

CHIEFTAIN METALS' WATER QUALITY STUDY FLAWED AND UNRELIABLE

INDEPENDENT ANALYSIS FINDS SIGNIFICANT RISK FROM TULSEQUAH CHIEF

Will new cleanup orders stop the mine pollution or lead to more delay?

Acid Mine Drainage Since 1957

Since it was abandoned in 1957 without any reclamation, the Tulsequah Chief mine has been pouring toxic acid mine drainage (AMD) into the Tulsequah River. The Tulsequah is the largest tributary to the Taku River, Southeast Alaska's most productive salmon river. The defunct underground mine is located in northwest British Columbia (B.C.) on the banks of the Tulsequah River just a few miles from the Alaska border. Despite [numerous inspections and cleanup orders](#) from B.C. agencies and frequent calls for action from Alaska and the U.S., B.C. and Canadian authorities have done little to enforce the orders and halt the pollution. At least some of this inaction is based on a study that current mine owner Chieftain Metals is using to suggest the AMD isn't harming the Taku watershed. However, an independent analysis of the study shows Chieftain's claim is not scientifically defensible and there is evidence the discharge is more harmful than claimed by Chieftain.



Picture from October 2015 [inspection](#) showing acid mine drainage piped directly into the Tulsequah River.

Water Quality Study Required Due to Shutdown of Water Treatment Plant

The only significant attempt to address the pollution was the installation of a temporary water treatment plant by Chieftain Metals. But the plant only operated for several months and was closed in [June 2012 due to costs and technical issues](#). As a result, AMD is once again pouring directly into the Tulsequah River, in violation of permits, Canadian federal law and a Memorandum of Understanding with the Taku River Tlingit First Nation.

In August 2013, the B.C. Ministry of the Environment required Chieftain Metals to conduct an [Ecological Risk Assessment \(ERA\)](#) of the AMD. The ERA was completed in December 2013 and concluded the AMD discharge poses a low risk to aquatic habitats. [B.C. Minister of Energy and Mines Bill Bennett cited](#) the ERA as evidence the AMD issue is minor and thus a low priority for remedial action.

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Independent Analysis Finds Major Flaws in Chieftain Water Quality Study

Rivers Without Borders commissioned an [independent assessment of the ERA](#), which concluded *“the ERA relied on an unclear and insufficient sample design, used inappropriate receptor (bioindicator) species, incorporated previously collected data of unknown quality, failed to address some study objectives altogether, and reported information haphazardly. Consequently, the conclusion of low risk to aquatic life from Tulsequah Chief Mine AMD is unreliable.”* Specific findings include:

- Estimates indicate that 264,000 gallons per day (over 96 million gallons per year) of AMD are flowing into the Tulsequah River, containing at least 13 elements with harmful impacts to aquatic life.
- AMD at the mine contains copper and zinc levels exceeding B.C. standards by 1,000 and over 2,000 times respectively. Copper and zinc are both toxic to fish, inhibiting growth, breathing, heart function, and spawning, and ultimately decreasing survival rates.
- Aluminum, lead and copper are at their highest levels during salmon fry emergence.
- The ERA used species that fail to meet the requirements for appropriate “bioindicators” when assessing AMD impacts on aquatic resources.
- The ERA did not identify how far downstream the toxic contamination is traveling. The farthest data point on the Tulsequah River (no sampling was done in the Taku) 1.6 miles downstream from the mine shows copper and zinc still exceeded B.C. water quality standards by more than five and six times, respectively.
- The temporary water treatment plant is still closed and contamination continues at a rate similar to 2009 when an Environment Canada official collected water from the site that caused 100% fish mortality in lab studies.
- “Hazard quotients” (HQs) used in the ERA to estimate risk directly contradict the conclusion of “low risk.” HQs consistently exceeded 1 (meaning conditions may pose unacceptable risks to aquatic life) for cadmium, copper, and zinc at a site about 0.3 km (0.2 mi) downstream of the mine and for copper at least 2.7 km (1.6 mi) downstream of the mine.
- Two of the ERA’s major assumptions, water quality is unaffected by AMD in off-channel habitat and fish do not use turbid mainstem environments, are not supported by actual in-stream sampling.

Chieftain’s Claims Not Scientifically Defensible

Several of the five short-term water quality studies that have been conducted in the nearly six decades since the mine stopped operating are flawed and none of them are comprehensive. One of those studies concluded Tulsequah Chief mine is the major contributor of toxic heavy metals to the Tulsequah and Taku drainages during low flows.

There simply has not been a comprehensive and scientifically defensible study of the overall effects of the Tulsequah Chief AMD on the Taku watershed. Chieftain’s claim that the discharge is not causing significant harm to the watershed is not substantiated. In fact, there is evidence that the pollution is more harmful than Chieftain claims. Until there is a study with water and sediment sampling in both the Tulsequah and Taku Rivers, with studies of appropriate fish and aquatic invertebrates and analysis of how spawning and rearing has been affected, it is impossible to determine the effects of the pollution.

Next Step: Real Cleanup or More Delay?

Alaskans were initially encouraged by [Minister Bennett’s reaction](#) to his visit to the Tulsequah Chief mine site in August 2015, after which he pledged to rectify the problem sooner rather than later. However, [he quickly began backtracking](#), claiming that since the discharge isn’t harmful the Tulsequah Chief was a low priority for cleanup. He said he was hoping eventual mine development would result in a halt to the AMD. But with [Chieftain Metals nearly out of money](#) and unable to attract any investors, and a risk-averse investor climate and the downward trend in metals prices, it seems unlikely this mine will ever re-open, certainly not in the foreseeable future. So a cleanup solution that is not dependent on Chieftain and an operating mine must be developed as soon as possible.

Chieftain has been ordered to develop a plan to halt the violations, especially the direct discharge of AMD to the Tulsequah River. In the past, cleanup orders have been issued, but little has been done to enforce the orders and stop the AMD. So will B.C. now enforce its cleanup orders, or again let the mining company off the hook? What happens now at the Tulsequah Chief will be a test of Minister Bennett’s commitment to stopping the problem and an indicator of how much B.C. can be trusted to develop other transboundary mines, such as KSM, in ways that don’t harm Alaska’s downstream water quality and salmon.