

Stream Status

Overall Strategy: Routine Watershed Management

Water Quality Rating: C-

Stream Class: Surface Water (SW)

Stream Type: Unstable, incised, highly erodible channel primarily comprised of an unconsolidated, heterogeneous mixture of gravel, some small cobble, and sand.

Subwatershed Land Cover: 22% developed, 20% forests and woodlands, 16% grassland/shrubland/sparse vegetation, 40% planted or cultivated, 2% wetlands.



BASIC FACTS

Section	14
Township	30
Range	20
Stream Length	0.09 miles
Subwatershed Area	1517 acres
Baseflow	0.97 cfs
Bankfull Flow	29.49 cfs
Entrenchment Ratio	1.30
Width:Depth Ratio	33.00
Sinuosity	1.10
Slope	0.04
Rosgen Class	F4
DNR Trout Stream	No

Fish Species: None

CMSCWD References:
Lower St. Croix River Spring Creek Stewardship Plan ('03)

Macroinvertebrate Data (2002-2003)*

Metric	Score	Mean of Spring Creeks
Chironomidae Species Richness	17	21
Invertebrate Taxa Richness	19	31.75
HBI	5.1	4.4
% EPT	11.8	36.9
% Dominance	63.1	35.5
Most Common Families	Midges, Elimidae Beetles and Netspinner Caddisflies	

Water Chemistry (2000-2002)*

Parameter	Site Mean	Site σ	MPCA NCHF Benchmark MIS/St. Croix River		Mean of Spring Creeks
TP [$\mu\text{g/L}$]	24.06	14.75	90	0.55	42.47
NO ₂ +NO ₃ [mg/L]	1.06	1.20	0.1	0.203	2.15
TSS [mg/L]	13.76	23.64	8.8	7.50	15.96
Temperature [C]	12.25	9.40	13.0	10.30	9.95

*Refer to 2010 Watershed Management Plan Section V, Stream Management Plans for definitions of macroinvertebrate metrics and water chemistry parameters.

Overall Assessment: Highway 95 Ravine

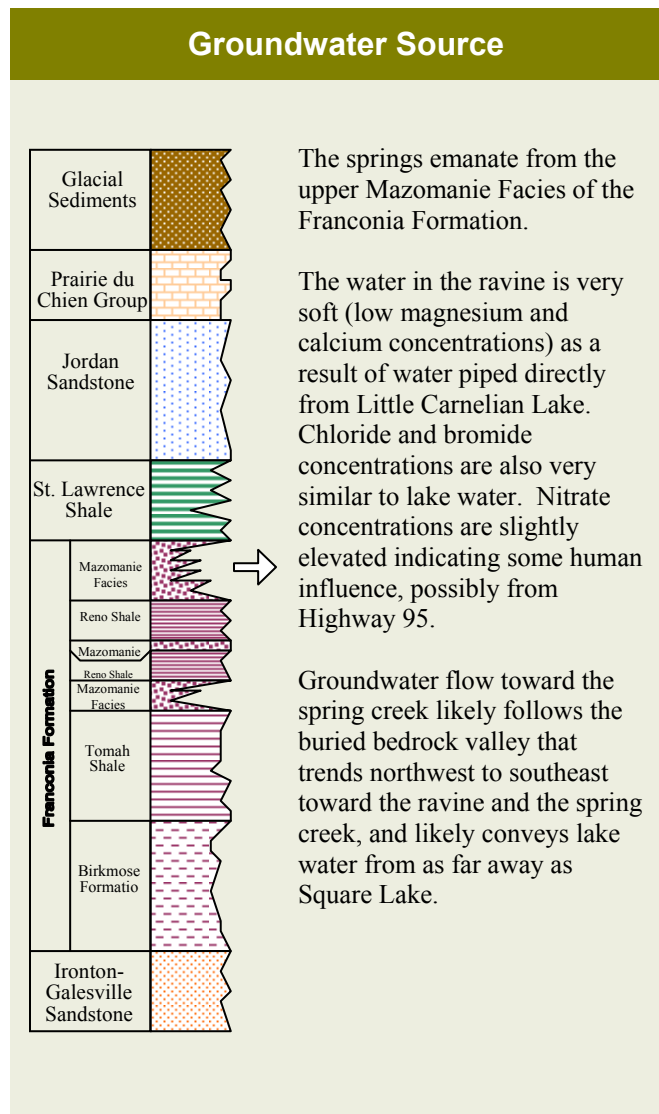
Highway 95 Ravine receives discharge from Little Carnelian Lake via the District's 30-inch pipe/outlet system constructed in 1984/1985. This pipe travels approximately three miles to the junction of Highway 95 and Arcola Trail where it outlets as a 54-inch diameter pipe into an old WPA (Work Program Administration) concrete channel. The WPA channel descends into the ravine, along with Highway 95, and outlets to the top of a 20-foot waterfall. From this waterfall, a natural stream channel flows for several hundred feet across floodplain and outlets to the St. Croix River.

Only within the lower-most reach of 95 Ravine does groundwater of any significance appear to contribute to flows within this creek. Some of this limited groundwater discharges just below the waterfall; however, due to the permeable floodplain soils, most of this flow seeps through the streambed and once again becomes groundwater. The 1500-acre watershed contributing to 95 Ravine contains a mixture of cropland, old fields, woodland, and scattered, large-lot development.

The lower portion of 95 Ravine outlets through a dramatic gorge that drops down to the St. Croix River, just north of the Historic Boom Site. This gorge encompasses maple basswood forest, white pine-hardwood forest and dry cliff communities.

Below the waterfall, 95 Ravine flows through a good quality silver maple flood plain forest. Rare features known from the lower portion of 95 Ravine include: fox snake (*Elaphe vulpine*), kintentails (*Besseyia bullii*), red-shouldered hawk (*Buteo lineatus*), buttonbush (*Cephalanthus occidentalis*), Louisiana waterthrush (*Seiurus motacilla*) and waterhorehound (*Lycopus virginicus*). The Blanding's turtle (*Emydoidea blandingii*) is a state-listed threatened species that may be encountered throughout the watershed. Except for the lower potion of this creek, within the floodplain of the St. Croix River, no fish are known to exist in this stream.

Based on macroinvertebrate data from the 2003 *Lower St. Croix River Spring Creek Stewardship Plan*, the 95 Ravine has a water quality rating of 'C-.' Hilsenhoff's biotic index (HBI) is fair but the data show poor diversity and percent EPT (percent of mayflies, stoneflies and caddisflies in the sample). For a fishless stream, macroinvertebrate data should be better.



Key Management Recommendations

- The CMSCWD should evaluate options to lower stormwater runoff rates and volumes into this creek. A potential option is to daylight the outlet pipe from Little Carnelian Lake and infiltrate storm flows, where possible. Options that direct stormwater originating along Highway 95 should also be considered.
- The lower-most portion of this creek is subject to foot traffic and bank erosion. The CMSCWD should work with the NPS to reduce foot traffic along the creek and reestablish vegetation, where appropriate.

* See *2010 Watershed Management Plan* Section V, *Stream Management Plans* for additional information on District stream management activities.

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