

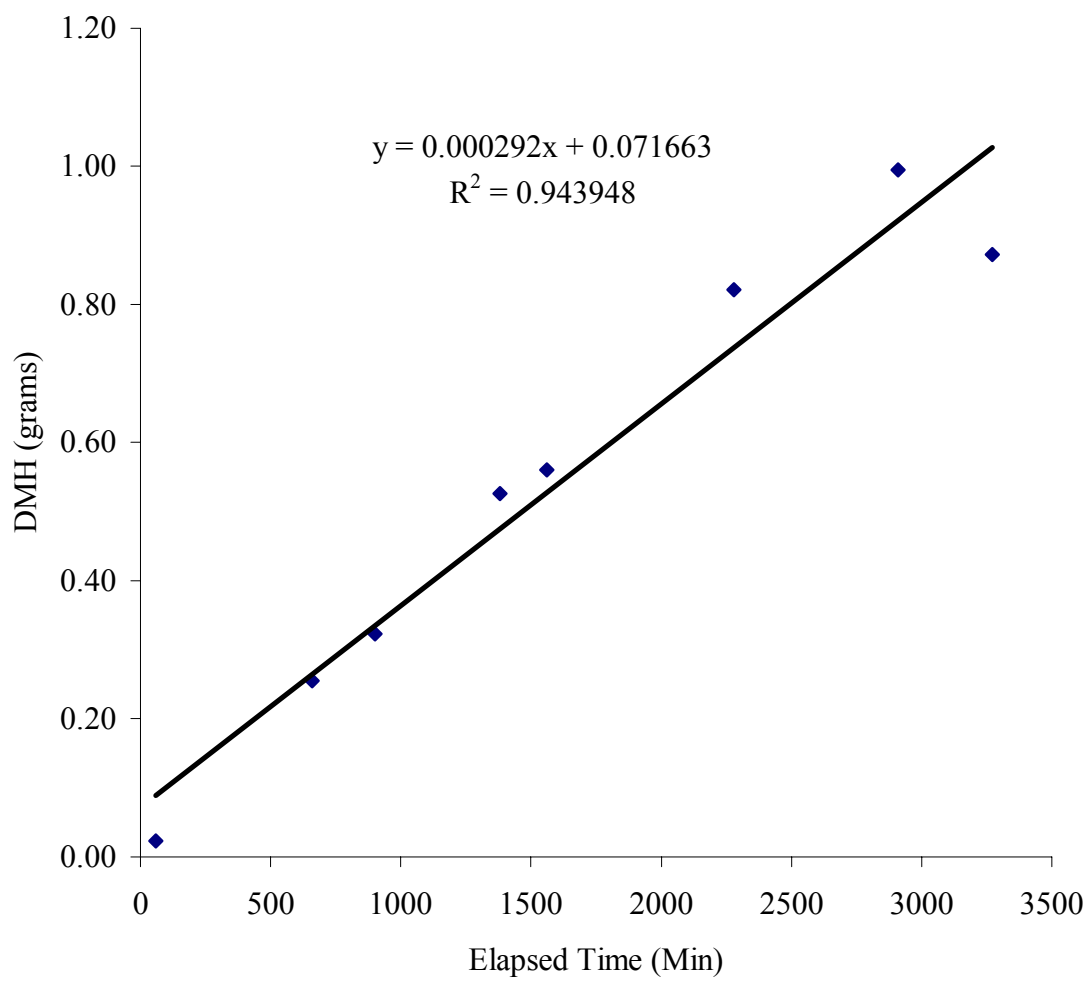
APPENDIX G

Continuous System 7: Synthetic Bangladesh Groundwater Contaminated with Fe (II), As (III), and As (V)

HPLC Data Compilation.....	141
Appearance of DHM Graph.....	142
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Continuous System 6: HPLC Data									
Time	Elapsed Time	Peak Area	Conc. (M)	Avg. Conc. (M)	S	Summary			
						Elapsed Time	Conc. (M)	Conc. (mM)	grams appear
4/6/03 5:00 AM	60	165.57889	1.16E-04	1.17E-04	1.5E-06	60	7.20E-05	0.072	0.0232
		168.90021	1.18E-04						
4/6/03 3:00 PM	660	95.85181	7.20E-05	7.20E-05	5.1E-06	660	7.20E-05	0.072	0.2556
		84.32011	6.47E-05						
4/6/03 7:00 PM	900	90.37284	6.85E-05	6.67E-05	2.6E-06	900	6.67E-05	0.067	0.3230
		84.61868	6.49E-05						
4/7/03 3:00 AM	1380	96.95852	7.27E-05	7.09E-05	2.5E-06	1380	7.09E-05	0.071	0.5265
		91.39355	6.91E-05						
4/7/03 6:00 AM	1560	88.72764	6.75E-05	6.67E-05	1.0E-06	1560	6.67E-05	0.067	0.5603
		86.43407	6.60E-05						
4/7/03 6:00 PM	2280	89.81784	6.82E-05	6.69E-05	1.7E-06	2280	6.69E-05	0.067	0.8212
		85.93773	6.57E-05						
4/8/03 4:30 AM	2910	83.26387	6.40E-05	6.35E-05	6.9E-07	2910	6.35E-05	0.064	0.9948
		81.71018	6.30E-05						
4/8/03 10:30 AM	3270	59.63577	4.91E-05	4.96E-05	6.9E-07	3270	4.96E-05	0.050	0.8728
		61.18566	5.01E-05						

Continuous System 7: Appearance of DMH



Continuous System 7: Chemiluminescence Data		
Elapsed Time (Min)	Conc. (mM)	grams BCDMH
60	0.00337	4.268
660	0.0330	4.049
900	0.0098	4.180
1380	0.0135	4.081
1560	0.0033	4.217
2280	0.0469	3.186
2910	0.0048	4.127
3270	-0.0005	4.288

Turner Designs: TD-20/20	
Luminometer	
Ver. 2020-1E 1098	
Delay Time: (sec)	2
Integrate Time: (sec)	4
Number of Replicates:	1
Sensitivity Level %:	1
Standard Reading:	0.274
Injection Volume #1: (ul)	50
Injection Volume #2: (ul)	50
Average Blank:	0.082
Mode:	STD

Continuous System 7 (pg 1 of 4)

0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082
0.302	0.479	0.466	0.178	0.206	1.063	0.763	1.39	1.131	0.409	
0.384	0.561	0.561	0.274	0.302	1.159	0.832	1.459	1.2	0.491	
275	226	109.6	142.5	198.9	17.68	45.21	41.03	70.03	74.34	
364.3	330.9	332.1	319.8	305.2	351.6	358.1	314	294.6	304.2	
176.7	166.9	162.8	151.6	150.5	215.9	215.1	188.4	172.6	187.3	
163.5	154.2	150.3	140.8	139.1	200.4	199.9	172.6	159.6	173.7	
150.3	141.8	138.3	129.8	127.9	183.7	183.7	157.6	146.7	159.8	
137.8	130.1	126.8	125.3	123.1	167.7	167.5	143.5	134.5	146.2	
126.3	125.1	122.1	115.7	113.5	152.5	152.2	130.4	122.8	133.2	
121.5	115.2	112.4	106.4	104.3	138.3	137.8	124.4	118.3	127.2	
111.8	105.8	103.3	97.89	95.89	125.2	124.7	113.7	108.8	116.4	
102.6	97.11	94.83	90.04	88.11	119.5	118.9	103.7	99.74	106.1	
94.14	89.23	87.08	82.79	80.95	109	108.3	94.52	91.47	96.73	
86.37	81.87	79.95	76.11	74.41	99.19	98.45	86.17	83.91	88.17	
79.21	75.22	73.37	69.95	68.4	90.29	89.51	78.63	76.94	80.4	
72.66	69.03	67.41	64.34	62.88	82.13	81.37	71.72	70.58	73.34	
66.68	63.38	61.92	59.18	57.8	74.79	74	65.41	64.73	66.85	
61.19	58.21	56.87	54.42	53.15	68.1	67.32	59.69	59.36	60.97	
56.16	53.48	52.22	50.05	48.85	62.06	61.23	54.48	54.48	55.63	
51.55	49.11	47.97	46.05	44.91	56.55	55.69	49.68	49.99	50.74	
47.32	45.11	44.08	42.38	41.31	51.55	50.68	45.35	45.86	46.35	
43.47	41.46	40.52	39.01	37.99	46.97	46.15	41.39	42.09	42.28	
39.93	38.08	37.25	35.91	34.96	42.81	42.02	37.8	38.61	38.62	
36.67	35.04	34.24	33.06	32.21	39.06	38.25	34.54	35.45	35.25	
33.7	32.21	31.49	30.45	29.67	35.63	34.87	31.53	32.59	32.21	
30.99	29.63	28.97	28.05	27.3	32.52	31.77	28.8	29.9	29.43	
28.49	27.27	26.67	25.83	25.15	29.71	28.94	26.32	27.45	26.89	
26.2	25.08	24.53	23.84	23.18	27.16	26.39	24.04	25.23	24.58	
24.14	23.11	22.59	21.98	21.37	24.82	24.06	21.97	23.17	22.46	
22.21	21.28	20.81	20.29	19.7	22.65	21.99	20.09	21.29	20.54	
Samp1 r0	Samp2 r0	Samp3 r0	Samp4 r0	Samp5 r0	Samp6 r0	Samp7 r0	Samp8 r0	Samp9 r0	Samp10 r0	
4/6/2003 5:00					4/6/2003 15:00					
Average Peak Max			330.46		Average Peak Max			324.5		
BCDMH Conc. (mM)			0.00337		BCDMH Conc. (mM)			0.0033		

Continuous System 7 (pg 2 of 4)

0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082
0.765	1.367	1.134	0.41	0.806	0.522	0.549	0.933	0.385	0.508	
0.779	1.421	1.175	0.492	0.888	0.59	0.631	0.988	0.467	0.59	
881.2	591.8	629	119	828.8	385.8	989.1	979.6	976.8	907.5	
1030	943.6	919.6	508.2	843.8	1152	1197	1083	1145	1148	
371.4	314.6	293.9	259.2	290.7	502.6	556	490.1	541.3	566.8	
345.6	291	271.6	241.3	269.1	471.7	517.2	455	506.8	527.7	
318	268.8	249.4	221.6	248.3	434.7	474.4	418.3	466.8	483.5	
290.7	247.3	228.2	201.5	228.2	397.2	432	382.2	426.6	440.8	
265.1	226.8	208.3	182.6	209.6	361.9	392.6	348.5	389	401.1	
241.6	208	190.2	165.4	192.4	329.3	356.9	317.5	354.5	364.9	
219.7	190.2	173.3	149.6	176.6	299.4	324.3	289	323	332	
200.1	174.4	158	135.1	161.8	272.6	294.7	263.3	294.2	302.2	
182.1	159.4	143.8	128.3	148.2	247.6	267.9	239.4	268.2	275	
165.7	145.7	131	117.1	135.6	225.2	243.2	218	244.1	250.4	
150.9	133.2	125.4	106.2	124.2	204.6	221	198.3	222.4	227.9	
137.3	128	114.9	96.53	119.7	186.3	201	180.5	202.7	207.4	
124.7	117.4	105.1	87.77	110.4	169	182.4	164.3	184.6	188.7	
119.6	108.1	96.09	79.85	101.5	153.7	166	149.6	167.9	171.7	
109.6	99.29	87.92	72.64	93.33	139.7	150.6	135.9	152.8	156.1	
100.2	91.23	80.44	66.14	85.85	126.8	136.7	123.5	139.1	141.9	
91.58	83.88	73.59	73.85	78.95	121.3	124.1	118.6	126.5	129	
83.73	77.06	67.37	67.55	72.65	111	118.8	108.7	121.3	123.5	
76.62	70.84	61.66	61.84	66.83	101.3	108.7	99.29	111.1	113.1	
70.09	65.16	56.44	56.59	61.51	92.47	99.14	90.82	101.6	103.3	
64.13	59.91	51.7	51.81	56.58	84.42	90.44	83.03	92.85	94.36	
58.71	55.13	47.36	47.42	52.07	77.13	82.57	75.93	84.91	86.19	
53.74	50.73	43.35	43.46	47.93	70.42	75.36	69.48	77.68	78.79	
49.21	46.7	39.71	39.8	44.15	64.38	68.82	63.59	71.02	72.05	
45.06	43.01	36.37	36.45	40.62	58.8	62.84	58.17	65	65.85	
41.26	39.57	33.31	33.39	37.42	53.75	57.44	53.26	59.46	60.21	
Samp41 r	Samp42 r	Samp43 r	Samp44 r	Samp45 r	Samp46 r	Samp47 r	Samp48 r	Samp49 r	Samp50 r	
4/6/2003 19:00					4/7/2003 3:00					
Average Peak Max			849.04		Average Peak Max			1145		
BCDMH Conc. (mM)			0.00982		BCDMH Conc. (mM)			0.0135		

Continuous System 7 (pg 3 of 4)

0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082
0.411	0.356	0.274	0.506	0.52	0.44	0.344	0.385	0.289	0.481	
0.479	0.424	0.329	0.588	0.575	0.494	0.412	0.44	0.357	0.549	
160.8	156.9	121.4	133.9	133.9	4115	4128	2277	3059	4309	
354	328.6	345.8	321.2	290	3918	4005	3598	3759	3865	
231.6	214.1	228	205.1	189.2	672.5	693.5	659.6	639.1	699.1	
216.6	199.1	213.6	189.6	174.5	622.5	643	607.4	590.1	647.1	
199.6	183.8	196.9	173.9	160	570.6	589.4	554.2	539.5	592.4	
182.7	168.3	179.7	158.7	146.1	520.6	537.3	502.8	491.3	539.5	
166.3	153.8	163.6	144.8	133.3	475.1	489.6	456.8	447.2	491.6	
151.3	140.1	148.6	131.6	127.6	433.7	446.3	414.6	407.2	448	
137.4	127.3	134.9	125.7	117.1	395.9	406.9	376.7	370.7	408.3	
124.6	121.9	128.4	115	107	361.4	371	342.5	337.5	372.4	
119.1	111.6	117	104.9	97.89	330.2	338.4	311.2	306.6	339.5	
108.8	101.9	106.9	95.79	89.51	301.7	308.5	283	278.9	309.3	
99.3	93.13	97.48	87.46	81.9	275.6	281.4	257.3	254.2	282.2	
90.52	85.08	88.86	79.89	74.92	251.8	256.7	234	231.5	257.3	
82.57	77.76	81.06	72.93	68.54	230.1	234.2	212.6	210.9	234.8	
75.38	71.06	73.95	66.57	62.74	210.1	213.7	193.4	192	214.2	
68.8	64.93	67.46	60.83	57.38	192.1	194.8	175.9	175	195.3	
62.8	59.34	61.56	55.6	52.54	175.3	177.8	159.7	159.4	178.1	
57.35	54.28	56.21	50.81	48.08	160.3	162.2	145.5	145.2	162.4	
52.36	49.63	51.29	46.43	44	146.3	147.9	132	132	148.2	
47.79	45.42	46.85	42.44	40.26	133.7	135	126.2	126.3	135	
43.67	41.54	42.77	38.79	36.9	128.2	129.1	115.5	115.9	123.3	
39.9	38.01	39.06	35.49	33.77	117.6	118.3	105.4	106	118.4	
36.48	34.77	35.72	32.43	30.94	108.2	108.6	96.35	96.97	108.7	
33.32	31.83	32.6	29.7	28.36	99.27	99.52	88.03	88.7	99.53	
30.46	29.15	29.79	27.15	25.98	91.08	91.21	80.46	81.24	91.22	
27.87	26.69	27.28	24.87	23.78	83.65	83.62	73.54	74.32	83.57	
25.49	24.43	24.94	22.76	21.79	76.77	76.68	67.23	68.1	76.63	
Samp51 r	Samp52 r	Samp53 r	Samp54 r	Samp55 r	Samp56 r	Samp57 r	Samp58 r	Samp59 r	Samp60 r	
4/7/2003 6:00					4/7/2003 18:00					
Average Peak Max			327.92		Average Peak Max			3829		
BCDMH Conc. (mM)			0.00334		BCDMH Conc. (mM)			0.04687		

Continuous System 7 (pg 4 of 4)

0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082
0.506	0.301	0.233	0.383	0.287	0.467	0.467	0.425	0.261	0.288	
0.588	0.369	0.287	0.465	0.369	0.562	0.535	0.508	0.343	0.343	
169.7	173.8	171	111.2	113.6	3.728	5.058	5.154	5.798	2.399	
501.3	491.2	460.1	422.7	362	20.73	18.78	17.39	14.69	12.43	
267.9	275.1	253.5	227.3	190.2	8.47	8.374	6.744	5.935	4.4	
251.4	259.1	238.3	211.6	176.6	7.058	6.977	5.675	4.948	3.619	
232	239.4	220.2	194.6	162.4	5.962	5.908	4.852	4.208	3.071	
212.1	218.9	201.7	178.3	148.2	5.098	5.058	4.194	3.632	2.632	
193.3	199.3	183.7	162.4	134.9	4.358	4.345	3.619	3.125	2.248	
175.8	181.3	167.3	147.9	128.3	3.755	3.742	3.153	2.742	1.974	
160	164.9	152	134.6	117.4	3.221	3.249	2.755	2.372	1.727	
145.5	149.9	138.4	128.3	106.6	2.837	2.81	2.413	2.097	1.522	
132.1	136.2	125.8	117.2	97.03	2.481	2.468	2.139	1.851	1.371	
126.2	123.6	120.5	107.3	88.3	2.18	2.193	1.892	1.673	1.22	
115.4	118.5	110.3	98.08	80.36	1.919	1.96	1.686	1.494	1.111	
105.4	108.5	100.8	89.62	73.15	1.727	1.741	1.522	1.33	1.015	
96.31	99.15	92.15	81.92	66.56	1.522	1.563	1.344	1.234	0.933	
87.97	90.57	84.24	74.87	60.56	1.385	1.426	1.234	1.138	0.864	
80.39	82.78	77	68.46	55.14	1.275	1.289	1.138	1.056	0.837	
73.45	75.66	70.44	62.58	50.22	1.165	1.193	1.056	0.974	0.768	
67.13	69.18	64.39	57.23	45.71	1.083	1.111	0.987	0.933	0.741	
61.38	63.29	58.92	52.35	41.59	0.987	1.042	0.919	0.864	0.713	
56.09	57.84	53.89	47.85	37.88	0.96	0.974	0.85	0.837	0.672	
51.27	52.9	49.32	43.77	34.49	0.891	0.919	0.823	0.782	0.645	
46.88	48.4	45.12	40.05	31.41	0.85	0.891	0.768	0.727	0.645	
42.87	44.27	41.28	36.65	28.6	0.795	0.85	0.727	0.741	0.604	
39.18	40.49	37.78	33.51	26.06	0.782	0.823	0.7	0.686	0.604	
35.84	37.03	34.58	30.68	23.72	0.741	0.782	0.672	0.672	0.59	
32.74	33.86	31.61	28.05	21.6	0.713	0.754	0.658	0.645	0.549	
29.97	30.99	28.96	25.66	19.68	0.699	0.727	0.631	0.645	0.549	
Samp62 r	Samp63 r	Samp64 r	Samp65 r	Samp66 r	Samp67 r	Samp68 r	Samp69 r	Samp70 r	Samp71 r	
4/8/2003 4:30					4/8/2003 4:30					
Average Peak Max			447.46		Average Peak Max			16.804		
BCDMH Conc. (mM)			0.00483		BCDMH Conc. (mM)			-0.00053		

Continuous System 7: Decomposition of 4.27 grams BCDMH
Briquette

