Supplementary information for manuscript:

Experimental deployment of microbial mineral carbonation at an asbestos mine: Potential applications to carbon storage and tailings stabilization

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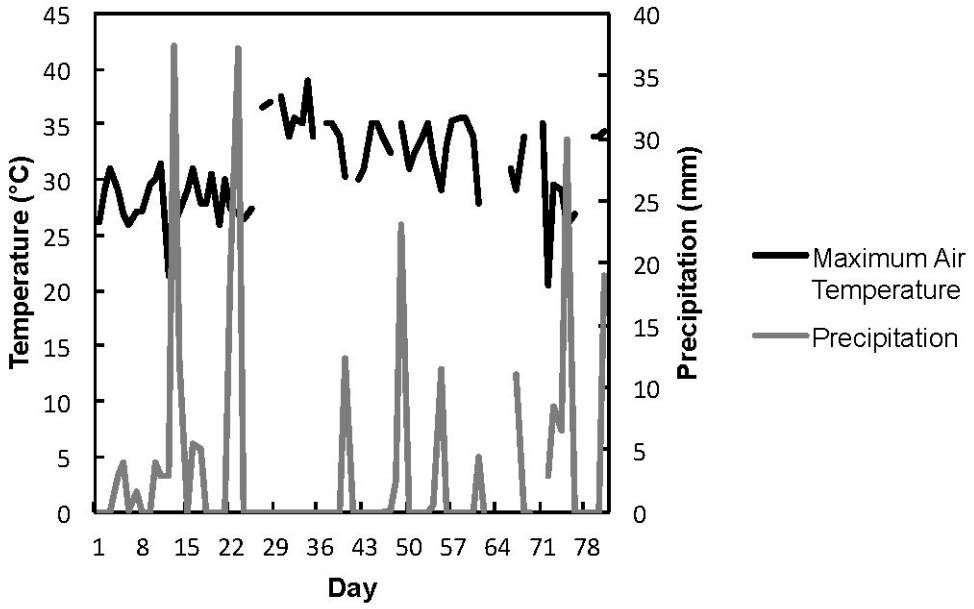

Figure S1. Maximum air temperature (°C) and precipitation (mm) over the duration of the experiment as measured in a nearby town (Bureau of Meteorology, 2016).

Table S1. Cation (ppm) and nutrient concentrations (ppb) in the creek water added to the experimental plots.

Cations (ppm)										
Al	Ca	Fe	K	Mg	Mn	Na	P	S	Si	Ti
<DL	29.2	0.007	2.1	70.4	0.06	37.4	<DL	8.1	11.8	<DL

Nutrients (ppb)				
PO_4-P	NH_4-N	NO_2-N	NO_3-N	
27.4	0.0	1.1	1.2	

<DL: below the detection limit

Table S2. Rietveld results and corresponding R_{wp} values for the control tailings. R_{wp} is the weighted pattern index, a function of the least-squares residual.

Depth (cm)	Mineral Phase (wt %)										
	Serpentine	Pyroaurite	Magnetite	Hydromagnesite	Brucite	Calcite	Forsterite	Enstatite	Quartz	Total	R_{wp}
0–2	91.8	1.4	3.6	0.0	0.2	0.3	1.5	0.6	0.6	100.0	6.2
	89.0	1.9	3.3	0.0	0.2	0.2	3.8	1.1	0.5	100.0	6.5
	92.8	0.7	3.5	0.0	0.1	0.2	1.6	0.7	0.5	100.0	5.9
2–17	90.8	1.8	2.3	1.3	0.2	0.5	2.2	0.9	0.2	100.0	6.0
	87.9	2.8	1.9	0.8	0.4	0.4	3.5	2.2	0.3	100.0	6.9
	87.9	3.3	2.4	1.4	0.3	0.4	2.6	1.5	0.2	100.0	7.3
17–32	89.0	2.1	2.2	0.9	0.3	0.7	2.6	2.0	0.1	100.0	7.1
	90.5	1.8	2.1	0.5	0.2	0.6	2.5	1.7	0.1	100.0	6.7
	91.2	1.7	2.0	0.6	0.2	0.7	2.2	1.4	0.0	100.0	7.1
32–47	93.6	0.9	2.4	0.0	0.3	0.4	1.8	0.5	0.0	100.0	6.0
	86.8	1.6	2.0	0.0	0.5	0.4	4.6	4.2	0.0	100.0	7.0
	92.0	1.3	1.9	0.0	0.5	0.6	2.5	1.2	0.1	100.0	6.3

Table S3. Rietveld results and corresponding R_{wp} values for the tailings sampled after 2 weeks following acid leaching. R_{wp} is the weighted pattern index, a function of the least-squares residual.

Depth (cm)	Mineral Phase (wt %)										
	Serpentine	Pyroaurite	Magnetite	Hydromagnesite	Brucite	Calcite	Forsterite	Enstatite	Quartz	Total	R_{wp}
0–2	92.6	1.9	2.1	0.5	0.1	0.3	1.2	0.9	0.3	100.0	5.9
	92.3	1.1	2.9	0.0	0.2	0.0	2.0	1.0	0.5	100.0	6.6
	93.2	0.9	2.5	0.0	0.2	0.0	2.1	0.6	0.5	100.0	6.3
2–17	88.5	3.8	2.0	1.2	0.3	0.5	2.4	1.2	0.1	100.0	6.9
	89.6	3.4	2.0	1.1	0.2	0.4	1.8	1.2	0.2	100.0	6.6
	87.9	3.1	2.2	1.5	0.3	0.4	2.7	1.8	0.2	100.0	6.5
17–32	88.3	2.6	3.3	1.5	0.2	0.5	2.5	1.0	0.1	100.0	7.1
	89.8	2.2	2.1	1.5	0.2	0.6	2.3	1.3	0.1	100.0	6.7
	89.4	2.1	2.1	0.8	0.3	0.6	3.5	1.2	0.1	100.0	6.3
32–47	93.3	1.7	1.8	0.0	0.1	0.6	1.5	0.9	0.0	100.0	6.7
	92.2	1.6	2.0	0.9	0.1	0.4	1.9	0.7	0.1	100.0	6.3
	94.0	1.0	1.9	0.0	0.2	0.5	1.7	0.7	0.0	100.0	6.0

Table S4. Rietveld results and corresponding R_{wp} values for the tailings sampled after 11 weeks following leaching. R_{wp} is the weighted pattern index, a function of the least-squares residual.

Depth (cm)	Mineral Phase (wt %)										
	Serpentine	Pyroaurite	Magnetite	Hydromagnesite	Brucite	Calcite	Forsterite	Enstatite	Quartz	Total	R_{wp}
	91.2	1.8	2.7	0.0	0.2	0.2	1.9	1.5	0.5	100.0	6.4
0–2	89.0	1.5	2.8	0.0	0.1	0.2	3.6	2.4	0.5	100.0	6.4
	90.4	1.2	3.0	0.0	0.3	0.2	2.5	1.8	0.6	100.0	6.6
	87.0	2.6	2.1	0.8	0.2	0.2	5.2	1.4	0.4	100.0	6.7
2–4	89.3	2.5	2.4	1.0	0.2	0.3	2.8	1.3	0.3	100.0	6.6
	89.6	2.5	2.0	1.5	0.1	0.3	1.9	1.8	0.3	100.0	6.1
	90.8	2.5	2.0	1.2	0.2	0.4	1.9	0.9	0.1	100.0	6.2
4–17	89.7	2.0	3.0	1.4	0.1	0.4	2.1	1.2	0.1	100.0	6.0
	89.1	3.0	2.2	1.6	0.3	0.4	1.8	1.4	0.1	100.0	6.5
	90.1	1.5	2.3	1.0	0.3	0.5	2.6	1.8	0.0	100.0	6.2
17–32	93.6	0.9	2.1	0.0	0.3	0.5	1.9	0.7	0.0	100.0	6.6
	92.2	1.0	2.1	0.0	0.3	0.5	2.0	2.0	0.0	100.0	6.6
	95.2	0.6	1.9	0.0	0.1	0.5	1.3	0.4	0.0	100.0	6.1
32–47	94.6	0.9	1.9	0.0	0.2	0.4	1.4	0.6	0.0	100.0	6.3
	95.0	0.8	1.9	0.0	0.3	0.4	1.2	0.4	0.0	100.0	6.5

Table S5. Rietveld results and corresponding R_{wp} values for the tailings sampled after 2 weeks following acid leaching and 9 weeks post-inoculum. R_{wp} is the weighted pattern index, a function of the least-squares residual.

Depth (cm)	Mineral Phase (wt %)										
	Serpentine	Pyroaurite	Magnetite	Hydromagnesite	Brucite	Calcite	Forsterite	Enstatite	Quartz	Total	R_{wp}
	90.7	0.7	3.3	0.0	0.2	0.2	3.1	1.2	0.5	100.0	6.1
0–2	89.2	1.2	3.2	0.0	0.3	0.3	3.5	1.5	0.8	100.0	6.1
	92.0	0.9	2.9	0.0	0.2	0.1	2.5	1.0	0.4	100.0	6.3
	87.1	2.9	2.1	2.1	0.3	0.7	3.3	0.9	0.7	100.0	6.5
2–4	89.6	3.2	2.2	1.6	0.1	0.3	1.7	0.9	0.4	100.0	6.3
	92.1	1.3	2.0	2.0	0.1	0.3	1.5	0.5	0.2	100.0	6.3
	91.3	1.8	2.1	1.1	0.1	0.5	2.0	1.0	0.0	100.0	5.9
4–17	90.8	2.4	2.0	1.2	0.1	0.5	2.1	0.9	0.0	100.0	6.1
	89.1	2.9	1.9	1.4	0.1	1.0	2.4	1.1	0.0	100.0	6.6
	91.7	1.2	2.1	0.8	0.2	0.5	2.6	0.9	0.0	100.0	6.3
17–32	91.7	1.2	2.2	0.7	0.2	0.6	2.4	0.9	0.0	100.0	6.1
	92.5	1.0	2.0	0.4	0.2	0.5	2.4	1.0	0.0	100.0	6.4
	92.3	1.1	2.2	0.0	0.3	0.5	2.4	1.3	0.0	100.0	6.5
32–47	92.3	0.9	2.4	0.0	0.9	0.6	2.0	0.9	0.0	100.0	6.4
	92.5	1.0	2.3	0.0	0.3	0.6	2.2	1.1	0.0	100.0	6.6