

Stream Status

Implementation Strategy: Focus

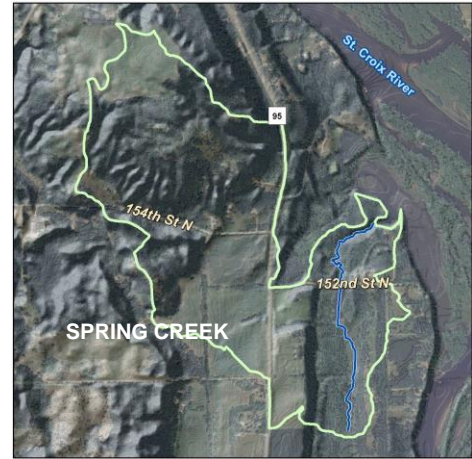
Water Quality Rating: A (2022)

Stream Health Grade: C (2014)

Stream Class: Groundwater Large Watershed Nonurban (GWL)

Stream Type: Sand dominated, slightly entrenched, meandering channel, incised in gentle terrain.

Subwatershed Land Cover: 7% developed, 50% forests and woodlands, 8% grassland/shrubland/sparse vegetation, 1% lakes and open water wetlands, 30% planted or cultivated, 5% wetlands.



Macroinvertebrate Data*

Metric	Score 2014	District Mean 2014	Score 2003	District Mean 2003
Chironomidae Species Richness (total number)	-	-	27	21
Invertebrate Taxa Richness	19	19	33	31.75
HBI	4.00	4.43	4.61	4.4
% EPT	8.89	20.01	41.55	36.9
% Dominance	82.61	50.14	32.42	35.5
Three Most Common Families	Scuds, Baetid mayflies, Blackflies	Scuds, Baetid mayflies, Bkflies	Scuds, Baetid mayflies, Midges,	NA
Species of Note	Midges, caddisflies	Midges, caddisflies	NA	NA

Water Chemistry*

Parameter	July 2013-2014	MPCA NCHF Benchmark Miss/St. Croix River		District Mean 2013-2014	District Mean 2003
TP [µg/L]	34.180	90	55	54.63	42.47
TN [µg/L]	1.25	NA	NA	2.67	NA
TSS [mg/L]	3.13	8.8	7.5	9.02	15.96
NO ₂ +NO ₃ [mg/L]	NA	0.1	0.203	NA	2.15
NO ₃ [mg/L]	1.11	NA	NA	2.48	NA
NH ₄ [mg/L]	0.002	NA	NA	0.006	NA
Mean Temp [C]	NA	13	10.3	9.6	9.95
Temp S&W [C]	16-8	NA	NA	14.3-4.8	NA

*Refer to *Watershed Management Plan* Section V, for definitions of macroinvertebrate metrics and water chemistry parameters.

BASIC FACTS

Section	18
Township	31
Range	19
Stream Length	0.61 miles
Subwatershed Area	315 acres
Baseflow	4.38 cfs
Bankfull Flow	12.47 cfs
Entrenchment Ratio	1.30
Width:Depth Ratio	17.00
Sinuosity	1.60
Slope	0.01
Rosgen Class	F5
DNR Trout Stream	No

Fish Species:

Brook Trout

CMSCWD References:

- Lower St. Croix River Select Small Tributary Streams: An Aquatic Biotic Assessment, Ten Years Later (2014)
- Lower St. Croix River Spring Creek Stewardship Plan (2003)

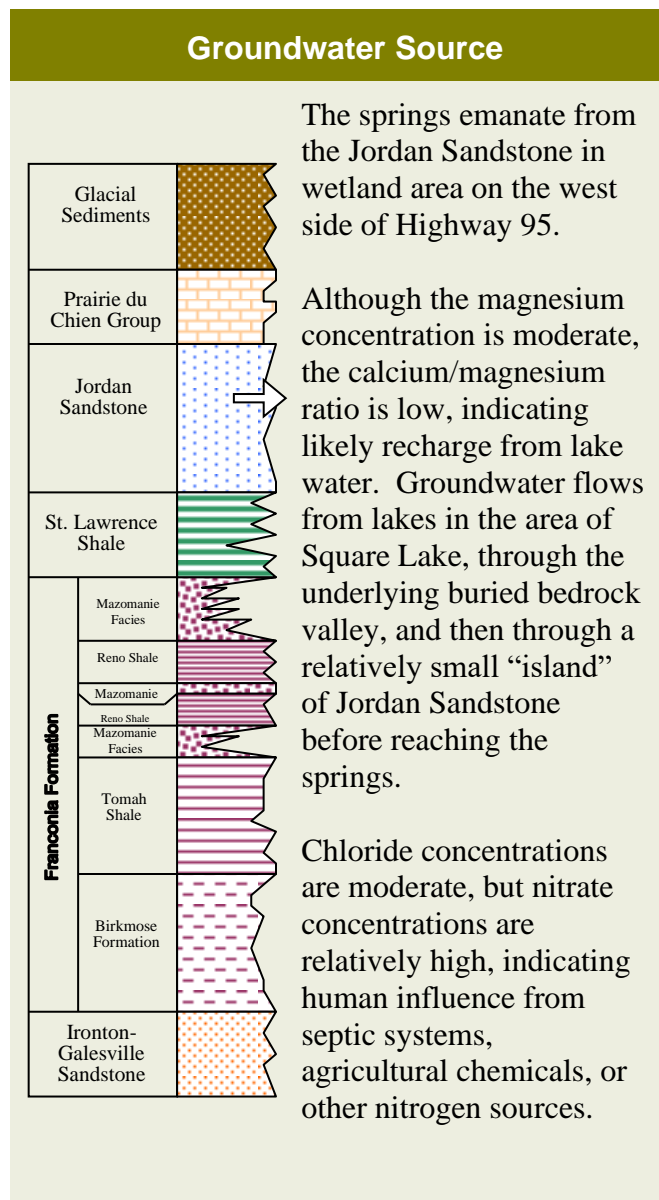
Overall Assessment: Spring Creek

Spring Creek has the second highest base flow in the study area (4.38 cfs) and yet has a relatively small watershed of 312 acres. Spring Creek discharges from a large tamarack seepage swamp located on the middle terrace of the St. Croix River. Near the northerly terminus of the tamarack seepage swamp, a small pond is formed behind a gravel driveway. Downstream of the driveway, Spring Creek meanders through a mixed hardwood seepage swamp with small, rich fen openings. Within one of these openings, a large boiling spring discharges groundwater into the creek. Throughout this 1000 foot reach, Spring Creek continues to accumulate additional flow from the numerous groundwater seeps in this area. The watershed of Spring Creek west of Highway 95 is dominated by forest, agricultural fields, prairie openings and large lot residential development. Because soils are well drained and flow paths often poorly defined, little surface runoff occurs to Spring Creek from this area.

Both the tamarack swamp and mixed hardwood seepage swamp associated with Spring Creek are mapped by the MN County Biological Survey on the Natural Communities and Rare Species Map for Washington County. Both of these wetlands are typed as circumneutral subtypes because of the pH-neutral groundwater seeps that support these communities.

An extensive patch of bog bluegrass (*Poa paludigena*) is documented in the floodplain where Spring Creek outlets to the St. Croix River. Red shouldered hawk (*Buteo lineatus*) is also documented in this area. Spring Creek ranks high in species richness for macroinvertebrates and has very high water quality. This stream supports a naturally reproducing population of brook trout (*Salvelinus fontinalis*). In addition, The Blanding's turtle (*Emydoidea blandingii*) is a state-listed threatened species that may be encountered throughout the watershed.

Based on macroinvertebrate data from the 2014 Watershed Management Plan Update, Spring Creek has a poor water quality rating of 'C.' Hilsenhoff's biotic index (HBI) is good, but the data show significant decrease in percent EPT (percent of pollutant intolerant mayflies, stoneflies and caddisflies in the sample) and a very high dominance by one taxa (scuds) compared to the 2003 data. The taxa richness has also decreased.



Key Management Recommendations

- The St. Croix Research Station should consider replacing the existing control structure where Spring Creek crosses under 152nd Street. This structure should be replaced with a culvert with the invert set to the original stream channel elevation. Care should be taken to minimize discharge of sediment from the pond to the creek and the St. Croix River. Although the pond south of 152nd Street would be lost, a significant section of upper Spring Creek could be restored.
- The watershed draining to Spring Creek from Highway 95 and areas to the west should be managed to promote infiltration. Infiltration ponds may require pretreatment due to the highly permeable soils and shallow depth to water table/bedrock.
- Buckthorn should be controlled within the mixed hardwood seepage swamps, fens, and adjoining oak woodland/forests. Where appropriate, replanting of native trees and shrubs should be completed, especially where shady cover along Spring Creek is lacking.

* See Appendix D for additional information on District stream management activities.

Planned Implementation Activity

- As a result of the Focused Implementation Strategy, a detailed implementation plan will be developed in Summer 2019.
- Conduct at least 2-years of macroinvertebrate sampling (May and September) and calculate IBI and Stream Health Grades.
- Conduct Rapid Stream Assessment
- Conduct Targeted Tributary Monitoring

THIS PAGE LEFT INTENTIONALLY BLANK