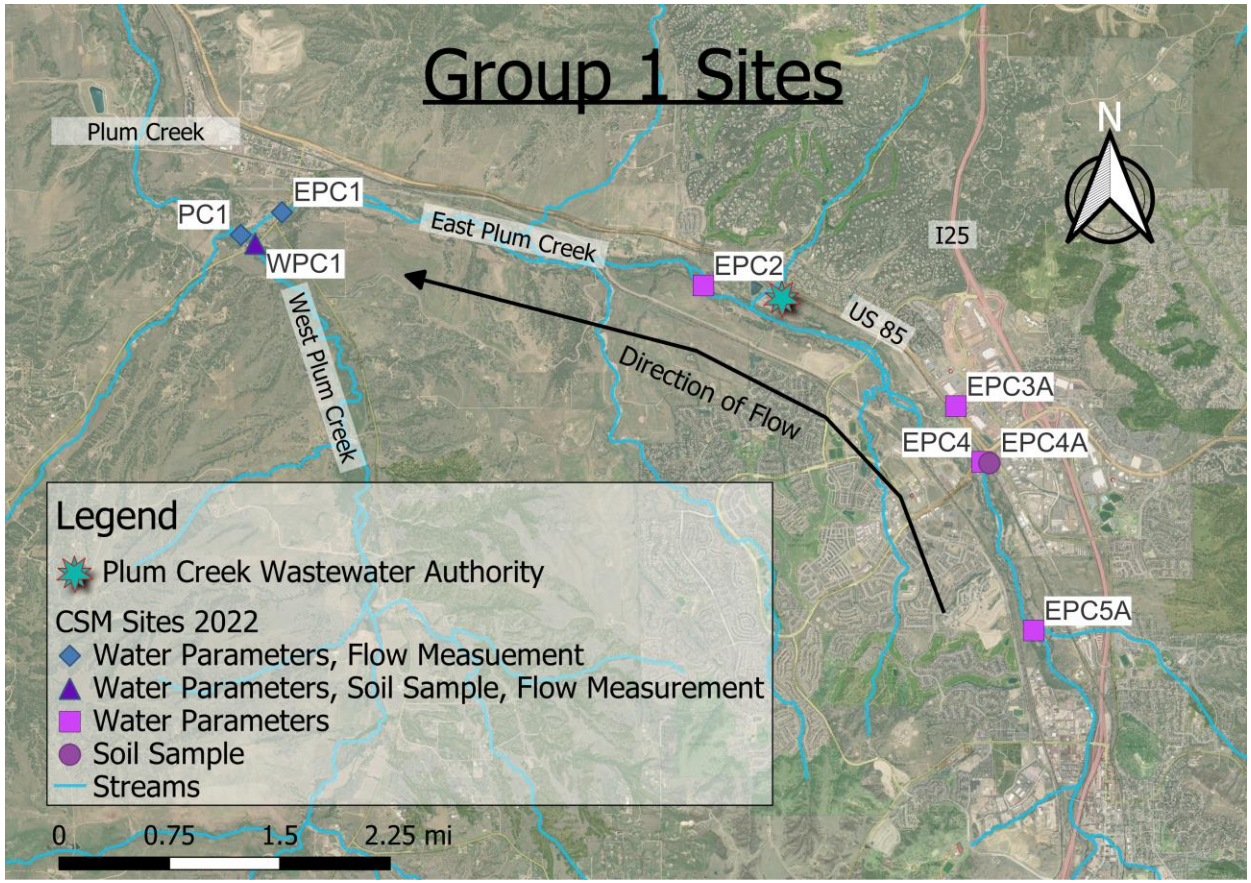
Group 1: East Plum Creek Client Handout



Key Findings

- Notable erosion was found at sites EPC4 and EPC5A
- The coliform measurements at EPC3A and EPC4 were higher than the CDPHE chronic standard
- EPC3A, EPC4, and EPC5A had high conductivity relative to other sites (Table 1)
- EPC4 and EPC3A had high chloride concentrations
- Algal growth in EPC1 caused by excess nutrients

Recommendations

- Further investigation into the excess nutrients found in East Plum Creek
- Sample at locations further upstream from EPC5A to see additional metal contaminant levels
- Monitor copper and zinc levels at all sites, especially as construction continues on Highway 85
- Investigate primary runoff locations and implement control measures
  - Engineered wetlands
- Erosion control for EPC4 and EPC5A

Table 1: Site Overview

Site #	Site Description	EC (uS/cm)	Flow Measurement (cfs)
PC1	Convergence of EPC/WPC	695	11.5
WPC1	Under Highway 67	381	3.10
EPC1	Under Highway 67	837	4.18
EPC2	Downstream of WWTP	817	-
EPC3A	Retention Pond Behind Outlets	1150	-
EPC4	Under Meadows Pkwy Bridge	1090	-
EPC4A	Dry Retention Pond	N/A	-
EPC5A	Hangman's Gulch	978	-

Table 2. Constituent Analysis

Site Overview			Regulations Overview	Metals (mg/L)			Anions (mg/L)	Pathogen Concentrations (cfu/100 mL)		Organic Concentrations (mg/L)		Metals (mg/L)		
East Plum Creek, West Plum Creek & Plum Creek 2022 Analytical Data Group 1: Max Garza, Lauren D'Ambra, Molly Rymes, Jacob Tweddle, Anamika Misra			Standard	As	P	Se	Cl^-	Total Coliform	*E. coli*	COD	DOC	Cu	Tl	Zn
			EPA Aquatic Life Chronic [1]	0.15	--	--	230		--	--	--	--	--	0.12
			EPA Aquatic Life Acute [1]	0.34	--	--	860	--	--	--	--	--	--	0.12
			EPA Human Recreation and Fishing [2]	1.80E-05	--	0.17	--	--	--	--	--	1.3	0.00024	7.4
			EPA Drinking Water [3]	0.01	--	0.05	--	--	--	--	--	1.3	0.002	--
			EPA Secondary Drinking Water [4]	--	--	--	250	--	--	--	--	1	--	5
			CDPHE Chronic [5]	0.00002*	0.11	0.0046	250	200	126	--	--	0.0062	--	0.0082
			CDPHE Acute [5]	0.34	--	0.0184	--	200	--	--	--	0.009	--	0.110
			USDA Livestock [6]	0.01	--	0.05	1500	200	--	--	--	0.5	--	25
			Detection Limit	0.008	0.002	0.0080	0.1	1	1	3.0	0.10	0.0041	0.0006	0.0031
Site	Sample ID	Date	Sample Coordinates											
EPC2	G1.1	5/17/2022	39.452898, -104.9112596	0.011	0.045	0.008	151	196	1	23.0	2.86	0.002	BDL	0.034
EPC5A	G1.2	5/17/2022	39.3914537, -104.8690118	BDL	BDL	BDL	225	0	0	9.39	0.63	BDL	BDL	0.008
EPC5A	G1.2 S^	5/17/2022	39.3913138, -104.8681229	0.017	0.651	BDL	--	--	--	--	--	0.024	0.014	0.071
EPC4A	G1.3^	5/17/2022	39.4078097, -104.8747892	0.021	0.466	0.011	--	--	--	--	--	0.018	0.002	0.216
EPC4	G1.4	5/17/2022	39.4080538, -104.8757964	BDL	BDL	BDL	257	938	11	11.3	0.67	BDL	BDL	0.014
EPC3A	G1.5	5/17/2022	39.4136249, -104.8791800	BDL	0.152	BDL	258	--	--	OOR	1.41	0.010	0.008	0.047
EPC3A	G1.5 S^	5/17/2022	39.4136249, -104.8791800	BDL	0.499	BDL	--	--	--	--	--	0.034	BDL	0.474
WPC1	G1.6	5/17/2022	39.4293656, -104.9679263	BDL	BDL	BDL	19.5	46.1	10.7	6.01	0.44	BDL	BDL	0.016
WPC1	G1.6 S^	5/17/2022	39.4293656, -104.9679263	BDL	0.535	BDL	--	--	--	--	--	0.008	BDL	0.018
PC1	G1.7	5/17/2022	39.4302860, -104.9702480	BDL	BDL	BDL	107.6	64.7	6.3	13.9	1.54	0.002	BDL	0.023
EPC1	G1.8	5/17/2022	39.4324566, -104.9646278	BDL	0.046	BDL	161.8	236	24.6	18.0	1.84	0.001	BDL	0.027
EPC1	G1.9	5/20/2022	39.4324566, -104.9646278	BDL	BDL	0.028	--	19.9	4.1	13.4	5.87	BDL	0.002	0.008
EPC1	G1.10	5/20/2022	39.4324566, -104.9646278	BDL	0.145	0.009	68.3	61.8	17.6	73.8	--	0.024	0.005	0.097
EPC2	G1.11	5/20/2022	39.452898, -104.9112596	--	--	--	--	--	--	--	--	--	--	--
EPC3A	G1.12	5/20/2022	39.4136249, -104.8791800	--	--	--	--	1010	63.1	--	--	--	--	--

[1] US EPA National Recommended Water Quality Criteria - Aquatic Life Criteria Table https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table
[2] US EPA National Recommended Water Quality Criteria - Human Health Criteria Tablehttps://www.epa.gov/wqc/national-recommended-water-quality-criteria-human-health-criteria-table
[3] US EPA Drinking Water https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations
[4] US EPA Secondary Standards https://www.epa.gov/sdwa/secondary-drinking-water-standards-guidance-nuisance-chemicals
[5] CDPHE (reg 38) https://cdphe.colorado.gov/water-quality-control-commission-regulations
[6] USDA Livestock https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_051302.pdf

* Total Recoverable Standards
** Action Level
*** Nitrate + Nitrite
N/A - Sample was not analyzed
BDL - Below Detection Limit
OOR - Out of Range