Storm Water Monitoring in Upper Bull Creek and Flint Ridge Cave

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The Water Quality Monitoring (WQM) Section of the City of Austin Watershed Protection Department operates two stormwater monitoring sites on BCP lands. The first site is on upper Bull Creek consisting on one flow station, one rain gauge and one automatic sampler. Flow at this site was intermittent during year with no long periods of sustained from. Three stormwater quality samples were collected during 2014 on July 18th and September 18 & 19. Due to reporting delays at the analytical laboratory, the results of these samples are not available at this time. Monitoring equipment was upgraded at this site in July of 2014. Monitoring is ongoing.

The second WQM monitoring site is located at Flint Ridge Cave. This site consists of three flow stations, three automatic samplers, two rain gauges and one stage recorder at the entrance of the cave. Eleven runoff quality samples were collected during the, five during May and six in September. Due to reporting delays at the analytical laboratory, the results of these samples are not available at this time. Monitoring equipment was upgraded at this site in July of 2014. Monitoring is ongoing.

Below are tables containing the water quality site statistics from all samples collected during the monitoring of these sites (except those samples noted above). Sites FR1, FR2 and FR3 are at Flint Ridge Cave; WT1 is located on upper Bull Creek. Units are in mg/l except for metals (Cd, Cu, Pb and Zn) which are in µg/l.

Site	Parameter	n	Median	Min	Max	Mean	Std	LCL	UCL
FR1	Cd	14	0.200	0.012	0.952	0.350	0.453	0.161	0.869
FR1	COD	14	54.55	12.00	126.70	64.03	36.36	46.09	91.12
FR1	Cu	14	3.54	1.00	19.21	5.09	3.82	3.28	8.24
FR1	DP	14	0.014	0.001	0.044	0.023	0.036	0.009	0.072
FR1	NH_3	14	0.026	0.004	0.070	0.029	0.026	0.017	0.051
FR1	NO3+NO2	14	0.294	0.168	1.030	0.391	0.227	0.279	0.562
FR1	Pb	14	3.07	1.13	26.23	5.68	5.86	3.08	11.39
FR1	TKN	14	1.31	0.95	4.82	1.64	0.72	1.27	2.13
FR1	TN	14	1.81	1.34	4.99	2.05	0.73	1.67	2.54
FR1	TOC	14	12.17	9.50	19.66	12.97	2.60	11.56	14.59
FR1	TP	14	0.152	0.099	0.805	0.208	0.131	0.144	0.309
FR1	TSS	14	86.56	27.20	847.28	131.87	127.82	74.33	251.60
FR1	VSS	14	15.63	7.50	118.05	22.66	18.10	14.18	38.00
FR1	Zn	14	14.35	7.34	57.14	17.44	10.29	12.38	25.20
FR2	Cd	21	0.200	0.012	2.590	0.354	0.534	0.180	0.776
FR2	COD	21	63.00	38.00	251.37	79.31	41.57	62.56	101.89
FR2	Cu	21	2.53	0.75	8.30	2.97	1.86	2.23	4.02
FR2	DP	21	0.017	0.001	0.135	0.031	0.060	0.013	0.086
FR2	NH_3	21	0.026	0.003	0.212	0.035	0.039	0.021	0.062
FR2	NO_3+NO_2	21	0.212	0.014	1.210	0.366	0.502	0.197	0.744
FR2	Pb	21	1.82	0.20	7.71	2.58	2.34	1.71	4.05
FR2	TKN	21	1.37	0.84	3.19	1.55	0.64	1.29	1.88
FR2	TN	21	1.57	0.86	3.91	1.88	0.84	1.54	2.32
FR2	TOC	21	17.03	11.74	31.00	18.31	4.23	16.49	20.37
FR2	TP	21	0.107	0.034	0.388	0.133	0.100	0.095	0.192
FR2	TSS	21	35.70	4.10	311.84	79.28	97.67	45.43	149.06
FR2	VSS	21	8.74	2.53	87.05	17.44	17.81	10.97	29.18
FR2	Zn	21	9.25	3.62	135.00	12.92	9.69	9.20	18.66

Site	Parameter	n	Median	Min	Max	Mean	Std	LCL	UCL
FR3	Cd	18	0.200	0.012	0.510	0.209	0.271	0.109	0.441
FR3	COD	18	52.86	34.78	114.60	61.63	21.25	51.98	73.56
FR3	Cu	18	2.74	0.35	10.45	3.27	2.49	2.24	4.94
FR3	DP	18	0.012	0.001	0.075	0.017	0.027	0.008	0.043
FR3	NH_3	18	0.033	0.003	0.074	0.034	0.038	0.020	0.064
FR3	NO_3+NO_2	18	0.220	0.006	1.769	0.403	0.629	0.185	1.011
FR3	Pb	18	1.80	0.40	18.90	3.03	2.73	1.93	4.99
FR3	TKN	18	1.20	0.56	2.18	1.31	0.47	1.10	1.58
FR3	TN	18	1.50	0.57	3.39	1.67	0.74	1.34	2.10
FR3	TOC	18	13.23	2.11	19.90	13.65	6.89	10.63	17.78
FR3	TP	18	0.095	0.048	0.347	0.129	0.085	0.093	0.184
FR3	TSS	18	77.19	12.00	402.00	112.78	132.22	62.70	219.91
FR3	VSS	18	14.01	3.65	86.00	20.20	20.10	12.28	35.21
FR3	Zn	18	12.97	5.44	39.01	17.26	9.81	13.02	23.31
WT1	Cd	18	0.092	0.013	0.500	0.203	0.327	0.091	0.526
WT1	COD	18	19.49	8.00	68.00	25.12	15.30	18.56	34.72
WT1	Cu	18	1.00	0.35	3.26	1.20	0.66	0.91	1.60
WT1	DP	18	0.010	0.001	0.037	0.012	0.014	0.007	0.023
WT1	NH_3	18	0.023	0.003	0.096	0.028	0.032	0.016	0.054
WT1	NO_3+NO_2	18	0.620	0.372	1.260	0.663	0.279	0.538	0.824
WT1	PB	18	0.51	0.04	3.52	0.91	1.12	0.49	1.84
WT1	TKN	18	0.54	0.18	1.39	0.62	0.39	0.45	0.86
WT1	TN	18	1.31	0.62	2.03	1.28	0.40	1.10	1.50
WT1	TOC	18	5.20	2.40	11.10	5.53	2.30	4.51	6.86
WT1	TP	18	0.056	0.004	0.242	0.077	0.112	0.038	0.181
WT1	TSS	18	28.88	4.50	189.00	52.90	78.79	25.16	126.62
WT1	VSS	18	7.08	1.30	32.00	10.00	11.63	5.59	19.38
WT1	Zn	18	4.02	0.85	15.50	5.83	4.93	3.82	9.27