APPENDIX F-1

Summary of Soil and Aquatic Sediment Guidelines and Standards

TABLE F-1A
Soils Cleanup Objectives and Cleanup Levels[a]

Analyte	*Units*	*TAGM #4046 Eastern U.S. Background Concentrations for Soil [a]*	*6 NYCRR Subpart 375-6.8(a) [b] Remedial Soil Cleanup Objectives*
Aluminum	mg/kg (ppm)	33,000	--
Antimony	mg/kg (ppm)	--	--
Arsenic	mg/kg (ppm)	3–12[c]	13
Barium	mg/kg (ppm)	15–600	350
Beryllium	mg/kg (ppm)	0–1.75	7.2
Cadmium	mg/kg (ppm)	0.1–1	2.5
Calcium	mg/kg (ppm)	130–35,000	--
Chromium	mg/kg (ppm)	1.5–40[c]	30
Cobalt	mg/kg (ppm)	2.5–60[c]	--
Copper	mg/kg (ppm)	1–50	50
Iron	mg/kg (ppm)	2,000–550,000	--
Lead	mg/kg (ppm)	4–61[d]	63
Magnesium	mg/kg (ppm)	100–5,000	--
Manganese	mg/kg (ppm)	50–5,000	1,600
Mercury	mg/kg (ppm)	0.001–0.2	0.18
Nickel	mg/kg (ppm)	0.5–25	30
Potassium	mg/kg (ppm)	8,500–43,000[c]	--
Selenium	mg/kg (ppm)	0.1–3.9	3.9
Silver	mg/kg (ppm)	--	2
Sodium	mg/kg (ppm)	6,000–8,000	--
Thallium	mg/kg (ppm)	--	--
Vanadium	mg/kg (ppm)	1–300	--
Zinc	mg/kg (ppm)	9–50	109

-- No reference level available for these analytes

[a] Source: New York State Department of Environmental Conservation "Technical and Administrative Guidance Memorandum (TAGM) #4046"

[b] Source: 6 NYCRR Subpart 375-6.8(a) Remedial Soil Cleanup Objectives: Unrestricted Use Soil Cleanup Objectives

[c] New York State background

[d] Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from 4–61 ppm. Average background levels in metropolitan or suburban areas or near highways are much higher and typically range from 200–500 ppm.

TABLE F-1B
Screening Concentrations for Contaminated Sediment[a]

Analyte	Units	Lowest Effect Level [b]	Severe Effect Level [c]
Aluminum	mg/kg (ppm)	--	--
Antimony	mg/kg (ppm)	2.0 (L)	25.0 (L)
Arsenic	mg/kg (ppm)	6.0 (P)	33.0 (P)
Barium	mg/kg (ppm)	--	--
Beryllium	mg/kg (ppm)	--	--
Cadmium	mg/kg (ppm)	0.6 (P)	9.0 (L)
Calcium	mg/kg (ppm)	--	--
Chromium	mg/kg (ppm)	26.0 (P)	110.0 (P)
Cobalt	mg/kg (ppm)	--	--
Copper	mg/kg (ppm)	16.0 (P)	110.0 (P)
Iron	%	2.0 (P)	4.0 (P)
Lead	mg/kg (ppm)	31.0 (P)	110.0 (L)
Magnesium	mg/kg (ppm)	--	--
Manganese	mg/kg (ppm)	460.0 (P)	1,100.0 (L)
Mercury	mg/kg (ppm)	0.15 (L)	1.3 (L)
Nickel	mg/kg (ppm)	16.0 (P)	50.0 (L)
Potassium	mg/kg (ppm)	--	--
Selenium	mg/kg (ppm)	--	--
Silver	mg/kg (ppm)	1.0 (L)	2.2 (L)
Sodium	mg/kg (ppm)	--	--
Thallium	mg/kg (ppm)	--	--
Vanadium	mg/kg (ppm)	--	--
Zinc	mg/kg (ppm)	120.0 (P/L)	270.0 (L)

L - An "L" following a criterion indicates that it was taken from Long and Morgan (1990).
P - A "P" following a criterion indicates that it was taken from Persaud et al. (1992).
-- No reference value available for these analytes

[a] Source: New York State Department of Environmental Conservation "Technical Guidance for Screening Contaminated Sediments," January 1999

[b] The Lowest Effect Level for each metal is the lowest of the either the Persaud et al. (1992) Lowest Effect Level or the Long and Morgan (1990) Effect Range-Low

[c] The Severe Effect Level for each metal is the lowest of either the Persaud et al. (1992) Severe Effect Level or the Long and Morgan (1990) Effect Range-Moderate

TABLE F-1C
Screening Thresholds for In-Water and Riparian Management of Sediment and Dredge Material[a]

Analyte	Units	No Appreciable Contamination Level
Arsenic	mg/kg (ppm)	<14
Cadmium	mg/kg (ppm)	<1.2
Copper	mg/kg (ppm)	<33
Lead	mg/kg (ppm)	<33
Mercury	mg/kg (ppm)	<0.17

[a] Source: Draft New York State Department of Environmental Conservation Technical and Operational Guidance Series (TOGS) #5.1.9, "In-Water and Riparian Management of Sediment and Dredge Material"

TABLE F-1D
Radionuclide Comparison Values for Soils

Radionuclide	Units	Consultation Triggers for Soil Contamination [a]		NUREG-1757 Screening Values of Common Radionuclides for Soil Surface Contamination Levels [b]
		Residential Soil Concentration	Industrial/Commercial Concentration	
Co-60	µCi/g	4E-06	6E-06	3.8E-06
Sr-90	µCi/g	--	--	1.7E-06
Sr-90+D[c]	µCi/g	2.3E-05	1.07E-03	--
Cs-137	µCi/g	--	--	1.1E-05
Cs-137+D[c]	µCi/g	6E-06	1.1E-05	--
U-234	µCi/g	4.01E-04	3.31E-03	1.3E-05
U-235	µCi/g	--	--	8E-06
U-235+D[c]	µCi/g	2.0E-05	3.9E-05	2.9E-07
U-238	µCi/g	--	--	1.4E-05
U-238+D[c]	µCi/g	7.4E-05	1.79E-04	5E-07
Total U	µg/g	4.7E+01	1.23E+03	--
Pu-238	µCi/g	2.97E-04	1.64E-03	2.5E-06
Pu-239	µCi/g	2.59E-04	1.43E-03	2.3E-06
Am-241	µCi/g	1.87E-04	5.68E-04	2.1E-06

-- No reference trigger available

[a] Memorandum of Understanding between the Environmental Protection Agency and the Nuclear Regulatory Commission "Consultation and Finality on Decommissioning and Decontamination of Contaminated Sites," September 2002.

[b] U.S. Nuclear Regulatory Commission. Consolidated Decommissioning Guidance: Characterization, Survey, and Determination of Radiological Criteria. NUREG-1757, Vol. 2, Rev. 1. September 2006.

[c] Concentrations apply to the parent radionuclide but assume that the daughter products are present in equilibrium.

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