IGNORANCE IS NOT BLISS:

Talon Mine Proposed "Project" and the Need for a Regional Tamarack Intrusive Complex Study

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Kettle River Slough/ J. Walters/ Wild Rivers Conservancy

WATERLEGACY

WaterLegacy's Mission: Protect Minnesota's fresh waters and the communities that rely on them.

WaterLegacy's Story:

- Formed in 2009 by rural Minnesotans concerned about PolyMet mine.
- • Science, legal advocacy, organizing.
- Tribal partnership and collaboration.
- Hold agencies accountable to protect nature and human health.

What is Sulfide Mine Pollution?

- Some areas, like Northern Minnesota, Aitkin County are naturally low in sulfate. Wild rice thrives there.
- Nickel, copper, cobalt sulfide ore mining would discharge massive quantities of sulfate.
- Taconite mines and coal plants are the largest dischargers of sulfate today in Minnesota.
- Mining is source of sulfate pollution when rock containing sulfur is exposed to air and water.

Sulfide Mine Threats to Water, Wild Rice, Health

Plaques on wild rice roots - impairs seeds as well as seedlings.

Geology: Copper, nickel, and cobalt are bound up with sulfur in the ore. **Massive sulphide mineralization = high sulfate.**

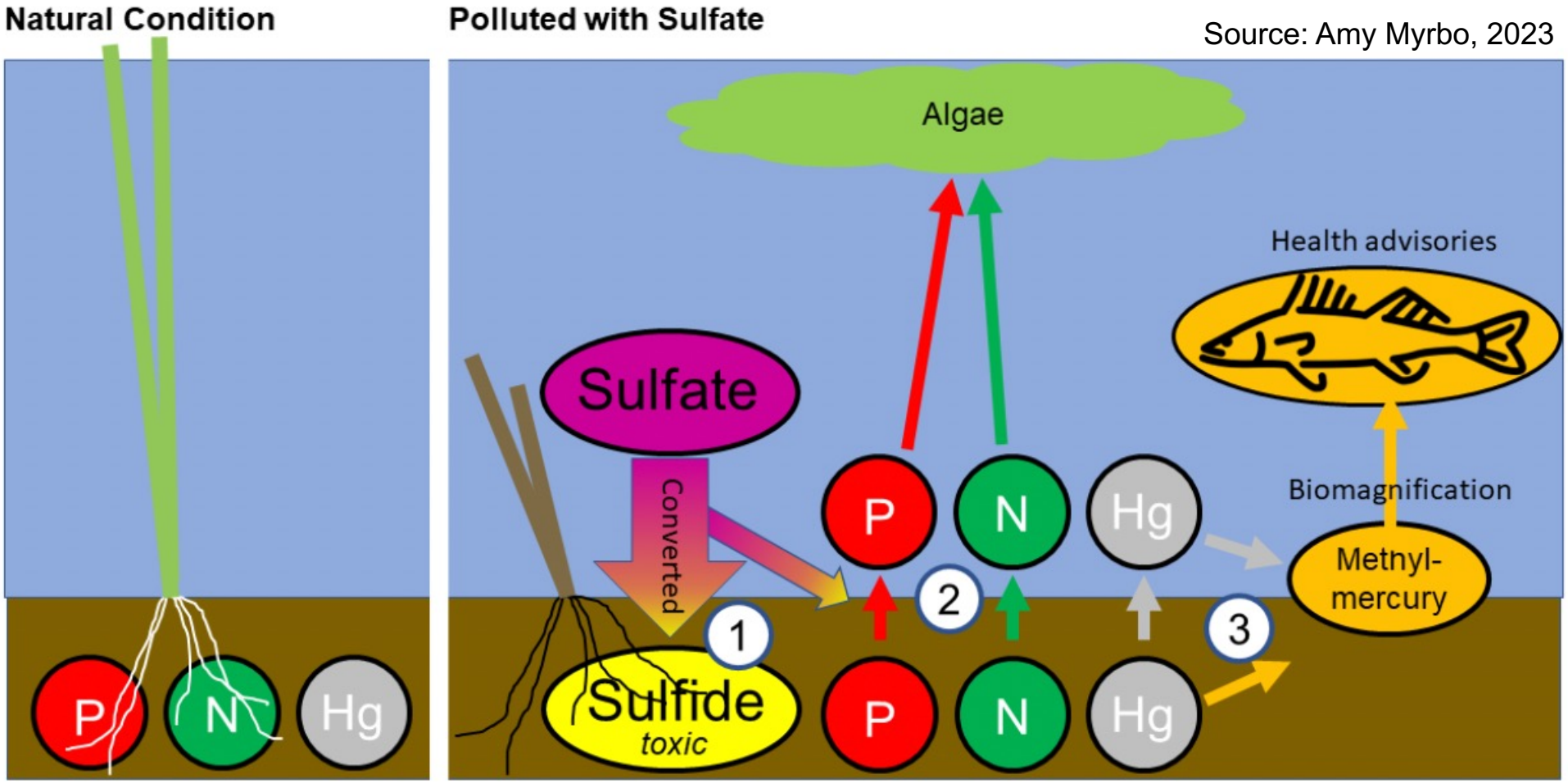
Sulfate exposed to air and water: acid mine drainage, leaching of toxic metals, such as arsenic, lead.

Sulfate in wetlands, sediments: 300 mg/L sulfate doubles mercury & nutrient release, increases methylmercury by **600%**.

Methylmercury in fish: bioaccumulates, concentrates up to **1,000,000 times** in fish at top of food chain. **Toxic** to developing brain: fetuses, infants, children.

Every sulfide mine (100%) in a water-rich environment has polluted surface and/or groundwater with acid mine drainage and/or toxic metals.

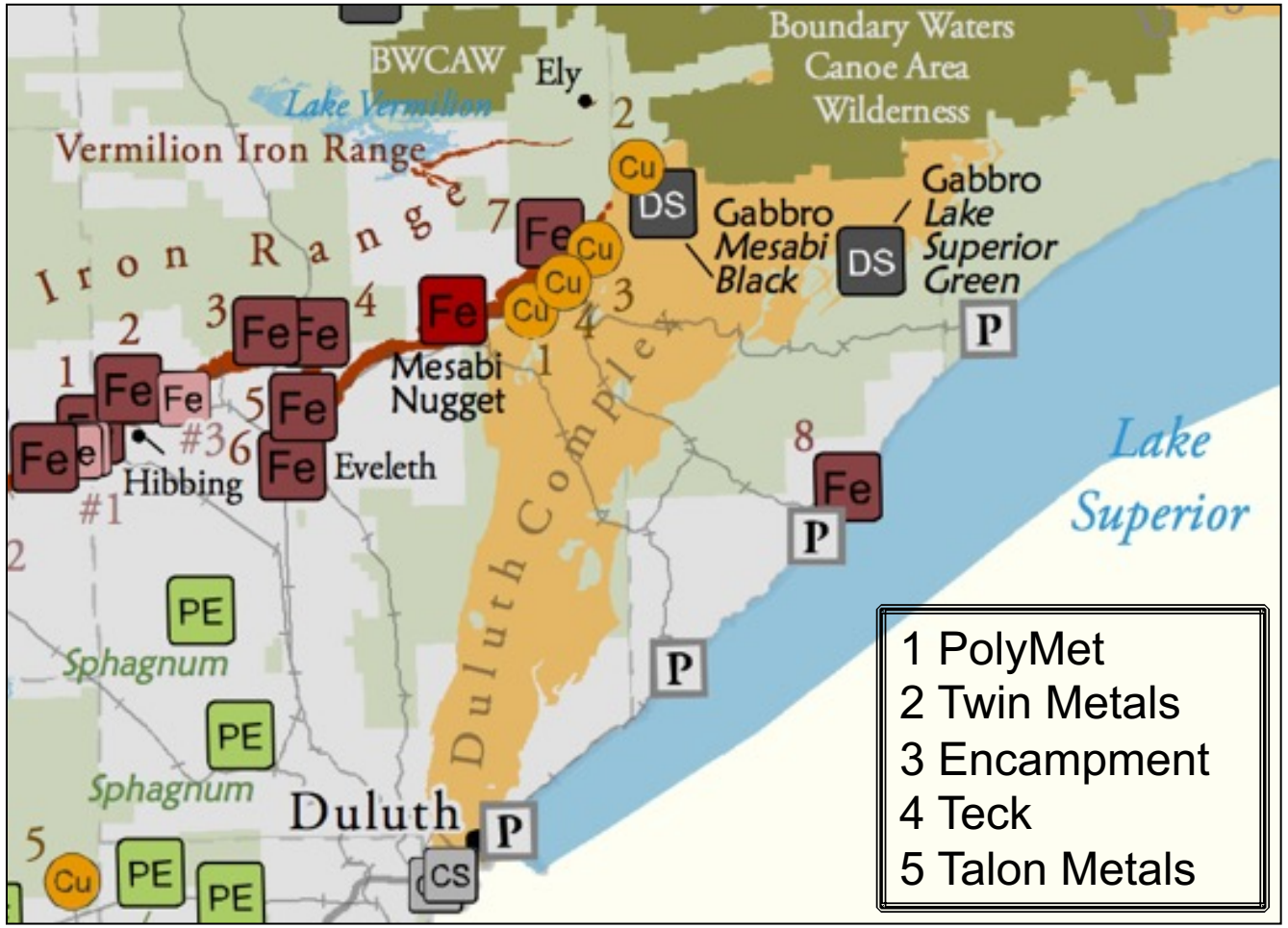
How Does Sulfate Pollution Affect Water Quality, Habitat, Health



Healthy Waterbody: low oxygen and low sulfide in sediments. Phosphorus (P), Nitrogen (N), and Mercury (Hg), along with organic matter remain in sediments.

Sulfate Polluted Waterbody: Sulfate used by sediment bacteria to convert sulfate to toxic sulfide. In the process, organic matter decomposed, P and N released (algae), Hg released and methylated to MeHg (biomagnification).

Minnesota Studied Regional Effects of Duluth Complex Mining



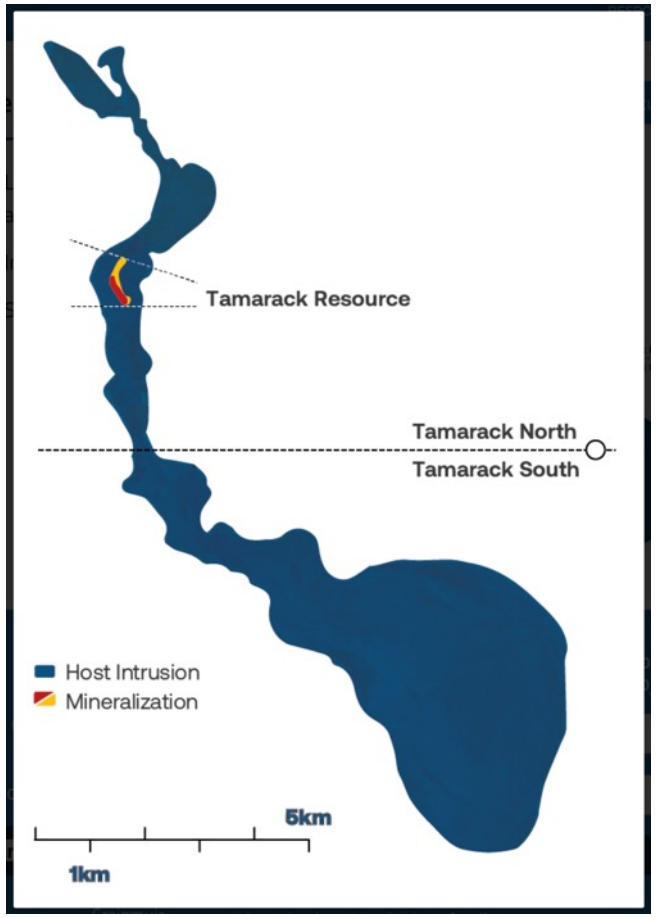
Duluth Complex Regional Study

1974 – proposed Duluth Complex Regional EIS.
1976 – amended to require "comprehensive regional study" & moratorium until completed.

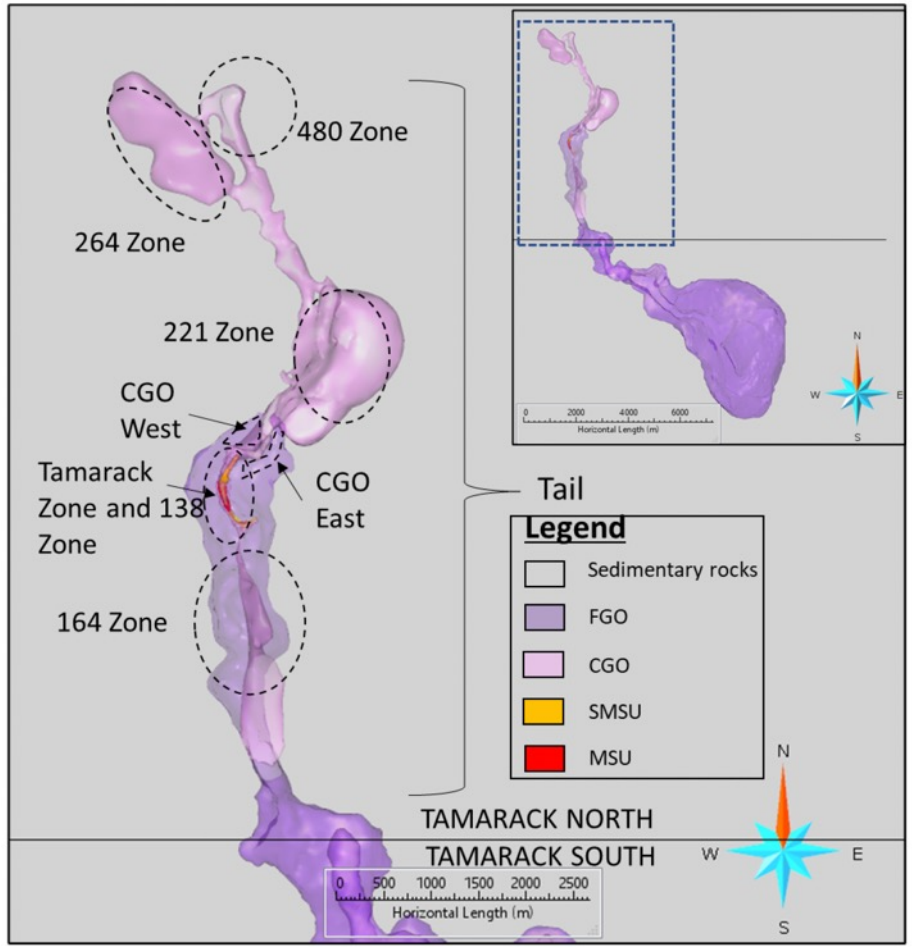
"A 'regional study' was commissioned because it was believed that **conventional site-specific environmental impact statements (EISs) and the corresponding regulatory process were inadequate** to deal with the broader issues involving this unexploited resource." EQB, 1979, Vol. 1 at i.

The Minnesota Copper-Nickel Regional Study covered only the Duluth Complex – not the Tamarack Intrusive Complex

Tamarack Intrusive Complex & Talon Metals "Project"



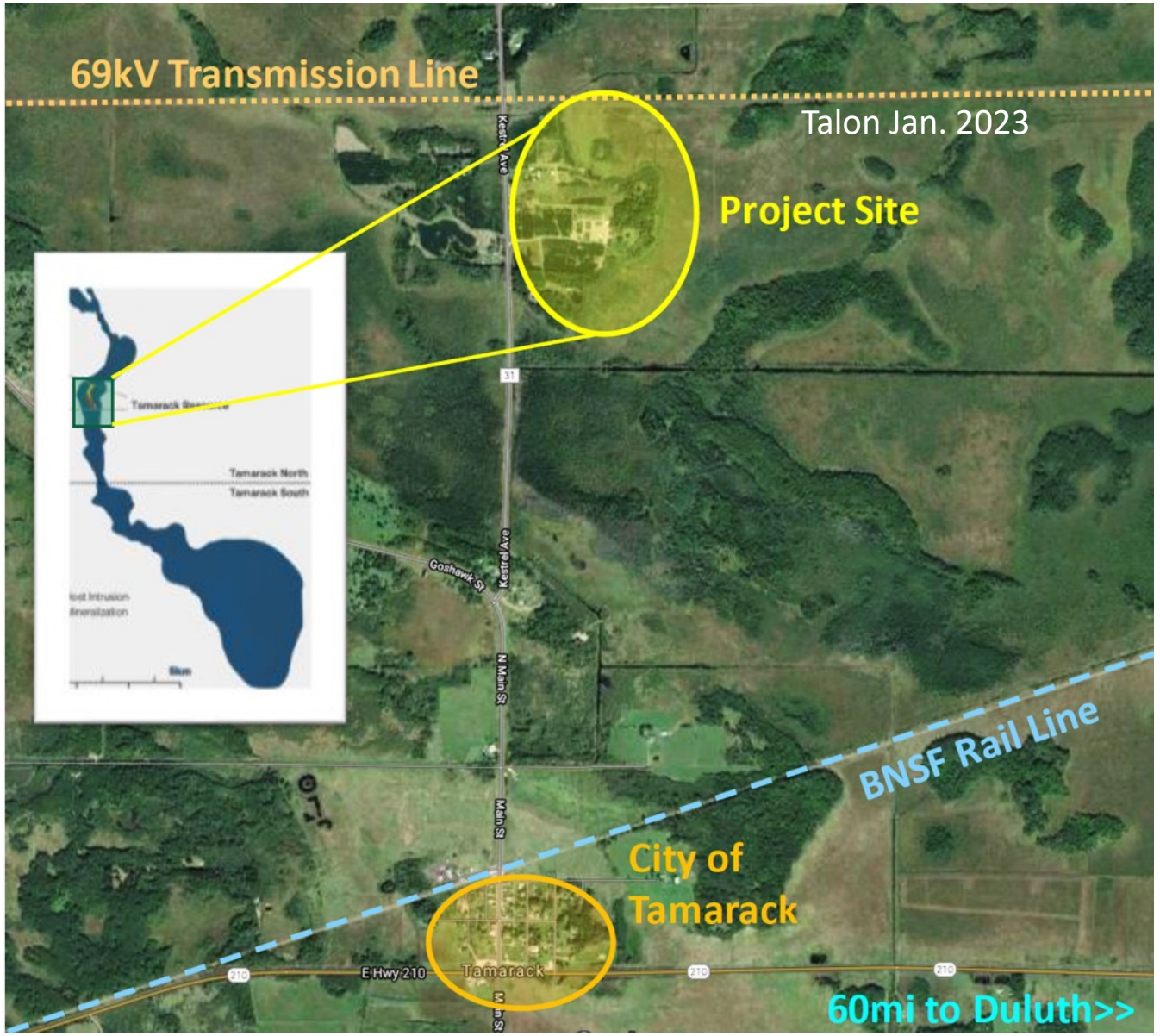
"[T]he Tamarack Intrusive Complex has district-scale potential." Talon chief exploration and operations officer Brian Goldner (Jan. 2023)



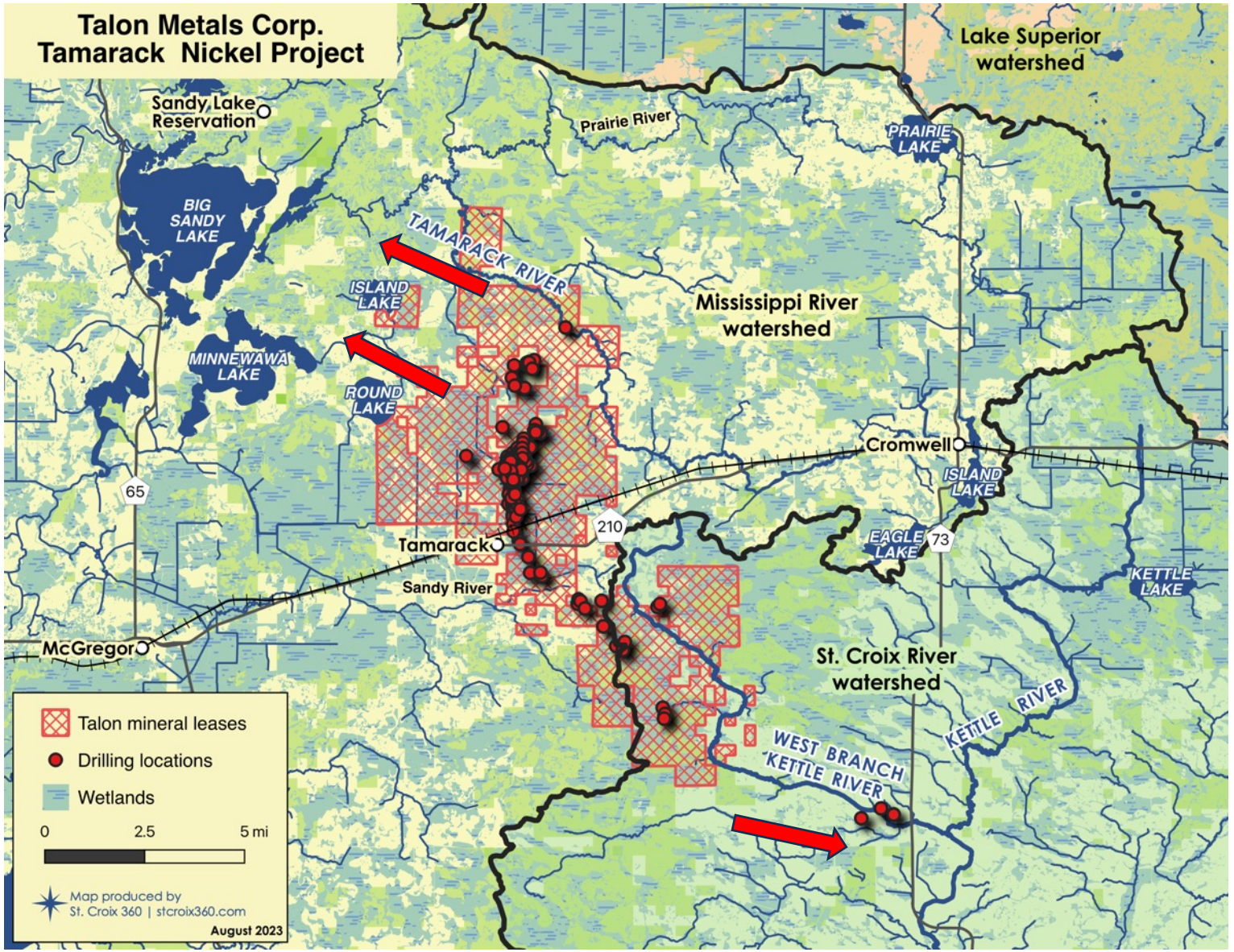
"[W]e can push forward this mine in the permitting process and hopefully get a permit while we're also exploring for additional nickel resources in Minnesota." Talon chief external affairs officer Todd Malan (June 2023)

Talon Metals “Tamarack Nickel Project” EAW

- **Talon/Rio Tinto EAW proposed mine “project” 447 total acres, 225 acres of mining. Less than 1% of the 31,000 acres they control.**
- **EAW: (2020) data prediction of Talon peak dewatering from “project” almost twice as much as modeled from all 3 PolyMet pits.**
- **EAW: not include impacts of spills or CO2 from @500 miles of rail transport.**
- **Subsidy @$115 million for North Dakota processing. EAW proposes no plan for tailings storage and no study of impacts of ore processing or tailings waste.**

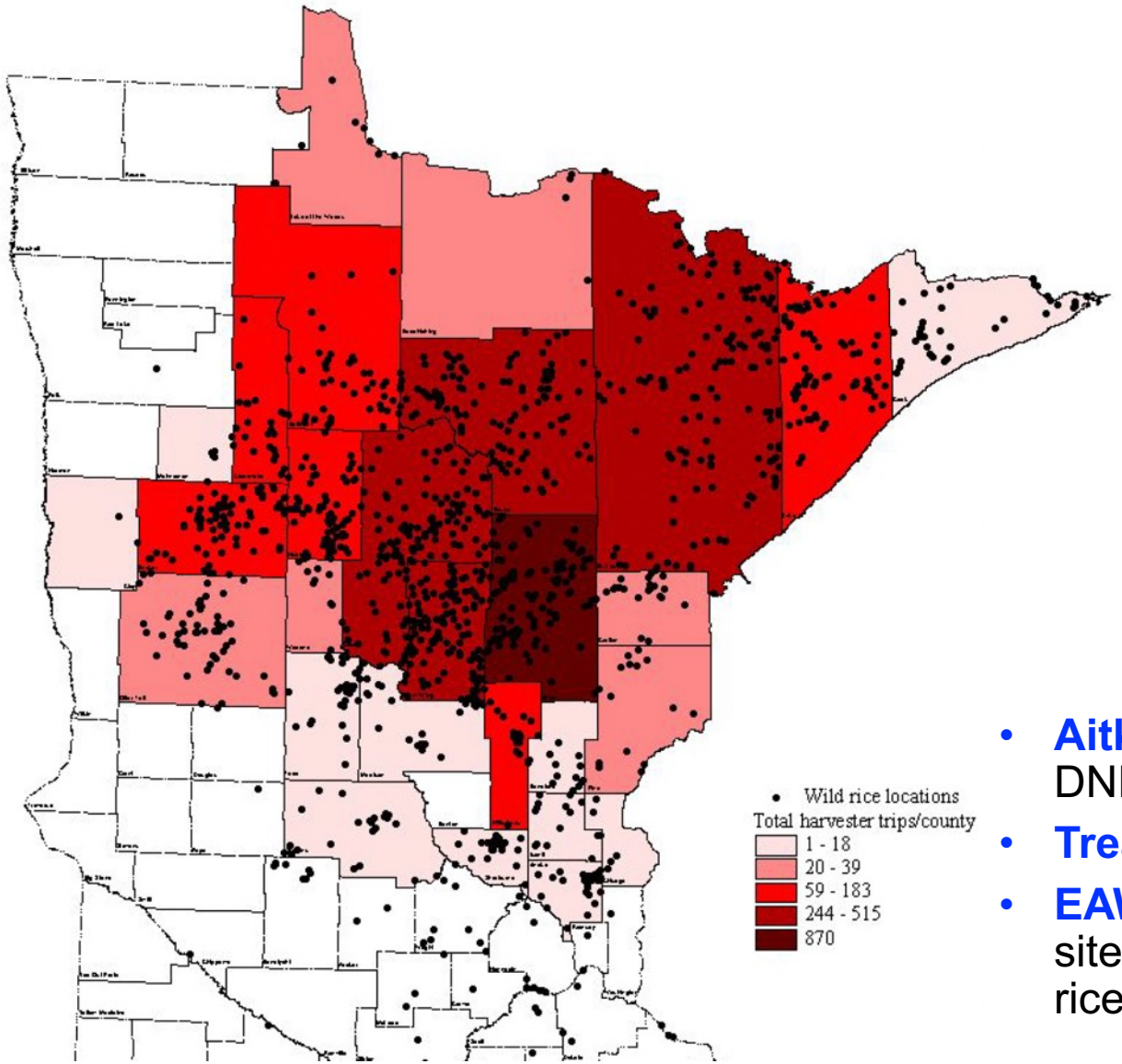


Tamarack Intrusive Complex Affected Waters



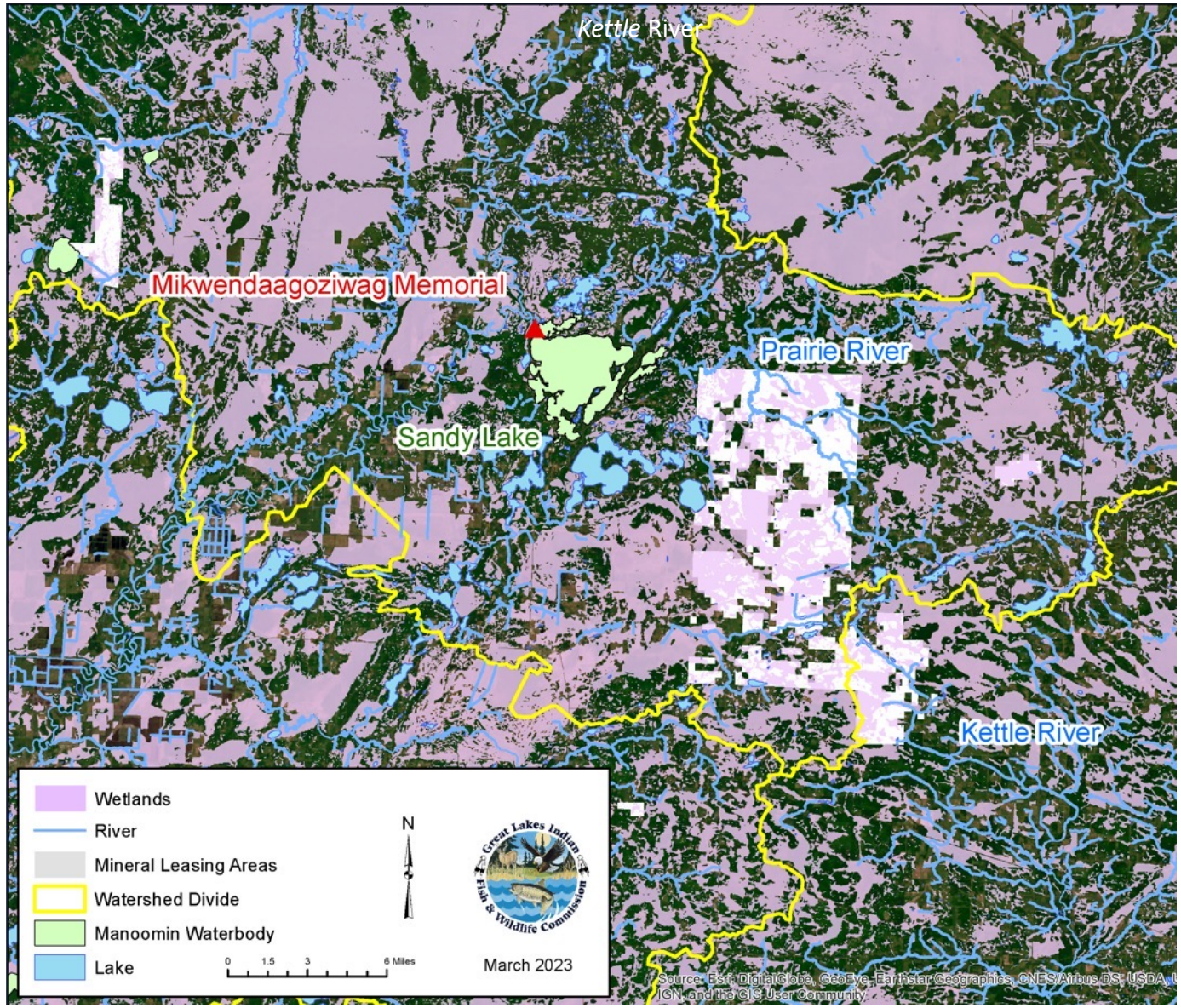
- **Impaired - Nutrients**: Lake Minnewawa and Big Sandy Lake.
- **Impaired - Mercury in Fish**: Round, Minnewawa, and Big Sandy Lakes, Kettle & St. Croix Rivers, Mississippi River segments.
- **Tamarack River:** exceptional class 2Be water impaired for e. coli.
- **Wild & Scenic Rivers**: Kettle River, Upper St. Croix River.
- **State Wildlife Management Areas**: Salo Marsh & Grayling Marsh.
- **Mille Lacs Band of Ojibwe Reservation Lands & Waters**: Sandy Lake, Lake Minnewawa, East Lake.

Tamarack Intrusive Complex Region Wild Rice



- **Aitkin County**: Minnesota wild rice abundance, Minnesota DNR found most harvest trips.
- **Treaty-reserved rights**: 1854,1855 and 1837 treaties.
- **EAW:** Fails to identify even all wild rice waters near proposed site. No consultation with tribes as to how to evaluate wild rice prevalence or health.

Tamarack Intrusive Complex– Wetlands & Shallow Lakes



EAW: "The Project Area is primarily classified as wetlands."

EAW: DNR data shows 77% of "project" area depth to water is less than 1 foot.

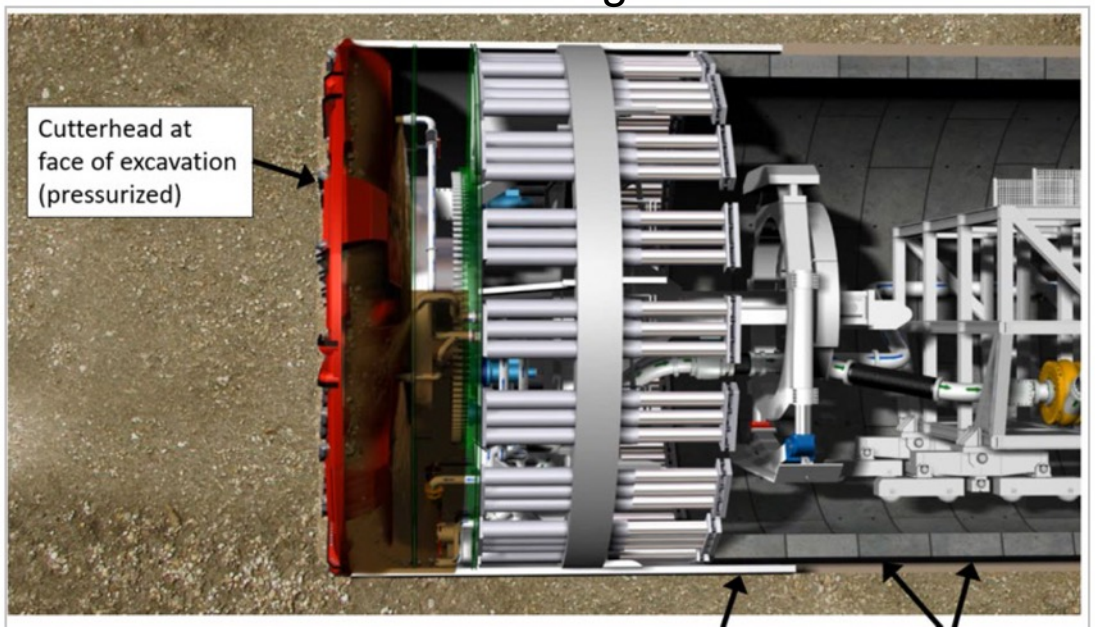
EAW: "[M]ine workings are expected to intersect local discrete zones and area of enhanced permeability." **Fractures**. No estimate of indirect effects on wetlands.

Photo: Tamarack area wetlands.

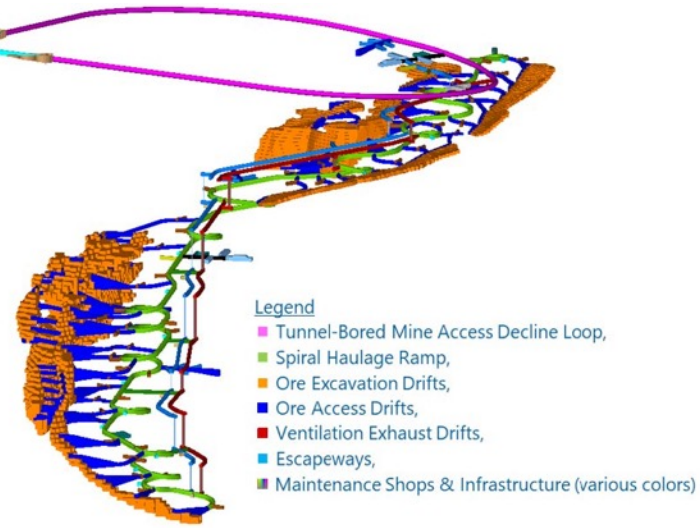
Talon/Rio Tinto EAW for Proposed Mine Project: More Gaps

- No engineering feasibility: tunnel boring machine, mine backfill, ore transport.
- No economic feasibility: PEA Jan. 2021 included onsite processing, capital costs of $316 million.
- No disclosure until EIS: wetlands hydrology or water quality; surface water or groundwater chemistry or flow; chemicals in intrusive deposit or mining.
- No clear plan for crushing rock, cement, backfill.
- No commitment on type or scale of treatment, plan to start mine before build treatment plant.
- No liners for “overburden,” claim “non-contact” water.
- No “waste rock” in EAW: calls waste “development” rock or “backfill material.”

Tunnel boring machine (TBM) shown in EAW not for mine. Talon would bore through 220 feet of bedrock.



Tunnel Loop



Tamarack Intrusive Complex Regional Study Needed to:

- **Evaluate regional characteristics**: *e.g.,* hydrology; ecosystems; chemistry; climate sustainability.
- **Evaluate downstream effects of district-scale mining:** wild rice, mercury, nutrients, aquatic life, wildlife, wild & scenic waters, public health.
- **Address areas of new science:** asbestiform fibers; sulfate/sulfide cycle, methylmercury, nutrients; wild rice; nitrate; chloride; specific conductance.
- **Address areas of increased accountability**: tribal reservations & exercise of treaty-reserved rights; boom-and-bust economics; pollution liability.
- **Ensure regulatory capacity to address issues posed by mining Tamarack Intrusive Complex.**

Photo St. Croix River: NPS, WolfeT

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Please sign up today: WaterLegacy.org