

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005

[$\mu\text{S}/\text{cm}$, microsiemens per centimeter at at 25°C; mg/L, milligrams per liter; $\mu\text{g}/\text{L}$, micrograms per liter; <, less than;
micro; mini sand-pack screen; CMT, continuous multilevel channel; Piez, piezometer;
SS, stainless steel piezometer with inner Teflon tubing; DS, diffusion sampler; B, baseline monitoring; --, no data]

Device ID	Device Type	Hydro-geologic Unit	Depth, Screened Interval (ft bls)	Date sampled	Time	pH	Specific conductance, $\mu\text{S}/\text{cm}$	Water temp. deg C.	Alkalinity, mg/L as CaCO_3
Biomat Sampling March 2005									
Below Mat Sampling									
PTN1	micro	Wetland	1	03/24/05	13:25	4.2	781	7.5	--
PTN2	micro	Wetland	1	03/18/05	10:50	4.7	595	--	--
PTN2	micro	Wetland	1	03/18/05	10:50	--	--	--	--
PTN3	micro	Wetland	1	03/22/05	13:30	5.1	600	14.6	9.5
PTN4	micro	Wetland	1	03/24/05	10:50	4.2	845	6.3	--
PTN5	micro	Wetland	1	03/21/05	11:35	4.8	678	12.0	--
PTN6	micro	Wetland	1	03/22/05	14:00	4.5	715	13.2	--
PTN7	micro	Wetland	1	03/24/05	11:05	4.6	914	7.5	--
PTN8	micro	Wetland	1	03/18/05	11:30	6.4	847	7.9	--
PTN9	micro	Wetland	1	03/22/05	14:25	4.4	716	15.1	--
PTC1A	CMT	Wetland	4.8-5.2	03/22/05	13:00	3.9	785	11.9	--
PTC1B	CMT	Wetland	7.8-8.2	03/24/05	9:35	5.4	872	16.4	34.6
PTC1C	CMT	Wetland	11.3-11.5	03/22/05	14:40	3.9	787	15.8	89.0
PTC2A	CMT	Wetland	4.8-5.2	03/17/05	14:40	4.1	728	6.9	--
PTC2B	CMT	Wetland	7.8-8.2	03/18/05	10:45	6.0	773	14.7	42.5
PTC2C	CMT	Wetland	11.8-12.0	03/18/05	11:20	5.3	816	11.4	34.8
PTC3A	CMT	Wetland	4.4-4.8	03/16/05	12:50	3.9	729	10.8	--
PTC3A	CMT	Wetland	4.4-4.8	03/16/05	12:50	--	--	--	--
PTC3B	CMT	Wetland	7.4-7.8	03/16/05	13:10	5.0	880	15.5	0.4
PTC3C	CMT	Wetland	13.1-13.3	03/16/05	13:25	3.9	772	12.0	--
PTC3C	CMT	Wetland	13.1-13.3	03/16/05	13:25	--	--	--	--
PTC4A	CMT	Wetland	4.8-5.2	03/17/05	15:05	3.9	846	9.5	--
PTC4A	CMT	Wetland	4.8-5.2	03/17/05	15:05	--	--	--	--
PTC4B	CMT	Wetland	7.8-8.2	03/17/05	15:20	3.9	885	9.0	--
PTC4C	CMT	Wetland	11.8-12.0	03/17/05	15:45	3.9	906	10.2	--
PTC5A	CMT	Wetland	4.8-5.2	03/21/05	13:00	4.0	753	10.1	--
PTC5B	CMT	Wetland	7.8-8.2	03/21/05	13:30	3.9	757	10.0	--
PTC5C	CMT	Wetland	11.8-12.0	03/22/05	9:15	4.3	772	11.0	--
PTB1B	DS	Reactive mat	-0.35	03/23/05	10:15	--	--	--	--
PTB1C	DS	Reactive mat	0.01	03/24/05	10:30	--	--	--	--
PTB2C	DS	Reactive mat	0.01	03/23/05	10:30	--	--	--	--
PTB3C	DS	Reactive mat	0.01	03/23/05	10:10	--	--	--	--

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Date sampled	Time	Sulfide, mg/L	Ammonia, mg/L	Phos- phate, as PO4 mg/L	Nitrate as NO3, mg/L	Iron, (Fe2+) mg/L, <10 range	Iron, (Fe2+) mg/L, >10 range	Methane (a), ug/L	Methane (b) ug/L
Biomat Sampling March 2005										
Below Mat Sampling										
PTN1	03/24/05	13:25	< 0.10	< 0.70	--	--	8.30	--	40.6	36.1
PTN2	03/18/05	10:50	< 0.10	< 0.88	--	--	--	12.7	--	--
PTN2	03/18/05	10:50	--	--	--	--	--	26.7	--	--
PTN3	03/22/05	13:30	0.59	< 0.70	--	--	--	26.7	33.0	35.7
PTN4	03/24/05	10:50	0.71	< 0.70	--	--	--	18.7	28.7	<38.3
PTN5	03/21/05	11:35	< 0.10	< 0.70	--	--	--	--	--	--
PTN6	03/22/05	14:00	< 0.10	< 0.70	--	--	--	--	35.9	32.4
PTN7	03/24/05	11:05	0.27	0.86	--	--	--	53.7	82.3	82.3
PTN8	03/18/05	11:30	< 0.10	< 0.70	--	--	--	82.9	--	--
PTN9	03/22/05	14:25	< 0.10	< 0.70	--	--	2.87	--	75.6	--
PTC1A	03/22/05	13:00	< 0.10	< 0.70	--	--	4.62	--	37.5	38.4
PTC1B	03/24/05	9:35	< 0.10	< 0.70	--	--	--	8.83	84.1	97.7
PTC1C	03/22/05	14:40	< 0.10	< 0.70	--	--	6.85	--	<38.2	<36.2
PTC2A	03/17/05	14:40	< 0.10	< 0.70	--	--	--	--	<34.9	<35.7
PTC2B	03/18/05	10:45	< 0.10	< 0.70	--	--	--	22.4	77.7	73.9
PTC2C	03/18/05	11:20	< 0.10	< 0.70	--	--	--	22.4	68.0	65.7
PTC3A	03/16/05	12:50	< 0.10	< 0.70	0.90	< 0.20	3.59	--	<34.8	<33.0
PTC3A	03/16/05	12:50	--	--	< 0.75	--	3.62	--	--	--
PTC3B	03/16/05	13:10	0.30	< 0.70	< 0.75	0.30	--	21.7	<30.9	<34.9
PTC3C	03/16/05	13:25	< 0.10	< 0.70	< 0.75	1.02	0.44	--	<39.2	<33.0
PTC3C	03/16/05	13:25	--	--	--	0.72	--	--	--	--
PTC4A	03/17/05	15:05	0.10	< 0.70	--	--	2.03	--	<26.3	<29.8
PTC4A	03/17/05	15:05	0.10	< 0.70	--	--	--	--	--	--
PTC4B	03/17/05	15:20	< 0.10	< 0.70	--	--	3.19	--	30.4	27.4
PTC4C	03/17/05	15:45	0.10	< 0.70	--	--	0.24	--	35.4	34.9
PTC5A	03/21/05	13:00	< 0.10	< 0.70	--	--	3.43	--	<35.2	<35.7
PTC5B	03/21/05	13:30	< 0.10	< 0.70	--	--	2.11	--	<36.6	<36.8
PTC5C	03/22/05	9:15	< 0.10	< 0.70	--	--	1.85	--	<39.4	<39.5
PTB1B	03/23/05	10:15	< 0.25	< 1.75	--	--	--	0.06	<47.1	--
PTB1C	03/24/05	10:30	< 0.25	< 1.75	--	--	--	0.18	3,490	--
PTB2C	03/23/05	10:30	0.00	< 1.75	--	--	--	0.06	2,930	--
PTB3C	03/23/05	10:10	< 0.25	3.53	--	--	--	0.06	45.0	--

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Device Type	Hydro-geologic Unit	Depth, Screened Interval (ft bls)	Date sampled	Time	pH	Specific conduc- tance, $\mu\text{S}/\text{cm}$	Water temp. deg C.	Alkalinity, mg/L as CaCO_3
PTB4B	DS	Reactive mat	-0.35	03/23/05	10:50	--	--	--	--
PTB4C	DS	Reactive mat	0.01	03/23/05	10:45	--	--	--	--
PTB4C	DS	Reactive mat	0.01	03/23/05	10:45	--	--	--	--
PTB5B	DS	Reactive mat	-0.35	03/23/05	11:05	--	--	--	--
PTB5C	DS	Reactive mat	0.01	03/23/05	11:00	--	--	--	--
PTB5C	DS	Reactive mat	0.01	03/23/05	11:00	--	--	--	--
PTB6B	DS	Reactive mat	-0.35	03/23/05	11:15	--	--	--	--
PTB6C	DS	Reactive mat	0.01	03/23/05	11:10	--	--	--	--
PTB7B	DS	Reactive mat	-0.35	03/23/04	11:25	--	--	--	--
PTB7C	DS	Reactive mat	0.01	03/23/04	11:20	--	--	--	--
PTB8B	DS	Reactive mat	-0.35	03/23/04	11:35	--	--	--	--
PTB8C	DS	Reactive mat	0.01	03/23/04	11:30	--	--	--	--
PTB8C	DS	Reactive mat	0.01	03/23/04	11:30	--	--	--	--
PTB9C	DS	Reactive mat	0.01	03/23/04	11:45	--	--	--	--
Perimeter Sampling									
PTZ1A	PIEZ	Wetland	3.5-4.5	03/14/05	10:35	3.9	1,020	7.9	--
PTZ1B	PIEZ	Wetland	7.5-8.5	03/14/05	14:00	6.1	398	9.5	72.4
PTZ1C	PIEZ	Aquifer	13-14	03/14/05	12:10	4.1	904	10.2	--
PTZ1D	PIEZ	Aquifer	24.7-25.7	03/14/05	13:20	5.4	177	10.9	10.5
PTZ1E	PIEZ	Aquifer	35-36	03/22/05	12:00	4.6	393	12.1	6.1
PTZ2A	PIEZ	Wetland	6-7	03/14/05	11:20	6.8	1,640	8.0	380
PTZ2A	PIEZ	Wetland	6-7	03/14/05	11:20	--	--	--	--
PTZ2B	PIEZ	Wetland	12-13	03/14/05	9:40	7.0	825	10.2	219
PTZ2C	PIEZ	Aquifer	20-21	03/14/05	11:45	6.0	610	11.1	30.7
PTZ2D	PIEZ	Aquifer	29.5-30.5	03/14/05	12:15	4.2	693	10.4	--
PTZ2E	PIEZ	Aquifer	37.7-38.7	03/14/05	13:00	4.4	491	12.1	--
PTZ4A	PIEZ	Wetland	6.5-7.5	03/14/05	16:20	5.3	376	8.5	11.1
PTZ4B	PIEZ	Wetland	9-10	03/14/05	16:10	4.5	278	9.3	--
PTZ4C	PIEZ	Aquifer	11.6-12.6	03/14/05	16:00	4.2	309	10.7	--
PTC6A	CMT	Wetland	2.8-3.2	03/16/05	13:00	4.0	711	12.0	--
PTC6B	CMT	Wetland	4.8-5.2	03/16/05	13:15	3.9	791	11.8	--
PTC6C	CMT	Wetland	7.8-8.2	03/17/05	10:15	4.8	928	12.2	23.5
PTC6D	CMT	Wetland	9.8-10.2	03/17/05	10:50	5.4	999	8.7	37.6
PTC6D	CMT	Wetland	9.8-10.2	03/17/05	10:50	--	--	--	26.3
PTC6E	CMT	Aquifer	11.8-12.0	03/21/05	12:30	4.9	805	12.1	4.2
PTC6E	CMT	Aquifer	11.8-12.0	03/21/05	12:30	--	--	--	--
PTC7A	CMT	Wetland	2.8-3.2	03/16/05	14:50	4.1	659	13.3	--
PTC7B	CMT	Wetland	4.8-5.2	03/17/05	8:50	4.1	725	9.4	--
PTC7B	CMT	Wetland	4.8-5.2	03/17/05	8:50	--	--	--	--
PTC7C	CMT	Wetland	7.8-8.2	03/18/05	9:20	5.8	680	10.9	40.0
PTC7D	CMT	Wetland	10.3-10.5	03/17/05	10:20	5.8	918	7.5	22.2

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Date sampled	Time	Sulfide, mg/L	Ammonia, mg/L	Phos- phate, as PO4 mg/L	Nitrate as NO3, mg/L	Iron, (Fe2+) mg/L, <10 range	Iron, (Fe2+) mg/L, >10 range	Methane (a), ug/L	Methane (b) ug/L
PTB4B	03/23/05	10:50	< 0.25	< 1.75	--	--	--	0.06	86.7	--
PTB4C	03/23/05	10:45	< 0.25	--	--	--	--	0.18	3,820	3,810
PTB4C	03/23/05	10:45	--	--	--	--	--	0.06	--	--
PTB5B	03/23/05	11:05	< 0.25	< 1.75	--	--	--	0.06	<47.9	--
PTB5C	03/23/05	11:00	< 0.25	< 1.75	--	--	--	0.06	1,070	--
PTB5C	03/23/05	11:00	--	--	--	--	--	0.06	--	--
PTB6B	03/23/05	11:15	< 0.25	2.00	--	--	--	0.06	<48.7	--
PTB6C	03/23/05	11:10	< 0.25	2.53	--	--	--	0.06	3,130	--
PTB7B	03/23/04	11:25	< 0.25	< 1.75	--	--	--	0.18	113	--
PTB7C	03/23/04	11:20	< 0.25	< 1.75	--	--	--	0.74	1,100	--
PTB8B	03/23/04	11:35	< 0.25	< 1.75	--	--	--	0.06	<47.7	--
PTB8C	03/23/04	11:30	< 0.25	< 1.75	--	--	--	0.06	3,760	3,740
PTB8C	03/23/04	11:30	--	--	--	--	--	0.06	--	--
PTB9C	03/23/04	11:45	< 0.25	< 1.75	--	--	--	0.06	2,440	--
Perimeter Sampling										
PTZ1A	03/14/05	10:35	2.15	< 0.70	< 0.94	< 0.20	--	--	271	272
PTZ1B	03/14/05	14:00	0.14	< 0.70	< 0.75	1.70	--	--	4,920	5,240
PTZ1C	03/14/05	12:10	0.15	< 0.70	< 0.75	0.82	--	--	345	339
PTZ1D	03/14/05	13:20	0.23	< 0.70	< 0.75	0.25	--	--	<29.4	<27.6
PTZ1E	03/22/05	12:00	< 0.10	< 0.70	< 0.75	< 0.20	0.19	--	<36.0	<33.3
PTZ2A	03/14/05	11:20	< 0.10	< 0.70	10.3	< 0.20	0.17	--	13,200	12,800
PTZ2A	03/14/05	11:20	--	--	--	--	0.14	--	--	--
PTZ2B	03/14/05	9:40	0.25	1.31	--	1.27	2.11	--	4,460	4,790
PTZ2C	03/14/05	11:45	0.39	< 0.70	< 0.75	< 0.20	--	--	2,550	2,520
PTZ2D	03/14/05	12:15	0.23	< 0.70	< 0.75	1.28	0.06	--	<21.0	<25.2
PTZ2E	03/14/05	13:00	< 0.10	< 0.70	< 0.75	1.04	--	--	<21.9	<28.2
PTZ4A	03/14/05	16:20	< 0.10	< 0.70	--	--	--	--	<36.0	39.6
PTZ4B	03/14/05	16:10	< 0.10	< 0.70	--	--	0.25	--	<36.9	<35.2
PTZ4C	03/14/05	16:00	< 0.10	< 0.70	--	--	--	--	<35.1	<35.9
PTC6A	03/16/05	13:00	0.11	< 0.70	< 0.75	0.23	--	--	<24.1	<32.0
PTC6B	03/16/05	13:15	< 0.10	< 0.70	< 0.75	0.48	0.90	--	<22.8	<12.8
PTC6C	03/17/05	10:15	< 0.10	< 0.70	< 0.75	< 0.20	--	15.4	61.6	57.1
PTC6D	03/17/05	10:50	< 0.10	< 0.70	< 0.75	< 0.20	--	18.1	70.3	73.6
PTC6D	03/17/05	10:50	--	--	--	--	--	--	--	--
PTC6E	03/21/05	12:30	< 0.10	0.81	< 0.75	< 0.20	--	13.5	34.5	32.7
PTC6E	03/21/05	12:30	< 0.10	--	--	--	--	--	--	--
PTC7A	03/16/05	14:50	1.70	< 0.70	--	--	--	3.76	103	105
PTC7B	03/17/05	8:50	1.30	< 0.70	--	--	3.74	4.14	157	153
PTC7B	03/17/05	8:50	--	--	--	--	3.77	--	--	--
PTC7C	03/18/05	9:20	0.15	< 0.88	--	--	--	--	355	351
PTC7D	03/17/05	10:20	0.58	< 0.70	--	--	7.80	--	278	285

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March-October 2005--Continued

Device ID	Device Type	Hydro-geologic Unit	Depth, Screened Interval (ft bls)	Date sampled	Time	pH	Specific conductance, $\mu\text{S}/\text{cm}$	Water temp. deg C.	Alkalinity, mg/L as CaCO_3
PTC8A	CMT	Wetland	2.8-3.2	03/15/05	9:30	5.0	228	8.5	2.2
PTC8B	CMT	Wetland	4.8-5.2	03/15/05	9:45	4.6	297	9.0	1.4
PTC8C	CMT	Wetland	7.8-8.2	03/15/05	10:05	5.3	762	6.4	15.2
PTC8D	CMT	Wetland	9.8-10.2	03/15/05	10:15	5.4	645	3.1	11.5
PTC8E	CMT	Aquifer	11.8-12.0	03/15/05	10:40	4.4	550	5.4	--
PTC9A	CMT	Wetland	2.8-3.2	03/17/05	10:45	3.9	795	5.7	--
PTC9B	CMT	Wetland	4.8-5.2	03/17/05	11:00	4.0	756	8.5	--
PTC9C	CMT	Wetland	7.8-8.2	03/17/05	11:10	4.0	730	8.1	--
PTC9D	CMT	Wetland	9.8-10.2	03/17/05	11:30	3.6	880	9.1	--
PTC9E	CMT	Aquifer	12.1-12.3	03/17/05	11:40	3.9	834	11.1	--
PTC10A	CMT	Wetland	2.4-2.8	03/15/05	11:20	4.0	848	8.5	--
PTC10B	CMT	Wetland	4.4-4.8	03/15/05	12:20	3.9	846	10.6	--
PTC10C	CMT	Wetland	7.4-7.8	03/15/05	13:55	3.8	738	11.7	--
PTC10D	CMT	Wetland	9.4-9.8	03/15/05	14:25	5.0	901	12.0	16.2
PTC10E	CMT	Aquifer	12.6-12.8	03/15/05	15:05	4.6	1,030	11.3	--
PTC11A	CMT	Wetland	1.8-2.2	03/16/05	12:10	3.9	811	10.4	--
PTC11B	CMT	Wetland	4.8-5.2	03/16/05	12:30	4.0	813	10.6	--
PTC11C	CMT	Wetland	7.8-8.2	03/16/05	12:40	3.9	805	11.1	--
PTC11D	CMT	Wetland	9.8-10.2	03/15/05	14:20	4.0	782	10.4	--
PTC11E	CMT	Wetland	11.8-12.2	03/15/05	15:10	3.9	780	9.6	--
PTC11F	CMT	Aquifer	14-14.2	03/15/05	16:00	3.8	774	11.4	--
PTC12A	CMT	Wetland	2.8-3.2	03/14/05	15:55	3.8	723	10.2	--
PTC12B	CMT	Wetland	4.8-5.2	03/14/05	16:15	4.3	747	10.2	--
PTC12C	CMT	Wetland	7.8-8.2	03/15/05	11:25	6.0	768	11.7	49.1
PTC12C	CMT	Wetland	7.8-8.2	03/15/05	11:25	--	--	--	49.9
PTC12D	CMT	Wetland	9.8-10.2	03/15/05	8:45	6.3	912	11.4	66.7
PTC12E	CMT	Wetland	11.8-12.2	03/15/05	9:20	5.7	727	12.2	38.6
PTC12F	CMT	Aquifer	15.2-15.4	03/15/05	9:45	5.5	820	12.7	31.7
PTC13A	CMT	Wetland	2.8-3.2	03/14/05	11:40	3.9	764	5.7	--
PTC13B	CMT	Wetland	4.8-5.2	03/14/05	12:00	4.2	684	9.5	--
PTC13C	CMT	Wetland	7.8-8.2	03/14/05	12:20	4.1	632	10.0	--
PTC13D	CMT	Wetland	9.8-10.2	03/14/05	13:00	3.6	683	8.8	--

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Date sampled	Time	Sulfide, mg/L	Ammonia, mg/L	Phos- phate, as PO4 mg/L	Nitrate as NO3, mg/L	Iron, (Fe2+) mg/L, <10 range	Iron, (Fe2+) mg/L, >10 range	Methane (a), ug/L	Methane (b) ug/L
PTC8A	03/15/05	9:30	< 0.10	< 0.70	< 0.75	0.32	--	--	<33.0	<28.6
PTC8B	03/15/05	9:45	0.31	< 0.70	1.05	0.45	--	--	<29.9	<25.1
PTC8C	03/15/05	10:05	0.13	< 0.70	< 0.75	--	--	--	136	134
PTC8D	03/15/05	10:15	0.15	< 0.70	< 0.75	0.24	--	6.48	--	--
PTC8E	03/15/05	10:40	0.47	2.50	< 0.75	1.43	--	--	30.2	<31.8
PTC9A	03/17/05	10:45	0.30	< 0.70	--	--	--	4.01	49.1	52.0
PTC9B	03/17/05	11:00	< 0.10	< 0.70	--	--	4.74	--	66.7	<109.6
PTC9C	03/17/05	11:10	0.39	1.00	--	--	5.57	--	54.2	52.0
PTC9D	03/17/05	11:30	0.14	< 0.70	--	--	7.49	--	46.9	48.7
PTC9E	03/17/05	11:40	0.17	< 0.70	--	--	0.15	--	93.0	97.2
PTC10A	03/15/05	11:20	< 0.10	< 0.70	< 0.75	--	--	--	32.5	<37.1
PTC10B	03/15/05	12:20	0.20	< 0.70	< 0.75	< 0.20	--	--	<47.6	41.5
PTC10C	03/15/05	13:55	0.18	< 0.70	< 0.75	< 0.20	--	--	44.5	44.9
PTC10D	03/15/05	14:25	< 0.10	< 0.70	< 0.75	< 0.20	--	23.9	51.8	56.8
PTC10E	03/15/05	15:05	< 0.10	< 0.70	< 0.75	< 0.20	--	--	87.2	87.8
PTC11A	03/16/05	12:10	< 0.10	< 0.70	--	--	2.65	--	92.8	92.5
PTC11B	03/16/05	12:30	0.44	0.70	--	--	2.40	--	101	101
PTC11C	03/16/05	12:40	0.27	< 0.70	--	--	--	--	44.5	41.9
PTC11D	03/15/05	14:20	< 0.10	< 0.70	--	--	1.51	--	38.1	38.8
PTC11E	03/15/05	15:10	0.30	< 0.70	--	--	0.93	--	38.9	<35.0
PTC11F	03/15/05	16:00	< 0.10	< 0.70	--	--	0.14	--	<30.7	<30.0
PTC12A	03/14/05	15:55	0.41	< 0.70	< 0.75	< 0.20	--	--	51.3	48.4
PTC12B	03/14/05	16:15	0.12	< 0.70	< 0.75	< 0.20	--	--	68.8	74.2
PTC12C	03/15/05	11:25	0.12	< 0.70	0.75	< 0.20	--	7.41	162	156
PTC12C	03/15/05	11:25	--	--	--	--	--	--	--	--
PTC12D	03/15/05	8:45	0.00	< 0.70	< 0.75	< 0.20	--	--	280	275
PTC12E	03/15/05	9:20	< 0.10	< 0.70	1.00	< 0.20	--	--	229	229
PTC12F	03/15/05	9:45	< 0.10	< 0.70	< 0.75	< 0.20	--	--	192	188
PTC13A	03/14/05	11:40	0.28	< 0.70	--	--	--	--	<28.2	<38.0
PTC13B	03/14/05	12:00	< 0.10	< 0.70	--	--	--	--	52.5	42.7
PTC13C	03/14/05	12:20	0.14	< 0.70	--	--	--	--	<31.2	<30.0
PTC13D	03/14/05	13:00	< 0.10	< 0.70	--	--	--	--	42.3	43.9

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Device Type	Hydro-geologic Unit	Depth, Screened Interval (ft bls)	Date sampled	Time	pH	Specific conductance, μ S/cm	Water temp. deg C.	Alkalinity, mg/L as CaCO ₃
Biomat Sampling May 2005									
Below Mat Sampling									
PTN1	micro	Wetland	1	5/18/2005	13:30	4.2	801	27.6	--
PTN2	micro	Wetland	1	5/18/2005	11:00	4.4	650	22.6	--
PTN3	micro	Wetland	1	5/18/2005	10:35	4.6	705	22.1	--
PTN4	micro	Wetland	1	5/18/2005	12:50	4.1	874	27.4	--
PTN5	micro	Wetland	1	5/18/2005	11:30	4.5	617	22.4	--
PTN6	micro	Wetland	1	5/18/2005	11:25	4.3	742	21.8	--
PTN7	micro	Wetland	1	5/18/2005	13:30	3.3	1,100	26.5	--
PTN8	micro	Wetland	1	5/18/2005	12:15	5.5	594	22.4	--
PTN9	micro	Wetland	1	5/18/2005	12:10	4.1	762	22.8	--
PTC1A	CMT	Wetland	4.8-5.2	5/13/2005	8:15	3.8	843	16	--
PTC1A	CMT	Wetland	4.8-5.2	5/13/2005	8:15	--	--	--	--
PTC1A	CMT	Wetland	4.8-5.2	5/13/2005	8:15	--	--	--	--
PTC1B	CMT	Wetland	7.8-8.2	5/13/2005	9:45	6.0	907	19	28.5
PTC1C	CMT	Wetland	11.3-11.5	5/13/2005	9:00	3.9	838	17	--
PTC2A	CMT	Wetland	4.8-5.2	5/16/2005	13:42	4.2	739	22.4	--
PTC2B	CMT	Wetland	7.8-8.2	5/17/2005	10:37	6.1	817	24.2	44.9
PTC2B	CMT	Wetland	7.8-8.2	5/17/2005	10:37	--	--	--	--
PTC2B	CMT	Wetland	7.8-8.2	5/17/2005	10:37	--	--	--	--
PTC2C	CMT	Wetland	11.8-12.0	5/17/2005	11:50	5.6	862	27.4	20.6
PTC3A	CMT	Wetland	4.4-4.8	5/13/2005	9:30	3.9	788	16.6	--
PTC3A	CMT	Wetland	4.4-4.8	5/13/2005	9:30	--	--	--	--
PTC3B	CMT	Wetland	7.4-7.8	5/13/2005	10:37	4.5	862	19.2	--
PTC3C	CMT	Wetland	13.1-13.3	5/13/2005	11:32	3.8	826	16.7	--
PTC4A	CMT	Wetland	4.8-5.2	5/13/2005	10:00	3.8	889	16.2	--
PTC4A	CMT	Wetland	4.8-5.2	5/13/2005	10:00	--	--	--	--
PTC4B	CMT	Wetland	7.8-8.2	5/13/2005	10:10	3.8	963	16.5	--
PTC4B	CMT	Wetland	7.8-8.2	5/13/2005	10:10	--	--	--	--
PTC4C	CMT	Wetland	11.8-12.0	5/13/2005	10:30	3.8	913	16.5	--
PTC4C	CMT	Wetland	11.8-12.0	5/13/2005	10:30	--	--	--	--
PTC5A	CMT	Wetland	4.8-5.2	5/13/2005	12:10	3.9	771	16.7	--
PTC5A	CMT	Wetland	4.8-5.2	5/13/2005	12:10	--	--	--	--
PTC5B	CMT	Wetland	7.8-8.2	5/13/2005	12:15	3.8	782	17.7	--
PTC5C	CMT	Wetland	11.8-12.0	5/13/2005	13:20	4.3	814	18.8	--
PTB1B	DS	Reactive mat	-0.35	5/23/2005	14:10	--	--	--	--
PTB1C	DS	Reactive mat	0.01	5/23/2005	14:15	--	--	--	--
PTB2B	DS	Reactive mat	-0.35	5/23/2005	14:20	--	--	--	--
PTB2C	DS	Reactive mat	0.01	5/23/2005	14:25	--	--	--	--
PTB3B	DS	Reactive mat	-0.35	5/23/2005	14:30	--	--	--	--
PTB3C	DS	Reactive mat	0.01	5/23/2005	14:35	--	--	--	--

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Date sampled	Time	Sulfide, mg/L	Ammonia, mg/L	Phos- phate, as PO4 mg/L	Nitrate as NO3, mg/L	Iron, (Fe2+) mg/L, <10 range	Iron, (Fe2+) mg/L, >10 range	Methane (a), ug/L	Methane (b) ug/L
Biomat Sampling May 2005										
Below Mat Sampling										
PTN1	5/18/2005	13:30	0.24	< 0.7	--	--	6.74	--	44.2	50.6
PTN2	5/18/2005	11:00	0.78	< 0.7	--	--	10.7	--	<34.7	<36.6
PTN3	5/18/2005	10:35	0.55	< 0.7	--	--	--	15.3	<39.1	<33.1
PTN4	5/18/2005	12:50	< 0.10	< 0.7	--	--	--	--	<31.7	<37.5
PTN5	5/18/2005	11:30	1.23	< 0.7	--	--	--	13.3	<37.9	<33.6
PTN6	5/18/2005	11:25	< 0.10	< 0.7	--	--	5.27	--	<33.4	<35.0
PTN7	5/18/2005	13:30	0.23	0.79	--	--	--	47.1	65.1	68.5
PTN8	5/18/2005	12:15	< 0.10	< 0.7	--	--	--	69.9	81.7	65.3
PTN9	5/18/2005	12:10	< 0.10	< 0.7	--	--	2.33	--	<32.7	<32.4
PTC1A	5/13/2005	8:15	< 0.10	< 0.7	< 0.75	< 0.20	3.81	--	38.1	40.2
PTC1A	5/13/2005	8:15	--	--	--	--	3.78	--	--	--
PTC1A	5/13/2005	8:15	--	--	--	--	3.79	--	--	--
PTC1B	5/13/2005	9:45	< 0.10	< 0.7	< 0.75	< 0.20	--	8.03	<39.7	<106.2
PTC1C	5/13/2005	9:00	< 0.10	< 0.7	< 0.75	< 0.20	2.57	--	37.2	44.1
PTC2A	5/16/2005	13:42	< 0.10	< 0.7	< 0.75	0.24	1.39	--	<38.7	<34.2
PTC2B	5/17/2005	10:37	0.14	< 0.7	1.50	--	--	15.6	50.9	58.5
PTC2B	5/17/2005	10:37	--	--	--	--	11.0	--	--	--
PTC2B	5/17/2005	10:37	--	--	--	--	11.0	--	--	--
PTC2C	5/17/2005	11:50	< 0.10	< 0.7	< 0.75	< 0.20	--	16.7	<31.2	<66.4
PTC3A	5/13/2005	9:30	< 0.10	< 0.7	< 0.75	< 0.20	5.31	--	<31.2	<32.9
PTC3A	5/13/2005	9:30	< 0.10	--	--	--	--	--	--	--
PTC3B	5/13/2005	10:37	0.19	< 0.7	< 0.75	< 0.20	--	22.7	<35.9	<32.8
PTC3C	5/13/2005	11:32	0.10	< 0.7	< 0.75	0.73	1.06	--	<32.9	<30.9
PTC4A	5/13/2005	10:00	< 0.10	< 0.7	< 0.75	< 0.20	2.00	--	<36.1	<33.8
PTC4A	5/13/2005	10:00	--	< 0.7	--	--	3.17	--	--	--
PTC4B	5/13/2005	10:10	< 0.10	< 0.7	< 0.75	0.23	3.17	--	<28.0	<40.2
PTC4B	5/13/2005	10:10	--	< 0.7	< 0.75	0.21	--	--	--	--
PTC4C	5/13/2005	10:30	0.17	< 0.7	< 0.75	1.20	0.01	--	<35.5	<33.9
PTC4C	5/13/2005	10:30	0.12	--	--	--	0.28	--	--	--
PTC5A	5/13/2005	12:10	0.12	< 0.7	< 0.75	< 0.20	3.37	--	<32.3	<38.8
PTC5A	5/13/2005	12:10	--	--	< 0.75	--	--	--	--	--
PTC5B	5/13/2005	12:15	0.44	1.97	1.90	1.30	2.54	--	<40.9	<34.1
PTC5C	5/13/2005	13:20	0.13	< 0.7	< 0.75	< 0.20	--	18.5	<36.5	<32.7
PTB1B	5/23/2005	14:10	< 0.50	< 3.50	--	--	--	0.06	1,590	--
PTB1C	5/23/2005	14:15	< 0.50	< 3.50	--	--	--	0.12	8,800	--
PTB2B	5/23/2005	14:20	< 0.50	< 3.50	--	--	--	0.06	<48.9	--
PTB2C	5/23/2005	14:25	< 0.50	11.0	--	--	--	0.68	9,000	--
PTB3B	5/23/2005	14:30	< 0.50	< 3.50	--	--	--	0.06	<47.8	--
PTB3C	5/23/2005	14:35	< 0.50	< 3.50	--	--	--	0.06	1,350	--

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Device Type	Hydro-geologic Unit	Depth, Screened Interval (ft bls)	Date sampled	Time	pH	Specific conductance, $\mu\text{S}/\text{cm}$	Water temp. deg C.	Alkalinity, mg/L as CaCO_3
PTB4B	DS	Reactive mat	-0.35	5/23/2005	14:40	--	--	--	--
PTB4C	DS	Reactive mat	0.01	5/23/2005	14:45	--	--	--	--
PTB5B	DS	Reactive mat	-0.35	5/23/2005	14:50	--	--	--	--
PTB5C	DS	Reactive mat	0.01	5/23/2005	14:55	--	--	--	--
PTB6B	DS	Reactive mat	-0.35	5/23/2005	15:00	--	--	--	--
PTB6C	DS	Reactive mat	0.01	5/23/2005	15:05	--	--	--	--
PTB7B	DS	Reactive mat	-0.35	5/23/2005	15:10	--	--	--	--
PTB7C	DS	Reactive mat	0.01	5/23/2005	15:15	--	--	--	--
PTB8B	DS	Reactive mat	-0.35	5/23/2005	15:20	--	--	--	--
PTB8C	DS	Reactive mat	0.01	5/23/2005	15:25	--	--	--	--
PTB9B	DS	Reactive mat	-0.35	5/23/2005	15:30	--	--	--	--
PTB9C	DS	Reactive mat	0.01	5/23/2005	15:35	--	--	--	--
Perimeter Sampling									
PTZ1A	PIEZ	Wetland	3.5-4.5	5/9/2005	13:30	3.9	998	20.2	--
PTZ1B	PIEZ	Wetland	7.5-8.5	5/10/2005	8:50	6.0	408	18	75.4
PTZ1B	PIEZ	Wetland	7.5-8.5	5/10/2005	8:50	--	--	--	--
PTZ1C	PIEZ	Aquifer	13-14	5/9/2005	14:35	4.1	886	19.7	--
PTZ1C	PIEZ	Aquifer	13-14	5/9/2005	14:35	--	--	--	--
PTZ1D	PIEZ	Aquifer	24.7-25.7	5/9/2005	11:25	4.0	192	15.6	12.5
PTZ1D	PIEZ	Aquifer	24.7-25.7	5/9/2005	11:25	--	--	--	--
PTZ1D	PIEZ	Aquifer	24.7-25.7	5/9/2005	11:25	--	--	--	--
PTZ1E	PIEZ	Aquifer	35-36	5/10/2005	9:25	5.4	313	18.5	--
PTZ2A	PIEZ	Wetland	6-7	5/10/2005	10:45	7.2	1,640	16	375
PTZ2A	PIEZ	Wetland	6-7	5/10/2005	10:45	--	--	--	--
PTZ2B	PIEZ	Wetland	12-13	5/10/2005	11:00	6.8	814	16.9	194
PTZ2B	PIEZ	Wetland	12-13	5/10/2005	11:00	--	--	--	--
PTZ2C	PIEZ	Aquifer	20-21	5/9/2005	11:15	5.7	604	17.5	46.9
PTZ2C	PIEZ	Aquifer	20-21	5/9/2005	11:15	--	--	--	--
PTZ2C	PIEZ	Aquifer	20-21	5/9/2005	11:15	--	--	--	--
PTZ2C	PIEZ	Aquifer	20-21	5/9/2005	11:15	--	--	--	--
PTZ2D	PIEZ	Aquifer	29.5-30.5	5/9/2005	11:50	4.2	682	17.8	--
PTZ2D	PIEZ	Aquifer	29.5-30.5	5/9/2005	11:50	--	--	--	--
PTZ2E	PIEZ	Aquifer	37.7-38.7	5/9/2005	12:20	4.5	417	16.4	--
PTZ4A	PIEZ	Wetland	6.5-7.5	5/10/2005	14:00	5.4	330	16.5	10.9
PTZ4A	PIEZ	Wetland	6.5-7.5	5/10/2005	14:00	--	--	--	--
PTZ4A	PIEZ	Wetland	6.5-7.5	5/10/2005	14:00	--	--	--	--
PTZ4B	PIEZ	Wetland	9-10	5/11/2005	9:30	4.5	235	13.8	--
PTZ4B	PIEZ	Wetland	9-10	5/11/2005	9:30	--	--	--	--
PTZ4C	PIEZ	Aquifer	11.6-12.6	5/12/2005	10:45	4.2	230	15.8	--
PTZ4C	PIEZ	Aquifer	11.6-12.6	5/12/2005	11:00	--	--	--	--

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Date sampled	Time	Sulfide, mg/L	Ammonia, mg/L	Phos- phate, as PO4 mg/L	Nitrate as NO3, mg/L	Iron, (Fe2+) mg/L, <10 range	Iron, (Fe2+) mg/L, >10 range	Methane (a), ug/L	Methane (b) ug/L
PTB4B	5/23/2005	14:40	< 0.50	< 3.50	--	--	--	0.12	2,530	--
PTB4C	5/23/2005	14:45	< 0.50	< 3.50	--	--	--	0.06	3,700	--
PTB5B	5/23/2005	14:50	< 0.50	< 3.50	--	--	--	0.06	378	--
PTB5C	5/23/2005	14:55	< 0.50	14.9	--	--	--	0.12	12,400	--
PTB6B	5/23/2005	15:00	< 0.50	< 3.50	--	--	--	0.06	320	--
PTB6C	5/23/2005	15:05	< 0.50	13.3	--	--	--	0.43	7,080	--
PTB7B	5/23/2005	15:10	< 0.50	< 3.50	--	--	--	0.06	440	--
PTB7C	5/23/2005	15:15	< 0.50	< 3.50	--	--	--	--	1,710	--
PTB8B	5/23/2005	15:20	< 0.50	< 3.50	--	--	--	0.06	4,050	--
PTB8C	5/23/2005	15:25	< 0.50	14.0	--	--	--	0.12	8,040	--
PTB9B	5/23/2005	15:30	< 0.50	< 3.50	--	--	--	0.06	<44.8	--
PTB9C	5/23/2005	15:35	< 0.50	< 3.50	--	--	--	0.06	6,980	--
Perimeter Sampling										
PTZ1A	5/9/2005	13:30	> 1.50	< 0.7	< 0.75	< 0.20	0.06	4.88	171	179
PTZ1B	5/10/2005	8:50	< 0.10	< 0.7	1.75	< 0.20	0.48	--	3,090	2,900
PTZ1B	5/10/2005	8:50	--	--	--	--	0.83	--	--	--
PTZ1C	5/9/2005	14:35	0.23	< 0.7	< 0.75	0.60	0.02	0.06	238	251
PTZ1C	5/9/2005	14:35	--	--	--	--	0.01	--	--	--
PTZ1D	5/9/2005	11:25	0.46	2.95	--	0.92	0.01	--	<36.6	<27.0
PTZ1D	5/9/2005	11:25	--	--	--	--	0.06	--	--	--
PTZ1D	5/9/2005	11:25	--	--	--	--	0.01	--	--	--
PTZ1E	5/10/2005	9:25	< 0.10	< 0.7	< 0.75	< 0.20	1.51	--	<34.7	<36.8
PTZ2A	5/10/2005	10:45	< 0.10	< 0.7	6.50	< 0.20	0.17	--	9,880	9,840
PTZ2A	5/10/2005	10:45	--	--	11.0	--	--	--	--	--
PTZ2B	5/10/2005	11:00	< 0.10	1.15	5.20	0.63	0.11	--	9,140	9,470
PTZ2B	5/10/2005	11:00	--	--	--	--	0.10	--	--	--
PTZ2C	5/9/2005	11:15	0.56	< 0.7	< 0.75	< 0.20	--	1.85	2,580	2,680
PTZ2C	5/9/2005	11:15	--	--	--	--	--	1.80	--	--
PTZ2C	5/9/2005	11:15	--	--	--	--	--	1.85	--	--
PTZ2C	5/9/2005	11:15	--	--	--	--	--	0.13	--	--
PTZ2D	5/9/2005	11:50	< 0.10	< 0.7	< 0.75	> 1.50	--	0.01	<31.4	<35.3
PTZ2D	5/9/2005	11:50	< 0.10	< 0.7	< 0.75	0.92	0.06	--	--	--
PTZ2E	5/9/2005	12:20	< 0.10	< 0.7	--	0.54	--	0.06	<33.9	<35.6
PTZ4A	5/10/2005	14:00	0.18	< 0.7	< 0.75	< 0.20	0.35	--	44.7	40.7
PTZ4A	5/10/2005	14:00	0.11	< 0.7	< 0.75	--	0.02	--	--	--
PTZ4A	5/10/2005	14:00	--	--	--	--	0.22	--	--	--
PTZ4B	5/11/2005	9:30	< 0.10	< 0.7	< 0.75	< 0.20	0.20	--	<29.4	<30.0
PTZ4B	5/11/2005	9:30	< 0.10	< 0.7	--	--	0.20	--	--	--
PTZ4C	5/12/2005	10:45	< 0.10	< 0.7	< 0.75	0.77	0.01	--	<32.5	<33.7
PTZ4C	5/12/2005	11:00	--	--	--	--	0.01	--	<37.2	<37.2

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Device Type	Hydro-geologic Unit	Depth, Screened Interval (ft bls)	Date sampled	Time	pH	Specific conductance, $\mu\text{S}/\text{cm}$	Water temp. deg C.	Alkalinity, mg/L as CaCO_3
PTC6A	CMT	Wetland	2.8-3.2	5/9/2005	15:45	4.1	774	23.1	--
PTC6B	CMT	Wetland	4.8-5.2	5/9/2005	14:40	4.0	793	20.9	--
PTC6C	CMT	Wetland	7.8-8.2	5/10/2005	10:15	5.5	753	19.6	20.0
PTC6C	CMT	Wetland	7.8-8.2	5/10/2005	10:15	--	--	--	--
PTC6D	CMT	Wetland	9.8-10.2	5/11/2005	8:55	5.7	961	19.1	7.8
PTC6D	CMT	Wetland	9.8-10.2	5/18/2005	9:14	5.4	857	18.3	--
PTC6E	CMT	Aquifer	11.8-12.0	5/11/2005	9:19	4.7	836	20.8	--
PTC6E	CMT	Aquifer	11.8-12.0	5/12/2005	9:40	--	--	--	--
PTC7A	CMT	Wetland	2.8-3.2	5/12/2005	9:30	4.2	702	19.1	--
PTC7A	CMT	Wetland	2.8-3.2	5/12/2005	9:30	--	--	--	--
PTC7B	CMT	Wetland	4.8-5.2	5/12/2005	9:50	4.0	767	17.7	--
PTC7B	CMT	Wetland	4.8-5.2	5/12/2005	9:50	--	--	--	--
PTC7B	CMT	Wetland	4.8-5.2	5/12/2005	9:50	--	--	--	--
PTC7C	CMT	Wetland	7.8-8.2	5/11/2005	8:00	6.0	690	18.6	41.4
PTC7D	CMT	Wetland	10.3-10.5	5/12/2005	10:15	5.6	907	17.9	--
PTC8A	CMT	Wetland	2.8-3.2	5/9/2005	16:30	4.9	273	23.4	--
PTC8A	CMT	Wetland	2.8-3.2	5/9/2005	16:30	--	--	--	--
PTC8B	CMT	Wetland	4.8-5.2	5/9/2005	10:40	4.6	360	20.6	--
PTC8B	CMT	Wetland	4.8-5.2	5/9/2005	10:40	--	--	--	--
PTC8B	CMT	Wetland	4.8-5.2	5/9/2005	10:40	--	--	--	--
PTC8C	CMT	Wetland	7.8-8.2	5/10/2005	10:15	5.3	736	21.5	18.2
PTC8D	CMT	Wetland	9.8-10.2	5/10/2005	12:30	5.6	624	19.7	15.0
PTC8D	CMT	Wetland	9.8-10.2	5/10/2005	12:30	--	--	--	6.9
PTC8E	CMT	Aquifer	11.8-12.0	5/10/2005	12:50	4.4	570	16.3	--
PTC8E	CMT	Aquifer	11.8-12.0	5/10/2005	12:50	--	--	--	--
PTC9A	CMT	Wetland	2.8-3.2	5/11/2005	10:30	3.9	693	15.7	--
PTC9A	CMT	Wetland	2.8-3.2	5/11/2005	10:30	--	--	--	--
PTC9B	CMT	Wetland	4.8-5.2	5/11/2005	10:50	3.9	638	15.2	--
PTC9C	CMT	Wetland	7.8-8.2	5/11/2005	11:05	3.9	625	15.5	--
PTC9C	CMT	Wetland	7.8-8.2	5/11/2005	11:05	--	--	--	--
PTC9D	CMT	Wetland	9.8-10.2	5/10/2005	13:55	3.9	809	23.8	--
PTC9E	CMT	Aquifer	12.1-12.3	5/11/2005	10:02	3.8	709	15	--
PTC9E	CMT	Aquifer	12.1-12.3	5/11/2005	10:02	--	--	--	--
PTC10A	CMT	Wetland	2.4-2.8	5/9/2005	15:35	3.8	888	22.1	--
PTC10A	CMT	Wetland	2.4-2.8	5/9/2005	15:35	--	--	--	--
PTC10B	CMT	Wetland	4.4-4.8	5/10/2005	7:50	3.9	846	18	--
PTC10B	CMT	Wetland	4.4-4.8	5/10/2005	7:50	--	--	--	--
PTC10B	CMT	Wetland	4.4-4.8	5/10/2005	7:50	--	--	--	--
PTC10B	CMT	Wetland	4.4-4.8	5/10/2005	7:50	--	--	--	--
PTC10C	CMT	Wetland	7.4-7.8	5/10/2005	8:10	3.8	931	18.3	--
PTC10D	CMT	Wetland	9.4-9.8	5/10/2005	8:40	5.2	1,100	16.7	17.4
PTC10E	CMT	Aquifer	12.6-12.8	5/10/2005	9:15	4.6	902	17.6	--

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Date sampled	Time	Sulfide, mg/L	Ammonia, mg/L	Phos- phate, as PO4 mg/L	Nitrate as NO3, mg/L	Iron, (Fe2+) mg/L, <10 range	Iron, (Fe2+) mg/L, >10 range	Methane (a), ug/L	Methane (b) ug/L
PTC6A	5/9/2005	15:45	0.10	< 0.7	< 0.75	< 0.20	1.34	--	<41.8	<36.9
PTC6B	5/9/2005	14:40	< 0.10	< 0.7	< 0.75	0.40	0.74	--	<41.8	<35.5
PTC6C	5/10/2005	10:15	< 0.10	< 0.7	< 0.75	< 0.20	--	3.95	<34.4	<34.7
PTC6C	5/10/2005	10:15	< 0.10	--	< 0.75	--	--	--	--	--
PTC6D	5/11/2005	8:55	< 0.10	< 0.7	< 0.75	< 0.20	9.89	--	77.8	82.1
PTC6D	5/18/2005	9:14	< 0.10	--	--	--	8.82	--	--	--
PTC6E	5/11/2005	9:19	< 0.10	< 0.7	< 0.75	< 0.20	11.0	--	<35.0	<33.4
PTC6E	5/12/2005	9:40	--	--	--	--	--	--	--	--
PTC7A	5/12/2005	9:30	0.68	< 0.7	< 0.75	< 0.20	4.19	--	94.2	97.8
PTC7A	5/12/2005	9:30	--	< 0.7	--	--	--	--	--	--
PTC7B	5/12/2005	9:50	0.56	< 0.7	< 0.75	< 0.20	3.52	--	91.1	91.1
PTC7B	5/12/2005	9:50	--	--	--	--	3.58	--	--	--
PTC7B	5/12/2005	9:50	--	--	--	--	3.44	--	--	--
PTC7C	5/11/2005	8:00	< 0.10	< 0.7	< 0.75	< 0.20	8.59	--	387	374
PTC7D	5/12/2005	10:15	0.19	< 0.7	< 0.75	< 0.20	--	10.7	169	212
PTC8A	5/9/2005	16:30	< 0.10	< 0.7	< 0.75	< 0.20	0.19	--	<31.9	<37.4
PTC8A	5/9/2005	16:30	--	--	--	--	0.01	--	--	--
PTC8B	5/9/2005	10:40	0.28	0.70	0.90	0.28	0.28	--	<34.9	<36.2
PTC8B	5/9/2005	10:40	--	--	--	--	0.30	--	--	--
PTC8B	5/9/2005	10:40	--	--	--	--	0.30	--	--	--
PTC8C	5/10/2005	10:15	< 0.10	< 0.7	< 0.75	< 0.20	--	7.41	166	142
PTC8D	5/10/2005	12:30	0.36	1.07	1.95	0.73	1.78	--	92.9	84.2
PTC8D	5/10/2005	12:30	--	--	--	--	--	--	--	--
PTC8E	5/10/2005	12:50	< 0.10	< 0.7	< 0.75	0.80	1.33	--	<35.7	29.5
PTC8E	5/10/2005	12:50	< 0.10	--	--	--	0.98	--	--	--
PTC9A	5/11/2005	10:30	0.18	< 0.7	0.85	< 0.20	4.20	--	103	105
PTC9A	5/11/2005	10:30	--	--	< 0.75	0.20	--	--	--	--
PTC9B	5/11/2005	10:50	< 0.10	< 0.7	< 0.75	< 0.20	4.94	--	--	--
PTC9C	5/11/2005	11:05	0.17	< 0.7	< 0.75	< 0.20	5.75	--	57.3	56.0
PTC9C	5/11/2005	11:05	--	--	< 0.75	--	--	--	--	--
PTC9D	5/10/2005	13:55	< 0.10	< 0.7	< 0.75	< 0.20	6.60	--	46.2	43.1
PTC9E	5/11/2005	10:02	< 0.10	< 0.7	< 0.75	1.02	0.42	--	76.6	74.3
PTC9E	5/11/2005	10:02	--	--	--	--	0.30	--	--	--
PTC10A	5/9/2005	15:35	0.34	< 0.7	< 0.75	< 0.20	4.06	--	<31.4	<34.9
PTC10A	5/9/2005	15:35	--	--	--	--	4.88	--	--	--
PTC10B	5/10/2005	7:50	< 0.10	< 0.7	< 0.75	< 0.20	4.31	--	<33.6	<39.2
PTC10B	5/10/2005	7:50	--	--	--	--	--	4.99	--	--
PTC10B	5/10/2005	7:50	--	--	--	--	4.73	--	--	--
PTC10B	5/10/2005	7:50	--	--	--	--	4.34	--	--	--
PTC10C	5/10/2005	8:10	< 0.10	< 0.7	< 0.75	< 0.20	--	22.8	63.6	62.7
PTC10D	5/10/2005	8:40	< 0.10	< 0.7	< 0.75	< 0.20	--	18.1	109	104
PTC10E	5/10/2005	9:15	< 0.10	< 0.7	< 0.75	< 0.20	--	20.1	44.8	45.9

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Device Type	Hydro-geologic Unit	Depth, Screened Interval (ft bls)	Date sampled	Time	pH	Specific conductance, μ S/cm	Water temp. deg C.	Alkalinity, mg/L as CaCO ₃
PTC11A	CMT	Wetland	1.8-2.2	5/10/2005	15:45	3.8	742	21.2	--
PTC11A	CMT	Wetland	1.8-2.2	5/10/2005	15:45	--	--	--	--
PTC11B	CMT	Wetland	4.8-5.2	5/10/2005	15:35	3.8	725	20.2	--
PTC11C	CMT	Wetland	7.8-8.2	5/10/2005	15:20	3.8	736	19.2	--
PTC11C	CMT	Wetland	7.8-8.2	5/10/2005	15:20	--	--	--	--
PTC11D	CMT	Wetland	9.8-10.2	5/10/2005	15:10	3.8	718	17.8	--
PTC11E	CMT	Wetland	11.8-12.2	5/10/2005	15:00	3.8	724	21.4	--
PTC11E	CMT	Wetland	11.8-12.2	5/10/2005	15:00	--	--	--	--
PTC11F	CMT	Aquifer	14-14.2	5/10/2005	14:00	3.8	713	18.2	--
PTC11F	CMT	Aquifer	14-14.2	5/10/2005	14:00	--	--	--	--
PTC12A	CMT	Wetland	2.8-3.2	5/9/2005	12:30	3.8	755	21	--
PTC12A	CMT	Wetland	2.8-3.2	5/9/2005	12:30	--	--	--	--
PTC12A	CMT	Wetland	2.8-3.2	5/9/2005	12:30	--	--	--	--
PTC12B	CMT	Wetland	4.8-5.2	5/9/2005	14:10	4.2	742	20.7	--
PTC12B	CMT	Wetland	4.8-5.2	5/9/2005	14:10	--	--	--	--
PTC12B	CMT	Wetland	4.8-5.2	5/9/2005	14:10	--	--	--	--
PTC12B	CMT	Wetland	4.8-5.2	5/9/2005	14:10	--	--	--	--
PTC12C	CMT	Wetland	7.8-8.2	5/9/2005	12:40	5.9	769	18.4	--
PTC12D	CMT	Wetland	9.8-10.2	5/9/2005	13:30	5.9	716	18.2	56.8
PTC12D	CMT	Wetland	9.8-10.2	5/9/2005	13:30	--	--	--	--
PTC12E	CMT	Wetland	11.8-12.2	5/10/2005	9:50	3.4	814	20.7	--
PTC12E	CMT	Wetland	11.8-12.2	5/10/2005	9:50	--	--	--	--
PTC12E	CMT	Wetland	11.8-12.2	5/10/2005	9:50	--	--	--	--
PTC12F	CMT	Aquifer	15.2-15.4	5/11/2005	13:35	5.7	678	18.3	39.4
PTC12F	CMT	Aquifer	15.2-15.4	5/11/2005	13:35	--	--	--	--
PTC12F	CMT	Aquifer	15.2-15.4	5/11/2005	13:35	--	--	--	--
PTC13A	CMT	Wetland	2.8-3.2	5/11/2005	11:15	3.8	732	20.4	--
PTC13A	CMT	Wetland	2.8-3.2	5/11/2005	11:15	--	--	--	--
PTC13A	CMT	Wetland	2.8-3.2	5/11/2005	11:15	--	--	--	--
PTC13B	CMT	Wetland	4.8-5.2	5/11/2005	11:40	4.0	687	19.7	--
PTC13B	CMT	Wetland	4.8-5.2	5/11/2005	11:45	--	--	--	--
PTC13C	CMT	Wetland	7.8-8.2	5/11/2005	13:00	4.0	698	19.3	--
PTC13C	CMT	Wetland	7.8-8.2	5/11/2005	13:00	--	--	--	--
PTC13D	CMT	Wetland	9.8-10.2	5/11/2005	13:35	3.5	738	19.3	--
PTC13D	CMT	Wetland	9.8-10.2	5/11/2005	13:35	--	--	--	--
PTC13D	CMT	Wetland	9.8-10.2	5/11/2005	13:35	--	--	--	--

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Date sampled	Time	Sulfide, mg/L	Ammonia, mg/L	Phos- phate, as PO4 mg/L	Nitrate as NO3, mg/L	Iron, (Fe2+) mg/L, <10 range	Iron, (Fe2+) mg/L, >10 range	Methane (a), ug/L	Methane (b) ug/L
PTC11A	5/10/2005	15:45	< 0.10	< 0.7	< 0.75	0.95	0.48	--	<32.3	<34.7
PTC11A	5/10/2005	15:45	--	--	--	0.84	0.69	--	--	--
PTC11B	5/10/2005	15:35	0.22	< 0.7	1.65	0.87	0.74	--	<32.1	<35.3
PTC11C	5/10/2005	15:20	< 0.10	< 0.7	< 0.75	1.15	1.67	--	39.8	43.6
PTC11C	5/10/2005	15:20	< 0.10	< 0.7	--	1.08	--	--	--	--
PTC11D	5/10/2005	15:10	< 0.10	< 0.7	< 0.75	0.86	1.54	--	<37.7	<35.8
PTC11E	5/10/2005	15:00	< 0.10	< 0.7	< 0.75	1.20	0.23	--	<42.6	<33.4
PTC11E	5/10/2005	15:00	< 0.10	< 0.7	< 0.75	0.70	0.90	--	--	--
PTC11F	5/10/2005	14:00	0.18	< 0.7	< 0.75	0.50	0.15	--	<35.4	<36.5
PTC11F	5/10/2005	14:00	--	--	--	1.15	--	--	--	--
PTC12A	5/9/2005	12:30	0.75	< 0.7	< 0.75	< 0.20	--	17.1	43.2	42.1
PTC12A	5/9/2005	12:30	--	--	--	--	--	20.2	--	--
PTC12A	5/9/2005	12:30	--	--	--	--	--	17.1	--	--
PTC12B	5/9/2005	14:10	0.31	< 0.7	< 0.75	0.20	--	5.12	84.9	80.6
PTC12B	5/9/2005	14:10	--	--	--	--	--	4.38	--	--
PTC12B	5/9/2005	14:10	--	--	--	--	--	4.69	--	--
PTC12B	5/9/2005	14:10	--	--	--	--	4.52	--	--	--
PTC12C	5/9/2005	12:40	< 0.10	< 0.7	< 0.75	< 0.20	--	3.76	89.5	83.5
PTC12D	5/9/2005	13:30	< 0.10	< 0.7	0.75	< 0.20	11.0	--	138	126
PTC12D	5/9/2005	13:30	--	--	--	--	--	11.9	--	--
PTC12E	5/10/2005	9:50	< 0.10	< 0.7	< 0.75	< 0.20	1.10	--	274	268
PTC12E	5/10/2005	9:50	--	--	--	--	--	15.1	--	--
PTC12E	5/10/2005	9:50	--	--	--	--	--	14.9	--	--
PTC12F	5/11/2005	13:35	0.14	< 0.7	0.85	< 0.20	--	51.1	251	245
PTC12F	5/11/2005	13:35	--	--	--	--	--	49.2	240	232
PTC12F	5/11/2005	13:35	--	--	--	--	--	49.2	--	--
PTC13A	5/11/2005	11:15	< 0.10	< 0.7	< 0.75	0.90	0.78	--	<31.0	<34.4
PTC13A	5/11/2005	11:15	--	--	--	--	--	7.16	--	--
PTC13A	5/11/2005	11:15	--	--	--	--	0.04	--	--	--
PTC13B	5/11/2005	11:40	< 0.10	< 0.7	< 0.75	< 0.20	4.12	--	50.7	48.9
PTC13B	5/11/2005	11:45	--	--	--	--	0.35	--	48.7	51.0
PTC13C	5/11/2005	13:00	0.11	< 0.7	< 0.75	< 0.20	5.86	--	<34.7	<36.9
PTC13C	5/11/2005	13:00	< 0.10	< 0.7	--	--	0.56	--	--	--
PTC13D	5/11/2005	13:35	< 0.10	< 0.7	< 0.75	< 0.20	10.9	--	<36.2	35.9
PTC13D	5/11/2005	13:35	< 0.10	< 0.7	--	--	10.8	--	--	--
PTC13D	5/11/2005	13:35	--	--	--	--	1.20	--	--	--

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Device Type	Hydro-geologic Unit	Depth, Screened Interval (ft bls)	Date sampled	Time	pH	Specific conductance, $\mu\text{S}/\text{cm}$	Water temp. deg C.	Alkalinity, mg/L as CaCO_3
Biomat Sampling June-July 2005									
Below Mat Sampling									
PTN1	micro	Wetland	1	6/16/2005	9:37	4.2	826	26.3	--
PTN1	micro	Wetland	1	6/30/2005	10:22	4.0	803	30.6	--
PTN2	micro	Wetland	1	6/16/2005	10:00	4.2	720	26.1	--
PTN2	micro	Wetland	1	6/30/2005	12:39	4.3	700	30.3	--
PTN3	micro	Wetland	1	6/16/2005	10:21	4.6	688	28	--
PTN3	micro	Wetland	1	6/30/2005	10:47	4.4	694	27.8	--
PTN4	micro	Wetland	1	6/16/2005	9:57	3.2	1,150	25.9	--
PTN4	micro	Wetland	1	6/30/2005	11:25	3.5	951	31.3	--
PTN5	micro	Wetland	1	6/16/2005	10:13	4.3	704	26.4	--
PTN5	micro	Wetland	1	6/30/2005	12:24	4.1	690	29.5	--
PTN6	micro	Wetland	1	6/16/2005	10:34	4.3	694	28	--
PTN6	micro	Wetland	1	6/30/2005	11:16	4.3	577	27.1	--
PTN7	micro	Wetland	1	6/16/2005	10:10	3.4	1,100	26.6	--
PTN7	micro	Wetland	1	6/30/2005	11:07	3.5	964	30.4	--
PTN8	micro	Wetland	1	6/16/2005	10:24	4.7	749	28.9	--
PTN8	micro	Wetland	1	6/30/2005	12:11	4.8	701	29.6	--
PTN9	micro	Wetland	1	6/16/2005	10:40	4.3	704	27.7	--
PTN9	micro	Wetland	1	6/30/2005	10:13	4.5	672	26.4	--
PTC1A	CMT	Wetland	4.8-5.2	6/23/2005	14:00	3.9	836	28.2	--
PTC1B	CMT	Wetland	7.8-8.2	6/24/2005	8:35	5.5	885	25.2	17.2
PTC1C	CMT	Wetland	11.3-11.5	6/24/2005	10:40	3.8	849	27.3	--
PTC2A	CMT	Wetland	4.8-5.2	6/23/2005	13:13	4.0	701	25.5	--
PTC2A	CMT	Wetland	4.8-5.2	6/30/2005	9:20	3.9	670	26.5	--
PTC2A	CMT	Wetland	4.8-5.2	6/30/2005	9:20	--	--	--	--
PTC2B	CMT	Wetland	7.8-8.2	6/24/2005	9:10	5.6	812	23.1	--
PTC2B	CMT	Wetland	7.8-8.2	6/28/2005	8:15	--	--	--	33.2
PTC2C	CMT	Wetland	11.8-12.0	6/24/2005	13:15	6.1	852	26.3	21.7
PTC3A	CMT	Wetland	4.4-4.8	6/24/2005	7:40	3.9	777	25.2	--
PTC3B	CMT	Wetland	7.4-7.8	6/24/2005	8:05	4.9	858	30.5	5.5
PTC3B	CMT	Wetland	7.4-7.8	6/24/2005	8:05	--	--	--	--
PTC3C	CMT	Wetland	13.1-13.3	6/24/2005	8:40	3.8	803	28.8	--
PTC4A	CMT	Wetland	4.8-5.2	6/23/2005	9:17	3.8	866	23.5	--
PTC4A	CMT	Wetland	4.8-5.2	6/23/2005	9:17	--	--	--	--
PTC4A	CMT	Wetland	4.8-5.2	6/23/2005	9:17	--	--	--	--
PTC4A	CMT	Wetland	4.8-5.2	6/30/2005	9:30	3.9	851	25.2	--
PTC4B	CMT	Wetland	7.8-8.2	6/23/2005	10:27	3.8	849	25.9	--
PTC4B	CMT	Wetland	7.8-8.3	6/23/2005	10:27	--	--	--	--
PTC4C	CMT	Wetland	11.8-12.0	6/23/2005	11:05	3.8	821	24.1	--
PTC4C	CMT	Wetland	11.8-12.0	6/23/2005	11:05	--	--	--	--

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Date sampled	Time	Sulfide, mg/L	Ammonia, mg/L	Phos- phate, as PO4 mg/L	Nitrate as NO3, mg/L	Iron, (Fe2+) mg/L, <10 range	Iron, (Fe2+) mg/L, >10 range	Methane (a), ug/L	Methane (b) ug/L
Biomat Sampling June-July 2005										
Below Mat Sampling										
PTN1	6/16/2005	9:37	--	--	--	--	--	--	--	--
PTN1	6/30/2005	10:22	--	--	--	--	--	13.6	139	133
PTN2	6/16/2005	10:00	--	--	--	--	--	--	--	--
PTN2	6/30/2005	12:39	--	--	--	--	--	16.0	<34.4	<34.2
PTN3	6/16/2005	10:21	--	--	--	--	--	--	--	--
PTN3	6/30/2005	10:47	--	--	--	--	--	17.0	46.9	46.6
PTN4	6/16/2005	9:57	--	--	--	--	--	--	--	--
PTN4	6/30/2005	11:25	--	--	--	--	--	15.5	212	183
PTN5	6/16/2005	10:13	--	--	--	--	--	--	--	--
PTN5	6/30/2005	12:24	--	--	--	--	11.0	--	<38.6	40.4
PTN6	6/16/2005	10:34	--	--	--	--	--	--	--	--
PTN6	6/30/2005	11:16	--	--	--	--	3.81	--	30.3	36.5
PTN7	6/16/2005	10:10	--	--	--	--	--	--	--	--
PTN7	6/30/2005	11:07	--	--	--	--	--	35.4	170	165
PTN8	6/16/2005	10:24	--	--	--	--	--	--	--	--
PTN8	6/30/2005	12:11	--	--	--	--	--	42.9	121	122
PTN9	6/16/2005	10:40	--	--	--	--	--	--	--	--
PTN9	6/30/2005	10:13	--	--	--	--	1.94	--	196	217
PTC1A	6/23/2005	14:00	< 0.10	< 0.7	< 0.75	< 0.20	4.18	--	45.7	47.2
PTC1B	6/24/2005	8:35	0.12	< 0.7	1.00	0.41	--	11.6	67.0	67.3
PTC1C	6/24/2005	10:40	< 0.10	< 0.7	< 0.75	0.28	1.71	--	45.3	39.2
PTC2A	6/23/2005	13:13	< 0.10	< 0.7	< 0.75	< 0.20	1.30	--	<34.3	<37.8
PTC2A	6/30/2005	9:20	--	--	--	--	--	--	38.1	<36.6
PTC2A	6/30/2005	9:20	--	--	--	--	--	--	35.5	<36.9
PTC2B	6/24/2005	9:10	--	--	--	--	1.23	--	43.2	35.8
PTC2B	6/28/2005	8:15	< 0.10	< 0.7	< 0.75	< 0.20	--	10.7	<29.7	<37.0
PTC2C	6/24/2005	13:15	0.19	< 0.7	< 0.75	< 0.20	--	16.7	54.0	64.9
PTC3A	6/24/2005	7:40	0.11	< 0.7	< 0.75	< 0.20	5.12	--	77.0	73.5
PTC3B	6/24/2005	8:05	0.14	< 0.7	< 0.75	< 0.20	--	21.3	<34.8	<38.0
PTC3B	6/24/2005	8:05	0.25	--	--	--	--	--	--	--
PTC3C	6/24/2005	8:40	< 0.10	< 0.7	< 0.75	0.77	0.98	--	<29.8	<28.5
PTC4A	6/23/2005	9:17	< 0.10	< 0.7	< 0.75	< 0.20	0.61	--	<33.7	<36.3
PTC4A	6/23/2005	9:17	--	--	--	--	2.45	--	<38.8	<38.0
PTC4A	6/23/2005	9:17	--	--	--	--	--	--	<33.1	<34.3
PTC4A	6/30/2005	9:30	--	--	--	--	2.41	--	--	--
PTC4B	6/23/2005	10:27	< 0.10	< 0.7	< 0.75	0.60	0.19	--	<44.4	<31.7
PTC4B	6/23/2005	10:27	--	--	--	--	2.64	--	--	--
PTC4C	6/23/2005	11:05	0.35	< 0.7	0.95	1.01	0.25	--	<34.7	<32.3
PTC4C	6/23/2005	11:05	--	--	--	--	0.29	--	--	--

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Device Type	Hydro-geologic Unit	Depth, Screened Interval (ft bls)	Date sampled	Time	pH	Specific conductance, $\mu\text{S}/\text{cm}$	Water temp. deg C.	Alkalinity, mg/L as CaCO_3
PTC5A	CMT	Wetland	4.8-5.2	6/24/2005	11:00	4.1	759	25	--
PTC5B	CMT	Wetland	7.8-8.2	6/24/2005	11:26	3.9	752	25.4	--
PTC5C	CMT	Wetland	11.8-12.0	6/24/2005	14:15	4.5	795	25.5	--
PTB1B	DS	Reactive mat	-0.35	7/6/2005	15:28	--	--	--	--
PTB1C	DS	Reactive mat	0.01	7/6/2005	15:40	--	--	--	--
PTB2B	DS	Reactive mat	-0.35	7/6/2005	15:48	--	--	--	--
PTB2C	DS	Reactive mat	0.01	7/6/2005	15:53	--	--	--	--
PTB3B	DS	Reactive mat	-0.35	7/6/2005	16:00	--	--	--	--
PTB3C	DS	Reactive mat	0.01	7/6/2005	16:05	--	--	--	--
PTB4B	DS	Reactive mat	-0.35	7/6/2005	16:12	--	--	--	--
PTB4C	DS	Reactive mat	0.01	7/6/2005	16:17	--	--	--	--
PTB5B	DS	Reactive mat	-0.35	7/6/2005	16:22	--	--	--	--
PTB5C	DS	Reactive mat	0.01	7/6/2005	16:28	--	--	--	--
PTB6B	DS	Reactive mat	-0.35	7/6/2005	16:39	--	--	--	--
PTB6C	DS	Reactive mat	0.01	7/6/2005	16:45	--	--	--	--
PTB7B	DS	Reactive mat	-0.35	7/6/2005	16:51	--	--	--	--
PTB7C	DS	Reactive mat	0.01	7/6/2005	16:56	--	--	--	--
PTB8B	DS	Reactive mat	-0.35	7/6/2005	17:00	--	--	--	--
PTB8C	DS	Reactive mat	0.01	7/6/2005	17:05	--	--	--	--
PTB9B	DS	Reactive mat	-0.35	7/6/2005	17:12	--	--	--	--
PTB9C	DS	Reactive mat	0.01	7/6/2005	17:17	--	--	--	--
Perimeter Sampling									
PTZ1A	PIEZ	Wetland	3.5-4.5	6/20/2005	11:25	4.0	972	21.2	--
PTZ1B	PIEZ	Wetland	7.5-8.5	6/20/2005	15:00	6.0	409	23.6	60.7
PTZ1C	PIEZ	Aquifer	13-14	6/20/2005	12:30	4.1	865	19.1	--
PTZ1D	PIEZ	Aquifer	24.7-25.7	6/20/2005	14:06	5.5	185	18.7	12.9
PTZ1E	PIEZ	Aquifer	35-36	6/21/2005	13:30	4.5	383	24.2	--
PTZ2A	PIEZ	Wetland	6-7	6/20/2005	11:20	6.6	1,710	18.2	355
PTZ2A	PIEZ	Wetland	6-7	6/20/2005	11:20	6.6	1,710	18.2	--
PTZ2B	PIEZ	Wetland	12-13	6/20/2005	11:30	6.7	840	16.6	190
PTZ2B	PIEZ	Wetland	12-13	6/20/2005	11:30	6.7	840	16.6	150
PTZ2C	PIEZ	Aquifer	20-21	6/20/2005	11:35	6.0	615	17.1	36.4
PTZ2C	PIEZ	Aquifer	20-21	6/20/2005	11:35	6.0	615	17.1	--
PTZ2D	PIEZ	Aquifer	29.5-30.5	6/20/2005	11:50	4.3	618	17	--
PTZ2E	PIEZ	Aquifer	37.7-38.7	6/20/2005	12:00	4.6	274	15.3	--
PTZ4A	PIEZ	Wetland	6.5-7.5	6/22/2005	9:45	5.6	186	16.3	9.3
PTZ4A	PIEZ	Wetland	6.5-7.5	6/22/2005	9:45	5.6	186	16.3	8.9
PTZ4B	PIEZ	Wetland	9-10	6/22/2005	10:44	5.5	234	16.1	6.5
PTZ4C	PIEZ	Aquifer	11.6-12.6	6/22/2005	11:42	4.3	279	14.8	--

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Date sampled	Time	Sulfide, mg/L	Ammonia, mg/L	Phos- phate, as PO4 mg/L	Nitrate as NO3, mg/L	Iron, (Fe2+) mg/L, <10 range	Iron, (Fe2+) mg/L, >10 range	Methane (a), ug/L	Methane (b) ug/L
PTC5A	6/24/2005	11:00	< 0.10	< 0.7	< 0.75	< 0.20	3.28	--	<23.7	<34.3
PTC5B	6/24/2005	11:26	< 0.10	0.73	< 0.75	0.76	2.21	--	<33.1	<33.9
PTC5C	6/24/2005	14:15	0.18	< 0.7	< 0.75	< 0.20	--	16.6	<34.7	<28.0
PTB1B	7/6/2005	15:28	< 0.25	< 1.94	--	--	--	0.72	--	--
PTB1C	7/6/2005	15:40	< 0.25	< 2.19	--	--	--	0.35	--	--
PTB2B	7/6/2005	15:48	< 0.25	< 1.94	--	--	--	0.04	--	--
PTB2C	7/6/2005	15:53	< 0.25	5.30	--	--	--	0.04	--	--
PTB3B	7/6/2005	16:00	< 0.25	< 1.75	--	--	--	0.04	--	--
PTB3C	7/6/2005	16:05	< 0.25	5.45	--	--	--	0.10	--	--
PTB4B	7/6/2005	16:12	< 0.25	< 1.75	--	--	--	0.41	--	--
PTB4C	7/6/2005	16:17	< 0.25	< 1.75	--	--	--	0.04	--	--
PTB5B	7/6/2005	16:22	< 0.25	< 1.75	--	--	--	0.04	--	--
PTB5C	7/6/2005	16:28	< 0.25	4.73	--	--	--	0.10	--	--
PTB6B	7/6/2005	16:39	< 0.25	< 1.75	--	--	--	0.04	--	--
PTB6C	7/6/2005	16:45	< 0.25	< 1.75	--	--	--	0.04	--	--
PTB7B	7/6/2005	16:51	< 0.25	< 1.75	--	--	--	0.90	--	--
PTB7C	7/6/2005	16:56	< 0.25	< 1.75	--	--	--	0.53	--	--
PTB8B	7/6/2005	17:00	< 0.25	< 1.94	--	--	--	0.17	--	--
PTB8C	7/6/2005	17:05	< 0.25	4.63	--	--	--	0.17	--	--
PTB9B	7/6/2005	17:12	< 0.25	< 1.75	--	--	--	0.04	--	--
PTB9C	7/6/2005	17:17	< 0.25	< 1.75	--	--	--	0.04	--	--
Perimeter Sampling										
PTZ1A	6/20/2005	11:25	1.73	< 0.7	< 0.75	< 0.20	5.08	--	186	179
PTZ1B	6/20/2005	15:00	0.21	< 0.7	2.00	< 0.20	0.72	--	98.1	98.7
PTZ1C	6/20/2005	12:30	< 0.10	< 0.7	< 0.75	0.79	0.00	--	228	236
PTZ1D	6/20/2005	14:06	0.38	1.07	1.05	0.27	0.00	--	<33.0	<35.4
PTZ1E	6/21/2005	13:30	< 0.10	< 0.7	< 0.75	< 0.20	0.70	--	<45.7	<29.8
PTZ2A	6/20/2005	11:20	< 0.10	< 0.7	9.92	< 0.20	0.15	--	10,400	10,400
PTZ2A	6/20/2005	11:20	--	< 0.7	--	--	0.16	--	--	--
PTZ2B	6/20/2005	11:30	0.16	< 0.7	5.25	0.36	0.26	--	8,130	8,240
PTZ2B	6/20/2005	11:30	--	--	--	--	0.31	--	--	--
PTZ2C	6/20/2005	11:35	0.51	< 0.7	< 0.75	< 0.20	1.75	--	2,450	2,450
PTZ2C	6/20/2005	11:35	0.40	--	--	--	--	--	--	--
PTZ2D	6/20/2005	11:50	< 0.10	< 0.7	< 0.75	1.21	0.00	--	<25.5	<44.0
PTZ2E	6/20/2005	12:00	< 0.10	< 0.7	< 0.75	0.34	0.00	--	<19.6	<31.9
PTZ4A	6/22/2005	9:45	0.31	< 0.7	< 0.75	< 0.20	--	--	<34.3	<44.8
PTZ4A	6/22/2005	9:45	--	--	--	--	--	--	--	--
PTZ4B	6/22/2005	10:44	< 0.10	< 0.7	< 0.75	< 0.20	--	--	<31.6	<28.5
PTZ4C	6/22/2005	11:42	< 0.10	< 0.7	< 0.75	1.07	0.00	--	<28.6	<27.8

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Device Type	Hydro-geologic Unit	Depth, Screened Interval (ft bls)	Date sampled	Time	pH	Specific conductance, $\mu\text{S}/\text{cm}$	Water temp. deg C.	Alkalinity, mg/L as CaCO_3
PTC6A	CMT	Wetland	2.8-3.2	6/22/2005	12:44	4.2	723	24.1	--
PTC6B	CMT	Wetland	4.8-5.2	6/22/2005	13:15	4.2	764	22.4	--
PTC6C	CMT	Wetland	7.8-8.2	6/23/2005	8:50	5.9	494	20.7	27.5
PTC6D	CMT	Wetland	9.8-10.2	6/28/2005	7:10	5.9	930	18.4	19.7
PTC6D	CMT	Wetland	9.8-10.2	6/28/2005	7:10				
PTC6E	CMT	Aquifer	11.8-12.0	6/25/2005	10:30	5.1	817	18.5	11.3
PTC7A	CMT	Wetland	2.8-3.2	6/23/2005	7:50	3.8	810	22.3	--
PTC7B	CMT	Wetland	4.8-5.2	6/23/2005	8:15	3.9	784	20.8	--
PTC7C	CMT	Wetland	7.8-8.2	6/23/2005	8:50	5.1	703	24.4	35.9
PTC7D	CMT	Wetland	10.3-10.5	6/23/2005	9:10	5.7	910	28.5	23.5
PTC8A	CMT	Wetland	2.8-3.2	6/21/2005	9:35	4.6	260	22.2	--
PTC8A	CMT	Wetland	2.8-3.2	6/21/2005	9:35	4.6	260	22.2	--
PTC8B	CMT	Wetland	4.8-5.2	6/21/2005	10:00	4.6	452	20.2	--
PTC8B	CMT	Wetland	4.8-5.2	6/21/2005	10:00	4.6	452	20.2	--
PTC8C	CMT	Wetland	7.8-8.2	6/21/2005	10:25	5.2	729	21.3	18.6
PTC8D	CMT	Wetland	9.8-10.2	6/21/2005	10:55	5.5	616	27	13.7
PTC8E	CMT	Aquifer	11.8-12.0	6/21/2005	11:15	5.1	530	19.2	--
PTC8E	CMT	Aquifer	11.8-12.0	6/21/2005	11:15	5.1	530	19.2	--
PTC9A	CMT	Wetland	2.8-3.2	6/22/2005	8:10	4.0	899	25.2	--
PTC9B	CMT	Wetland	4.8-5.2	6/22/2005	8:40	3.9	807	21.5	--
PTC9C	CMT	Wetland	7.8-8.2	6/22/2005	8:55	3.9	788	20.4	--
PTC9D	CMT	Wetland	9.8-10.2	6/22/2005	9:25	3.9	708	22.9	--
PTC9E	CMT	Aquifer	12.1-12.3	6/22/2005	9:55	3.7	865	21.6	--
PTC10A	CMT	Wetland	2.4-2.8	6/20/2005	12:15	3.8	870	22.9	--
PTC10A	CMT	Wetland	2.4-2.8	6/21/2005	14:05	3.7	868	26.7	--
PTC10A	CMT	Wetland	2.4-2.8	6/21/2005	14:05	3.7	868	26.7	--
PTC10B	CMT	Wetland	4.4-4.8	6/20/2005	11:50	4.0	819	22	--
PTC10B	CMT	Wetland	4.4-4.8	6/20/2005	11:50	4.0	819	22	--
PTC10B	CMT	Wetland	4.4-4.8	6/20/2005	11:50	4.0	819	22	--
PTC10B	CMT	Wetland	4.4-4.8	6/21/2005	14:25	3.8	823	23.9	--
PTC10C	CMT	Wetland	7.4-7.8	6/20/2005	10:25	4.0	863	21.5	--
PTC10C	CMT	Wetland	7.4-7.8	6/21/2005	15:25	4.6	1,020	25.1	--
PTC10C	CMT	Wetland	7.4-7.8	6/21/2005	15:25	4.6	1,020	25.1	--
PTC10C	CMT	Wetland	7.4-7.8	6/21/2005	15:25	4.6	1,020	25.1	--
PTC10D	CMT	Wetland	9.4-9.8	6/20/2005	11:30	4.8	1,080	22.2	--
PTC10D	CMT	Wetland	9.4-9.8	6/20/2005	11:30	4.9	1,100	25.3	--
PTC10E	CMT	Aquifer	12.6-12.8	6/20/2005	13:50	4.5	845	19.7	--
PTC10E	CMT	Aquifer	12.6-12.9	6/20/2005	13:50	--	--	--	--

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Date sampled	Time	Sulfide, mg/L	Ammonia, mg/L	Phos- phate, as PO4 mg/L	Nitrate as NO3, mg/L	Iron, (Fe2+) mg/L, <10 range	Iron, (Fe2+) mg/L, >10 range	Methane (a), ug/L	Methane (b) ug/L
PTC6A	6/22/2005	12:44	0.40	< 0.7	< 0.75	< 0.20	0.91	--	<34.7	<35.9
PTC6B	6/22/2005	13:15	< 0.10	< 0.7	< 0.75	< 0.20	1.18	--	<31.4	<27.5
PTC6C	6/23/2005	8:50	< 0.10	< 0.7	< 0.75	< 0.20	10.6	--	<32.6	<26.1
PTC6D	6/28/2005	7:10	< 0.10	< 0.7	< 0.75	< 0.20	--	11.7	43.0	42.7
PTC6D	6/28/2005	7:10							39.8	36.9
PTC6E	6/25/2005	10:30	< 0.10	< 0.7	< 0.75	< 0.20	10.8	--	35.1	<33.1
PTC7A	6/23/2005	7:50	0.31	< 0.7	< 0.75	< 0.20	4.28	--	36.1	42.2
PTC7B	6/23/2005	8:15	0.45	< 0.7	< 0.75	< 0.20	3.70	--	90.8	95.4
PTC7C	6/23/2005	8:50	< 0.10	< 0.7	< 0.75	< 0.20	7.69	--	316	254
PTC7D	6/23/2005	9:10	0.13	< 0.7	< 0.75	< 0.20	--	23.0	70.9	67.6
PTC8A	6/21/2005	9:35	< 0.10	< 0.7	< 0.75	< 0.20	0.74	--	<27.7	<28.7
PTC8A	6/21/2005	9:35	--	--	< 0.75	--	--	--	--	--
PTC8B	6/21/2005	10:00	0.33	< 0.7	1.20	< 0.20	0.93	--	35.2	44.0
PTC8B	6/21/2005	10:00	--	--	--	--	0.93	--	--	--
PTC8C	6/21/2005	10:25	< 0.10	< 0.7	< 0.75	< 0.20	5.73	--	102	99.5
PTC8D	6/21/2005	10:55	0.27	< 0.7	1.30	0.25	7.21	--	117	113
PTC8E	6/21/2005	11:15	0.13	< 0.7	< 0.75	0.54	0.84	--	42.5	38.3
PTC8E	6/21/2005	11:15	--	< 0.7	--	--	--	--	--	--
PTC9A	6/22/2005	8:10	< 0.10	0.72	< 0.75	< 0.20	4.01	--	98.0	97.7
PTC9B	6/22/2005	8:40	< 0.10	< 0.7	< 0.75	< 0.20	5.57	--	50.2	57.1
PTC9C	6/22/2005	8:55	< 0.10	< 0.7	< 0.75	< 0.20	5.95	--	57.0	58.7
PTC9D	6/22/2005	9:25	< 0.10	< 0.7	< 0.75	< 0.20	5.85	--	50.5	<33.8
PTC9E	6/22/2005	9:55	< 0.10	< 0.7	< 0.75	0.63	0.25	--	27.8	<31.7
PTC10A	6/20/2005	12:15	0.17	< 0.7	< 0.75	< 0.20	4.67	--	54.9	33.1
PTC10A	6/21/2005	14:05	--	--	< 0.75	--	--	--	<33.6	<33.7
PTC10A	6/21/2005	14:05	--	--	< 0.75	--	--	--	--	--
PTC10B	6/20/2005	11:50	< 0.10	< 0.7	< 0.75	< 0.20	4.02	--	35.2	33.6
PTC10B	6/20/2005	11:50	< 0.10	--	--	--	3.88	--	--	--
PTC10B	6/20/2005	11:50	--	--	--	--	3.86	--	--	--
PTC10B	6/21/2005	14:25	< 0.10	< 0.7	--	--	--	--	34.6	<42.4
PTC10C	6/20/2005	10:25	< 0.10	< 0.7	< 0.75	< 0.20	--	11.4	57.2	58.6
PTC10C	6/21/2005	15:25	--	< 0.7	--	< 0.20	--	--	69.9	71.4
PTC10C	6/21/2005	15:25	< 0.10	--	--	< 0.20	--	--	--	--
PTC10C	6/21/2005	15:25	--	--	--	< 0.20	--	--	--	--
PTC10D	6/20/2005	11:30	--	--	--	--	--	--	61.5	67.9
PTC10D	6/20/2005	11:30	< 0.10	< 0.7	< 0.75	< 0.20	--	--	--	--
PTC10E	6/20/2005	13:50	< 0.10	< 0.7	< 0.75	< 0.20	10.5	--	55.4	51.4
PTC10E	6/20/2005	13:50					9.91	--	--	--

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Device Type	Hydro-geologic Unit	Depth, Screened Interval (ft bls)	Date sampled	Time	pH	Specific conductance, $\mu\text{S}/\text{cm}$	Water temp. deg C.	Alkalinity, mg/L as CaCO_3
PTC11A	CMT	Wetland	1.8-2.2	6/20/2005	15:37	3.9	738	23.9	--
PTC11A	CMT	Wetland	1.8-2.2	6/20/2005	15:37	3.9	738	23.9	--
PTC11B	CMT	Wetland	4.8-5.2	6/21/2005	9:25	3.9	732	22.2	--
PTC11C	CMT	Wetland	7.8-8.2	6/21/2005	10:25	3.8	743	21.9	--
PTC11D	CMT	Wetland	9.8-10.2	6/21/2005	11:00	3.8	735	23.7	--
PTC11D	CMT	Wetland	9.8-10.2	6/21/2005	11:00	3.8	735	23.7	--
PTC11E	CMT	Wetland	11.8-12.2	6/21/2005	11:40	3.8	727	21.8	--
PTC11F	CMT	Aquifer	14-14.2	6/21/2005	12:18	3.8	715	21.4	--
PTC12A	CMT	Wetland	2.8-3.2	6/21/2005	8:50	3.9	745	22.2	--
PTC12A	CMT	Wetland	2.8-3.2	6/21/2005	8:50	3.9	745	22.2	--
PTC12B	CMT	Wetland	4.8-5.2	6/21/2005	9:12	4.2	734	19.8	--
PTC12B	CMT	Wetland	4.8-5.2	6/21/2005	9:12	4.2	734	19.8	--
PTC12C	CMT	Wetland	7.8-8.2	6/21/2005	10:35	5.8	834	19.6	45.7
PTC12C	CMT	Wetland	7.8-8.2	6/21/2005	10:35	5.8	834	19.6	--
PTC12D	CMT	Wetland	9.8-10.2	6/21/2005	11:10	6.0	878	18	63.9
PTC12D	CMT	Wetland	9.8-10.2	6/21/2005	11:10	6.0	878	18	--
PTC12E	CMT	Wetland	11.8-12.2	6/21/2005	11:45	3.4	845	19.1	--
PTC12F	CMT	Aquifer	15.2-15.4	6/21/2005	12:23	6.0	763	18.8	31.9
PTC12F	CMT	Aquifer	15.2-15.4	6/21/2005	12:23	6.0	763	18.8	--
PTC12F	CMT	Aquifer	15.2-15.5	6/21/2005	12:23	--	--	--	--
PTC13A	CMT	Wetland	2.8-3.2	6/21/2005	15:16	3.9	639	22.6	--
PTC13A	CMT	Wetland	2.8-3.3	6/21/2005	15:16	--	--	--	--
PTC13B	CMT	Wetland	4.8-5.2	6/21/2005	11:00	4.2	672	21.3	--
PTC13B	CMT	Wetland	4.8-5.2	6/21/2005	11:00	4.2	672	21.3	--
PTC13C	CMT	Wetland	7.8-8.2	6/21/2005	14:26	4.0	714	20.3	--
PTC13D	CMT	Wetland	9.8-10.2	6/21/2005	14:03	3.5	787	20.4	--
PTC13D	CMT	Wetland	9.8-10.2	6/21/2005	14:03	3.5	787	20.4	--

August biomat site

Below Mat Sampling

PTN1	micro	Wetland	1	8/8/2005	14:35	3.6	786	30.5	--
PTN2	micro	Wetland	1	8/8/2005	10:55	4.1	649	31.5	--
PTN3	micro	Wetland	1	8/8/2005	12:05	4.4	615	30.6	--
PTN4	micro	Wetland	1	8/8/2005	13:40	3.0	1,170	34.8	--
PTN5	micro	Wetland	1	8/9/2005	8:25	5.0	629	22.6	--
PTN6	micro	Wetland	1	8/9/2005	9:13	4.3	481	23.3	--
PTN6	micro	Wetland	1	8/9/2005	9:13	4.3	481	23.3	--
PTN7	micro	Wetland	1	8/12/2005	10:40	3.8	807	19.9	--
PTN8	micro	Wetland	1	8/8/2005	12:00	4.3	670	30.9	--
PTN9	micro	Wetland	1	8/9/2005	10:10	4.0	648	24.1	--

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Date sampled	Time	Sulfide, mg/L	Ammonia, mg/L	Phos- phate, as PO4 mg/L	Nitrate as NO3, mg/L	Iron, (Fe2+) mg/L, <10 range	Iron, (Fe2+) mg/L, >10 range	Methane (a), ug/L	Methane (b) ug/L
PTC11A	6/20/2005	15:37	< 0.10	< 0.7	< 0.75	--	1.37	--	49.5	48.1
PTC11A	6/20/2005	15:37	--	--	--	--	1.38	--	--	--
PTC11B	6/21/2005	9:25	0.22	< 0.7	1.45	0.84	1.54	--	68.6	63.8
PTC11C	6/21/2005	10:25	0.12	< 0.7	< 0.75	0.25	1.67	--	90.9	81.7
PTC11D	6/21/2005	11:00	0.42	< 0.7	1.00	0.41	1.32	--	45.7	38.7
PTC11D	6/21/2005	11:00	--	--	--	--	--	--	--	--
PTC11E	6/21/2005	11:40	0.22	< 0.7	< 0.75	0.52	0.68	--	<46.1	<36.4
PTC11F	6/21/2005	12:18	0.14	0.90	< 0.75	< 0.20	0.19	--	39.2	<32.8
PTC12A	6/21/2005	8:50	0.73	< 0.7	< 0.75	< 0.20	9.42	--	66.2	56.5
PTC12A	6/21/2005	8:50	0.53	--	--	--	4.78	--	--	--
PTC12B	6/21/2005	9:12	0.23	< 0.7	< 0.75	< 0.20	4.80	--	88.5	87.8
PTC12B	6/21/2005	9:12	0.20	< 0.7	--	--	--	--	--	--
PTC12C	6/21/2005	10:35	< 0.10	< 0.7	1.45	< 0.20	5.81	--	65.7	64.8
PTC12C	6/21/2005	10:35	--	< 0.7	--	< 0.20	--	--	--	--
PTC12D	6/21/2005	11:10	< 0.10	< 0.7	< 0.75	< 0.20	9.73	--	89.3	89.2
PTC12D	6/21/2005	11:10	--	--	--	< 0.20	--	--	--	--
PTC12E	6/21/2005	11:45	< 0.10	< 0.7	< 0.75	< 0.20	--	22.4	132	132
PTC12F	6/21/2005	12:23	< 0.10	< 0.7	< 0.75	< 0.20	--	32.4	141	134
PTC12F	6/21/2005	12:23	--	--	--	--	--	18.3	--	--
PTC12F	6/21/2005	12:23	--	--	--	--	7.82	--	--	--
PTC13A	6/21/2005	15:16	< 0.10	< 0.7	< 0.75	0.59	0.63	--	<29.1	<34.3
PTC13A	6/21/2005	15:16	--	--	--	--	0.53	--	--	--
PTC13B	6/21/2005	11:00	< 0.10	< 0.7	< 0.75	< 0.20	4.23	--	42.9	43.7
PTC13B	6/21/2005	11:00	--	--	< 0.75	--	--	--	--	--
PTC13C	6/21/2005	14:26	< 0.10	< 0.7	< 0.75	< 0.20	1.55	--	<35.4	<33.7
PTC13D	6/21/2005	14:03	< 0.10	< 0.7	< 0.75	< 0.20	9.24	--	<37.4	38.2
PTC13D	6/21/2005	14:03	< 0.10	< 0.7	< 0.75	< 0.20	--	--	--	--
August biomat site										
Below Mat Sampling										
PTN1	8/8/2005	14:35	3.58	< 0.7	< 0.75	< 0.20	--	11.6	293	312
PTN2	8/8/2005	10:55	0.45	< 0.7	< 0.75	< 0.20	10.72	--	57.0	51.6
PTN3	8/8/2005	12:05	0.44	< 0.7	< 0.75	< 0.20	--	16.2	110	93.9
PTN4	8/8/2005	13:40	<0.10	< 0.7	< 0.75	< 0.20	--	28.4	205	227
PTN5	8/9/2005	8:25	1.70	< 0.7	< 0.75	< 0.20	--	14.9	<34.7	<34.8
PTN6	8/9/2005	9:13	<0.10	< 0.7	< 0.75	< 0.20	4.49	--	52.0	53.3
PTN6	8/9/2005	9:13	--	< 0.7	--	--	--	--	--	--
PTN7	8/12/2005	10:40	0.21	< 0.7	< 0.75	< 0.20	10.88	--	399	385
PTN8	8/8/2005	12:00	<0.10	< 0.7	< 0.75	< 0.20	--	49.3	427	170
PTN9	8/9/2005	10:10	<0.10	< 0.7	< 0.75	< 0.20	1.83	--	167	174

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Device Type	Hydro-geologic Unit	Depth, Screened Interval (ft bls)	Date sampled	Time	pH	Specific conductance, $\mu\text{S}/\text{cm}$	Water temp. deg C.	Alkalinity, mg/L as CaCO_3
PTC1A	CMT	Wetland	4.8-5.2	8/15/2005	10:00	3.7	795	28.1	--
PTC1A	CMT	Wetland	4.8-5.2	8/15/2005	10:00	3.7	795	28.1	--
PTC1B	CMT	Wetland	7.8-8.2	8/10/2005	12:45	5.1	859	30.0	--
PTC1C	CMT	Wetland	11.3-11.5	8/15/2005	10:55	3.7	829	28.1	--
PTC2A	CMT	Wetland	4.8-5.2	8/9/2005	11:35	4.0	486	24.1	--
PTC2A	CMT	Wetland	4.8-5.2	8/9/2005	11:35	4.0	486	24.1	--
PTC2B	CMT	Wetland	7.8-8.2	8/10/2005	10:00	5.1	811	22.9	40.0
PTC2B	CMT	Wetland	7.8-8.2	8/10/2005	10:00	5.1	811	22.9	46.2
PTC2C	CMT	Wetland	11.8-12.0	8/12/2005	8:30	5.1	862	26.9	38.0
PTC3A	CMT	Wetland	4.4-4.8	8/9/2005	13:35	4.0	722	25.3	--
PTC3B	CMT	Wetland	7.4-7.8	8/10/2005	9:45	5.3	906	27.5	7.1
PTC3C	CMT	Wetland	13.1-13.3	8/10/2005	14:20	3.8	732	28.8	--
PTC3C	CMT	Wetland	13.1-13.3	8/10/2005	14:25	3.8	732	28.8	--
PTC4A	CMT	Wetland	4.8-5.2	8/11/2005	14:20	3.8	798	30.1	--
PTC4B	CMT	Wetland	7.8-8.2	8/12/2005	8:55	3.8	771	27.9	--
PTC4B	CMT	Wetland	7.8-8.2	8/12/2005	8:55	3.8	771	27.9	--
PTC4C	CMT	Wetland	11.8-12.0	8/12/2005	10:05	3.8	734	29.4	--
PTC4C	CMT	Wetland	11.8-12.0	8/13/2005	11:05	--	--	--	--
PTC5A	CMT	Wetland	4.8-5.2	8/11/2005	11:05	3.8	695	28.5	--
PTC5B	CMT	Wetland	7.8-8.2	8/11/2005	10:45	3.8	696	28.9	--
PTC5B	CMT	Wetland	7.8-8.2	8/12/2005	11:45	--	--	--	--
PTC5C	CMT	Wetland	11.8-12.0	8/11/2005	11:30	3.7	803	31.8	--
PTC5C	CMT	Wetland	11.8-12.0	8/12/2005	12:30	--	--	--	--
PTB1B	DS	Reactive mat	-0.35	8/23/2005	--	--	--	--	--
PTB1C	DS	Reactive mat	0.01	8/23/2005	--	--	--	--	--
PTB2B	DS	Reactive mat	-0.35	8/23/2005	--	--	--	--	--
PTB2C	DS	Reactive mat	0.01	8/23/2005	--	--	--	--	--
PTB3B	DS	Reactive mat	-0.35	8/23/2005	--	--	--	--	--
PTB3C	DS	Reactive mat	0.01	8/23/2005	--	--	--	--	--
PTB4B	DS	Reactive mat	-0.35	8/23/2005	--	--	--	--	--
PTB4C	DS	Reactive mat	0.01	8/23/2005	--	--	--	--	--
PTB5B	DS	Reactive mat	-0.35	8/23/2005	--	--	--	--	--
PTB5C	DS	Reactive mat	0.01	8/23/2005	--	--	--	--	--
PTB6B	DS	Reactive mat	-0.35	8/23/2005	--	--	--	--	--
PTB6C	DS	Reactive mat	0.01	8/23/2005	--	--	--	--	--
PTB7B	DS	Reactive mat	-0.35	8/23/2005	--	--	--	--	--
PTB7C	DS	Reactive mat	0.01	8/23/2005	--	--	--	--	--
PTB8B	DS	Reactive mat	-0.35	8/23/2005	--	--	--	--	--
PTB8C	DS	Reactive mat	0.01	8/23/2005	--	--	--	--	--
PTB9B	DS	Reactive mat	-0.35	8/23/2005	--	--	--	--	--
PTB9C	DS	Reactive mat	0.01	8/23/2005	--	--	--	--	--

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Date sampled	Time	Sulfide, mg/L	Ammonia, mg/L	Phos- phate, as PO4 mg/L	Nitrate as NO3, mg/L	Iron, (Fe2+) mg/L, <10 range	Iron, (Fe2+) mg/L, >10 range	Methane (a), ug/L	Methane (b) ug/L
PTC1A	8/15/2005	10:00	<0.10	< 0.7	< 0.75	< 0.20	4.17	--	111	117
PTC1A	8/15/2005	10:00	--	--	--	< 0.20	--	--	--	--
PTC1B	8/10/2005	12:45	<0.10	< 0.7	< 0.75	< 0.20	3.76	--	57.1	55.6
PTC1C	8/15/2005	10:55	<0.10	< 0.7	< 0.75	0.46	0.96	--	60.0	58.5
PTC2A	8/9/2005	11:35	<0.10	< 0.7	< 0.75	< 0.20	0.92	--	78.0	76.9
PTC2A	8/9/2005	11:35	<0.10	--	--	--	--	--	--	--
PTC2B	8/10/2005	10:00	<0.10	< 0.7	< 0.75	< 0.20	--	12.1	<30.3	<39.7
PTC2B	8/10/2005	10:00	--	--	--	--	--	--	--	--
PTC2C	8/12/2005	8:30	0.50	< 0.7	< 0.75	< 0.20	--	21.1	749	736
PTC3A	8/9/2005	13:35	<0.10	< 0.7	< 0.75	< 0.20	4.22	--	<32.1	44.1
PTC3B	8/10/2005	9:45	0.46	< 0.7	< 0.75	< 0.20	--	22.2	<34.4	<34.2
PTC3C	8/10/2005	14:20	<0.10	< 0.7	< 0.75	0.60	0.57	--	<34.1	<33.9
PTC3C	8/10/2005	14:25	--	--	--	--	--	--	<37.1	<34.5
PTC4A	8/11/2005	14:20	<0.10	< 0.7	< 0.75	< 0.20	1.85	--	<33.9	41.2
PTC4B	8/12/2005	8:55	<0.10	< 0.7	< 0.75	0.43	2.10	--	<38.3	<33.7
PTC4B	8/12/2005	8:55	--	--	--	0.41	--	--	--	--
PTC4C	8/12/2005	10:05	0.16	< 0.7	0.85	1.30	0.12	--	<35.3	<33.6
PTC4C	8/13/2005	11:05	--	--	--	--	0.10	--	--	--
PTC5A	8/11/2005	11:05	<0.10	< 0.7	< 0.75	< 0.20	2.99	--	69.4	65.4
PTC5B	8/11/2005	10:45	0.30	< 0.7	< 0.75	0.58	1.51	--	47.8	45.5
PTC5B	8/12/2005	11:45	--	--	--	--	1.47	--	--	--
PTC5C	8/11/2005	11:30	0.10	< 0.7	< 0.75	0.00	10.99	19.2	88.8	85.3
PTC5C	8/12/2005	12:30	--	--	--	--	--	18.5	--	--
PTB1B	8/23/2005	--	--	--	--	--	--	0.9	--	--
PTB1C	8/23/2005	--	--	--	--	--	--	--	14,100	--
PTB2B	8/23/2005	--	--	--	--	--	--	0.0	<38.3	--
PTB2C	8/23/2005	--	--	--	--	--	--	0.2	13,600	--
PTB3B	8/23/2005	--	--	--	--	--	--	-0.1	117	--
PTB3C	8/23/2005	--	--	--	--	--	--	0.5	11,400	--
PTB4B	8/23/2005	--	--	--	--	--	--	0.6	11,500	--
PTB4C	8/23/2005	--	--	--	--	--	--	0.1	15,300	--
PTB5B	8/23/2005	--	--	--	--	--	--	--	<46.1	--
PTB5C	8/23/2005	--	--	--	--	--	--	0.2	14,200	--
PTB6B	8/23/2005	--	--	--	--	--	--	-0.1	<44.6	--
PTB6C	8/23/2005	--	--	--	--	--	--	0.2	14,300	--
PTB7B	8/23/2005	--	--	--	--	--	--	1.6	9,040	--
PTB7C	8/23/2005	--	--	--	--	--	--	0.8	13,900	--
PTB8B	8/23/2005	--	--	--	--	--	--	1.4	9,620	--
PTB8C	8/23/2005	--	--	--	--	--	--	0.1	14,700	--
PTB9B	8/23/2005	--	--	--	--	--	--	0.0	<46.7	--
PTB9C	8/23/2005	--	--	--	--	--	--	0.2	6,510	--

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Device Type	Hydro-geologic Unit	Depth, Screened Interval (ft bls)	Date sampled	Time	pH	Specific conductance, $\mu\text{S}/\text{cm}$	Water temp. deg C.	Alkalinity, mg/L as CaCO_3
Perimeter Sampling									
PTZ1A	PIEZ	Wetland	3.5-4.5	8/16/2005	10:30	3.8	993	19.5	--
PTZ1A	PIEZ	Wetland	3.5-4.5	8/16/2005	10:30	3.8	993	19.5	--
PTZ1B	PIEZ	Wetland	7.5-8.5	8/16/2005	12:00	6.2	300	18.6	83.7
PTZ1C	PIEZ	Aquifer	13-14	8/16/2005	13:10	4.2	799	18.9	--
PTZ1D	PIEZ	Aquifer	24.7-25.7	8/16/2005	14:00	5.3	182	16.8	12.5
PTZ1D	PIEZ	Aquifer	24.7-25.7	8/16/2005	14:05	5.3	182	16.8	--
PTZ1E	PIEZ	Aquifer	35-36	8/16/2005	14:30	4.5	342	17.9	--
PTZ2A	PIEZ	Wetland	6-7	8/15/2005	12:45	6.9	1,640	23.9	447.8
PTZ2A	PIEZ	Wetland	6-7	8/15/2005	12:45	6.9	1,640	23.9	--
PTZ2B	PIEZ	Wetland	12-13	8/15/2005	15:00	6.9	811	21.2	227.4
PTZ2B	PIEZ	Wetland	12-13	8/16/2005	8:45	6.9	811	21.2	--
PTZ2C	PIEZ	Aquifer	20-21	8/16/2005	10:15	5.8	602	19.8	45.1
PTZ2C	PIEZ	Aquifer	20-21	8/16/2005	11:00	5.8	602	19.8	--
PTZ2D	PIEZ	Aquifer	29.5-30.5	8/17/2005	9:15	4.5	358	22.8	--
PTZ2E	PIEZ	Aquifer	37.7-38.7	8/17/2005	10:15	4.7	256	24.0	--
PTZ4A	PIEZ	Wetland	6.5-7.5	8/17/2005	13:20	6.6	257	20.9	18.2
PTZ4B	PIEZ	Wetland	9-10	8/17/2005	13:35	4.8	209	16.0	2.8
PTZ4C	PIEZ	Aquifer	11.6-12.6	8/17/2005	13:40	4.3	311	17.0	--
PTC6A	CMT	Wetland	2.8-3.2	8/10/2005	15:45	4.0	556	27.9	--
PTC6A	CMT	Wetland	2.8-3.2	8/10/2005	16:05	4.0	556	27.9	--
PTC6B	CMT	Wetland	4.8-5.2	8/10/2005	14:30	4.0	625	25.1	--
PTC6C	CMT	Wetland	7.8-8.2	8/10/2005	12:40	5.1	822	24.6	44.9
PTC6D	CMT	Wetland	9.8-10.2	8/10/2005	11:00	5.6	929	23.9	47.3
PTC6E	CMT	Aquifer	11.8-12.0	8/10/2005	9:30	5.1	817	21.9	13.3
PTC6E	CMT	Aquifer	11.8-12.0	8/10/2005	9:30	5.1	817	21.9	13.1
PTC7A	CMT	Wetland	2.8-3.2	8/8/2005	14:30	3.9	814	25.2	--
PTC7B	CMT	Wetland	4.8-5.2	8/9/2005	8:30	3.8	805	20.5	--
PTC7B	CMT	Wetland	4.8-5.2	8/10/2005	9:30	--	--	--	--
PTC7C	CMT	Wetland	7.8-8.2	8/9/2005	8:45	5.8	608	28.0	28.7
PTC7D	CMT	Wetland	10.3-10.5	8/9/2005	10:00	5.9	903	24.5	12.5
PTC7D	CMT	Wetland	10.3-10.5	8/9/2005	10:00	5.9	903	24.5	--
PTC8A	CMT	Wetland	2.8-3.2	8/9/2005	11:00	4.4	555	22.5	--
PTC8A	CMT	Wetland	2.8-3.2	8/9/2005	11:00	4.4	555	22.5	--
PTC8B	CMT	Wetland	4.8-5.2	8/9/2005	13:15	4.6	520	20.3	--
PTC8C	CMT	Wetland	7.8-8.2	8/8/2005	10:15	5.6	705	28.1	53.1
PTC8D	CMT	Wetland	9.8-10.2	8/11/2008	11:00	5.6	578	28.8	15.8
PTC8D	CMT	Wetland	9.8-10.2	8/11/2008	11:05	5.6	578	28.8	--
PTC8E	CMT	Aquifer	11.8-12.0	8/12/2005	9:00	4.6	533	22.9	--

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Date sampled	Time	Sulfide, mg/L	Ammonia, mg/L	Phos- phate, as PO4 mg/L	Nitrate as NO3, mg/L	Iron, (Fe2+) mg/L, <10 range	Iron, (Fe2+) mg/L, >10 range	Methane (a), ug/L	Methane (b) ug/L
Perimeter Sampling										
PTZ1A	8/16/2005	10:30	2.08	0.72	< 0.75	< 0.20	5.09	--	235	235
PTZ1A	8/16/2005	10:30	2.08	--	< 0.75	--	--	--	--	--
PTZ1B	8/16/2005	12:00	0.22	< 0.7	3.00	0.36	0.63	--	3,860	3,870
PTZ1C	8/16/2005	13:10	<0.10	< 0.7	< 0.75	0.77	0.03	--	102	112
PTZ1D	8/16/2005	14:00	<0.10	< 0.7	< 0.75	0.23	0.00	--	<32.2	<32.7
PTZ1D	8/16/2005	14:05	<0.10	< 0.7	< 0.75	0.23	--	--	--	--
PTZ1E	8/16/2005	14:30	<0.10	< 0.7	< 0.75	< 0.20	0.79	--	<31.8	<28.2
PTZ2A	8/15/2005	12:45	<0.10	0.83	4.20	< 0.20	0.18	--	8,330	8,030
PTZ2A	8/15/2005	12:45	--	--	--	--	--	--	--	--
PTZ2B	8/15/2005	15:00	<0.10	1.36	< 1.88	< 0.20	0.35	--	4,480	4,430
PTZ2B	8/16/2005	8:45	--	--	6.13	--	1.57	--	--	--
PTZ2C	8/16/2005	10:15	0.77	< 0.7	< 0.75	< 0.20	1.69	--	984	1,030
PTZ2C	8/16/2005	11:00	--	--	--	--	1.69	--	--	--
PTZ2D	8/17/2005	9:15	<0.10	< 0.7	< 0.75	0.40	-0.02	--	<32.0	<31.8
PTZ2E	8/17/2005	10:15	<0.10	< 0.7	< 0.75	0.35	-0.02	--	<35.5	<35.5
PTZ4A	8/17/2005	13:20	0.70	< 0.7	< 0.75	< 0.20	0.61	--	<36.9	<37.8
PTZ4B	8/17/2005	13:35	<0.10	< 0.7	< 0.75	< 0.20	0.15	--	<30.2	<28.0
PTZ4C	8/17/2005	13:40	<0.10	< 0.7	< 0.75	1.17	0.00	--	<39.2	<32.0
PTC6A	8/10/2005	15:45	<0.10	< 0.7	< 0.75	< 0.20	0.83	--	<27.5	<23.3
PTC6A	8/10/2005	16:05	--	--	--	--	--	--	--	--
PTC6B	8/10/2005	14:30	<0.10	< 0.7	< 0.75	< 0.20	0.98	--	<33.3	<26.8
PTC6C	8/10/2005	12:40	<0.10	< 0.7	< 0.75	< 0.20	--	9.4	43.0	43.1
PTC6D	8/10/2005	11:00	<0.10	< 0.7	< 0.75	< 0.20	--	20.1	<33.4	<29.6
PTC6E	8/10/2005	9:30	0.15	< 0.7	< 0.75	< 0.20	--	11.2	45.0	35.5
PTC6E	8/10/2005	9:30	--	--	--	--	--	--	--	--
PTC7A	8/8/2005	14:30	0.44	< 0.7	1.05	0.39	3.77	--	<41.8	<34.0
PTC7B	8/9/2005	8:30	0.26	< 0.7	< 0.75	< 0.20	3.16	--	44.5	<46.3
PTC7B	8/10/2005	9:30	--	--	--	--	3.23	--	--	--
PTC7C	8/9/2005	8:45	<0.10	< 0.7	< 0.75	< 0.20	8.17	--	300	298
PTC7D	8/9/2005	10:00	0.26	< 0.7	< 0.75	< 0.20	8.40	--	89.6	83.8
PTC7D	8/9/2005	10:00	0.07	--	--	--	--	--	162	172
PTC8A	8/9/2005	11:00	0.12	< 0.7	< 0.75	< 0.20	3.73	--	66.0	67.9
PTC8A	8/9/2005	11:00	0.09	< 0.7	--	--	--	--	--	--
PTC8B	8/9/2005	13:15	0.25	0.83	1.15	0.33	1.33	--	96.4	92.3
PTC8C	8/8/2005	10:15	0.09	< 0.7	0.80	0.35	5.53	--	148	150
PTC8D	8/11/2008	11:00	0.36	1.03	1.55	0.92	6.08	--	66.4	60.5
PTC8D	8/11/2008	11:05	--	--	--	--	6.14	--	--	--
PTC8E	8/12/2005	9:00	0.37	0.81	1.65	0.73	1.19	--	38.8	40.6

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Device Type	Hydro-geologic Unit	Depth, Screened Interval (ft bls)	Date sampled	Time	pH	Specific conductance, $\mu\text{S}/\text{cm}$	Water temp. deg C.	Alkalinity, mg/L as CaCO_3
PTC9A	CMT	Wetland	2.8-3.2	8/16/2005	9:50	3.9	908	22.2	--
PTC9A	CMT	Wetland	2.8-3.2	8/16/2005	9:50	3.9	908	22.2	--
PTC9B	CMT	Wetland	4.8-5.2	8/16/2005	9:20	3.9	854	21.4	--
PTC9B	CMT	Wetland	4.8-5.2	8/16/2005	9:25	3.9	854	21.4	--
PTC9C	CMT	Wetland	7.8-8.2	8/15/2005	15:30	3.9	831	28.3	--
PTC9C	CMT	Wetland	7.8-8.2	8/16/2005	16:30	--	--	--	--
PTC9D	CMT	Wetland	9.8-10.2	8/15/2005	14:00	3.8	857	26.5	--
PTC9D	CMT	Wetland	9.8-10.2	8/16/2005	15:00	--	--	--	--
PTC9E	CMT	Aquifer	12.1-12.3	8/15/2005	14:30	3.8	855	24.8	--
PTC9E	CMT	Aquifer	12.1-12.3	8/15/2005	14:30	3.8	855	24.8	--
PTC10A	CMT	Wetland	2.4-2.8	8/10/2005	11:15	3.8	234	27.9	--
PTC10A	CMT	Wetland	2.4-2.8	8/10/2005	11:15	3.8	234	27.9	--
PTC10A	CMT	Wetland	2.4-2.8	8/10/2005	11:15	3.8	234	27.9	--
PTC10B	CMT	Wetland	4.4-4.8	8/10/2005	12:20	3.9	795	25.8	--
PTC10B	CMT	Wetland	4.4-4.8	8/10/2005	12:21	3.9	795	25.8	--
PTC10C	CMT	Wetland	7.4-7.8	8/10/2005	15:00	4.3	1,005	26.2	--
PTC10D	CMT	Wetland	9.4-9.8	8/10/2005	8:45	5.6	1,120	19.8	12.1
PTC10D	CMT	Wetland	9.4-9.8	8/10/2005	8:45	5.6	1,120	19.8	--
PTC10E	CMT	Aquifer	12.6-12.8	8/10/2005	15:50	4.4	847	22.6	--
PTC10E	CMT	Aquifer	12.6-12.8	8/10/2005	15:55	4.4	847	22.6	--
PTC11A	CMT	Wetland	1.8-2.2	8/16/2005	10:45	3.9	722	21.5	--
PTC11A	CMT	Wetland	1.8-2.2	8/16/2005	10:45	3.9	722	21.5	--
PTC11B	CMT	Wetland	4.8-5.2	8/16/2005	11:10	3.9	738	20.7	--
PTC11B	CMT	Wetland	4.8-5.2	8/16/2005	11:10	3.9	738	20.7	--
PTC11C	CMT	Wetland	7.8-8.2	8/16/2005	13:40	3.9	748	19.5	--
PTC11D	CMT	Wetland	9.8-10.2	8/16/2005	14:05	3.9	742	18.9	--
PTC11E	CMT	Wetland	11.8-12.2	8/16/2005	14:40	3.9	732	18.9	--
PTC11F	CMT	Aquifer	14-14.2	8/17/2005	8:50	3.8	716	19.9	--
PTC12A	CMT	Wetland	2.8-3.2	8/15/2005	10:20	3.7	767	29.3	--
PTC12A	CMT	Wetland	2.8-3.2	8/15/2005	10:20	3.7	767	29.3	--
PTC12B	CMT	Wetland	4.8-5.2	8/15/2005	10:34	4.0	736	26.9	--
PTC12B	CMT	Wetland	4.8-5.2	8/15/2005	10:34	4.0	736	26.9	--
PTC12C	CMT	Wetland	7.8-8.2	8/15/2005	12:40	3.5	831	26.6	--
PTC12C	CMT	Wetland	7.8-8.2	8/15/2005	12:40	3.5	831	26.6	--
PTC12D	CMT	Wetland	9.8-10.2	8/11/2005	14:10	5.6	792	21.7	72.7
PTC12E	CMT	Wetland	11.8-12.2	8/11/2005	11:40	5.1	791	23.6	63.5
PTC12E	CMT	Wetland	11.8-12.2	8/11/2005	11:40	5.1	791	23.6	63.1
PTC12F	CMT	Aquifer	15.2-15.4	8/11/2005	13:20	5.6	772	25.2	42.5
PTC12F	CMT	Aquifer	15.2-15.4	8/11/2005	13:20	--	--	--	--

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Date sampled	Time	Sulfide, mg/L	Ammonia, mg/L	Phos- phate, as PO4 mg/L	Nitrate as NO3, mg/L	Iron, (Fe2+) mg/L, <10 range	Iron, (Fe2+) mg/L, >10 range	Methane (a), ug/L	Methane (b) ug/L
PTC9A	8/16/2005	9:50	0.14	< 0.7	< 0.75	< 0.20	2.95	--	78.7	80.3
PTC9A	8/16/2005	9:50	--	--	--	< 0.20	--	--	--	--
PTC9B	8/16/2005	9:20	<0.10	< 0.7	< 0.75	< 0.20	2.46	--	50.0	51.8
PTC9B	8/16/2005	9:25	--	> 8.75	--	--	2.51	--	50.0	50.7
PTC9C	8/15/2005	15:30	<0.10	< 0.7	< 0.75	< 0.20	1.88	--	49.5	50.5
PTC9C	8/16/2005	16:30	--	--	--	--	1.82	--	--	--
PTC9D	8/15/2005	14:00	<0.10	< 0.7	< 0.75	0.69	0.90	--	35.2	39.5
PTC9D	8/16/2005	15:00	--	--	--	--	0.95	--	--	--
PTC9E	8/15/2005	14:30	<0.10	< 0.7	< 0.75	0.44	0.30	--	42.2	36.0
PTC9E	8/15/2005	14:30	--	--	< 0.75	--	--	--	--	--
PTC10A	8/10/2005	11:15	0.35	0.77	1.05	0.32	4.34	--	35.9	<38.8
PTC10A	8/10/2005	11:15	--	> 8.75	--	--	--	--	--	--
PTC10A	8/10/2005	11:15	--	< 0.7	--	--	--	--	--	--
PTC10B	8/10/2005	12:20	<0.10	< 0.7	< 0.75	< 0.20	3.52	--	<38.6	<30.9
PTC10B	8/10/2005	12:21	--	--	< 0.75	--	--	--	--	--
PTC10C	8/10/2005	15:00	<0.10	< 0.7	< 0.75	< 0.33	11.20	--	104	108
PTC10D	8/10/2005	8:45	<0.10	0.73	< 0.75	< 0.20	--	22.2	109	109
PTC10D	8/10/2005	8:45	--	--	< 0.75	< 0.20	--	--	--	--
PTC10E	8/10/2005	15:50	<0.10	< 0.7	< 0.75	< 0.20	10.79	--	64.3	59.4
PTC10E	8/10/2005	15:55	--	--	--	--	--	--	64.6	68.3
PTC11A	8/16/2005	10:45	<0.10	< 0.7	< 0.75	0.88	0.60	--	<37.6	25.5
PTC11A	8/16/2005	10:45	--	--	--	0.94	--	--	--	--
PTC11B	8/16/2005	11:10	0.27	< 0.7	< 0.75	0.73	1.46	--	91.6	86.2
PTC11B	8/16/2005	11:10	--	--	--	0.77	--	--	--	--
PTC11C	8/16/2005	13:40	0.15	< 0.7	< 0.75	0.64	1.63	--	105	105
PTC11D	8/16/2005	14:05	0.36	1.12	0.85	0.55	1.25	--	91.8	85.9
PTC11E	8/16/2005	14:40	0.14	< 0.7	< 0.75	1.04	0.64	--	75.3	63.6
PTC11F	8/17/2005	8:50	0.41	0.99	0.80	1.07	0.13	--	<38.6	<36.0
PTC12A	8/15/2005	10:20	0.47	< 0.7	0.75	< 0.20	7.04	--	93.8	90.0
PTC12A	8/15/2005	10:20	0.35	--	--	--	--	--	--	--
PTC12B	8/15/2005	10:34	0.22	0.85	< 0.75	< 0.20	4.87	--	83.9	80.2
PTC12B	8/15/2005	10:34	0.20	--	--	--	--	--	--	--
PTC12C	8/15/2005	12:40	<0.10	< 0.7	1.19	< 0.20	3.70	--	136	163
PTC12C	8/15/2005	12:40	--	--	--	< 0.30	1.21	--	--	--
PTC12D	8/11/2005	14:10	<0.10	< 0.7	< 0.75	< 0.20	8.05	8.1	166	158
PTC12E	8/11/2005	11:40	<0.10	< 0.7	< 0.75	< 0.20	--	47.7	182	193
PTC12E	8/11/2005	11:40	--	--	--	--	--	47.2	--	--
PTC12F	8/11/2005	13:20	<0.10	< 0.7	< 0.75	< 0.20	--	49.8	202	215
PTC12F	8/11/2005	13:20	--	--	--	--	--	44.4	--	--

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Device Type	Hydro-geologic Unit	Depth, Screened Interval (ft bls)	Date sampled	Time	pH	Specific conductance, $\mu\text{S}/\text{cm}$	Water temp. deg C.	Alkalinity, mg/L as CaCO_3
PTC13A	CMT	Wetland	2.8-3.2	8/17/2005	9:55	3.9	387	23.6	--
PTC13B	CMT	Wetland	4.8-5.2	8/17/2005	12:15	3.9	629	22.9	--
PTC13C	CMT	Wetland	7.8-8.2	8/17/2005	10:35	3.7	706	19.7	--
PTC13C	CMT	Wetland	7.8-8.2	8/17/2005	10:35	--	--	--	--
PTC13D	CMT	Wetland	9.8-10.2	8/17/2005	11:05	3.5	748	20.8	--
September-October 2005 groundwater sampling									
Below Mat Sampling									
PTN1	micro	Wetland	1	09/20/05	13:24	3.7	752	26.2	--
PTN1			1	09/20/05	13:24	--	--	--	--
PTN2	micro	Wetland	1	09/20/05	13:05	4.2	574	29.0	--
PTN2			1	09/20/05	13:05	--	--	--	--
PTN3	micro	Wetland	1	09/20/05	11:22	4.4	498	27.7	--
PTN3	micro	Wetland	1	09/29/05	13:35	4.6	425	22.9	--
PTN4	micro	Wetland	1	09/20/05	11:55	3.5	911	26.6	--
PTN4	micro	Wetland	1	09/21/05	11:55	--	--	--	--
PTN5	micro	Wetland	1	09/20/05	11:40	3.8	704	30.6	--
PTN5	micro	Wetland	1	09/21/05	11:40	--	--	--	--
PTN6	micro	Wetland	1	09/20/05	10:58	3.8	335	26.7	--
PTN7	micro	Wetland	1	09/20/05	12:58	3.4	945	27.2	--
PTN7	micro	Wetland	1	09/29/05	13:10	3.8	822	20.3	--
PTN8	micro	Wetland	1	09/20/05	10:30	4.7	659	28.5	--
PTN9	micro	Wetland	1	09/20/05	10:28	3.8	609	26.7	--
PTC1A	CMT	Wetland	4.8-5.2	09/21/05	11:12	4.1	723	24.0	30.9
PTC1B	CMT	Wetland	7.8-8.2	09/22/05	8:45	4.9	866	25.2	--
PTC1B	CMT	Wetland	7.8-8.2	09/22/05	8:45	--	--	--	--
PTC1C	CMT	Wetland	11.3-11.5	09/21/05	13:23	4.3	774	23.3	--
PTC1C	CMT	Wetland	11.3-11.5	09/21/05	13:23	--	--	--	--
PTC2A	CMT	Wetland	4.8-5.2	09/21/05	9:47	3.9	369	22.3	--
PTC2A	CMT	Wetland	4.8-5.2	09/21/05	9:47	--	--	--	--
PTC2B	CMT	Wetland	7.8-8.2	09/22/05	9:35	4.7	790	24.8	--
PTC2C	CMT	Wetland	11.8-12.0	09/23/05	12:30	5.5	851	30.4	30.9
PTC2C	CMT	Wetland	11.8-12.0	09/23/05	12:30	--	--	--	--
PTC3A	CMT	Wetland	4.4-4.8	09/21/05	10:05	6.6	620	23.6	--
PTC3A	CMT	Wetland	4.4-4.8	09/21/05	10:05	--	--	--	--
PTC3B	CMT	Wetland	7.4-7.8	09/21/05	11:35	5.4	900	26.9	2.0
PTC3C	CMT	Wetland	13.1-13.3	09/21/05	13:45	5.2	665	27.4	--
PTC4A	CMT	Wetland	4.8-5.2	09/21/05	14:23	4.2	738	23.1	--
PTC4B	CMT	Wetland	7.8-8.2	09/22/05	14:00	3.9	739	26.6	--
PTC4C	CMT	Wetland	11.8-12.0	09/23/05	10:35	3.8	675	27.3	--
PTC4C	CMT	Wetland	11.8-12.0	09/23/05	10:35	--	--	--	--
PTC5A	CMT	Wetland	4.8-5.2	09/23/05	11:40	3.9	634	28.9	--
PTC5B	CMT	Wetland	7.8-8.2	09/23/05	13:35	3.9	608	31.8	--
PTC5C	CMT	Wetland	11.8-12.0	09/26/05	13:00	4.3	798	27.8	--
PTC5C	CMT	Wetland	11.8-12.0	09/26/05	13:00	--	--	--	--

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Date sampled	Time	Sulfide, mg/L	Ammonia, mg/L	Phos- phate, as PO4 mg/L	Nitrate as NO3, mg/L	Iron, (Fe2+) mg/L, <10 range	Iron, (Fe2+) mg/L, >10 range	Methane (a), ug/L	Methane (b) ug/L
PTC13A	8/17/2005	9:55	<0.10	< 0.7	< 0.75	< 0.20	0.38	--	<31.2	<34.1
PTC13B	8/17/2005	12:15	<0.10	< 0.7	< 0.75	< 0.20	4.00	4.4	<31.7	<39.8
PTC13C	8/17/2005	10:35	<0.10	< 0.7	< 0.75	< 0.20	5.51	--	40.7	56.6
PTC13C	8/17/2005	10:35	--	--	--	--	4.98	--	--	--
PTC13D	8/17/2005	11:05	<0.10	< 0.7	< 0.75	< 0.20	--	15.9	<33.9	<36.3
September-October 2005 groundwater sampling										
Below Mat Sampling										
PTN1	09/20/05	13:24	--	<0.70	<0.75	<0.20	--	13.29	307	308
PTN1	09/20/05	13:24	4.20	--	--	--	--	--	--	--
PTN2	09/20/05	13:05	1.03	<0.70	<0.75	<0.20	--	15.38	83.6	79.5
PTN2	09/20/05	13:05	1.05	--	--	--	--	--	--	--
PTN3	09/20/05	11:22	1.33	<0.70	<0.75	<0.20	--	18.67	254	253
PTN3	09/29/05	13:35	0.54	<0.70	<0.75	<0.20	--	18.29	425	494
PTN4	09/20/05	11:55	<0.10	<0.70	<0.75	<0.20	--	23.20	233	220
PTN4	09/21/05	11:55	<0.10	--	--	--	--	--	--	--
PTN5	09/20/05	11:40	2.55	<0.70	<0.75	<0.20	10.92	11.15	164	151
PTN5	09/21/05	11:40	--	<0.70	--	--	10.84	--	--	--
PTN6	09/20/05	10:58	<0.10	<0.70	<0.75	<0.20	2.46	--	383	365
PTN7	09/20/05	12:58	0.22	<0.70	<0.75	<0.20	--	44.78	430	129
PTN7	09/29/05	13:10	0.14	<0.70	<0.75	--	--	--	314	332
PTN8	09/20/05	10:30	<0.10	<0.70	<0.75	<0.20	--	54.92	298	298
PTN9	09/20/05	10:28	<0.10	<0.70	<0.75	<0.20	1.65	--	2,090	2,040
PTC1A	09/21/05	11:12	<0.10	<0.70	<0.75	<0.20	4.08	--	162	167
PTC1B	09/22/05	8:45	<0.10	<0.70	<0.75	<0.20	8.44	--	137	138
PTC1B	09/22/05	8:45	--	--	--	--	8.53	--	--	--
PTC1C	09/21/05	13:23	<0.10	<0.70	<0.75	0.26	0.90	--	51.4	45.7
PTC1C	09/21/05	13:23	--	--	--	0.27	--	--	--	--
PTC2A	09/21/05	9:47	<0.10	<0.70	<0.75	<0.20	0.97	--	36.2	38.4
PTC2A	09/21/05	9:47	--	--	--	--	--	--	--	--
PTC2B	09/22/05	9:35	<0.10	<0.70	<0.75	<0.20	--	14.43	<33.3	<30.8
PTC2C	09/23/05	12:30	<0.10	<0.70	<0.75	<0.20	--	17.97	<34.1	<38.9
PTC2C	09/23/05	12:30	--	--	--	--	--	18.49	--	--
PTC3A	09/21/05	10:05	0.14	<0.70	<0.75	<0.20	4.05	--	48.8	41.9
PTC3A	09/21/05	10:05	0.14	--	--	--	--	--	--	--
PTC3B	09/21/05	11:35	0.32	<0.70	<0.75	<0.20	--	22.01	40.7	50.4
PTC3C	09/21/05	13:45	<0.10	<0.70	<0.75	0.74	0.40	--	<33.3	<35.8
PTC4A	09/21/05	14:23	<0.10	<0.70	<0.75	<0.20	1.80	--	<36.6	<35.6
PTC4B	09/22/05	14:00	<0.10	<0.70	<0.75	0.46	2.04	--	37.7	<33.9
PTC4C	09/23/05	10:35	0.12	<0.70	<0.75	1.32	0.10	--	<33.7	<34.5
PTC4C	09/23/05	10:35	--	--	--	--	0.11	--	--	--
PTC5A	09/23/05	11:40	<0.10	<0.70	<0.75	<0.20	3.06	--	102	103
PTC5B	09/23/05	13:35	0.11	<0.70	<0.75	0.53	1.51	--	56.0	55.5
PTC5C	09/26/05	13:00	0.10	<0.70	<0.75	<0.20	--	18.23	<36.1	<35.9
PTC5C	09/26/05	13:00	0.16	--	--	--	--	--	71.5	71.0

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Device Type	Hydro-geologic Unit	Depth, Screened Interval (ft bls)	Date sampled	Time	pH	Specific conductance, $\mu\text{S}/\text{cm}$	Water temp. deg C.	Alkalinity, mg/L as CaCO_3
PTB1B	DS	Reactive mat	-0.35	10/03/05	--	--	--	--	--
PTB1C	DS	Reactive mat	0.01	10/03/05	--	--	--	--	--
PTB2B	DS	Reactive mat	-0.35	10/03/05	--	--	--	--	--
PTB2C	DS	Reactive mat	0.01	10/03/05	--	--	--	--	--
PTB3B	DS	Reactive mat	-0.35	10/03/05	--	--	--	--	--
PTB3C	DS	Reactive mat	0.01	10/03/05	--	--	--	--	--
PTB4B	DS	Reactive mat	-0.35	10/03/05	--	--	--	--	--
PTB4C	DS	Reactive mat	0.01	10/03/05	--	--	--	--	--
PTB5B	DS	Reactive mat	-0.35	10/03/05	--	--	--	--	--
PTB5C	DS	Reactive mat	0.01	10/03/05	--	--	--	--	--
PTB6B	DS	Reactive mat	-0.35	10/03/05	--	--	--	--	--
PTB6C	DS	Reactive mat	0.01	10/03/05	--	--	--	--	--
PTB7B	DS	Reactive mat	-0.35	10/03/05	--	--	--	--	--
PTB7C	DS	Reactive mat	0.01	10/03/05	--	--	--	--	--
PTB8B	DS	Reactive mat	-0.35	10/03/05	--	--	--	--	--
PTB8C	DS	Reactive mat	0.01	10/03/05	--	--	--	--	--
PTB9B	DS	Reactive mat	-0.35	10/03/05	--	--	--	--	--
PTB9C	DS	Reactive mat	0.01	10/03/05	--	--	--	--	--
Perimeter Sampling									
PTZ1A	PIEZ	Wetland	3.5-4.5	09/28/05	13:05	4.0	987	21.0	--
PTZ1A	PIEZ	Wetland	3.5-4.5	09/29/05	--	--	--	--	--
PTZ1B	PIEZ	Wetland	7.5-8.5	09/27/05	9:45	6.4	433	23.4	60.7
PTZ1B	PIEZ	Wetland	7.5-8.5	09/27/05	9:45	--	--	--	--
PTZ1C	PIEZ	Aquifer	13-14	09/28/05	12:35	4.1	809	18.3	--
PTZ1C	PIEZ	Aquifer	13-14	09/29/05	--	--	--	--	--
PTZ1D	PIEZ	Aquifer	24.7-25.7	09/28/05	11:00	5.2	190	17.4	8.6
PTZ1D	PIEZ	Aquifer	24.7-25.7	09/29/05	--	--	--	--	--
PTZ1E	PIEZ	Aquifer	35-36	09/27/05	9:20	4.6	325	18.8	--
PTZ2A	PIEZ	Wetland	6-7	09/26/05	14:05	6.5	1,656	23.9	350.8
PTZ2A	PIEZ	Wetland	6-7	09/26/05	14:05	--	--	--	333.1
PTZ2B	PIEZ	Wetland	12-13	09/27/05	9:15	6.6	812	19.2	180.3
PTZ2C	PIEZ	Aquifer	20-21	09/26/05	13:40	6.8	599	18.9	33.6
PTZ2C	PIEZ	Aquifer	20-21	09/26/05	13:40	--	--	--	--
PTZ2D	PIEZ	Aquifer	29.5-30.5	09/26/05	11:35	5.6	258	22.7	2.0
PTZ2D	PIEZ	Aquifer	29.5-30.5	09/26/05	11:35	--	--	--	7.4
PTZ2E	PIEZ	Aquifer	37.7-38.7	09/26/05	14:45	5.5	223	23.5	1.2
PTZ2E	PIEZ	Aquifer	37.7-38.7	09/26/05	14:45	--	--	--	--
PTZ4A	PIEZ	Wetland	6.5-7.5	09/29/05	11:05	5.6	201	17.1	8.5
PTZ4B	PIEZ	Wetland	9-10	09/29/05	11:35	5.4	295	16.5	5.3
PTZ4B	PIEZ	Wetland	9-10	09/29/05	11:40	--	--	--	--
PTZ4C	PIEZ	Aquifer	11.6-12.6	09/29/05	12:15	4.3	362	14.8	--

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Date sampled	Time	Sulfide, mg/L	Ammonia, mg/L	Phos- phate, as PO4 mg/L	Nitrate as NO3, mg/L	Iron, (Fe2+) mg/L, <10 range	Iron, (Fe2+) mg/L, >10 range	Methane (a), ug/L	Methane (b) ug/L
PTB1B	10/03/05	--	<0.10	<0.70	--	--	--	0.20	10,500	--
PTB1C	10/03/05	--	<0.10	6.83	--	--	--	-0.04	11,900	--
PTB2B	10/03/05	--	<0.10	<0.70	--	--	--	-0.07	654	--
PTB2C	10/03/05	--	<0.10	4.63	--	--	--	0.00	9,930	--
PTB3B	10/03/05	--	<0.10	4.25	--	--	--	0.27	44.5	--
PTB3C	10/03/05	--	<0.10	6.30	--	--	--	0.05	15,900	--
PTB4B	10/03/05	--	<0.10	<0.70	--	--	--	-0.23	<30.5	--
PTB4C	10/03/05	--	<0.10	5.83	--	--	--	0.07	14,500	--
PTB5B	10/03/05	--	<0.10	<0.70	--	--	--	--	<34.7	--
PTB5C	10/03/05	--	<0.10	7.10	--	--	--	-0.02	1,410	--
PTB6B	10/03/05	--	<0.10	1.35	--	--	--	--	<32.6	--
PTB6C	10/03/05	--	<0.10	8.55	--	--	--	0.04	17,400	--
PTB7B	10/03/05	--	<0.10	--	--	--	--	0.40	3,750	--
PTB7C	10/03/05	--	<0.10	2.10	--	--	--	0.04	4,200	--
PTB8B	10/03/05	--	<0.10	<0.70	--	--	--	-0.03	376	--
PTB8C	10/03/05	--	<0.10	5.25	--	--	--	--	11,400	--
PTB9B	10/03/05	--	<0.10	0.78	--	--	--	0.24	<29.6	--
PTB9C	10/03/05	--	<0.10	2.40	--	--	--	0.08	14,600	--
Perimeter Sampling										
PTZ1A	09/28/05	13:05	0.82	0.79	<0.75	<0.20	--	--	163	152
PTZ1A	09/29/05	--	--	<0.70	--	--	5.48	--	--	--
PTZ1B	09/27/05	9:45	0.10	<0.70	1.85	<0.20	0.84	--	3,520	3,470
PTZ1B	09/27/05	9:45	--	--	--	--	--	--	3,550	3,430
PTZ1C	09/28/05	12:35	0.11	<0.70	<0.75	0.39	-0.01	--	99.3	118
PTZ1C	09/29/05	--	--	--	<0.75	0.70	-0.01	--	91.4	88.3
PTZ1D	09/28/05	11:00	0.27	<0.70	0.75	0.52	0.00	--	<36.7	<40.0
PTZ1D	09/29/05	--	0.78	1.53	--	--	--	--	--	--
PTZ1E	09/27/05	9:20	<0.10	<0.70	<0.75	<0.20	0.57	--	<28.8	<34.4
PTZ2A	09/26/05	14:05	<0.10	1.23	11.25	<0.20	0.20	--	475	486
PTZ2A	09/26/05	14:05	--	--	4.50	--	--	--	--	--
PTZ2B	09/27/05	9:15	0.11	0.77	2.25	0.40	0.28	--	5,370	5,430
PTZ2C	09/26/05	13:40	0.50	<0.70	<0.75	<0.20	1.60	--	2,280	2,330
PTZ2C	09/26/05	13:40	--	--	--	<0.20	--	--	--	--
PTZ2D	09/26/05	11:35	<0.10	<0.70	<0.75	0.38	-0.02	--	<31.4	<35.3
PTZ2D	09/26/05	11:35	--	--	--	--	--	--	--	--
PTZ2E	09/26/05	14:45	0.12	<0.70	<0.75	0.31	0.00	--	<33.1	<33.1
PTZ2E	09/26/05	14:45	<0.10	<0.70	--	--	--	--	--	--
PTZ4A	09/29/05	11:05	0.92	<0.70	<0.75	<0.20	0.34	--	46.6	47.9
PTZ4B	09/29/05	11:35	<0.10	<0.70	<0.75	0.62	0.55	--	<40.2	<31.4
PTZ4B	09/29/05	11:40	--	--	--	--	-0.02	--	<31.7	<35.4
PTZ4C	09/29/05	12:15	<0.10	<0.70	<0.75	0.98	-0.01	--	<37.2	<36.0

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Device Type	Hydro-geologic Unit	Depth, Screened Interval (ft bls)	Date sampled	Time	pH	Specific conductance, $\mu\text{S}/\text{cm}$	Water temp. deg C.	Alkalinity, mg/L as CaCO_3
PTC6A	CMT	Wetland	2.8-3.2	09/22/05	9:43	4.6	460	19.9	--
PTC6A	CMT	Wetland	2.8-3.2	09/22/05	9:43	--	--	--	--
PTC6B	CMT	Wetland	4.8-5.2	09/22/05	10:12	4.1	483	20.5	--
PTC6C	CMT	Wetland	7.8-8.2	09/22/05	10:48	4.8	836	19.6	24.7
PTC6D	CMT	Wetland	9.8-10.2	09/28/05	9:20	5.4	942	20.7	16.6
PTC6E	CMT	Aquifer	11.8-12.0	09/28/05	9:35	4.3	840	21.6	--
PTC6E	CMT	Aquifer	11.8-12.0	09/28/05	--	--	--	--	--
PTC7A	CMT	Wetland	2.8-3.2	09/22/05	13:30	4.4	772	23.9	--
PTC7B	CMT	Wetland	4.8-5.2	09/23/05	14:00	4.2	795	24.2	--
PTC7C	CMT	Wetland	7.8-8.2	09/23/05	8:37	5.4	713	26.6	41.8
PTC7D	CMT	Wetland	10.3-10.5	09/28/05	9:00	5.5	918	22.2	10.5
PTC7D	CMT	Wetland	10.3-10.5	09/28/05	9:00	--	--	--	4.4
PTC8A	CMT	Wetland	2.8-3.2	09/23/05	11:05	4.4	662	23.8	--
PTC8B	CMT	Wetland	4.8-5.2	09/23/05	10:58	4.8	546	23.0	--
PTC8C	CMT	Wetland	7.8-8.2	09/23/05	12:23	5.4	684	24.2	15.3
PTC8D	CMT	Wetland	9.8-10.2	09/23/05	13:12	5.3	567	22.1	11.3
PTC8E	CMT	Aquifer	11.8-12.0	09/26/05	10:20	4.5	528	19.4	--
PTC8E	CMT	Aquifer	11.8-12.0	09/26/05	10:20	--	--	--	--
PTC9A	CMT	Wetland	2.8-3.2	09/27/05	13:00	4.0	894	24.4	--
PTC9B	CMT	Wetland	4.8-5.2	09/27/05	13:25	4.0	843	21.9	--
PTC9C	CMT	Wetland	7.8-8.2	09/27/05	14:05	3.9	839	22.6	--
PTC9C	CMT	Wetland	7.8-8.2	09/27/05	14:10	--	--	--	--
PTC9D	CMT	Wetland	9.8-10.2	09/27/05	11:45	4.4	853	23.0	--
PTC9E	CMT	Aquifer	12.1-12.3	09/28/05	9:15	3.8	834	16.2	--
PTC9E	CMT	Aquifer	12.1-12.3	09/28/05	9:20	--	--	--	--
PTC10A	CMT	Wetland	2.4-2.8	09/27/05	13:20	3.6	846	24.1	--
PTC10A	CMT	Wetland	2.4-2.8	09/27/05	13:20	--	--	--	--
PTC10B	CMT	Wetland	4.4-4.8	09/27/05	13:45	4.0	786	23.0	--
PTC10B	CMT	Wetland	4.4-4.8	09/27/05	13:50	--	--	--	--
PTC10C	CMT	Wetland	7.4-7.8	09/26/05	14:55	5.0	1,032	21.8	19.8
PTC10C	CMT	Wetland	7.4-7.8	09/26/05	14:55	--	--	--	--
PTC10D	CMT	Wetland	9.4-9.8	09/27/05	8:45	5.5	1,096	22.5	7.7
PTC10D	CMT	Wetland	9.4-9.8	09/27/05	8:45	--	--	--	--
PTC10E	CMT	Aquifer	12.6-12.8	09/28/05	10:00	4.5	889	17.2	--
PTC10E	CMT	Aquifer	12.6-12.8	09/28/05	10:00	--	--	--	--

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Date sampled	Time	Sulfide, mg/L	Ammonia, mg/L	Phos- phate, as PO4 mg/L	Nitrate as NO3, mg/L	Iron, (Fe2+) mg/L, <10 range	Iron, (Fe2+) mg/L, >10 range	Methane (a), ug/L	Methane (b) ug/L
PTC6A	09/22/05	9:43	<0.10	<0.70	<0.75	<0.20	1.13	--	<29.2	<31.5
PTC6A	09/22/05	9:43	--	--	--	<0.20	--	--	--	--
PTC6B	09/22/05	10:12	<0.10	<0.70	<0.75	<0.20	0.91	--	<29.0	<28.4
PTC6C	09/22/05	10:48	<0.10	<0.70	<0.75	<0.20	3.73	--	<27.1	<31.5
PTC6D	09/28/05	9:20	<0.10	<0.70	<0.75	<0.20	--	9.36	65.1	65.7
PTC6E	09/28/05	9:35	<0.10	<0.70	<0.75	<0.20	9.92	--	<37.6	35.4
PTC6E	09/28/05	--	<0.10	<0.70	--	<0.20	--	--	--	--
PTC7A	09/22/05	13:30	0.33	0.90	1.25	0.22	3.76	--	<27.6	<31.7
PTC7B	09/23/05	14:00	0.29	<0.70	<0.75	<0.20	3.50	--	<29.1	26.7
PTC7C	09/23/05	8:37	0.22	<0.70	<0.75	<0.20	9.73	--	277	254
PTC7D	09/28/05	9:00	0.10	<0.70	<0.75	<0.20	--	12.75	93.5	91.8
PTC7D	09/28/05	9:00	--	--	--	<0.20	--	14.36	--	--
PTC8A	09/23/05	11:05	<0.10	<0.70	<0.75	<0.20	4.27	--	48.8	40.6
PTC8B	09/23/05	10:58	0.55	0.94	1.05	0.42	1.60	--	126	133
PTC8C	09/23/05	12:23	<0.10	<0.70	<0.75	1.33	0.77	--	121	129
PTC8D	09/23/05	13:12	0.23	0.85	2.45	1.18	6.33	--	95.5	91.2
PTC8E	09/26/05	10:20	0.15	<0.70	<0.75	0.41	0.47	--	--	--
PTC8E	09/26/05	10:20	--	--	--	0.50	--	--	--	--
PTC9A	09/27/05	13:00	0.25	<0.70	1.65	0.31	2.88	--	52.7	53.0
PTC9B	09/27/05	13:25	0.14	0.71	<0.75	<0.20	3.02	--	41.2	38.4
PTC9C	09/27/05	14:05	0.34	0.72	1.30	0.28	2.80	--	<31.3	<32.1
PTC9C	09/27/05	14:10	--	--	--	--	--	--	<33.8	<32.8
PTC9D	09/27/05	11:45	<0.10	<0.70	<0.75	0.39	0.75	--	<34.4	<29.2
PTC9E	09/28/05	9:15	<0.10	<0.70	<0.75	1.07	0.21	--	<34.9	<34.5
PTC9E	09/28/05	9:20	<0.10	<0.70	<0.75	1.24	0.22	--	<35.4	<33.7
PTC10A	09/27/05	13:20	0.35	<0.70	1.40	<0.20	3.82	--	<37.4	<48.2
PTC10A	09/27/05	13:20	--	--	<0.75	<0.20	--	--	--	--
PTC10B	09/27/05	13:45	<0.10	<0.70	<0.75	<0.20	4.10	--	<38.1	<32.1
PTC10B	09/27/05	13:50	--	--	--	<0.20	--	--	<36.8	<35.3
PTC10C	09/26/05	14:55	<0.10	<0.70	<0.75	<0.20	--	20.09	103	98.0
PTC10C	09/26/05	14:55	<0.10	0.78	--	--	--	--	--	--
PTC10D	09/27/05	8:45	<0.10	1.42	<0.75	<0.20	--	21.67	89.1	89.7
PTC10D	09/27/05	8:45	--	<0.70	--	--	--	--	--	--
PTC10E	09/28/05	10:00	<0.10	<0.70	<0.75	<0.20	11.06	--	68.5	67.9
PTC10E	09/28/05	10:00	--	--	--	<0.20	--	--	--	--

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Device Type	Hydro-geologic Unit	Depth, Screened Interval (ft bls)	Date sampled	Time	pH	Specific conductance, $\mu\text{S}/\text{cm}$	Water temp. deg C.	Alkalinity, mg/L as CaCO_3
PTC11A	CMT	Wetland	1.8-2.2	09/28/05	10:15	3.9	641	21.8	--
PTC11A	CMT	Wetland	1.8-2.2	09/28/05	10:15	--	--	--	--
PTC11B	CMT	Wetland	4.8-5.2	09/28/08	10:55	3.9	705	19.4	--
PTC11C	CMT	Wetland	7.8-8.2	09/28/05	11:40	3.9	724	18.4	--
PTC11D	CMT	Wetland	9.8-10.2	09/28/05	12:45	3.9	721	19.8	--
PTC11D	CMT	Wetland	9.8-10.2	09/28/05	12:45	--	--	--	--
PTC11E	CMT	Wetland	11.8-12.2	09/28/05	13:35	3.9	715	20.3	--
PTC11F	CMT	Aquifer	14-14.2	09/29/05	8:50	3.9	690	17.9	--
PTC11F	CMT	Aquifer	14-14.2	09/29/05	8:55	--	--	--	--
PTC12A	CMT	Wetland	2.8-3.2	09/29/05	9:36	4.0	712	21.2	--
PTC12B	CMT	Wetland	4.8-5.2	09/29/05	10:35	4.2	720	19.6	--
PTC12B	CMT	Wetland	4.8-5.2	09/29/05	10:40	--	--	--	--
PTC12C	CMT	Wetland	7.8-8.2	09/29/05	11:10	5.9	850	19.2	40.8
PTC12D	CMT	Wetland	9.8-10.2	09/29/05	11:50	6.1	908	17.8	59.8
PTC12E	CMT	Wetland	11.8-12.2	09/29/05	13:10	5.6	828	17.3	42.7
PTC12F	CMT	Aquifer	15.2-15.4	09/29/05	14:05	5.9	762	22.2	33.6
PTC13A	CMT	Wetland	2.8-3.2	09/29/05	8:35	3.9	315	20.8	--
PTC13A	CMT	Wetland	2.8-3.2	09/29/05	8:35	--	--	--	--
PTC13B	CMT	Wetland	4.8-5.2	09/29/05	8:50	4.0	608	19.3	--
PTC13B	CMT	Wetland	4.8-5.2	09/29/05	8:50	--	--	--	--
PTC13C	CMT	Wetland	7.8-8.2	09/29/05	9:25	3.7	676	18.6	--
PTC13C	CMT	Wetland	7.8-8.2	09/29/05	9:30	--	--	--	--
PTC13D	CMT	Wetland	9.8-10.2	09/29/05	10:00	3.5	756	18.8	--
PTC13D	CMT	Wetland	9.8-10.2	09/29/05	10:00	--	--	--	--

"PTC" samples are groundwater samples collected from multi-level piezometers

"PTZ" samples are groundwater samples collected from individual piezometers

"PTB" samples are groundwater samples collected from in-mat passive diffusion samplers

"PTN" samples are groundwater samples collected from below-mat mini sand-pack screens

Appendix 1B. Field measurements and reduction-oxidation (redox)-sensitive constituents
for groundwater samples, seep 3-4W reactive mat pilot-test area, West Branch
Canal Creek, Aberdeen Proving Ground, Maryland,
March-October 2005--Continued

Device ID	Date sampled	Time	Sulfide, mg/L	Ammonia, mg/L	Phos- phate, as PO4 mg/L	Nitrate as NO3, mg/L	Iron, (Fe2+) mg/L, <10 range	Iron, (Fe2+) mg/L, >10 range	Methane (a), ug/L	Methane (b) ug/L
PTC11A	09/28/05	10:15	<0.10	<0.70	<0.75	0.83	0.14	--	<31.4	<30.9
PTC11A	09/28/05	10:15	--	--	--	--	0.13	--	--	--
PTC11B	09/28/08	10:55	0.15	<0.70	0.85	0.63	1.34	--	64.2	70.2
PTC11C	09/28/05	11:40	<0.10	<0.70	<0.75	0.50	1.63	--	116	114
PTC11D	09/28/05	12:45	0.39	0.74	1.20	0.99	1.38	--	91.8	87.9
PTC11D	09/28/05	12:45	--	--	--	0.94	--	--	--	--
PTC11E	09/28/05	13:35	<0.10	<0.70	<0.75	0.85	0.83	--	73.0	81.0
PTC11F	09/29/05	8:50	0.44	0.92	1.90	1.23	0.14	--	48.6	48.2
PTC11F	09/29/05	8:55	--	--	--	0.92	--	--	47.0	49.4
PTC12A	09/29/05	9:36	0.89	<0.70	<0.75	<0.20	7.10	--	109	111
PTC12B	09/29/05	10:35	0.55	<0.70	<0.75	<0.20	4.54	--	79.2	75.6
PTC12B	09/29/05	10:40	--	--	--	--	--	--	77.7	74.4
PTC12C	09/29/05	11:10	<0.10	<0.70	<0.75	<0.20	--	9.80	161	164
PTC12D	09/29/05	11:50	0.10	<0.70	<0.75	<0.20	--	10.49	175	157
PTC12E	09/29/05	13:10	<0.10	<0.70	0.95	<0.20	--	9.39	177	172
PTC12F	09/29/05	14:05	0.11	<0.70	<0.75	<0.20	--	44.80	177	167
PTC13A	09/29/05	8:35	<0.10	<0.70	<0.75	<0.20	0.37	--	<40.0	<34.6
PTC13A	09/29/05	8:35	--	--	<0.75	--	--	--	--	--
PTC13B	09/29/05	8:50	<0.10	<0.70	<0.75	<0.20	4.62	--	<33.2	<36.6
PTC13B	09/29/05	8:50	--	--	--	--	4.52	--	--	--
PTC13C	09/29/05	9:25	<0.10	<0.70	<0.75	<0.20	5.27	--	<36.3	36.3
PTC13C	09/29/05	9:30	--	--	--	--	--	--	<38.6	36.2
PTC13D	09/29/05	10:00	<0.10	<0.70	<0.75	<0.20	--	15.31	<38.5	<36.2
PTC13D	09/29/05	10:00	--	--	--	--	--	14.36	--	--