

Flute Reed River Watershed Guide

DRAFT for comment
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This is our first attempt at a watershed guide.

We welcome your comments and suggestions!

Prepared by the Flute Reed Partnership

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What is the Flute Reed Partnership?

We are landowners in and near the watershed who started meeting in April 2006 to discuss and share our concerns for the river. We are a "grassroots" watershed group hoping to involve everyone in the watershed. Our goal is to educate ourselves and our community about the river's ecosystem and to positively influence its environment. This is a voluntary, non-regulatory effort. We meet monthly and invite everyone to join us. Please call Dick Betz (475-2709) or Rick Schubert (475-2778) for further information.

Why the Partnership name? We want to partner with our neighbors and fellow stakeholders to accomplish the goal above. We also want to partner with county, state and federal agencies, higher education institutions, other citizen groups and anyone else who can help with support and assistance toward this goal.

Our mission is: To foster stewardship within the community, to maintain, restore and enhance the watershed health of the Flute Reed River.

Introduction

"We approach watershed management with a large degree of humility."

Watershed ecosystems are enormously complex. Our understanding of how the Flute Reed River works is elementary, but our goal is to learn as we proceed. We may never know all we need to know, but that fact need not stop us from working on our watershed. That ecosystems are inherently resilient is to our great advantage.

Why should we care?

Our economy in Cook County and a healthy environment are closely linked. Most property owners in the Flute Reed River Watershed purchased their property, in part, because of the quality of the environment. The economic value of their investment is linked to the health of the river, woods and Lake Superior. If the ecological health declines, so does the value of our property in real dollars.

What is this watershed guide?

It's an adaptive plan. We will learn as we go along and this plan will evolve. We'll make our best attempts and improve as we proceed. This plan does not have all the answers, let alone all the questions. But it does have enough to get started and still leaves room for your good ideas and contributions.

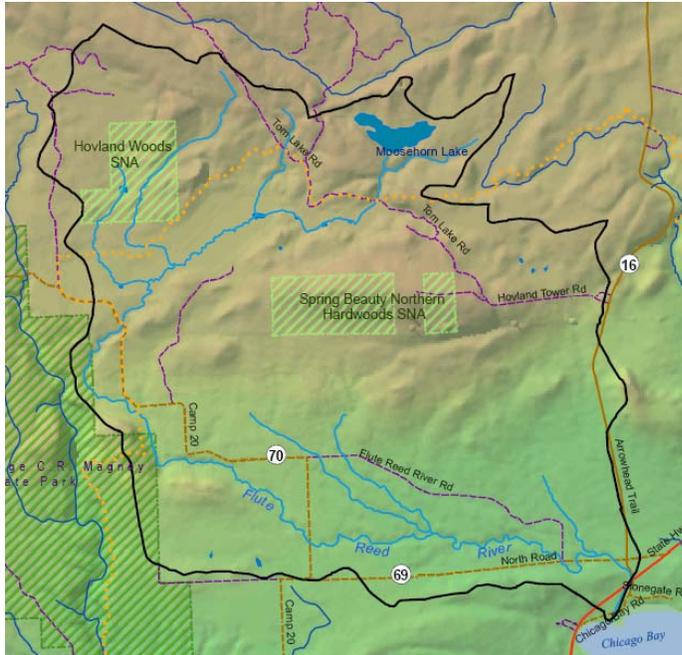
We will reach out to all stakeholders in the watershed to try and understand their needs and concerns. Those of us who are "hands on" will have plenty to do.

A word of caution: Our society typically thinks long term planning is 12 months. Unfortunately ecosystems measure time in decades and centuries. The final outcome of good work done today might not be fully apparent for many years.

The watershed at a glance

The Flute Reed River empties into Lake Superior at Hovland, 18 miles northeast of Grand Marais, MN. It is designated a trout stream by the state. The river is 9.2 miles long. Average width in the upper section is 11 feet and 15 feet in the lower section. The watershed is 10,485 acres and is predominantly second and third growth forest with a remote and rural character.

The watershed is mostly mixed hardwoods and conifers on gently to moderately sloping glaciated and lake-deposited soils. Soil type consists mostly of clay with some boulders, gravel and sand.



Soils are generally more rocky close to Lake Superior. Bank cover is mixed hardwoods consisting chiefly of alder and aspen.

Watershed land ownership is 75% private, 17% state and 8% federal. Land ownership adjacent to river is 96% private, 2% state and 2% federal. Most of the privately owned land in Cook County is in the Hovland area which includes the watershed. Main river road crossings are at mile 0.1, 0.3, 0.8, 1.1, 1.3, 3.5, 6.7 and 8.8.

The population of Cook County increased 48% from 1990 to 2000 and is projected to continue to increase at 50% through 2030. There are 316 parcels in the watershed. Currently some larger parcels are

being subdivided and sold off. The lower portion of the Flute Reed watershed has a higher density of housing and contains a larger percentage of the overall population. This mix may change as development continues.

Minimum lot size in the watershed ranges from one acre along Lake Superior to 20 acres, increasing as you move away from the lake. The Flute Reed is classified as a "Remote River" by the DNR and structure setback is 75 feet on property close to Lake Superior and 200 feet further inland.

Storm water conveyance is by ditches and foundation drains. Wastewater is managed primarily with on site septic systems. Some residents compost their human waste and utilize gray water treatment systems.

Five reasons to care about the river:

- 1) The negative impact of sediment and pollutants on Chicago Bay and greater Lake Superior.
- 2) The Flute Reed is one of the best steelhead trout rivers on the North Shore. It previously was home to brook trout and german brown trout as well.
- 3) The economic impact it could have on our property values.
- 4) The aquatic and wildlife it supports
- 5) The aesthetics and scenic beauty of the river itself, not to mention the musical sound it produces

What are the issues?

The first table below lists the pollutants and conditions that are threatening the river.

Pollutants/Conditions Threatening the River
<p><u>Known:</u></p> <p>Sediment</p> <p>High water temperature in summer</p> <p>River dries up some summers</p> <p><u>Possible:</u></p> <p>Nutrients - phosphate and/or nitrate</p> <p>Pathogens, including e-coli?</p> <p>Chemicals?</p> <p>Septic runoff?</p> <p>Pesticides?</p> <p>Oil & grease?</p>

The causes listed on the right side of this second table are what we want to address.

Sources of the Pollutants/Conditions	Causes of those Sources
<u>Known:</u> (in our opinion)	<u>Known:</u> (in our opinion)
Eroding red clay stream banks	High water flows in spring
	High water flows after heavy rains
	Increasing amount of impervious surfaces leading to rapid water runoff
Roads, driveways and other impervious surfaces	Inadequate erosion control at some road crossings, ditches and driveways
	Location and design of some roads and driveways that encourages rapid water runoff
Construction (not all)	Inadequate erosion control at some construction sites
	Lack of large coniferous trees along river
Insufficient riparian areas (zones adjacent to river)	Failure to leave adequate border along river when logging
	Clearing lawns or openings to river
Inadequate culverts	Inadequate planning or age
<u>Possible:</u>	<u>Possible:</u>
Failing or no septic systems?	(Obvious)
Unpermitted dumps?	(Obvious)
Livestock?	Livestock permitted too close to river?
Residential and forestry fertilizer & pesticides?	(Obvious)

What is the top priority?

The number one pollutant in the Flute Reed River is sediment.

- Much of it originates in the natural red clay banks of the river. Other sources include roads, driveways, ditches and construction sites. We believe the sediment contains phosphorous and/or nitrates and this is likely causing the extensive algae blooms in Chicago

Bay. In years of normal snowfall, sediment from the Flute Reed River can turn the water in Chicago Bay brown from the first part of April to the end of June.

- The sediment also fills the trout pools, covers the gravel that fish need to spawn and degrades the habitat for fish and the bugs that make up their food source.
- And a brown river is also not very pleasing to look at. It detracts from the natural beauty of the area.



The number one cause of the sediment is high water flow in the river after snow melt and heavy rains.

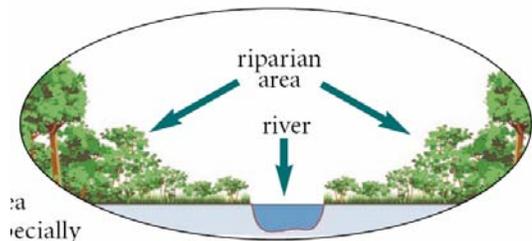
- The water runs off the land too quickly turning the river into a raging torrent. Then the river slows to a trickle or can even dry up. The river is too “flashy”. Some long time residents say the river used to be more steady. Some say it used to be worse. (See Appendix A for possible explanation.)
- If the river didn’t so frequently turn into a torrent with high, swift water then the clay banks would erode less and not slump into the river. We believe we need to slow down the river.

Nutrients, especially phosphorus are directly tied to the sediment because red clay in many areas around Lake Superior naturally contains phosphorus. High water temperature in summer can be reduced by improving the riparian borders. (See next section) The river drying up some summers will be helped by holding the water on the land. There is no evidence yet that the possible pollutants listed earlier; pathogens, e-coli, chemicals, septic runoff, pesticides and oil & grease, are a problem on the Flute Reed. We will watch for these as we proceed.

So what can be done?

Slow down the water and keep it on the land longer:

- The importance of the river’s riparian borders cannot be overemphasized. Work to improve these areas by encouraging conifer growth, especially white cedar. This will help slow down and catch water flows. It will also eventually shade the river, reducing summer temperatures. There is a lot we can do here nursing existing young trees by clearing brush and weeds around them and fencing for deer control, if needed. We can also plant new trees where appropriate and fence as needed.



- Discourage logging and clearing within 200 feet of the river depending on the slope of the land. Talk with loggers, land owners, and developers.
- Encourage water runoff management with installation of rain barrels and landscaping with native vegetation including natural swales, catch ponds, rain gardens and flow diverters. This would include discouraging large grass lawns balanced with a concern for fire and Firewise suggestions. Go for the natural look!
- Encourage rock check dams in steep ditches to slow down and hold water.

Help prevent soil eroding in the first place:

- Encourage and help vegetate slopes along roads, driveways and culverts. Plant native grasses and wildflowers to stabilize bare, eroding areas. Identify the most serious cases and work with landowner or county to secure permission and possible funding. Organize neighbor work groups to help. Get our hands dirty!



- Follow best management practices with any new road or driveway construction for erosion control
- Stabilize the worst of the slumping clay banks on the river itself. The DNR identified these in a Turbidity Study in 2001. Try bio-engineering one of them.
- Make sure culverts in the watershed are not undersized and in good condition. This would help prevent wash out.

Minimize construction and development impact on the land:

- Driveways and new homes located and designed to minimize water runoff and hold water on the land.
- Minimize impervious surfaces. Encourage the use of shared roads and low impact development.
- Advocate the avoidance of land disturbing activities on steep slopes.
- Work with the Cook County Highway Department Engineer
- When violations of the county Storm Water Ordinance are observed, work through the county planning and zoning department for inspection and enforcement.

What will we do in the next 5 years?

- **Education** We see education, of ourselves and our community, as extremely important. We believe unsound land-use practices stem more from lack of knowledge than lack of concern.

Classes and Workshops

- 1) We are working on holding a series of workshops in Hovland this summer for landowners to learn about forest management in a watershed for their property. We are working with the U of M Extension Service, UMD Sea Grant and the Cook County Extension Service to organize and conduct them. There will be no charge and open to all.
- 2) We will consider future community workshops, including possibly organizing a rain barrel construction workshop.

Outreach

- 1) We hope to continue working with the landowners who initially attend classes to help, if they wish, improve their land based on the ideas in the previous section. We hope to be able to also assist them getting and implementing DNR Forest Stewardship Plans.
- 2) In addition to the community and self education effort we will focus on four target audiences: contractor/builders, developers, loggers and realtors. We will attempt to learn about each of their perceptions about water quality. We will consider possible barriers that may prevent our message reaching them. We will then develop specific messages for each attempting to answer why they should care and what they could do. We will consider contacting each person one-on-one to exchange information. We will learn from this effort and adopt our approach accordingly.

● Projects

- 1) Maintaining and improving the Flute Reed's riparian border is the single most important project. Because 96% of this border area is privately owned, it is critical to work with the landowners so they understand its importance and that we can work together to enhance this zone.



- 2) Working with the county and private landowners to reduce erosion by planting on bare slopes along roads, culverts and driveways. (As outlined in "Help prevent soil from eroding in the first place" above)
- 3) We hope to contact any new property owners in the watershed, as neighbors, to ask if we could meet them, inform them of these issues and direct them to services and sources of information if they wish.
- 4) Identify the most critical areas in the watershed in terms of their sediment contribution. One method could be to monitor turbidity, flow level and temperature at a number of different lo-

cations along the river. Then by comparing these readings, sections could be identified as the most problematic. These areas could then be more closely examined and inventoried, including further monitoring.

- **Marketing**

- 1) We are working with Sea Grant on a brochure to help make people aware of who we are as well as what we're not.
- 2) We will keep the media, primarily local newspapers and WTIP radio, informed of our activities and projects.
- 3) Possibly publish a quarterly newsletter.

Develop an evaluation process (still needs to be done)

Possibilities include: water quality and quantity monitoring to verify our opinions and conclusions in this guide; numbers of events held; number of trees planted and/or protected; number of contacts in the watershed.

Celebrate our Successes

We will have some and we will celebrate them! This is a relatively small watershed and it will react to change. Stay tuned.

In conclusion, we have the opportunity to protect the natural resources that people in other places have lost. We can maintain our reputation as a place of unsurpassed natural beauty and clear waters. And we can do it even as we grow and promote economic growth in our community.

Appendix A:

How did the river get the way it is today?

One can only make educated guesses on what the river system and watershed were like 200 years ago. Cook Country once supported caribou. What kind of streams flowed from that landscape? The only major factor that changed conditions back then was fire. Boreal forest consisting of white pine, some red pine, spruce, tamarack and white cedar dominated the landscape.

The snow melt and rainfall that ran off the land 200 years ago had a much different path than today's water does. The duff, a thousand year layer of composting pine needles that laid over massive intertwined root systems would have sent the streams a much different charge of water. The dense forest cover shaded and slowed the snow melt over a much longer time and the forest acted like a sponge holding the water. Runoff events and floods would have been tempered, peak flows would have been lower and the duration of flow lengthened over a period of time. The river probably ran much steadier though out the year.

As Europeans settled the region in the mid 1800's the lands, streams and wetlands dramatically changed. Logging removed much of the forest cover. Hot fires and attempts at land clearing took out the duff layer, all of which resulted in an increase in the volume and velocity of water entering streams. (One Wisconsin study suggests sediment loads increased five-fold at that time.) Erosion and sedimentation was probably even worse then. Streams on the north shore remain sensitive to erosion partly because of the damage that occurred 100 years ago.

The forests that grew back helped stabilize the soil, but land clearing, rooftops, roads, driveways and construction continue to quickly usher water into rivers causing erosion. It is now most likely better than conditions earlier in the nineteenth century. But without careful logging, lower impact development, respect and care for the river's riparian borders the sedimentation could approach those levels again.

Appendix B

Beavers – good or bad?

(Still needs work) See page 39 of Chocoday Watershed Plan and Paul Sandstrom's article

Appendix C

Future possibilities beyond 5 years

- Identify any tributaries contributing high loads of sediment to the Flute Reed and then determine the cause/s up stream. Only a few of any the tributaries have been mapped We need GIS assistance to map these tributaries so they can be identified as critical areas or not.

- Lack of beaver dams has been identified by some as a major contributor to the river's issues. Others say beaver dams are a problem in themselves. We will continue to explore this. (See appendix B)

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