



LOWER MINNESOTA RIVER WATERSHED DISTRICT

Executive Summary for Action

Lower Minnesota River Watershed District Board of Managers Meeting

Wednesday, March 18, 2020

Agenda Item

Item 5. A. - Presentation of 2019 monitoring results by Scott County Soil & Water Conservation District

Prepared By

Linda Loomis, Administrator

Summary

Troy Kuphal and Jon Utecht, from the Scott County Soil & Water Conservation District (SWCD) will attend the LMRWD Board meeting to present findings of the 2019 monitoring program in Scott County.

The LMRWD contracts with Scott County SWCD to monitor resources within the LMRWD which are located in Scott County. A contract between the SWCD and the LMRWD is entered into annually before the monitoring season begins. The Agreement for 2020 along with a statement of work is attached for Board review. Fees are billed to the LMRWD based on time and materials/supplies.

In addition to monitoring, the LMRWD is a partner in the Scott County Water Education Partnership (SCWEP). SCWEP is managed by the Scott County SWCD and LMRWD contribution to the partnership is part of the agreement between the SWCD and the LMRWD. The 2019 Annual Report from the SCWEP is attached for the Board's information.

Attachments

2019 Annual Monitoring Report

Agreement between the Lower Minnesota River Watershed District and the Scott Soil and Water Conservation District for Monitoring, Technical, Education and other Conservation Services

2020 Statement of Work

SCWEP 2019 Annual Report and 2020 Work Plan

Recommended Action

Motion to receive and file 2019 Annual Monitoring Report and SCWEP Annual report

Motion to authorize execution of Agreement between the Lower Minnesota River Watershed District and the Scott Soil and Water Conservation District for Monitoring, Technical, Education and other Conservation Services

ANNUAL MONITORING REPORT 2019



Savage Fen Tree Frog

Prepared for:

Lower Minnesota River Watershed District

By: SCOTT SWCD

Jordan, MN

Lower Minnesota River Watershed District



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Introduction

This report focuses on the summary and comparison of water resources data collected by Scott Soil and Water Conservation District (SWCD) from 2019 and previous monitoring seasons. Like previous years, the monitoring work plan for 2019 included three temperature logging locations in Eagle Creek, one continuous water monitoring station in Eagle Creek (operated in conjunction with Metropolitan Council Environmental Services (MCES) Watershed Outlet Monitoring Program (WOMP)), 19 observation wells located in the Savage Fen and surrounding area, and one water monitoring station on the inlet to Dean Lake (DLI). New to the 2019 monitoring activities included adding three additional temperature loggers and performing chloride sampling in the Eagle Creek watershed.

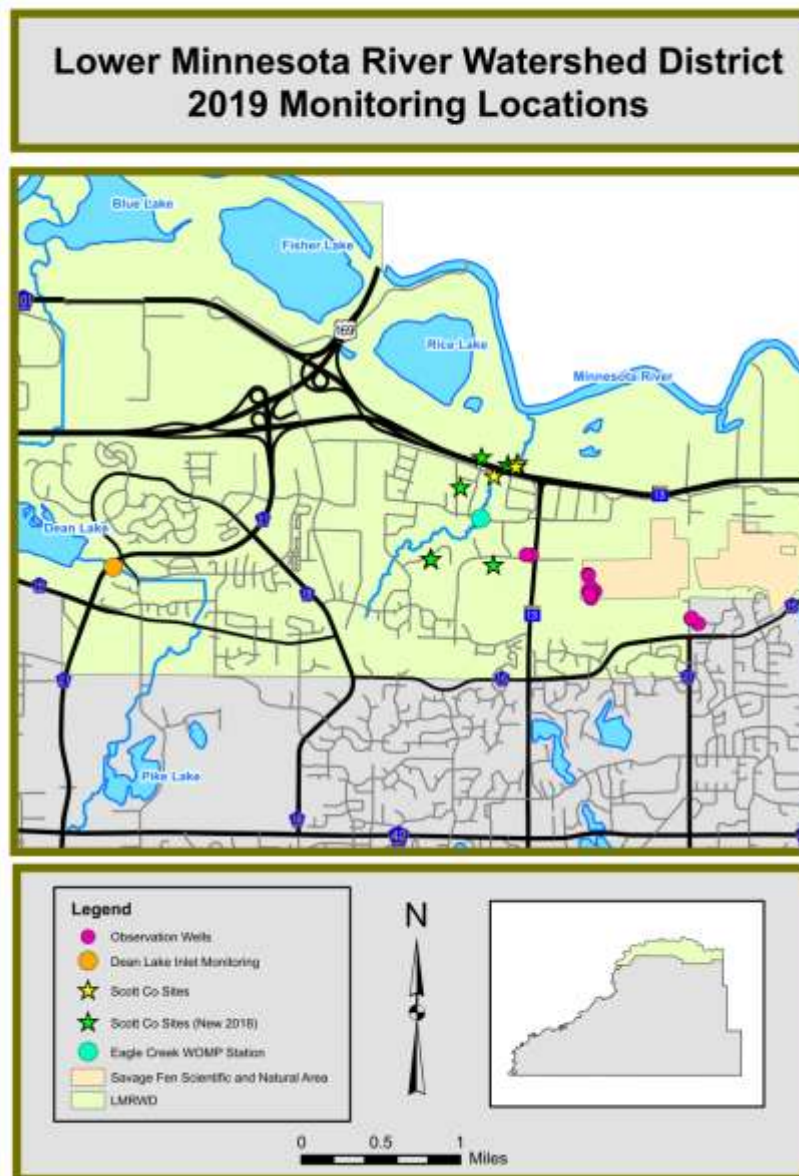


Figure 1. Monitoring Location Map.

I. Thermal Monitoring

This study was initiated by the Lower Minnesota River Watershed District (LMRWD) to evaluate the impact storm water runoff from Highway 101 has on temperatures in Eagle Creek, a DNR designated trout stream. Brown Trout are very sensitive to temperature as it impacts growth rate, habitat, and food resources. The optimal temperature range for adult brown trout is approximately 12.4 – 17.6° Celsius (Bell, 2006).

Methods

Temperature loggers were placed upstream and downstream of Highway 101 in June of 2006 and have been recording stream temperature since that time. In October 2012, a midstream logger was placed just upstream of a pond tributary to monitor its impact on stream temperatures. Three additional loggers have been placed on the outlets of the ponds adjacent to Eagle Creek in late July of 2018 (Figure 2). The goal of the additional pond loggers is monitor water temperatures leaving the ponds, and help zero in on potential warm thermal sources contributing to the creek. All the loggers record continuous temperature data in 15-minute intervals. Scott SWCD contracted with the LMRWD to collect and report the instream temperature data. Rainfall data used for this report is taken from the Shakopee Mdewakanton Sioux Community (SMSC) rain gauge located in Shakopee.

Results

Under most conditions, stream temperatures trend with atmospheric temperatures. The downstream logger shows a deviation from the midstream and upstream loggers during both the winter and summer. A combination of atmospheric temperatures and the inflow of cold and warm water from the inlet near the Hwy 101 logger would influence the deviation.

Similar to other years, the upstream logger continues to be the warmest during the winter and coolest in the summer of the three Eagle Creek loggers. The downstream logger shows an opposite trend as it is the warmest in the summer and coolest in the winter (Figure 3). During warm summer days, water temperatures occasionally exceeded the optimal range for trout but for only a few hours at a time (Figure 4). The maximum daily temperatures exceeded the optimal range 15, 6, and 2 times for the downstream, midstream, and upstream loggers respectively. A noticeable separation in water temperatures is noticed after rain events. It appears that the

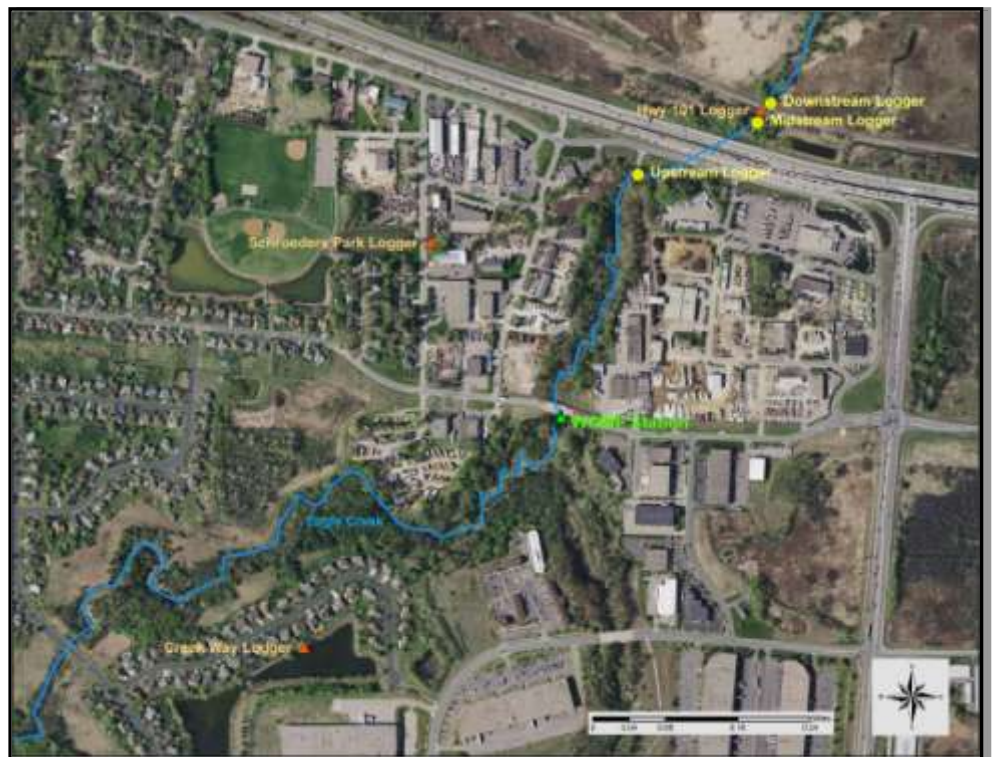


Figure 2. Location of temperature loggers and WOMP station. The new 2018 loggers are represented by the orange triangles. No temperature logger exists at the WOMP station.

midstream and downstream loggers tend to peak higher than the upstream logger, likely due to surface runoff from the stormwater inlets under Hwy 101 and increased side channel flow from the inlet at the Hwy 101 logger location. The midstream logger is in between the Hwy 101 overpass and the Hwy 101 inlet, downstream temperature logger is located approximately 30 feet downstream of the Hwy 101 inlet.

The additional three loggers at the Creek Way pond outlet, Shroeder's park outlet and the Hwy 101 pond inlet are not a part of the spring fed Eagle Creek main channel. They are more reactive to atmospheric temperature fluctuations (Figure 5). The Creek Way pond logger tracks very close to average air temperatures, except for a few times in early and late 2019. Shroeder's park and Hwy 101 loggers track very close to one another, with the exception to the Spring of 2019 where the flooding likely kept the Hwy 101 logger cooler than normal. Looking at how these ponds influence the main channel of Eagle Creek, it is likely that the Hwy 101 pond inlet has some influence to rising temperatures at the downstream logger as the largest separation in temperatures between the midstream and downstream logger is observed after the Hwy 101 logger temperatures surpass the main channel temperatures (Figure 6). Fluctuations are also observed with the atmospheric temperatures and rain events.

Discussion

Multiple flooding events in the Minnesota River appeared to influence the data for all of the loggers during the Spring of 2019. The late May into June flood levels kept field staff out of the water and the levels also seemed to impact the water temperatures at all the loggers in the main channel and at the Hwy 101 logger. Following the flooding, all of the thermal monitoring loggers have shown typical responses to temperature increases and precipitation events. The downstream logger continues to show a greater and more sustained response to the events. This is likely due to the combination of the runoff from the crossing highway and overflow from the adjacent pond. All of the loggers showed spikes in maximum daily temperatures outside the optimal range for the Brown Trout, but the total number of spikes decreased by 29 between all of the loggers when compared with 2018 data. The pond loggers tracked well with average air temperatures. The logger at Creek Way pond only appeared to be submerged for a short period during the Spring thaw, the rest of the time it tracked with the atmospheric temperatures. The Hwy 101 pond logger tracked diurnally with the downstream and midstream loggers. It remained cooler than the main channel in the winter and warmer in the summers. It likely has some influence on the downstream logger temperatures as a noticeable separation is observed between the midstream and downstream loggers after the Hwy 101 logger temperatures surpass the main channel temperatures. This is similar to the results found in the brief investigation in 2009.

An investigation was conducted on August 19, 2009 during a 2-inch rain event at numerous temperature monitoring locations on Eagle Creek. Temperatures were recorded upstream and downstream of the pond tributary and in the tributary itself. The temperature of Eagle Creek rose almost 2°C directly after the tributary discharged into Eagle Creek. The tributary was almost 5°C higher than Eagle Creek. According to this study, temperature spikes in Eagle Creek appear to be from large volumes of solar heated pondwater and warm surface runoff discharging from the pond. The temperature of the pond may not actually increase during storm events, but rather the volume of water discharging into Eagle Creek is perhaps the stronger influence on temperature rise. This greatly exceeds the small increase in temperature that typically occurs during dry periods that could be attributed to atmospheric warming of the stream. The addition of the thermal loggers at the outlets of the ponds adjacent to the creek will provide a longer record of the actual influence of temperature increases from the ponds. Even though the temperature exceeds the optimal range for trout by only a few degrees and for only a short period, these rapid temperature increases could be stressful to fish. The state water quality standard for Class 2A waters maintain there shall be "no material increase" in temperature.

Other factors that show influence to fluctuating Eagle Creek temperatures are atmospheric temperatures, Spring flooding, and precipitation events. All of the loggers generally track with seasonal air temperatures with the main channel loggers have a more diluted effect, likely due to the flooding influences. Flooding usually occurs as early as March and can last up to June. This can artificially increase or suppress temperature fluctuations during these periods. Finally, precipitation events are seen to have impacts to the logger temperatures, especially in the midstream and downstream loggers. These loggers have the greatest potential for influence from highway runoff and pond overflow discharge.

Continually monitoring of Eagle Creek and the adjacent ponds will allow the tracking of temperature shifts. It also allows for historical background for past and future restoration projects, similar to the MNDNR habitat improvement project in 2013. Construction near the Schroeders park pond resulted in a missing logger data for much of the late 2018 to early 2019 season. The logger has since been replaced and all the loggers within the Eagle Creek watershed continue to capture continuous water temperature data.

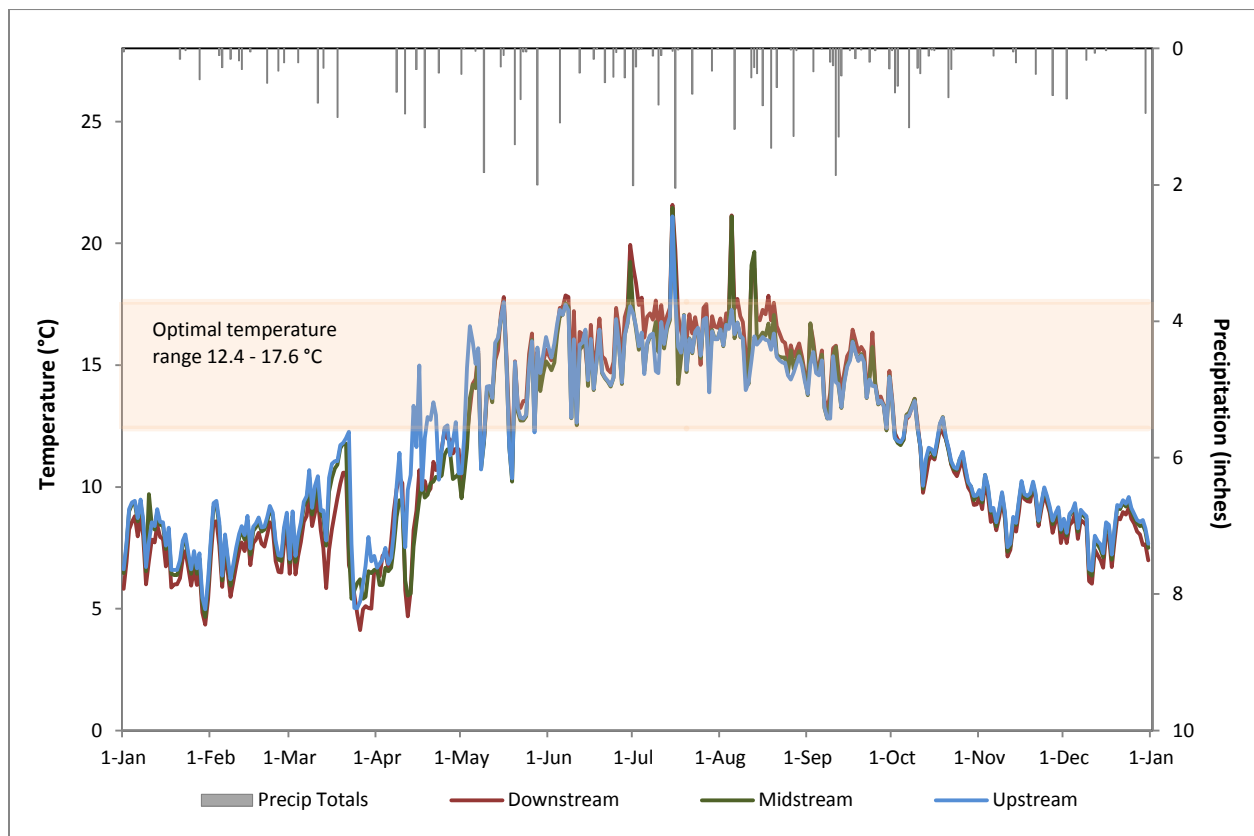


Figure 3. 2019 Maximum daily water temperatures in Eagle Creek.

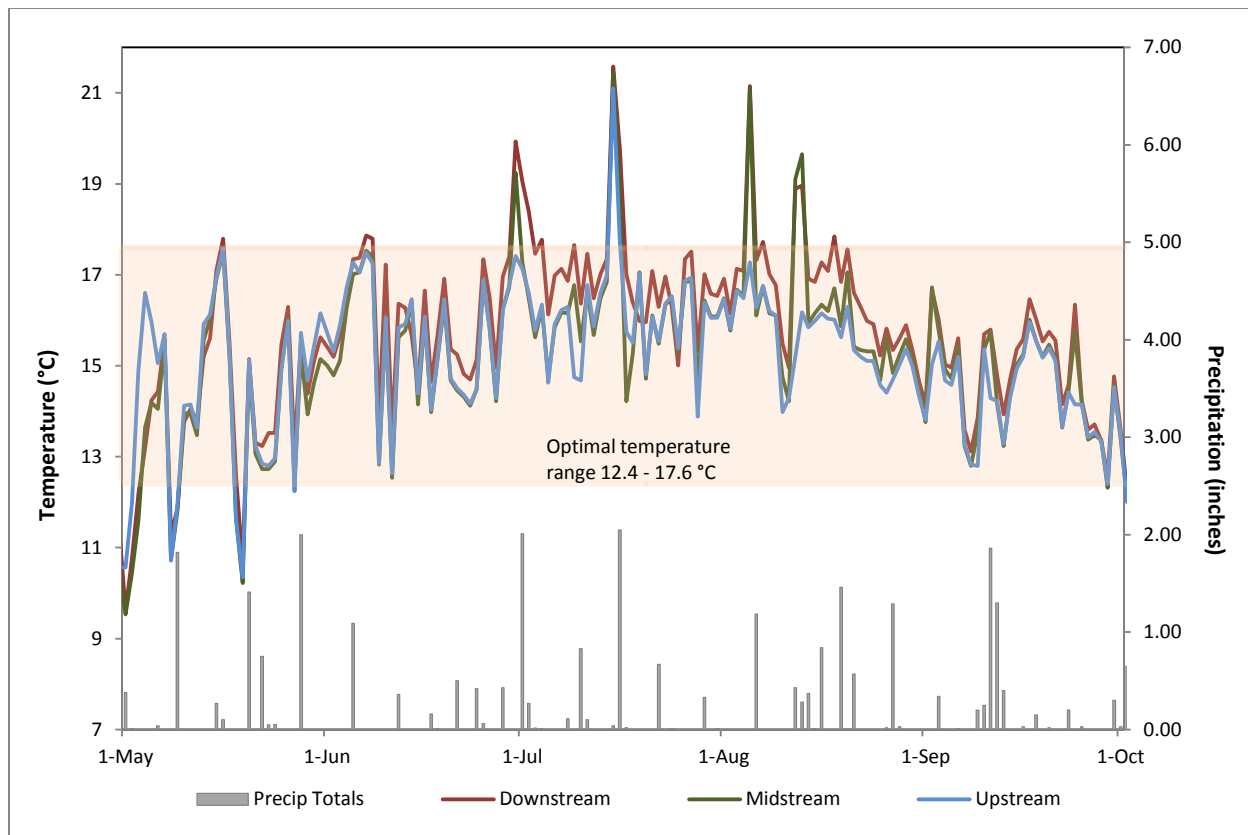


Figure 4. Maximum daily temperatures for the 2019 summer.

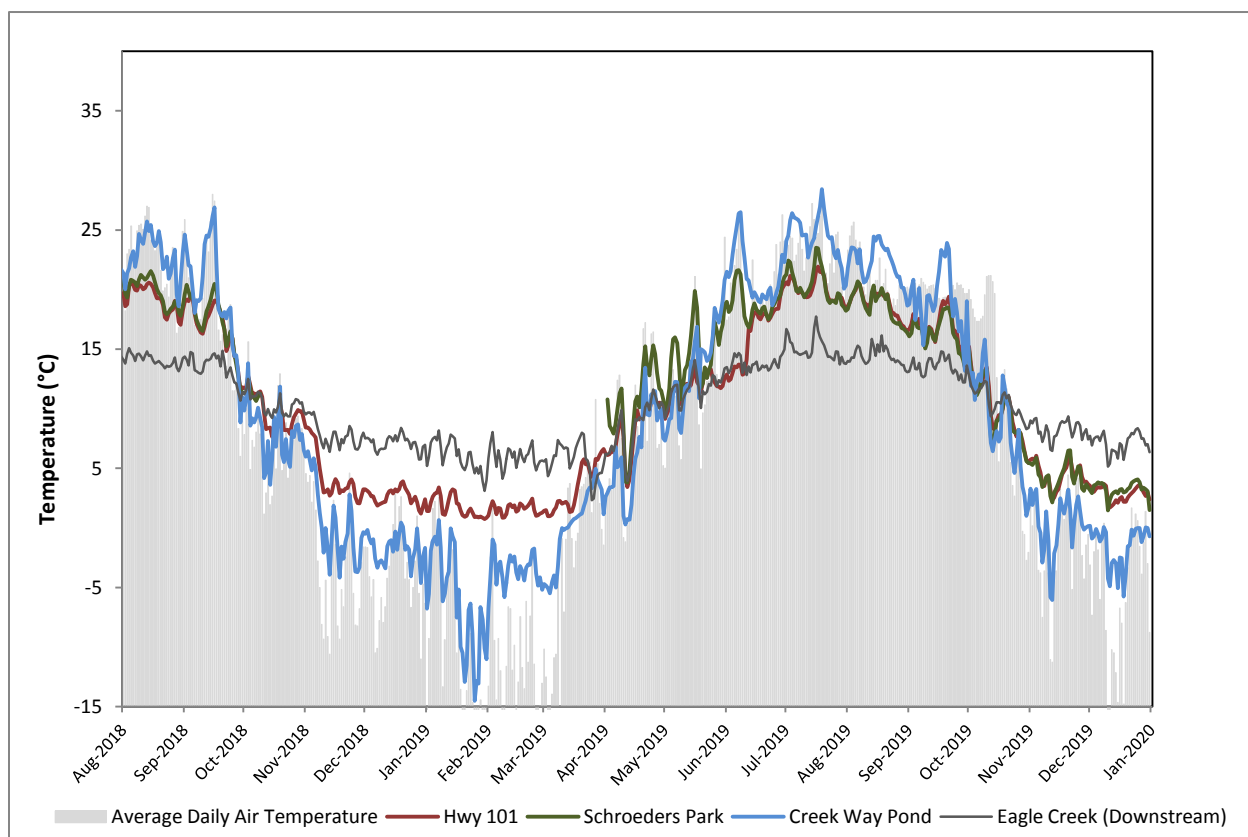


Figure 5. Pond outlet loggers 2019 average daily water temperatures. The Eagle Creek (Downstream) logger is shown for reference.

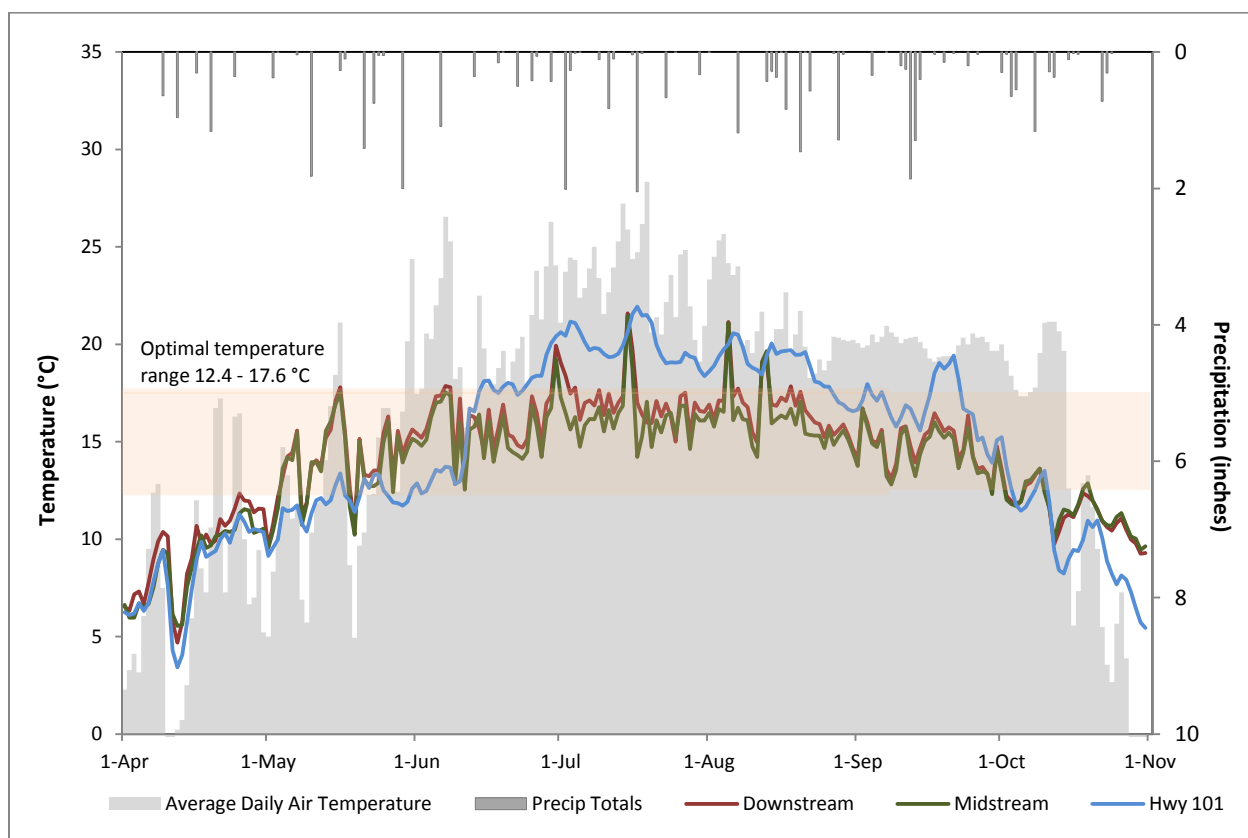


Figure 6. Comparison of 2019 water temperatures at the Hwy 101 pond and Eagle Creek upstream and downstream of pond confluence.

II. Eagle Creek Monitoring

Eagle Creek is a Class 2A self-reproducing trout stream, a unique water resource in the metropolitan area. The Creek originates at the Boiling Springs (an area considered sacred by the Mdewakanton Sioux Community) and outlets into the Minnesota River. Significant measures have been taken over the past couple of decades to prevent degradation of Eagle Creek, including diverting storm water from the stream, the establishment of a 200-foot natural vegetative buffer along each side of the bank, and most recently in 2013, a habitat improvement project along the west branch of Eagle Creek. These and other steps have helped to significantly minimize impacts from this rapidly growing suburban area.

Chloride Monitoring

Located in a highly developed area, Eagle Creek is a unique metropolitan Brown Trout (*Salmo trutta*) stream that may be susceptible to increased levels of chloride. With over 67% of the watershed “developed” and a road density greater than 18%, the runoff potential from impervious surfaces that can transport deicing products into the creek is significant (MPCA, 2018). High levels of chlorides have been found to impact trout development and reduce their growth (Hintz & Relyea, 2017). Smaller streams in highly urbanized areas, like Eagle Creek, are more susceptible to higher chloride concentrations (SEWRPC, 2013).

Methods

New monitoring to trace potential chloride inputs began in early November of 2018 and is scheduled to conclude at the end of March 2019. Samples are collected in three targeted areas around the watershed to capture baseline and runoff chloride concentrations to see if there are areas that are susceptible to higher levels of chloride pollution during the winters (Figure 7). The selected locations will divide the watershed into

sections that can help identify areas with the highest inputs. Chloride and *Escherichia coli* (*E. coli*) samples were collected bi-weekly along with up to five additional event samples. The event samples are dictated by two consecutive days of above freezing ambient temperatures (32°F). This will capture the greatest potential for chloride runoff into the creek. During each sample run stream parameters (temperatures, pH, conductivity, and dissolved oxygen) were recorded with an YSI EXO 1 sonde at each sample location along with four

additional sonde only sample sites. The goal is to relate chloride concentrations to conductivity levels and translate the correlated chloride values to the sonde only measurements. In addition to chloride, *E. coli* samples are also collected to help isolate the source of historically high levels observed during the winter months.

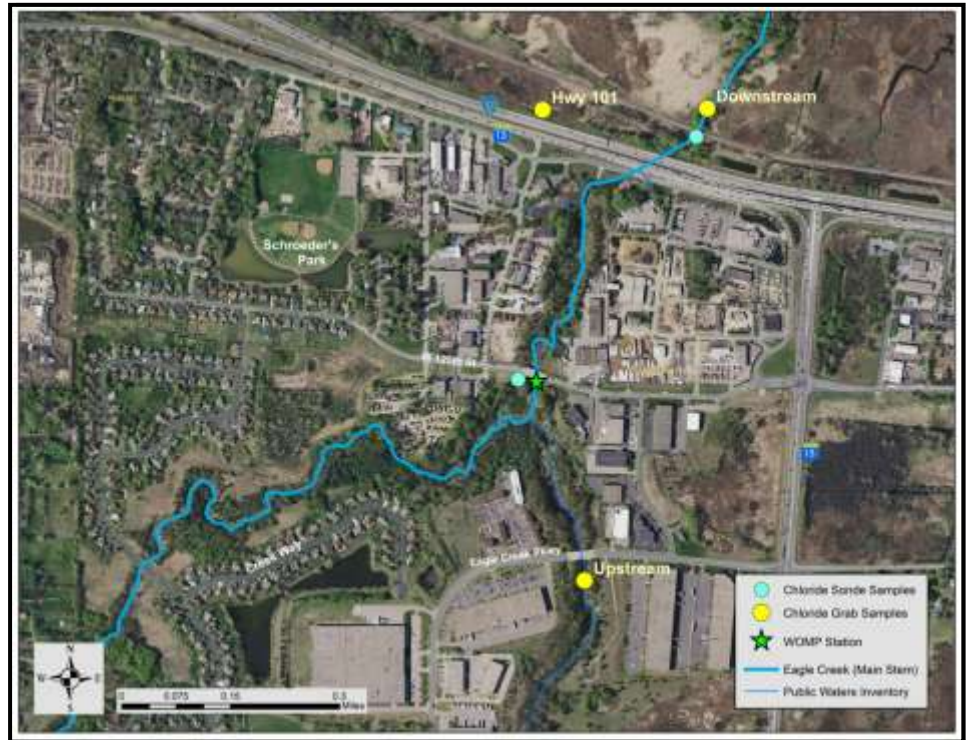


Figure 7. Map depicting the locations of the grab samples and sonde readings for the 2018-2019 chloride analysis.

Results

A total of eleven bi-weekly samples were collected throughout the 2018-2019 winter, only ten were collected at the downstream and Hwy 101 site due to flooding. The chloride levels recorded ranged from 31-360 mg/L (Table 1). Most of the sites stayed below the state concentration standard of 230 mg/L, the Hwy 101 site was the only location with values above the state standard (Figure 8). Most of the sites did not see much fluctuation in chloride levels, the two sites upstream (upstream and WOMP) only varied 6-11 mg/L from the lowest to highest values collected. The upstream site even decreased in concentration for the event samples. Lower in the watershed there appears to be more variation with the Hwy 101 site has a range of 247 mg/L for routine and 195 mg/L for event samples. This likely impacted the lowest site downstream as it had a range of 50-60 mg/L, the highest in the Eagle Creek main channel. Even comparing routine and event samples the upstream site had the lowest range in averages with only a 4 mg/L difference, the Hwy 101 site had ten times that range with a 47 mg/L difference. Again this bumped the variation in the downstream site to a 17 mg/L difference.

Table 1. Chloride results of samples collected for the Eagle Creek chloride project. Data represents routine and event samples collected from 11/7/18 to 3/27/19. Red values are in exceedance of state standards for chlorides (230 mg/L).

Site	Type	Min	25th %	Median	Avg	75th %	Max	N
Upstream	Routine	45	48.7	50.1	50.6	53.9	56.3	11
	Event	30.8	38.6	50.7	46.18	51.5	51.6	5
WOMP	Routine	47.2	47.9	48.5	49.14	50.1	53	11
	Event	38.7	-	-	-	-	38.7	1
Hwy 101	Routine	112.4	126	132.15	155.57	149.8	359.1	10
	Event	102.9	133.75	212.5	203.04	267.6	297.6	5
Downstream	Routine	59.1	60.35	64	67.95	67.95	108.3	10
	Event	58.9	64	84.9	85.08	106.25	116.9	5

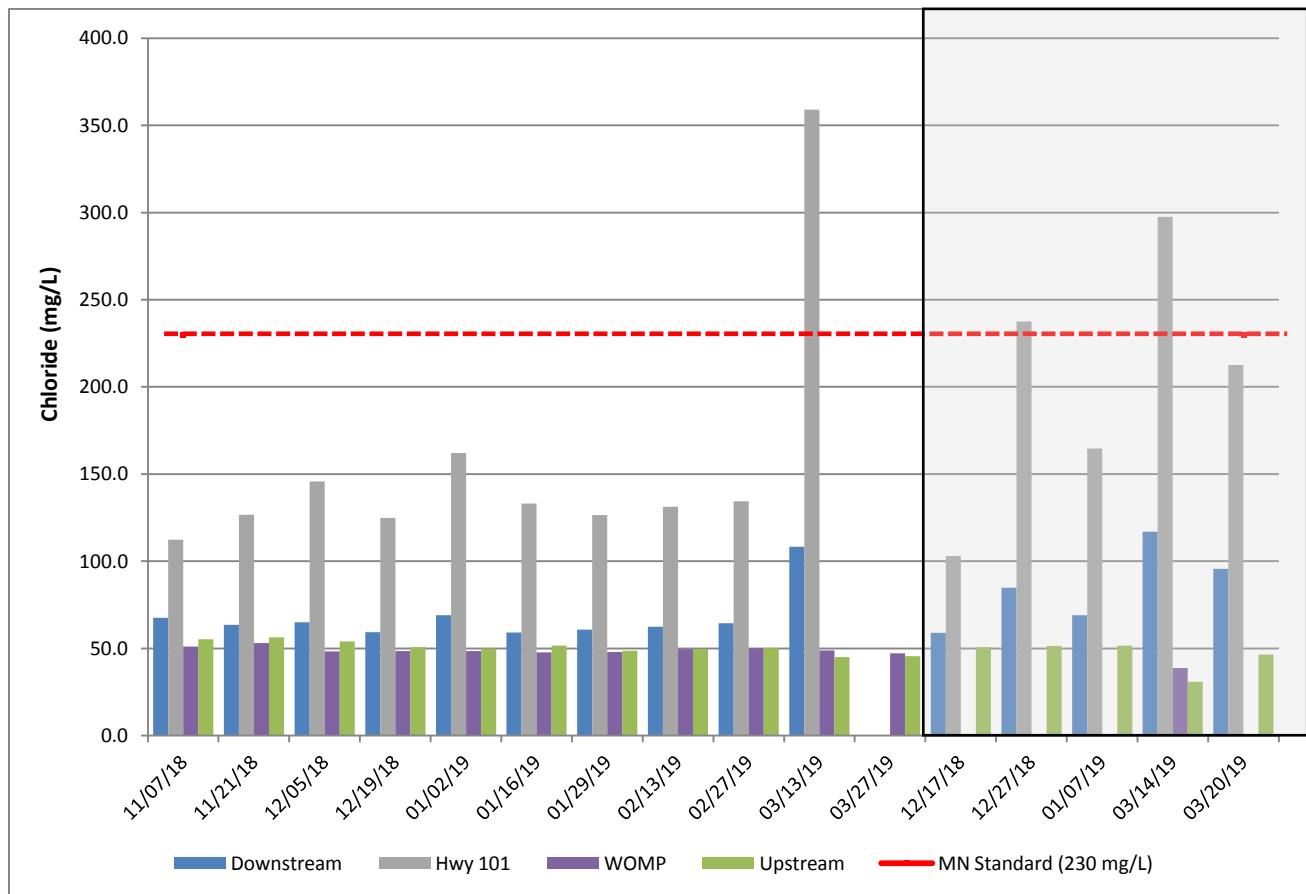


Figure 8. Distribution of chloride concentration for each grab sample. The highlighted area represents the event samples.

Along with chloride analysis, this study also collected E.coli data at the sample locations. Historically, the WOMP location sees and uptick in E.coli values during January and February, this has remained true during this study (Figure 9). The upstream site had the highest and lowest values observed (Table 2). On average the WOMP site had the highest values and in most cases decrease further downstream. There are no state standards for the winter, but a general 126 CFU/100ml is a standard values set for the summer that was used here to compare values. All the sites exceeded this value with their max values and most sites even exceeded the value with their averages.

Table 2. E.coli results of samples collected for the Eagle Creek chloride project. Data represents routine and event samples collected from 11/7/18 to 3/27/19. Red values are in exceedance of state standards for chlorides (126 CFU/100ml). The state standard only applies to Geometric means for summer measurements; the standard here is used as a guide to compare results.

Site	Type	Min	25th %	Median	Avg	75th %	Max	N
Upstream	Routine	3	8	12	142	58	1203	11
	Event	6	8	26	51	107	185	5
WOMP	Routine	5	11	25	175	411	548	11
	Event	206	-	-	-	-	206	1
Hwy 101	Routine	17	21	31	60	108	201	10
	Event	16	20	29	148	335	548	5
Downstream	Routine	8	14	52	172	307	649	10
	Event	7	9	13	41	87	152	5

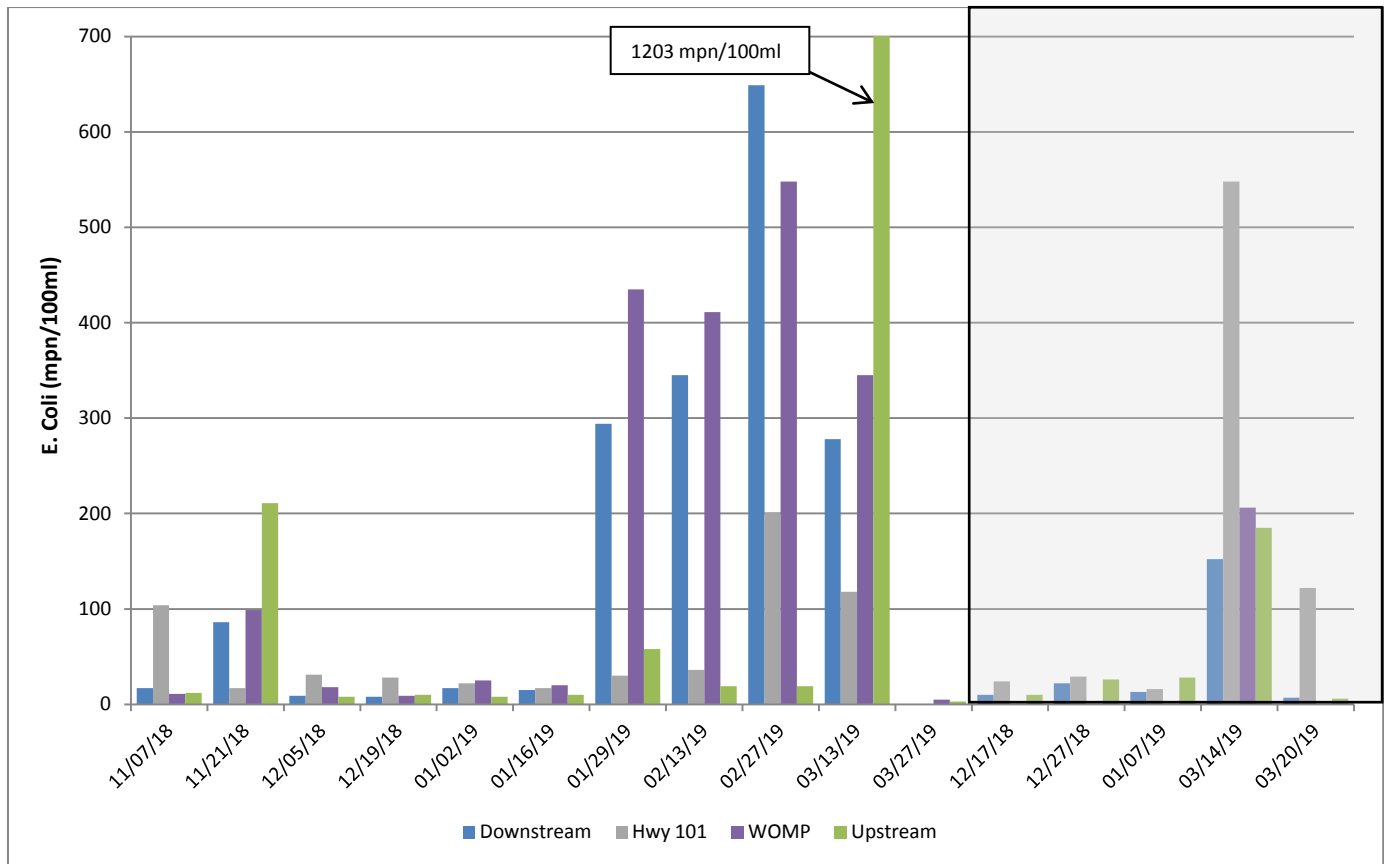


Figure 9. Distribution of E.coli concentrations for each grab sample. The highlighted area represents the event samples.

Discussion

The main channel of Eagle Creek upstream of Hwy 101 does not appear to be greatly impacted by chlorides, as the monitored levels remained fairly constant throughout the study. Furthermore, the reported levels never came close to the 230 mg/L state standard. Downstream has a little more room for concern as the main stem levels correlated with the levels of the inlet just downstream of Hwy 101. The Hwy 101 monitoring site recorded much higher levels than the main stem of Eagle Creek and even exceeded the state standard on a few occasions. Although the mixing of the main channel and the inlet kept chloride levels well below the standard at the downstream monitoring location, it is concerning to see these high levels anywhere within the Eagle Creek watershed. Further monitoring would provide more data in this area and would track whether the situation stays the same, or deviates from these results.

Monitoring E.coli levels at the Metropolitan Councils watershed outlet monitoring program (WOMP) site has been conducted for multiple years. Every year a spike in concentrations consistently appears in early part of the year (January, February and March). This trend remained consistent in this study as high levels of E.coli were seen at the WOMP station during those months. These high levels could have added to higher levels at the downstream site but was likely diluted further downstream. There was a case when the downstream site had higher levels than the WOMP station. Water fowl were noticed near the Hwy 101 overpass during this measurement which may have increased the readings. Similarly, at the Hwy 101 sampling location there were a few times that signs of muskrats were present which could have influenced the data. Eagle Creek has historically had issues with E.coli levels, as seen in the WOMP data, and it will continue to be monitored through the Metropolitan Councils WOMP program.

Watershed Outlet Monitoring Program (WOMP)

The Eagle Creek monitoring station began in 1999 as part of the Metropolitan Council's Watershed Outlet Monitoring Program (WOMP). This program was designed and is currently managed by the Metropolitan Council, for the primary purpose of improving the ability to calculate pollutant loads to the Minnesota River. The Lower Minnesota River Watershed District (LMRWD) is the local funding partner for this station, and contracts with the Scott Soil and Water Conservation District (SWCD) to perform field-monitoring activities. The monitoring station is located in the City of Savage near Highway 13 and Highway 101, approximately 0.8 miles upstream of the confluence with the Minnesota River.

The following water quality and flow data is preliminary and is subject to change until the Metropolitan Council submits the final report for this period.

Table 3. Precipitation near Eagle Creek WOMP Station.

Month	2019 Precipitation* (inches)	30 Year Record **		
		Average	Minimum	Maximum
January	0.70	0.82	0.08	4
February	2.13	0.84	T	2.18
March	2.31	1.68	0.34	4.26
April	3.43	3.01	0.42	7.51
May	6.88	4.46	1.08	11.08
June	3.03	5.34	2.1	12.3
July	6.48	4.16	0.87	8.48
August	6.50	4.97	1.11	10.86
September	5.09	2.85	0.21	6.88
October	4.26	2.57	0.46	5.83
November	1.44	1.56	T	4.99
December	1.97	1.18	T	3.4
Total	44.21	34.26	21.93	41.99

* Precipitation data obtained from Shakopee Mdewakanton Sioux community weather station.

** The 30 year average (normal) is from 1989-2019, NOAA National Weather Service Forecast Office: site Jordan 1SSW Minimum annual average is from 1989 and maximum is from 2019. Records indicated with a "T" represent a trace of precipitation.

<https://w2.weather.gov/climate/xmacis.php?wfo=mpx>

Methods

Sampling

Many parameters are recorded continuously at the Eagle Creek WOMP station including stage, velocity, conductivity, precipitation, and stream temperature. Samples are collected and analyzed for multiple parameters (Table 5) during base flow conditions and storm events. Base flow samples are taken monthly during periods of time unaffected by rainfall or snowmelt events. Samples are taken directly from the stream and then transported to the Metropolitan Council Environmental Services Laboratory (lab) for analysis. The station is set with a composite sampler to collect a number of samples during peak flow events, but during 2019 the Metropolitan Council staff was still trying to fine tune the equipment's collection capabilities. The goal is to capture the water quality at or near the peak of the hydrograph. The event samples are treated similar to base flow samples and the grab samples are brought to the lab for analysis. The site was visited and samples were collected thirty-seven times during the 2019 monitoring season, a few of the composite samples did not collect enough water to run a full analysis.

Flow

There are two means of measuring stage and flow at the WOMP station: a WaterLOG bubbler system and Sontek Argonaut Shallow Water (SW) system. The bubbler system has been used since 1999 to measure stage. To determine the amount of flow related to stage, flow measurements are taken manually by MCES staff with a flow meter while the creek is at different stages and a rating curve is developed. With this data, a stage-flow relationship can be applied to the datalogger program, which then calculates continuous flow values as determined by the measured stage.

The Sontek Argonaut-SW was installed by the Metropolitan Council in 2008. This equipment calculates instantaneous flow based on the cross section area, stage, and velocity of the water. This equipment was determined necessary because of occasional backwater conditions caused by beaver dams or flooding of the Minnesota River. The bubbler system is not able to determine that the water is moving slower, so it automatically calculates higher flow as the stage rises. The Argonaut is able to adjust the flow as velocity changes, making the flow values more accurate during backwater conditions.

Results

The range of sampled water quality parameters are reported in table 5. The minimum, 25th percentile, median, mean, 75th percentile and maximum values are reported along with any state standard or comparable ecoregion range or mean for comparison purposes. Individual TSS and E. coli samples are plotted in figures 11 and 13 respectively. The 5 year trend of monthly TSS values and monthly geometric mean of all E. coli samples taken over the past 10 years are reported in figure 12 and 14 respectively.

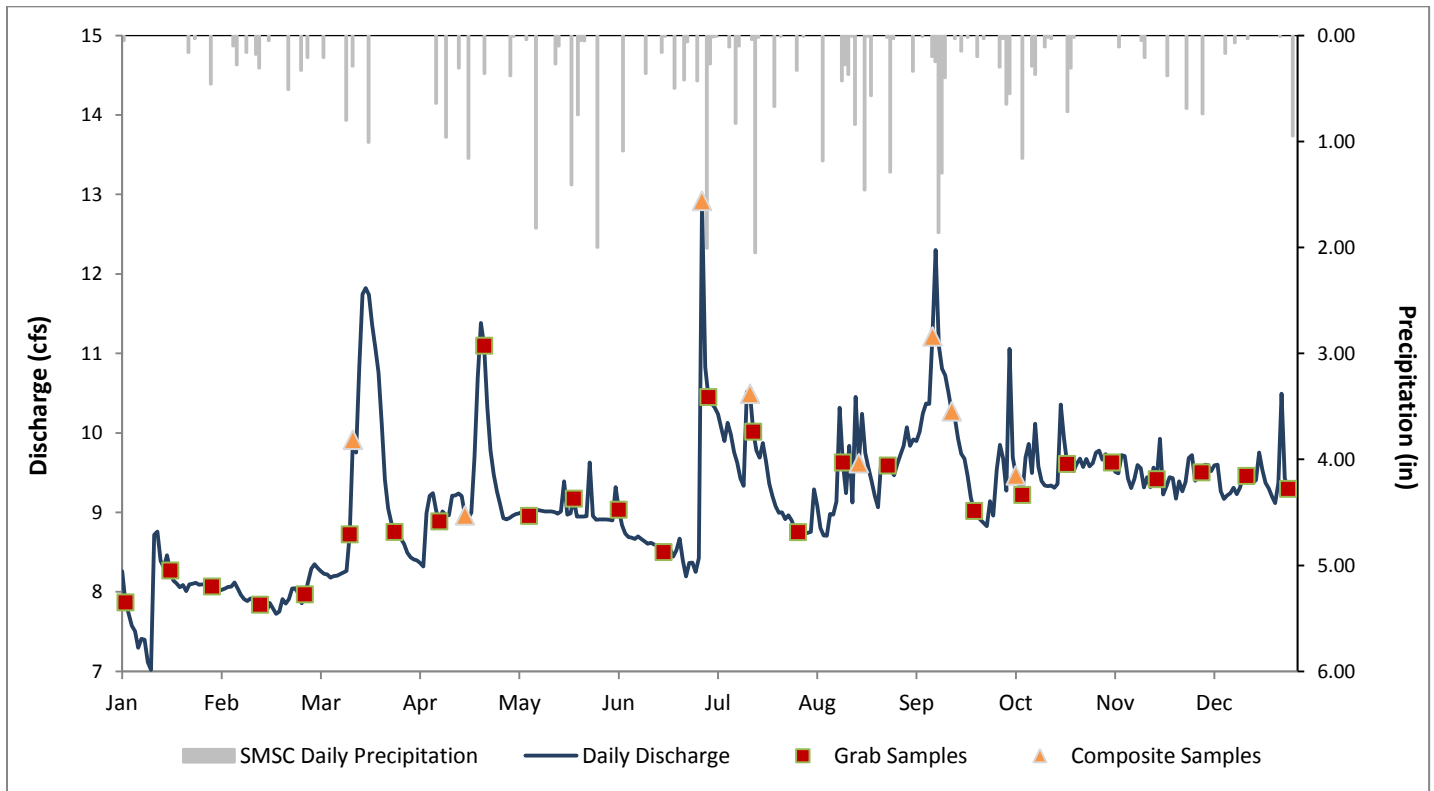


Figure 10: 2019 Eagle Creek WOMP discharge, precipitation, and samples collected. Discharge data is provided by METC and is preliminary.

Table 4. 2019 *In situ* water quality measurements taken by YSI EXO 1 multi-probe mini sonde during 2019 sampling.

Parameter	Min	25th %	Median	Avg	75th%	Max	N	Notes
Temp (deg C)	5.30	7.67	9.92	10.36	12.60	21.06	32	
DO (mg/L)	7.30	8.00	8.57	8.62	9.12	10.47	32	Standard = > 7 mg/L
pH (Units)	7.43	7.58	7.71	7.69	7.76	8.09	32	Standard = 6.5-8.5
Conductivity (umho/cm)	452.0	658.6	670.9	652.6	673.2	688.6	33	

Table 5. 2019 Water quality preliminary lab results. Red text indicates exceedance of the state standard or NCHF ecoregion mean.

Parameter	Min	25th %	Median	Avg	75th%	Max	N	Notes
Alkalinity (mg/L_CaCO3)	270	-	277	277	-	283	2	No standard, 20-200 mg/L typical
Chloride (mg/L)	22.8	46.6	49.8	47.3	51.3	55.8	37	Standard = 230 mg/L
Hardness (mg/L_CaCO3)	276.0	-	293.0	293.0	-	310.0	2	
Ammonia (mg/L)	0.02	0.03	0.06	0.07	0.08	0.13	37	
Sulfate (mg/L)	18.2	-	19.3	19.3	-	20.4	2	
Nitrate (mg/L)	0.19	0.20	0.20	0.24	0.24	1.00	37	Ecoregion mean = 0.04-0.26 mg/L
Nitrite (mg/L)	0.03	0.06	0.06	0.05	0.06	0.06	37	Ecoregion mean = 0.04-0.26 mg/L
Total Kjeldahl Nitrogen (mg/L)	0.14	0.26	0.38	0.50	0.50	2.20	37	
Total Phosphorus filtered (mg/L)	0.020	0.020	0.020	0.081	0.022	1.730	36	Ecoregion mean = 0.06-0.15 mg/L EPA recommends < 0.1 mg/L
Total Phosphorus unfiltered (mg/L)	0.020	0.025	0.041	0.072	0.084	0.386	37	Ecoregion mean = 0.06-0.15 mg/L EPA recommends < 0.1 mg/L
Ortho Phosphate (mg/L)	0.005	0.007	0.008	0.008	0.010	0.016	33	
Total Organic Carbon (mg/L)	2.5	-	3.1	3.1	-	3.6	2	
Suspended Solids (mg/L)	2	5	11	25	22	198	35	Ecoregion mean = 4.8-16 mg/L Standard = 10 mg/L
Volatile Suspended Solids (mg/L)	1	2	3	8	7	59	35	
E. Coli (#/100ml)	1	25	104	235	345	1553	31	Standard = 126 CFU/100ml as geometric mean

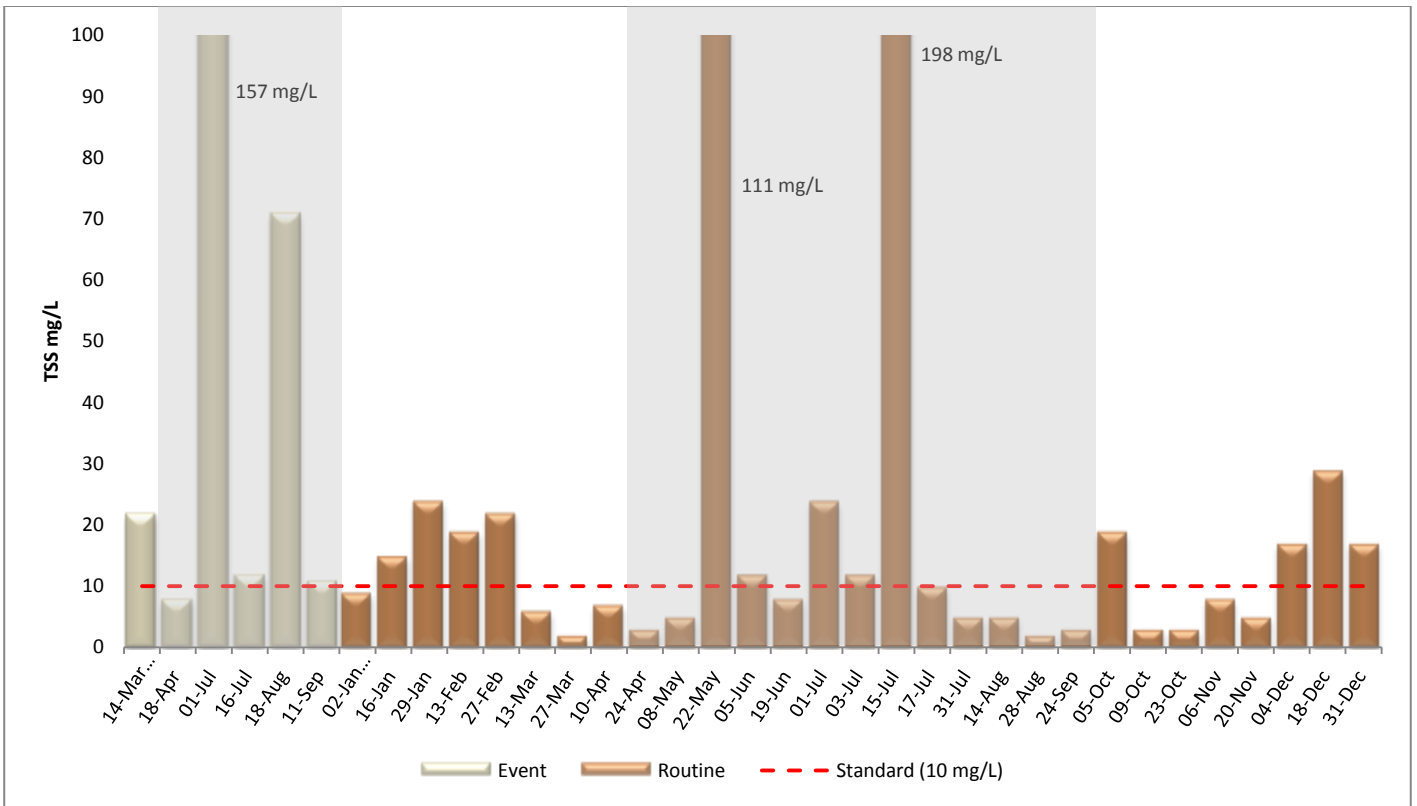


Figure 11. Total Suspended Solids (2019). State Standard for Class 2A Waters = 10 mg/L with no more than 10% exceedance between 1 April and 30 September (indicated by the red dashed line and the shaded areas in the graph).

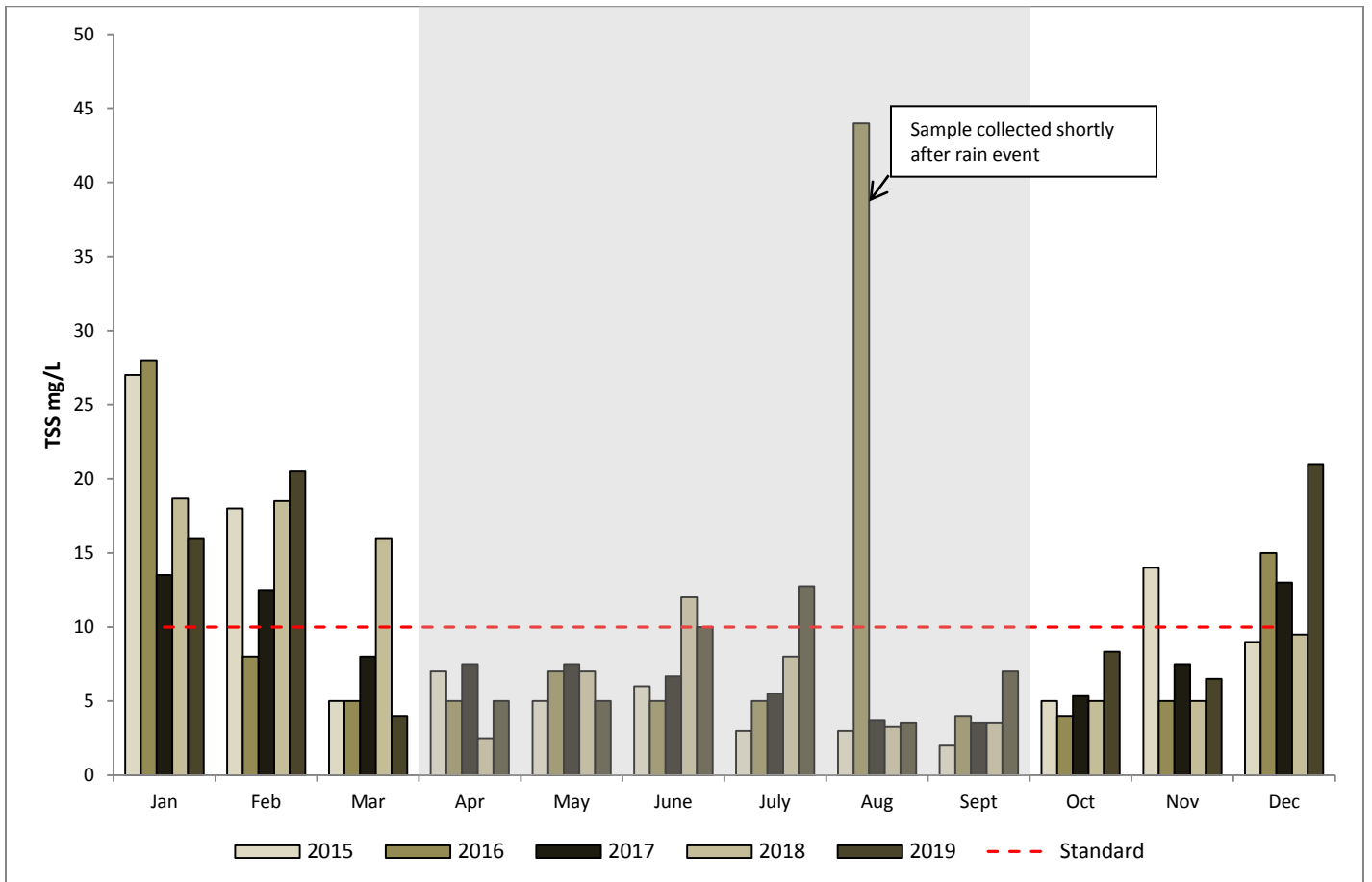


Figure 12. Total suspended solid monthly average over the last 5 years for non-event samples. The state standard is 10mg/L indicated by the dashed red line. No more than 10% exceedance shall occur between 1 April and 30 September (shaded area).

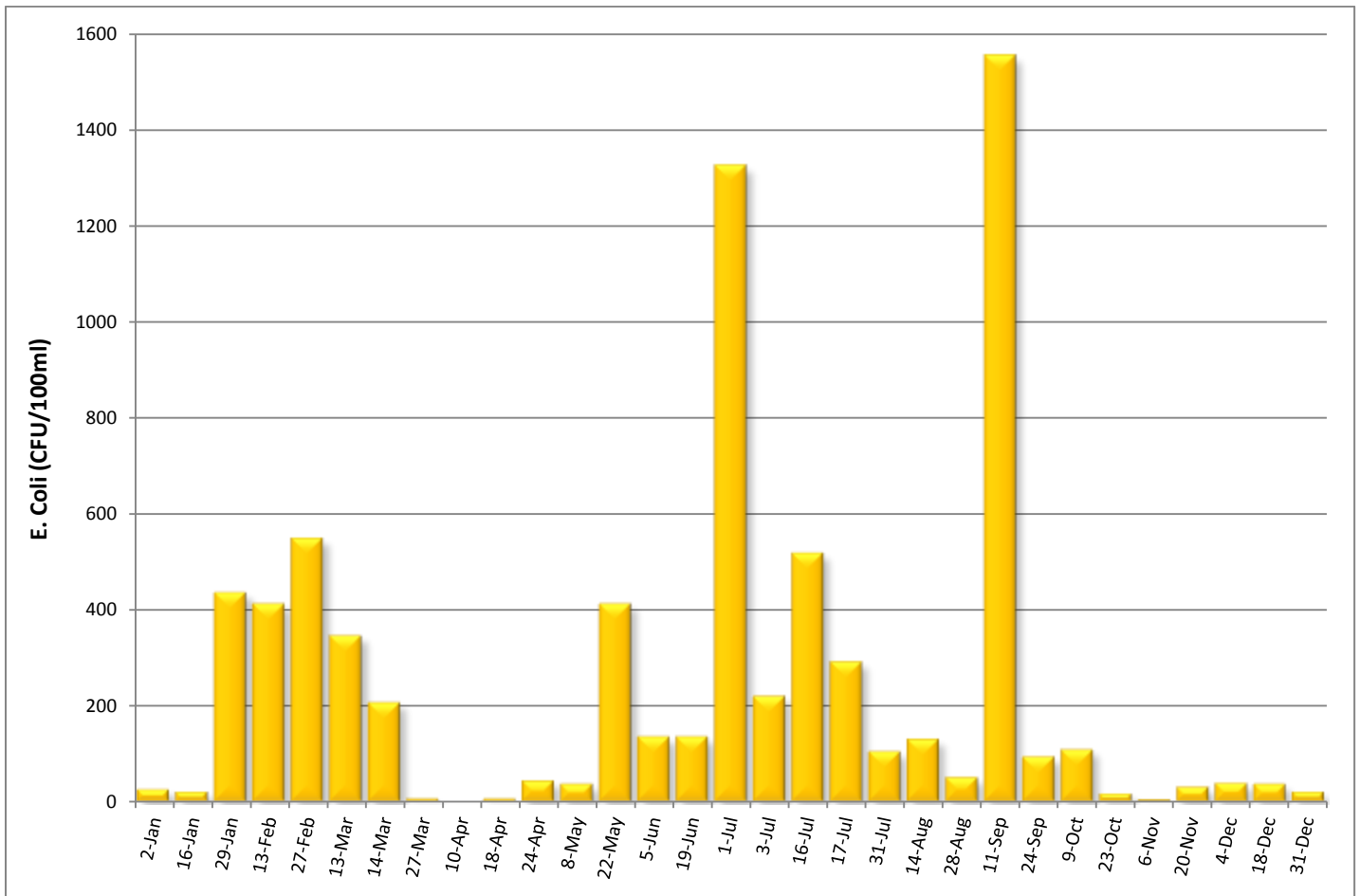


Figure 13. *E. coli* samples (2019). *E. coli* state standard for class 2A waters is not to exceed 126 organisms/100 ml as a geometric mean of not less than 5 samples representative of conditions within any calendar month. Nor shall more than 10% of all samples taken during any calendar month individually exceed 1,260 organisms per 100 ml. The standard applies only between April 1 and October 31.

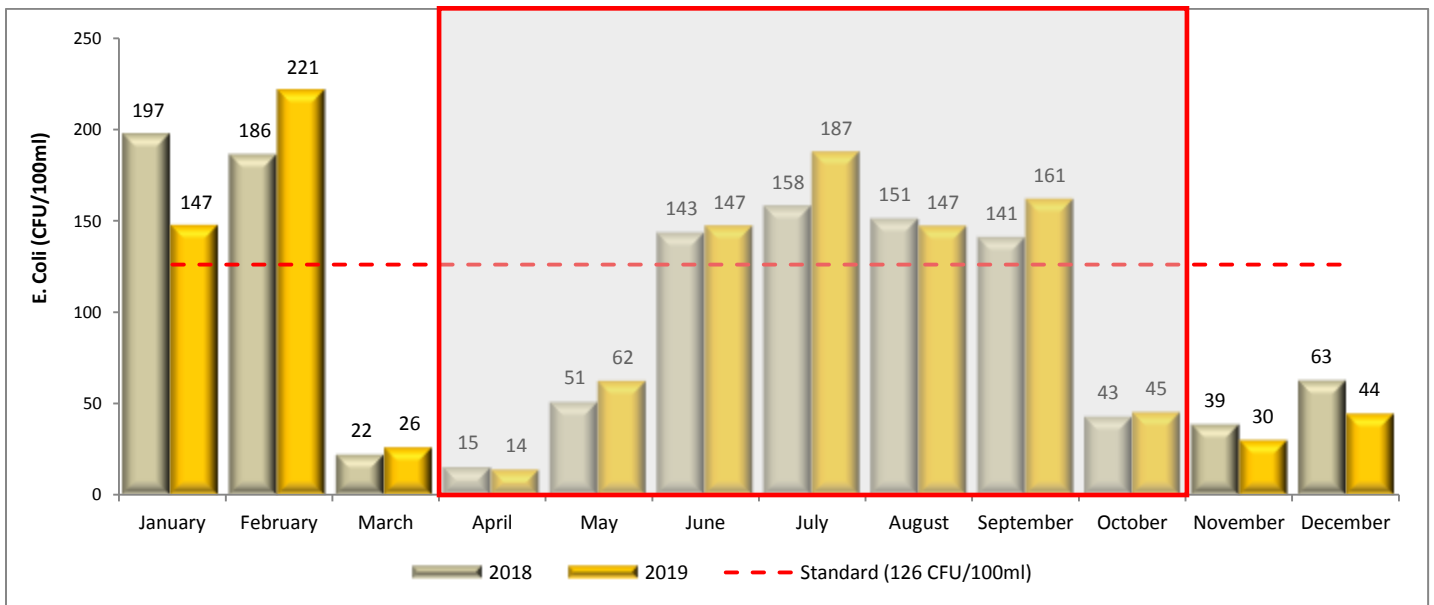


Figure 14. Geometric mean of *E. coli* at Eagle Creek. The geometric mean was calculated using all samples over the past 10 years (2009-2019) for any given month. *E. coli* state standard for class 2A waters is not to exceed 126 organisms/100 ml as a geometric mean of not less than 5 samples representative of conditions within any calendar month. Nor shall more than 10% of all samples taken during any calendar month individually exceed 1,260 organisms per 100 ml. The standard applies only between April 1 and October 31.

Discussion

In general, the monitoring data suggests that Eagle Creek consistently meets state water quality standards and ecoregion means¹, with the exceptions being bacteria and suspended solids (Figure 11, Figure 14 and Table 5). The elevated levels of these parameters in winter is characteristic of this stream due to the fact that Eagle Creek is spring fed and does not freeze over in the winter. The open water attracts a large number of waterfowl, which results in historically higher bacteria, sediment, and turbidity levels than observed in summer months (Figures 11 and 13). Elevated levels during the summer are a result of continual waterfowl use and runoff from significant rain events.

The *E. coli* standard is applicable from April 1 – October 31 and is exceeded when greater than 10% of the samples exceed 1260 Colony Forming Units (CFU) per 100 ml or the geometric mean of no fewer than five samples in a calendar month exceed 126 CFUs. Two samples exceeded 1260 CFU's from April through October, one in July and another in September (Figure 13). Additionally, the geometric mean of the previous ten years of *E. coli* samples resulted in the exceedance of 126 CFU's for June thru August (Figure 14). January and February also exceeded the 126 CFU threshold leaving six month's below the standard.

The previous state turbidity standard was replaced with a Total Suspended Solids (TSS) standard. The new TSS standard for Class 2A waters state that no more than 10% of samples shall exceed 10 mg/L between April 1 and September 30. This year, Eagle Creek exceeded 10 mg/L in 5 of 13 (38%) lab samples during the applicable season (Figure 11). In addition two of the five event samples and all samples exceeded the 10 mg/L level. For all of the samples collected from April thru September, 7 of 18 (39%) exceeded the state standard. Additionally, nine of the other samples outside of the standards date range had TSS levels above 10 mg/L.

III. Dean Lake Inlet Monitoring

Dean Lake Inlet was once on the Minnesota Pollution Control Agency (MPCA) 303 (d) list of impaired waters from 2006-2016. It was impaired for Aquatic Recreation due to excess nutrients causing eutrophication. In 2016 the body of water was re-assessed and reclassified as a wetland in the MPCA's Lower Minnesota River Watershed Monitoring and Assessment Report of June 2017. Although the reclassification removes the body of water from the 303 (d) list the nutrient loading still remains. Scott SWCD continues to provide monitoring data on the inlet to Dean Lake to document nutrient loading. The monitoring site is located where CR21 passes over the Prior Lake Outlet Channel to the southeast of Dean Lake. The SWCD monitors water chemistry and continuous stage and flow at this location. This site has been monitored from 2014 to present.

Methods

In-stream field measurements of dissolved oxygen, temperature, turbidity, pH, and conductivity were taken using an YSI EXO 1 multiparameter Sonde. Field transparency is measured with a 1 meter secchi tube. Bi-weekly scheduled samples and additional event grab samples taken after rain events are taken while the stream channel is open (March-November). In 2019, 17 base grab samples and 4 event grab samples were collected totaling 21 samples. In addition to water quality samples, a total of five periodic flow measurements were taken in 2019. These measurements are used and in conjunction with flow measurements taken over

¹ There are seven ecoregions in Minnesota. Ecoregions are classified by geographic areas with similar plant communities, land use, soil, and geology. Eagle Creek is located in the North Central Hardwood Forest (NCHF) ecoregion. Each ecoregion has unique water quality goals as determined by historical monitoring of representative and minimally impacted reference streams within that ecoregion.

the previous years to develop a discharge rating curve. This rating curve is applied to the continuous 15 minute stage measurements collected by Campbell Scientific SR50 Ultrasonic Distance Sensor and CR1000 data logger to calculate continuous discharge data at the site (Figure 15).

Results

The 2019 monitoring data suggest that the inlet to Dean Lake meets MN water quality standards for all measurable categories, but it fell out of ecoregion mean and EPA recommendations for phosphorus, nitrate and suspended solids (Table 6). Historically, the inlet has seen spikes in nitrate and phosphorus. During the 2019 sampling season the total unfiltered phosphorus fell beyond the recommended level 19% of the time and measured below and above the Ecoregion mean 52% and 10% of the time respectively. The nitrates only exceeded the Ecoregion high 14% of the time and never went below the low. Finally, the suspended solids exceeded the state standard 9% of the time and went above the Ecoregion high 33% of the time.

Table 6. 2019 water quality data from Dean Lake Inlet. Red, bolded text indicates exceedance of the state standard or North Central Hardwood Forest ecoregion mean.

Parameter	Min	25th %	Median	Avg	75th%	Max	N	Notes
Chloride (mg/L)	28.60	47.1	50.0	49.0	53.3	60.4	21	Standard = 230 mg/L
Nitrate (mg/L)	0.16	0.20	0.20	0.22	0.21	0.42	21	Ecoregion mean = 0.04-0.26 mg/L
Nitrite (mg/L)	0.03	0.06	0.06	0.06	0.06	0.06	21	Ecoregion mean = 0.04-0.26 mg/L
Total Kjeldahl Nitrogen (mg/L)	0.08	0.75	0.80	0.81	0.90	1.20	21	
Total Phosphorus filtered (mg/L)	0.020	0.020	0.028	0.041	0.046	0.164	21	Ecoregion mean = 0.06-0.15 mg/L EPA recommends < 0.1 mg/L
Total Phosphorus unfiltered (mg/L)	0.015	0.048	0.055	0.074	0.094	0.170	21	Ecoregion mean = 0.06-0.15 mg/L EPA recommends < 0.1 mg/L
Lab Turbidity (NTRU)	3	5	6	8	11	19	21	
Suspended Solids (mg/L)	4	9	13	17	17	73	21	Standard = 30 mg/L Ecoregion mean = 4.8-16 mg/L
Volatile Suspended Solids (mg/L)	1	3	3	4	5	9	21	

Table 7. 2019 *In situ* water quality measurements taken by a YSI EXO1 multi-probe mini sonde for Dean Lake Inlet.

Parameter	Min	25th %	Median	Avg	75th%	Max	N	Notes
Temp (deg C)	4.24	11.02	16.59	16.09	11.02	25.51	20	
DO (mg/L)	6.04	7.27	8.59	8.77	10.00	12.48	20	
pH (Units)	7.56	7.81	7.90	7.90	8.02	8.24	20	
Conductivity (umho/cm)	391.5	437.0	455.4	454.2	471.7	575.7	20	

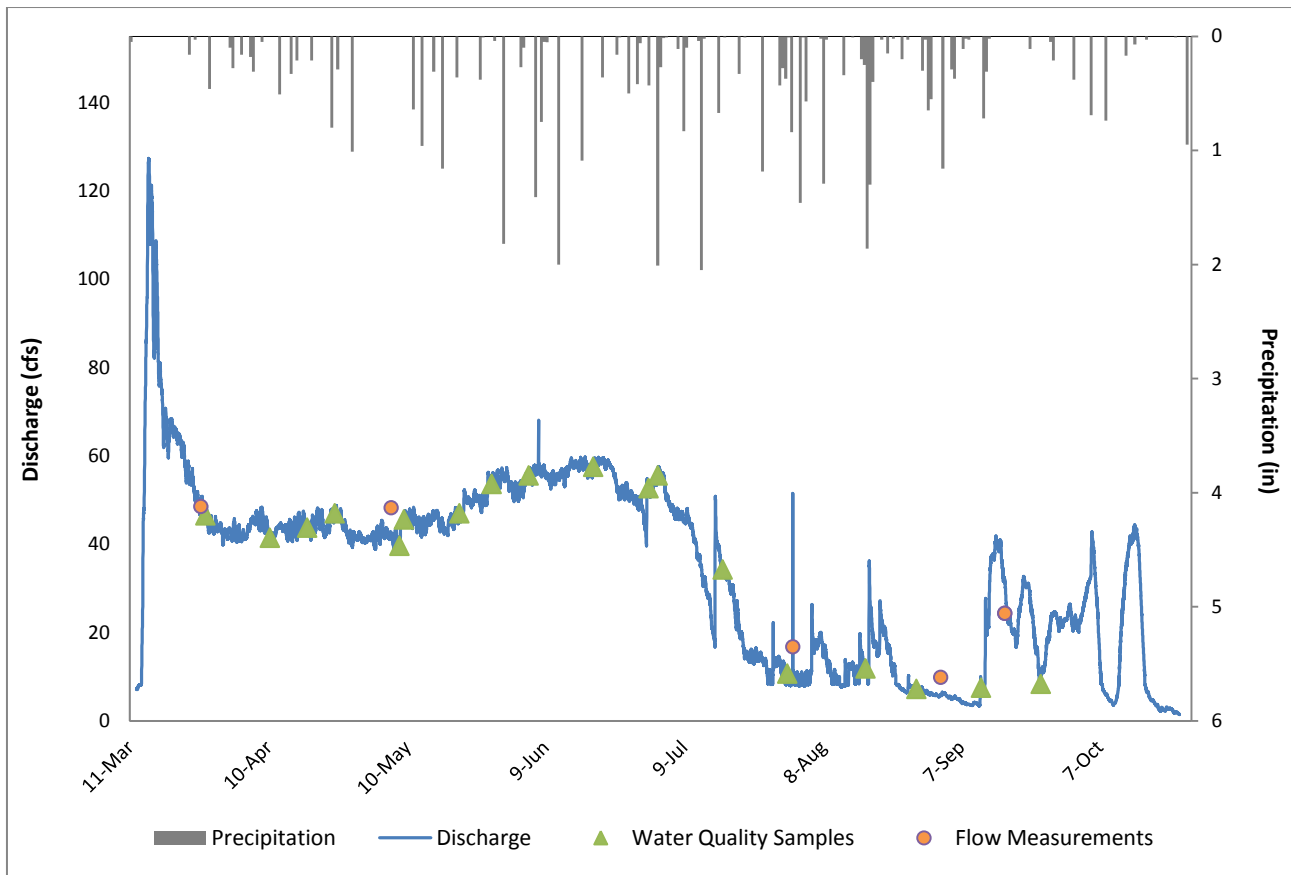


Figure 15. Dean Lake Inlet discharge, precipitation, flow measurements, and water quality samples collected (2019).

Discussion:

Most of the water quality parameters at the Dean Lake Inlet are within the recommended standards and ecoregion averages. With all of the exceeding parameters, most exceedance is occurring after precipitation events, droughts, or seasonally influence. Monitoring these levels should continue to track any potential increases or decreases in these levels. Although Dean Lake Inlet is no longer on the 303 (d) list because of its reclassification, it is important to track the amount of nutrients at the site to maintain historical data and track nutrient loading downstream.

IV. Well Monitoring

In 2005 the LMRWD contracted with Scott Soil and Water Conservation District to collect groundwater measurements from 13 wells in the Savage Fen, 4 wells in the Eagle Creek area and 2 Bluff wells. The data from these recordings is used to assess groundwater resources, determine long-term trends and interpret the impacts of pumping and climate. The wells in the Savage Fen were installed by the DNR to monitor development effects and water usage from the City of Savage on the water level in the Fen. All well data is entered into the DNR’s groundwater level database and can be accessed at

<http://www.dnr.state.mn.us/waters/cgm/index.html>.

Savage Fen Area Wells

The Savage Fen is a rare wetland complex at the base of the north-facing bluffs in the Minnesota River Valley, the largest calcareous fen of its kind in Minnesota. A plant community of wet, seepage sites with an internal flow of groundwater rich in calcium, magnesium bicarbonates and sulfates result in a thick peat base that is able to support a unique diversity of plants. More than 200 various plant species have been found in the Savage Fen, some of which are rare.

Methods

Scott SWCD monitors 13 wells in the Savage Fen monthly between April and December (Figure 16). The water level fluctuates throughout the year and the artesian wells record water levels above ground level. In addition, four wells are monitored in the Eagle Creek portion of Savage Fen on the other side of highway 13 (Figure 21).

The SWCD monitors two additional wells in the Savage Bluff area. In 2010 the Savage Post Office and Fire Department was constructed near the bluff wellheads and as a result, the wellheads were reconstructed and placed below the street, accessible beneath a manhole cover. The SWCD did not read these two wells in 2011 or 2012 as a result of the construction. In 2013, the SWCD resumed monitoring these wells with the City of Savage staff providing access. The Bluff wells were sealed during the 2019 season and are not longer accessible.

In total, the SWCD recorded 141 water level measurements in 2019 from 19 wells for LMRWD.

Results

The Savage Fen water levels remained relatively constant throughout the monitoring season with individual well fluctuations throughout the year (Figure 16). Overall, the average Savage Fen water levels for 2019 decreased 0.42 feet throughout the year, with some wells dropping more than others (Figure 18, 19 & 20). Historically, the Fens have shown signs of fluctuation, and besides a dip in 2012 the water levels have shown a general sign of increase. This year the wells continue to rise with an average 0.14 foot gain in water levels over the last 10 years (Figure 17). The 2019 Eagle Creek well levels generally showed a decrease throughout the year with all the wells averaging a 0.42ft drop throughout the year (Figure 21). Even with the drop in levels this year, the past 10 years show a 0.57ft average rise in water elevations with EC3, EC4, EC5 and EC6 gaining 0.19, 0.71, 0.27 and 1.11ft respectively (Figure 22).

The bluff wells both showed signs of water levels increasing before they became inaccessible (Figure 23). The water level in the deep bluff gained 0.67ft through the abbreviated 2019 monitoring, and the shallow well also gained 0.35ft. The historic monitoring at the bluff well sites is discontinuous due to construction. However, since the construction water levels have generally increased and are the highest levels recorded since the initial observation in 1994 (Figure 24). This year the wells were showing a rebound to the decreasing levels observed in 2018.

All figures in this section are reported in depth to water (DTW) which is a product of the wells measuring point elevation minus the elevation of the recorded observed elevation.

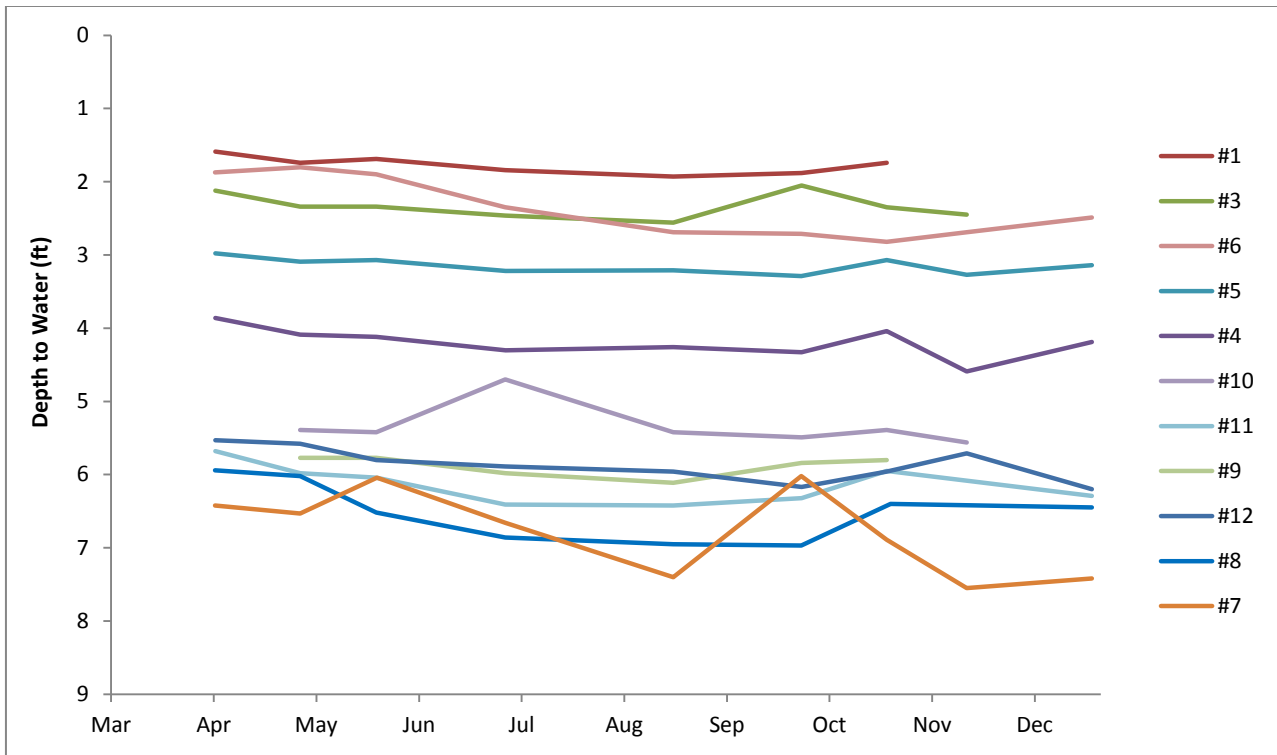


Figure 16. Savage Fen Wells (2019).

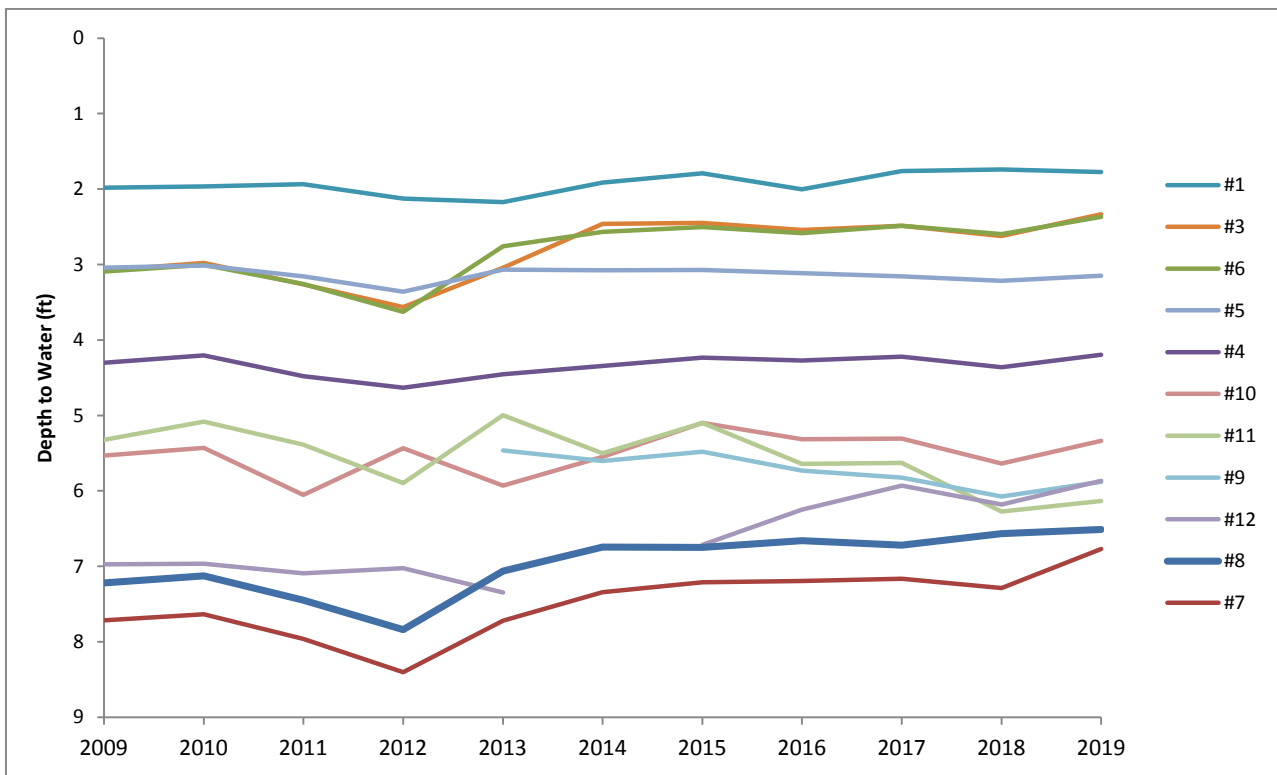


Figure 17. Average annual water level in Savage Fen wells (2009-2019). Averages include all observations in a calendar year.

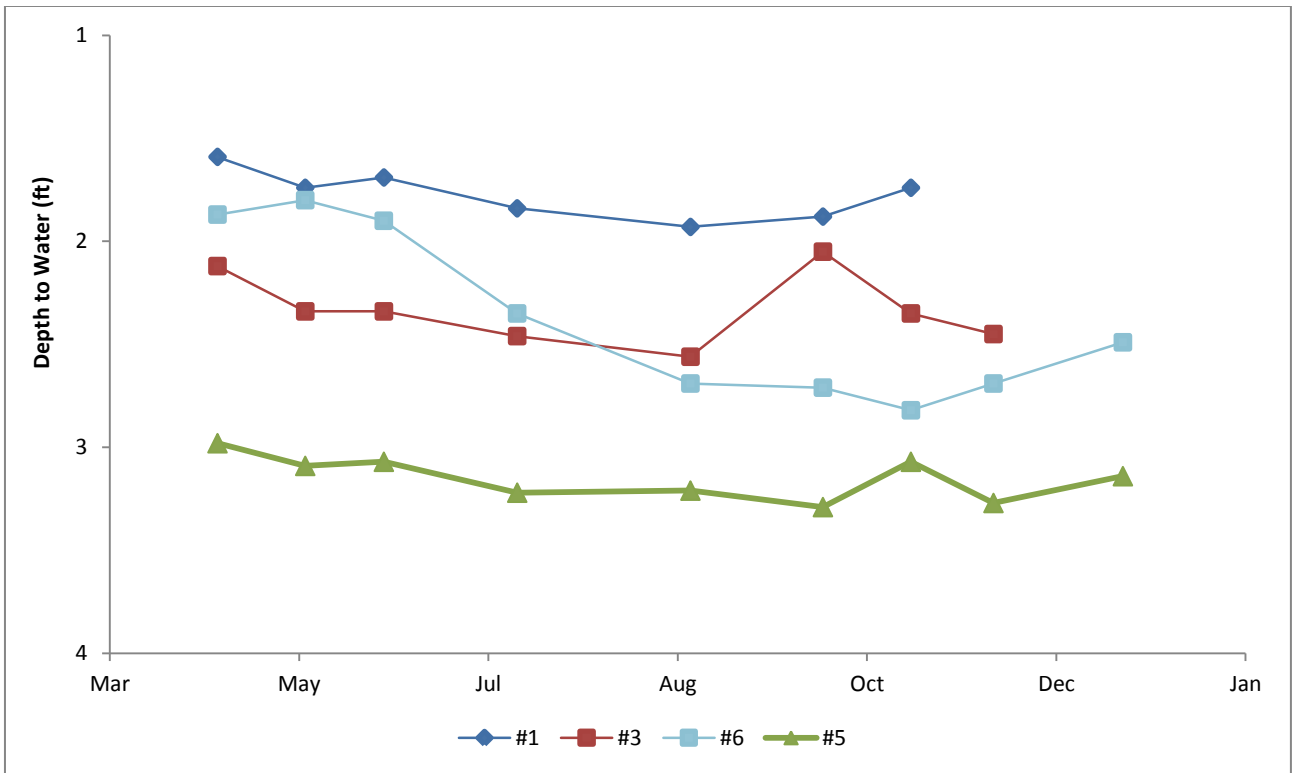


Figure 18. The four Savage Fen wells with the lowest depth-to-water (DTW) values (2019).

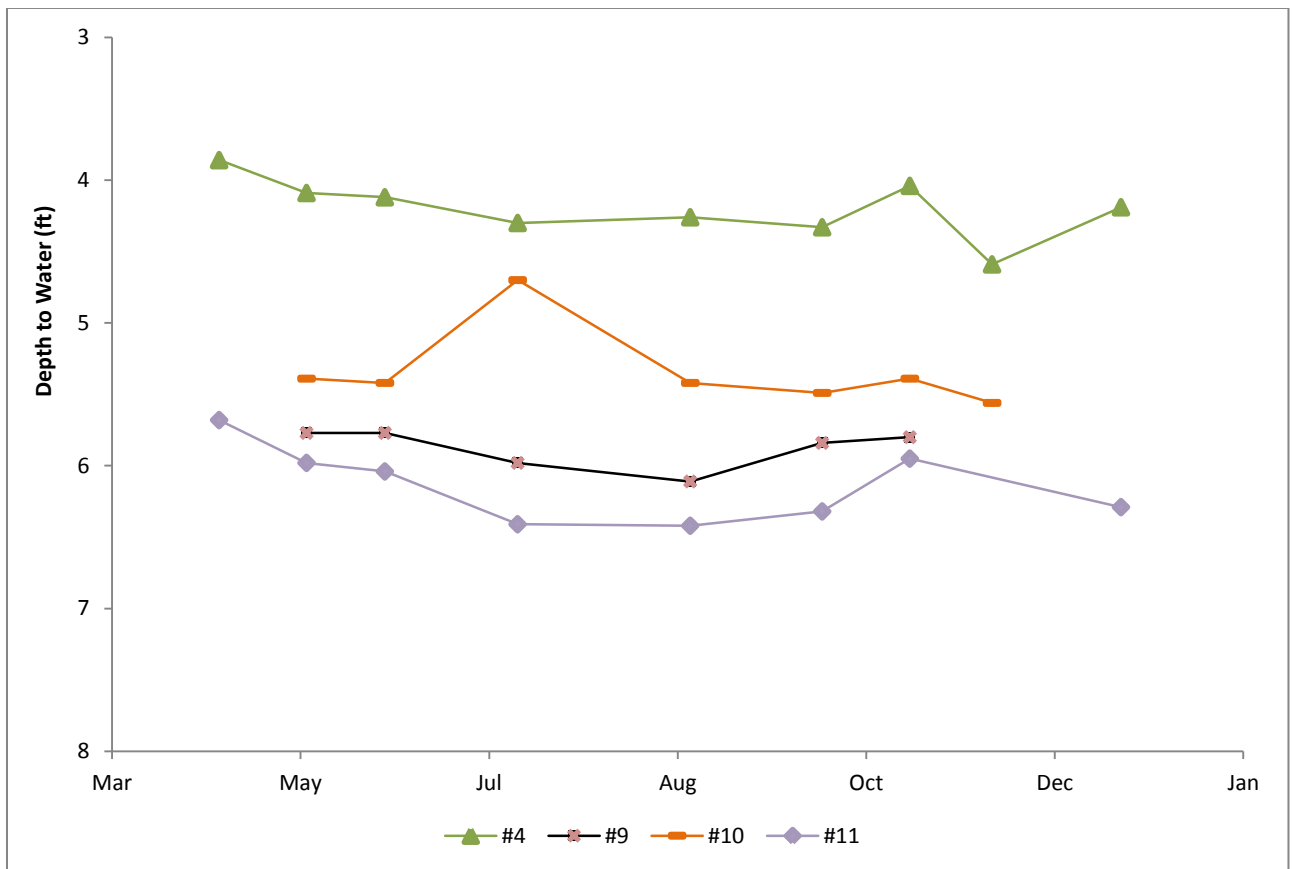


Figure 19. The four Savage Fen wells with the mid-level depth-to-water (DTW) values (2019).

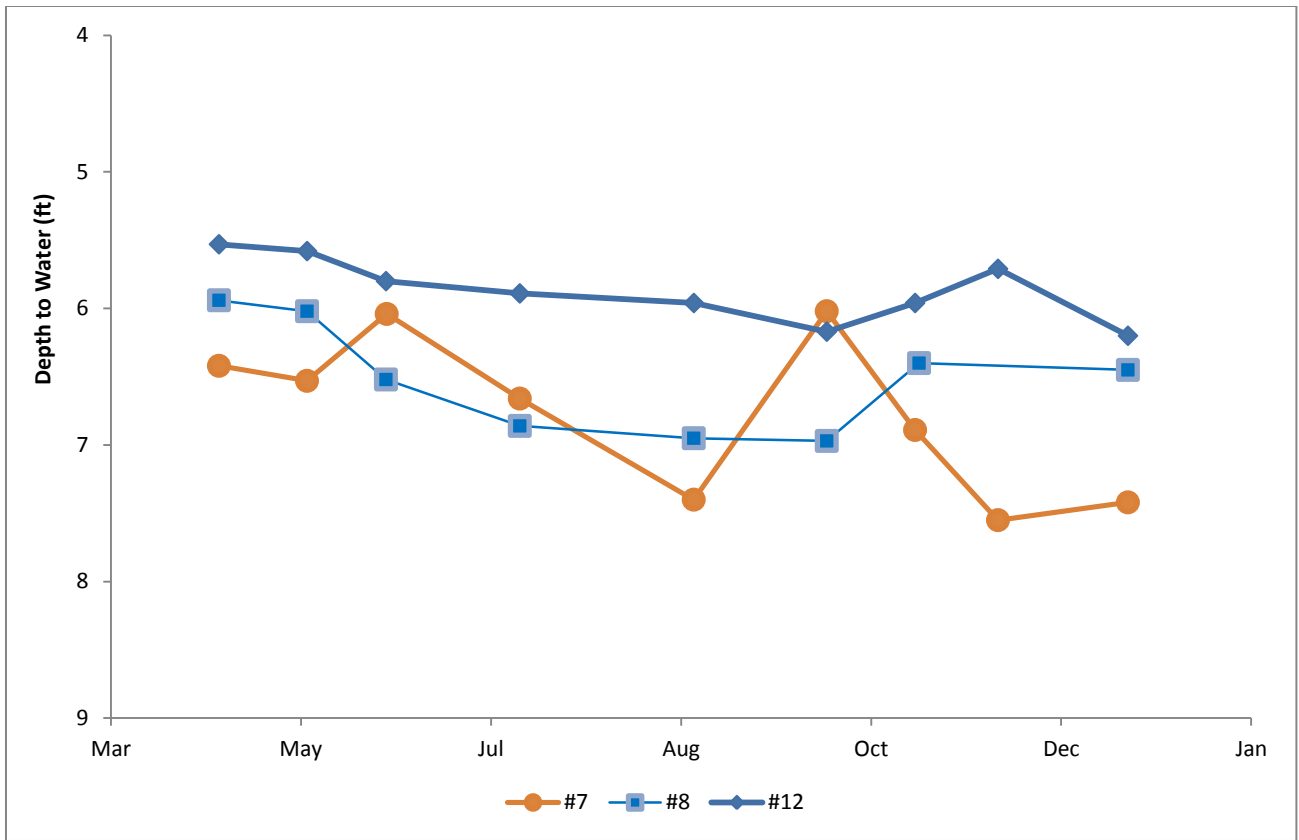


Figure 20. The three Savage Fen wells with the highest depth-to-water (DTW) values (2019).

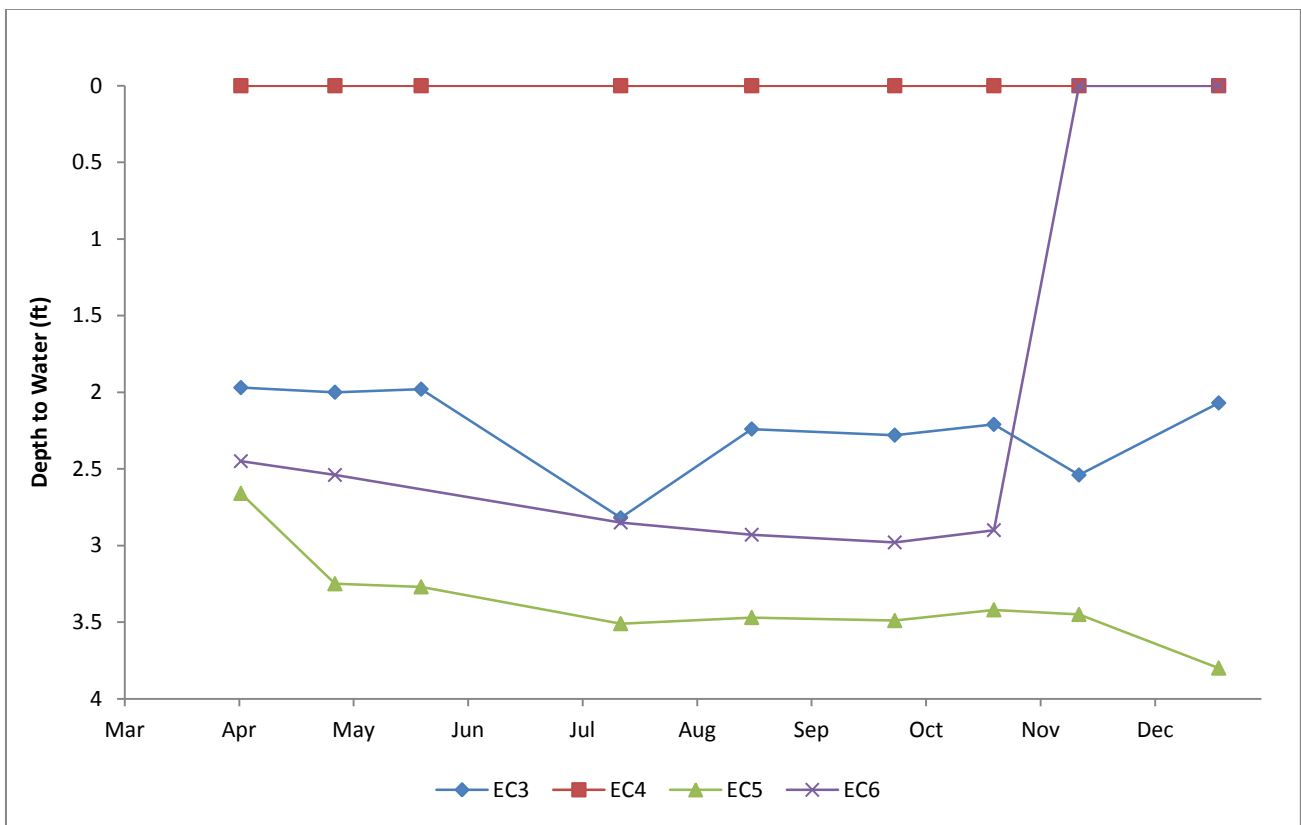


Figure 21. Eagle Creek wells (2019). Measurements recorded as “zero” are over-topped wells from April-October, and frozen wells from October-End of year.

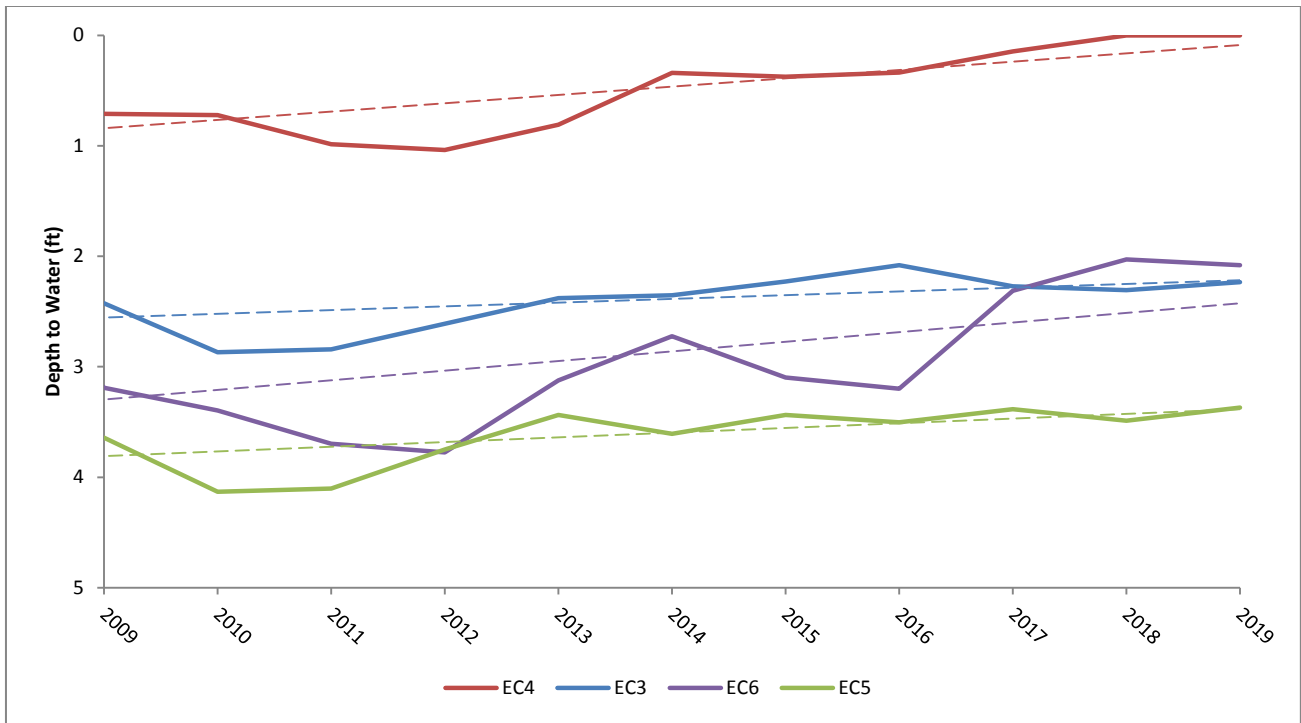


Figure 22. Eagle Creek historical 10 year trend. Values are yearly averages and include all values taken within the year.

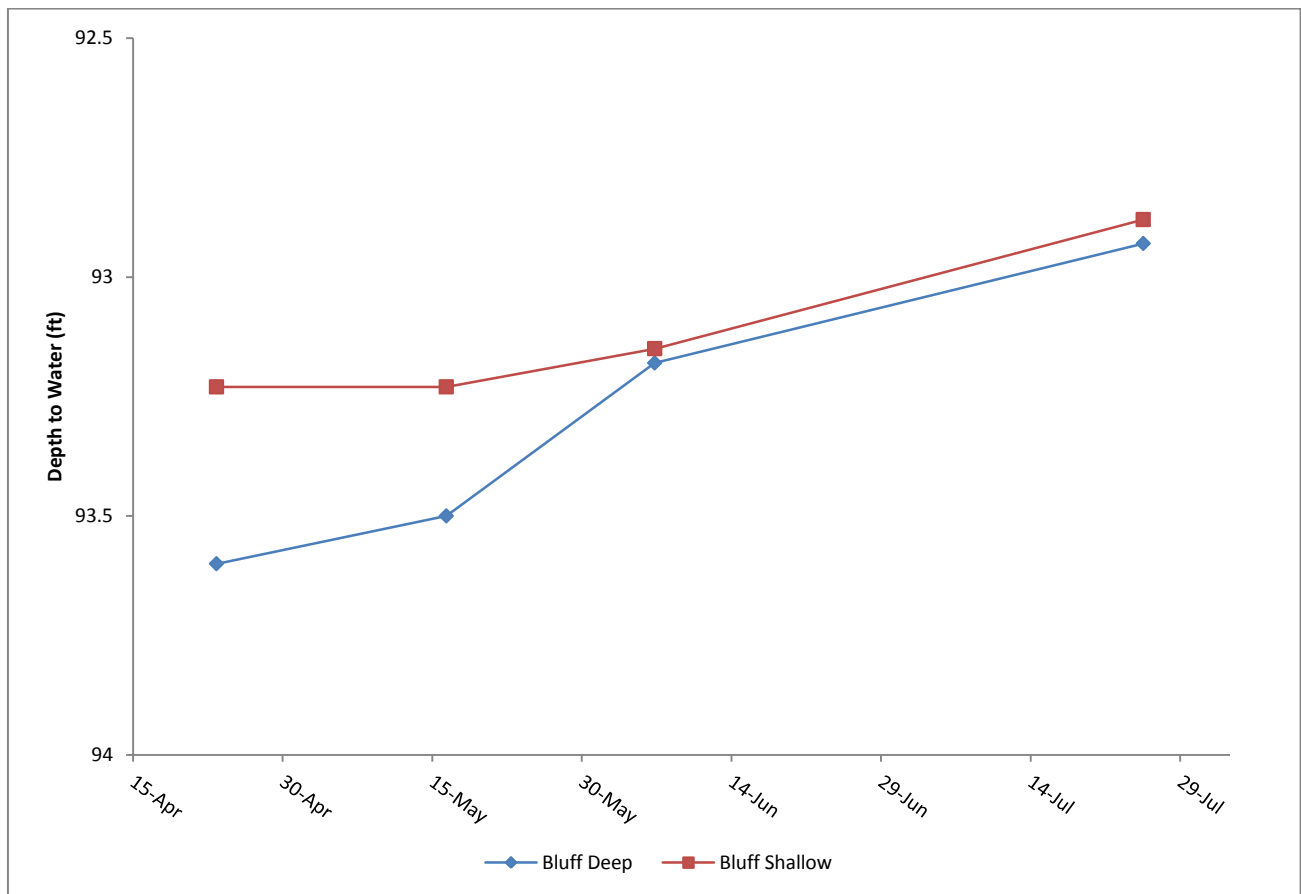


Figure 23: Shallow and deep bluff well data (2019). **Both wells were sealed during the 2019 season. Going forward, no further measurements will be available.**

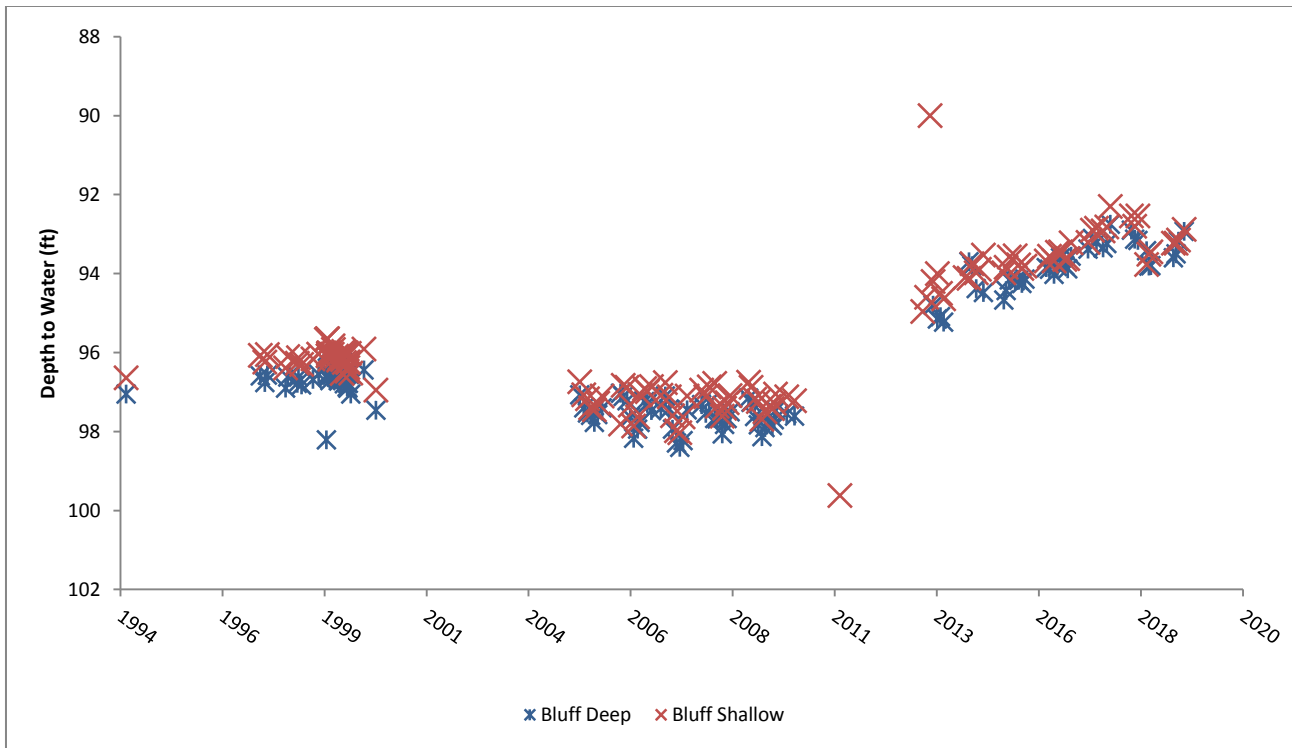


Figure 24. Shallow and deep bluff well historic water levels. Scott SWCD began monitoring in 2005. Monitoring was suspended between 2010 and 2013 due to construction in the area. All available data for these two wells are reported.

Discussion:

Even with a very wet 2019 season, all the wells (except the bluff wells) showed a seasonal decrease in water levels. Unlike previous year’s most wells did not see significant spikes throughout the season, the slight decreases were gradual throughout the year. Historically, the water levels in all the wells are higher than they have been in the past ten years. A combination of a wet 2018 Fall and a wet 2019 season will likely help the slight decreases seen in the wells this season. Although the Bluff wells are no longer accessible, the increase seen throughout the year is a good sign that the wells will continue to increase their water levels as long as the human influences in the area remain minimal. Continual monitoring of all the wells in the LMRWD area will provide information on groundwater levels that can provide information on the impacts of water usage and recharge capabilities.

V. References

- Bell, John M. 2006. The Assessment of Thermal Impact on Habitat Selection, Growth, Reproduction, and Mortality in Brown Trout (*Salmo trutta*): A Review of the Literature.
- Hintz, W. D. & R. A. Relyea. 2017. Impacts of Road Deicing Salts on the Early-life Growth and Development of a Stream Salmonid: Salt type matters. Environmental Pollution. 223: 409-415.
- SEWRPC Community Assistance Planning Report No. 316. 2013. Acute Toxicity of Sodium Chloride to Freshwater Aquatic Organisms. Appendix E: 1-14.
- Minnesota Pollution Control Agency (MPCA). EDA: Guide to Typical Minnesota Water Quality Conditions. <https://www.pca.state.mn.us/quick-links/eda-guide-typical-minnesota-water-quality-conditions>
- Minnesota Pollution Control Agency (MPCA). Minnesota's Impaired Waters List. <https://www.pca.state.mn.us/water/minnesotas-impaired-waters-list>
- Minnesota Pollution Control Agency (MPCA). Salt and Water Quality. <https://www.pca.state.mn.us/water/salt-and-water-quality> . Visited 6/29/2018.

**AGREEMENT BETWEEN THE LOWER MINNESOTA RIVER WATERSHED DISTRICT
AND THE SCOTT SOIL AND WATER CONSERVATION DISTRICT FOR MONITORING, TECHNICAL,
EDUCATION, AND OTHER CONSERVATION SERVICES**

This Contract for Services (Contract) is made and entered into between the Lower Minnesota River Watershed District ("LMRWD"), a body corporate and politic, and the Scott Soil and Water Conservation District, an independent contractor ("Contractor" or "SSWCD").

WHEREAS, the LMRWD is in need of services from SSWCD as set forth in the Statement of Work, attached hereto as Attachment 1, and the SSWCD desires and is capable of providing such services.

NOW, THEREFORE, in consideration of the mutual promises and agreements contained herein the parties agree as follows:

1. TERM

This Contract shall be in effect as of January 1, 2020, notwithstanding the dates of the signatures of the parties, and shall continue through December 31, 2020, unless earlier terminated by law or according to the provisions herein.

2. CONTRACTOR'S OBLIGATIONS

The LMRWD hereby contracts with the SSWCD to provide services related to monitoring (water quality, thermal and well), technical assistance and cost share, education, and other engineering, technical and administrative services, as set forth in Attachment 1 - 2020 Statement of Work.

The Services shall commence immediately upon receipt of notice to proceed from the LMRWD Administrator, who will serve as the LMRWD's agent for such services and will administer this Contract.

3. PAYMENT

3.1 Invoicing. The SSWCD will invoice the LMWRD on a time and materials basis. The maximum amount for which the SSWCD may invoice the LMRWD under this Agreement shall be \$40,450, unless otherwise authorized in advance by the LMRWD Administrator. As set forth in Attachment 1, monitoring services shall not exceed \$29,400; landowner technical assistance and cost share shall not exceed \$6,200, education services shall not exceed \$4,100; and other technical and administrative services shall not exceed \$750. The SSWCD shall not invoice the LMRWD for any additional or other time or materials without prior authorization by the LMRWD Administrator.

3.2 Compensation. The SSWCD will invoice for services according to the following hourly rates:

Administrative Assistant	\$57
Resource Conservation Technician	\$62
Natural Resources Specialist; Water Resources Specialist; Outreach and Education Specialist	\$67
Resource Conservationist I; Engineering Technician; Finance and Accounting Specialist	\$72
Resource Conservationist II	\$77
District Manager	\$85

3.3 Time of Payment. The LMRWD shall make payment to SSWCD within sixty (60) days of the date on which an itemized invoice is received. If the invoice is incorrect, defective, or otherwise improper, the LMRWD will notify The SSWCD within ten (10) days of receiving the incorrect invoice. Upon receiving the corrected invoice from the SSWCD, the LMRWD will make payment within thirty-five (35) days.

3.4 Payment for Unauthorized Claims. The LMRWD may refuse to pay any claim that is not specifically authorized by this Contract. Payment of a claim shall not preclude the LMRWD from questioning the propriety of the claim. The LMRWD reserves the right to offset any overpayment or disallowance of claim by reducing future payments.

3.5 Payment Upon Early Termination. In the event this Contract is terminated before the completion of services, the LMRWD shall pay to the SSWCD, for services provided in a satisfactory manner, a sum based upon the actual time spent at the rates stated in paragraph 3.2. In no case shall such payment exceed the total contract price.

4. COMPLIANCE WITH LAWS/STANDARDS

4.1 General. Contractor shall abide by all Federal, State or local laws, statutes, ordinances, rules and regulations now in effect or hereinafter adopted pertaining to this Contract or to the facilities, programs and staff for which Contractor is responsible.

4.2 Minnesota Law to Govern. This Contract shall be governed by and construed in accordance with the substantive and procedural laws of the State of Minnesota, without giving effect to the principles of conflict of laws. All proceedings related to this Contract shall be venued in the State of Minnesota, County of Scott.

5. INDEPENDENT CONTRACTOR STATUS

The SSWCD is an independent contractor and nothing herein contained shall be construed to create the relationship of employer and employee between LMRWD and the SSWCD. The SSWCD shall at all times be free to exercise initiative, judgment and discretion as to how to best perform or provide services. The SSWCD shall have discretion as to working methods, hours and means of operation. The SSWCD acknowledges and agrees that the SSWCD is not entitled to receive any of the benefits received by LMRWD employees and is not eligible for workers' or unemployment compensation benefits. The SSWCD also acknowledges and agrees that no withholding or deduction for state or federal income taxes, FICA, FUTA, or otherwise, will be made from the payments due the SSWCD and that it is the SSWCD's sole obligation to comply with the applicable provisions of all federal and state tax laws.

6. SUBCONTRACTING

6.1 The parties shall not enter into any subcontract for the performance of the services contemplated under this Contract nor assign any interest in the Contract without prior written consent of all parties and subject to such conditions and provisions as are deemed necessary. The subcontracting or assigning party shall be responsible for the performance of its subcontractors or assignees unless otherwise agreed.

6.2 Any subcontractor approved by the LMRWD will be required to provide proof of insurance to the LMRWD in coverage and amount the same as the SSWCD. Prior to or concurrent with execution of this Contract, the SSWCD shall file certificates or certified copies of its subcontractor(s)' policies of insurance with the LMRWD. All fees for services and all job supervision will remain the obligation of the SSWCD.

6.3 The SSWCD agrees to pay any subcontractor within ten (10) days of the SSWCD's receipt of payment from the LMRWD for undisputed services provided by the subcontractor. The SSWCD agrees to pay interest of 1½ percent per month or any part of a month to the subcontractor on any undisputed amount not paid on time to the subcontractor. The minimum monthly interest penalty payment for an unpaid balance of \$100 or more is \$10.

7. INDEMNIFICATION

Each party to this Contract shall be liable for its own acts and the results thereof to the extent authorized by law and shall not be responsible for the acts of the other party, its officers, employees or agents. Each party hereby agrees to indemnify, hold harmless and defend the other, its officers, employees or agents, against any and all liability, loss, costs, damages, expenses, claims or actions, including attorney's fees which the other party, its officers, employees or agents, may sustain, incur or be required to pay, arising out of or by reason of any act or omission of the party, its officers, employees or agents, in the execution, performance, or failure to adequately perform its obligations pursuant to this Contract. Minn. Stat. Ch. 466 and other applicable laws shall govern the liability of the LMRWD.

8. INSURANCE

8.1 General Terms. At its own expense and in order to protect the SSWCD and to protect the LMRWD under the indemnity provisions set forth above, The SSWCD shall procure and maintain policies of insurance covering the term of this Contract, as set forth in the Insurance Terms, unless waived or amended by the LMRWD in writing.

8.2 Certificates. Prior to or concurrent with execution of this Contract, the SSWCD shall file certificates or certified copies of such policies of insurance with the LMRWD.

8.3 Failure to Provide Proof of Insurance. The LMRWD may withhold payments or immediately terminate this Contract for failure of the SSWCD to furnish proof of insurance coverage or to comply with the insurance requirements as stated above.

9. FORCE MAJEURE

Neither party shall be held responsible for delay or failure to perform when such delay or failure is due to any of the following unless the act or occurrence could have been foreseen and reasonable action could have been taken to prevent the delay or failure: fire, flood, epidemic, strikes, wars, acts of God, unusually severe weather, acts of public authorities, or delays or defaults caused by public carriers; provided the defaulting party gives notice as soon as possible to the other party of the inability to perform.

10. OWNERSHIP, COPYRIGHTS AND FUTURE USE OF WORK PRODUCT

Upon the completion of this Contract, all work product, data compilations, and materials of any kind, regardless of the format in which they exist will become the sole and exclusive property of the LMRWD. The SSWCD, at the request of the LMRWD, shall execute any necessary documents to transfer ownership rights to the LMRWD. Whenever any invention, improvement, or discovery (whether or not patentable) is made or conceived for the first time, actually or constructively reduced to practice by the SSWCD or its employees or agents in the course of or in connection with this Contract, the SSWCD shall immediately give the LMRWD's authorized representative written notice and complete information thereof.

In all publications or press releases or presentations to the public where data collected or compiled in the performance of this contract is disseminated. The SSWCD shall acknowledge funding by the LMRWD for all or part of the costs of making such information available to the public.

11. TERMINATION

Either party may terminate this Contract for cause by giving seven (7) days' written notice or without cause by giving thirty (30) days' written notice, of its intent to terminate, to the other party. Such notice to terminate for cause shall specify the circumstances warranting termination of the Contract. Cause shall mean a material breach of this Contract and any supplemental agreements or amendments thereto. This Contract may also be terminated by the LMRWD in the event of a default by the SSWCD. In the event this Contract is terminated for cause, the SSWCD shall be entitled to payment determined on a pro rata basis for work or services satisfactorily performed. Notice of Termination shall be made by certified mail or personal delivery to the authorized representative of the other party. Termination of this Contract shall not discharge any liability, responsibility or right of any party, which arises from the performance of or failure to adequately perform the terms of this Contract prior to the effective date of termination.

12. CONTRACT RIGHTS/REMEDIES

12.1 Rights Cumulative. All remedies available to either party under the terms of this Contract or by law are cumulative and may be exercised concurrently or separately, and the exercise of any one remedy shall not be deemed an election of such remedy to the exclusion of other remedies.

12.2 Waiver. Waiver for any default shall not be deemed to be a waiver of any subsequent default. Waiver of breach of any provision of this Contract shall not be construed to be modification for the terms of this Contract unless stated to be such in writing and signed by authorized representatives of the LMRWD and the SSWCD.

13. AUTHORIZED REPRESENTATIVES

The following named persons are designated the authorized representatives of parties for purposes of this Contract. These persons have authority to bind the party they represent and to consent to modifications and subcontracts, except that, as to the LMRWD, the authorized representative shall have only the authority specifically or generally granted by the Board. Notification required to be provided pursuant to this Contract shall be provided to the following named persons and addresses unless otherwise stated in this Contract, or in a modification of this Contract.

To the SSWCD:

Robert Casey, Chair
Scott Soil and Water Conservation District
7151 W. 190th Street, Suite 125
Jordan, MN 55352
Telephone: (952) 492-5425

To the LMRWD:

Yvonne Shirk, Chair
Lower Minnesota River Watershed District
112 E 5th Street
Chaska, MN. 55318
(952) 856-5880

14. LIAISON

To assist the parties in the day-to-day performance of this Contract and to define services, ensure compliance and provide ongoing consultation, a liaison shall be designated by the SSWCD and the LMRWD. The parties shall keep each other continually informed, in writing, of any change in the designated liaison. At the time of execution of this Contract, the following persons are the designated liaisons:

SSWCD Liaison:

Troy Kuphal, District Manager
Scott Soil and Water Conservation District
7151 W. 190th Street, Suite 125
Jordan, MN 55352
Telephone: (952) 492-5425

LMRWD Liaison:

Linda Loomis, Administrator,
Lower MN River Watershed District
6677 Olson Memorial Highway
Golden Valley, MN 55427
763-545-4659

15. MODIFICATIONS

Any alterations, variations, modifications, or waivers of the provisions of this Contract shall only be valid when they have been reduced to writing, signed by authorized representatives of the LMRWD and SSWCD.

16. SEVERABILITY

The provisions of this Contract shall be deemed severable. If any part of this Contract is rendered void, invalid, or unenforceable, such rendering shall not affect the validity and enforceability of the remainder of this Contract unless the part or parts which are void, invalid or otherwise unenforceable shall substantially impair the value of the entire Contract with respect to either party.

17. MERGER

17.1 Final Agreement. This Contract is the final expression of the agreement of the parties and the complete and exclusive statement of the terms agreed upon, and shall supersede all prior negotiations, understandings or agreements. There are no representations, warranties, or stipulations, either oral or written, not herein contained.

17.2 Attachments. Attachment 1 attached and incorporated herein by reference.

- Attachment 1 – 2020 STATEMENT OF WORK

IN WITNESS WHEREOF, the parties hereto have executed this Contract on the date(s) indicated below.

FOR LOWER MINNESOTA RIVER WATESHED DISTRICT

By: _____
Board Chair

Date: _____

FOR SCOTT SOIL AND WATER CONSERVATION DISTRICT

By: _____
Doug Schoenecker, Board Chair

Date: _____

ATTACHMENT 1: 2020 STATEMENT OF WORK

This Statement of Work (SOW) is made pursuant to and governed by the approved 2020 Contract for Services between Lower Minnesota Watershed District (“LMRWD”) and Scott Soil & Water Conservation District (SSWCD), and defines the specific monitoring, conservation education and technical assistance, and other technical and field support services the SWCD will perform for the LMRWD in connection with said Contract for Services.

Task I. Monitoring (\$29,400)

Scope of Work

The SSWCD will assist the LMRWD with planning and implementing its water quality, thermal and well monitoring programs.

A. Eagle Creek Water Quality and Flow Monitoring (\$7,600)

- Collect monthly base-flow samples and storm event composite samples
- Deliver samples to the MCES lab
- Maintain and calibrate sonde
- Collect flow measurements
- Log, process and complete QA/QC of data

B. Eagle Creek Thermal Monitoring (\$2,900)

- Collect data from loggers
- Data management and analysis
- Maintain sites and equipment
- Includes continuing monitoring per approved 2018 project proposal

C. Eagle Creek –Chlorides Monitoring (\$7,400)

- Bi-weekly and event grab samples
- Lab analysis costs
- Data management and analysis
- Includes continuing monitoring per approved 2018 project proposal

D. Water Quality and Flow – Dean Lake (\$6,900)

- Collect monthly base-flow samples and storm event composite samples
- Deliver samples to the MCES lab
- Maintain and calibrate sonde
- Collect flow measurements
- Log, process and complete QA/QC of data

E. Well Monitoring (\$2,300)

- Collect depth-to-water readings monthly
- Enter data into DNR database
- Maintain sites and well monitoring equipment

F. Reporting (\$2,300)

- Prepare written annual data and analysis report for all monitoring
- Prepare and deliver summary presentation
- Prepare and present proposed work plan and budget

Task II. Technical Assistance and Cost Share (\$6,200)

Scope of Work

The SWCD will provide technical and cost share assistance to landowners within the DISTRICT in support of implementation of conservation behaviors and best management practices that reduce soil erosion, decrease runoff volume, and improve water quality. The SWCD will assist landowners who contact the SWCD directly or who are referred by the DISTRICT for conservation program information and/or technical assistance. Cost share may be provided for projects that meet eligibility and other relevant criteria in accordance with the SSWCD's cost share program policy docket, subject to available funding.

A. Technical Assistance (\$4,000)

- a) Project Scoping and Pre-Approval
 - Meet with landowners to clarify goals and interests
 - Conduct preliminary off- and/or on-site research
 - Determine project feasibility and eligibility
- b) Project Development
 - Complete technical assessment
 - Collect and submit soil samples for nutrient analysis, when applicable
 - Conduct topographic surveys if necessary
 - Meet with landowner to finalize decisions and secure commitments
 - Prepare technical and environmental assessments
 - Prepare concept plans and cost estimates
- c) Administrative Activities
 - Prepare and process contract applications, fact sheets, and payment vouchers
 - Prepare and send letters of decision (approval or denial)
 - Prepare and issue cost share checks, upon certified completion
 - Track and report budget activity
 - Project/file close out
- d) Design Activities
 - Conduct surveys
 - Prepare and review designs, specifications, and final cost estimates (or coordinate same if engineering services are outsourced)
 - Apply for/secure applicable permits
 - Prepare Operation and Maintenance agreements
 - If requested submit design packet to the DISTRICT for review prior to construction
- e) Construction Activities
 - Coordinate and lead pre-construction meetings
 - Stake projects
 - Inspect/supervise construction
 - Prepare as-built drawings
 - Provide construction certification
- f) Cost share
 - This is pass-through for landowners that install practices (\$2200)
 - Stake projects
 - Inspect/supervise construction
 - Prepare as-built drawings
 - Provide construction certification

B. Cost Share (\$2,200)

- a) This is pass-through to cooperators that install conservation practices
- b) Advance cost share application approval and final construction certification is required in accordance with SWCD cost share policies

Task III. Education and Outreach (\$4,100)

Scope of Work

The SWCD will provide various educational programming services, as described below.

A. Raingarden Workshop

The SWCD will plan, coordinate and host one Blue Thumb workshop

- Plan and prepare workshop details in coordination with the WMO, PLSLWD and Cities of Prior Lake and Savage
- Develop promotional and informational materials and resources
- Plan and implement media marketing/promotion plan
- Coordinate and manage registrations and venue set-up and take-down
- Prepare and present information
- Post-workshop review and follow up with landowners

B. SCWEP Activities

The SWCD will plan, coordinate and execute events and activities as identified in the 2017 Scott Clean Water Education Program (SCWEP) work plan. These services have multi-jurisdictional benefit and are supported by funding contributions by all SCWEP partners.

C. Other Education Activities

The SWCD will help provide support and assistance with other education efforts as may be requested by the District, including but not limited to developing education and promotion materials and assisting with special event planning and coordination.

Task IV. Other Services (\$750)

Scope of Work

The SWCD will provide the following and technical services on an as-needed basis:

- Provide consultation on activities related to soil and water resources within the LMRWD
- Conduct or assist with LMRWD compliance reviews
- Review development plans for compliance with LMRWD standards
- Conduct construction inspections and oversight to ensure compliance with LMRWD standards
- Assist with surveys, construction supervision, and/or project management for capital improvement projects
- Conduct or assist with inventory and/or mapping projects
- Assist with monitoring plan development
- Attend LMRWD-sponsored meetings, including but not limited to Board and TAC meetings
- Assist with development of plans, including but not limited to Comprehensive Water Resources Management Plan and TMDL Implementation Plans
- Assist with planning and development of LMRWD cost share program
- Other services as may be requested

Scott Clean Water Education Program 2019 Annual Report



Prepared By:

Shelby Roberts, SCWEP Coordinator
Scott Soil and Water Conservation District

Background

The Scott Clean Water Education Program (SCWEP) started in 2010, and has been updated continually during the last eight years so the program can affectively educate and inform Scott County residents. The program's goal is to make clean water choices second nature for all who live and work in Scott County. SCWEP has incorporated the goal into the marketing materials using the theme of "Clean Water Starts with Me!"

2019 Highlights

Workshops

In 2019, SCWEP offered raingarden, native prairie, shoreline, and cover crop workshops. The workshops were promoted through social media, utility bill mailers, and submissions to local papers and community calendars. Outreach also included distributing promotional flyers to local offices and businesses. Registration for the workshops is simple using the on-line registration tool, Eventbrite.com. 2019 Workshop attendance:

- 44 participants at the Raingarden workshop
- 57 participants at the Native Prairie Workshop
- 44 participants at the Shoreline Workshop
- 69 participants at the multi-county Cover Crop workshop.



Conservation Leaders Program



Every year conservation leaders are recognized in Scott County to illustrate local ways of changing behavior in conservation. Scott County residents can see real examples of how their neighbors are creating a new normal.

Joe Hentges was chosen as the 2019 Conservation Leader of the Year. He was also nominated for the MASWCD Outstanding Conservationists of the Year award, and was recognized at the MASWCD Annual Convention in December.

Outdoor Education Days



2019 hosted the 34th annual Outdoor Education Days. This year 1,127 third through sixth graders from 14 schools—including schools from Belle Plaine, New Prague, Shakopee, Savage, and Jordan—were part of the fall outing. The weather cooperated extremely well with the event, and no rain days were needed this year.

The six OED stations focused on forestry, wildlife, soil health, the water cycle, pond macro-invertebrates, and conservation. The stations were taught by staff from the Scott SWCD, Prior Lake-Spring Lake Watershed District, and Three Rivers Park District. At the end of each day, CLIMB Theatre put on a production about recycling and composting. Outdoor Education Day remains the main activity that SCWEP utilizes to directly reach Scott County youth.

Scott WMO/SWCD Conservation Tour



This year the Scott WMO/SWCD tour focused on soil health, with an emphasis on nutrient management. Nutrient management BMPs help protect water quality in Scott County by reducing excess nutrient runoff.

23 people attended the tour including Scott County Commissioners, members of the Scott County Watershed Planning Commission, SWCD Supervisors, Prior Lake-Spring Lake Watershed District Managers, the Conservation Leader of the year, and WMO and SWCD staff.

Stops included the WMO CIP site on Sand Creek, Mark Klehr's Dairy Farm and his animal waste storage facility, and the SWCD cover crop test plot. Each stop had relevant presentations and speeches from landowners. Mark Klehr spoke with Scott Schneider on his nutrient management plan and other conservation practices on his farm. Chris Schultz spoke with Diann Korbel at the SWCD cover crop test plot discussing soil health and the benefits of cover crops.

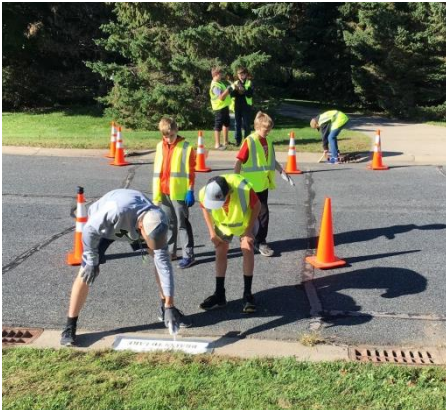
This annual event allows county officials to view conservation projects throughout Scott County first-hand and see how dollars are being spent. It is also a chance to give them a better understanding of the importance of conservation, showing them that, over time, real changes are being made in the county.

Chlorides

Chloride outreach for Scott County started in full swing this year. The county partnered with Fortin Consulting to host six SMART Salting workshops for property managers and parking lots and sidewalks. The workshops gathered a total of 112 participants.

Informational postcards on proper winter salting techniques were sent out to 73 targeted places of worship around the county. Targeted mailing was also done on residents around the Credit River, Prior Lake, Cedar Lake, Spring Lake, Lake Thole and O’Dowd areas, and a half page postcard is scheduled to be sent to recipients in early 2020 to give awareness and information to lakeshore residents about proper winter salting techniques. In addition, the Scott SWCD attended the Prior Lake Fall Fest to promote a SMART salting demonstration. The Scott County SCENE published three articles on proper winter salting, and relevant articles and information were posted on the Scott SWCD website blog and social media platforms.

Storm Drain Stenciling



This fall, Boy Scout Troop 323 used the SCWEP’s storm drain stenciling kit to spray paint 18 storm drains around Cedar Lake. The effort served as both a youth educational tool for water quality and storm water runoff outreach, as well as outreach and awareness for residents around the lake.

The project involved the nine members of the troop, and their two chaperones. It took place over two weekends in October. The messages are expected to reach residents of Cedar Lake as well as those who frequent the lake for recreation.

News Releases

SCWEP continues to promote information, activities, and relevant news through various print publications available to Scott County citizens. This year SCWEP published 38 water-related articles to the county-wide Scott County SCENE newspaper. In addition, events, informational articles, and workshops continued to be promoted on partner’s social media platforms, websites, and other local papers including the Prior Lake American.

Partners

Members of the SCWEP partnership believe more can be accomplished by working together toward our common goal. By collaborating, we eliminate overlapping programs, prevent inconsistent and duplicative messaging and achieve similar outcomes at lower costs. In 2019, SCWEP partners included:

- Scott County
- Scott Watershed Management Organization
- Scott Soil and Water Conservation District
- Prior Lake-Spring Lake Watershed District
- Vermillion River Watershed Joint Powers Organization
- Lower Minnesota River Watershed District
- Spring Lake Township
- Credit River Township
- Jackson Township
- Louisville Township

Whenever practical, SCWEP collaborated with other agencies, organizations and clubs in implementing outreach programs with similar goals and objectives in Scott County. This collaboration achieves an even greater level of consistency, reach and cost effectiveness. In 2019, these agencies included:

- Scott County Library System
 - Libraries throughout the county posted workshop flyers
- Scott-Carver Extension Master Gardeners
 - Available to answer questions about trees and plants at the Scott SWCD tree sale
- Prior Lake Association
 - Helped spread the word about Shoreline workshop
- Cedar Lake Improvement District
 - Helped spread the word about Shoreline workshop
- O'Dowd Lake Association
 - Helped spread the word about Shoreline workshop
- Spring Lake Association
 - Helped spread the word about Shoreline workshop
- KCHK Radio
 - Provided publicity for the Cover Crop workshop.
- Prior Lake-Spring Lake Watershed District
 - Helped spread the word about Shoreline workshop
 - Provided publicity for the Cover Crop workshop
 - Provided one staff for two days of Outdoor Education Days
- Three Rivers Park District
 - Allowed Outdoor Education Days to be held free-of-charge at Cedar Lake Farm Regional Park
 - Set up tables and garbage and recycling bins, and offered use of their golf carts for Outdoor Education Days
 - Provided two staff for all five days of Outdoor Education Days

Accomplishments

The 2019 SCWEP Work Plan targeted and customized its “Clean Water Starts With Me!” campaign to three general audiences: Agriculture/Rural Landowners, Urban and Lakeshore Residents, and Community Groups, Schools and Government. SCWEP utilized both passive and active marketing and outreach techniques to connect with these audiences in Scott County.

Active techniques generally consisted of activities that were targeted, hands-on and engaged with very specific audiences. They were point-in-time events that were scheduled according to seasonal relevance. They took significant time and budgeted expense to plan and implement, but were more likely to have a higher impact in terms of educational outcomes (i.e., changed attitudes and behaviors). Examples included workshops, field demonstrations, tours, and one-on-one landowner meetings.

Passive activities, by contrast, were intended to reach large audiences and deliver consistent “base” messaging. They had a relatively low impact compared to active activities, but were also relatively easy and inexpensive to implement. Examples included news articles, social media postings and event displays that focused on the effects of how our decisions impact water quality and the positive or negative impacts we are responsible for on Scott County water bodies.

Listed below is a comprehensive table of participation numbers for workshops and outreach events featured in 2019.

Activity	2019	2018	2017
Raingarden Workshop	44	21	14
Native Prairie Workshop	59	21	14
Shoreline Workshop	44	6	24
Cover Crop Workshop	70	130	NA
SMART Salting Workshops	112	NA	NA
Outdoor Education Days	1,127	1,070	1,500
Nitrate Water Testing Clinic	150	90	NA

Listed below is the suite of activities and targeted audiences SCWEP focused on in 2019:

Audience & Events	Took Place in 2019	MS4 Activity	Accomplishments
Agriculture/Rural Landowners			
Promote Cover Crop/Soil Health BMPs (news releases, fact sheets, workshops, cover crop informational books, community events/displays, demonstration plots, success stories, cost-share incentives for cover crops)	X	X	<ul style="list-style-type: none"> Staff continued to receive training on soil health and cover crops Sent out monthly “Cover Crop Updates” emails 69 people attended a cover crop and soil health workshop on March 14 in Le Center. The event was a collaboration between the Scott WMO, Scott SWCD, and Rice and Le Sueur SWCDs. Sponsors for the cover crop workshop this year included Werner seed, Cannon River Watershed partnership, Saddle Butte Ag, Midwest Ag Air, MN Department of Ag, Stangler Seed, and corn/soybean growers. Featured the SWCD cover crop test plot during the WMO and SWCD fall tour Featured landowner success story on creating their own interseeder

			<p>submitted to the SCENE</p> <ul style="list-style-type: none"> • Joe Hentges was names this year’s Conservation Leader for his stewardship in promoting soil health in the community • Created cover crop videos to distribute through social media and “Cover Crop Update” emails • Shared relevant stories on partner social media pages, as well as promote our own projects through social media • Partnered with the Prior Lake-Spring Lake Watershed District to promote the Lake-friendly farm program’s efforts
Promote nutrient and manure management	X	X	<ul style="list-style-type: none"> • Provided individual producers with one-on-one assistance • Highlighted Mark Klehr’s farm and nutrient management pit at WMO tour • Nutrient management article submitted to SCENE and promoted on social media and blog postings
Promote no-till drill rental program, reduced tillage	X	X	<ul style="list-style-type: none"> • Scott Conservation Center Hallway display theme: Equipment rental program and benefits of no-till • No-till equipment rental article submitted to the SCENE • Added new equipment to rental program and alerted residents through social media and blog postings
Promote native grass planting	X	X	<ul style="list-style-type: none"> • 59 residents attended Planting Native Prairie workshop on March 13 • Sent 158 flyers and letters to targeted landowners in the Lower MN River and Vermillion River Watershed to attend the Native Prairie Workshop • Serviced 64 new requests for prairie restoration assistance • Certified 2 native prairie projects totaling approximately 8.7 acres of new native prairie • Native Prairie Success Story published in the SCENE • Workshop publicity in county newspapers, on local websites and in the SCENE • Displayed “Plant Native Prairie” banner and rack card at seasonally appropriate events. • Shared relevant stories on partner social media pages, as well as promoted our own projects through social media
Promote riparian buffers and filter strips	X	X	<ul style="list-style-type: none"> • Serviced 15 new requests for buffer technical assistance • Contacted landowners directly for targeted riparian buffer improvement projects • Shared relevant stories on partner social media pages
Promote tree and native seed program (buffers, windbreaks, soil savings, erosion reduction, screenings, living snow fences, wildlife habitat improvement)	X	X	<ul style="list-style-type: none"> • Sold 28,200 tree seedlings • Sold 102 Native Seed Mixes • Submitted news articles on tree and native seed mix annual sale • Sent an email blast on tree program to customer/interest list • Scott Conservation Center Hallway display theme: Tree program • Shared relevant stories on partner social media pages, as well as promoted our own projects through social media
Promote rural residential/hobby farm conservation practices (news releases, community events, direct mailings, one-on-one meetings, success stories, community events/displays)	X	X	<ul style="list-style-type: none"> • Set up display booth with banners and information rack cards on pastures, manure management, cover crops, erosion, and soil loss at appropriate events including the Scott County Fair • Had “Contact Me” cards available at the Scott County Fair • Shared relevant stories on partner social media pages • Sent out 157 postcards to residents who recently purchased 2(+) acres about services: technical assistance, designing, cost-share, etc.
Promote cost-share and conservation assistance	X		<ul style="list-style-type: none"> • Included information on cost-share and technical assistance in appropriate SCENE articles • Featured notable landowners who participate in conservation practices in SCENE articles, website blog, and social media • Created a conservation practice gallery for stock images and videos of in-progress and completed conservation projects
Scott WMO/SWCD Fall Conservation Tour	X		<ul style="list-style-type: none"> • Held the annual Fall WMO/SWCD Conservation tour on September 23 with 23 attendees including a Scott County Commissioner; members of

			<p>the Scott Co. Watershed Planning Commission; SWCD Supervisors; Prior Lake-Spring Lake Watershed District Managers; and WMO and SWCD staff.</p> <ul style="list-style-type: none"> • Stops included the WMO Sand Creek CIP site, Mark Klehr’s dairy farm, and the SWCD cover crop test plot • Speakers at each stop included Ryan Holzer, Scott Schneider, Diann Korbel, Mark Klehr, and Chris Schultz
Urban and Lakeshore Residents			
Promote raingardens	X	X	<ul style="list-style-type: none"> • Raingarden workshop information published in the SCENE • Assisted landowners with installation of 8 new raingardens, including one raingarden installed by the Minnesota Conservation Corps Crew • Shared relevant stories on partner social media pages, as well as promoted our own projects through social media
Hold a Shoreline Restoration Workshop	X	X	<ul style="list-style-type: none"> • Sent 650 flyers to shoreline residents marketing the Stabilize your Shoreline workshop • 22 residents attended the Restore Your Shoreline workshop on June 22 • Serviced 31 new requests for shoreline and streambank protection assistance • Certified 2 projects totaling 436 lineal feet of new lakeshore stabilization and protection. • Promoted the workshop in SCENE and local media outlets
Promote natural landscaping practices	X	X	<ul style="list-style-type: none"> • Displayed “Plant Native Prairie: Put Down Roots” and “Landscape Naturally” rack cards and banners at community events • Provided SWCD staff with native prairie door hangers for distribution during ESC inspections • Shared relevant stories on partner social media pages, as well as promoted our own projects through social media
Promote environmentally-friendly snow/ice management	X	X	<ul style="list-style-type: none"> • Prepared environmentally friendly snow/ice removal news release for the SCENE and other local news media • WMO held 6 smart salting workshops • Attended Prior Lake Fall Fest to show SMART salting demonstration • Sent smart salting post-cards to 73 places of worship and nursing homes • Sent targeted mailings to residents around Prior Lake, Spring Lake, Cedar Lake, and Credit River about proper ice management • Shared relevant stories on partner social media pages, as well as promoted our own projects through social media
Promote environmentally-friendly lawn care	X	X	<ul style="list-style-type: none"> • Prepared news releases on spring and fall environmentally-friendly lawn care BMPs for The SCENE and local news media • Five information rack cards and display banners focus on this topic • Shared relevant stories on partner social media pages • Hosted storm drain stenciling project with local boy scouts and spray painted 18 drains around Cedar Lake
Promote personal storm water management/responsibility	X	X	<ul style="list-style-type: none"> • Displayed “The Unfiltered Truth” and “Rain Barrel” rack cards and banners at community events and outdoor education days • During Scott County Fair, on-site raingarden was featured with interpretative signage as part of a Scott County fair • Shared relevant stories on partner social media pages, as well as promoted our own projects through social media • PLSLWD hosted 2019 Spring Clean Water Clean-Up at Fish Point Lake. Event saw 50 volunteers who removed 1.8 tons of buckthorn, 1.6 tons of leaves, and picked up trash around the lake • PLSLWD hosted Clean Water Clean-Up in Prior Lake, removing an estimated 12 tons of buckthorn and raking up half a dump truck of leaves.
Interpretive signage installed	X		<ul style="list-style-type: none"> • Installed 5 raingarden signs, 7 native prairie signs, 2 cover crop test plot signs, 3 shoreline signs at project sights
Promote proper disposal of hazardous waste via county HHW facility	X	X	<ul style="list-style-type: none"> • HHW Facility articles were promoted in every edition of this year’s SCENE • “Don’t Throw it Out, Take it to the County” rack cards and banner

			<ul style="list-style-type: none"> displayed at community events Shared relevant stories on partner social media pages, as well as promoted our own projects through social media
Promote “unintentional” pollution prevention	X	X	<ul style="list-style-type: none"> Displayed “The Unfiltered Truth,” “Salt Pollutes” and “Don’t Throw it Out: Take it to the County” rack cards and banners at community events News releases on Salt Pollutes Shared relevant stories on partner social media pages, as well as promoted our own projects through social media
Educate citizens about groundwater nitrate	X	X	<ul style="list-style-type: none"> 235 water samples analyzed at SWCD tree-pickups days: April 26 12 wells decommissioned
Community Groups, Schools, Government			
Organize and host Outdoor Education Days	X		<ul style="list-style-type: none"> Hosted 34 annual event, attended by 1,127 students from 14 schools (Belle Plaine, New Prague, Shakopee, Jordan, and Savage) on September 23, 24, 25, and 26 Six student stations focused on forestry, wildlife, conservation, soil health, the water cycle, and pond macro-invertebrates. There was also a CLIMB Theatre production about recycling and composting. Received \$1,000 from MVEC Operation Roundup Grant for waters for students and lunches for presenters The Scott SWCD provided bussing grants to classrooms at Marion W Savage, Eagle View, and Oak Crest
Share and promote information Watershed Stewards Mini-Grants	X		<ul style="list-style-type: none"> Promoted the grants availability on SWCD website, blog, and social media outlets Emailed grant application to schools, churches, and townships Grant applications available at Government Center
Continue to develop Fish Lake, New Prague, Prior Lake Sportsmen’s Club and Pheasants Forever Partnerships	X		<ul style="list-style-type: none"> This relationship development is ongoing with SWMO taking the lead Made SCWEP Program displays and staff available for events put on by organizations to initiate person-to-person contact.
Continue to educate community leaders and officials about Illicit Discharge Detection and Elimination	X	X	<ul style="list-style-type: none"> Displayed IDDE rack cards and banners at community events Continued to distribute IDDE vehicle visor clips upon request to county and city public works vehicles/employees
General			
Education presentations to WPC	X		<ul style="list-style-type: none"> Regular updates and reporting is shared with WPC Board on a monthly basis
Submit MASWCD Conservation Cooperator of the Year Award and Scott SWCD’s Conservation Leaders Program	X		<ul style="list-style-type: none"> Submitted an award application for Joe Hentges for MASWCD’s Outstanding Conservationists of the Year. He was recognized at the MASWCD Annual Convention on December 10. He also received Conservation Leaders Program signage.
Write/edit news articles (educational, events, success stories, testimonials, etc.) in cooperation with other partners via Cooperative Media Plan.	X	X	<ul style="list-style-type: none"> SCWEP followed a comprehensive media plan with SCWEP Partners to reduce redundancy and streamline conservation topic focus/impact. 70 relevant articles were drafted and published
Rotate Scott Conservation Center Hallway Displays	X		<ul style="list-style-type: none"> Designed and utilized seasonal themes including tree program, no-till equipment rental, planting cover crops, and winter sidewalk management.

Media

SCWEP continues to work with partners and county agencies on a timely, cost-effective manner to market programs and activities. This involves the utilization of a Cooperative Media Plan in which news releases and other promotions are strategically outlined in advance of deadlines. The Cooperative Media Plan allows for more effective communications through timely news releases and less overlap of stormwater runoff, workshops, lawn care, landowner success stories and other topics. Media outlets include county newspapers, The Scott County SCENE, and the county, PLSLWD and SWCD websites. As an added benefit, the plan also allows for more effective cross-marketing of partner programs.

In 2019, 38 relevant news releases were written and distributed. Topics for news releases follow SCWEP goals and objectives. Whether residents owned a business or home, lived on a lake, walked their dog, hunted in our woods or wetland areas, maintained their lawn, landscaped with native plants or raised crops in Scott County, the clean water message was tailored to them.

2019 News Releases

2019 SCENE Articles		
Issue	Article	Partner
Feb	Compass Learning Center Success Story	WMO
	River City Centre Success Story	WMO
	Water softener Salt Article	WMO
	Reluctant Regulator Env SCENE column.	WMO
	Food Plot Seed Update	SWCD
	March Cover Crop Workshop	SWCD
	Planting Native Prairie Workshop	SWCD
	Scott Co Parks Success Story	SWCD
Apr	Free Nitrate Testing for Well Water	WMO
	Henderson Apartment Success	WMO
	Live Native Garden Kits Available for Spring	SWCD
	Raingarden Workshop Coming up!	SWCD
	Spring Lawn Care for Clean Water	SWCD
	Bring your Community Together for Clean Water	SWCD
Jun	Scott SWCD Staff hosts one-on-one Meeting with Farmers	SWCD
	Cover Crops Help Local Farmer care for his Soil	SWCD
	Stabilize your Shoreline Workshop Coming up!	SWCD
	Drinking water series, part II, arsenic	WMO
	AIS what to look for	WMO
	New watercraft inspections this summer	WMO
Aug	Cover Crop test plot moves onto year two	SWCD
	Local couple restores prairie to improve diversity	SWCD

	Conserving water does make a difference	SWCD
	Blue green algae	SCES
	Don't flush medicines	SCES
	Wipes in septic systems	SCES
	Bluff stabilization	WMO
Oct	Nutrient management techniques benefiting the environment	SWCD
	Father-son duo creates homemade inter seeder	SWCD
	Waste Wise - Canterbury park	WMO
	Buckthorn bust at the Prior Lake Spring Lake Watershed District	PLSLWD
	Test well water for arsenic	SCES
	Scott County drinking water, part III, manganese	SCES
	Septic system winter update	SCES
	Nonpoint source pollution	SCES
Dec	Local farmers participate in cover crop aerial seeding	SWCD
	Scott SWCD and WMO host annual fall conservation tour	SWCD
	Students learn environmental lessons at OED	SWCD
	Five ways to use less salt this winter	SWCD
	ENV SCENE column - Ryan on improving water quality	WMO
	Microplastics found everywhere; be aware, choose to reduce use	WMO

MS4 Activity

The 2019 Work Plan was designed to ensure member compliance with the educational requirements of their respective Stormwater Pollution Prevention Plans. There are six minimum control measures (MCMs) defined in the MS4 Permit, including:

1. Public Education and Outreach
2. Public Participation and Involvement
3. Illicit Discharge Detection and Elimination
4. Construction Site Storm Water Runoff Control
5. Post Construction Storm Water Management in New and Redevelopment
6. Pollution Prevention/Good Housekeeping for Municipal Operations

Many SCWEP activities helped partners comply with the MS4 MCM1 requirements. Data used for MS4 reporting can be found in the appendix.

Budget

The 2019 SCWEP budget was \$ 100,073. This includes \$96,073 for staff time to plan and implement activities and \$4,000 for materials, supplies and related expenses. Of this total, Scott WMO contributed \$85,273, Prior Lake-Spring Lake Watershed District contributed \$3,500, Lower Minnesota River Watershed District contributed \$4,100, Vermillion River Watershed contributed \$1,200, Spring Lake Township contributed \$2,000.

Outcomes, Evaluation and Reporting

The SCWEP goal – to make clean water choices second nature for all who live and work in Scott County – was reviewed throughout the year. Outcomes were evaluated primarily by number of participants and following-up with program participants. We also tracked follow-up requests for additional information and technical assistance in SWIMS database.

A large part of the Storm Water Pollution Prevention Program (SWPPP) requires identification and documentation of best management practices that will be undertaken to reduce the discharge of pollutants from the MS4 to the maximum extent practicable. A few of the metrics used to measure the impact of marketing strategies include:

- Number of participants at specific SCWEP hosted events or workshops
- Number of direct mailings, brochures and flyers distributed
- Number of submitted press releases articles
- Number of requests for technical assistance
- Number of best management practices completed through a partner organization

Staff recorded and quantified the above metrics to assess the success or benefit of each marketing strategy. Additionally, staff provided evaluations after educational workshops and outreach events (when applicable) to gauge how well presented topics were understood, how much project excitement was felt, and if adjustments to curriculum were recommended. Once results were received, staff used feedback from the surveys to modify content and presentations as needed.

Evaluation was and continues to be an important component in understanding the effectiveness of reaching our goal of the “Clean Water Starts With Me!” campaign.

Appendix: 2019 MS4 Reporting Information

Workshops

Date	Workshop	Location	# of Attendees	Breakdown of Attendees							
				WMO	PLSLWD	LMRWD	VRWJPO	Credit River TS	Jackson TS	Louisville TS	Spring Lake TS
3/13/19	Plant Native Prairie	Spring Lake Town Hall	59	27	21	1	7	3	1	0	7
3/14/18	Cover Crop and Soil Health	Le Center American Legion	70 (19 from Scott Co.)	16	2	1	0	1	0	0	0
4/18/19	Create a Raingarden	Spring Lake Town Hall	44	19	20	2	0	6	0	0	4
6/11/19	Restore Your Shoreline	Spring Lake Town Hall	44	17	23	0	0	1	0	0	5

Other Events

Date	Event
4/6/2019	U of M Extension Master Gardeners: Garden Fever
4/7/2019	Celebrate Jordan: Expo
4/22/19 & 10/28/19	PLSLWD Clean Water Clean-Ups
4/29/2019	Tree Seedling / Native Seed pickup
4/29/2019	Ground Water Nitrate testing clinic (235 water samples tested)
7/24/19 - 7/28/19	Scott County Fair
9/16/2019	Prior Lake Community Fest
9/23/19 – 9/27/19	Outdoor Education Days
10/6/2019	Miles for Monarchs
10/19/19	Storm Drain Stenciling

Appendix: 2019 MS4 Reporting Information

2019 Materials Distributed

2019 MS4 Activity	Date	Materials Distributed	Amount distributed
Plant Native Prairie workshop	3/13/2019	Rack Cards	Distributed 10 rack cards
Finding Profit in Cover Crops workshop	3/14/2019	Rack Cards	Distributed 20 rack cards
Booth at Celebrate Jordan Expo	4/7/2019	Rack Cards	Distributed 25 rack cards
Create a Raingarden workshop	4/18/2019	Rack Cards	Distributed 20 rack cards
Booth at U of M Extension Garden Fever Conference	4/6/2019	Rack Cards	Distributed 30 rack cards
Tree seedling and native seed distribution day	4/26/2019	Rack Cards	Distributed 50 rack cards
Stabilize your shoreline workshop	6/11/2019	Rack Cards	Distributed 45 rack cards
Booth and information at Scott County Fair	7/24/2019 - 7/28/2019	Rack Cards	Distributed 100 rack cards
Booth at Prior Lake Fall Fest	9/16/2019	Rack Cards	Distributed 25 rack cards
Miles for Monarchs	10/19/2019	Rack Cards	Distributed 10 rack cards
Scott SCENE Erosion Reduction article	Dec, 2018/Jan, 2019	News Article	Distributed to 57,000 people
Scott SCENE Cover Crop workshop article	Dec, 2018/Jan, 2019	News Article	Distributed to 57,000 people
Scott SCENE Lawn Care Tips article	April, 2019	News Article	Distributed to 57,000 people
Scott SCENE Nitrate Testing article	April, 2019	News Article	Distributed to 57,000 people
Scott SCENE funds for clean water projects article	April, 2019	News Article	Distributed to 57,000 people
Scott SCENE local farmers for clean water article	April, 2019	News Article	Distributed to 57,000 people
Scott SCENE native garden kits for sale article	April, 2019	News Article	Distributed to 57,000 people
Scott SCENE Water Conservation article	August, 2019	News Article	Distributed to 57,000 people
Scott SCENE Native Prairie article	August, 2019	News Article	Distributed to 57,000 people
Scott SCENE Manure Management article	October, 2019	News Article	Distributed to 57,000 people
Scott SCENE cover crop article	October, 2019	News Article	Distributed to 57,000 people
Scott SCENE Prevent Salt Pollution article	December, 2019	News Article	Distributed to 57,000 people
Scott SCENE students learn conservation article	December, 2019	News Article	Distributed to 57,000 people
Scott SCENE cover crop seeding article	December, 2019	News Article	Distributed to 57,000 people
Scott SWCD website and blog	On-going	General online outreach	Viewed by ~6,200 people
Social Media	On-going	General online outreach	Viewed by ~3000 people

Listed below are the planned SCWEP activities for 2020. New activities proposed last year are highlighted.

Events and Activities	Dates	Objective	MS4 Activity
Agriculture/Rural Landowners			
Native Prairie Workshop	TBD	1	X
Cover Crop Workshop	March 19	1	X
Nitrate Water Testing Clinic	April 24	1	X
Tree/Native Seed Mix Order Pickup	April 24	1	
Conservation Leaders/Awards	Fall/Winter	1	
Cover Crop field days	Spring and Fall	1	X
Promote native grass planting	Ongoing	1	X
Promote buffer BMPs	Ongoing	1	X
Promote Cover Crop/Soil Health BMPs	Ongoing	1, 2	X
Promote nutrient and manure management	Ongoing	1, 2	X
Provide technical assistance and cost share for agricultural BMPs	Ongoing	2	
Cover Crop videos	Ongoing	1	
Targeted outreach to producers in areas with high bacteria levels	August	1	X
Conservation Practice Videos & Photo Gallery	Ongoing	1	X
Native Prairie Door Hangers	Ongoing	2	X
Community Groups, Schools, Government			
Scott WMO/SWCD Conservation Tour	TBD	1	
Education presentations to community leaders (WPC, Citizen Advisory Committee, etc.)	Ongoing	1	
Outdoor Education Days	Sept 21-25	2	
Clean-Water Clean-Up, rake the lake event	Spring and Fall	3	X
Sportsmen's Club Relationship Building	Ongoing	3	X
Lake Association Relationship Building	Ongoing	3	X
Share and promote Watershed Stewards Mini-Grants	Ongoing	3	
Send out Smart Salting postcards to faith based organizations and nursing homes	Winter	1	X
Promote chloride reduction (winter salt and softener salt)	Ongoing	3	X
Urban and Lakeshore Residents			
Raingarden workshop	April 8	2	X
University of MN Extension Garden Fever	TBD	1	X
Jordan Showcase	TBD	1	X
Scott County Fair	TBD	1	X
Prior Lake Community Fest	TBD	1	X
SCWEP Banner Display	Ongoing	1	X

Landowner Success Stories	Bi-monthly	1	X
Conservation Themes/Hallway	Rotated seasonally	1	
Cooperative Media Plan	Ongoing	1	
Storm Drain Stencil Kit	As requested	1	X
Project signage: Raingarden, Native Prairie, Native Shoreline	Ongoing	1	X
Promote “unintentional” pollution and illicit discharge prevention	Ongoing	1	X
Promote proper disposal of hazardous waste via HHW facility	Ongoing	1	X
Mail postcard to residents who recently purchased 2+ acres about services: technical assistance, designing, cost-share, etc.	Send out annually	1	X
Shoreline Workshop	June 10	2	X
Mailing to new lakeshore residents about technical assistance, cost-share, and workshops	Summer	2	
Raingarden Tour	Summer	2	X
Native Shoreline video	Summer	1	
Autumn Fare Demonstration: Smart Salting	October	2	X
Distribute smart salting cups	Winter	1	X

Goals Beyond 2020

The activities outlined in this report are geared toward achieving positive behavior change for the long term. This is an ongoing process and changes in perceptions and lasting behaviors are difficult to measure. Many of these activities will be repeated in future years as a constant reminder to the public that “Clean Water Starts with Me.” As new ideas and opportunities emerge, new activities will be added to keep SCWEP relevant and reaching as many people as possible. SCWEP goals beyond 2020 include:

- Changing residents’ way of thinking about stormwater runoff and their roles in making a difference to water quality
- Providing support and programming to partner agencies and others
- Showing the public that their everyday decisions do matter by including personal success stories in press releases and outreach
- Increasing workshop participation numbers to create greater impact and personal behavior change
- Building and enhancing partnerships between SCWEP and local citizen groups (i.e., lake associations, lake residents, sportsmen’s clubs, existing social networks, community service clubs, etc.)