TAMARACK WATER ALLIANCE

Tamarack Water Alliance Community Zoom Meeting
Wednesday, August 5, 2026 10am CT

TOPIC: Manoomin Restoration in the St. Louis Estuary
BY: Matt Steigler, Senior Water Resources Management Specialist, Wisconsin DNR

This presentation will describe the challenges and success of the extensive restoration and partnership to restore the St. Louis River Estuary wild rice beds and wildlife habitat after 150 years of commercial use from logging and mining. This legacy of historic commercial uses of the estuary disrupted and altered these natural habitats, as shorelines and near shore areas were dredged and developed, and chemical contamination impacted the waters.

The St. Louis River Estuary is a unique, 12,000-acre wetland complex between Duluth, MN and Superior, WI. Here, water from the St. Louis River mixes with the water from Lake Superior, producing conditions that result in an incredible amount of biological productivity. Numerous species of fish, birds, and other wildlife depend on the Estuary for their survival. The Estuary also includes the Duluth Superior Harbor, mid-America's gateway to global trade and the nation's busiest freshwater harbor. More than a quarter million residents and 3.5 million tourists live, work and visit the area every year.

Matt Steiger, Senior Water Resources Management Specialist, Wisconsin DNR, will speak of the hard work, challenges, success, and ongoing research to restore Manoomin to the Estuary. He will be outlining the progress that has been made in bringing a significant amount of Manoomin back to the estuary and how we have integrated education, outreach and research into the work.

Register for the meeting to receive the Zoom link at **tamarackwateralliance.org/php/eventreg.php?eid=16** or from our home page at **tamarackwateralliance.org**.

Public Comment Period Open
Talon Tamarack High Sulfide Mine

Make Your Voice Heard! The Public Comment period for the Talon Tamarack High Sulfide project is now open until September 14, 2026. This is the first formal opportunity for Minnesotans to provide feedback on the project proposal during the environmental review process.

Voice your concerns at Mille Lacs Band Water Over Nickel:
waterovernickel.com/public-comment-resources.

Visit the Tamarack Water Alliance resource page for comments:
tamarackwateralliance.org/scoping.html.

Visit the Tamarack Water Alliance page outlining impacts on the St. Louis Bay Estuary:
tamarackwateralliance.org/estuary.html.

Visit the Main DNR Talon EIS Site:
https://www.dnr.state.mn.us/input/environmentalreview/tamarack-nickel-project.html.

Download the Project Scoping Document:
https://files.dnr.state.mn.us/input/environmentalreview/tamarack-nickel/2026-07-07-tal-draft-scoping-decision-document.pdf.

Water Over Nickel Events

- **Sunday, August 2, 2026 - RIPPLE 2-4pm (doors open at 1:30pm)**
  Cultural Arts Exhibit at Grand Casino Hinkley, MN
  Join us for a fashion show featuring pieces by Mille Lacs Band of Ojibwe designers Adrienne Benjamin and TariaRose Aubid, followed by a conversation with the designers and tribal leaders about the role water plays in inspiring Indigenous art and connecting our communities. Guests can explore an exhibition featuring original work from Mille Lacs Band students, enjoy appetizers, and visit our postcard station to speak up for Minnesota's clean water during the Tamarack Mine public comment period. RSVP on Facebook to let us know you're coming. No ticket is required. Bring a friend, family member, or neighbor and join us as

we honor Nibi through art and action.
https://waterovernickel.com/ripple-cultural-arts-show

- **August 5- DNR Public Meeting McGregor High School, 5-9pm,** 148 S. 2nd Street, McGregor, MN 55760
- **August 12- DNR Public Meeting Blaine Sports Arena, 5-9pm,** 1750 105th Ave. NE, Blaine, MN 55449

Get Involved

REQUEST Presentation On Risks of Sulfide Mining for your group, Rotary Club, church or community club. Send us an email at waters@tamarackwateralliance.org.

DOWNLOAD Tamarack Water Alliance fact sheets/flyers here (https://tamarackwateralliance.org/resources.html#flyers).

SIGN-UP To Receive Updates from the DNR on Talon Metals Environmental Impact Statement here **here** (https://www.dnr.state.mn.us/input/environmentalreview/tamarack-nickel-project.html).

VOLUNTEER with the Tamarack Water Alliance. Send us an email at waters@tamarackwateralliance.org.

SIGN-UP FOR THIS NEWSLETTER: Encourage your friends, family and neighbors to sign up for the monthly Tamarack Water Alliance email newsletter at **tamarackwateralliance.org/php/articlereg.php**.

Manoomin Restoration and Stewardship in the St. Louis River Estuary
Matt Steiger, Wisconsin Department of Natural Resources

Wild Rice Restoration Efforts in the Allouez Bay - Manoomin from Sandy Lake Flowage, Aitkin Cty

The St. Louis River Estuary Manoomin Restoration and Stewardship Partnership is a collaboration of partners with the goal to Increase abundance and distribution of self-sustaining manoomin within the St. Louis River Estuary (SLRE) including areas in both Minnesota and Wisconsin to increase opportunities for culturally important harvest and benefit fish and wildlife species including contributing to the removal of the Loss of Fish and Wildlife Habitat BUI within the St. Louis River Area of Concern (WDNR 2024).

Manoomin - More Than Human Entity - A Relative for Anishinaabe
The Ojibwe name for wild rice is manoomin, a name that is often translated as "*the good fruit*" or "*the good berry*" (David et al. 2019). The significance of manoomin as a cultural keystone species for the Anishinaabe people cannot be understated; manoomin is a fundamental, more-than-human entity and relative who provides both spiritual and cultural connection to the land and strengthens relationships within the community (LSMCECS 2020). In the Anishinaabe worldview, the health of the people is inextricably connected to the health of manoomin. Manoomin harvest, in particular, is critical to community cohesiveness. Communities come together to participate in manoomin harvest, and the cultural traditions and history are passed down through generations. Healthy,

harvestable manoomin stands are vitally important for tribal community health and food sovereignty.

Manoomin is an important part of complex aquatic ecosystems in the western Great Lakes region. Manoomin serves as both food and habitat to a variety of fish and wildlife species throughout its growth cycle (MNDNR 2008, David et al. 2019). Many species of birds, fish, semi-aquatic mammals and insects utilize manoomin during their life cycle. Manoomin is also known to have an important role in nutrient cycling (Pastor and Walker 2006) and sediment transport in riparian systems (NRCS 2004, David et al. 2019).

Manoomin Decline

Restoration efforts have been underway for many years with significant resources invested since 2015. Over 96,000 pounds of manoomin have been seeded in the estuary at approximately 12 sites utilizing Great Lakes Restoration Initiative (GLRI) funding administered by the US Environmental Protection Agency. The St Louis River Estuary once supported vast stands of manoomin and was documented by white explorers in documents during the 1800s. Unfortunately, the distribution of manoomin has declined substantially across its historical extent in Minnesota and Wisconsin over the last century (Drewes and Silbernagel 2012), with an estimated 32% decline in the number of watersheds containing manoomin in Wisconsin and Minnesota since the early 1900s (WDNR 2021). A similar pattern of decline threatened the extirpation of manoomin in the SLRE (Schwartzkopf 1999). Analysis of William Hearding's navigational charts from 1861 suggested that upwards of 7,000 acres of suitable manoomin habitat in the SLRE was lost as shallow habitats were deepened by dredging operations for ship traffic or filled to facilitate shoreline development (DeVore 1978, MPCA & WDNR 1992, Hollenhorst et al. 2013).

Threats to Manoomin include Sulfur Discharge from Mining

Successful restoration and long-term stewardship rely on maintaining protections for manoomin in the SLRE. There are many threats to manoomin persisting in the SLRE and throughout its distribution. This includes climate change, water level fluctuations, herbivory, shoreline development and recreation, declining harvest participation, competition and displacement by other aquatic organisms and water quality parameters such as sulfate.

Data indicate that water quality parameters for manoomin are improving although threats to water quality persist. For example, the SLRE is situated downstream of a large watershed with valuable mineral resources that have supported the development of an established mining economy, with new copper-nickel mining projects proposed in the watershed. These types of mining developments bring with them concerns regarding sulfur discharges and impacts to aquatic systems.

Sulfur discharges affect manoomin when sulfate is converted to phytotoxic sulfide and reduces the uptake of nitrogen needed for manoomin growth (LaFond-Hudson et al. 2022). Upstream mining activities, which are a regionally significant source of sulfate, have the potential to impact manoomin growth in the SLRE. Studies have shown that low aquatic sulfate levels provide good habitat for manoomin populations (Moyle 1944, Pastor et al. 2017) and a federally approved sulfate standard of 10mg/L has been adopted by the State of Minnesota as well as the Fond du Lac and Grand Portage Bands of Lake Superior Chippewa to protect manoomin waters. Despite extensive research which confirms the deleterious impact of excessive sulfate loading on germination rates, plant biomass, and seed production, the Minnesota standard has been met with legislative opposition and legal challenges which have made enforcement challenging.

There is no analogous water quality standard for manoomin waters in Wisconsin although a variety of protective measures have been offered for consideration, including a statewide sulfate water quality standard and site-specific standards based on waterway characteristics. Sulfate was nominated as a Chemical of Mutual Concern under Annex 3, Part B, Section 2 of the Great Lakes Water Quality Agreement by the Fond du Lac Band of Lake Superior Chippewa and Great Lakes Indian Fish and Wildlife Commission in 2016. Consideration of sulfate under Annex 3 continues following updates to the Binational Screening Criteria and guidance on nominations in 2021. WDNR prepared a brief identifying important uses of sulfates and knowledge gaps and that affect management decisions in 2023 as part of Annex on-going deliberations. These nominations share concerns over sulfate's role in mercury methylation, eutrophication, and production of sulfide, which is directly toxic to animals and plants, including wild rice. This nomination is already informing science and research funded through GLRI and if the nomination is accepted, a binational strategy to address sulfate will be developed. The complex interaction between manoomin and sulfide (the reduced state of sulfate) and the resulting impact on viability is of particular concern for manoomin's long-term persistence in our region.

Elevated Sulfate Concentrations Toxic to Manoomin

Sulfate enters manoomin waters from bedrock weathering, mine drainage, wastewater treatment, and other sources and is converted to phytotoxic sulfide by anerobic bacteria present in the sediment. High sulfide concentration reduces the uptake of nitrogen which is essential for plant growth (LaFond-Hudson et al. 2022) and is associated with decreased seedling survival and lower seed biomass (Pastor et al. 2017, LaFond-Hudson et al. 2018). The weight of evidence suggests that sulfide exerts an important control on the presence of manoomin in otherwise suitable habitat (Myrbo et al. 2017a) by influencing seedling emergence and seed production. Historic

observations and analysis by Moyle (1944) indicate that manoomin may be present in waters where sulfate concentration is at, or below, 10mg/L and uncommon in waters where sulfate concentration exceeds 50mg/L. Experimental research by Pastor et al. (2017) determined that elevated sulfate concentrations are toxic to manoomin and result in reduced seed production, seed mass, and seedling emergence which, taken together, could lead to extirpation in a matter of years.

For more detailed information regarding the St. Louis River Estuary Manoomin Stewardship and Restoration, including references in this article and acknowledgement of partners that have contributed to this work visit St. Louis River Estuary Manoomin Restoration and Stewardship Plan. **https://dnr.wisconsin.gov/sites/default/files/topic/GreatLakes/St.LouisRiverEstuaryManoominRestorationStewa**

Protect Or Polute, Water Over Nickel Billboard

While All Eyes Are On Boundary Waters, A Different Mining Project Nears A Regulatory Yardstick - Talon Tamarack Project

From Kelly Applegate,commissioner of natural resources for the Mille Lacs Band of Ojibwe. : "...We're asking all of Minnesota to give a heartfelt response to what water means to them and to say, 'No, this is too much of a water-rich area to risk,'"

"...If a mine known as the Tamarack Nickel Project started operating, Applegate said, it would be within miles of the band's members, important cultural sites, wild rice beds and fisheries..."

..."It's the latest opportunity for Tamarack opponents to generate a groundswell against the project. The Mille Lacs band, Friends of the Mississippi River and the Minnesota Center for Environmental Advocacy are combining on the effort..."People like to think it's just a localized concern," he said. "But it's much bigger and broader..."

Artola, Brian, May 5, 2026, MinnPost
https://www.minnpost.com/environment/2026/05/while-all-eyes-are-on-the-boundary-waters-a-different-mining-project-nears-a-regulatory-yardstick/

Sulfide Mining Is Destructive and Dangerous
"...In the case of the proposed Tamarack/Talon/Rio Tinto underground mine in Minnesota, nickel comprises only 1.73% of the ore on average. The sulfur content of these ores may be 5-10 times

higher than the specific metal of interest. As such, high sulfide mining creates a very large amount of waste sulfur which is often discarded into the environment with many toxic effects..."

"...Sulfur waste from high sulfide mining operations (as well as exploratory bore hole cuttings) have at least three toxic consequences. These include acid mine drainage (AMD), methyl-mercury in fish, and the die off of prime wild rice waters..."

Anderson, Lynn, June 8, 2026, Aitkin Independent Age
https://www.messagemedia.co/aitkin/opinion/letters/letters-from-readers---7-8-26/article_e89b09fb-fb26-474f-902a-970b2bf7b999.html

Who We Are

Tamarack Water Alliance is a group of local residents and landowners working together with others from across Minnesota to protect water and community health from the dangers of sulfide mining near our beloved lakes and wild rice beds, at the headwaters of the Kettle River and in the Mississippi River watershed. Visit our website **here** (https://tamarackwateralliance.org/index.html).

A proposal by a foreign owned mining company, Talon Metals/Rio Tinto to mine nickel and other metals near Tamarack in Aitkin County threatens the health of our communities. This kind of sulfide mining, especially in water-rich environments, has never been done without severe impacts to water and the health of those downstream. Mining here is also a threat to environmental justice and the long-term economic security of nearby native and rural communities.

Review our **community slide presentation** (tamarackwateralliance.org/docs/TamarackMineConcerns-Consolidated.pdf) and download **informative flyers** (tamarackwateralliance.org/resources.html):

- Talon Mine Risks
- Geology of Aitkin County
- Talon Dumping Toxic Drilling Waste,
- Minnesota Declares Round Lake Impaired
- High Sulfide Mines Create Acid Mine Drainage
- Nickel Not Needed for Future EV Batteries
- Minnesota's Prime Wild Rice Lakes Under Threat,
- Difference Between High Sulfide Mining and Taconite Mining
- Minnesota Regulators Poor Record In Protecting The Environment
- Eagle Mine Environmental Report & Saving Our Meager Nickel Reserves
- Is There Really A Talon Tesla Supply Agreement? (no)
- Rio Tinto: A History of Corruption
- Green Bridge Metals - Canadian proposed sulfide mine near Duluth seeks to acquire battery rich mineral assets
- Copper and The Green Economy
- Prove It First!

We will send this monthly newsletter to keep you informed about this project, to share information and opportunities to act to protect clean water and community health.