

Supplementary files:

Table S1. Tukey's pairwise comparisons results for the significant ($P < 0.05$) metal and nutrient concentration variables.

Variable	Sites	<i>P</i>	Variable	Sediment depth (cm)	<i>P</i>
N	N1 vs. N4	<0.001	N	0–20 vs. 20–40	<0.001
N	N4 vs. N1	<0.001	N	0–20 vs. 40–60	<0.001
N	N4 vs. N2	0.003	N	0–20 vs. 60–80	<0.001
N	N4 vs. N3	0.005	N	0–20 vs. 80–100	<0.001
N	N5 vs. N1	<0.001	N	0–20 vs. 120–140	<0.001
N	N5 vs. N2	<0.001	N	20–40 vs. 80–100	0.002
N	N5 vs. N3	<0.001	N	20–40 vs. 120–140	0.007
N	N5 vs. N4	0.009	N	40–60 vs. 80–100	0.041
P	N2 vs. N1	<0.001	P	0–20 vs. 60–80	0.049
P	N2 vs. N3	0.001	P	0–20 vs. 80–100	<0.001
P	N2 vs. N4	0.001	P	0–20 vs. 120–140	<0.001
P	N4 vs. N1	<0.001	P	20–40 vs. 60–80	0.042
P	N4 vs. N3	<0.001	P	20–40 vs. 80–100	<0.001
P	N4 vs. N5	<0.001	P	20–40 vs. 120–140	<0.001
K	N1 vs. N3	0.023	P	40–60 vs. 80–100	0.002
K	N4 vs. N2	0.045	P	40–60 vs. 120–140	<0.001
K	N4 vs. N3	0.002	Ca	120–140 vs. 0–20	0.006
K	N5 vs. N3	0.008	Mg	0–20 vs. 80–100	0.035
Mg	N4 vs. N3	0.014	Mg	0–20 vs. 120–140	0.011
Mg	N5 vs. N3	0.033	Mg	20–40 vs. 120–140	0.018
Na	N4 vs. N1	0.047	Cu	80–100 vs. 0–20	0.030
Na	N4 vs. N2	0.032	Cu	80–100 vs. 20–40	0.008
Na	N4 vs. N3	0.009	Cu	120–140 vs. 0–20	0.011
Na	N5 vs. N1	0.006	Cu	120–140 vs. 20–40	0.003
Na	N5 vs. N2	0.004	Zn	0–20 vs. 120–140	0.040
Na	N5 vs. N3	0.001	Zn	20–40 vs. 80–100	0.021
Cu	N4 vs. N3	0.018	Zn	20–40 vs. 120–140	0.008
Cu	N5 vs. N1	0.028			
Cu	N5 vs. N3	0.003			
B	N1 vs. N2	<0.001			
B	N1 vs. N3	<0.001			
B	N1 vs. N4	<0.001			
B	N1 vs. N5	<0.001			

Table S2. Sediment quality guidelines for mean Mn, Fe, Cu, and Zn concentrations (mg kg⁻¹) for different sediment depths across study sites.

Site	Depth (cm)	Mn	Fe	Cu	Zn
N1	0–20	88.9	5310.5	16.6	20.4
N1	20–40	134.6	21092.6	13.5	20.3
N1	40–60	196.1	18677.4	11.3	19.2
N1	60–80	747.4	13329.8	10.7	17.8
N1	80–100	1343.7	13177.2	7.5	14.6
N1	120–140	309.9	15804.1	6.3	11.9
N2	0–20	464.5	11148.5	18.4	36.3
N2	20–40	327.2	11942.4	19.6	37.2
N2	40–60	276.7	13048.2	16.7	28.2
N2	60–80	262.7	13985.7	16.6	32.0
N2	80–100	315.3	14164.1	13.0	21.2
N2	120–140	253.1	13872.8	13.2	16.0
N3	0–20	98.1	5066.3	8.0	12.9
N3	20–40	101.5	9298.5	12.9	12.3
N3	40–60	218.5	15272.0	8.6	16.4
N3	60–80	173.0	9275.9	8.3	17.6
N3	80–100	41.6	2191.4	2.8	5.0
N3	120–140	29.8	1533.5	3.0	7.1
N4	0–20	360.7	14095.6	36.6	61.6
N4	20–40	384.9	21510.5	32.3	48.3
N4	40–60	493.7	32715.3	24.0	37.3
N4	60–80	190.8	7244.2	18.2	15.0
N4	80–100	157.8	6175.4	11.1	13.0
N4	120–140	38.8	7875.8	5.8	6.4
N5	0–20	165.3	9043.6	36.2	35.0
N5	20–40	74.4	14035.5	49.6	72.9
N5	40–60	100.5	9852.9	21.2	14.4
N5	60–80	107.1	11512.4	28.9	18.7
N5	80–100	34.1	3564.6	6.4	3.8
N5	120–140	5.7	743.0	3.3	1.9

Canadian Sediment Quality Guidelines (Persuad et al., 1993): Cu (lowest effect level (LEL), 16; severe effect level (SEL), 110)); Fe (LEL, 20000; SEL, 40000), Mn (LEL, 460; SEL, 1100), Zn (LEL, 120; SEL, 820); colors: green—no effect level, yellow—LEL, red—SEL.

Table S3. Tukey's pairwise comparisons results for the significant ($P < 0.05$) sediment quality guideline variables

Variable	Sites	P	Variable	Sediment depth (cm)	P
<i>Geoaccumulation index</i>			<i>Geoaccumulation index</i>		
Mg	N1 vs. N3	0.022	Ca	0–20 vs. 120–140	0.002
Mg	N2 vs. N3	0.025	Ca	20–40 vs. 120–140	0.002
Mg	N4 vs. N3	0.015	Ca	40–60 vs. 120–140	0.005
Mg	N5 vs. N3	0.007	Ca	60–80 vs. 120–140	0.023
Mn	N2 vs. N5	0.027	Mg	80–100 vs. 0–20	0.029
Fe	N2 vs. N3	0.043	Mg	80–100 vs. 20–40	0.006
Cu	N2 vs. N3	0.015	Mg	80–100 vs. 40–60	0.009
Cu	N4 vs. N3	0.005	Mg	120–140 vs. 0–20	0.004
Cu	N5 vs. N1	0.007	Mg	120–140 vs. 20–40	0.001
Cu	N5 vs. N3	<0.001	Mg	120–140 vs. 40–60	0.001
			Mg	120–140 vs. 60–80	0.045
<i>Enrichment factor</i>			Fe	20–40 vs. 80–100	0.036
K	N4 vs. N2	0.024	Fe	20–40 vs. 120–140	0.027
K	N5 vs. N2	0.009	Fe	40–60 vs. 80–100	0.013
Na	N4 vs. N2	0.035	Fe	40–60 vs. 120–140	0.010
Na	N5 vs. N1	<0.001	Cu	0–20 vs. 80–100	0.015
Na	N5 vs. N2	<0.001	Cu	0–20 vs. 120–140	0.006
Na	N5 vs. N3	0.002	Cu	20–40 vs. 80–100	0.002
Cu	N5 vs. N1	0.001	Cu	20–40 vs. 120–140	0.001
Cu	N5 vs. N2	0.002	Cu	40–60 vs. 80–100	0.047
Cu	N5 vs. N3	0.009	Cu	40–60 vs. 120–140	0.022
Cu	N5 vs. N4	0.032	Zn	0–20 vs. 80–100	0.031
B	N1 vs. N2	0.035	Zn	0–20 vs. 120–140	0.006
B	N1 vs. N4	0.039	Zn	20–40 vs. 80–100	0.008
			Zn	20–40 vs. 120–140	0.002
			Zn	40–60 vs. 120–140	0.015