

NOTE:

All mine related information is taken from the publically available TALON 2021 Preliminary Economic Analysis - PEA (https://talonmetals.com/wp-content/uploads/2021/02/Talon-Tamarack-PEA3_2021.pdf) and 2022 PEA (https://talonmetals.com/wp-content/uploads/2022/11/Final_NI43101_Report_Talon_TamarackN_20221102.pdf)

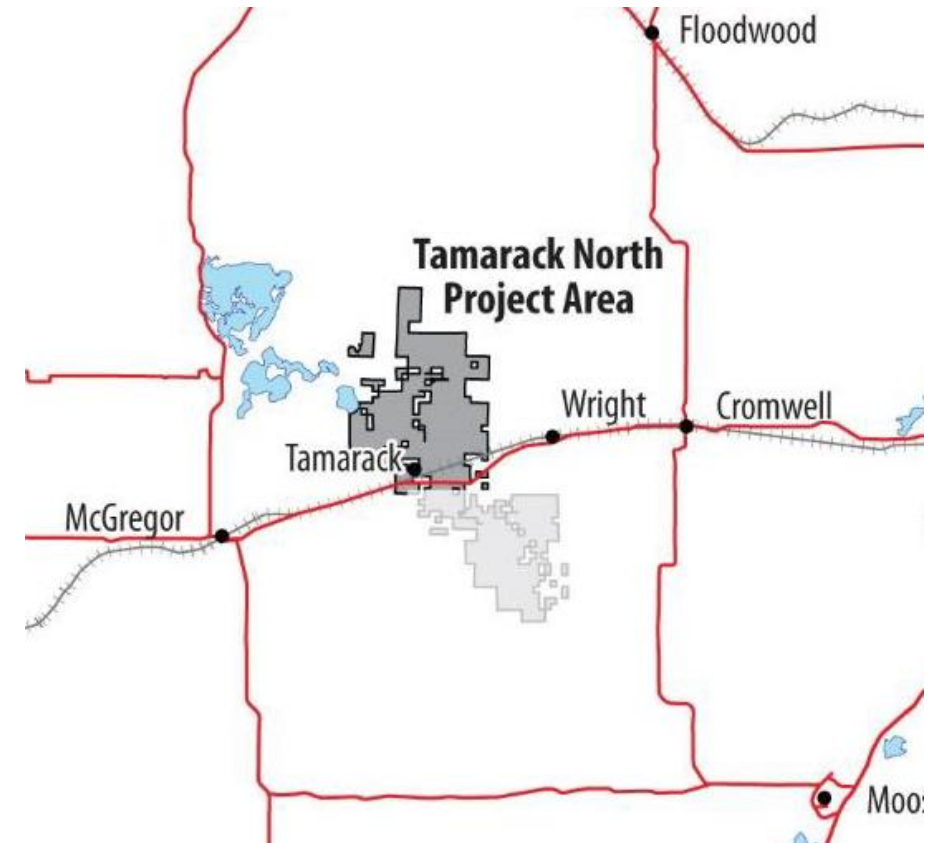
Tamarack Water Alliance

What's New With Talon Metals and
the Tamarack North Project

<https://tamarackwateralliance.org/>

About Talon Metals (TLOFF)

- ❖ Talon is a base metals development and marketing company headquartered in the British Virgin Islands in a joint venture with Rio Tinto on the Tamarack North Nickel-Copper Project
- ❖ They are traded on the US Over The Counter market (OTC) as TLOFF with financials shown in US dollars
 - They are also traded on the Toronto Stock Exchange (TSX) with financials in Canadian dollars (\$1 Canadian = \$0.74 US)
 - They do not meet the financial requirements to be traded on a major US stock exchange such as the New York or NASDAQ stock exchanges.
 - With their 11/2023 stock offering Talon has **approximately 840 million shares outstanding**.
- ❖ Their stock price during December 2022 varies between \$0.32 and \$0.37 per share and at this price is generally considered in the market as a **very high risk "penny" stock**.
- ❖ Talon funds ongoing operations from the sale of their stock and thus has no money at present to build a mine. They must rely on huge investments from other investors to mine.



Talon is a very high risk stock with likely no path to significant revenue until the 2030 time frame

Metal / Ore Processing

- ❖ On October 19th, 2022, Talon Metals announced that they would move the ore processing and tailings management facility from the Tamarack mine site to an existing industrial brownfield site in Mercer County, North Dakota.
 - This move means that the Hydrometallurgical Plant originally planned for the Tamarack North project moves from the mine site in Tamarack to North Dakota
- ❖ This move has a number of consequences:
- ❖ This moves 150 jobs from Tamarack to North Dakota (see Talon Press release).
 - Although Talon has recently been saying that the mine would employ about 450 people, we note that the Talon 2021 Preliminary Economic Analysis provides a staff estimate of 300 people (see page 237-8 of the Talon 2021 Preliminary Economic Analysis).
 - Moving 150 jobs to North Dakota means that the Talon Tamarack staff levels may now be in the 150 – 300 range?



Page 238 of the 2021 Talon PEA

Talon PEA statement of staff inconsistent with what they tell the community

Metal / Ore Processing (2)

- ❖ At the Tamarack mine site, the plant is replaced by a huge rail facility since rail will be used to transport the raw ore from Tamarack to North Dakota
- ❖ Talon will be loading at least 43 rail ore cars each day (365 days a year).
 - According to the 2021 Preliminary Economic Analysis, the Talon mine facilities will extract 1.3 million tonnes of ore per year
 - This equates to 1.43 million US tons of material per year.
 - Given that a rail ore car can haul 85-100 tons of material (an average of 92.5 tons), that means Talon will be loading at least 43 rail cars with ore each day (365 days a year).
 - This large rail loading facility will create additional toxic dust issues beyond what we have previously noted.
- ❖ The Mercer County North Dakota "pollution zone" where Talon intends to site their processing includes native tribal lands, continuing the legacy of using tribal lands as toxic dumping grounds
 - Potentially 10's of millions of tons of tailings waste will be dumped at the site, creating a significant toxic waste disposal area.
- ❖ Even with a US Government Grant, the Talon share of the ND plant is \$318,025,927 ... a total spend for the plant of approximately \$430M!
 - https://www.energy.gov/sites/default/files/2022-10/DOE%20BIL%20Battery%20FOA-2678%20Selectee%20Fact%20Sheets%20-%201_2.pdf

Metal / Ore Processing – Impact on Water (3)

- ❖ Talon originally planned to use the tailings mixed with cement to create a cement paste that would be used to fill the mined out stopes (caverns)
- ❖ Minimizes cave-ins BUT ALSO, the "set" cement mixture decreases water seepage
- ❖ However, by moving all the tailings to North Dakota, how do they fill these mined out stopes in the mine?
 - If Talon does not fill the mined out stopes, these areas become sources of mine water that must be "dewatered" from the mine. The more surface area you leave exposed in the mine, the more water seeps into the mine so the 2.6 million gallons is now a very low end estimate. In reality, real pumping levels may be MUCH more!
 - If Talon continues down the plan to fill the stopes with a cement paste, where do they get the material? Logically, on average, they might need another 40 or so train car loads of gravel shipped every day, 365 days a week. From where?
- ❖ Blasting may also increase water seepage from new / expanded cracks

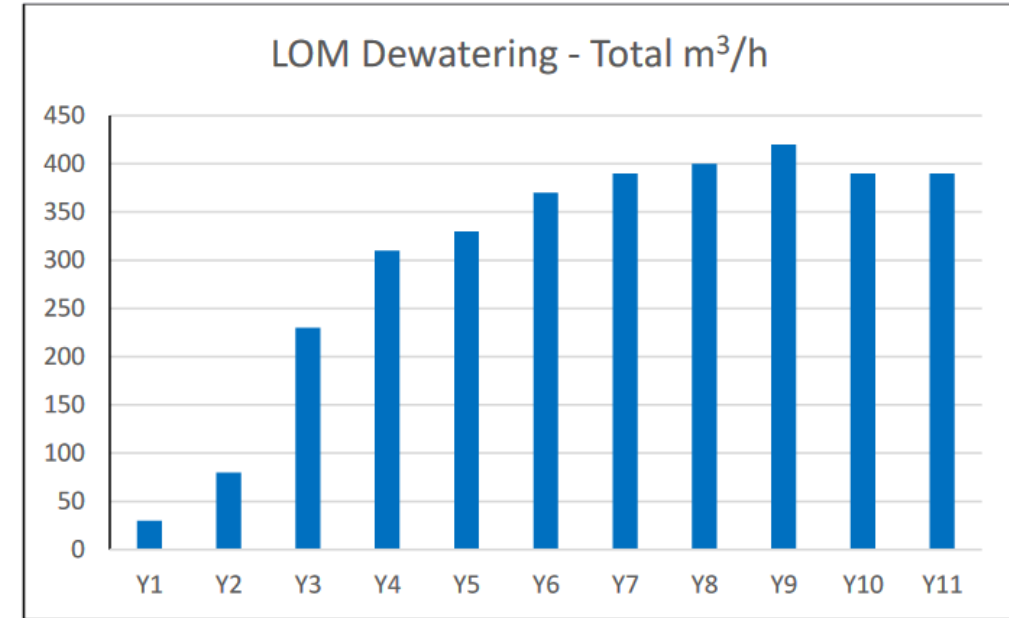


Figure 16-16: Mine Dewatering Requirements

Page 228 of the 2021 Talon PEA

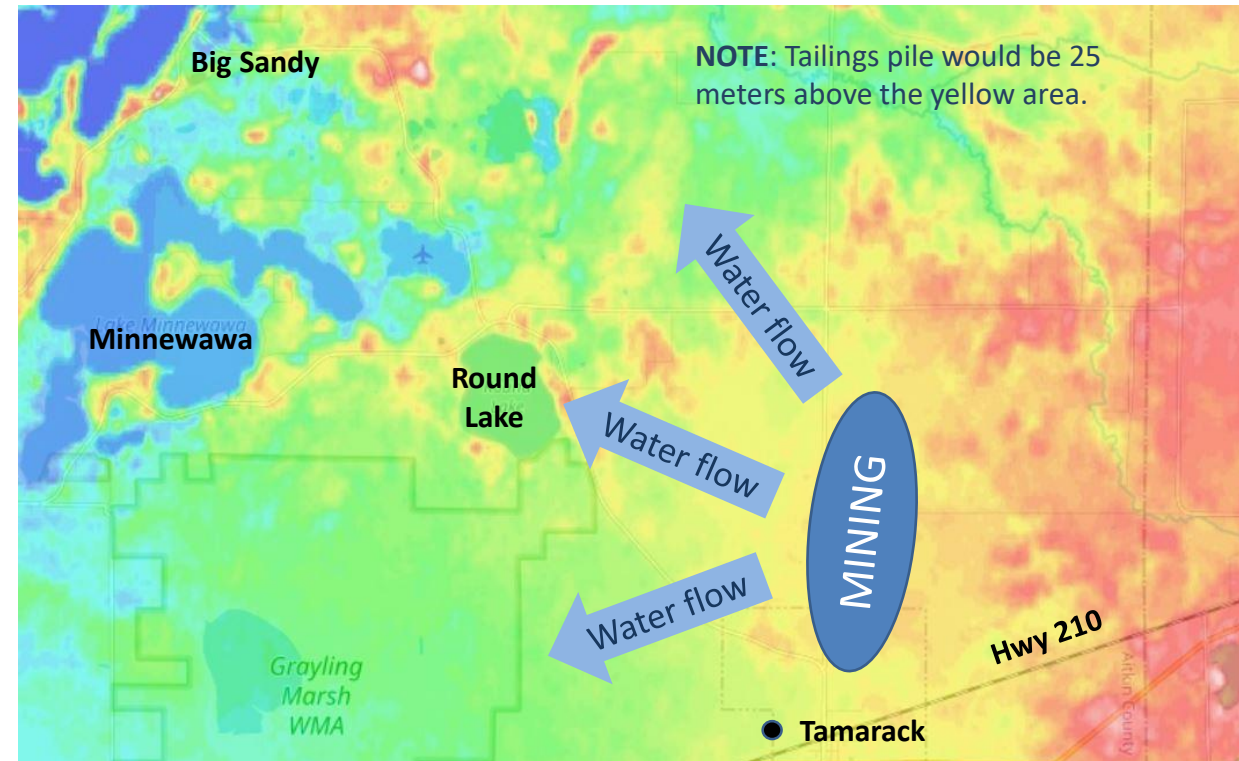
- Groundwater inflows are based on an average inflow of 9.9 gpm per water bearing feature
- An average of one water bearing feature per 216 m of drill data has been measured through past logging;
- It is assumed that groundwater inflows can be reduced by 20% by grouting;

New PEA Released

- ❖ On November 2, 2022, Talon Metals released the document titled "November 2022 National Instrument 43-101 Technical Report of the Tamarack North Project – Tamarack, Minnesota."
 - The purpose of this Technical Report is to support the disclosure of a material change to the mineral resource estimate based on drilling completed since the 2021 PEA
 - https://talonmetals.com/wp-content/uploads/2022/11/Final_NI43101_Report_Talon_TamarackN_20221102.pdf.
- ❖ The average nickel content has fallen from 1.91% for indicated resources (1.39% total including inferred resources) to 1.73% for indicated resources (1.28% total including inferred resources).
- ❖ Total quantified mineral resource has increased from 11 million tonnes of resource (ore) to 17 million tonnes of resource
 - Thus, this is may be a much bigger mine than originally estimated. Indeed, the life of the proposed mine may now be closer to 17 years rather than 12 years.
- ❖ Of the 17 million tonnes of ore, 8.56 million tonnes are classified as "indicated resources".
 - Indicated resources have been verified by drilling. We note however that the 2021 PEA business case indicates that a sufficient business case likely requires at least 12 million tonnes of resource if not more.
 - Talon will need to quantify with drilling 12-16 million tonnes of resource. This is why Talon recently doubled the number of drilling rigs since they still have significant work to do to meet a bankable business case need.
- ❖ In effect, Talon will need to double again the amount of indicated resources – and that's why they bought MORE drilling rigs!

Conclusion – Recent News Supports our Concerns

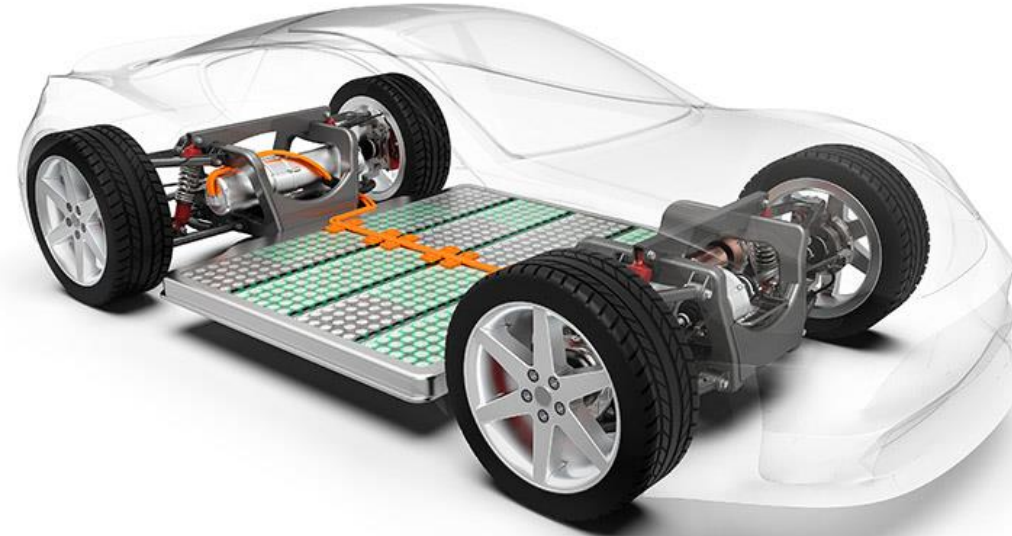
- ❖ Talon plans to pump at least 2.6 million gallons of water a day out of our local aquifers. (SOURCE: PEA p. 227). Even if filtered, this level of pumping will surely lower water levels substantially in our lakes and wetlands. And where do they put all this water? Certainly, even more water would need to be filtered and pumped if the mined out stopes (caverns) are not properly sealed.
- ❖ During mining operations, development rock and high sulfide ore storage areas would exist. Although these storage areas will hopefully be lined, we know from the Eagle Mine that such liners leak over time resulting in future contamination of the area.
- ❖ Wind will blow the dust from the contaminated rock/ore storage areas, mine ventilation shafts and ore loading and handling operations into the surrounding area. This dust will contaminate the environment and pose human health risks. There is also a risk of dust contamination from rail transport as well.



SOURCE: <https://en-gb.topographic-map.com/maps/ilbc/Aitkin-County/>

Q&A: But Don't We Need Nickel, a US Designated Critical Mineral?

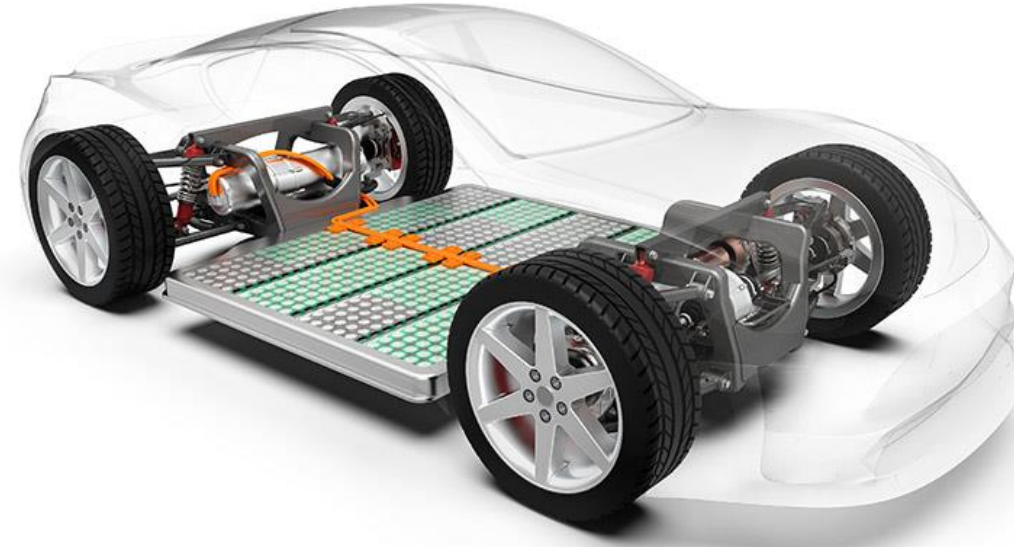
- ❖ Talon will not produce Nickel until 2030 at the earliest so must look at the nickel market in the next decade
 - Given the unresolved and significant environmental issues, permitting will take from 5-10 years
 - With a ~\$850M mine build (\$430M for the ND plant and at least \$420 for the Tamarack Mine), it may take 2-3 years to build facilities
 - And take additional time to ramp up production
- ❖ Lithium-Ion Batteries - Nickel costs \$25,000 - \$30,000 per tonne (12/2022) and cobalt is ~\$50,000 per tonne making these materials too expensive for mass market EV applications
 - EV batteries using Lithium-Ion technology can cost \$20,000 when Nickel was \$10,000 per tonne ... now battery costs have sky rocked! Resulting in battery costs of \$30,000 or more going forward
 - Thus Nickel (and cobalt) based batteries can never be a solution to affordable EVs for the mass market
- ❖ The industry is thus moving to new battery chemistries with low cost materials (\$100 per tonne) to address specific niches within the market --- the future is a multi-chemistry battery world



Industry is quickly moving toward and environment utilizing a variety of low cost battery chemistries to address specific market needs

Q&A: But Don't We Need Nickel, a US Designated Critical Mineral? (2)

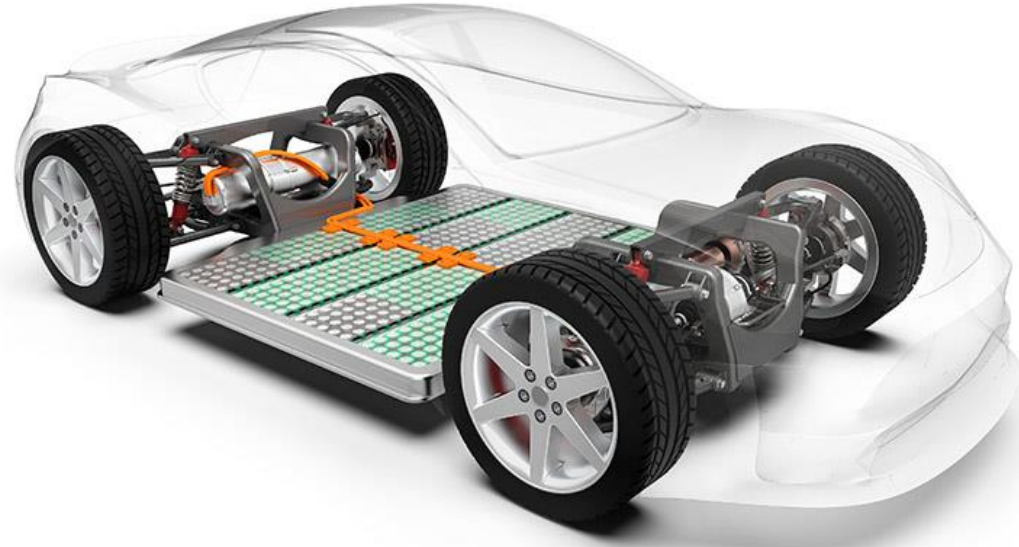
- ❖ Tesla has announced a long term shift to (LFP) Lithium Ferrous Phosphate EV batteries – much safer and has longer life
 - Tesla 1Q22 quarterly report – nearly 50% of their vehicles in that quarter were already shipping with LFP (no nickel) batteries and
 - Tesla is transitioning their fixed battery product line to LFP
 - But new solutions will be required for long range and large vehicle needs
- ❖ Lyten Corp and others (e.g. Theion Corp) are trialing a Lithium-Sulphur battery (no nickel) that has 2-3 times the energy density of the old Nickel based Lithium-Ion batteries – for much longer range vehicles.
- ❖ CATL is trialing a Sodium Ion battery – no nickel but made with locally sourceable inexpensive materials
 - Suitable for shorter range EVs at very low cost points
 - And will positioned to take over the fixed battery market
- ❖ New Iron/Air batteries promise to provide high energy density at low costs



By 2030, battery needs will be satisfied by energy dense battery technologies that use locally sourced inexpensive materials

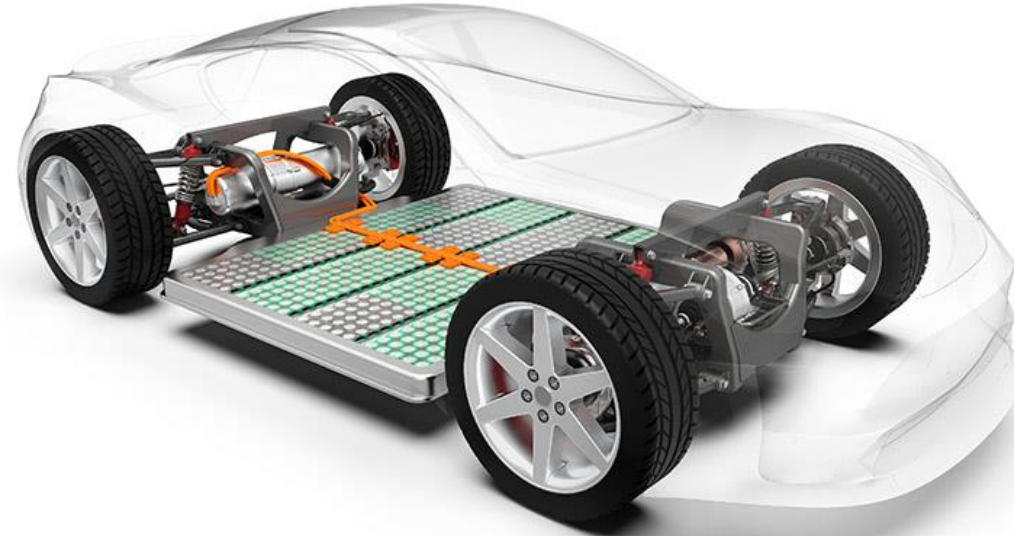
Q&A: But Don't We Need Nickel, a US Designated Critical Mineral? (3)

Nickel will fall off the “critical minerals” list long before it is mined by Talon



Q&A: But Talon has said they're provide iron for LFP Batteries?

- ❖ This 'suggestion' that Talon will supply iron for the LFP industry is a bit silly.
- ❖ Realize that Talon has known there are small amounts of iron in the deposit for 20 years – BUT they explicitly rejected it as a profitable mineral to be mined in the 2020 and 2021 PEA (they had not heard of LFP batteries yet) ... when Iron was much higher priced than today
- ❖ From the 2022 PEA, the average amount of iron across all resources is about 5% and is considered VERY VERY low grade
 - 25% iron is already considered low grade
 - At 5%, you would need 20 tons of ore to get \$100 worth of iron.
 - We note that “Company has excluded the iron (Fe in sulphides) from its calculation of nickel equivalent (NiEq)” (<https://talonmetals.com/us-battery-supply-chain-talon-metals-announces-significant-increase-to-mineral-resource-estimate-at-tamarack-nickel-project/>) Thus, Talon admits that its not profitable to mine iron.



Based on Talon statements, iron will likely not be minded and certainly not in sufficient quantities to affect the market

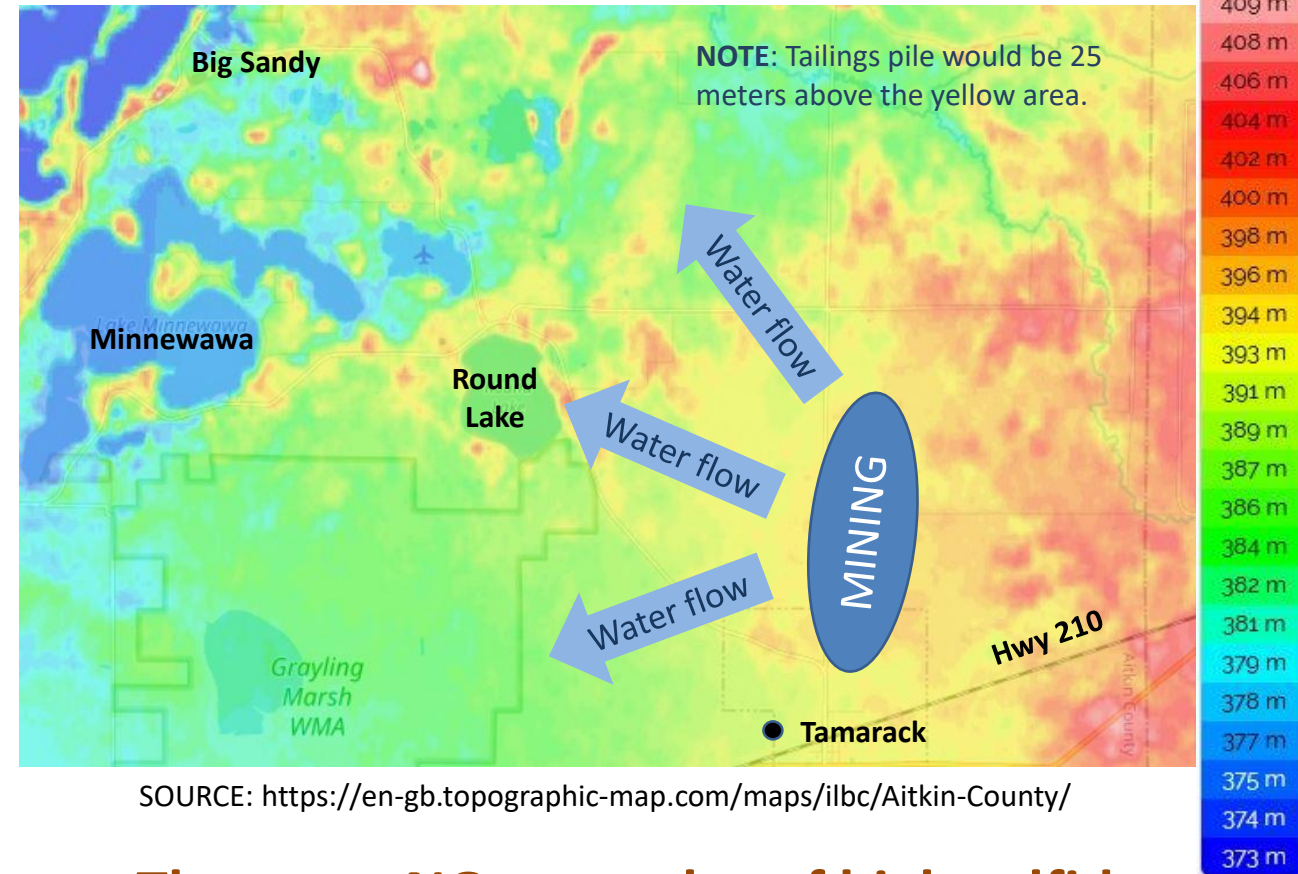
BACKUP MATERIAL

Acid Mine Drainage

- ❖ A literature review on acid mine drainage concluded that “no hard rock surface mines exist today that can demonstrate that acid mine drainage can be stopped once it occurs on a large scale.”
- ❖ Acid runoff from the Summitville Mine in Colorado killed all biological life in a 17-mile stretch of the Alamosa River. The site was designated a federal Superfund site, and the EPA has spent over \$210 million on clean-up.
- ❖ Zortman Landusky mine in north central Montana filed for bankruptcy in 1998 leaving the state of Montana with the liability for \$33 million in long-term water treatment and reclamation costs

SOURCES:

- https://earthworks.org/issues/acid_mine_drainage/
- <https://www.usgs.gov/mission-areas/water-resources/science/mine-drainage>
- <https://www.epa.gov/nps/abandoned-mine-drainage-additional-resources>



There are NO examples of high sulfide mines in water rich areas that do not pollute the environment

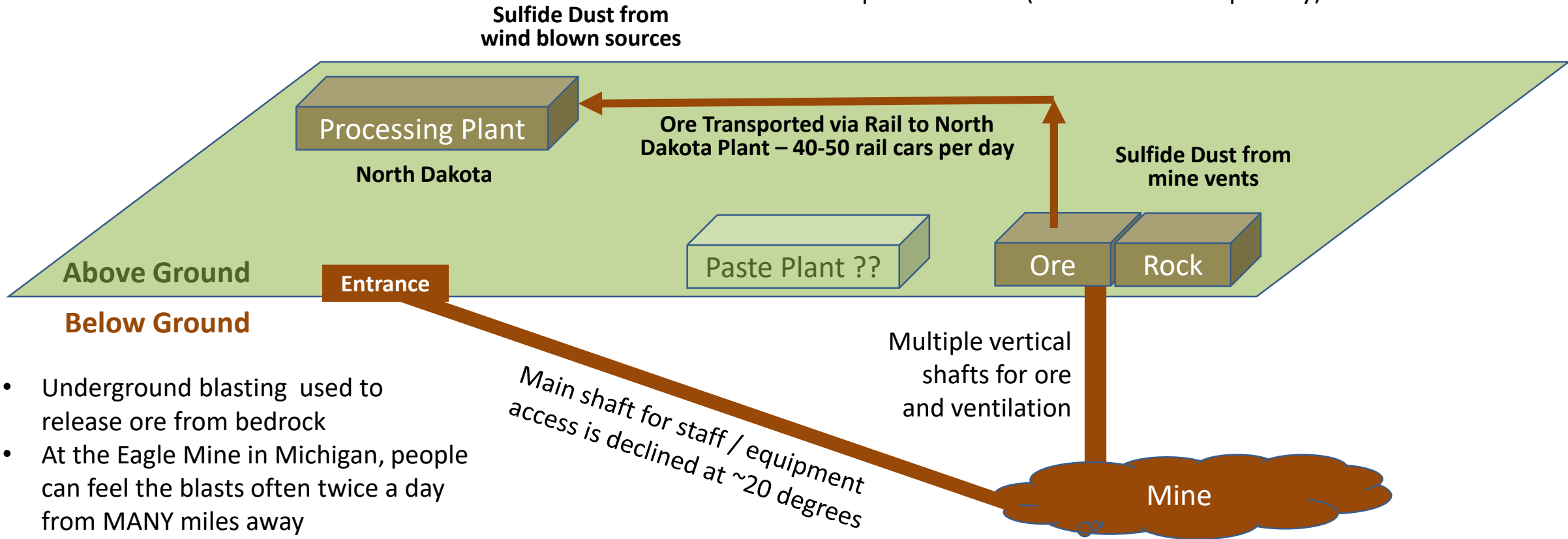
Documented Health Risks of Sulfide Mining in Minnesota

- Sulfide Mining and Human Health in Minnesota
https://pubs.royle.com/publication/?i=352462&article_id=2624726&view=articleBrowser
- Risks and costs to human health of sulfide-ore mining near the Boundary Waters Canoe Area Wilderness
<https://www.tandfonline.com/doi/abs/10.1080/10807039.2019.1576026>
- Sulfide-ore mining AND human health in Minnesota - WHERE ARE WE NOW?
<https://www.savetheboundarywaters.org/sites/default/files/resource-file/MNMedicine2022.pdf>

How the Mine Works

BASIC OPERATION

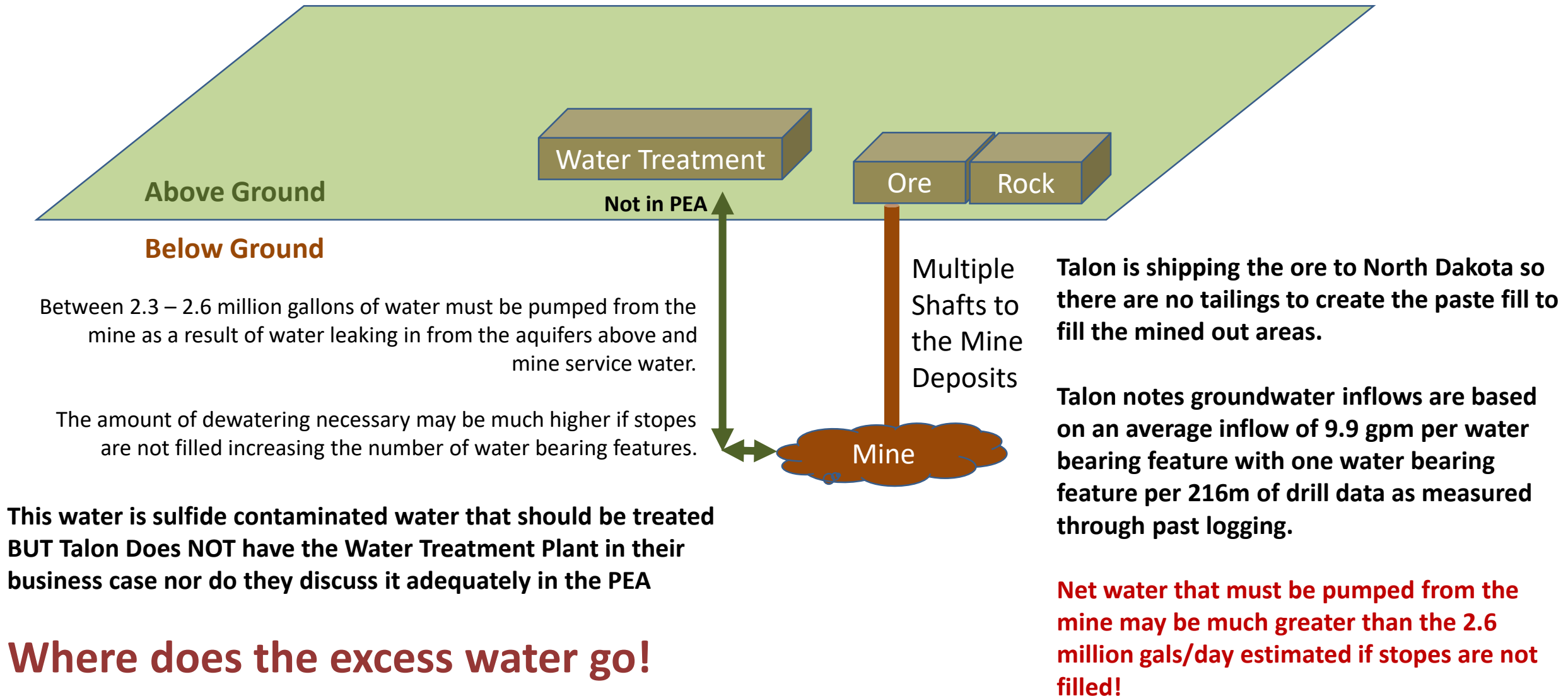
- Blast out stopes to collect ore
- Bring ore to the surface and store
- Ship ore over rail (about 40-50 cars per day) to North Dakota



- Underground blasting used to release ore from bedrock
- At the Eagle Mine in Michigan, people can feel the blasts often twice a day from MANY miles away
- At the Eagle Mine, mining operations generate significant air borne pollution vented directly into the atmosphere

Water Balance Details

1. From page 228 of the PEA
2. Numbers vary from year to year



Concerns - Air

- ❖ Vented Airborne Dust from Blasting and CFTF is Contaminated with Sulfide Particles as well as many other toxic minerals – Eagle Mine monitors for at least 33 toxic substances
- ❖ No provision in the Talon PEA to address airborne contamination
- ❖ Eagle Mine does a very poor job at managing dust – a possible cause of the water contamination demonstrated in the Eagle Mine Exception report
 - After including an air filtration system in its original permit, Eagle sought to have it removed in 2013, which the MDEQ approved, blowing a plume of unfiltered mine emissions out over the Salmon Trout River and the Yellow Dog Plains. No stack monitoring is taking place, and the emissions have not been measured since September 2014, before the mine was in full operation.
Source: Mining Action Group <http://savethewildup.org/about/eagle-mine-facts/>
 - <http://savethewildup.org/2013/03/air-filtration-necessary-on-eagle-mine-air-stack-to-keep-air-clean/>



Mining dust has saturated and stained the Flags on the Eagle Mine bulletin board.

Michigan Eagle Mine must file an “exception” report to Michigan each year
https://www.eaglemine.com/_files/ugd/145c36_9fc08b466c944ef8a22dd0a5c5ff9642.pdf

Concerns - Water

- ❖ Talon must pump up to 2.6 million gallons a day from the mine due to water entering from the aquifers and service water used in operations
 - No provision for water filtering in the Talon PEA
 - Aquifer levels and surface water impacts are of concern
 - Pumping requirements may actually be **substantially higher** since Talon had planned to fill mined out stopes with a cement paste made with tailings ... but tailings are no longer available since ore processing has been moved to North Dakota
- ❖ At Eagle Mine monitor point QAL023B, the mean water level readings from 10/2019 – 9/2020 were a maximum of **1.7 feet (ft) below the calculated minimum background baseline level**
 - The document also notes that water levels have generally increased since the baseline was set
 - Mine attributed this drop in water levels to pumping of the mine services well and groundwater infiltration into the mine
 - This drop in water levels is then due to an average pumping requirement of 80,000 to 150,000 gallons a day – what happens at the Talon Tamarack site where it's estimated that 2,600,000 gallons might be pumped per day ... **approximately 20 times more than Eagle Mine**
- ❖ Water levels at many Eagle Mine wetland monitoring locations fell up to six inches below pre-mining baseline levels in face of the fact that regionally, the overall water levels have been increasing since the fall of 2013 with many monitoring locations near record high levels in 2020.
- ❖ Eagle mine listed at least 17 monitoring events that show levels of pollution and water chemistry changes outside the planned benchmark range – some with sulfate levels that exceed MN wild rice standards by x1500

Concerns – Ore/Rock Storage

- ❖ Tamarack Talon Mine site will include storage areas for development rock and ore to be shipped to North Dakota
 - These areas must be lined but we know linings leak over time
 - These areas also become a source of wind blown dust into the environment

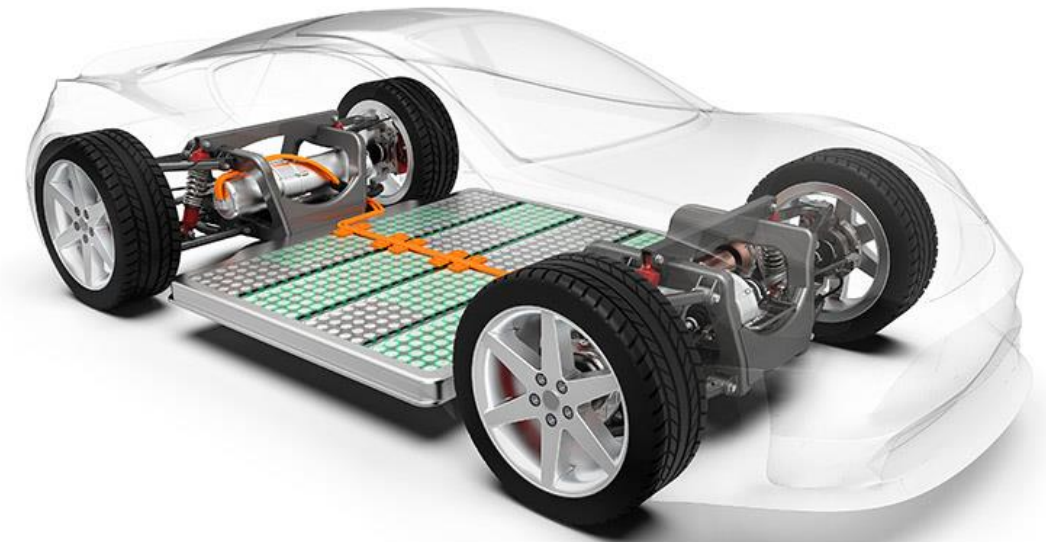
- ❖ At Eagle Mine TDRSA (Temporary Development Rock Storage Area) is lined with both a primary and secondary lining
 - A leak detection system is installed between the liners to monitor primary lining integrity
 - A total of approximately 55 gallons of water was purged from the leak detection sump in 2020, a larger volume than 2019.
 - Thus we see that the lining system does leak after only a few years of operation
 - **The leak levels are currently very small at this point but as noted in the document, increasing slightly over time.**

But Don't We Need Nickel?

- ❖ Tamarack North Mine Will Make NO difference in the Global Supply of Nickel
 - Only 0.6% of the world's supply of Nickel comes from the US (Michigan Eagle Mine)
 - US only possesses 0.375% of the worldwide reserves of Nickel (Michigan and Tamarack)
 - Instead of shipping this nickel onto global markets / China, should we not save our meager reserves for the future?

Tamarack Nickel will make no difference in the global supply of nickel ... but will serve to increase profits for Rio Tinto

From the USGS <https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-nickel.pdf>



Tesla publishes their list of mineral suppliers on an ongoing basis and guess what TALON IS NOT ON THE LIST
(<https://electrek.co/2022/05/06/tesla-list-battery-material-suppliers-long-term-nickel-deal-vale/>).