Taku **E**nvironmental **A**ction **M**anagement Plan
(TEAM) Plan

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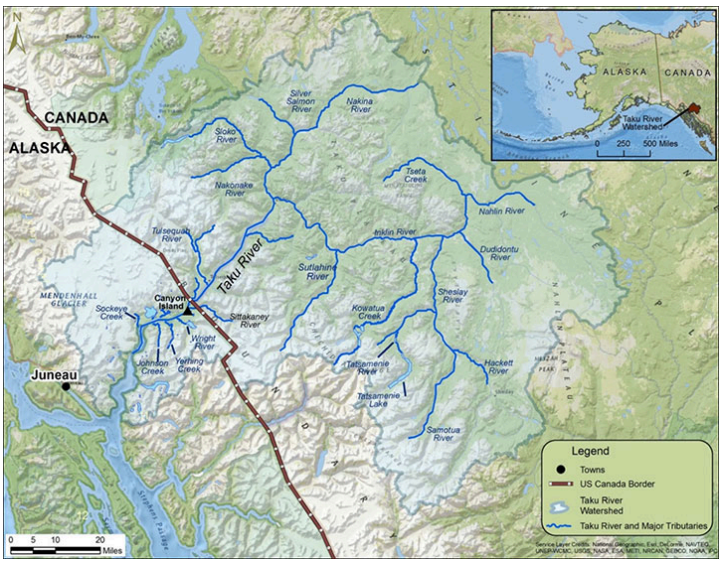
Mission Statement:

The TEAM Plan's mission is to safeguard the ecological integrity of the Taku watershed in Alaska by the Canadian border through various remediation and restoration projects centered around the negative environmental impacts caused by historical mining, pollution, and melting glaciers. With our goals, we hope to preserve the watershed ensuring future protection of water quality, wildlife habitats, and indigenous land by 2030.

Background and History:

The Taku River is critical for the stability of habitats and the indigenous people who inhabit the area. The river has its headwater in British Columbia, Canada with its terminus in southern Alaska near Juneau. The basin, which spreads over 10,000 square miles, drains into the Taku Inlet, then Stephens Passage, then the Pacific Ocean.



The watershed was and still is inhabited by the indigenous Tlingit people who advocate for the protection of their land from industrial harm. Over the course of history, the Russians took control of Alaska and later on sold the land to the United States in 1867.

Maintaining the ecological integrity of the Taku River and the Taku River Basin is extremely important. The indigenous people, including the Tlingit people, rely on the Taku River for fresh water and are dependent on the salmon that spawn there. Nearly half of all of the commercially caught salmon in Alaska is from the southeastern region, including the Taku River. Various salmon species in the Taku River mainly include chinook salmon, chum salmon, and coho salmon. Abundant wildlife surrounding the watershed also provide the Tlingit people with food and clothing.

Mining activities have a history of posing great threats to the Taku River and the surrounding environment. Pollution into the river, such as acid mine drainage, has devastating effects on the quality of the water, drastically affecting the fish and other aquatic organisms. Ecosystems are all interconnected, and therefore, negative impacts in the river would affect all of the surrounding

wildlife and indigenous people. The Tulsequah Chief Mine was a gold mine that was abandoned and has been leaking pollutants into the Taku River for decades, with plans arising to reopen the mine. In addition to the Tulsequah Chief Mine, the New Polaris Mine is another gold mine that is planning on reopening as well. Reopening the abandoned gold mines will inevitably lead to devastating consequences for the water quality and surrounding ecosystems.

Policies and Mandates:

The Taku River flows through Alaska and Canada, making the conservation and protection of the watershed an international concern. The bilateral group of Alaska and British Columbia officials meet twice a year to address environmental concerns regarding the shared border with a focus on water quality and mining. At the meeting, the senior officials share and discuss water quality data, mine operations and land development, and environmental assessments. In addition to discussing and sharing information with the United States and Canada, the Pacific Salmon Treaty was initiated in March of 1985 to prevent overfishing and make sure both the United States and Canada benefit equally from the salmon production.

The United States has various laws that pertain to environmental protection, water quality, and mining regulation.

- The Clean Water Act (1972): Regulates pollution discharges and water quality standards for US waters.
- National Environmental Policy Act (1970): Requires federal agencies to assess their environmental impact prior to making decisions.
- Endangered Species Act (1973): Conserves and protects endangered and threatened species.
- Wild and Scenic Rivers Act (1968): Allows Congress to preserve rivers that provide natural, cultural, and recreational values.
- Federal Land Policy and Management Act (1976): Governs how the Bureau of Land Management manages public lands.

Alaska has additional state laws that pertain to environmental protection, water quality, and mining regulation in regards to the health of salmon.

- The Anadromous Fish Act (1965): Requires approval of projects from the Alaska Department of Fish and Game concerning rivers and streams that are vital for salmon spawning and rearing.
- The Fishway Act: Requires notification and approval for activities from the Alaska Department of Fish and Game if the activities involve possible impediment of the passage of fish.

Canada also has federal laws that insure the protection of the environment and regulation of mining activity.

- Mineral Tenure Act: A law of British Columbia that regulates mining and mining claims in the province.
- The Environmental Assessment Act (2012): Assesses possible environmental damages of new projects, including mines.
    - Section 31 Subsection 7 states: "If, in the reasonable opinion of the minister as set out in subsection (1) or (6), a reviewable project is substantially started, the certificate remains in effect for the life of the project, subject to cancellation or suspension under section 56."
- The Environmental Management Act: Regulates the discharge and pollution of industrial and municipal waste as well as oversees site remediation.
- The Water Sustainability Act (2016): Ensures a sustainable and clean water supply for the people of Canada.
- Canadian Fisheries Act: Regulates fisheries and fishing vessels in Canada.

Governance Structure:

Various organizations and federal agencies in the United States and Canada, respectively, oversee the Taku River. The Taku River Tlingit First Nation (TRTFN) of Canada have fought to maintain the integrity of their watershed and protect the natural environment that includes the Taku River. In the United States, the Environmental Protection Agency (EPA) and Alaska Department of Environmental Protection (DEC) oversee the quality of water and the surrounding area of the Taku River.

Problems:

TEAM's main focus is to examine and analyze the effects that abandoned mines, plans for new mines, climate change, and the melting glaciers have on the Taku River watershed and its salmon population. In looking at the watershed and its surroundings, TEAM's aim is to see how the mines and glaciers affected by climate change affect both the ecosystem and its keystone species.

Problem:	**Description:**	**Causes:**
P1: Heavy Metal/ Toxins Pollution in the lower Taku watershed	Multiple pre-existing mines have polluted the Taku River with heavy and toxic metals with a proposed mine, the Tulsequah Chief, in the same area as the previous polluting mines.	- An abandoned underground BC mine - Discharge of toxic acidic and heavy metals waste into the lower Taku watershed -Proposal of a new mine being developed in the same

		area
P2: British Columbia environmental regulations on mining claims are not accounting for melting glaciers	New mining claims outside protected areas are not prohibited under British Columbia's Mineral Tenure Act, as they won't pose an instant risk to the Taku river (even though they will in the near future as global warming melts more glacier) These mining claims also are very difficult to revoke once they have been "substantially started"	-Legal pluralism and the Mineral Tenure Act and Environmental Assessment Laws not accounting for terrain transformation caused by melting glaciers -Global Warming
P3: Lower spawning rates of salmon	The number of spawning Chinook salmon in the Taku River in 2022 was around 15,000, which is lower than the lower goal of 20,000 set by Alaska Department of Fish and Game.	- Toxic metals from acid mine drainage - Positive feedback loops of melting glaciers warms water temperature

Problem 1: Heavy Metal Pollution

The small underground mine in British Columbia has been discharging the metal waste ever since it was abandoned in 1957. Despite calls from Alaska for BC to end this pollution, it has continued unabated. Another issue is a proposed new mine, Tulsequah Chief, has long been a matter of intense controversy, lawsuits, broken promises, bankruptcies, and wasted government resources. This would be a gold and mixed metals mine, developed in the same area, on the bank of the Tulsequah River very close to its juncture with the Taku and just upstream of the watersheds premier salmon spawning and rearing habitat straddling the international border.

G1: Cleanup of Abandoned Mines

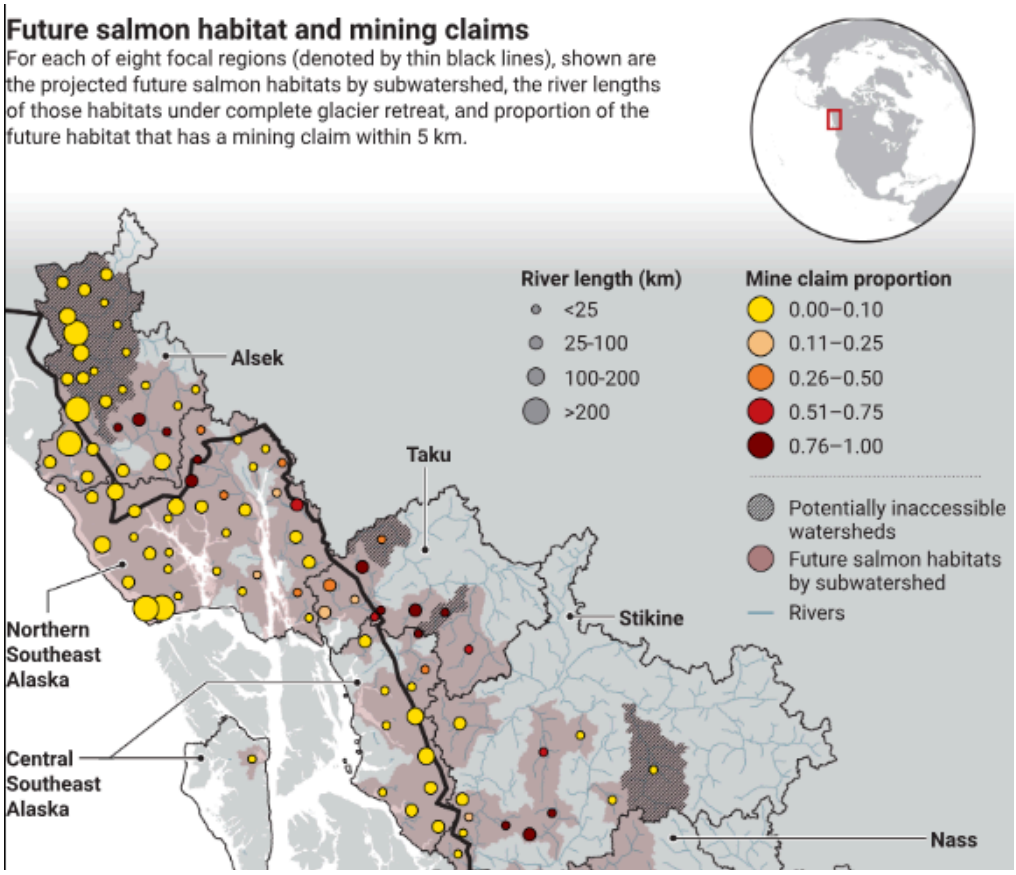
Heavy metal pollution has been an ongoing issue due to abandoned mines and possible construction of new mines. Solutions to this include a full cleanup of the abandoned mines in order to bring the rivers to a more neutral ph level. Because the mine is located in Canada, the

United States would have to work with the Canadian government to assess the damage of the mines as well as cleanup the pollution they have caused. In a previous attempt to clean up the mines, the B.C. government took control of the abandoned mine and started a cleanup. The B.C. government released a remediation plan that estimated clean up at more than $55 million with $2 million a year for maintenance and monitoring of the site in the coming decades, which included mine water discharge. The cost of the cleanup over the next two decades will be about $100 million. Cleanup, once started, is expected to take at least five years. Teck, the company that owned the mines in the 1950s, has provided $1.575 million in 2021 and $1.685 million in 2022, however; the rest of the cost will end up being covered by taxpayers in B.C. The goal is to continue to support this effort for cleanup.

Problem 2: Legal Loophole to Bypass Regulations of Environmentally Harmful Mining Activities

British Columbia's Mineral Tenure Act includes an easy process to stake mining claims, so long as it's outside protected areas. While these claims are also subject to the Environmental Assessment Act, the assessment of environmental risk of the mines doesn't account for changing habitats via climate change. Specifically, new mining claims on glaciers don't categorically present an environmental risk to the Taku river according to the Environmental Assessment Act, but because of global warming, such a new mine will become a significant polluter of the river as the glacier melts and the upstream river area (which can become new salmon spawning habitat) expands. Under this legislation, mining claims can be made so long as they are outside the protected areas and don't *currently* pose an environmental risk, but future mines in these areas outside the protected zones will still become significant polluters of the downstream environment in the future. Additionally, these certificates can be held perpetually after initially being passed, so long as the project is "substantially started".

Currently, of the 279 km of future salmon habitat in the Taku river watershed, 62% of it is currently within 5 km of mining claims.



G2: Amend Canada's Environmental Assessment Act

While an amendment on the Mineral Tenure Act may slow down future mining projects and claims, such an amendment would not be able to revoke current mining claims for environmental reasons. Therefore, an amendment to the Environmental Assessment Act would be more effective.

We propose amending section 31 (duration and effect of the certificate) subsection 7 of the Environmental Assessment Act, which currently states,

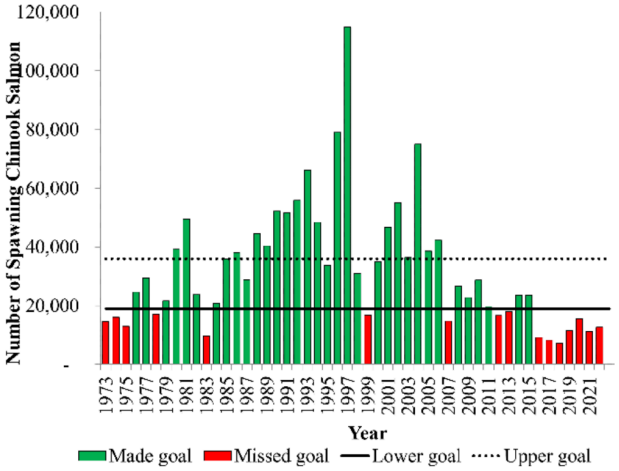
"If, in the reasonable opinion of the minister as set out in subsection (1) or (6), a reviewable project is substantially started, the certificate remains in effect for the life of the project, subject to cancellation or suspension under section 56."

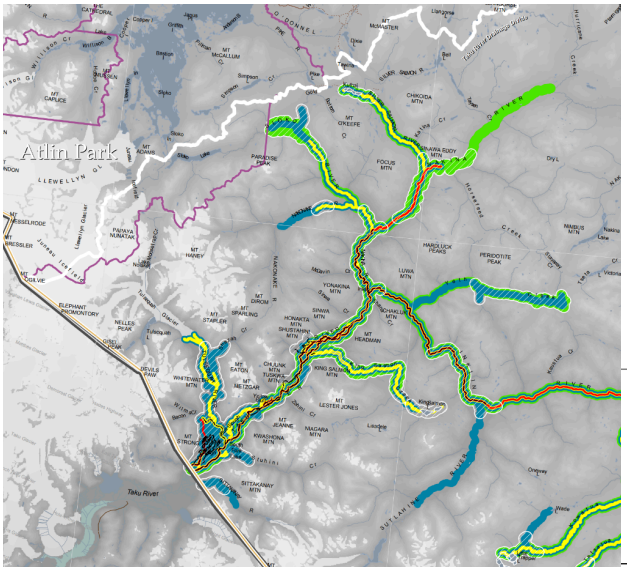
Due to the usage of the term "substantially started", and no provisions in section 56 that allow for suspension of the certificate due to new environmental risks, mining projects in current glacier areas can't be stopped when the melting glacier causes the mining project to become a new environmental risk. We propose that legislation should be passed by the Canadian government to amend the Environmental Assessment Act to remove the provisions that give lifetime certification to projects that have been substantially started, and replace them with continuous recertification requirements per time intervals between 1-2 years, with the specific time interval being determined in reasonable opinion of the minister. Projects that do not

continue to prove they pose little environmental risk should have their certificates suspended until they can do so.

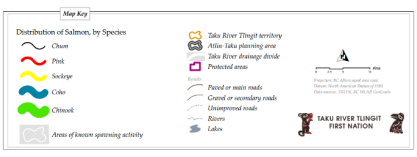
Problem 3: Lower Population of Salmon

Salmon are crucial species for the transport of energy and nutrients that determines overall ecosystem health. Salmon populations support local fisheries and indigenous groups who live within the Taku watershed. The number of spawning Chinook salmon in the Taku River in 2022 was around 15,000, which is lower than the lower goal of 20,000 set by Alaska Department of Fish and Game. The Taku river is the largest salmon producing river in southeast Alaska, contributing over $8 million dollars in economic activity. All of the salmon species within the Taku watershed are threatened by water acidification from acid mine drainage from nearby mines and because salmon are spawned in rivers and remain there during their juvenile stage, the salmon are more vulnerable to ecological changes than adult salmon.





Atlin-Taku Planning Area: **Distribution of Salmon**



Goal 3: Increase Salmon Population

Salmon populations as a whole have been negatively affected with declining populations in the Taku River. The TEAM plan proposes that the chinook salmon spawning number in the Taku River increase to 40,000 to be above the upper limit set by the Alaska Department of Fish and Game. Due to the number spawning in 2022 being around 15,0000, the increase would be 40% by 2030. To increase the salmon population, the most prominent solution is to address the acid mine drainage problem because acid mine drainage lowers the pH of the water and salmon prefer a neutral pH of 6.5-7.5. Additional actions that can be taken to increase salmon production include providing better connections between upstream and ocean outlets, and increasing the number of adults that are of a reproductive age. To spawn, salmon swim upstream and having an easier connection without a barrier would result in more salmon being able to reach their spawning area. Having a greater number of adult salmon that are able to reproduce would increase the amount of salmon spawned and can occur due to tighter fishing controls and restocking the river.

Recommendations:

To combat heavy metal pollution, TEAM recommends:

- A combined effort from both Alaska and British Columbia to fully cleanup the abandoned mines
- Creating new regulations for both Alaska and British Columbia to design a plan around current abandoned mine drainage and the halting of future mine production
- Continually monitor sites near abandoned mines every year to be below the EPA water quality standards of 0.010 mg/L for arsenic, 0.005 mg/L for cadmium, 1.3 mg/L for copper, and 0.002 mg/L for mercury.

To help with the issues of environmentally detrimental mining claims, Team recommends:

- Legislation passed by the Canadian government to amend the Environmental Assessment Act to add continuous recertification requirements per time intervals between 1-2 years to include the effects of glacial melting.

To help increase salmon population, TEAM recommends:

- Cleaning up the pollution caused by abandoned heavy metal mines located in the British Columbia side of the Taku River.
- Providing better connections between upstream and ocean outlets with less barriers for fish migration.

Conclusion:

The Taku watershed is home to groups of indigenous groups as well as being the largest salmon producing river in Southeast Alaska, and the pollution issues continue to be a hindrance to the environment and health of the area. Many of these issues are due to the heavy metal pollution which affects many aspects of the watershed. TEAM includes suggestions to implement several solutions that address the heavy metal toxins, such as a clean-up plan and also legislation changes to expand the protected area. TEAM addresses the correlation between these problems, and requires the assistance from both the Alaskan and Canadian government to address these issues. TEAM hopes to preserve and protect the Taku River so that the ecosystem the river supports can continue to benefit the environment in the future.

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