

Supplementary Materials: Sulfur Isotope Fractionation as an Indicator of Biogeochemical Processes in an AMD Passive Bioremediation System

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Table S1. Sulfur isotope composition of sulfur-bearing compounds from Tab-Simco passive bioremediation system.

Date of sample collection	Location	Sample Type	S-bearing phase	$\delta^{34}\text{S}$ (‰, VCDT)
9/30/2011	Creek Paum coal mine	Murphyboro coal	Pyrite	-1.1
9/30/2011	Creek Paum coal mine	Murphyboro coal	Pyrite	-0.5
9/30/2011	Creek Paum coal mine	Murphyboro coal	Pyrite	6.7
9/30/2011	Creek Paum coal mine	Murphyboro coal	Pyrite	5.9
9/30/2011	Creek Paum coal mine	Murphyboro coal	Pyrite	12.7
9/30/2011	Creek Paum coal mine	Murphyboro coal	Pyrite	10.3
9/30/2011	Creek Paum coal mine	Murphyboro coal	Pyrite	5.0
9/30/2011	Creek Paum coal mine	Murphyboro coal	Pyrite	5.60
9/30/2011	Creek Paum coal mine	Murphyboro coal	Pyrite	4.5
9/30/2011	Creek Paum coal mine	Mount Rorah coal	Pyrite	6.2
9/30/2011	Creek Paum coal mine	Mount Rorah coal	Pyrite	4.7
9/30/2011	Creek Paum coal mine	Mount Rorah coal	Pyrite	3.1
9/30/2011	Creek Paum coal mine	Mount Rorah coal	Pyrite	4.8
9/30/2011	Creek Paum coal mine	Mount Rorah coal	Pyrite	11.1
9/30/2011	Creek Paum coal mine	Mount Rorah coal	Pyrite	4.5
9/30/2011	Creek Paum coal mine	Mount Rorah coal	Pyrite	9.3
9/30/2011	Creek Paum coal mine	Mount Rorah coal	Pyrite	6.1
9/23/2007	Well B2	Untreated Mine Drainage	Dissolved sulfate	5.9
12/1/2008	Well B2	Untreated Mine Drainage	Dissolved sulfate	7.6
4/18/2011	Well B2	Untreated Mine Drainage	Dissolved sulfate	7.2

10/12/2011	Well B2	Untreated Mine Drainage	Dissolved sulfate	6.3
12/1/2008	Well B1	Untreated Mine Drainage	Dissolved sulfate	7.4
1/22/2009	Well B1	Untreated Mine Drainage	Dissolved sulfate	7.4
7/11/2011	Well B1	Untreated Mine Drainage	Dissolved sulfate	5.3
9/26/2011	Well B1	Untreated Mine Drainage	Dissolved sulfate	6.4
10/12/2011	Well B1	Untreated Mine Drainage	Dissolved sulfate	7.1
4/16/2008	Main Seep	Untreated Mine Drainage	Dissolved sulfate	6.6
8/27/2008	Main Seep	Untreated Mine Drainage	Dissolved sulfate	6.9
12/1/2008	Main Seep	Untreated Mine Drainage	Dissolved sulfate	7.3
1/22/2009	Main Seep	Untreated Mine Drainage	Dissolved sulfate	7.2
3/22/2009	Main Seep	Untreated Mine Drainage	Dissolved sulfate	6.5
7/30/2009	Main Seep	Untreated Mine Drainage	Dissolved sulfate	6.8
2/3/2010	Main Seep	Untreated Mine Drainage	Dissolved sulfate	7.0
7/18/2010	Main Seep	Untreated Mine Drainage	Dissolved sulfate	6.4
10/13/2010	Main Seep	Untreated Mine Drainage	Dissolved sulfate	6.1
3/18/2011	Main Seep	Untreated Mine Drainage	Dissolved sulfate	6.6
7/11/2011	Main Seep	Untreated Mine Drainage	Dissolved sulfate	5.9
9/26/2011	Main Seep	Untreated Mine Drainage	Dissolved sulfate	6.3
10/12/2011	Main Seep	Untreated Mine Drainage	Dissolved sulfate	6.5
1/30/2012	Main Seep	Untreated Mine Drainage	Dissolved sulfate	6.2
3/9/2012	Main Seep	Untreated Mine Drainage	Dissolved sulfate	6.4
5/2/2012	Main Seep	Untreated Mine Drainage	Dissolved sulfate	6.4
6/7/2012	Main Seep	Untreated Mine Drainage	Dissolved sulfate	6.6
7/27/2012	Main Seep	Untreated Mine Drainage	Dissolved sulfate	6.9
8/5/2012	Main Seep	Untreated Mine Drainage	Dissolved sulfate	5.9
8/24/2012	Main Seep	Untreated Mine Drainage	Dissolved sulfate	6.2

10/11/2012	Main Seep	Untreated Mine Drainage	Dissolved sulfate	6.4
11/11/2012	Main Seep	Untreated Mine Drainage	Dissolved sulfate	5.9
12/11/2012	Main Seep	Untreated Mine Drainage	Dissolved sulfate	6.4
1/20/2013	Main Seep	Untreated Mine Drainage	Dissolved sulfate	6.5
2/21/2013	Main Seep	Untreated Mine Drainage	Dissolved sulfate	6.2
3/24/2013	Main Seep	Untreated Mine Drainage	Dissolved sulfate	6.2
4/25/2013	Main Seep	Untreated Mine Drainage	Dissolved sulfate	6.1
5/24/2013	Main Seep	Untreated Mine Drainage	Dissolved sulfate	6.31
7/6/2013	Main Seep	Untreated Mine Drainage	Dissolved sulfate	6.6
4/16/2008	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	6.7
8/27/2008	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	6.6
12/1/2008	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	7.0
1/22/2009	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	6.9
3/22/2009	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	6.4
7/30/2009	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	6.8
2/3/2010	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	6.6
7/18/2010	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	6.3
10/13/2010	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	6.4
3/18/2011	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	6.6
7/11/2011	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	6.5
9/26/2011	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	5.7
10/12/2011	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	6.0
1/30/2012	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	6.1
3/9/2012	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	6.2
5/2/2012	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	6.5
6/7/2012	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	6.3

7/27/2012	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	6.3
8/5/2012	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	6.4
8/24/2012	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	6.3
10/11/2012	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	6.3
11/11/2012	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	5.5
12/11/2012	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	6.1
1/20/2013	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	6.2
2/21/2013	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	5.9
3/24/2013	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	6.3
4/25/2013	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	6.4
5/24/2013	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	6.2
7/6/2013	Bioreactor Inlet	Untreated Mine Drainage	Dissolved sulfate	5.9
7/27/2012	Bioreactor Acid Pond	Untreated Mine Drainage	Dissolved sulfate	6.4
8/24/2012	Bioreactor Acid Pond	Untreated Mine Drainage	Dissolved sulfate	6.1
2/21/2013	Bioreactor Acid Pond	Untreated Mine Drainage	Dissolved sulfate	6.4
7/6/2013	Bioreactor Acid Pond	Untreated Mine Drainage	Dissolved sulfate	6.3
4/16/2008	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	10.8
8/27/2008	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	10.9
12/1/2008	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	9.6
1/22/2009	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	8.8
3/22/2009	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	8.4
7/30/2009	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	10.0
2/3/2010	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	8.5
7/18/2010	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	9.8
10/13/2010	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	9.3
3/18/2011	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	8.0

7/11/2011	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	8.7
9/26/2011	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	8.6
10/12/2011	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	8.0
1/30/2012	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	6.1
3/9/2012	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	6.4
5/2/2012	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	7.3
6/7/2012	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	7.0
7/27/2012	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	7.0
8/5/2012	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	7.3
8/24/2012	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	7.6
10/11/2012	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	7.8
11/11/2012	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	7.8
12/11/2012	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	7.2
1/20/2013	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	6.0
2/21/2013	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	6.7
3/24/2013	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	6.9
4/25/2013	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	7.3
5/24/2013	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	7.2
7/6/2013	Bioreactor Outlet	Treated Mine Drainage	Dissolved sulfate	7.1
10/12/2011	Wetland	Treated Mine Drainage	Dissolved sulfate	7.4
3/9/2012	Wetland	Treated Mine Drainage	Dissolved sulfate	6.4
5/24/2013	Wetland	Treated Mine Drainage	Dissolved sulfate	7.1
4/16/2008	System Outlet	Treated Mine Drainage	Dissolved sulfate	10.4
8/27/2008	System Outlet	Treated Mine Drainage	Dissolved sulfate	10.4
12/1/2008	System Outlet	Treated Mine Drainage	Dissolved sulfate	10.0
1/22/2009	System Outlet	Treated Mine Drainage	Dissolved sulfate	7.9

3/22/2009	System Outlet	Treated Mine Drainage	Dissolved sulfate	8.3
7/30/2009	System Outlet	Treated Mine Drainage	Dissolved sulfate	9.2
2/3/2010	System Outlet	Treated Mine Drainage	Dissolved sulfate	7.3
7/18/2010	System Outlet	Treated Mine Drainage	Dissolved sulfate	7.6
10/13/2010	System Outlet	Treated Mine Drainage	Dissolved sulfate	7.9
3/18/2011	System Outlet	Treated Mine Drainage	Dissolved sulfate	6.5
7/11/2011	System Outlet	Treated Mine Drainage	Dissolved sulfate	7.7
9/26/2011	System Outlet	Treated Mine Drainage	Dissolved sulfate	7.5
10/12/2011	System Outlet	Treated Mine Drainage	Dissolved sulfate	6.7
1/30/2012	System Outlet	Treated Mine Drainage	Dissolved sulfate	6.5
3/9/2012	System Outlet	Treated Mine Drainage	Dissolved sulfate	6.4
5/2/2012	System Outlet	Treated Mine Drainage	Dissolved sulfate	6.5
6/7/2012	System Outlet	Treated Mine Drainage	Dissolved sulfate	6.4
7/27/2012	System Outlet	Treated Mine Drainage	Dissolved sulfate	6.4
8/5/2012	System Outlet	Treated Mine Drainage	Dissolved sulfate	6.2
8/24/2012	System Outlet	Treated Mine Drainage	Dissolved sulfate	6.1
10/11/2012	System Outlet	Treated Mine Drainage	Dissolved sulfate	6.8
11/11/2012	System Outlet	Treated Mine Drainage	Dissolved sulfate	6.6
12/11/2012	System Outlet	Treated Mine Drainage	Dissolved sulfate	6.6
1/20/2013	System Outlet	Treated Mine Drainage	Dissolved sulfate	6.3
2/21/2013	System Outlet	Treated Mine Drainage	Dissolved sulfate	6.0
3/24/2013	System Outlet	Treated Mine Drainage	Dissolved sulfate	6.5
4/25/2013	System Outlet	Treated Mine Drainage	Dissolved sulfate	6.2
5/24/2013	System Outlet	Treated Mine Drainage	Dissolved sulfate	6.4
7/6/2013	System Outlet	Treated Mine Drainage	Dissolved sulfate	6.8
8/14/2013	Bioreactor	AMD sediment Fe-rich layer	Porewater Sulfate	5.9

8/14/2013	Bioreactor	AMD sediment Fe-rich layer	Porewater Sulfate	5.3
8/14/2013	Bioreactor	AMD sediment Fe-rich layer	Porewater Sulfate	4.4
8/14/2013	Bioreactor	AMD sediments Fe-rich layer	Porewater Sulfate	5.2
8/14/2013	Bioreactor	AMD sediments Al-rich layer	Porewater Sulfate	4.7
8/14/2013	Bioreactor	AMD sediment Al-rich layer	Porewater Sulfate	4.7
8/14/2013	Bioreactor	AMD sediment Al-rich layer	Porewater Sulfate	4.1
8/14/2013	Bioreactor	AMD sediment Al-rich layer	Porewater Sulfate	3.7
7/14/2013	Bioreactor	Organic Substrate	Porewater Sulfate	7.4
7/16/2013	Bioreactor	Organic Substrate	Porewater Sulfate	7.0
7/23/2013	Bioreactor	Organic Substrate	Porewater Sulfate	7.8
7/26/2013	Bioreactor	Organic Substrate	Porewater Sulfate	7.5
7/27/2013	Bioreactor	Organic Substrate	Porewater Sulfate	7.6
7/29/2013	Bioreactor	Organic Substrate	Porewater Sulfate	7.3
8/20/2013	Bioreactor	Organic Substrate	Sulfide minerals	4.1
8/20/2013	Bioreactor	Organic Substrate	Sulfide minerals	4.6
8/20/2013	Bioreactor	Organic Substrate	Sulfide minerals	1.7
8/20/2013	Bioreactor	Organic Substrate	Sulfide minerals	-0.3
8/20/2013	Bioreactor	Organic Substrate	Sulfide minerals	-2.3
