

Fairfax County 2024 MS4 Program Plan and Annual Report

Appendix R12

Wet Weather Screening Report

VSMP Permit Number VA0088587
9-30-2024

							Water Quality Analyte																										
Monitoring Site	StormNet ID	Sample Type	Rainfall Start Date	Rainfall Amount (in)	Rainfall Length (h)	Last Rainfall Date	Physical Parameters						Metals										Nutrients					Anions					
							COD (mg/L)	Hardness (mg/L)	pH	Si (mg/L)	SPC (µS/cm)	TDS (mg/L)	TSS (mg/L)	Cd (ug/L)	Ca (mg/L)	Cr (ug/L)	Cu (ug/L)	Fe (ug/L)	Pb (ug/L)	Mg (ug/L)	Mn (ug/L)	Ni (ug/L)	K (mg/L)	Na (mg/L)	Zn (ug/L)	NH ₃ (mg/L)	TKN (mg/L)	NO _x (mg/L)	Ortho-P (mg/L)	TP (mg/L)	Cl (mg/L)	Fluoride (mg/L)	SO ₄ (mg/L)
Fairfax Water Authority	STMN0442033318	First Flush	10/14/2023	0.55	22	10/7/2023	58.1	117,000	7.8	18,500	304	179	87.4	ND	37600	7.9	15.9	3730	ND	5530	1450	ND	2100	14,600	116	0.41	2.2	1.9	0.051	0.26	31.7	ND	9.1
Fairfax Water Authority	STMN0442033318	Storm Composite	10/14/2023	0.55	22	10/7/2023	53.40	31,400	7.20	9,330	90	65	30.20	ND	ND	9,530	ND	1540	ND	1840	104	ND	1530	5,750	55.20	ND	1.30	0.44	ND	0.10	6.40	ND	3.20
Bren Marr	STMN0811453764	First Flush	10/14/2023	0.43	11.5	10/7/2023	109.00	12,400	6.80	3,450	38.60	ND	29.40	ND	3850	ND	11.30	1140	ND	686	53.80	ND	1180	2,220	107.00	0.23	1.60	0.40	ND	0.10	2.20	ND	2.00
Bren Marr	STMN0811453764	Storm Composite	10/14/2023	0.43	11.5	10/7/2023	27.80	16,200	6.90	2,420	61.60	40.00	20.60	ND	5230	ND	6.10	488	ND	751	21.00	ND	1250	3,880	44.50	0.16	0.97	0.29	ND	ND	8.20	ND	2.10
Fairfax Water Authority	STMN0442033318	First Flush	12/10/2023	1.5	17.9	12/4/2023	201	51,200	6.4	9,950	156	141	73.5	ND	15200	4.1	19.7	1960	5.4	3220	308	4.6	3550	9,670	121	0.35	3.1	0.76	0.24	0.43	31.7	ND	9.1
Fairfax Water Authority	STMN0442033318	Storm Composite	12/10/2023	1.5	17.9	12/4/2023	33.40	19,400	6.80	3,870	56.8	44	13.4	ND	5880	1.4	8.6	541	1.3	1160	39.2	1.3	1390	3,560	31.7	ND	0.7	0.26	0.056	0.11	3.5	ND	2.3
Bren Marr	STMN0811453764	First Flush	12/10/2023	1.58	18.2	12/4/2023	35.7	11,300	6.5	1,970	38.6	32	25.2	ND	3500	1.2	6.9	608	2.2	625	26.2	1.5	1300	2,450	54.8	0.27	1.1	0.37	ND	0.097	3.3	ND	2.1
Bren Marr	STMN0811453764	Storm Composite	12/10/2023	1.58	18.2	12/4/2023	ND	11,000	ND	ND	50	43	10.9	ND	3570	1.2	4.3	420	1.4	503	13.4	ND	1440	4,620	27.4	ND	0.7	0.14	ND	0.051	4.9	ND	1.9
Fairfax Water Authority	STMN0442033318	First Flush	3/2/2024	0.55	13.5	2/28/2024	107	115,000	7.1	33,200	362	261	199	0.16	34500	10.2	34	6660	7.9	6920	296	9.3	2250	33,300	142	0.37	2.8	0.92	ND	0.34	73.1	ND	7.4
Fairfax Water Authority	STMN0442033318	Storm Composite	3/2/2024	0.55	13.5	2/28/2024	39.5	31,000	7	6,580	188	129	40	ND	9340	2.2	10.1	1170	2.5	1850	49.4	2.0	871	24,500	39.5	ND	0.63	0.38	ND	0.082	40	ND	2.0
Bren Marr	STMN0811453764	First Flush	3/2/2024	0.74	15.1	2/28/2024	32.7	20,600	7	2,600	205	115	13.8	ND	6540	1.6	4.5	456	1.4	1040	14.3	1.3	1880	30,500	32	ND	ND	0.28	ND	ND	46.9	ND	3.3
Bren Marr	STMN0811453764	Storm Composite	3/2/2024	0.74	15.1	2/28/2024	ND	101,000	7.4	6,720	783	446	4.5	ND	28800	ND	3.8	584	ND	6950	62.5	5.1	5880	111,000	30.9	ND	ND	0.88	ND	ND	180	ND	16.3
Fairfax Water Authority	STMN0442033318	First Flush	5/4/2024	0.56	15.6	4/4/2024	37.8	11,800	6.7	4,820	40.2	27	29.5	ND	3450	1.4	10.3	706	1.8	775	45.8	2	1180	3,670	47.7	ND	0.78	0.21	0.12	0.084	3.9	ND	ND
Fairfax Water Authority	STMN0442033318	Storm Composite	5/4/2024	0.56	15.6	4/4/2024	58.7	20,200	6.8	8,990	37.1	ND	91	ND	6410	2.2	14.5	1240	2.8	1020	65.3	2.7	1200	3,430	59.4	ND	1.9	0.19	ND	0.27	3.4	ND	ND
Bren Marr	STMN0811453764	First Flush	5/5/2024	0.54	6.5	4/4/2024	ND	13,000	6.9	1,280	90.4	52	7.5	ND	4120	ND	7.9	153	ND	663	9.4	2.2	1130	11,800	33.3	0.42	0.85	0.36	ND	ND	16.1	ND	1.7
Bren Marr	STMN0811453764	Storm Composite	5/5/2024	0.54	6.5	4/4/2024	ND	14,300	7.1	1,760	123	65	3.5	ND	4620	ND	5.4	143	ND	664	7.2	ND	1460	18,000	18.5	0.13	ND	0.3	ND	ND	23.4	ND	2

In Q4 of the previous permit year (Apr-June, 2023) staff discovered a diesel fuel leak at the Fairfax Water Authority location, which was the result of a leaking underground storage tank. Mitigation was largely completed in late Q1 (July-Sep, 2023), and sampling resumed in Q2 (Oct-Dec). Some construction and clean-up continued during Q2 which may have contributed to the one-time Chromium exceedance.

Analyte value was greater than exceedance criterion

Follow-up actions : All storm event reports with exceedances are sent to the Stormwater Pollution Inspections (SPI) Group for analysis. Zinc and copper are common urban pollutants, originating from roofs and vehicles. Copper can also come from cooling towers, washing activity, or from water flowing through soil such as groundwater seeps into the storm drainage system joints. Elevated copper and zinc concentrations are common in urban and suburban runoff (Davis, Shokouhian and Ni, 2001), (Pitt, Field, Lalor, & Brown, 1995). The SPI group performed a desktop analysis and found that observed values were similar to levels commonly found in drinking water, which is an allowable discharge under the permit.

References:

Pitt, R., R. Field, M. Lalor, and M. Brown. 1995. Urban stormwater toxic pollutants: assessment, sources, and treatability. Water Environment Research, 67(3), 260-275.

Davis, A., M. Shokouhian, and S. Ni. 2001. Loading estimates of lead, copper, cadmium, and zinc in urban runoff from specific sources. Chemosphere, 44(5), 997-1009.