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Supporting Information for

## **Seasonal and spatial variation in the location and reactivity of a nitrate-contaminated groundwater discharge zone in a lakebed**

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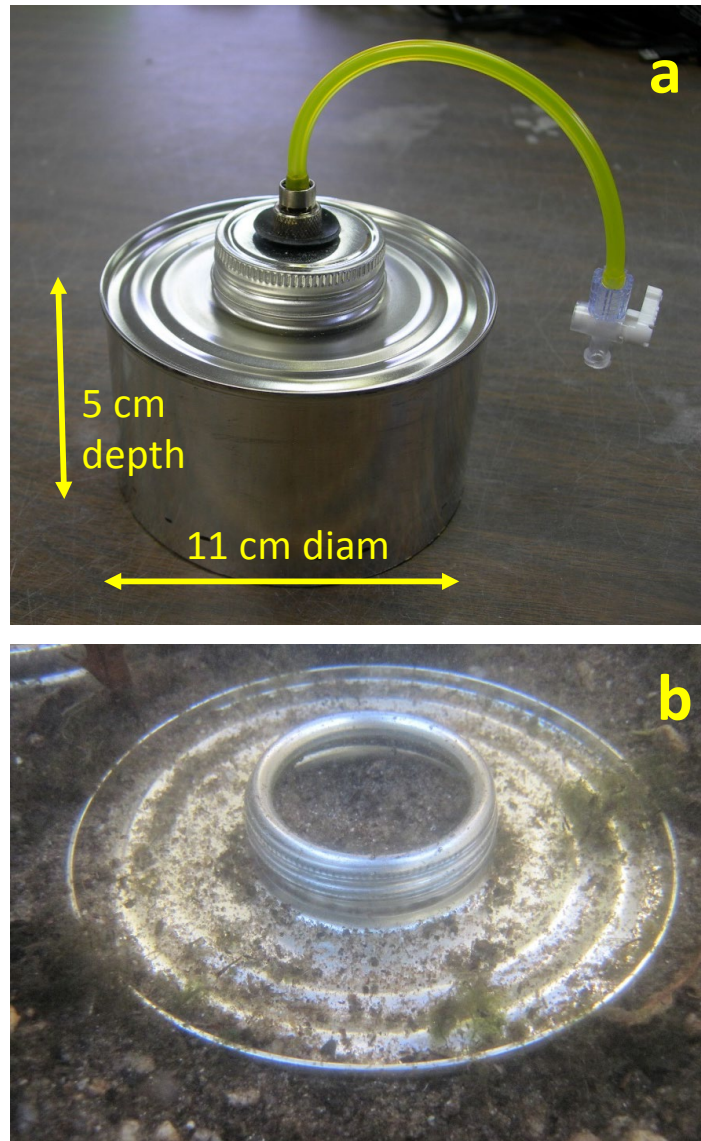
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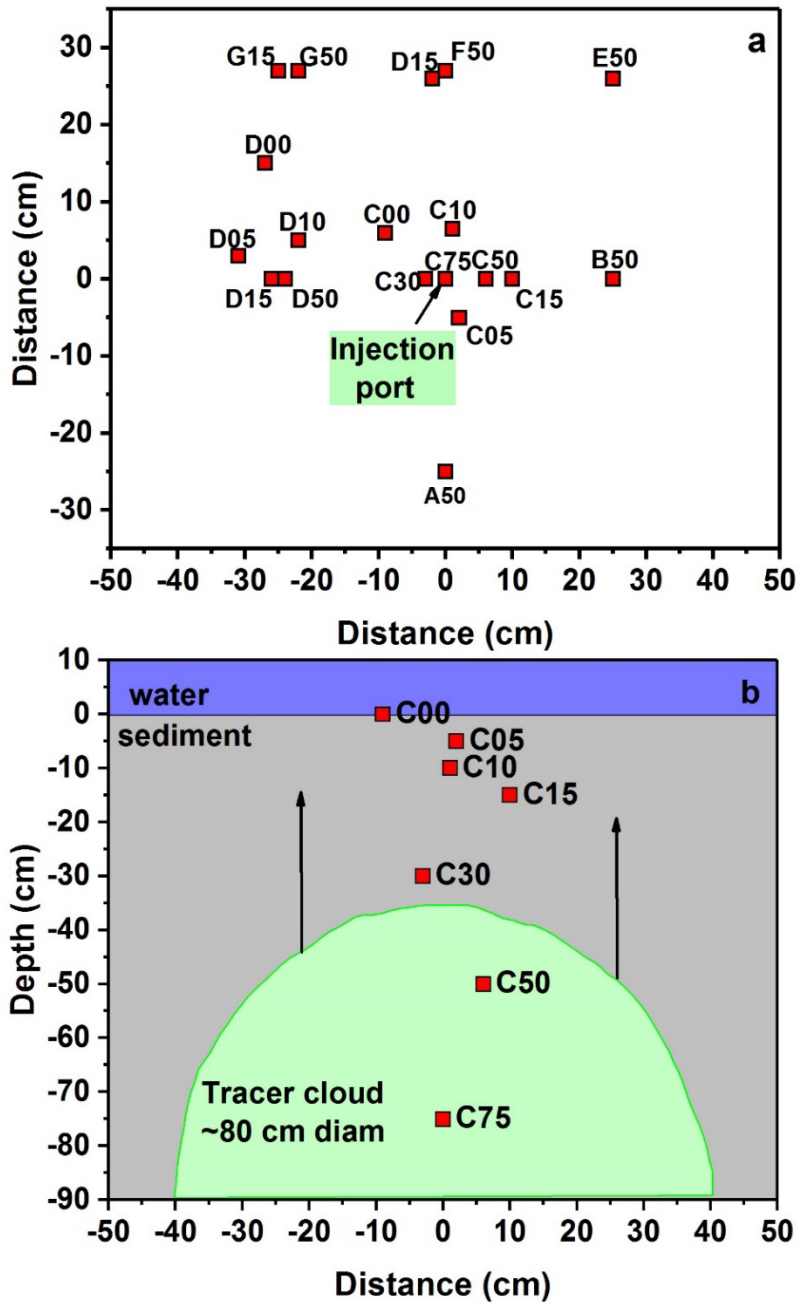
Figures S1 and S2; Tables S1 to S9

### **Introduction**

Figure S1 in this document describes the surface sampler used for collecting porewater in the top 5-cm sediment interval in Ashumet Pond and includes an underwater picture of the sampler in place in the lake. Figure S2 includes a map and vertical section showing the placement of the push-point samplers for the *in situ* tracer tests conducted in the lake. Table S1 is the tabulated temperature and location data for Figure 2 in the accompanying paper and Tables S2 and S3 are the tabulated groundwater and porewater geochemistry data for Figures 3, 4, and 5 in the paper. Table S4 is the chemical composition of the groundwater used for the sediment slurry incubations, while Tables S5, S6, and S7 present tabulated data of the sediment geochemistry, rates of activity measured in the sediment incubations, and sediment N-cycle gene abundances shown in Figure 6 of the paper. Table S8 presents the tracer composition of the injection solution used in the two *in situ* tracer tests, and Table S9 presents the tabulated data of the tracer test breakthrough curves shown in Figures 7 and 8 in the paper.



**Figure S1.** a) Porewater surface sampler constructed from an aluminum can with screwtop lid. The bottom of the can has been cutoff and a hole drilled in the cap. A stainless steel fitting with a Luer connector on one end and an open, threaded end is attached with a nut to the inside of the screwtop lid. Flexible, oxygen-impermeable tubing connects the stainless steel Luer fitting to a plastic, Luer valve. b) Picture of a porewater surface sampler in place in lake sediment. The screwtop lid is removed between sampling events to allow porewater to flow through the sampler. For sampling, the lid is placed on the sampler and porewater is slowly collected using a 30-mL syringe attached to the valve. The first syringe load of porewater is discarded. The second syringe load is collected as the sample. Photos by D. LeBlanc, USGS.



**Figure S2.** a) Map of sampling point locations used for natural-gradient tracer test designated by site (A-G) and depth (0-75 cm) of the middle of the pushpoint screen. See Figure S1 for description of surface samplers and Figure 2 of the accompanying paper for the location of the tracer tests in the lake (Note: Sampling point identifiers in this figure (e.g., A-E) differ from the transect labels in Figure 2 of the accompanying paper). b) Cross section of sampling points at site C and approximate size of 75-L tracer cloud at time of injection into C75 (assumes a sediment porosity of 0.3).

**Table S1.** Location and lakebed porewater temperature in Fishermans Cove, Ashumet Pond, Massachusetts in June 2015 at a sediment depth of 10 cm.

<b>Point ID</b>	<b>Easting_NAD83 meters</b>	<b>Northing_NAD83 meters</b>	<b>Temperature °C</b>	<b>Date</b>
1	279968.884	820955.442	13.2	6/19/2015
2	279969.781	820955.002	14.7	6/19/2015
3	279970.677	820954.562	15.3	6/19/2015
4	279972.470	820953.682	17.7	6/19/2015
5	279974.263	820952.802	18.3	6/19/2015
6	279975.160	820952.363	17.9	6/19/2015
7	279976.953	820951.483	18.2	6/19/2015
8	279978.746	820950.603	18.9	6/19/2015
9	279980.539	820949.723	20.1	6/19/2015
10	279982.332	820948.843	20.3	6/19/2015
11	279982.960	820948.535	20.2	6/19/2015
12	279964.799	820951.878	14.3	6/19/2015
13	279965.785	820951.394	14.8	6/19/2015
14	279967.578	820950.514	18.5	6/19/2015
15	279968.475	820950.074	19.0	6/19/2015
16	279970.268	820949.194	18.5	6/19/2015
17	279972.061	820948.314	18.7	6/19/2015
18	279972.957	820947.874	17.9	6/19/2015
19	279974.750	820946.994	19.6	6/19/2015
20	279976.543	820946.114	19.9	6/19/2015
21	279977.440	820945.674	20.2	6/19/2015
22	279961.789	820947.785	13.2	6/19/2015
23	279963.582	820946.905	16.5	6/19/2015
24	279965.375	820946.025	18.3	6/19/2015
25	279967.168	820945.145	18.3	6/19/2015
26	279968.961	820944.265	17.7	6/19/2015
27	279970.754	820943.385	17.3	6/19/2015
28	279972.547	820942.505	19.0	6/19/2015
29	279974.340	820941.625	19.3	6/19/2015
30	279959.048	820943.560	12.9	6/19/2015
31	279959.586	820943.296	13.5	6/19/2015
32	279961.379	820942.416	16.3	6/19/2015
33	279963.172	820941.536	17.4	6/19/2015
34	279964.965	820940.657	16.3	6/19/2015
35	279966.759	820939.777	18.6	6/19/2015
36	279968.552	820938.897	18.5	6/19/2015
37	279970.345	820938.017	18.8	6/19/2015
38	279972.138	820937.137	18.7	6/19/2015
39	279973.124	820936.653	18.8	6/19/2015
40	279956.577	820939.204	13.2	6/19/2015
41	279957.384	820938.808	14.4	6/19/2015

42	279959.177	820937.928	15.8	6/19/2015
43	279960.970	820937.048	17.1	6/19/2015
44	279962.763	820936.168	18.2	6/19/2015
45	279964.556	820935.288	19.9	6/19/2015
46	279966.349	820934.408	19.3	6/19/2015
47	279968.142	820933.528	19.2	6/19/2015
48	279969.935	820932.648	18.5	6/19/2015
49	279971.728	820931.768	19.4	6/19/2015
50	279954.195	820934.803	14.2	6/19/2015
51	279955.181	820934.319	17.9	6/19/2015
52	279956.974	820933.439	18.4	6/19/2015
53	279958.767	820932.559	18.2	6/19/2015
54	279960.560	820931.679	18.5	6/19/2015
55	279962.353	820930.799	18.8	6/19/2015
56	279964.146	820929.920	17.8	6/19/2015
57	279965.939	820929.040	16.0	6/19/2015
58	279967.732	820928.160	16.5	6/19/2015
59	279969.525	820927.280	16.1	6/19/2015
60	279951.543	820930.534	14.5	6/19/2015
61	279952.978	820929.831	17.2	6/19/2015
62	279954.771	820928.951	18.5	6/19/2015
63	279956.564	820928.071	19.1	6/19/2015
64	279958.357	820927.191	18.3	6/19/2015
65	279960.150	820926.311	18.6	6/19/2015
66	279961.943	820925.431	18.6	6/19/2015
67	279963.736	820924.551	17.3	6/19/2015
68	279965.529	820923.671	16.3	6/19/2015
69	279967.322	820922.791	15.9	6/19/2015
70	279949.879	820925.782	16.4	6/19/2015
71	279950.327	820925.562	16.9	6/19/2015
72	279950.775	820925.342	17.3	6/19/2015
73	279952.568	820924.462	19.3	6/19/2015
74	279954.361	820923.582	19.3	6/19/2015
75	279956.154	820922.702	19.1	6/19/2015
76	279957.947	820921.822	19.2	6/19/2015
77	279959.740	820920.942	20.5	6/19/2015
78	279961.533	820920.062	21.0	6/19/2015
79	279963.326	820919.183	20.8	6/19/2015
80	279965.119	820918.303	20.7	6/19/2015
81	279948.303	820920.985	17.5	6/19/2015
82	279948.572	820920.853	16.8	6/19/2015
83	279950.365	820919.973	18.8	6/19/2015
84	279952.158	820919.094	18.6	6/19/2015
85	279953.951	820918.214	20.2	6/19/2015
86	279955.744	820917.334	20.8	6/19/2015

87	279957.537	820916.454	21.1	6/19/2015
88	279959.330	820915.574	21.3	6/19/2015
89	279961.124	820914.694	21.1	6/19/2015
90	279962.917	820913.814	21.3	6/19/2015
91	279946.638	820916.233	17.4	6/19/2015
92	279948.162	820915.485	18.8	6/19/2015
93	279949.955	820914.605	18.6	6/19/2015
94	279951.749	820913.725	19.9	6/19/2015
95	279953.542	820912.845	21.2	6/19/2015
96	279955.335	820911.965	21.3	6/19/2015
97	279957.128	820911.085	21.8	6/19/2015
98	279958.921	820910.205	21.8	6/19/2015
99	279960.714	820909.325	21.6	6/19/2015
100	279962.507	820908.445	21.5	6/19/2015
101	279945.780	820911.084	17.0	6/19/2015
102	279947.753	820910.116	19.2	6/19/2015
103	279949.546	820909.236	19.0	6/19/2015
104	279951.339	820908.356	20.6	6/19/2015
105	279953.132	820907.477	21.3	6/19/2015
106	279954.925	820906.597	21.6	6/19/2015
107	279956.718	820905.717	21.6	6/19/2015
108	279958.511	820904.837	21.8	6/19/2015
109	279960.304	820903.957	21.3	6/19/2015
110	279944.653	820906.068	16.9	6/19/2015
111	279946.446	820905.188	17.0	6/19/2015
112	279947.343	820904.748	18.1	6/19/2015
113	279949.136	820903.868	20.3	6/19/2015
114	279950.929	820902.988	21.5	6/19/2015
115	279952.722	820902.108	21.6	6/19/2015
116	279954.515	820901.228	21.4	6/19/2015
117	279956.308	820900.348	21.4	6/19/2015
118	279958.101	820899.468	21.2	6/19/2015
119	279943.840	820900.897	15.9	6/19/2015
120	279944.244	820900.699	15.6	6/19/2015
121	279945.140	820900.259	17.7	6/19/2015
122	279946.933	820899.379	19.9	6/19/2015
123	279948.726	820898.499	21.3	6/19/2015
124	279950.519	820897.619	21.8	6/19/2015
125	279952.312	820896.740	21.9	6/19/2015
126	279954.105	820895.860	22.0	6/19/2015
127	279955.898	820894.980	21.8	6/19/2015
128	279957.691	820894.100	21.6	6/19/2015
129	279943.027	820895.727	17.4	6/19/2015
130	279943.834	820895.331	13.2	6/19/2015
131	279944.730	820894.891	18.4	6/19/2015

132	279946.523	820894.011	20.8	6/19/2015
133	279948.316	820893.131	21.8	6/19/2015
134	279950.109	820892.251	21.5	6/19/2015
135	279951.902	820891.371	21.7	6/19/2015
136	279953.695	820890.491	21.3	6/19/2015
137	279955.489	820889.611	21.2	6/19/2015
138	279979.797	820927.809	16.6	6/19/2015
139	279978.915	820926.013	16.2	6/19/2015
140	279978.034	820924.218	16.5	6/19/2015
141	279977.153	820922.422	19.6	6/19/2015
142	279976.272	820920.627	21.4	6/19/2015
143	279975.391	820918.832	21.6	6/19/2015
144	279974.510	820917.036	21.8	6/19/2015
145	279973.629	820915.241	21.8	6/19/2015
146	279972.747	820913.445	21.8	6/19/2015
147	279971.866	820911.650	21.9	6/19/2015
148	279970.985	820909.854	21.9	6/19/2015
149	279970.104	820908.059	21.6	6/19/2015
150	279969.223	820906.263	21.7	6/19/2015
151	279968.342	820904.468	21.6	6/19/2015
152	279968.342	820904.468	21.7	6/19/2015
153	279966.580	820900.877	21.8	6/19/2015
154	279965.698	820899.082	21.8	6/19/2015
155	279964.817	820897.286	21.8	6/19/2015
156	279963.936	820895.491	21.8	6/19/2015
157	279963.055	820893.695	21.7	6/19/2015
158	279962.174	820891.900	21.8	6/19/2015

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**Table S2.** Groundwater (GW), lakewater (LW), and lake sediment porewater (PW) samples near and within Fishermans Cove, Ashumet Pond, MA.

USGS local site name	Elevation m	Sediment Depth cm	Sample date	Sample Type	O <sub>2</sub> μM	NO <sub>3</sub> <sup>-</sup> μM	NO <sub>2</sub> <sup>-</sup> μM	N <sub>2</sub> O μM	NH <sub>4</sub> <sup>+</sup> μM	δ <sup>15</sup> N NO <sub>3</sub> <sup>-</sup> ‰	δ <sup>18</sup> O NO <sub>3</sub> <sup>-</sup> ‰
F424-M02-01PT	13.44	na	10/25/14	GW	16.56	0.00	0.00	0.02	0.00	nd	nd
F424-M02-02GNT	12.68	na	10/25/14	GW	1.09	0.00	0.00	nd	0.00	nd	nd
F424-M02-03RT	11.91	na	10/25/14	GW	0.94	0.00	0.00	0.01	0.00	nd	nd
F424-M02-04BUT	11.15	na	10/25/14	GW	100.31	0.00	0.00	nd	0.00	nd	nd
F424-M02-05BKT	10.38	na	10/25/14	GW	133.44	1.48	0.00	0.06	0.00	nd	nd
F424-M02-06WT	9.62	na	10/25/14	GW	191.56	13.64	0.00	nd	0.00	nd	nd
F424-M02-07O	8.86	na	10/25/14	GW	173.75	23.27	0.00	0.29	0.00	nd	nd
F424-M02-08GY	8.09	na	10/25/14	GW	52.19	68.16	0.00	nd	0.00	nd	nd
F424-M02-09Y	7.33	na	10/25/14	GW	10.63	83.05	0.00	1.85	0.00	nd	nd
F424-M02-10P	6.57	na	10/25/14	GW	1.56	104.52	3.16	1.57	0.00	nd	nd
F424-M02-11GN	5.81	na	10/25/14	GW	1.25	34.71	1.77	0.82	0.00	nd	nd
F424-M02-12R	5.04	na	10/25/14	GW	1.09	1.07	0.00	0.04	0.00	nd	nd
F424-M02-14BK	3.51	na	10/25/14	GW	1.13	0.87	0.00	0.02	0.00	nd	nd
F424-M02-15W	2.75	na	10/25/14	GW	1.41	0.82	0.00	0.02	6.34	nd	nd
F744-0004	12.88	na	10/24/14	GW	1.09	0.00	0.00	0.00	0.00	nd	nd
F744-0008	11.50	na	10/24/14	GW	109.38	8.74	0.00	0.05	0.00	nd	nd
F744-0010	11.13	na	10/24/14	GW	128.44	10.33	0.00	nd	0.00	nd	nd
F744-0011	10.64	na	10/24/14	GW	130.63	18.63	0.00	0.08	nd	nd	nd
F744-0013	10.20	na	10/24/14	GW	153.44	18.53	0.00	nd	0.00	6.72	-1.44
F744-0017	9.00	na	10/24/14	GW	178.44	5.92	0.00	0.03	0.00	6.87	-0.03
F744-0019	8.14	na	10/24/14	GW	127.19	29.63	0.00	nd	0.00	8.36	-0.06
F744-0023	7.14	na	10/24/14	GW	44.69	58.31	0.00	0.80	0.00	12.89	4.37
F744-0025	6.50	na	10/24/14	GW	7.50	69.23	0.00	nd	0.00	18.16	8.90
F744-0026	6.00	na	10/24/14	GW	1.25	71.30	0.00	1.52	0.00	21.22	10.98
F744-0028	5.67	na	10/24/14	GW	0.94	70.37	0.00	nd	0.00	28.88	14.99
F744-0029	5.18	na	10/24/14	GW	1.56	18.51	0.00	0.37	0.00	53.86	18.19
F744-0030	5.04	na	10/24/14	GW	0.94	5.10	0.00	nd	0.00	68.03	23.78
16N2E	13.30	-0.14	10/23/14	LW	311.25	0.00	0.00	0.02	0.00	nd	nd
16N2E	13.11	5	10/25/14	PW	nd	71.27	3.79	nd	4.16	nd	nd
16N2E	13.11	5	10/23/14	PW	15.63	67.32	3.30	1.31	0.00	nd	nd



16N2E	13.06	10	10/23/14	PW	5.63	86.72	3.76	2.39	0.00	nd	nd
16N2E	13.01	15	10/23/14	PW	1.25	95.85	3.22	2.34	0.00	nd	nd
16N2E	12.86	30	10/23/14	PW	2.00	89.94	2.98	2.33	0.00	nd	nd
16N2E	12.66	50	10/23/14	PW	1.50	90.31	2.89	2.37	0.00	nd	nd
16N2E	12.16	100	10/23/14	PW	4.38	85.68	2.16	2.40	0.00	nd	nd
105N007E	na	0	6/12/15	PW	nd	19.21	0.00	0.75	0.00	19.28	8.36
105N007E	na	10	6/12/15	PW	nd	57.75	0.00	1.15	0.00	16.34	6.72
105N007E	na	15	6/12/15	PW	16.84	54.67	0.00	1.07	0.00	15.60	6.19
105N007E	na	30	6/12/15	PW	17.50	53.96	0.00	1.10	0.00	15.81	6.49
105N007E	na	50	6/12/15	PW	18.00	53.54	0.00	1.09	0.00	16.02	6.70
105N007E	na	100	6/12/15	PW	49.38	42.97	0.00	0.74	0.00	13.60	4.39
105N008E	na	0	6/12/15	PW	nd	14.62	0.00	0.91	0.00	31.39	16.26
105N008E	na	10	6/12/15	PW	nd	47.00	0.00	1.79	0.00	29.66	15.07
105N008E	na	15	6/12/15	PW	3.63	51.77	0.00	1.89	0.00	26.42	13.58
105N008E	na	30	6/12/15	PW	4.44	54.94	0.00	1.89	0.00	26.23	13.50
105N008E	na	50	6/12/15	PW	3.97	55.14	0.00	1.97	0.00	26.29	13.63
105N008E	na	100	6/12/15	PW	3.09	58.93	0.00	1.63	0.00	21.53	10.38
115N008E	na	0	6/14/15	PW	nd	39.49	2.06	1.41	0.00	34.23*	17.60*
115N008E	na	10	6/14/15	PW	nd	81.73	0.00	2.26	0.00	32.74*	16.08*
115N008E	na	15	6/14/15	PW	6.34	80.86	1.81	1.95	0.00	31.68	15.00
115N008E	na	30	6/14/15	PW	7.97	79.50	2.09	1.93	0.00	31.60	14.42
115N008E	na	50	6/14/15	PW	6.41	81.57	2.20	1.93	0.00	31.43	14.28
115N008E	na	100	6/14/15	PW	5.31	79.24	3.47	1.86	0.00	35.81*	15.56*
115N009E	na	0	6/16/15	PW	nd	8.06	0.00	0.67	0.00	na	na
115N009E	na	10	6/16/15	PW	nd	65.81	5.90	3.09	0.00	43.28*	16.79*
115N009E	na	15	6/16/15	PW	2.88	50.31	4.84	2.35	0.00	45.38*	16.11*
115N009E	na	30	6/16/15	PW	3.44	55.52	5.20	2.27	0.00	46.01*	16.02*
115N009E	na	50	6/16/15	PW	3.59	49.15	5.25	2.08	0.00	47.90*	16.18*
115N009E	na	100	6/16/15	PW	3.31	46.47	3.96	1.92	0.00	45.81*	16.81*

\*Sample treated with sulfamic acid to remove nitrite; na = not available.

**Table S3.** Nitrate and oxygen concentrations within Ashumet Pond sediment porewater at 15 centimeters sediment depth along horizontal transects perpendicular to shore (Figure 2), June 2013 to June 2015.

USGS local site name	Distance from shore m	Distance from fixed location m	Sample Date	O <sub>2</sub> μM	NO <sub>3</sub> <sup>-</sup> μM
Nit-01N-02.4-A	2.44	3.44	6/6/2013	na	23.20
Nit-01N-03.0-A	3.05	4.05	6/6/2013	na	36.98
Nit-01N-03.7-A	3.66	4.66	6/6/2013	na	46.69
Nit-01N-04.3-A	4.27	5.27	6/6/2013	62.50	47.40
Nit-01N-05.2-A	5.18	6.18	6/6/2013	6.06	76.03
Nit-01N-05.5-A	5.49	6.49	6/6/2013	0.81	87.46
Nit-01N-06.3-A	6.34	7.34	6/12/2013	4.34	89.90
Nit-01N-06.8-A	6.80	7.80	6/12/2013	1.22	90.90
Nit-01N-07.3-A	7.32	8.32	6/12/2013	1.31	96.48
Nit-01N-07.8-A	7.80	8.80	6/12/2013	3.44	89.23
Nit-01N-00.0E-SHORE	0.00	1.49	9/22/2013	na	na
Nit-01N-00.1E-A	0.12	1.61	9/22/2013	48.44	1.53
Nit-01N-01.3E-A	1.04	2.53	9/22/2013	154.69	4.19
Nit-01N-01.6E-A	1.34	2.83	9/22/2013	145.94	5.74
Nit-01N-02.0E-A	1.65	3.14	9/22/2013	96.25	9.10
Nit-01N-01.8E-A	1.83	3.32	9/22/2013	59.38	19.78
Nit-01N-02.0E-A	2.04	3.53	9/22/2013	17.19	39.83
Nit-01N-02.3E-A	2.26	3.74	9/22/2013	9.06	45.76
Nit-01N-02.6E-A	2.56	4.05	9/22/2013	1.25	59.57
Nit-01N-02.9E-A	2.87	4.36	9/22/2013	1.25	65.30
Nit-01N-03.1E-A	3.08	4.57	9/21/2013	2.81	71.08
Nit-08N-00.0E	0.00	3.59	6/19/2014	na	na
Nit-08N-00.2E-A	0.20	3.79	6/19/2014	70.00	0.00
Nit-08N-02.0E-A	2.00	5.59	6/19/2014	101.88	29.10
Nit-08N-03.0E-A	3.00	6.59	6/17/2014	59.06	47.16
Nit-08N-04.0E-A	4.00	7.59	6/17/2014	37.81	60.98
Nit-08N-04.5E-A	4.50	8.09	6/17/2014	3.44	72.58
Nit-08N-05.0E-A	5.00	8.59	6/17/2014	4.38	70.60
Nit-08N-05.5E-A	5.50	9.09	6/17/2014	2.41	70.42
Nit-08N-06.0E-A	6.00	9.59	6/17/2014	2.22	72.82
Nit-08N-06.5E-A	6.50	10.09	6/17/2014	0.97	70.61
Nit-08N-07.0E-A	7.00	10.59	6/17/2014	1.84	66.59
Nit-08N-08.0E-A	8.00	11.59	6/17/2014	1.34	39.10

Nit-08N-10.0E-A	10.00	13.59	6/17/2014	1.19	0.00
Nit-08N-12.0E-A	12.00	15.59	6/17/2014	0.69	0.00
Nit-16N-00.0E-A	0.00	8.77	10/23/2014	102.19	16.56
Nit-16N-00.5E-A	0.50	9027	10/23/2014	48.13	39.06
Nit-16N-01.0E-A	1.00	9.77	10/23/2014	1.56	71.63
Nit-16N-02.0E-A	2.00	10.77	10/23/2014	1.25	95.85
Nit-16N-03.0E-A	3.00	11.77	10/23/2014	1.09	56.13
Nit-16N-04.0E-A	4.00	12.77	10/23/2014	1.59	62.75
Nit-16N-05.0E-A	5.00	13.77	10/23/2014	0.94	58.04
Nit-16N-06.0E-A	6.00	14.77	10/23/2014	0.72	43.81
Nit-16N-07.0E-A	7.00	15.77	10/23/2014	1.56	51.82
Nit-16N-08.0E-A	8.00	16.77	10/23/2014	1.00	14.21
Nit-16N-09.0E-A	9.00	17.77	10/23/2014	4.84	0.00
Nit-16N-10.0E-A	10.00	18.77	10/23/2014	3.44	0.81
Nit-16N-11.0E-A	11.00	19.77	10/23/2014	3.44	0.00
Nit-16N-12.0E-A	12.00	20.77	10/23/2014	3.13	7.82
Nit-16N-13.0E-A	13.00	21.77	10/23/2014	5.63	23.47
Nit-16N-14.0E-A	14.00	22.77	10/23/2014	5.00	0.00
105N 000E	0.00	-0.23	6/12/2015	na	na
105N005E	0.50	0.27	6/12/2015	128.44	14.59
105N007E	2.50	2.27	6/12/2015	16.84	54.67
105N008E	3.50	3.27	6/12/2015	3.63	51.77
105N011E	6.50	6.27	6/12/2015	5.66	8.50
105N013E	8.50	8.27	6/12/2015	2.75	0.00

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na = not available.

**Table S4.** Composition of groundwater used for sediment slurry incubations.

Parameter	Sample date	
	6/16/2014	6/9/2015
Specific Conductance, $\mu\text{S cm}^{-1}$	124.4	114.3
Dissolved Oxygen, $\mu\text{M}$	0.94	0.01
pH	6.15	6.08
DOC, $\mu\text{M}$	39.4	46.9
Nitrate, $\mu\text{M}$	0	0
Nitrite, $\mu\text{M}$	0	0
Ammonium, $\mu\text{M}$	12	10
Chloride, $\mu\text{M}$	538	343
Sulfate, $\mu\text{M}$	90	139
Sodium, $\mu\text{M}$	633	545
Potassium, $\mu\text{M}$	83	84
Calcium, $\mu\text{M}$	82	78
Magnesium, $\mu\text{M}$	53	64

**Table S5.** Temperature, pH, selected porewater constituents, and total sediment carbon content (as dry weight) at locations and depth intervals where sediment cores were collected in Ashumet Pond.

Date and USGS local site name	Distance from fixed location m	Sediment core interval	pH	Temp °C	NO <sub>3</sub> <sup>-</sup> μM	NH <sub>4</sub> <sup>+</sup> μM	Fe μM	Mg μM	Mn μM	P μM	S μM	Si μM	Total C %
<b>Jun-14</b>													
OX-B	4	5-30 cm	4.95	17.4	0.00	0.00	0.1	116.4	0.7	0.0	21.9	87.9	0.06
SUB-B	6.6	5-30 cm	5.65	22.2	47.16	0.00	0.1	87.3	0.0	0.0	30.3	141.5	0.07
APN-B	11.2	5-30 cm	na	na	na	na	na	na	na	na	na	na	0.07
ANOX-LO-B	13.1	5-30 cm	6.07	23.4	39.10	4.94	0.2	119.4	26.6	13.4	166.5	213.9	0.07
ANOX-0-B	14.5	5-30 cm	6.18	24.0	0.00	0.00	0.0	82.6	17.8	17.0	188.2	211.5	0.12
<b>Jun-15</b>													
APN-Ox	0.3	0-5 cm	5.86	24.0	6.05	0.00	na	na	na	na	na	na	0.13
APN-SubOx	2.3	0-5 cm	6.09	23.9	19.21	0.00	1.25	59.04	6.50	0.40	79.32	100.48	0.11
APN-Low	3.3	0-5 cm	6.19	23.5	14.62	0.00	1.06	71.41	4.26	1.17	94.88	88.26	0.11
APN1-1	6.3	0-5 cm	6.56	22.1	1.67	0.00	16.80	76.69	68.44	14.09	116.81	166.60	0.17
APN-0	8.3	0-5 cm	na	na	na	na	na	na	na	na	na	na	0.32
<b>Jun-15</b>													
APN1-1	6.3	0-5 cm	6.56	22.1	1.67	0.00	16.80	76.69	68.44	14.09	116.81	166.60	0.17
	6.3	0-5 cm	na	na	na	na	na	na	na	na	na	na	na
	6.3	0-5 cm	na	na	na	na	na	na	na	na	na	na	na
APN1-2	6.3	5-10 cm	6.20	20.9	8.26	0.00	0.25	65.38	13.55	14.12	140.17	207.65	0.12
	6.3	5-10 cm	na	na	na	na	na	na	na	na	na	na	na
	6.3	5-10 cm	na	na	na	na	na	na	na	na	na	na	na
APN1-3	6.3	10-15 cm	6.16	21.5	8.50	0.00	0.11	66.20	13.25	14.17	140.39	207.61	0.09
	6.3	10-15 cm	na	na	na	na	na	na	na	na	na	na	na
	6.3	10-15 cm	na	na	na	na	na	na	na	na	na	na	na

na = not available.

**Table S6.** Rates of nitrous oxide production by denitrification in the presence of acetylene, <sup>15</sup>N-nitrogen gas production by anammox, and anoxic nitrate consumption in Ashmet Pond slurried sediment core incubations.

Date and USGS local site name	Distance from fixed location m	Sediment core interval	N <sub>2</sub> O production nmol N/gdw/hr		N <sub>2</sub> production nmol N/gdw/hr		NO <sub>3</sub> <sup>-</sup> consumed nmol/gdw/hr	
			mean	sd	mean	sd	mean	sd
<b>Jun-14</b>								
OX-B	4	5-30 cm	0.174	0.012	na	na	0.052	0.447
SUB-B	6.6	5-30 cm	0.545	0.017	na	na	0.461	0.595
APN-B	11.2	5-30 cm	0.066	0.005	0.493	0.031	0.370	0.169
ANOX-LO-B	13.1	5-30 cm	0.052	0.003	0.602	0.088	0.364	0.171
ANOX-0-B	14.5	5-30 cm	0.005	0.001	0.429	0.069	0.811	0.203
<b>Jun-15</b>								
APN-Ox	0.3	0-5 cm	6.417	0.258	0.112	0.006	7.115	0.208
APN-SubOx	2.3	0-5 cm	5.294	0.168	0.077	0.011	3.304	0.625
APN-Low	3.3	0-5 cm	7.325	0.194	0.152	0.024	8.116	0.248
APN1-1	6.3	0-5 cm	8.055	0.210	0.235	0.024	7.882	0.431
APN-0	8.3	0-5 cm	6.029	0.101	0.293	0.031	18.055	1.398
<b>Jun-15</b>								
APN1-1	6.3	0-5 cm	8.055	0.210	0.235	0.024	7.882	0.431
	6.3	0-5 cm	8.656	0.150	na	na	9.994	0.838
	6.3	0-5 cm	5.138	0.089	na	na	8.115	0.586
APN1-2	6.3	5-10 cm	2.492	0.043	0.202	0.030	4.546	0.356
	6.3	5-10 cm	0.292	0.003	na	na	0.689	0.138
	6.3	5-10 cm	0.340	0.006	na	na	1.199	0.566
APN1-3	6.3	10-15 cm	0.638	0.007	0.073	0.015	0.235	0.134
	6.3	10-15 cm	0.062	0.001	na	na	0.294	0.222
	6.3	10-15 cm	0.125	0.008	na	na	0.602	0.204

gdw = gram dry weight; sd = standard deviation; na = not available.

**Table S7.** Abundance of genes regulating denitrification (*nosZI*, *nosZII*, and *nirS*) and anammox (*hzo*) in Ashumet Pond sediment cores.

Date and USGS local site name	Distance from fixed location m	Sediment core interval	<i>hzo</i> copies/gdw		<i>nirS</i> copies/gdw		<i>nosZI</i> copies/gdw		<i>nosZII</i> copies/gdw	
			mean	sd	mean	sd	mean	sd	mean	sd
<b>Jun-14</b>										
OX-B	4	5-30 cm	2.84E+05	3.30E+04	4.74E+06	3.54E+05	2.29E+07	1.29E+06	3.11E+07	1.28E+06
SUB-B	6.6	5-30 cm	6.52E+05	1.10E+04	5.01E+06	1.55E+05	2.49E+07	2.47E+05	1.43E+07	1.73E+05
APN-B	11.2	5-30 cm	7.03E+05	1.79E+04	4.30E+06	2.54E+05	1.82E+07	7.93E+05	1.91E+07	4.80E+05
ANOX-LO-B	13.1	5-30 cm	2.38E+06	2.06E+05	6.22E+06	2.00E+05	3.41E+07	1.05E+06	2.44E+07	1.03E+06
ANOX-0-B	14.5	5-30 cm	4.12E+06	2.61E+05	3.57E+06	1.42E+04	4.09E+07	1.81E+06	2.26E+07	1.30E+06
<b>Jun-15</b>										
APN-Ox	0.3	0-5 cm	6.07E+04	3.67E+04	1.08E+07	6.81E+05	7.29E+07	1.96E+06	6.42E+07	7.95E+06
APN-SubOx	2.3	0-5 cm	6.85E+05	1.02E+05	3.09E+07	2.65E+05	1.60E+08	5.41E+06	1.94E+08	2.96E+06
APN-Low	3.3	0-5 cm	6.07E+05	3.17E+04	2.29E+07	1.11E+06	9.39E+07	3.95E+06	4.38E+07	1.38E+06
APN1-1	6.3	0-5 cm	2.34E+06	1.13E+05	3.86E+07	1.65E+06	1.08E+08	2.40E+06	1.74E+08	1.42E+07
APN-0	8.3	0-5 cm	8.11E+05	7.63E+04	2.44E+07	1.63E+06	6.35E+07	5.01E+06	5.29E+07	9.74E+05
<b>Jun-15</b>										
APN1-1	6.3	0-5 cm	2.34E+06	1.13E+05	3.86E+07	1.65E+06	1.08E+08	2.40E+06	1.74E+08	1.42E+07
	6.3	0-5 cm	na	na	na	na	na	na	na	na
	6.3	0-5 cm	na	na	na	na	na	na	na	na
APN1-2	6.3	5-10 cm	7.98E+05	6.29E+04	1.41E+07	4.30E+05	4.13E+07	6.12E+06	7.82E+07	2.45E+06
	6.3	5-10 cm	na	na	na	na	na	na	na	na
	6.3	5-10 cm	na	na	na	na	na	na	na	na
APN1-3	6.3	10-15 cm	na	na	na	na	na	na	na	na
	6.3	10-15 cm	na	na	na	na	na	na	na	na
	6.3	10-15 cm	na	na	na	na	na	na	na	na

gdw = gram dry weight; sd = standard deviation; na = not available.

**Table S8.** Measured tracer concentrations in injectate solutions for lakebed sediment tracer test in Fishermans Cove, Ashumet Pond, MA in October 2014.

Sample	Tracer test #	Sample designation	Date	Oxygen $\mu\text{M}$	Bromide $\mu\text{M}$	Nitrite $\mu\text{M}$	Acetate $\mu\text{M}$	Nitrate $\mu\text{M}$	Nitrous oxide $\mu\text{M-N}$
injectate	1 & 2	supply water	10/24/2014	2.6	0.0	0.0	na	80.1	2.02
injectate	1	1a	10/24/2014	9.0	965.4	37.5	na	98.7	1.37
injectate	1	1b	10/24/2014	na	974.4	37.6	na	95.7	1.51
injectate	1	2a	10/24/2014	7.1	975.0	38.0	na	96.2	1.13
injectate	1	2b	10/24/2014	na	974.1	38.8	na	94.4	1.17
injectate	1	end	10/24/2014	na	946.9	38.8	na	95.6	na
injectate	1	C <sub>0</sub>	10/24/2014	8.1	967.2	38.1	na	96.1	1.30
injectate	2	1	10/27/2014	3.7	1230.1	na <sup>a</sup>	113.8	81.8	na
injectate	2	2	10/27/2014	4.1	1229.6	na <sup>a</sup>	115.8	82.9	na
injectate	2	C <sub>0</sub>	10/24/2014	3.9	1229.9	58.5 <sup>a</sup>	114.8	82.4	0.89 <sup>b</sup>

<sup>a</sup>Sample lost. Used C75 (T<sub>0</sub> minus background) for C<sub>0</sub>.

<sup>b</sup>Used C75 T<sub>0</sub> for C<sub>0</sub>.

na = not available.



**Table S9.** Lakebed sediment tracer tests in Fishermans Cove, Ashumet Pond, MA in October 2014.

Site	Test #	sample	Hours elapsed after tracer injection	Bromide $\mu\text{M}$	Nitrite $\mu\text{M}$	Acetate $\mu\text{M}$	Nitrate $\mu\text{M}$	Nitrous oxide $\mu\text{M-N}$	Bromide C/C <sub>0</sub>	Nitrite C/C <sub>0</sub>	Nitrite consumed $\mu\text{M}$	Acetate consumed $\mu\text{M}$
C00	1	T0	0.00	0.50	4.08	na	72.74	2.26	0.00	0.00	0.02	na
C00	1	T1	2.92	1.08	3.86	na	75.01	2.05	0.00	-0.01	0.26	na
C00	1	T2	6.22	17.32	4.22	na	72.95	2.06	0.02	0.00	0.55	na
C00	1	T3	9.20	486.79	18.65	na	76.24	2.99	0.50	0.38	4.63	na
C00	1	T4	12.12	761.11	28.10	na	73.89	3.60	0.79	0.63	6.00	na
C00	1	T5	15.13	902.59	32.36	na	76.58	3.98	0.93	0.74	7.32	na
C00	1	T6	18.08	936.96	33.83	na	74.48	4.12	0.97	0.78	7.21	na
C00	1	T7	20.93	905.67	32.76	na	72.01	4.92	0.94	0.75	7.04	na
C00	1	T8	24.13	699.99	23.95	na	73.51	4.56	0.72	0.52	7.74	na
C00	1	T9	27.19	324.46	12.49	na	79.90	3.68	0.34	0.22	4.39	na
C00	1	T10	29.93	115.34	5.17	na	71.40	2.83	0.12	0.03	3.46	na
C00	1	T11	32.78	26.66	3.11	na	66.67	1.96	0.03	-0.03	2.02	na
C00	1	T12	39.07	2.35	3.00	na	75.41	2.10	0.00	-0.03	1.17	na
C00	1	T13	44.27	1.23	3.24	na	77.06	nd	0.00	-0.02	0.88	na
C00	2	T0	0.00	0.66	3.38	0.00	74.98	2.23	0.00	0.01	-0.61	0.06
C00	2	T1	2.90	0.98	3.25	0.00	62.18	2.03	0.00	0.01	-0.46	0.09
C00	2	T2	5.83	4.66	3.52	0.00	66.89	2.27	0.00	0.01	-0.55	0.44
C00	2	T3	8.78	368.00	18.64	18.23	56.68	6.10	0.30	0.27	1.61	16.08
C00	2	T4	11.95	956.72	46.28	59.06	51.17	8.87	0.78	0.74	1.97	29.95
C00	2	T5	14.80	1097.68	53.29	66.75	45.81	9.41	0.89	0.86	1.67	35.39

C00	2	T6	17.82	1119.59	60.11	61.55	38.69	10.25	0.91	0.98	-4.11	42.74
C00	2	T7	20.90	1161.47	57.78	79.95	55.47	10.23	0.94	0.94	0.21	27.96
C00	2	T8	23.95	913.15	48.11	51.91	54.19	11.47	0.74	0.78	-1.93	33.12
C00	2	T9	26.93	492.23	27.22	19.69	59.38	10.86	0.40	0.42	-1.06	26.29
C00	2	T10	29.77	145.85	7.18	0.00	61.18	6.42	0.12	0.08	2.51	13.73
C00	2	T11	33.75	20.63	3.08	0.00	66.11	4.03	0.02	0.01	0.65	1.94
C00	2	T12	40.20	3.16	2.35	0.00	66.44	3.10	0.00	-0.01	0.54	0.30
C00	2	T13	44.27	1.66	2.40	0.00	70.95	3.03	0.00	-0.01	0.43	0.16
C00	2	T14	48.88	1.27	2.00	0.00	65.16	3.41	0.00	-0.01	0.81	0.12
C05	1	T0	0.00	0.75	3.77	na	84.14	2.22	0.00	0.00	0.03	na
C05	1	T1	2.91	0.90	3.38	na	86.83	2.03	0.00	-0.01	0.42	na
C05	1	T2	6.21	356.86	15.48	na	87.52	2.29	0.37	0.31	2.37	na
C05	1	T3	9.19	911.57	34.34	na	93.16	3.34	0.94	0.80	5.39	na
C05	1	T4	12.12	967.75	36.90	na	89.71	4.42	1.00	0.87	5.04	na
C05	1	T5	15.13	969.32	36.24	na	89.31	4.62	1.00	0.85	5.77	na
C05	1	T6	18.05	957.13	34.07	na	83.28	4.91	0.99	0.79	7.45	na
C05	1	T7	20.93	855.42	29.60	na	80.59	4.52	0.88	0.68	7.91	na
C05	1	T8	24.13	526.42	19.66	na	81.48	3.83	0.54	0.42	4.87	na
C05	1	T9	27.18	189.24	8.64	na	86.63	3.03	0.20	0.13	2.59	na
C05	1	T10	29.92	48.12	3.71	na	81.78	2.00	0.05	0.00	1.96	na
C05	1	T11	32.77	11.42	2.73	na	83.50	2.00	0.01	-0.03	1.48	na
C05	1	T13	43.93	1.49	2.80	na	86.50	nd	0.00	-0.03	1.03	na
C05	2	T0	0.00	0.70	3.32	0.00	88.77	2.12	0.00	0.01	-0.54	0.07
C05	2	T1	2.92	0.63	3.43	0.00	90.46	2.08	0.00	0.01	-0.65	0.06
C05	2	T2	5.87	285.33	17.69	16.51	83.43	3.85	0.23	0.26	-1.38	10.06
C05	2	T3	8.82	1134.81	64.20	75.97	67.49	9.85	0.92	1.05	-7.48	29.50
C05	2	T4	11.98	1224.87	71.93	112.26	64.76	9.43	1.00	1.18	-10.92	1.06

C05	2	T5	14.83	1218.94	66.49	87.15	65.61	10.65	0.99	1.09	-5.77	26.04
C05	2	T6	17.86	1206.91	71.95	85.26	64.96	11.76	0.98	1.18	-11.80	26.84
C05	2	T7	20.92	1103.35	67.29	73.35	64.03	11.48	0.90	1.10	-12.06	29.21
C05	2	T8	23.96	800.50	48.56	43.85	65.63	14.05	0.65	0.78	-7.74	30.71
C05	2	T9	26.96	319.48	19.25	8.58	73.19	11.10	0.26	0.28	-1.31	21.34
C05	2	T10	29.80	83.10	6.98	1.69	83.74	6.46	0.07	0.07	-0.28	6.10
C05	2	T11	33.78	11.16	3.47	0.00	87.61	3.99	0.01	0.01	-0.19	1.05
C05	2	T12	40.23	2.46	2.85	0.00	90.03	3.15	0.00	0.00	0.02	0.23
C05	2	T13	44.30	1.58	2.46	0.00	86.24	3.15	0.00	0.00	0.36	0.15
C05	2	T14	48.92	0.99	2.54	0.00	90.01	3.11	0.00	0.00	0.25	0.09
C10	1	T0	0.00	0.96	3.04	na	89.30	2.76	0.00	0.00	0.04	na
C10	1	T1	2.89	1.01	3.11	na	90.75	2.43	0.00	0.00	-0.02	na
C10	1	T2	6.19	172.30	8.62	na	90.55	2.19	0.18	0.15	1.22	na
C10	1	T3	9.17	705.72	27.81	na	91.48	1.98	0.73	0.65	3.07	na
C10	1	T4	12.10	932.85	36.36	na	91.48	1.89	0.96	0.87	3.48	na
C10	1	T5	15.10	933.12	36.35	na	90.38	1.84	0.96	0.87	3.50	na
C10	1	T6	18.05	799.62	31.58	na	92.34	1.84	0.83	0.75	3.00	na
C10	1	T7	20.92	422.05	18.41	na	92.52	2.39	0.44	0.40	1.28	na
C10	1	T8	24.12	124.42	7.25	na	90.34	2.68	0.13	0.11	0.70	na
C10	1	T9	27.16	27.15	3.78	na	89.52	2.62	0.03	0.02	0.33	na
C10	1	T10	29.90	6.50	3.03	na	86.87	2.64	0.01	0.00	0.27	na
C10	1	T11	32.73	2.62	3.03	na	86.56	2.41	0.00	0.00	0.12	na
C10	1	T13	43.88	1.18	3.22	na	85.78	nd	0.00	0.00	-0.13	na
C10	2	T0	0.00	0.72	3.28	1.13	92.34	2.10	0.00	0.01	-0.50	0.00
C10	2	T1	2.95	0.71	3.69	1.11	93.17	2.34	0.00	0.02	-0.91	0.00
C10	2	T2	5.92	115.56	8.92	8.00	91.90	2.47	0.09	0.11	-0.68	2.74
C10	2	T3	8.87	856.61	45.38	66.46	82.54	3.40	0.70	0.73	-1.89	13.00

C10	2	T4	12.02	1201.24	58.02	100.91	79.81	3.02	0.98	0.94	1.86	10.38
C10	2	T5	14.87	1184.98	56.84	98.96	79.90	3.05	0.96	0.92	2.27	10.83
C10	2	T6	17.90	1060.52	54.59	88.67	81.04	3.33	0.86	0.89	-1.40	9.59
C10	2	T7	20.93	603.79	34.19	49.46	83.94	3.81	0.49	0.54	-2.73	6.51
C10	2	T8	23.97	221.06	14.98	15.12	86.26	3.62	0.18	0.21	-1.72	5.42
C10	2	T9	26.98	59.30	6.30	2.78	88.07	3.31	0.05	0.06	-0.73	2.75
C10	2	T10	29.83	11.64	3.82	1.24	87.51	2.87	0.01	0.02	-0.52	0.00
C10	2	T11	33.82	2.88	3.49	1.22	87.57	2.46	0.00	0.01	-0.61	0.00
C10	2	T12	40.27	1.27	3.10	1.18	87.50	2.30	0.00	0.01	-0.29	0.00
C10	2	T13	44.33	1.09	3.01	1.13	87.90	2.56	0.00	0.00	-0.21	0.00
C10	2	T14	48.95	0.92	2.99	1.18	87.57	2.75	0.00	0.00	-0.20	0
C15	1	T0	0.00	2.34	3.00	na	90.19	2.43	0.00	0.00	0.09	na
C15	1	T1	2.89	155.67	7.95	na	93.57	1.96	0.16	0.13	1.20	na
C15	1	T2	6.19	708.55	27.36	na	96.02	1.63	0.73	0.64	3.59	na
C15	1	T3	9.16	909.34	35.04	na	95.50	1.35	0.94	0.84	3.83	na
C15	1	T4	12.10	919.87	34.65	na	96.13	1.39	0.95	0.83	4.64	na
C15	1	T5	15.09	839.94	32.10	na	97.37	1.48	0.87	0.76	4.03	na
C15	1	T6	18.07	473.77	19.48	na	96.85	1.82	0.49	0.43	2.21	na
C15	1	T7	20.93	152.20	8.13	na	92.70	2.21	0.16	0.13	0.88	na
C15	1	T8	24.12	27.27	3.73	na	90.18	2.42	0.03	0.02	0.35	na
C15	1	T9	27.15	4.97	2.96	na	88.17	2.37	0.01	0.00	0.24	na
C15	1	T10	29.89	2.25	2.93	na	88.69	2.22	0.00	0.00	0.16	na
C15	1	T11	32.72	1.70	3.02	na	88.81	2.09	0.00	0.00	0.05	na
C15	1	T13	43.85	0.99	2.87	na	88.75	nd	0.00	0.00	0.18	na
C15	2	T0	0.00	0.83	2.92	0.00	93.11	2.11	0.00	0.00	-0.13	0.08
C15	2	T1	2.97	191.92	10.93	15.68	91.59	2.24	0.16	0.14	0.95	2.11
C15	2	T2	5.96	843.86	40.46	68.07	83.08	1.89	0.69	0.64	2.42	10.16

C15	2	T3	8.91	1217.72	55.63	98.74	80.14	1.56	0.99	0.90	5.04	14.14
C15	2	T4	12.05	1164.20	55.85	98.96	80.49	1.62	0.95	0.91	2.28	8.88
C15	2	T5	14.90	1052.04	47.83	89.50	80.71	1.90	0.86	0.77	4.96	7.95
C15	2	T6	17.94	670.44	33.90	58.62	84.72	2.10	0.55	0.53	0.74	3.46
C15	2	T7	20.95	237.10	15.00	21.03	89.03	2.53	0.19	0.21	-0.98	0.92
C15	2	T8	23.97	43.09	5.65	3.18	90.33	2.61	0.04	0.05	-0.86	0.82
C15	2	T9	27.01	8.39	3.90	0.00	90.37	2.46	0.01	0.02	-0.76	0.79
C15	2	T10	29.87	2.96	3.04	0.00	89.99	2.29	0.00	0.00	-0.15	0.28
C15	2	T11	33.85	1.77	3.48	0.00	89.63	2.17	0.00	0.01	-0.65	0.17
C15	2	T12	40.30	1.06	3.12	0.00	89.71	2.13	0.00	0.01	-0.32	0.10
C15	2	T13	44.37	0.00	0.00	0.00	37.21	2.23	0.00	-0.05	2.75	0.00
C15	2	T14	48.98	0.84	3.13	0.00	89.03	2.36	0.00	0.01	-0.35	0.08
C50	na	bkg	-3.95	0.79	2.57	na	94.30	2.26	na	na	na	na
C50	1	T0	0.00	976.13	38.54	na	94.73	1.28	1.01	0.94	2.53	na
C50	1	T1	2.86	973.69	39.25	na	92.88	1.11	1.01	0.96	1.73	na
C50	1	T2	6.16	969.05	36.46	na	94.80	1.09	1.00	0.89	4.33	na
C50	1	T3	9.13	899.61	35.06	na	94.31	1.25	0.93	0.85	2.99	na
C50	1	T4	12.08	495.25	20.74	na	96.01	1.61	0.51	0.48	1.36	na
C50	1	T5	15.06	123.26	6.80	na	94.79	1.85	0.13	0.11	0.63	na
C50	1	T6	18.08	16.93	3.12	na	92.57	2.08	0.02	0.01	0.12	na
C50	1	T7	20.95	5.43	2.62	na	91.86	2.16	0.01	0.00	0.16	na
C50	1	T8	24.10	2.85	2.47	na	91.58	2.09	0.00	0.00	0.21	na
C50	1	T9	27.12	1.81	2.48	na	90.99	2.16	0.00	0.00	0.16	na
C50	1	T13	43.77	1.01	2.57	na	91.43	nd	0.00	0.00	0.03	na
C50	2	T0	0.00	1235.30	57.94	117.97	78.12	1.03	1.00	0.94	3.57	0.00
C50	2	T1	3.02	1233.78	59.97	114.96	78.15	1.04	1.00	0.98	1.46	0.00
C50	2	T2	6.04	1229.04	61.58	118.81	77.88	1.10	1.00	1.01	-0.37	0.00

C50	2	T3	8.99	1184.67	55.67	113.30	78.16	1.24	0.96	0.90	3.43	0.00
C50	2	T4	12.12	798.57	40.61	77.70	83.25	1.77	0.65	0.65	0.12	0.00
C50	2	T5	14.97	258.49	15.31	27.46	88.80	2.04	0.21	0.21	-0.27	0.00
C50	2	T6	18.02	44.47	5.17	5.27	90.55	2.21	0.04	0.04	-0.31	0.00
C50	2	T7	20.98	9.59	3.49	0.00	90.53	2.20	0.01	0.01	-0.29	0.90
C50	2	T8	23.99	1.04	2.97	0.00	90.10	2.37	0.00	0.00	-0.18	0.10
C50	2	T9	27.06	2.78	2.98	0.00	90.10	1.94	0.00	0.00	-0.10	0.26
C50	2	T10	29.93	2.13	2.77	0.00	90.08	2.21	0.00	0.00	0.07	0.20
C50	2	T11	33.92	1.47	2.72	0.00	90.37	2.48	0.00	0.00	0.10	0.14
C50	2	T12	40.37	1.15	2.65	0.00	90.06	2.12	0.00	0.00	0.16	0.11
C50	2	T13	44.43	1.04	2.66	0.00	89.81	2.26	0.00	0.00	0.14	0.10
C50	2	T14	49.05	1.02	2.75	0.00	90.20	2.20	0.00	0.00	0.05	0.10
C75	na	bkg	-3.95	0.77	0.00	na	94.86	2.15	na	na	na	na
C75	1	T0	0.00	963.12	38.09	na	94.86	1.23	1.00	0.94	1.99	na
C75	1	T1	2.84	543.44	22.57	na	95.19	1.46	0.56	0.54	0.96	na
C75	1	T2	6.14	171.72	8.29	na	95.13	1.84	0.18	0.16	0.57	na
C75	1	T3	9.10	41.51	3.61	na	94.13	2.05	0.04	0.04	0.11	na
C75	1	T4	12.07	9.84	2.48	na	93.64	2.18	0.01	0.01	0.00	na
C75	1	T5	15.03	3.26	2.14	na	91.11	2.11	0.00	0.00	0.07	na
C75	1	T6	18.08	2.16	2.14	na	92.86	2.14	0.00	0.00	0.04	na
C75	1	T7	20.95	1.56	2.07	na	93.33	2.00	0.00	0.00	0.09	na
C75	1	T8	24.08	1.28	2.07	na	93.28	2.15	0.00	0.00	0.07	na
C75	1	T13	43.72	0.82	2.09	na	93.50	nd	0.00	0.00	0.03	na
C75	2	T0	0.00	1235.08	61.26	115.58	81.26	0.89	1.00	1.00	0.23	0.00
C75	2	T1	3.05	772.89	39.14	72.11	86.85	1.50	0.63	0.62	0.37	0.00
C75	2	T2	6.08	256.96	14.28	24.45	93.65	2.05	0.21	0.20	0.69	0.00
C75	2	T3	9.03	90.79	6.41	8.91	95.75	2.33	0.07	0.06	0.66	0.00

C75	2	T4	12.15	18.92	3.27	1.63	96.25	2.00	0.02	0.01	0.38	0.12
C75	2	T5	15.00	4.77	2.55	0.00	96.93	1.78	0.00	0.00	0.42	0.45
C75	2	T6	18.07	2.21	2.26	0.00	96.69	1.74	0.00	-0.01	0.59	0.21
C75	2	T7	21.00	1.47	2.08	0.00	96.77	1.98	0.00	-0.01	0.73	0.14
C75	2	T8	24.00	1.50	2.18	0.00	96.69	2.04	0.00	-0.01	0.63	0.14
C75	2	T9	27.08	1.03	2.05	3.61	96.80	2.18	0.00	-0.01	0.75	0.00
C75	2	T10	29.97	0.83	2.05	0.00	97.01	2.07	0.00	-0.01	0.74	0.08
C75	2	T11	33.95	0.90	2.06	0.00	97.09	2.16	0.00	-0.01	0.73	0.09
C75	2	T12	40.40	0.83	2.07	0.00	96.54	2.01	0.00	-0.01	0.72	0.08
C75	2	T13	44.47	0.80	2.09	0.00	96.04	2.61	0.00	-0.01	0.70	0.08
C75	2	T14	49.08	0.77	2.13	0.00	96.23	2.16	0.00	-0.01	0.65	0.07

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na = not available; nd = no data; bkg = background.