



SOUTH WASHINGTON WATERSHED DISTRICT

Northern Watershed Regional Assessment Locations

SWWD’s Northern Watershed (NWS; Map 1) covers roughly one third of the District and includes the NWS chain of lakes—Armstrong, Markgrafs, Powers, Wilmes, Colby, and Bailey. Results of Lake monitoring are included in separate reports. This report summarizes the monitoring results for the two NWS regional assessment locations.

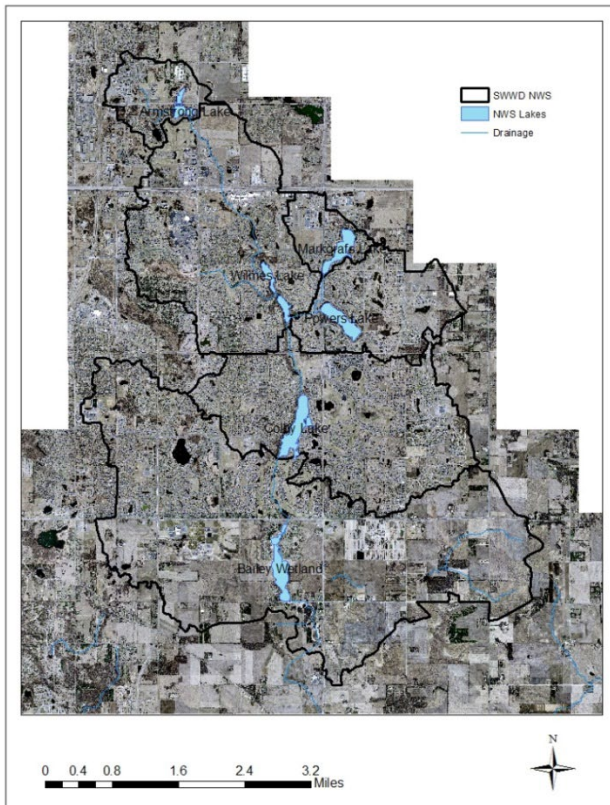
SWWD’s monitoring programs are based on a Regional Assessment approach. By following a regional approach, monitoring is focused on key resources and watershed outlets throughout the District. SWWD maintains two long-term regional assessment monitoring locations in the NWS—MS1 and MS2.

MS1

Municipality: Lake Elmo

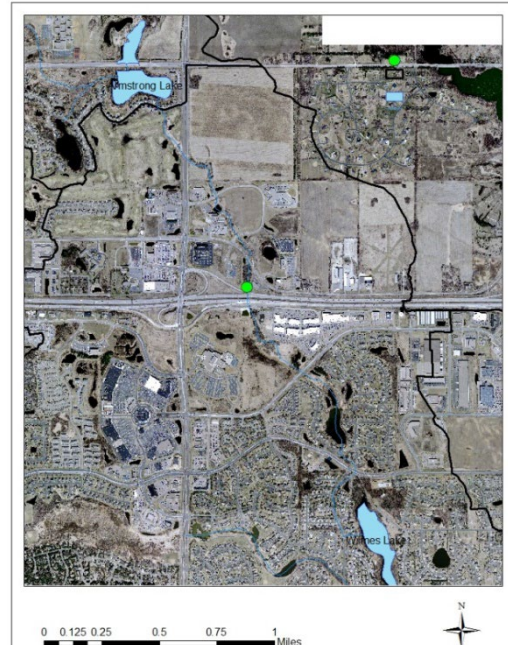
Watershed Area: 1,482 Acres

Changes in loading from Armstrong Lake and tributaries from the City of Lake Elmo to downstream Wilmes Lake are assessed with data collected at SWWD’s MS1 Regional



Assessment Location. MS1 is a vital link in understanding the intercommunity flow from Lake Elmo and Oakdale to Woodbury. Runoff yield has been elevated, likely reflecting the saturated system upstream, limiting capacity for detention of storm runoff. Overall, water quality measures are down from peaks in the early 2000s. SWWD expects that trend to continue with development more or less complete and the watershed stabilized. SWWD will continue to watch changes at this site.

All data is available through SWWD at www.swwdmn.org.



Map 2: MSI Regional Assessment Location

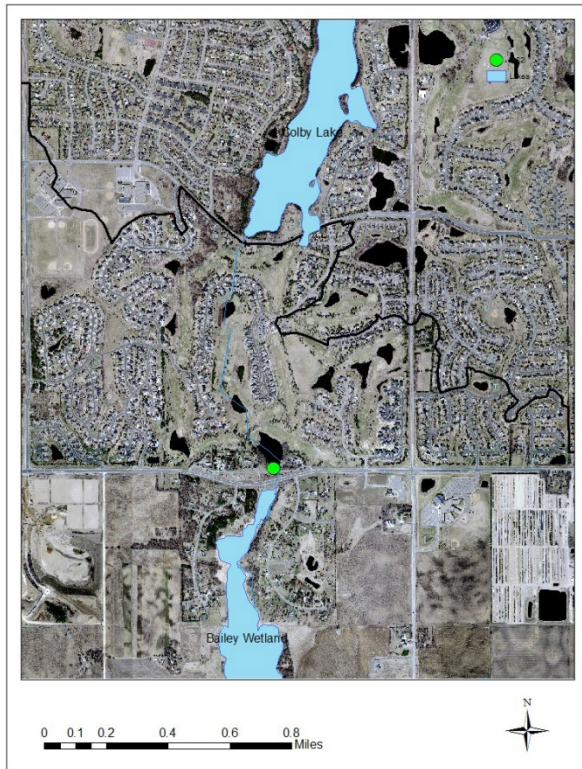
Table 1: Annual Loading Summary for MSI

Year	April-Oct Precipitation (in)	Runoff Yield (ft ³ /in)	April- Oct TP (lbs)	TP Yield (lbs/in precip)	April- Oct TSS (lbs)	TSS Yield (lbs/in precip)	April- Oct Chloride (lbs)	Chloride Yield (lbs/in precip)
2001	25.6	639,474	158	6.2	53,902	2,102	92,857	3,621
2002	30.0	692,825	1,076	35.9	922,885	30,804	42,161	1,407
2003	16.7	670,419	387	23.2	394,994	23,664	25,792	1,545
2004	19.2	456,083	200	10.4	218,527	11,410	18,503	966
2005	25.5	764,616	519	20.4	457,080	17,947	39,477	1,550
2006	18.1	400,214	184	10.1	60,135	3,316	25,391	1,400
2007	20.4	483,087	141	6.9	43,604	2,139	31,530	1,547
2008	17.6	509,551	117	6.6	35,477	2,010	47,024	2,665
2009	16.1	239,809	39	2.4	12,511	779	7,122	444
2010	24.7	677,226	230	9.3	92,265	3,739	27,608	1,119
2011	16.5	1,236,581	224	13.6	96,617	5,841	52,310	3,163
2012	17.7	433,379	68	3.8	21,528	1,216	24,808	1,401
2013	19.4	958,983	651	33.5	245,146	12,616	84,113	4,329
2014	26.2	983,511	489	18.7	516,774	19,711	103,264	3,939
2015	25.6	515,791	223	8.7	115,610	4,525	23,149	906
2016	31.8	1,759,367	664	20.9	204,328	6,423	87,203	2,741
2017	26	1,157,500	355	13.7	90,544	3,499	117,227	4,530
2018	24.2	1,245,459	342	14.1	102,514	4,234	56,699	2,342
2019	30.4	1,247,337	426	14	111,374	3,664	129,819	4,270
2020	21.7	1,204,878	305	14.1	98,934	4,559	97,775	4,506

2021	14.7	1,028,986	178	12.1	42,422	2,894	46,431	3,167
2022	19	842,125	173	9.1	39,778	2,099	74,418	3,927

MS2

Municipality: Cottage Grove Watershed Area: 2,720 Acres



Map 3: MS2 Regional Assessment Location

Water from a large portion of Woodbury, including outflow from Colby Lake, flows through MS2 (Map 7) in route to Bailey Lake. Data collected at this location is used to assess loading rates from the portion of Woodbury that drains into Bailey Lake and develop models that will be used to evaluate effects of proposed development, BMP, and conservation projects.

The MS2 monitoring site was established in 1996; however, only water quality data collected since 2000 is consistent and reliable. No data is available from 2019 or 2020 due to construction activity at the monitoring location. Parameters monitored include stage, flow, heavy metals, nutrients, and rainfall. Data (Table 2) indicates decreases in seasonal yield of total phosphorus, total suspended solids, and runoff indicating gradual improvement in stormwater quality. That improvement is likely a result of decreased development activity and more recent implementation of best management practices

targeted to mimic a more natural watershed hydrograph and improve water quality in the upstream watersheds. Chloride yield remains steady.

Table 1: Annual Loading Summary for MS2

Year	April-Oct Precipitation (in) (scaled)	Runoff Yield (ft³/in)	April- Oct TP (lbs)	TP Yield (lbs/in precip)	April- Oct TSS (lbs)	TSS Yield (lbs/in precip)	April- Oct Chloride (lbs)	Chloride Yield (lbs/in precip)
2001	25.7	1,104,630	239	9.3	28,781	1,118	125,763	4,887
2002	29.3	8,993,731	2,495	85.2	264,317	9,021	934,847	31,909
2003	17.0	3,812,230	619	36.4	68,435	4,018	182,571	10,722

2004	26.8	1,772,472	559	20.9	120,309	4,487	176,776	6,593
2005	18.2	1,755,744	305	16.8	23,607	1,299	124,629	6,863
2006	20.0	336,707	72	3.6	5,449	272	17,870	894
2007	17.7	2,140,354	289	16.3	30,111	1,700	203,365	11,484
2008	16.2	1,563,904	283	17.4	33,474	2,061	100,535	6,192
2009	24.7	3,365,749	697	28.2	86,500	3,499	273,933	11,083
2010	18.5	4,975,153	776	42.0	86,243	4,666	429,474	23,236
2011	18.1	1,794,620	245	13.6	32,254	1,781	133,352	7,366
2012	21.0	2,381,512	424	20.2	35,669	1,698	288,356	13,734
2013	26.1	4,293,710	726	27.8	62,010	2,371	570,933	21,837
2014	25.6	412,129	100	3.9	6,377	249	26,581	1,040
2015	25.7	4,031,748	239	9.3	28,781	1,118	125,763	4,887
2016	31.8	3,099,909	883	27.8	79,045	2,485	307,742	9,677
2017	26	1,104,630	538	20.8	44,784	1,730	385,153	14,882
2018	16	2,618,698	319	19.9	35,071	2,188	188,390	11,752
2019	NO DATA COLLECTED							
2020	NO DATA COLLECTED							
2021	14.7	1,787,666	183	14.3	16,137	1,260	110,227	8,605
2022	19	188,659	28	1.5	2,850	150	14,425	761