

Supplementary Table 4.2: Continued.

Variable	S	Hg	Sand	Silt	Clay	S1	S2	S3	RC
Cu	0.426	0.551	-0.186	0.274	-0.132	0.127	-0.032	-0.123	-0.159
Pb	0.138	0.486	-0.351	0.252	0.019	-0.076	-0.256	-0.263	-0.313
As	0.598	0.512	-0.104	0.214	-0.023	0.488	0.361	0.426	0.203
U	0.306	0.317	-0.101	0.143	0.058	0.315	-0.016	0.019	0.006
Ca	0.191	0.045	0.023	0.048	0.075	0.132	0.310	0.441	0.377
P	-0.100	0.395	-0.153	-0.072	0.213	0.016	0.004	0.156	0.151
Mg	-0.414	-0.364	-0.171	0.132	-0.052	-0.735	-0.592	-0.666	-0.430
Ba	-0.618	-0.328	-0.185	0.077	0.062	-0.683	-0.476	-0.400	-0.308
Na	-0.031	-0.285	-0.200	0.246	-0.010	-0.134	-0.128	-0.223	-0.135
S	1.000	0.447	-0.105	0.239	0.005	0.632	0.453	0.346	0.324
Hg	0.447	1.000	-0.149	0.070	0.090	0.334	0.285	0.407	0.309
Sand	-0.105	-0.149	1.000	-0.622	-0.165	0.063	0.095	0.058	0.094
Silt	0.239	0.070	-0.622	1.000	-0.552	-0.028	-0.141	-0.089	-0.170
Clay	0.005	0.090	-0.165	-0.552	1.000	0.146	0.222	0.196	0.249
S1	0.632	0.334	0.063	-0.028	0.146	1.000	0.670	0.553	0.384
S2	0.453	0.285	0.095	-0.141	0.222	0.670	1.000	0.790	0.759
S3	0.346	0.407	0.058	-0.089	0.196	0.553	0.790	1.000	0.835
RC	0.324	0.309	0.094	-0.170	0.249	0.384	0.759	0.835	1.000
TOC	0.421	0.328	0.125	-0.132	0.187	0.609	0.921	0.883	0.914
Dis..to.GM	-0.388	-0.035	-0.056	-0.202	0.287	-0.199	-0.032	0.013	0.106
AV	-0.110	-0.049	0.074	-0.170	0.195	-0.061	0.346	0.386	0.511
CAA	0.094	-0.269	0.183	0.136	-0.185	-0.069	0.069	0.156	0.170
CAD	0.199	-0.024	0.189	0.282	-0.413	0.096	0.190	0.261	0.227
CCA	0.422	0.271	0.050	-0.040	0.077	0.655	0.246	0.133	0.010
CCC	0.526	0.126	0.051	0.049	0.013	0.653	0.297	0.180	0.014
CCS	0.181	0.004	-0.082	0.052	0.050	0.070	-0.012	-0.014	0.017
CT	-0.409	-0.246	-0.094	-0.109	0.163	-0.570	-0.205	-0.225	0.017
CP	0.001	0.035	0.320	-0.103	-0.170	-0.071	-0.076	0.028	0.043
DB	0.067	0.048	-0.058	0.218	-0.224	-0.145	-0.178	-0.114	0.002
MC	-0.297	-0.387	0.234	-0.147	-0.065	-0.390	-0.220	-0.110	0.016
DGG	-0.464	0.065	-0.273	0.083	-0.022	-0.494	-0.452	-0.308	-0.235
DGD	-0.110	0.063	-0.137	0.130	-0.021	-0.081	0.022	0.088	0.083
DOO	-0.566	-0.258	0.039	-0.204	0.050	-0.638	-0.428	-0.311	-0.132
DOS	-0.216	0.122	0.135	-0.227	0.074	-0.277	-0.037	-0.044	0.118
DOT	-0.111	-0.018	-0.036	0.097	-0.127	-0.239	-0.044	-0.008	0.130
DP	-0.202	-0.227	0.160	-0.384	0.260	-0.259	-0.151	-0.135	0.051
DA	-0.335	0.019	0.089	-0.305	0.189	-0.389	-0.237	-0.120	0.032
DCI	-0.293	-0.101	0.014	-0.186	0.243	-0.339	-0.196	-0.184	-0.021
DU	0.101	0.011	-0.184	0.216	-0.064	-0.075	0.167	0.127	0.149
Dscal	-0.026	-0.058	0.164	-0.275	0.153	0.002	0.048	-0.029	0.043
Dcur	-0.228	-0.024	0.073	-0.253	0.130	-0.250	-0.165	-0.119	0.043
DE	0.534	0.233	-0.086	0.017	0.097	0.624	0.449	0.267	0.173
LV	-0.282	-0.178	0.059	-0.209	0.165	-0.101	0.101	0.007	0.101
LS	-0.268	-0.320	0.050	-0.288	0.323	-0.231	-0.045	-0.055	0.059
PC	-0.339	-0.147	-0.169	0.106	0.001	-0.401	-0.240	-0.163	-0.183

Supplementary Table 4.2: Continued.

Variable	TOC	Dis..to.GM	AV	CAA	CAD	CCA	CCC	CCS	CT
Cu	-0.096	-0.227	-0.289	-0.233	0.012	0.236	0.152	0.133	-0.179
Pb	-0.303	-0.127	-0.335	-0.278	-0.149	0.135	0.035	0.167	-0.087
As	0.319	-0.559	0.009	0.047	0.256	0.296	0.342	0.078	-0.443
U	0.013	-0.219	-0.176	-0.230	0.010	0.304	0.269	0.195	-0.351
Ca	0.367	-0.103	0.340	0.472	0.193	-0.107	0.080	0.052	0.062
P	0.082	0.408	0.098	-0.228	-0.228	0.010	-0.212	-0.082	0.103
Mg	-0.573	0.132	-0.125	0.122	-0.211	-0.519	-0.504	-0.028	0.631
Ba	-0.453	0.323	0.170	0.058	-0.208	-0.497	-0.502	-0.137	0.573
Na	-0.124	-0.010	-0.026	0.287	-0.090	-0.323	-0.179	-0.082	0.350
S	0.421	-0.388	-0.110	0.094	0.199	0.422	0.526	0.181	-0.409
Hg	0.328	-0.035	-0.049	-0.269	-0.024	0.271	0.126	0.004	-0.246
Sand	0.125	-0.056	0.074	0.183	0.189	0.050	0.051	-0.082	-0.094
Silt	-0.132	-0.202	-0.170	0.136	0.282	-0.040	0.049	0.052	-0.109
Clay	0.187	0.287	0.195	-0.185	-0.413	0.077	0.013	0.050	0.163
S1	0.609	-0.199	-0.061	-0.069	0.096	0.655	0.653	0.070	-0.570
S2	0.921	-0.032	0.346	0.069	0.190	0.246	0.297	-0.012	-0.205
S3	0.883	0.013	0.386	0.156	0.261	0.133	0.180	-0.014	-0.225
RC	0.914	0.106	0.511	0.170	0.227	0.010	0.014	0.017	0.017
TOC	1.000	-0.005	0.409	0.148	0.255	0.172	0.207	0.000	-0.132
Dis..to.GM	-0.005	1.000	0.151	-0.227	-0.308	-0.142	-0.299	-0.180	0.272
AV	0.409	0.151	1.000	0.132	0.146	-0.225	-0.117	-0.058	0.215
CAA	0.148	-0.227	0.132	1.000	0.602	-0.367	0.080	-0.070	0.136
CAD	0.255	-0.308	0.146	0.602	1.000	-0.041	0.222	0.116	-0.176
CCA	0.172	-0.142	-0.225	-0.367	-0.041	1.000	0.655	0.278	-0.574
CCC	0.207	-0.299	-0.117	0.080	0.222	0.655	1.000	0.331	-0.544
CCS	0.000	-0.180	-0.058	-0.070	0.116	0.278	0.331	1.000	-0.196
CT	-0.132	0.272	0.215	0.136	-0.176	-0.574	-0.544	-0.196	1.000
CP	-0.038	-0.299	0.117	0.254	0.355	0.026	0.004	0.102	-0.056
DB	-0.099	-0.023	-0.026	0.024	0.258	-0.082	-0.149	-0.051	0.026
MC	-0.099	-0.047	0.115	0.345	0.255	-0.297	-0.162	0.125	0.356
DGG	-0.365	0.154	-0.114	-0.320	-0.323	-0.261	-0.416	-0.113	0.357
DGD	0.032	-0.063	0.037	0.153	0.145	-0.227	-0.110	-0.126	0.058
DOO	-0.329	0.450	0.036	-0.196	-0.260	-0.358	-0.546	-0.005	0.389
DOS	0.025	0.167	0.013	-0.093	-0.081	-0.148	-0.259	0.007	0.171
DOT	0.007	-0.013	0.042	0.037	0.091	-0.274	-0.262	-0.017	0.079
DP	-0.132	0.194	0.137	0.119	-0.068	-0.374	-0.299	-0.046	0.215
DA	-0.194	0.203	0.114	-0.115	-0.101	-0.323	-0.338	-0.050	0.162
DCI	-0.158	0.175	0.253	0.014	-0.146	-0.285	-0.081	-0.015	0.282
DU	0.159	-0.010	0.047	0.367	0.327	-0.343	-0.129	-0.262	0.171
Dscal	-0.021	0.060	0.040	-0.183	-0.076	0.109	0.133	0.167	-0.035
Dcur	-0.096	0.238	0.131	-0.075	-0.087	-0.175	-0.168	0.093	0.148
DE	0.337	-0.183	-0.233	-0.237	-0.195	0.351	0.426	-0.050	-0.370
LV	0.099	0.284	0.099	0.027	0.003	-0.030	-0.078	-0.210	0.244
LS	-0.035	0.232	-0.007	-0.051	-0.215	-0.190	-0.151	-0.023	0.360
PC	-0.254	0.208	-0.150	-0.013	-0.093	-0.250	-0.381	-0.233	0.226

Supplementary Table 4.2: Continued.

Variable	CP	DB	MC	DGG	DGD	DOO	DOS	DOT	DP
Cu	-0.019	0.060	-0.344	-0.026	0.003	-0.237	-0.027	-0.097	-0.160
Pb	0.034	0.144	-0.310	0.252	0.114	-0.086	-0.028	0.037	-0.142
As	0.134	0.032	-0.278	-0.272	0.136	-0.485	-0.176	0.030	-0.383
U	0.028	0.035	-0.232	-0.046	0.120	-0.106	0.065	-0.183	-0.211
Ca	0.061	-0.139	0.136	-0.285	-0.157	-0.235	-0.106	-0.267	-0.025
P	-0.110	0.111	-0.166	0.250	0.100	0.168	0.126	0.064	0.005
Mg	0.021	0.111	0.225	0.336	-0.043	0.390	0.118	0.152	0.153
Ba	0.038	0.055	0.193	0.403	-0.019	0.452	0.167	-0.020	0.112
Na	-0.115	0.058	0.053	-0.051	0.014	-0.106	-0.108	0.027	-0.065
S	0.001	0.067	-0.297	-0.464	-0.110	-0.566	-0.216	-0.111	-0.202
Hg	0.035	0.048	-0.387	0.065	0.063	-0.258	0.122	-0.018	-0.227
Sand	0.320	-0.058	0.234	-0.273	-0.137	0.039	0.135	-0.036	0.160
Silt	-0.103	0.218	-0.147	0.083	0.130	-0.204	-0.227	0.097	-0.384
Clay	-0.170	-0.224	-0.065	-0.022	-0.021	0.050	0.074	-0.127	0.260
S1	-0.071	-0.145	-0.390	-0.494	-0.081	-0.638	-0.277	-0.239	-0.259
S2	-0.076	-0.178	-0.220	-0.452	0.022	-0.428	-0.037	-0.044	-0.151
S3	0.028	-0.114	-0.110	-0.308	0.088	-0.311	-0.044	-0.008	-0.135
RC	0.043	0.002	0.016	-0.235	0.083	-0.132	0.118	0.130	0.051
TOC	-0.038	-0.099	-0.099	-0.365	0.032	-0.329	0.025	0.007	-0.132
Dis..to.GM	-0.299	-0.023	-0.047	0.154	-0.063	0.450	0.167	-0.013	0.194
AV	0.117	-0.026	0.115	-0.114	0.037	0.036	0.013	0.042	0.137
CAA	0.254	0.024	0.345	-0.320	0.153	-0.196	-0.093	0.037	0.119
CAD	0.355	0.258	0.255	-0.323	0.145	-0.260	-0.081	0.091	-0.068
CCA	0.026	-0.082	-0.297	-0.261	-0.227	-0.358	-0.148	-0.274	-0.374
CCC	0.004	-0.149	-0.162	-0.416	-0.110	-0.546	-0.259	-0.262	-0.299
CCS	0.102	-0.051	0.125	-0.113	-0.126	-0.005	0.007	-0.017	-0.046
CT	-0.056	0.026	0.356	0.357	0.058	0.389	0.171	0.079	0.215
CP	1.000	0.080	0.109	-0.031	0.126	-0.015	-0.048	0.062	0.113
DB	0.080	1.000	0.149	0.043	0.040	0.255	0.004	0.277	0.138
MC	0.109	0.149	1.000	0.073	0.000	0.383	0.215	0.075	0.299
DGG	-0.031	0.043	0.073	1.000	0.167	0.358	0.234	0.341	0.069
DGD	0.126	0.040	0.000	0.167	1.000	-0.123	0.101	0.199	-0.069
DOO	-0.015	0.255	0.383	0.358	-0.123	1.000	0.403	0.221	0.323
DOS	-0.048	0.004	0.215	0.234	0.101	0.403	1.000	0.144	0.116
DOT	0.062	0.277	0.075	0.341	0.199	0.221	0.144	1.000	0.184
DP	0.113	0.138	0.299	0.069	-0.069	0.323	0.116	0.184	1.000
DA	0.120	0.168	0.198	0.369	-0.016	0.411	0.266	0.183	0.479
DCI	-0.008	-0.002	0.186	0.238	0.091	0.253	0.152	0.121	0.136
DU	0.031	0.131	-0.049	-0.032	0.377	-0.124	-0.017	0.311	0.116
Dscal	0.000	0.028	0.062	-0.093	-0.077	0.022	0.119	0.056	0.161
Dcur	-0.022	-0.033	0.186	0.243	-0.169	0.443	0.316	0.111	0.392
DE	-0.356	-0.075	-0.306	-0.256	0.019	-0.458	-0.230	0.018	-0.190
LV	0.088	0.006	0.091	0.018	0.080	0.276	0.160	0.168	0.070
LS	-0.116	0.010	0.324	0.183	-0.038	0.458	0.171	0.193	0.106
PC	0.034	0.032	-0.111	0.311	0.113	0.222	0.132	0.202	-0.064

Supplementary Table 4.2: Continued.

Variable	DA	DCI	DU	Dscal	Dcur	DE	LV	LS	PC
Cu	-0.053	-0.061	0.046	-0.053	-0.129	0.163	-0.188	-0.275	-0.065
Pb	-0.081	0.025	-0.055	-0.140	-0.019	-0.026	-0.152	-0.257	-0.045
As	-0.286	-0.211	0.055	-0.125	-0.200	0.341	-0.276	-0.271	-0.307
U	0.084	0.006	-0.269	0.046	0.071	0.148	-0.122	-0.069	-0.141
Ca	-0.094	-0.092	0.071	-0.068	-0.206	-0.008	-0.193	-0.107	-0.053
P	0.209	0.032	-0.016	-0.228	0.093	-0.143	0.045	-0.058	0.136
Mg	0.111	0.233	0.127	-0.077	0.037	-0.451	0.114	0.215	0.361
Ba	0.220	0.281	-0.046	-0.059	0.117	-0.593	0.058	0.205	0.338
Na	-0.291	0.005	0.185	-0.158	-0.274	-0.089	-0.028	-0.057	0.105
S	-0.335	-0.293	0.101	-0.026	-0.228	0.534	-0.282	-0.268	-0.339
Hg	0.019	-0.101	0.011	-0.058	-0.024	0.233	-0.178	-0.320	-0.147
Sand	0.089	0.014	-0.184	0.164	0.073	-0.086	0.059	0.050	-0.169
Silt	-0.305	-0.186	0.216	-0.275	-0.253	0.017	-0.209	-0.288	0.106
Clay	0.189	0.243	-0.064	0.153	0.130	0.097	0.165	0.323	0.001
S1	-0.389	-0.339	-0.075	0.002	-0.250	0.624	-0.101	-0.231	-0.401
S2	-0.237	-0.196	0.167	0.048	-0.165	0.449	0.101	-0.045	-0.240
S3	-0.120	-0.184	0.127	-0.029	-0.119	0.267	0.007	-0.055	-0.163
RC	0.032	-0.021	0.149	0.043	0.043	0.173	0.101	0.059	-0.183
TOC	-0.194	-0.158	0.159	-0.021	-0.096	0.337	0.099	-0.035	-0.254
Dis..to.GM	0.203	0.175	-0.010	0.060	0.238	-0.183	0.284	0.232	0.208
AV	0.114	0.253	0.047	0.040	0.131	-0.233	0.099	-0.007	-0.150
CAA	-0.115	0.014	0.367	-0.183	-0.075	-0.237	0.027	-0.051	-0.013
CAD	-0.101	-0.146	0.327	-0.076	-0.087	-0.195	0.003	-0.215	-0.093
CCA	-0.323	-0.285	-0.343	0.109	-0.175	0.351	-0.030	-0.190	-0.250
CCC	-0.338	-0.081	-0.129	0.133	-0.168	0.426	-0.078	-0.151	-0.381
CCS	-0.050	-0.015	-0.262	0.167	0.093	-0.050	-0.210	-0.023	-0.233
CT	0.162	0.282	0.171	-0.035	0.148	-0.370	0.244	0.360	0.226
CP	0.120	-0.008	0.031	0.000	-0.022	-0.356	0.088	-0.116	0.034
DB	0.168	-0.002	0.131	0.028	-0.033	-0.075	0.006	0.010	0.032
MC	0.198	0.186	-0.049	0.062	0.186	-0.306	0.091	0.324	-0.111
DGG	0.369	0.238	-0.032	-0.093	0.243	-0.256	0.018	0.183	0.311
DGD	-0.016	0.091	0.377	-0.077	-0.169	0.019	0.080	-0.038	0.113
DOO	0.411	0.253	-0.124	0.022	0.443	-0.458	0.276	0.458	0.222
DOS	0.266	0.152	-0.017	0.119	0.316	-0.230	0.160	0.171	0.132
DOT	0.183	0.121	0.311	0.056	0.111	0.018	0.168	0.193	0.202
DP	0.479	0.136	0.116	0.161	0.392	-0.190	0.070	0.106	-0.064
DA	1.000	0.447	-0.064	0.284	0.409	-0.235	0.048	0.273	0.168
DCI	0.447	1.000	-0.001	0.123	0.185	-0.187	0.065	0.249	-0.033
DU	-0.064	-0.001	1.000	-0.145	-0.140	0.028	0.288	-0.057	0.245
Dscal	0.284	0.123	-0.145	1.000	-0.129	0.181	-0.015	0.140	-0.198
Dcur	0.409	0.185	-0.140	-0.129	1.000	-0.306	0.063	0.237	-0.091
DE	-0.235	-0.187	0.028	0.181	-0.306	1.000	-0.129	0.013	-0.185
LV	0.048	0.065	0.288	-0.015	0.063	-0.129	1.000	0.345	0.379
LS	0.273	0.249	-0.057	0.140	0.237	0.013	0.345	1.000	0.292
PC	0.168	-0.033	0.245	-0.198	-0.091	-0.185	0.379	0.292	1.000

Supplementary Table 4.3: Results of the Variance Inflation Factor (VIF) analysis showing the variable with the least collinearity.

Variables	VIF
Cu	2.656006
Pb	7.014747
As	3.855858
U	4.152093
Ca	1.615276
P	2.198065
Mg	9.113926
Ba	5.342302
Na	2.971913
S	3.353344
Hg	4.955292
Silt	1.770951
Clay	1.512049
S1	5.511694
RC	2.682368
Dis..to.GM	1.502405

Supplementary Table 4.4: Statistical Significance of the RDA axes. Axes considered in this study are in bold.

Axis	Variance	Pr(>F)
RDA1	0.073668	0.001
RDA2	0.031364	0.001
RDA3	0.009955	0.001
RDA4	0.007032	0.002
RDA5	0.003965	0.113
RDA6	0.003256	0.259
RDA7	0.001519	0.881
RDA8	0.001055	0.972
RDA9	0.000757	0.999
RDA10	0.000309	1
Residual	0.196167	NA

Supplementary Table 4.5: Results of the variance partitioning analysis showing the statistical significance of the selected environmental parameters.

Variable	Variance %	Pr(>F)
As	9.4	0.001
S	6.2	0.001
TOC	1.4	0.091
S1	8.9	0.001
Ba	1.6	0.054
Distance	2.5	0.01
P	1.8	0.042
Na	3.1	0.001
Ca	3.8	0.001
Hg	1.7	0.041
Residual	40.4	NA

Supplementary Table 4.6a: Results of the weighted average tolerance and optima analysis (WATO) performed on 25 statistically significant Arcellinidan species and strains. For more information on the acronyms please refer to Figure 4.5.

Species	Optima	Tolerance
AV	241.0616	744.1499
CAA	346.0836	676.5366
CAD	802.5316	1922.811
CCA	821.9584	1922.642
CCC	783.5154	1697.002
CCS	1433.631	2613.599
CT	130.0022	237.6854
CP	507.1434	1709.354
DB	520.3917	1963.859
MC	111.5945	156.7367
DGG	222.4082	351.7255
DGD	317.9678	540.7706
DOO	145.0593	352.0894
DOS	129.7306	238.0538
DOT	321.0171	765.724
DP	105.1873	161.1999
DA	225.071	311.5444
DCI	184.8097	216.8119
DU	387.3508	702.1228
Dscal	99.34347	177.489
Dcur	188.128	333.1541
DE	565.724	1382.504
LV	286.3242	611.5564
LS	189.7403	355.5323
PC	169.0153	335.1306

Supplementary Table 4.6b: Comparison of As range inferred from Arcellinidan tolerance and optima values and As concentration from 30 freeze core sub-sample. The As concentration for the sample highlighted in green fall within the range suggested by the tolerance and optima of dominant taxa, while As levels of samples highlighted in yellow were not reflected by the dominant taxa.

	As (PPM)	No. of Species	CT	MC	DGG	DOO	DOS	DP	DA	DCI	Dscal	Dcur
Optima (PPM)			130.0	111.6	222.4	145.1	129.7	105.2	225.1	184.8	99.3	188.1
Tolerance (PPM)			237.7	156.7	351.7	352.1	238.1	161.2	311.5	216.8	177.5	333.2
FL30	121.5	16	3.00 46.00	1.00	2.00	24.00	9.00	5.00	1.00	0.00	0.00	0.00
FL29	125.9	16	3.00 48.00	0.00	3.00	27.00	11.00	2.00	0.00	0.00	0.00	0.00
FL26	126.1	15	1.00 40.00	1.00	1.00	17.00	15.00	2.00	1.00	0.00	0.00	2.00
FL27	140	15	1.00 36.00	1.00	4.00	17.00	11.00	0.00	0.00	0.00	0.00	2.00
FL28	153.1	19	1.00 35.00	1.00	2.00	13.00	14.00	1.00	1.00	0.00	0.00	1.00
FL25	166.4	14	5.00 47.00	1.00	5.00	23.00	11.00	0.00	0.00	0.00	0.00	1.00
FL22	176.6	15	1.00 22.00	0.00	5.00	11.00	3.00	1.00	1.00	0.00	0.00	0.00
FL1	179.6	16	19.00 56.00	4.00	4.00	10.00	15.00	0.00	1.00	0.00	0.00	0.00
FL20	191.9	16	0.00 34.00	0.00	5.00	25.00	1.00	1.00	0.00	0.00	0.00	0.00
FL21	193.1	17	2.00 18.00	0.00	3.00	5.00	1.00	4.00	2.00	0.00	0.00	0.00
FL2	199	16	39.00 71.00	2.00	1.00	11.00	11.00	1.00	2.00	0.00	0.00	2.00
FL24	199.2	15	1.00 41.00	4.00	0.00	18.00	13.00	3.00	0.00	0.00	0.00	1.00
FL19	219.6	15	1.00 34.00	0.00	5.00	22.00	1.00	5.00	0.00	0.00	0.00	0.00
FL23	228.7	14	3.00 44.00	3.00	0.00	28.00	7.00	1.00	0.00	0.00	0.00	1.00
FL18	237.9	17	1.00 32.00	0.00	3.00	19.00	2.00	4.00	2.00	0.00	0.00	1.00
FL3	243.7	18	18.00 48.00	2.00	1.00	7.00	11.00	1.00	4.00	0.00	0.00	2.00
FL12	261.7	14	5.00 23.00	1.00	9.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00
FL4	278.1	15	22.00 59.00	3.00	0.00	10.00	19.00	0.00	2.00	0.00	0.00	0.00

Supplementary Table 4.6b: Continued.

	LS	PC	DGD	AV	CAA	DOT	DU	LV	DE	CAD	CCA	CCC
Optima (PPM)	189.7	169.0	318.0	241.1	346.1	321.0	387.4	286.3	565.7	802.5	822.0	783.5
Tolerance (PPM)	355.5	335.1	540.8	744.1	676.5	765.7	702.1	611.6	1382.5	1922.8	1922.6	1697.0
FL30	0.00	1.00	0.00	1.00	9.00	1.00	0.00	1.00	26.00	2.00	1.00	5.00
			12.00						34.00			
FL29	0.00	2.00	0.00	1.00	6.00	2.00	3.00	2.00	19.00	2.00	2.00	7.00
			14.00						30.00			
FL26	0.00	0.00	0.00	0.00	2.00	3.00	0.00	4.00	25.00	0.00	5.00	5.00
			9.00						35.00			
FL27	0.00	0.00	0.00	0.00	7.00	3.00	1.00	3.00	26.00	3.00	7.00	4.00
			14.00						40.00			
FL28	0.00	1.00	0.00	0.00	8.00	2.00	1.00	1.00	23.00	6.00	1.00	7.00
			12.00						37.00			
FL25	0.00	1.00	0.00	0.00	0.00	3.00	0.00	3.00	31.00	0.00	2.00	5.00
			6.00						38.00			
FL22	0.00	0.00	1.00	0.00	3.00	16.00	3.00	4.00	30.00	2.00	3.00	7.00
			27.00						42.00			
FL1	2.00	1.00	0.00	0.00	1.00	3.00	1.00	3.00	13.00	1.00	15.00	4.00
			8.00						33.00			
FL20	1.00	1.00	1.00	0.00	13.00	3.00	2.00	1.00	16.00	3.00	7.00	9.00
			20.00						35.00			
FL21	0.00	1.00	5.00	0.00	6.00	21.00	5.00	3.00	23.00	1.00	3.00	8.00
			40.00						35.00			
FL2	2.00	0.00	1.00	0.00	3.00	7.00	0.00	0.00	3.00	3.00	8.00	2.00
			11.00						16.00			
FL24	0.00	1.00	0.00	0.00	1.00	5.00	1.00	5.00	28.00	0.00	4.00	4.00
			12.00						36.00			
FL19	0.00	0.00	3.00	0.00	14.00	1.00	0.00	2.00	9.00	5.00	14.00	8.00
			20.00						36.00			
FL23	1.00	0.00	0.00	0.00	0.00	3.00	0.00	3.00	28.00	1.00	3.00	6.00
			6.00						38.00			
FL18	0.00	0.00	3.00	0.00	6.00	2.00	2.00	2.00	14.00	9.00	10.00	6.00
			15.00						39.00			
FL3	1.00	1.00	0.00	0.00	1.00	4.00	0.00	1.00	0.00	4.00	23.00	5.00
			6.00						32.00			
FL12	1.00	0.00	0.00	1.00	7.00	1.00	0.00	1.00	4.00	7.00	26.00	23.00
			10.00						60.00			
FL4	3.00	0.00	1.00	0.00	4.00	0.00	1.00	1.00	9.00	4.00	10.00	4.00
			7.00						27.00			
FL17	0.00	1.00	1.00	0.00	11.00	5.00	3.00	2.00	11.00	9.00	11.00	4.00
			22.00						35.00			
FL13	1.00	0.00	0.00	0.00	7.00	1.00	0.00	0.00	4.00	6.00	27.00	28.00
			8.00						65.00			
FL5	0.00	0.00	1.00	0.00	3.00	8.00	5.00	1.00	9.00	5.00	13.00	7.00
			18.00						34.00			
FL16	1.00	0.00	0.00	0.00	3.00	2.00	2.00	0.00	7.00	5.00	20.00	15.00
			7.00						47.00			
FL14	1.00	1.00	0.00	0.00	7.00	1.00	1.00	1.00	10.00	5.00	21.00	18.00
			10.00						54.00			

Supplementary Table 4.6b: Continued.

	CCS	CP	DB
Optima (PPM)	1433.6	507.1	520.4
Tolerance (PPM)	2613.6	1709.4	1963.9
FL30	0.00	0.00	0.00
FL29	1.00	0.00	0.00
FL26	1.00	0.00	0.00
FL27	1.00	0.00	0.00
FL28	1.00	0.00	1.00
FL25	1.00	0.00	1.00
FL22	0.00	0.00	0.00
FL1	0.00	0.00	0.00
FL20	1.00	0.00	0.00
FL21	1.00	0.00	0.00
FL2	0.00	0.00	0.00
FL24	0.00	0.00	1.00
FL19	1.00	0.00	1.00
FL23	0.00	0.00	1.00
FL18	1.00	0.00	0.00
FL3	1.00	0.00	1.00
FL12	0.00	0.00	3.00
	3.00		
FL4	0.00	0.00	1.00
	1.00		
FL17	2.00	0.00	0.00
FL13	0.00	0.00	0.00
FL5	0.00	1.00	3.00
FL16	2.00	0.00	1.00
FL14	0.00	0.00	0.00

Supplementary Table 4.6b: Continued.

	As (PPM)	No. of Species	CT	MC	DGG	DOO	DOS	DP	DA	DCI	Dscal	Dcur
Optima (PPM)			130. 0	111. 6	222. 4	145. 1	129. 7	105. 2	225. 1	184. 8	99.3	188. 1
Tolerance (PPM)			237. 7	156. 7	351. 7	352. 1	238. 1	161. 2	311. 5	216. 8	177.5	333. 2
FL6	659.9	14	19.0 0	1.00	1.00	4.00	26.0 0	1.00	0.00	0.00	0.00	0.00
			54.0 0									
FL15	688.1	17	3.00	0.00	3.00	5.00	1.00	1.00	1.00	0.00	0.00	1.00
			15.0 0									
FL11	688.8	17	6.00	1.00	4.00	5.00	0.00	1.00	2.00	0.00	0.00	1.00
			22.0 0									
FL7	913.2	10	18.0 0	0.00	0.00	4.00	7.00	1.00	0.00	0.00	0.00	0.00
			30.0 0									
FL8	1237. 3	17	10.0 0	1.00	6.00	4.00	2.00	1.00	1.00	0.00	0.00	0.00
			30.0 0									
FL9	1452. 6	17	3.00	2.00	7.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00
			18.0 0									
FL10	1473. 5	10	18.0 0	4.00	0.00	10.0 0	0.00	0.00	0.00	0.00	0.00	0.00
			32.0 0									

Supplementary Table 4.6b: Continued.

	LS	PC	DGD	AV	CAA	DOT	DU	LV	DE	CAD	CCA	CCC
Optima (PPM)	189. 7	169. 0	318. 0	241. 1	346. 1	321. 0	387. 4	286. 3	565.7	802.5	822.0	783.5
Tolerance (PPM)	355. 5	335. 1	540. 8	744. 1	676. 5	765. 7	702. 1	611. 6	1382. 5	1922. 8	1922. 6	1697. 0
FL6	2.00	0.00	0.00	0.00	5.00	3.00	0.00	0.00	1.00	3.00	13.00	7.00
			8.00						24.00			
FL15	0.00	0.00	2.00	0.00	7.00	3.00	2.00	0.00	6.00	6.00	29.00	16.00
			14.0 0						57.00			
FL11	2.00	0.00	0.00	1.00	17.0 0	0.00	2.00	1.00	6.00	10.00	17.00	16.00
			21.0 0						49.00			
FL7	0.00	0.00	0.00	2.00	13.0 0	1.00	0.00	0.00	0.00	18.00	23.00	10.00
			16.0 0						51.00			
FL8	4.00	1.00	0.00	0.00	14.0 0	1.00	0.00	1.00	2.00	14.00	23.00	14.00
			16.0 0						53.00			
FL9	1.00	0.00	0.00	0.00	14.0 0	0.00	3.00	1.00	6.00	12.00	27.00	14.00
			18.0 0						59.00			
FL10	0.00	0.00	0.00	1.00	10.0 0	0.00	0.00	0.00	8.00	6.00	17.00	19.00
			11.0 0						50.00			

Supplementary Table 4.6b: Continued.

	CCS	CP	DB
Optima (PPM)	1433.6	507.1	520.4
Tolerance (PPM)	2613.6	1709.4	1963.9
FL6	0.00	0.00	1.00
FL15	1.00	0.00	1.00
FL11	0.00	0.00	1.00
FL7	0.00	0.00	0.00
FL8	2.00	0.00	0.00
FL9	2.00	0.00	0.00
FL10	1.00	0.00	0.00

Supplementary Table 4.7: A) Arsenic concentrations reported in soil, water and lake sediments around Con and Giant Mines; and, B) Canadian Council of the Ministers of the Environment (CCME) As guidelines.

A		
Study	Medium	As concentration (ppm/µg/L)
Hutchinson et al., 1982	Soil	50 to 9300 ppm
Carrizales et al., 2006	Soil	202 to 5214 ppm
Galloway et al., 2017	Lake sediment	0.5 to >10000 ppm
Jackson et al., (1996)	Lake sediment	up to 2550 ppm
Palmer et al., 2015	Lake Water	0.5 to 646 µg/L
Mac (1998)	Lake water	1764 to 3821 ppm
Moore et al., (1978)	Lake water	1500 to 20400 µg/L

B	
CCME Guidelines	Guideline As Concentration
CCME Soil	12 ppm
Government of the Northwest Territories guideline for industrial soils	340 ppm
CCME water quality guidelines for the protection of aquatic life	5 µg/L
The interim sediment quality guidelines (ISQL)	5.5 ppm
The probable effect levels (PEL)	17 ppm