

MEMORANDUM

Sampling Dates: May-December 2010
To: *Bear Creek Watershed Association*
From: Russell N. Clayshulte, Manager
Re: 2010 Bear Creek Kerr/Swede Gulch Summary Data



Segment 5 Bear Creek: Swede, Kerr, Sawmill, Troublesome, and Cold Springs Gulches, and mainstem of Cub Creek from the source to the confluence with Bear Creek.

Standards

- Temperature =TVS(CS-II) °C; April-October =18.2 (MWAT)/23.8 (DM) °C; November-March =9.0 (MWAT)/13.0 (DM) °C
- D.O.=6.0 mg/l; D.O.(sp)=7.0 mg/l
- pH=6.5-9.0
- E. Coli=126/100ml (Measured as a geometric mean of data)

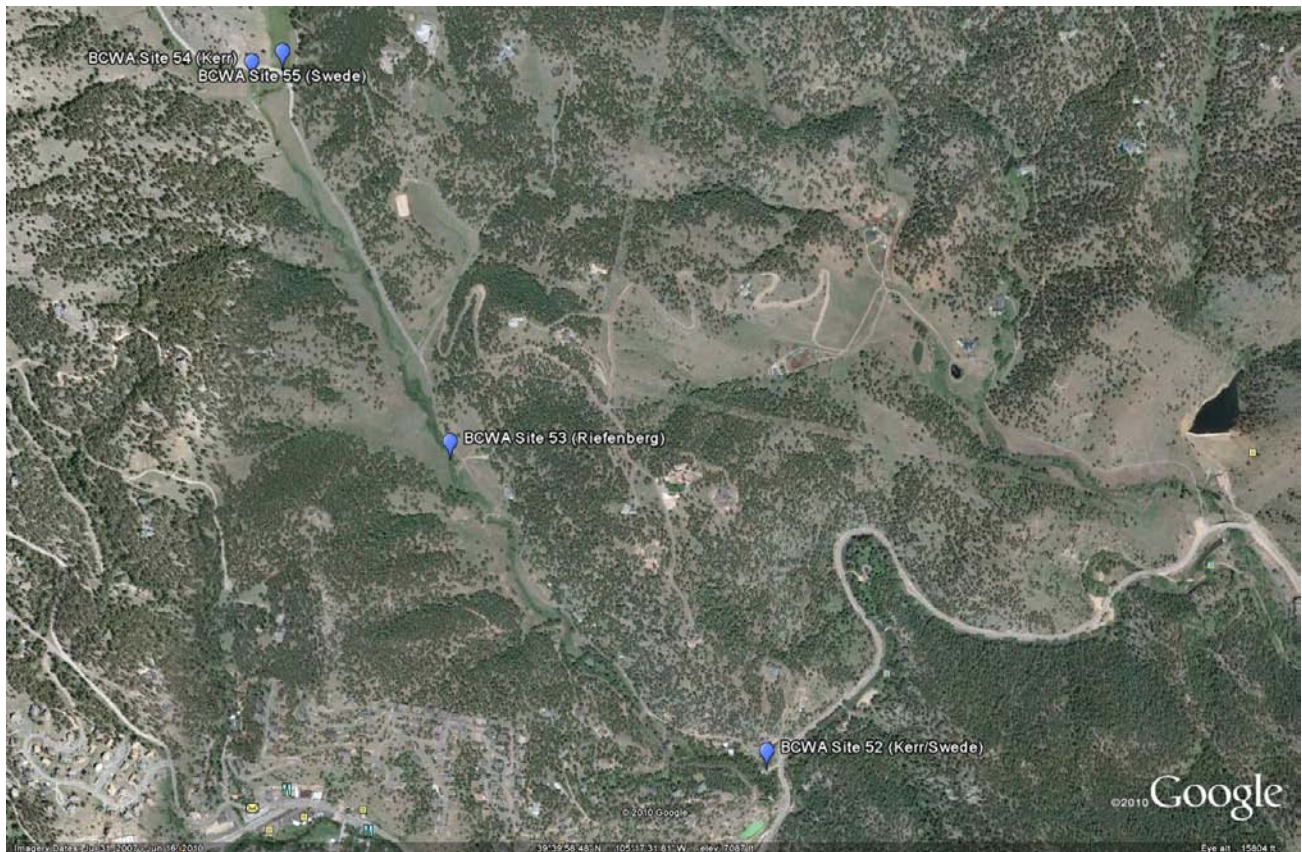


Figure 1 Kerr/Swede Gulch Sample Locations

Table 1 Kerr/Swede Gulch Sampling

BCWA Site	Time	Temp (C)	pH	SC (ms/cm)	DO (mg/l)	Rel NO3 (mg/l)	E. Coli (Cells/100ml)
5/25/2010							
Site 52 - Confluence	12:46	12.5	8.35	0.82	8.57	1.31	10
Site 53 - Riefenberg	13:01	14.6	8.31	0.82	8.12	1.01	6
Site 54 - Kerr	13:15	14.9	8.24	0.8	7.74	0.96	5

BCWA Site	Time	Temp (C)	pH	SC (ms/cm)	DO (mg/l)	Rel NO3 (mg/l)	E. Coli (Cells/100ml)
Site 55 - Swede	13:10	15.2	8.09	0.88	7.64	0.94	12
6/22/2010							
Site 52 - Confluence	13:20	17.9	8.38	0.83	7.48	2.13	40
Site 53 - Riefenberg	13:35	19	8.3	0.83	7.23	2.15	40
Site 54 - Kerr	13:50	19.1	8.24	0.81	6.63	2.07	76/90
Site 55 - Swede	13:45	21.2	8.22	0.86	6.79	2.13	38
7/20/2010							
Site 52 - Confluence	13:33	15.5	7.51	0.848	8.09		80/128
Site 53 - Riefenberg	13:22	16.2	7.64	0.848	7.73		48/160
Site 54 - Kerr	13:10	16.8	7.9	0.829	7.32		128/280
Site 55 - Swede	13:16	19.2	7.56	0.905	7.08		40/64
8/24/2010							
Site 52 - Confluence	11:14	12.7	8.57	0.84	10.29		52
Site 53 - Riefenberg	10:57	12.7	8.41	0.84	10.02		236
Site 54 - Kerr	10:43	12.5	8.34	0.81	9.52		32
Site 55 - Swede	10:37	13.5	8.26	0.86	9.69		36
9/28/2010							
Site 52 - Confluence	13:27	12	7.77	0.84	8.34		16
Site 53 - Riefenberg	13:44	14.3	7.94	0.8	7.48		16
Site 54 - Kerr	14:01	14.5	8.1	0.83	7.46		20
Site 55 - Swede	13:55	17.1	8.09	0.92	6.79		12
10/26/2010							
Site 52 - Confluence	9:15	2.4	7.98	0.85	10.27		2
Site 53 - Riefenberg	9:26	2.1	8.05	0.84	9.85		4
Site 54 - Kerr	9:36	1.8	8.24	0.84	9.81		2
Site 55 - Swede	9:40	1.7	8	0.85	9.8		4
11/16/2010							
Site 52 - Confluence	9:27	1.5	7.66	0.835	9.86		1
Site 53 - Riefenberg	9:40	2.2	7.9	0.819	9.64		1
Site 54 - Kerr	10:52	2.9	7.84	0.839	8.79		3
Site 55 - Swede	10:58	2.3	8.05	0.786	9.36		1
12/8/2010							
Site 52 - Confluence	1:49	0.9	8.3	0.848	11.31		2
Site 53 - Riefenberg	2:05	0.7	7.91	0.779	10.55		2
Site 54 - Kerr	2:20	0	7.91	0.781	10.84		11
Site 55 - Swede	2:16	0.3	7.92	0.822	10.28		6

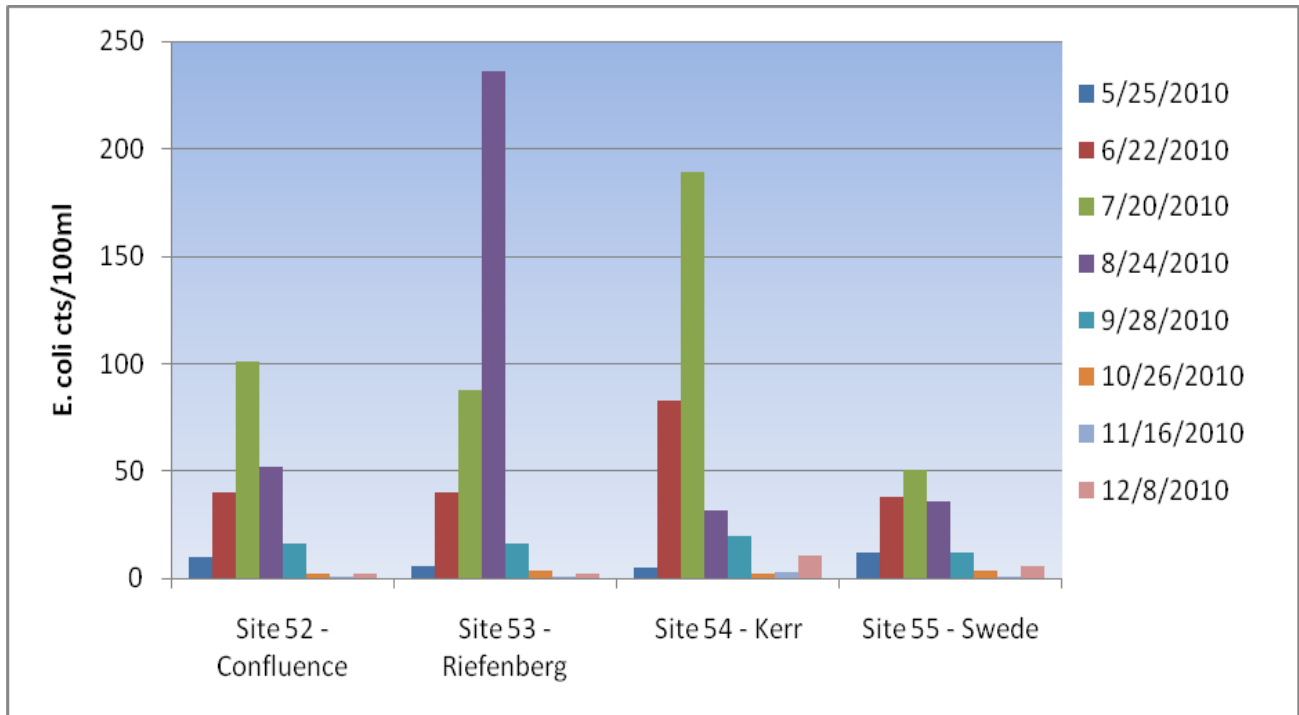


Figure 2 2010 E. coli Counts by Month

Table 2 E. Coli 2010 Geometric Mean Summary

BCWA Site	2010
	Geometric Mean
Site 52 - Confluence	13
Site 53 - Riefenberg	16
Site 54 - Kerr	24
Site 55 - Swede	13
Total	16

Note -There is no exceedance of the E. coli standard with the system

Table 3 Kerr/Swede Gulch Flow Estimates (CFS)

Site	25-May	22-Jun	20-Jul	24-Aug	28-Sep	26-Oct	15-Nov	8-Dec
Site 52 - Confluence	3.00	1.36	0.70	0.81	0.34	0.72	0.52	0.65
Site 53 - Riefenberg	2.10	1.15	0.44	0.71	0.32	0.69	0.43	0.60
Site 54 - Kerr	1.50	0.57	0.21	0.70	0.30	0.32	0.42	0.42
Site 55 - Swede	0.30	0.42	0.15	0.54	0.03	0.14	0.10	0.30

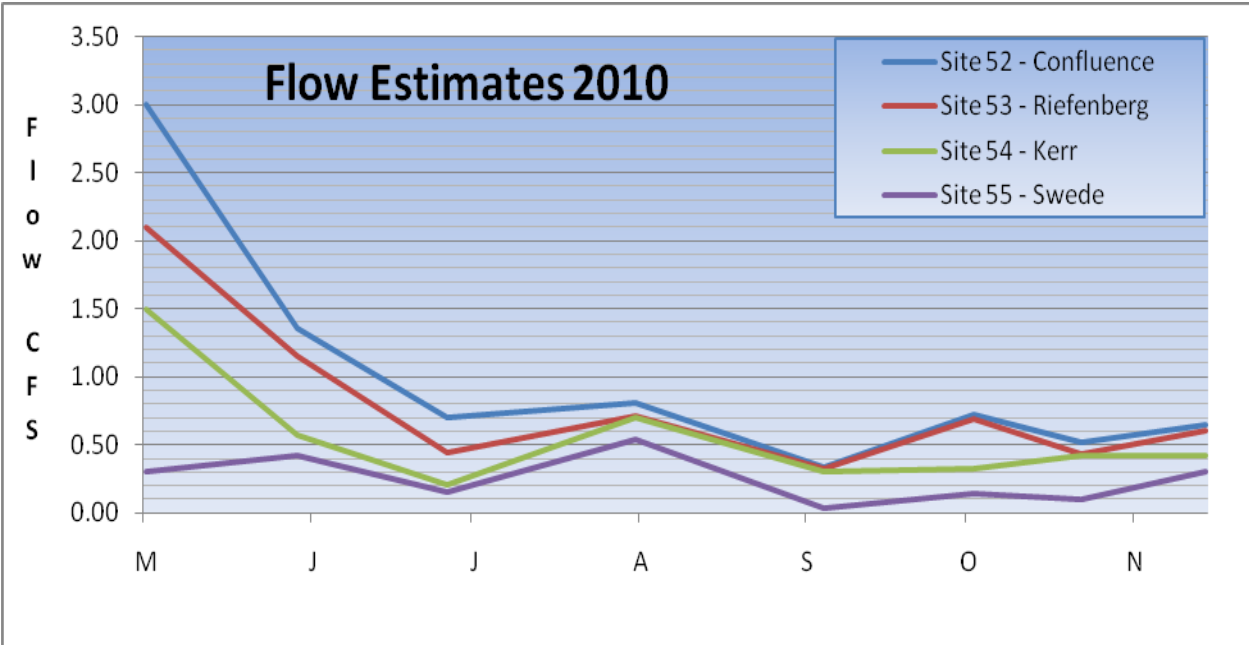


Figure 3 2010 Flow Estimates by Site

Table 4 2010 Monthly Flow Estimates (Acre-Feet/ Month)

Site	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Site 52 - Confluence	184	81	43	50	20	44	31	40	494
Site 53 - Riefenberg	129	68	27	44	19	42	26	37	392
Site 54 - Kerr	92	34	13	43	18	20	25	26	270
Site 55 - Swede	18	25	9	33	2	9	6	18	121

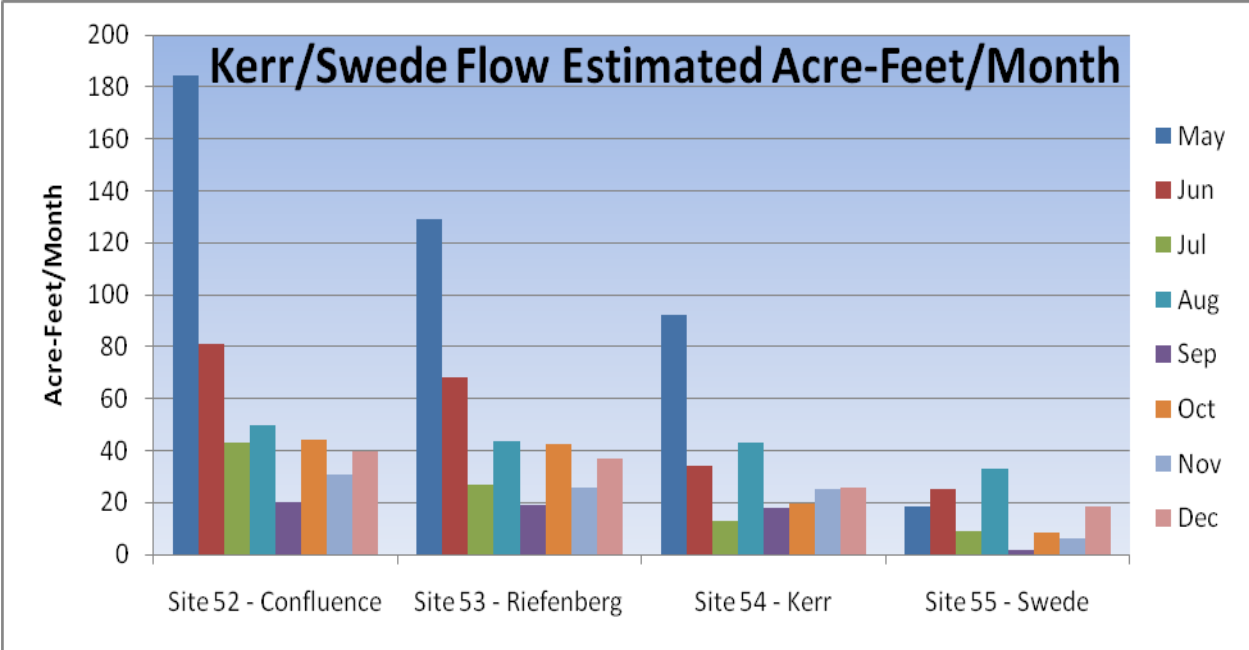


Figure 4 2010 Monthly Flow Estimates by Site

Table 5 November Chemistry Data Results with November Load Estimates

Site	15-Nov-10			
	Nitrate/Nitrite (ug/l)	Ammonia (ug/l)	Total Phosphorus (ug/l)	Total Dissolved Phosphorus (ug/l)
Site 52 - Confluence	197	43	43	4
Site 53 - Riefenberg	94	32	6	9
Site 54 - Kerr	225	42	22	3
Site 55 - Swede	61	37	37	10
	Pounds Per November			
Site 52 - Confluence	16.59	3.62	3.62	0.34
Site 53 - Riefenberg	6.55	2.23	0.42	0.63
Site 54 - Kerr	15.31	2.86	1.50	0.20
Site 55 - Swede	0.99	0.60	0.60	0.16

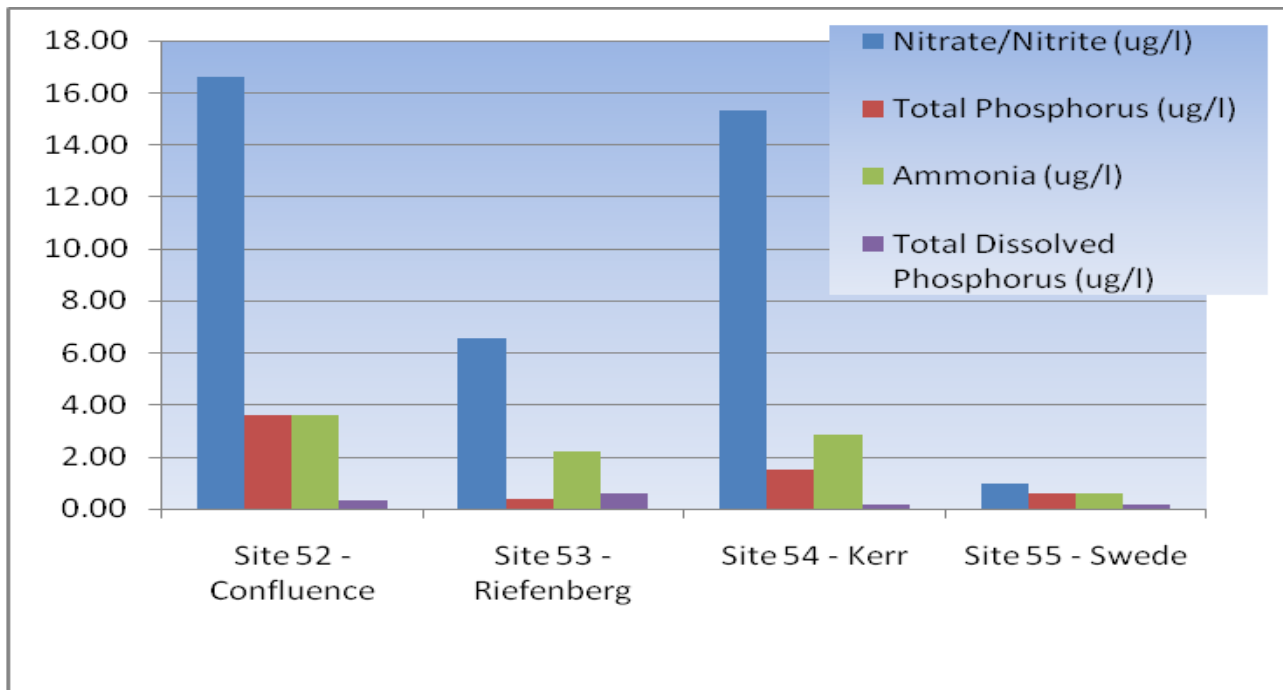


Figure 5 November 2010 Nutrient Loading in Kerr/Swede System