

APPENDIX K

**SUMMARY OF STREAM BIOLOGICAL AND
PHYSICAL MONITORING DATA
FOR BALLENGER, BENNETT, AND
LINGANORE CREEK SITES SAMPLED IN 2009**

Table K-1. Summary of field habitat data from sites sampled in 2009, including results from previous years.									
Station ID	Date Sampled	Avg. Wetted Width (m)	Avg. Thalweg Depth (m)	Slope	Discharge (cfs)	Discharge (cms)	D50 (mm)	Buffer Width Left Bank (m)	Buffer Width Right Bank (m)
BALL-04	04/25/00	7.5	0.64	8.3E-05	32.27	1.055	0.1	20	>30
	06/10/03	8.1	0.99	0.003	57.17	1.619	*	50	40
	09/13/04	7.4	0.51	0.001	6.67	0.189	0.6	50	50
	03/21/05	7.4	0.48	0.002	3.34	0.095	0.8	50	50
	03/02/06	7.4	0.52	0.002	3.94	0.112	9.0	50	50
	04/18/07	6.4	0.33	0.001	4.30	0.122	12.3	50	50
	04/24/08	3.9	0.45	0.001	3.31	0.094	16.3	50	50
	09/17/09	85	0.49	0.0002	4.92	0.139	14.9	50	50
BALL-07	09/13/04	7.1	0.44	0.0002	3.67	0.104	0.5	50	20
	03/21/05	7.2	0.33	0.006	34.77	0.984	10.0	50	50
	03/02/06	6.8	0.46	0.002	5.20	0.147	11.3	50	50
	04/18/07	7.8	0.45	0.001	5.97	0.169	9.32	50	50
	04/24/08	3.5	0.44	0.002	4.99	0.141	17.0	50	25
	09/18/09	7.8	0.30	0.003	5.91	0.167	12.3	50	35
BENN-03	04/28/05	3.0	4.2	0.007	5.25	0.148	22.6	50	50
	09/18/09	3.2	3.2	0.005	1.44	0.041	33.6	50	50
BENN-05	04/21/06	2.7	0.14	0.006	0.82	0.025	n/a	0	0
	04/19/07	2.0	0.16	0.007	0.85	0.024	1.5	0	0
	04/24/08	2.3	0.23	0.006	0.59	0.017	9.6	15	50
	09/15/09	1.9	0.18	0.007	1.09	0.031	11.6	15	50
BENN-07	05/06/08	2.0	0.18	0.019	0.85	0.024	27.3	8	50
	09/16/09	1.7	0.13	0.020	0.225	0.006	22.3	8	50
BENN-08	05/06/08	1.5	0.23	0.026	0.24	0.007	22.6	50	40
	09/16/09	1.3	0.12	0.029	0.07	0.002	13.5	50	40

Table K-1. (Continued)

Station ID	Date Sampled	Avg. Wetted Width (m)	Avg. Thalweg Depth (m)	Slope	Discharge (cfs)	Discharge (cms)	D50 (mm)	Buffer Width Left Bank (m)	Buffer Width Right Bank (m)
BENN-09	05/27/08	2.0	0.18	0.033	0.59	0.017	28.4	5	50
	09/16/09	1.8	0.11	0.034	0.11	0.003	14.5	5	50
BENN-10	05/28/08	1.7	0.12	0.030	0.44	0.012	29.1	50	35
	09/16/09	1.4	0.08	0.029	0.13	0.004	20.0	50	35
LING-18	04/23/08	2.4	0.14	0.002	8.21	0.232	6.1	7	20
	09/17/09	2.0	0.16	0.004	0.25	0.007	0.1	10	20

* No pebble count performed, site was too deep.
n/a = Not Available.

Table K-2. Summary of field water quality data from sites sampled in 2009, including results from previous years.

Station ID	Date Sampled	Water Temperature (°C)	Dissolved Oxygen (mg/l)	pH	Specific Conductivity (mS/cm)	Turbidity (NTU)
BALL-04	04/25/00	11.3	8.9	6.81	0.362	12.2
	10/05/00	16.1	5.8	7.96	0.485	5.0
	03/25/03	12.9	15.8	7.52	0.418	*
	04/28/04	9.6	14.2	7.42	0.403	*
	09/13/04	17.0	10.4	7.03	0.518	16.2
	03/21/05	7.1	10.4	7.25	0.168	49.1
	08/16/05	20.3	5.7	7.66	0.545	12.8
	03/02/06	6.5	11.0	7.41	0.435	4.2
	06/14/06	16.9	8.4	7.45	0.514	24.7
	04/18/07	8.3	12.6	6.50	0.644	3.9
	06/25/07	18.2	8.1	6.63	0.464	21.0
	04/24/08	14.0	10.2	7.75	0.406	28.2
	09/04/08	17.8	8.1	7.72	0.572	25.0
	04/28/09	18.3	10.6	7.82	0.117	15.2
09/17/09	16.7	7.6	7.83	0.554	22.0	
BALL-07	04/28/04	10.3	19.4	7.54	0.401	*
	09/13/04	20.5	13.1	7.51	0.476	9.5
	03/21/05	6.8	10.6	7.38	0.240	61.1
	09/21/05	17.1	6.4	7.42	0.514	9.4
	03/02/06	6.6	11.5	7.73	0.433	4.8
	06/14/06	18.9	9.9	7.58	0.509	13.1
	04/18/07	9.3	13.8	6.74	0.638	3.9
	06/25/07	19.8	9.8	7.07	0.517	8.6
	04/24/08	14.4	10.5	7.79	0.406	27.8
	09/12/08	17.9	8.1	7.78	0.554	12.2
	04/28/09	18.9	10.2	7.82	0.116	25.1
09/18/09	16.2	8.0	7.72	0.546	20.7	
BENN-03	04/28/05	12.0	10.4	7.97	0.154	8.2
	06/30/05	20.8	9.4	6.94	0.178	*
	04/29/09	14.6	9.3	7.27	0.480	13.7
	09/18/09	17.3	9.0	7.63	0.178	17.5
BENN-05	04/21/06	14.4	11.8	8.41	0.247	12.2
	06/08/06	16.5	9.8	7.55	0.288	49.0

Table K-2. (Continued)

Station ID	Date Sampled	Water Temperature (°C)	Dissolved Oxygen (mg/l)	pH	Specific Conductivity (mS/cm)	Turbidity (NTU)
BENN-05	04/19/07	10.4	13.7	6.71	0.505	4.0
	08/08/07	22.4	10.9	7.83	0.303	8.4
	04/24/08	17.9	11.0	7.99	0.281	31.7
	08/19/08	17.3	8.5	8.16	0.340	28.8
	04/29/09	22.6	10.0	7.94	0.772	16.6
	09/15/09	17.8	9.2	7.99	0.260	16.7
BENN-07	05/06/08	14.1	9.4	7.56	0.042	15.4
	09/16/09	16.7	8.8	8.06	0.051	15.0
BENN-08	05/06/08	14.7	9.3	7.15	0.032	16.7
	09/16/09	17.3	8.5	7.76	0.035	15.8
BENN-09	05/27/08	14.4	9.6	7.27	0.038	26.7
	09/16/09	16.4	9.1	8.14	0.049	16.0
BENN-10	05/28/08	14.8	9.5	7.05	0.033	26.3
	09/16/09	17.1	8.9	7.88	0.037	16.8
LING-18	04/24/08	16.7	10.1	7.45	0.161	29.3
	09/17/08	17.7	7.9	7.65	0.277	49.4
	04/28/09	20.5	8.9	7.51	0.055	17.1
	09/17/09	17.0	7.9	7.85	0.249	8.5
* Data not available.						

Table K-3. Summary of benthic macroinvertebrate results from sites sampled in 2009, including results from previous years.

Station	Date sampled	Number of taxa	Benthic IBI Score	Benthic IBI Rating
BALL-04	03/25/03	27	2.00	Poor
	04/28/04	24	2.50	Poor
	03/21/05	27	2.75	Poor
	03/02/06	33	2.50	Poor
	04/18/07	31	2.25	Poor
	04/24/08	37	2.75	Poor
	04/28/09	30	3.00	Fair
BALL-07	04/28/04	22	1.75	Very Poor
	03/21/05	24	2.25	Poor
	03/02/06	38	3.00	Fair
	04/18/07	27	2.25	Poor
	04/24/08	34	3.00	Fair
	04/28/09	25	2.25	Poor
BENN-03	04/28/05	38	2.75	Poor
	04/29/09	46	3.75	Fair
BENN-05	04/21/06	38	3.00	Fair
	04/19/07	35	2.75	Poor
	04/24/08	37	2.75	Poor
	04/28/09	24	2.75	Poor
LING-18	04/24/08	31	3.50	Fair
	04/28/09	43	3.00	Fair

Table K-4. Summary of fish results from sites sampled in 2009, including results from previous years.						
Station ID	Date Sampled	Number of Taxa	Number of Fish Caught	Percent of Tolerant Individuals	Fish IBI Score	Fish IBI Rating
BALL-04	10/05/00	15	290	23%	3.33	Fair
	08/20/02	9	371	46%	3.67	Fair
	09/13/04	12	553	43%	4.33	Good
	08/16/05	15	619	43%	4.67	Good
	06/14/06	13	572	50%	4.67	Good
	06/25/07	12	388	45%	4.67	Good
	09/04/08	16	894	25%	5.00	Good
	09/17/09	14	951	54%	4.67	Good
BALL-07	09/13/04	12	669	35%	4.67	Good
	09/21/05	15	1329	33%	5.00	Good
	06/14/06	12	816	33%	4.67	Good
	06/25/07	16	405	32%	4.67	Good
	09/12/08	14	908	27%	4.67	Good
	09/18/09	13	830	32%	4.67	Good
BENN-03	06/30/05	10	679	62%	3.67	Fair
	09/18/09	12	543	53%	3.67	Fair
BENN-05	06/08/06	10	1281	64%	3.67	Fair
	08/08/07	9	1372	78%	3.67	Fair
	08/19/08	12	1111	77%	3.67	Fair
	09/15/09	12	748	70%	3.67	Fair
LING-18	09/17/08	5	20	80%	1.67	Very Poor
	09/17/09	5	13	100%	1.67	Very Poor

Table K-5. Qualitative habitat scores using MBSS protocols for sites sampled in 2009, including results from previous years.

Site	Date	Instream habitat (0-20)	Epifaunal substrate (0-20)	Velocity-depth diversity (0-20)	Pool-glide quality (0-20)	Riffle-run quality (0-20)	Embeddedness	Shading
BALL-04	08/20/02	10	7	14	17	8	30%	90%
	09/13/04	10	8	14	13	11	100%	65%
	08/16/05	14	8	12	14	13	80%	70%
	06/14/06	11	5	14	17	14	75%	55%
	06/25/07	11	9	14	18	11	70%	70%
	09/04/08	10	6	12	14	11	70%	35%
	09/17/09	12	10	12	15	12	70%	30%
BALL-07	09/13/04	11	7	13	14	14	80%	55%
	09/21/05	12	7	13	16	12	75%	30%
	06/14/06	12	5	14	16	13	60%	40%
	06/25/07	9	6	13	13	11	75%	40%
	09/12/08	14	8	13	14	12	70%	50%
	09/18/09	16	15	15	15	14	60%	70%
BENN-03	06/30/05	14	13	14	13	15	60%	85%
	09/18/09	17	16	15	14	14	35%	80%
BENN-05	06/08/06	11	7	9	10	9	50%	10%
	08/08/07	10	7	7	8	8	50%	20%
	08/19/08	12	6	13	14	9	65%	25%
	09/15/09	11	8	12	12	13	75%	30%
BENN-07	05/06/08	19	17	9	9	15	30%	90%
	09/16/09	19	18	9	9	15	30%	90%
BENN-08	05/06/08	18	16	13	14	15	25%	85%
	09/16/09	18	16	10	10	14	30%	90%
BENN-09	05/27/08	18	17	9	8	16	30%	85%
	09/16/09	18	18	7	8	12	30%	90%
BENN-10	05/28/08	18	16	13	13	17	30%	90%
	09/16/09	18	16	12	13	15	30%	90%
LING-18	09/17/08	9	4	7	7	11	75%	85%
	09/17/09	9	8	8	8	13	50%	75%