Stream Status

Overall Strategy: Routine Watershed Management

Water Quality Rating: A+

Stream Class: Groundwater Large Watershed Nonurban (GWL)

Stream Type: Slightly entrenched, meandering, gravel dominated, channel. This stream is relatively stable but there is moderate to severe streambank erosion in the lower portion of the creek due to high surface water inputs.

Subwatershed Land Cover: 19% developed, 37% forests and woodlanes, 7% grassland/shrubland/sparse vegetation, 1% lakes and open water wetlands, 30% planted or cultivated, 6% wetlands.

BASIC FACTS

Section	19
Township	32
Range	19
Stream Length	0.51 miles
Subwatershed Area	919 acres
Baseflow	0.35 cfs
Bankfull Flow	5.28 cfs
Entrenchment Ratio	1.80
Width:Depth Ratio	13.00
Sinuosity	2.10
Slope	0.06
Rosgen Class	B4a
DNR Trout Stream	No

Fish Species:
Brook Trout, Burbot

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

Macroinvertebrate Data (2002-2003)*

Metric	Score	Mean of Spring Creeks
Chironomidae Species Richness	20	21
Invertebrate Taxa Richness	33	31.75
HBI	4.61	4.4
% EPT	41.55	36.9
% Dominance	32.42	35.5
Most Common Families	Midges, Black Flies and Small Minnow Mayfly	

Water Chemistry (2000-2002)*

Parameter	Site Mean	Site σ	MPCA NCHF Benchmark MIS/St. Croix River		Mean of Spring Creeks
TP [µg/L]	33.57	3.38	90	55	42.47
NO_2+NO_3 [mg/L]	2.49	0.74	0.1	0.203	2.15
TSS [mg/L]	4.83	5.14	8.8	7.5	15.96
Temperature [C]	6.90	3.98	13.0	10.30	9.95

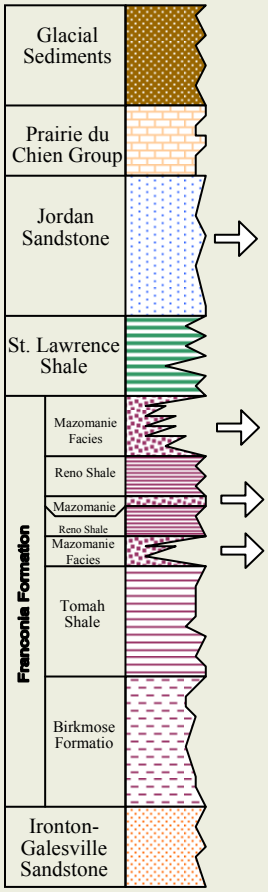
*Refer to *2010 Watershed Management Plan* Section V, *Stream Management Plans* for definitions of macroinvertebrate metrics and water chemistry parameters.

Overall Assessment: Clapp's Stream

The contributing watershed to Clapp's Stream is 712 acres and includes portions of downtown Scandia. A dry ravine with ephemeral flows drains a mixture of forestland, agricultural fields and residential areas along the east side of Scandia. The last one mile of this dry ravine is severely eroded and contributes significant sediment loads to the lower portions of Clapp's Stream and the St. Croix River. Below Highway 95, Clapp's Stream descends downward to an upper terrace of the St. Croix River. It is along this slope that Clapp's Stream receives groundwater inputs from a series of small seeps.

Most of these seeps, however, soon disappear under a deep deposit of sediment that has filled the stream channel though this reach. Just upstream from the Wisconsin-Central Rail, numerous seeps provide additional groundwater, and as they converge, Clapp's Stream becomes a perennial stream. From the Wisconsin-Central Rail, Clapp's Stream flows a short distance through a black ash and mixed hardwood seepage swamp, crosses CR 53, and then begins its descent to the St. Croix River. Clapp's Stream contains a naturally reproducing population of brook trout (*Salvelinus fontinalis*). Burbot (*Lota lota*), a fish found locally within clear, cold streams is also found here.

Groundwater Source



Because of the high relief in this area, springs emanate from several bedrock formations. Water in the spring creek is usually a combination of surface runoff and groundwater.

Water samples from the upper parts of the creek (especially the upper parts of the north branch where discharge from the Jordan Sandstone was more predominant) had relatively soft water, indicating mixing with surface water runoff. These samples also had chloride concentrations approaching 20 ppm, indicating influence from human activities.

Clapp's Stream flows through, and receives significant groundwater inputs from one of the larger groundwater dependent wetland complexes in the study area. Extending from the north boundary of William O'Brien State Park to just north of the junction of CR 53 and the Wisconsin-Central Rail, this wetland complex includes rich fen, black ash seepage swamp and mixed hardwood seepage swamp. Downstream of CR 53, Clapp's Stream drops over a waterfall into a scenic gorge. The gorge contains sheer rock walls of sandstone overlaid by limestone. A good quality sand-gravel prairie opening borders the south-facing rim of this gorge. Where groundwater seeps occur within this gorge, unusual wet cliff communities dominated by mosses and ferns occur. A diverse mixture of high quality white pine-hardwood forest, maple-basswood forest and mixed hardwood seepage swamp occurs along this lower section. Records for several rare species including red shouldered hawk (*Buteo lineatus*), bald eagle (*Halliaeetus leucocephalus*) and a special concern vascular plant are noted for this area. The Blanding's turtle (*Emydoidea blandingii*) is a state-listed threatened species that may be encountered throughout the watershed. The lower portion of Clapp's Stream encompasses one of the most scenic and biologically diverse areas within the study area.

Based on macroinvertebrate data from the 2003 *Lower St. Croix River Spring Creek Stewardship Plan*, Clapp's Stream has an rating of 'A+' in water quality. The stream has an excellent Hilsenhoff's biotic index (HBI) and good values for other measures including percent EPT (percent of pollutant intolerant mayflies, stoneflies and caddisflies in the sample). Fish found in the stream as discussed above (brook trout and burbot) also indicate high water quality.

Key Management Recommendations

- Stormwater rate and volume control should be implemented for portions of the City of Scandia draining east towards Clapp's Stream. Existing urban areas should be retrofitted where possible, while runoff rate and volume for all new development should be maintained at predevelopment levels.
- Several landlocked basins are present to the northeast and east of the City of Scandia. These basins should not be outletted, but rather should be managed to store stormwater, consistent with stormwater management standards for sensitive wetlands.
- The ephemeral stream channel west of Hwy 95 is severely eroded from a combination of high flow rates, highly erodible soils on steep slopes, and a lack of ground cover vegetation. The City of Scandia and the District should work together with private landowners to stabilize this ravine once upstream stormwater rate control is achieved.
- The lower portion of Clapp's Stream contains sediment deposition from upstream erosion. Additionally, this lower reach has several areas of active streambank erosion, also contributing to instream sedimentation. The District should work with private landowners to stabilize these areas of bank erosion. Instream fish habitat improvements could also be incorporated into these bank stabilization efforts.

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

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