Pond	06/23/03
Butyl benzyl phthalate	85-68-7	1/ 4	0.0018	0.0018	0.00433	--	Yes	Detected organic	--	--	--	0.016	RSL	No	Below risk screening criteria	CPCsw-045	04/01/10
Di-n-butyl phthalate	84-74-2	2/ 4	0.0023	0.012	0.00608	--	Yes	Detected organic	--	--	--	0.09	RSL	No	Below risk screening criteria	Lowcobb Pond	06/23/03

^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 Cleanup Goals (FWCUGs) 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 = United States Environmental Protection Agency Residential Regional Screening Level

^dFWCUGs are the most conservative (smallest) of the FWCUGs for hexavalent and trivalent chromium.

^eNo FWCUGs or RSLs are available for sulfate and sulfide. These anions are reported as water quality parameters for protection of aquatic organisms and have very low toxicity to humans.

bgs = below ground surface

Table G-5. COC Screening for Surface Soil (0-1 ft bgs Discrete Samples) at the Pond Bank Exposure Unit
Unrestricted Land Use Receptor: Resident (Adult and Child)

COPC	CAS Number	Freq of Detect	Minimum Detect	Maximum Detect	Average Result	UCL 95	Dist.	EPC	Resident Receptor FWCUG ^a		Background Criteria ^b	EPC Exceeds FWCUG?
									HQ=1	Risk=10 ⁻⁵		
									Inorganic Chemicals			
Aluminum	7429-90-5	24/ 24	6450	19200	11900	13100	L	13100	73798	--	17700	No
Arsenic ^c	7440-38-2	24/ 24	4.2	28.4	11.1	13.5	L	13.5	20.2	4.25	15.4	No
Chromium ^d	7440-47-3	24/ 24	9.6	24.8	15.4	17	L	17	81473	NA	17.4	No
Cobalt	7440-48-4	24/ 24	4.5	16.4	8.9	10.1	L	10.1	1313	8030	10.4	No
Cyanide ^e	57-12-5	4/ 11	0.31	1.2	0.292	0.471	D	0.471	2.7	--	0	No
Semi-volatile Organic Compounds												
Benzo(a)pyrene	50-32-8	3/ 14	0.014	0.057	0.0482	0.0727	D	0.057	--	0.221	--	No

All units are milligrams per kilogram (mg/kg)

^aFacility-Wide Cleanup Goals (FWCUGs) from *Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (USACE 2010).

^bBackground criteria for soil 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 the Resident FWCUG for arsenic exceeds the surface soil background screening concentration (15.4 mg/kg), the background level is used as the cleanup goal.

^dUsing the lines of evidence presented in Section 7.2.4.1, FWCUGs for trivalent chromium were identified as being appropriate for use with soil data.

^eNo FWCUG is available for cyanide. Cleanup goal is the USEPA Residential Regional Screening Level (RSL).

Dist.: N=normal distribution, t statistic used for UCL 95 calculation

L=lognormal distribution, Land statistic used for UCL 95 calculation

D=fewer than 5 or 50% detects, t statistic used for UCL 95 calculation

bgs = below ground surface

CAS = Chemical Abstract Service

COC = Chemical of Concern

COPC = Chemical of Potential Concern

EPC = Exposure Point Concentration

HQ = Hazard Quotient

UCL 95 = 95% Upper Confidence Limit of the mean

-- = No value available

Bold = EPC exceeds FWCUG

Table G-6. COC Screening for Subsurface Soil (1-13 ft bgs Discrete Samples) at the Pond Bank Exposure Unit
Unrestricted Land Use Receptor: Resident (Adult and Child)

COPC	CAS Number	Freq of Detect	Minimum Detect	Maximum Detect	Average Result	UCL 95	Dist.	EPC	Resident FWCUG ^a		Background Criteria ^b	EPC Exceeds FWCUG?
									HQ=1	Risk=10 ⁻⁵		
Semi-volatile Organic Compounds												
Benzo(a)pyrene	50-32-8	1/ 6	0.066	0.066	0.0362	0.0482	D	0.0482	--	0.221	--	No

All units are milligrams per kilogram (mg/kg)

^aFacility-Wide Cleanup Goals (FWCUGs) from *Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (USACE 2010).

^bBackground criteria for soil >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).

Dist.: N=normal distribution, t statistic used for UCL 95 calculation

D=fewer than 5 or 50% detects, t statistic used for UCL 95 calculation

bgs = below ground surface

CAS = Chemical Abstract Service

COC = Chemical of Concern

COPC = Chemical of Potential Concern

EPC = Exposure Point Concentration

HQ = Hazard Quotient

UCL 95 = 95% Upper Confidence Limit of the mean

-- = No value available

Bold = EPC exceeds FWCUG

Table G-7. COC Screening for Sediment at the Three Exposure Units
Unrestricted Land Use Receptor: Resident (Adult and Child)

COPC	CAS Number	Freq of Detect	Minimum Detect	Maximum Detect	Average Result	UCL 95	Dist.	EPC	Resident Receptor FWCUG ^a		Background Criteria ^b	EPC Exceeds FWCUG?
									HQ=1	Risk=10 ⁻⁵		
Backwater Area												
Discrete Samples												
Aluminum	7429-90-5	14/	6620	18600	12500	14200	N	14200	73798	--	13900	No
Chromium ^c	7440-47-3	14/	9.9	56.5	23.3	31.9	L	31.9	81473	--	18.1	No
Cobalt ^e	7440-48-4	14/	5.4	22.8	13.6	16.2	N	16.2	23	4200	9.1	No
Cyanide ^e	57-12-5	3/	0.1	0.55	0.224	0.285	D	0.285	2.7	--	0	No
Benz(a)anthracene	56-55-3	3/	0.058	0.83	0.274	39.4	L	0.83	--	2.21	--	No
Benzo(a)pyrene	50-32-8	4/	0.063	0.89	0.323	37.5	L	0.89	--	0.221	--	Yes
Benzo(b)fluoranthene	205-99-2	3/	0.1	0.86	0.338	9.2	L	0.86	--	2.21	--	No
Dibenz(a,h)anthracen	53-70-3	1/	0.066	0.066	0.095	0.139	D	0.066	--	0.221	--	No
Indeno(1,2,3-	193-39-5	3/	0.04	0.48	0.192	2.23	L	0.48	--	2.21	--	No
Upper Cobbs Pond												
Discrete Samples												
Aluminum	7429-90-5	5/	13400	21400	16500	20500	L	20500	73798	--	13900	No
Chromium ^c	7440-47-3	6/	19.9	91.6	50.8	126	L	91.6	81473	--	18.1	No
Chromium,	18540-29-	1/	10.6	10.6	2.73	6.95	D	6.95	199	268	--	No
Cobalt ^e	7440-48-4	5/	5.9	19.3	13.3	18.6	N	18.6	23	4200	9.1	No
Benzo(a)pyrene	50-32-8	1/	0.12	0.12	0.0845	0.309	D	0.12	--	0.221	--	No
ISM Sample												
Chromium ^c	7440-47-3	1/ 1	18.6	18.6	18.6	--	--	18.6	81473	--	18.1	No
Lower Cobbs Pond												
Discrete Samples												
Aluminum	7429-90-5	8/	8920	16400	12800	15300	L	15300	73798	--	13900	No
Arsenic	7440-38-2	8/	5.1	34.3	14.9	26.9	L	26.9	20.2	4.25	19.5	Yes
Chromium ^c	7440-47-3	8/	11.9	150	59	315	L	150	81473	NA	18.1	No
Chromium,	18540-29-	2/	5	5.7	2.12	4.19	D	4.19	199	268	--	No
Cobalt ^e	7440-48-4	8/	8.6	21.3	12	15.1	L	15.1	23	4200	9.1	No
Cyanide ^e	57-12-5	1/	0.4	0.4	0.225	0.325	D	0.325	2.7	--	0	No
Benzo(a)pyrene	50-32-8	2/	0.02	0.052	0.0473	0.09	D	0.052	--	0.221	--	No

Table G-7. COC Screening for Sediment at the Three Exposure Units
Unrestricted Land Use Receptor: Resident (Adult and Child) (continued)

COPC	CAS Number	Freq of Detect	Minimum Detect	Maximum Detect	Average Result	UCL 95	Dist.	EPC	Resident Receptor FWCUG ^a		Background Criteria ^b	EPC Exceeds FWCUG?
									HQ=1	Risk=10 ⁻⁵		
									ISM Sample			
Aluminum	7429-90-5	1/ 1	15400	15400	15400	--	--	15400	73798	--	13900	No
Chromium ^c	7440-47-3	1/ 1	121	121	121	--	--	121	81473	--	18.1	No
Cobalt ^e	7440-48-4	1/ 1	12	12	12	--	--	12	23	4200	9.1	No

All units are milligrams per kilogram (mg/kg)

^aFacility-Wide Cleanup Goals (FWCUGs) from *Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (USACE 2010).

^bBackground 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).

^cUsing the lines of evidence presented in Section 7.2.4.1, FWCUGs for trivalent chromium were identified as being appropriate for use with sediment data.

^dCancer risk-based FWCUG value presented in *Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (USACE 2010) were calculated using a cancer unit risk factor based on a chromium mixture containing 1/7th hexavalent chromium. These FWCUGs are adjusted by dividing by 7 for comparison to hexavalent chromium-specific results.

^eNo FWCUG available for cobalt or cyanide in sediment. Cleanup goals are USEPA Residential Regional Screening Levels (RSL) for soil.

Dist.: N=normal distribution, t statistic used for UCL 95 calculation

L=lognormal distribution, Land statistic used for UCL 95 calculation

D=fewer than 5 or 50% detects, t statistic used for UCL 95 calculation

CAS = Chemical Abstract Service

COC = Chemical of Concern

COPC = Chemical of Potential Concern

EPC = Exposure Point Concentration

HQ = Hazard Quotient

ISM = Incremental Sampling Methodology

UCL 95=95% Upper Confidence Limit of the mean

-- = No value available

Bold = EPC exceeds FWCUG

Table G-8. Sum-of-Ratios for Non-Carcinogens: COC Screening for Sediment at the Three Exposure Units
Unrestricted Land Use Receptor: Resident (Adult and Child)

COPC	CAS Number	EPC	Resident Receptor FWCUG ^a		Background Criteria ^b	Ratio
			HQ=1	Critical Effect or Target Organ		
Backwater Area						
Discrete Samples						
Aluminum	7429-90-5	14200	73798	Neurotoxicity in Offspring	13900	0.2
Chromium ^c	7440-47-3	31.9	81473	NOAEL	18.1	0.0004
Cobalt ^e	7440-48-4	16.2	23	Not Specified	9.1	0.7
Cyanide ^e	57-12-5	0.285	2.7	Reproductive	0	0.1
Sum-of-Ratios						1
Upper Cobbs Pond						
Discrete Samples						
Aluminum	7429-90-5	20500	73798	Neurotoxicity in Offspring	13900	0.3
Chromium ^c	7440-47-3	91.6	81473	NOAEL	18.1	0.001
Chromium, hexavalent ^d	18540-29-	6.95	199	Stomach, Liver/Kidney	--	0.03
Cobalt ^e	7440-48-4	18.6	23	Not Specified	9.1	1
Sum-of-Ratios						1
Lower Cobbs Pond						
Discrete Samples						
Aluminum	7429-90-5	15300	73798	Neurotoxicity in Offspring	13900	0.2
Arsenic	7440-38-2	26.9	20.2	Skin	19.5	1
Chromium ^c	7440-47-3	150	81473	NOAEL	18.1	0.002
Chromium, hexavalent ^d	18540-29-	4.19	199	Stomach, Liver/Kidney	--	0.02
Cobalt ^e	7440-48-4	15.1	23	Not Specified	9.1	0.7
Cyanide ^e	57-12-5	0.325	2.7	Reproductive	0	0.1
Sum-of-Ratios						2
Sum-of-Ratios Neurotoxicity in Offspring and Reproductive (Aluminum, Chromium, Cobalt, Cyanide)						1
Sum-of-Ratios Skin (Arsenic, Chromium, Cobalt)						2
Sum-of-Ratios Stomach, Liver/Kidney (Hexavalent Chromium, Chromium, Cobalt)						0.8
ISM Samples						
Aluminum	7429-90-5	15400	73798	Neurotoxicity in Offspring	13900	0.2
Chromium ^c	7440-47-3	121	81473	NOAEL	18.1	0.001
Cobalt ^e	7440-48-4	12	23	Not Specified	9.1	0.5
Sum-of-Ratios						0.7

All units are milligrams per kilogram (mg/kg)

^aFacility-Wide Cleanup Goals (FWCUGs) from *Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (USACE 2010).

^bBackground 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).

^cUsing the lines of evidence presented in Section 7.2.4.1, FWCUGs for trivalent chromium were identified as being appropriate for use with sediment data.

^dCancer risk-based FWCUG value presented in *Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (USACE 2010) were calculated using a cancer unit risk factor based on a chromium mixture containing 1/7th hexavalent chromium. These FWCUGs are adjusted by dividing by 7 for comparison to hexavalent chromium-specific results.

^eNo FWCUG available for cobalt or cyanide in sediment. Cleanup goals are USEPA Residential Regional Screening Levels (RSL) for soil.

CAS = Chemical Abstract Service

COC = Chemical of Concern

COPC = Chemical of Potential Concern

EPC = Exposure Point Concentration

HQ = Hazard Quotient

NOAEL = No-observed-adverse-effect-level

SOR = Sum-of-Ratios

-- = No value available

Bold = SOR greater than 1

Table G-9. Sum-of-Ratios for Carcinogens: COC Screening for Sediment at the Three Exposure Units
Unrestricted Land Use Receptor: Resident (Adult and Child)

COPC	CAS Number	EPC	Receptor FWCUG ^a Risk=10 ⁻⁵	Background Criteria ^b	Ratio	Percent Contribution to SOR if > 1
<i>Backwater Area</i>						
Cobalt ^c	7440-48-4	16.2	4200	9.1	0.004	<0.1%
Benz(a)anthracene	56-55-3	0.83	2.21	--	0.4	7%
Benzo(a)pyrene	50-32-8	0.89	0.221	--	4.0	76%
Benzo(b)fluoranthene	205-99-2	0.86	2.21	--	0.4	7%
Dibenz(a,h)anthracene	53-70-3	0.066	0.221	--	0.3	6%
Indeno(1,2,3-cd)pyrene	193-39-5	0.48	2.21	--	0.2	4%
Sum-of-Ratios					5	
<i>Upper Cobbs Pond</i>						
Chromium, hexavalent	18540-29-9	6.95	268		0.03	NA
Cobalt ^c	7440-48-4	18.6	4200	9.1	0.004	NA
Benzo(a)pyrene	50-32-8	0.12	0.221	--	0.5	NA
Sum-of-Ratios					0.6	
<i>Lower Cobbs Pond</i>						
Chromium, hexavalent	18540-29-9	4.19	268	--	0.02	NA
Cobalt ^c	7440-48-4	15.1	4200	9.1	0.004	NA
Benzo(a)pyrene	50-32-8	0.052	0.221	--	0.2	NA
Sum-of-Ratios					0.3	

All units are milligrams per kilogram (mg/kg)

^aFacility-Wide Cleanup Goals (FWCUGs) from *Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (USACE 2010).

^bBackground 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).

^cNo FWCUG available for cobalt in sediment. Cleanup goal is USEPA Residential Regional Screening Level (RSL) for soil.

CAS = Chemical Abstract Service

COPC = Chemical of Potential Concern

EPC = Exposure Point Concentration

NA = Not applicable, SOR is ≤ 1

SOR = Sum-of-Ratios

-- = No value available

Bold = SOR greater than 1

Table G-10. COC Screening for Surface Water at the Three Exposure Units
Unrestricted Land Use Receptor: Resident (Adult and Child)

COPC	CAS Number	Freq of Detect	Minimum Detect	Maximum Detect	Average Result	UCL 95	Dist.	EPC	Resident Receptor FWCUG ^a		Background Criteria ^b	EPC Exceeds FWCUG?/COC?
									HQ=1	Risk=10 ⁻⁵		
Backwater Area												
Arsenic	7440-38-2	4/ 4	0.0009	0.0104	0.00415	0.00939	D	0.00939	0.0463	0.011	0.0032	No
Cobalt ^c	7440-48-4	4/ 4	0.00039	0.0107	0.00423	0.01	D	0.01	0.006	--	0	Yes
Manganese	7439-96-5	4/ 4	0.132	15.8	6.16	15.1	D	15.1	6.326	--	0.391	Yes
Selenium	7782-49-2	3/ 4	0.00023	0.0104	0.00335	0.00901	D	0.00901	0.1		0	No
Upper Cobbs Pond												
No COPCs identified												
Lower Cobbs Pond												
Manganese	7439-96-5	7/ 7	0.0915	0.654	0.215	0.457	L	0.457	6.326	--	0.391	No

All units are milligrams per liter (mg/L)

^aFacility-Wide Cleanup Goals (FWCUGs) from *Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (USACE 2010).

^bBackground 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).

^cNo FWCUG available for cobalt in surface water. Cleanup goal is USEPA Tap Water Regional Screening Level (RSL).

Dist.: N=normal distribution, t statistic used for UCL 95 calculation

L=lognormal distribution, Land statistic used for UCL 95 calculation

D=fewer than 5 or 50% detects, t statistic used for UCL 95 calculation

CAS = Chemical Abstract Service

COC = Chemical of Concern

COPC = Chemical of Potential Concern

EPC = Exposure Point Concentration

HQ = Hazard Quotient

SRC = Site-related Contaminant

UCL 95=95% Upper Confidence Limit of the mean

-- = No value available

Bold = EPC exceeds FWCUG

Table G-11. Sum-of-Ratios for Non-Carcinogens: COC Screening for Surface Water at the Three Exposure Units
Unrestricted Land Use Receptor: Resident (Adult and Child)

COPC	CAS Number	EPC	Resident Receptor FWCUG ^a		Background Criteria ^b	Ratio
			HQ=1	Critical Effect or Target Organ		
Backwater Area						
Arsenic	7440-38-2	0.00939	0.0463	Skin	0.0032	0.2
Cobalt ^c	7440-48-4	0.01	0.006	Not Specified	0	2
Manganese	7439-96-5	15.1	6.326	CNS	0.391	2
Selenium	7782-49-2	0.00901	0.1	Nervous System, Hematologic, Dermal	0	0.09
Sum-of-Ratios						4

All units are milligrams per liter (mg/L)

^aFacility-Wide Cleanup Goals (FWCUGs) from *Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (USACE 2010).

^bBackground 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).

^cNo FWCUG available for cobalt in surface water. Cleanup goal is USEPA Tap Water Regional Screening Level (RSL).

CAS = Chemical Abstract Service

COPC = Chemical of Potential Concern

EPC = Exposure Point Concentration

HQ = Hazard Quotient

SOR = Sum-of-Ratios

-- = No value available

Bold = SOR greater than 1

Exhibit G-1. Site-specific Equation RSL Inputs and Outputs for Sediment

Site-specific Recreator Equation Inputs for Soil	
Variable	Value
TR (target cancer risk) unitless	0.00001
THQ (target hazard quotient) unitless	1
SA _{rec-c} (skin surface area - child) cm ² /day	2373
SA _{rec-a} (skin surface area - adult) cm ² /day	6032
SA ₀₋₂ (skin surface area - mutagenic) cm ² /day	0
SA ₂₋₆ (skin surface area - mutagenic) cm ² /day	2373
SA ₆₋₁₆ (skin surface area - mutagenic) cm ² /day	6032
SA ₁₆₋₃₀ (skin surface area - mutagenic) cm ² /day	6032
LT (lifetime - recreator) year	70
IFS _{rec-adj} (age-adjusted soil ingestion factor) mg/kg	964.167
DFS _{rec-adj} (age-adjusted soil dermal factor) mg/kg	3282.02
IFSM _{rec-adj} (mutagenic age-adjusted soil ingestion factor) mg/kg	2692.5
DFSM _{rec-adj} (mutagenic age-adjusted soil dermal factor) mg/kg	9001.58
EF ₀₋₂ (exposure frequency) day/year	0
EF ₂₋₆ (exposure frequency) day/year	8
EF ₆₋₁₆ (exposure frequency) day/year	35
EF ₁₆₋₃₀ (exposure frequency) day/year	8
EF _{rec-c} (exposure frequency - child) day/year	8
EF _{rec-a} (exposure frequency - adult) day/year	21.5
EF _{rec} (exposure frequency - recreator) day/year	19.25
IRS ₀₋₂ (soil intake rate) mg/day	0
IRS ₂₋₆ (soil intake rate) mg/day	200
IRS ₆₋₁₆ (soil intake rate) mg/day	100
IRS ₁₆₋₃₀ (soil intake rate) mg/day	100
IRS _{rec-c} (soil intake rate - child) mg/day	200
IRS _{rec-a} (soil intake rate - adult) mg/day	100
ED ₀₋₂ (exposure duration) year	0
ED ₂₋₆ (exposure duration) year	4
ED ₆₋₁₆ (exposure duration) year	10
ED ₁₆₋₃₀ (exposure duration) year	10
ED _{rec-c} (exposure duration - child) year	4
ED _{rec-a} (exposure duration - adult) year	20
ED _{rec} (exposure duration - recreator) year	24
ET ₀₋₂ (exposure time) hr/day	0
ET ₂₋₆ (exposure time) hr/day	24
ET ₆₋₁₆ (exposure time) hr/day	24
ET ₁₆₋₃₀ (exposure time) hr/day	24
ET _{rec-c} (exposure time - child) hr/day	24
ET _{rec-a} (exposure time - adult) hr/day	24
ET _{rec} (exposure time - recreator) hr/day	24
BW ₀₋₂ (body weight) kg	0

Exhibit G-1. Site-specific Equation RSL Inputs and Outputs for Sediment (continued)

Site-specific Recreator Equation Inputs for Soil (continued)	
Variable	Value
BW ₂₋₆ (body weight) kg	15
BW ₆₋₁₆ (body weight) kg	80
BW ₁₆₋₃₀ (body weight) kg	80
BW _{rec-c} (body weight - child) kg	15
BW _{rec-a} (body weight - adult) kg	80
AF ₀₋₂ (skin adherence factor) mg/cm ²	0
AF ₂₋₆ (skin adherence factor) mg/cm ²	0.2
AF ₆₋₁₆ (skin adherence factor) mg/cm ²	0.07
AF ₁₆₋₃₀ (skin adherence factor) mg/cm ²	0.07
AF _{rec-c} (skin adherence factor - child) mg/cm ²	0.2
AF _{rec-a} (skin adherence factor - adult) mg/cm ²	0.07
City _{PEF} (Climate Zone) Selection	
A _s (acres)	0.5
Q/C _{wp} (inverse of the ratio of the geometric mean air concentration to the PEF (particulate emission factor) m ³ /kg	93.77
PEF (particulate emission factor) m ³ /kg	1359344438
A (PEF Dispersion Constant)	16.2302
B (PEF Dispersion Constant)	18.7762
C (PEF Dispersion Constant)	216.108
V (fraction of vegetative cover) unitless	0.5
U _m (mean annual wind speed) m/s	4.69
U _t (equivalent threshold value)	11.32
F(x) (function dependant on U _m /U _t) unitless	0.194
City _{VF} (Climate Zone) Selection	
A _s (acres)	0.5
Q/C _{vol} (inverse of the ratio of the geometric mean air concentration to the foc (fraction organic carbon in soil) g/g	68.18
foc (fraction organic carbon in soil) g/g	0.006
ρ _b (dry soil bulk density) g/cm ³	1.5
ρ _s (soil particle density) g/cm ³	2.65
n (total soil porosity) L _{pore} /L _{soil}	0.43396
a (air-filled soil porosity) L _{air} /L _{soil}	0.28396
w (water-filled soil porosity) L _{water} /L _{soil}	0.15
T (exposure interval) s	819936000
A (VF Dispersion Constant)	11.911
B (VF Dispersion Constant)	18.4385
C (VF Dispersion Constant)	209.7845
City _{VF mass-loading} (Climate Zone) Selection	
VF _{ml} (volitization factor - mass-limit) m ³ /kg	.
Q/C _{vol} (inverse of the ratio of the geometric mean air concentration to the A _s (acres)	68.18365
A _s (acres)	0.5
T (exposure interval) yr	26
d _s (depth of source) m	.
ρ _b (dry soil bulk density) g/cm ³	1.5
A (VF Dispersion Constant - Mass Limit)	11.911
B (VF Dispersion Constant - Mass Limit)	18.4385
C (VF Dispersion Constant - Mass Limit)	209.7845
Output generated 29NOV2016:14:12:37	

Exhibit G-1. Site-specific Equation RSL Inputs and Outputs for Sediment (continued)

Site-specific Recreator Equation Output Screening Levels (RSL) for Soil																			
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL), ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat, Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide), Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat																			
Chemical	CAS Number	Mutagen ?	VOC?	Ingestion SF (mg/kg-day) ⁻¹	SFO Ref	Inhalation Unit Risk (ug/m ³) ⁻¹	IUR Ref	Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m ³)	Chronic RfC Ref	GIABS	ABS	RBA	Volatilization Factor (m ³ /kg)	Henry's Law Constant (atm-m ³ /mol)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m ³ /kg)	Ingestion SL TR=1.0E-5 (mg/kg)
Benzo[a]pyrene	50-32-8	Yes	No	7.30E+00	I	1.10E-03	C	-		-		1	0.13	1	-	0.0000187	-	1.36E+09	1.30E+01
Output generated 29NOV2016:14:12:37																			

Exhibit G-1. Site-specific Equation RSL Inputs and Outputs for Sediment (continued)

Site-specific Recreator Equation Output Screening Levels (RSL) for Soil (continued)												
ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL), ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat, Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide), Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat												
Chemical	Dermal SL TR=1.0E-5 (mg/kg)	Inhalation SL TR=1.0E-5 (mg/kg)	Carcinogenic SL TR=1.0E-5 (mg/kg)	Ingestion SL Child THQ=1 (mg/kg)	Dermal SL Child THQ=1 (mg/kg)	Inhalation SL Child THQ=1 (mg/kg)	Noncarcinogenic SL Child THI=1 (mg/kg)	Ingestion SL Adult THQ=1 (mg/kg)	Dermal SL Adult THQ=1 (mg/kg)	Inhalation SL Adult THQ=1 (mg/kg)	Noncarcinogenic SL Adult THI=1 (mg/kg)	Screening Level (mg/kg)
Benzo[a]pyrene	2.99E+01	2.58E+05	9.06E+00	-	-	-	-	-	-	-	-	9.06E+00 ca
Output generated 29NOV2016:14:12:37												