

Technical Memorandum BCWA



Date: February 5, 2020
To: Bear Creek Watershed Association
From: Russell N. Clayshulte, Manager

Re: BCWA TM 2019.05 Tributary and Mainstem (Segment) Nutrient Summary

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The BCWA monitors a series of P3 stations located within the middle section of the Bear Creek Watershed. In 2019, samples were collected from May through October. The monitoring in 2019 focused on total nitrogen and total phosphorus pairs. The full data results are contained in the 2019 Bear Creek Master Spreadsheet. These P3 monitoring programs focus on characterizing water quality of surface waters in the Turkey Creek and Bear Creek drainages of the watershed. The monitoring plan is detailed in the *Bear Creek Sample Analysis Plan*, which is updated annually and posted on the Association website monitoring page. The BCWA collects limited flow data at monitoring sites to determine potential nutrient loading problem areas. The nutrient data shows areas along the mainstem of Bear Creek where elevated nutrients are commonly measured: the mainstem of Bear Creek between Golden Willow and the Keys on the green (Upper Bear Creek), downtown Evergreen, and below Idledale. Turkey Creek also had elevated nutrient loading in 2019. The Tributaries with elevated nutrient loading are Troublesome drainage, and Mt. Vernon drainage.

Table 1 Tributary and Mainstem Seasonal Nutrient Averages

		Site ID	Site Location by Stream Segment	5/14/2019		6/20/2019		7/9/2019		8/19/2019		9/17/2019		10/15/2019		Seasonal Average	
				TN Ug/l	T Phos Ug/l	TN Ug/l	T Phos Ug/l	TN Ug/l	T Phos Ug/l	TN Ug/l	Phos Ug/l	TN Ug/l	Phos Ug/l	TN Ug/l	T Phos Ug/l	TN Ug/l	T Phos Ug/l
Seg 7	Evans	Site 36	Summit Lake			288	11	944	255	319	14	237	6	424	49	442	67
		Site 37	Bear Creek Below Summit Lake			335	18	345	17	244	6	262	6	300	11	297	12
Seg 1a	Upper Bear	Site 58	Bear Creek below Wilderness	244	23	281	7	208	7	206	18	197	6	230	22	228	14
		Site 2a	Golden Willow Road UBC	215	21	258	19	181	10	169	6	156	7	152	41	189	17
		Site 3a	Above Evergreen Lake at CDOW Site	253	37	261	19	194	14	170	13	165	7	192	6	206	16
Seg 3	Tribs	Site 25	Vance Creek (Mt. Evans Wilderness drainage)	149	14	146	7	116	8	85	7	94	13	61	6	109	9
Seg 1d	EGL	Site 4a	Evergreen Lake	246	12	319	16	271	12	239	18	244	11	204	21	254	15
		Site 5	Above EMD WWTP, CDOW downtown site	293	18	298	25	226	13	202	14	189	16	173	15	230	17
Seg 1e	Middle Bear Creek	Site 8a	Bear Creek Cabins at CDOW Site	442	43	333	38	272	18	479	55	437	31	432	20	399	34
		Site 9	O'Fallon Park, west end at CDOW Site	418	41	326	24	288	34	346	30	346	40	312	44	339	36
		Site 12	Lair o' the Bear Park, at CDOW site	401	39	404	38	352	55	382	33	644	35	351	31	422	39
		Site 13a	Below Idledale, Shady Lane at CDOW site	518	56	367	46	307	26	381	34	622	37	388	22	431	37
		Site 14a	Morrison Park west, CDOW Site	867	152	402	37	276	24	278	37	589	36	459	45	479	55
Seg 5	Upper Tribs	Site 26	Cub Creek, Mouth	691	30	561	70	424	29	324	26	161	23	87	18	375	33
		Site 64	Troublesome at Culvert above West Jeff	838	65	634	61	478	37	229	29	337	66	637	29	526	48
		Site 32	Troublesome Mouth	1420	107	1246	153	911	147	495	111	605	150	706	109	897	130
Seg 4a	Mt. V	Site 34b	Mt Vernon Drainage, Morrison	969	13	803	11									886	12
Seg 1b	BCP	Site 15a	Bear Creek Park	674	25	446	50	334	35	451	29	750	121	613	23	545	47
Seg 6b	Turkey	Site 19	North Turkey Creek Flying J Ranch Bridge	558	12	322	14	276	13	342	111	376	21	191	12	344	31
Seg 6a	Turkey	Site 18	South Turkey Creek Aspen Park	403	31	524	26	498	30	556	87	524	103	246	16	459	49
		Site 16a	South Turkey Creek, Park	625	7	463	28	679	15	507	41	657	6	725	13	609	18
Seg 1c	BCR	Site 40a	Bear Creek Reservoir	737	18	516	31	429	25	502	46	369	27	606	64	527	35
Seg 2	Lower Bear	Site 45	Bear Creek below BCR	811	28	521	24	409	33	572	35	546	55	371	33	538	35
		Site 90	Bear Creek Wadsworth	624	17	522	35	477	59	679	89	911	111	650	18	644	55

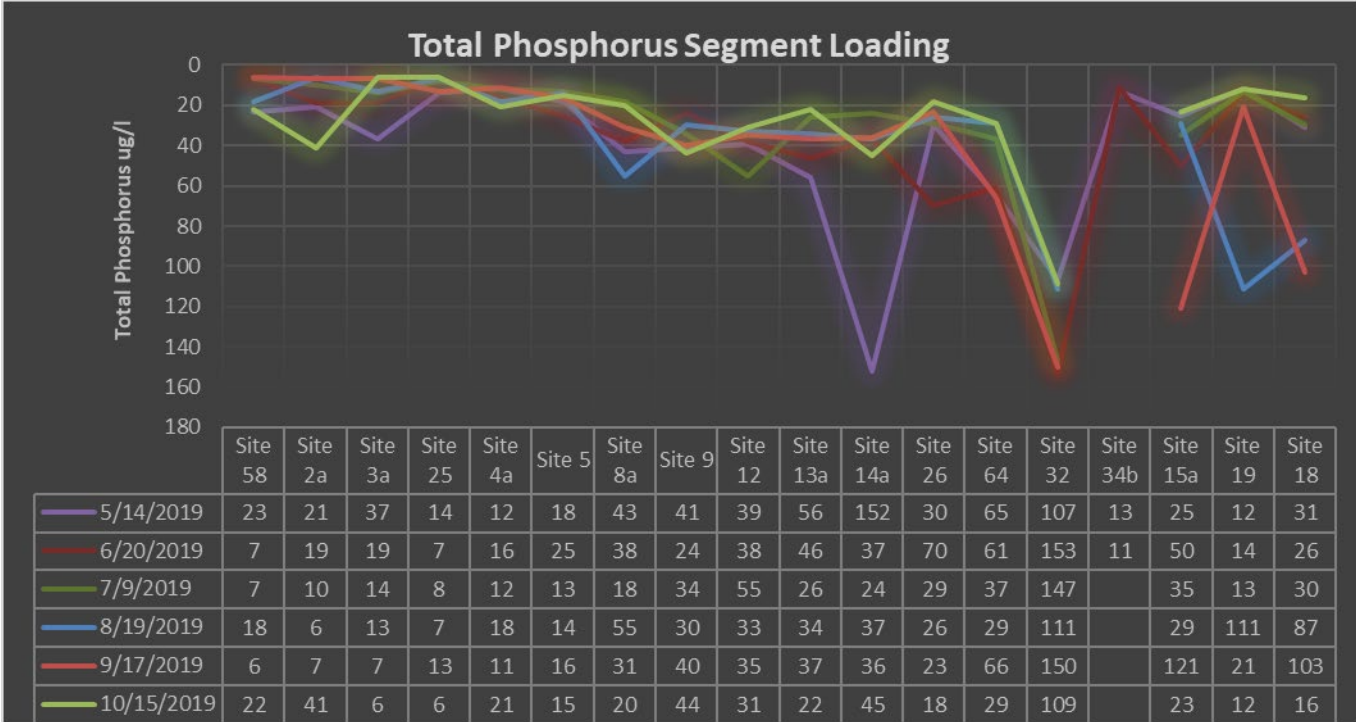


Figure 1 Total Phosphorus

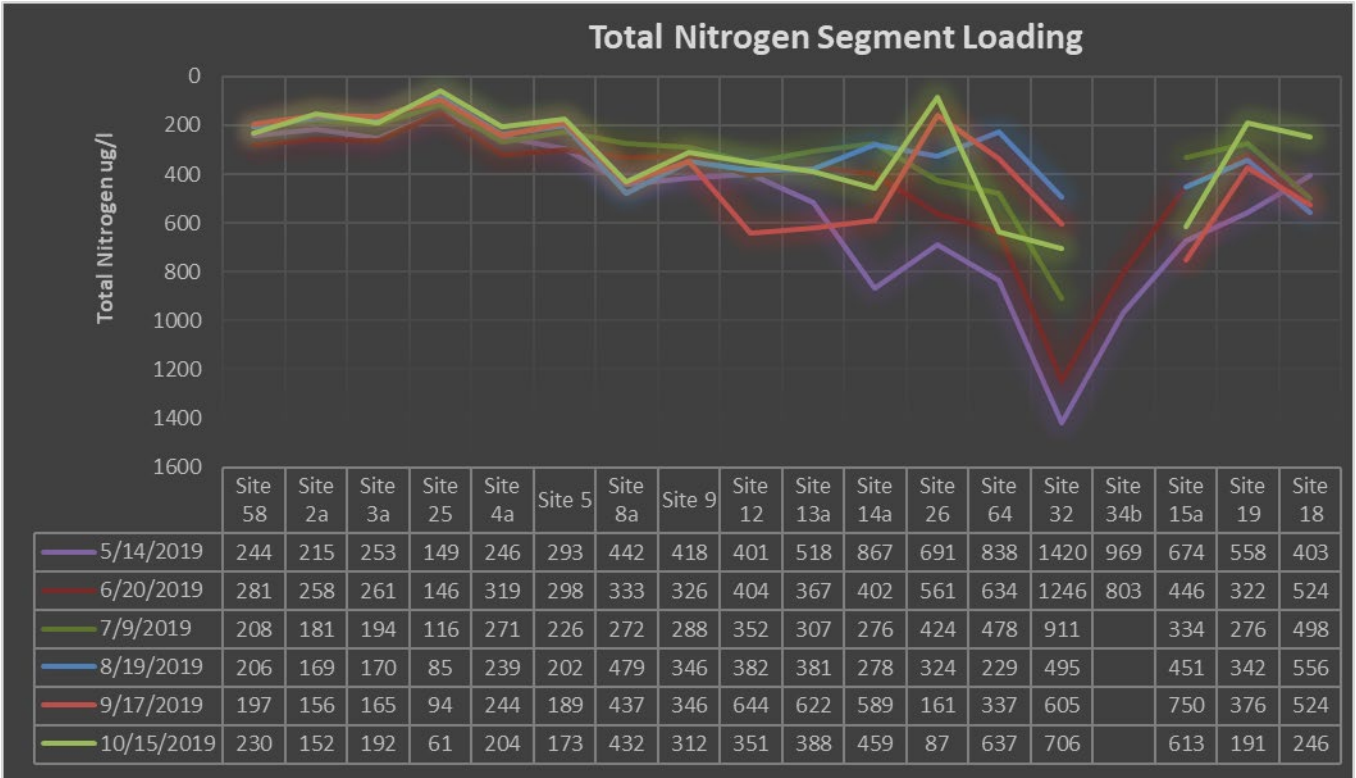


Figure 2 Total Nitrogen

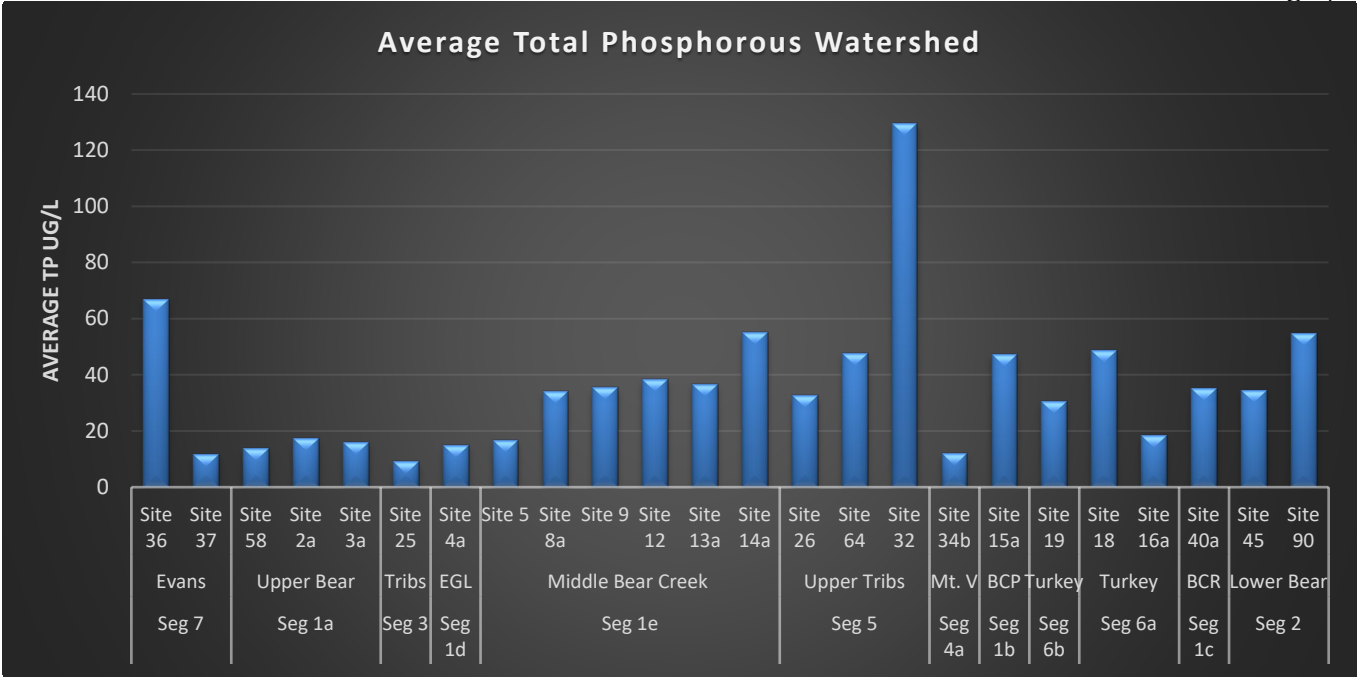


Figure 3 Phosphorus Load by Segments

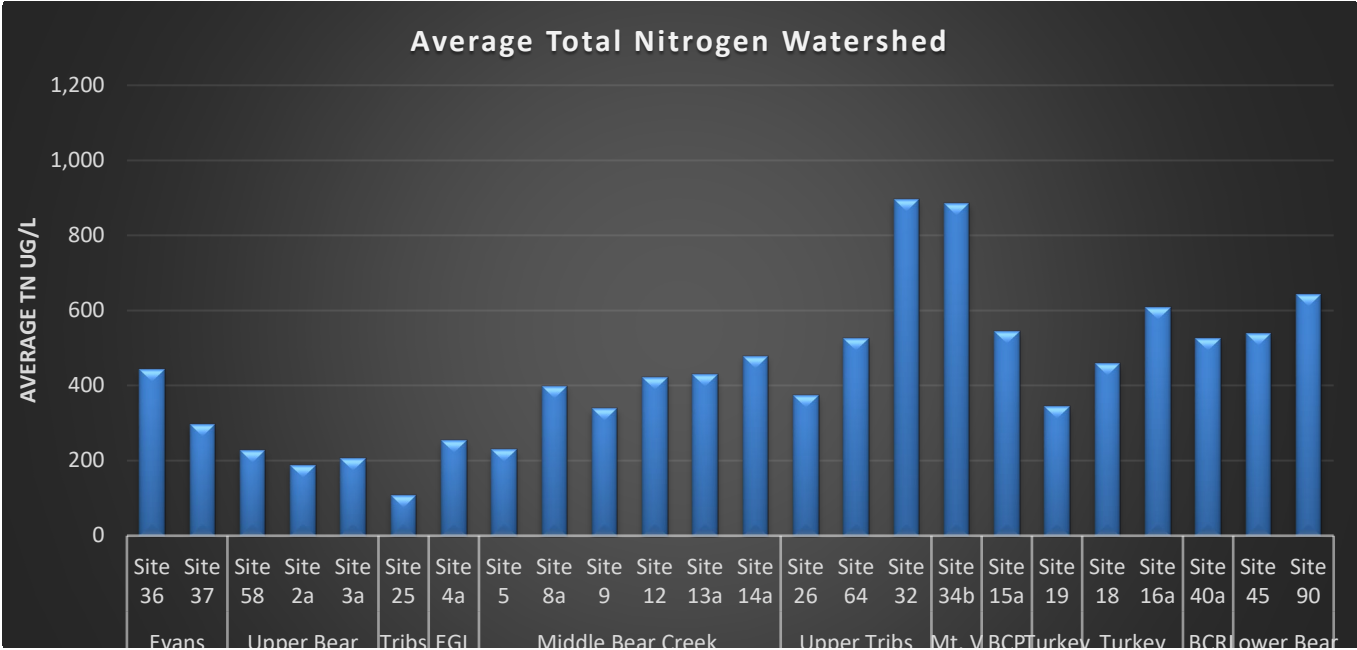


Figure 4 Nitrogen Loading by Segments