



On July 18, 2019, Antofagasta's Twin Metals, which proposes to build a sulfide-ore copper mine next to the Boundary Waters - put out a press release. Let's be clear about what Twin Metals' announcement really is: a huge admission and a massive set-back for the proposed mine project. Twin Metals admitted it wants to store 2.6 billion tons of its toxic sulfide-ore copper mine waste 16 miles closer to the Boundary Waters - in the Boundary Waters watershed, in a landscape of lakes and rivers that flows into the Wilderness.

Here are 5 key things to know about Twin Metals' announcement:

1. It's not really news.

Dry-stacking was the original method of tailings storage that was proposed in the October 6, 2014 preliminary feasibility study[1], for the Twin Metals project. Why would it make a show of announcing this method of tailings storage? It had another aim in mind.

2. In its press release, Twin Metals intentionally buries the lead.

The lead is not about how it would handle its tailings, it's about where Twin Metals wants to store them. Twin Metals admitted that it wants to move the proposed location of its mining waste 16 miles north to a location within a few miles of the Boundary Waters, to an area of lakes and rivers that drain into the Wilderness.

Twin Metals tried everything to keep from having to move its tailings basin into the Boundary Waters watershed. Now Twin Metals admitted to breaking that promise. This is bad news for Twin Metals and it knows it, but now it has to admit it will be dumping mountains of mine waste in the Boundary Waters watershed.

With no other options, the company's PR team used smoke and mirrors to distract, just as a magician would, from what it is actually planning to do: permanently dump billions of tons of sulfide-ore copper mining waste in the headwaters of the Boundary Waters Canoe Area Wilderness and Voyageurs National Park.

3. No technology in existence now or on the horizon - including dry-stacking - can prevent a sulfide-ore copper mine in this location from polluting surrounding groundwater and surface water, including the Boundary Waters.

4. Dry-stacking Twin Metals' tailings will not eliminate the risk of perpetual mining pollution flowing to the Boundary Waters.

Dry-stacking mining waste is not a panacea. In dry-stacking, a company reduces water content of the tailings to around 15%, and dumps them onto a liner. Then the mining company compacts the tailings in the hopes of inhibiting rainwater and snow-melt from soaking in and re-hydrating the tailings. Dry tailings degrade air quality with fugitive dust, which the Minnesota Department of Natural Resources has said may contain heavy metals, sulfur, and fine particulates. There are also other risks, as well.

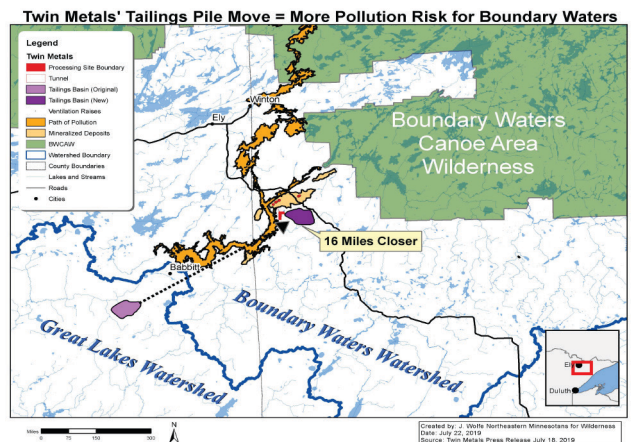
First, there will be toxic seepage from the tailings. Twin Metals would have to build a perpetual seepage collection and treatment system, which means pipes, pumps, valves, and holding tanks, all of which eventually break, leak, rust-through, freeze and burst, or fail in other ways.

Second, all liners, even the best ones, eventually leak,[7],[8] and Twin Metals can only treat the pollution it catches. Tailings leachate that escapes the liner will go untreated and make its way through groundwater to surface waters.

Third, a dry tailings facility can fail if it is re-saturated. The Boundary Waters watershed receives 30 inches and more of rain and snowmelt each year, and severe rain events are increasingly frequent. This wet environment poses a high risk that Twin Metals' tailings pile will re-hydrate. Minnesota regulators warn of serious pollution consequences if that happens.[9] This risk is heightened in Twin Metals' case because the mining company proposes to use topsoil, rather than a plastic or other waterproof liner, to cover its tailings. Topsoil will allow rain and snowmelt to infiltrate the tailings pile. Twin Metals' own website (e.g., saying that its "tailings can safely be exposed to air and water") suggests that it understands the risk of its tailings re-hydrating.

Fourth, Twin Metals says that it won't build a tailings dam to hold back its tailings, saying it's not necessary. If and when the tailings pile re-hydrates, however, there will be no dam to stop the tailings pile from failing catastrophically - in an area of lakes, streams and rivers that flow into the Boundary Waters.

Finally, the air above the Boundary Waters is a protected Class I airshed. The lakes and rivers of the Boundary Waters are designated the highest level "Outstanding Resource Value Waters." Pollution from a Twin Metals mine, not only but especially from its tailings, would degrade the Boundary Waters' air and water quality contrary to law.



5. Twin Metals referred to four mines using dry-stacking in the northern U.S. and Canada. All of those for which environmental performance data are available have caused significant water pollution.

Twin Metals has misled us in another way, as well. Twin Metals asserted in its July 18th press release that dry-stacking had “been successfully used in four mines in the northern United States and Canada with similar climates to Minnesota,” without specifying which mines they meant. Recently, a Duluth resident called the Twin Metals office and asked which mines the company was talking about. The Twin Metals representative answered: the Green’s Creek and Pogo mines (both in Alaska), and the Raglan and Éleonore mines (both in northern Quebec).

Here’s what can be determined from available materials on these four mines:

- All are still in operation. This is important because it sometimes takes a decade or two after mining has ended for the full scale of water pollution to become evident. Nonetheless, all mines have polluted and may continue to pollute surrounding surface water, groundwater, or both.
- At the Green’s Creek mine, the “dry” stacked tailings pile has partially re-saturated, and the mine has polluted the waters and sediments of Hawks Inlet (on Admiralty Island, a National Monument) by discharging on numerous occasions total suspended solids and heavy metals, including lead and zinc, in excess of permit limits and water quality standards. [See 2013 Alaska Pollutant Discharge Elimination System Permit Fact Sheet for the Hecla Greens Creek Mining Company, <https://bit.ly/2kwllyl>, at p. 10; see also pp. 7-9] The state of Alaska has so far failed to resurvey marine life in the bay for comparison with baseline studies that occurred in the 1980s, before the mine opened. Until those baseline studies are repeated the full impact from the mine, in terms of heavy metals contamination of the ocean and sea life, cannot be quantified. Alaska has confirmed elevated lead levels around, and at distances up to 1,695 feet from, the Greens Creek mine tailings dump. Alaska Department of Environmental Conservation attributes the lead loading to fugitive dust blown from the dump during dry, cold, windy conditions. [See Final EIS for the Greens Creek Mine Tailings Disposal Facility Expansion, <https://bit.ly/2lBn8ti>, at p. 3-7] As stated in Southeast Alaska Conservation Council’s report, “Performance of Hecla Mining Company at the Greens Creek Mine in Admiralty Island National Monument”:

Hecla’s claim that mining operations at Greens Creek have maintained or protected the surrounding marine environment is unsupported by credible scientific evidence. Neither the company, nor state and federal agencies, can show that mining operations at the Greens Creek Mine within the Admiralty Island National Monument meets the “no irreparable harm” standard for mining operations under the Alaska National Interest Lands Conservation Act. The record does show a 3-6 times increase in lead concentrations in various receptors within the adjacent marine environment.

- At the Pogo mine, water discharged by the mine contains excess nitrates, likely because the dry-stack tailings pile was built without a liner. It was said by the mining company and its contractors that a bottom liner would not add to water protection, but would increase the risk of re-saturation of the tailings and a future failure of the tailings facility:

Permeabilities of the fine-grained dry-stack tailings themselves were not considered to be greatly different than permeabilities of an installed liner system. ... Placement of an impermeable liner beneath the general placement zone likely would cause saturation of the tailings pile and result in occurrence of the worst case scenario, which was not the design intent. Thus, saturation caused by the impervious liner likely would increase stability risk. [See Pogo FEIS <https://bit.ly/2kL9K5x>, at, p. 4-182]

Groundwater monitoring wells installed downstream of the recycled tailings pond (RTP) dam, around the RTP, down-gradient from the ore body, and within the footprint of the mine’s surface processing facility show violations of groundwater water quality standards (WQS) for nitrates, iron, arsenic, manganese, and other pollutants. For example:

Two wells are located below the Drystack Tailings Facility: MW11-001A and MW11-001B. The wells monitor ground water downstream of the DSTF and upstream of the Recycled Tailings Pond (RTP). Nitrates and TDS [total dissolved solids] remain above ADEQ [Alaska Department of Environmental Conservation] WQS in this area and Copper in MW11-001A.

Results in some groundwater wells also show chloride, nitrate, and sodium levels above “trigger limits,” and the company reports that “mercury remains elevated” in the mine process water separated from the tailings. [See Northern Star’s 2018 “Annual Activity and Monitoring Report” for the Pogo mine, <https://bit.ly/2lGDgte>, at pp 7-9, 14-17; 21-22]

- “At the Raglan mine site,” which began production in mid-1998, “site runoff and tailings water discharge that is collected in a holding pond, treated and then released to the environment continues to exceed toxicity limits. The closing of the zero process water discharge recycling loop has reduced the frequency of toxicity events.” [See a May 10, 2004 “Annual Information Form” filed with the Securities Exchange Commission (SEC) by Falconbridge Limited, then the Raglan mine’s owner, at <https://bit.ly/2lxmFrX>]
- At the Éleonore mine, which began operations in 2014, “elevated concentrations of ammonia and residual cyanide by-products were detected in mill effluent,” a pollution problem that continued until October, 2017:

“Following Éleonore’s mill start-up in 2014, the new process water bleed (discharge) to water treatment plant (WTP) and paste backfill process resulted in increased concentrations of contaminants in water effluent, according to Gold corp. Even though the cause of the ammonia and residual cyanide toxicity couldn’t readily be identified, the Éleonore ore team immediately notified all major stakeholders ... informing them on the extent of the problem and plans to rectify the situation.”

For reducing ammonia and cyanide toxicity in water discharged to area lakes by 90%, Goldcorp, the parent and owner of the Éleonore mine, gave the mine its annual environmental responsibility award. [International Mining, at <https://bit.ly/2TNXi5i>]

A review of available environmental performance data for the four mines shows that Twin Metals, when it said those mines had used dry-stacking successfully, was not correct. Twin Metals either failed to review the actual track record at those mines, intended to mislead Minnesotans, or has difficulty distinguishing between success and failure.

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