

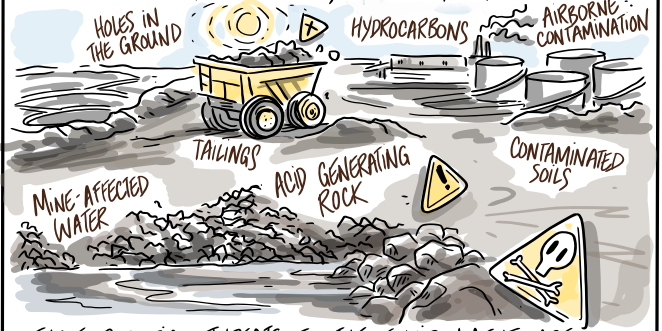
CLIMATE CHANGE & MINE CLOSURE

ACROSS CANADA AND THROUGHOUT THE NORTH, MINING IS A BIG INDUSTRY - AND HAS BEEN FOR A LONG TIME!



MINES CAN OPERATE FOR YEARS AND YEARS, EXTRACTING METALS OR MINERALS FROM THE EARTH

THE WORLD NEEDS MINING, BUT TO SOME DEGREE OR ANOTHER, IT ALWAYS ALTERS THE LAND - WITH SOME PROJECTS LEAVING PARTICULARLY DAMAGING LEGACIES



THESE POTENTIAL THREATS TO THE ENVIRONMENT ARE CALLED **LIABILITIES**.

ONCE MINES ARE DONE OPERATING, THEY ENTER INTO A NEW PHASE CALLED

CLOSURE.

We won't be extracting any more minerals

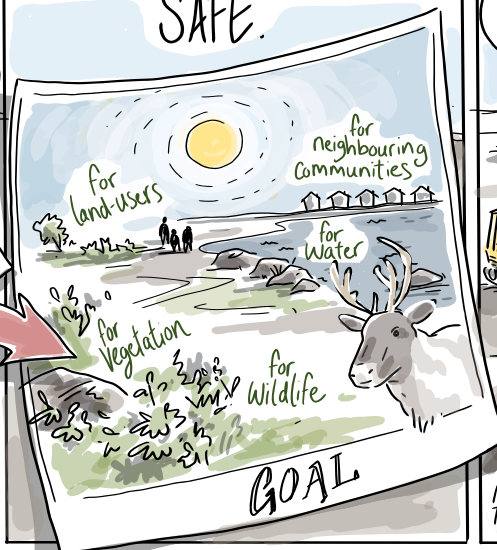


HOW WE WILL CLEAN-UP THIS SITE

IT IS GUIDED BY A **CLOSURE PLAN** WHICH, LIKE THE OTHER PHASES IN A MINE'S LIFE CYCLE, MUST BE APPROVED BY REGULATORS.

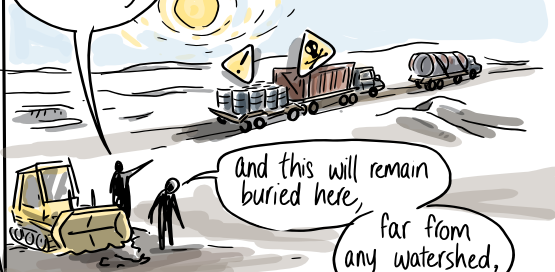
CLOSURE AIMS TO MANAGE THESE LIABILITIES, AND TO MAKE THE SITE OF THE NOW-CLOSED MINE

SAFE.



CLOSURE PLANS OFFER DIRECTION ON **REMEDIATION ACTIONS**,

That is being taken away,



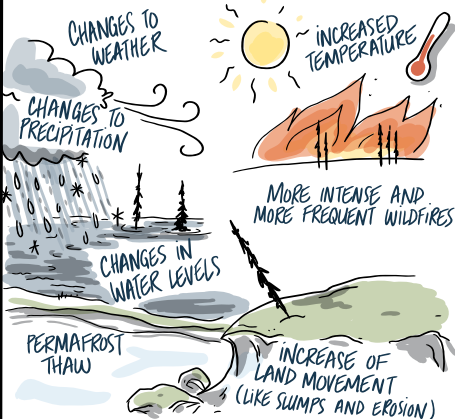
And this will remain buried here,

far from any watershed,

and so deep that permafrost will keep it frozen and stable.

IN THESE ACTIONS, IT IS ALSO IMPORTANT TO CONSIDER THE EVOLVING IMPACTS OF CLIMATE CHANGE OVER TIME.

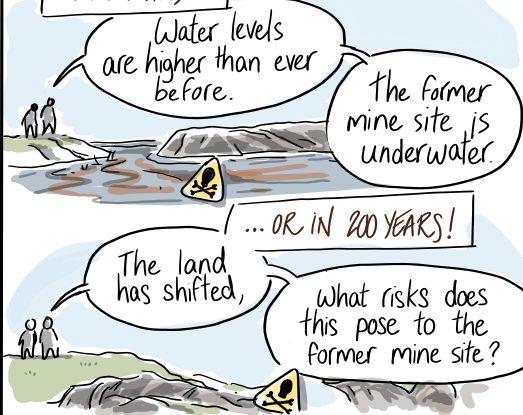
AS WE KNOW, DUE TO **CLIMATE CHANGE** OUR ENVIRONMENT IS CHANGING FAST AND IN UNPRECEDENTED WAYS.



ALL OF WHICH CAN LEAD TO THE MOVEMENT OF CONTAMINANTS.

THIS MEANS THAT STEPS TAKEN TO MAKE MINE SITES SAFE IN OUR CURRENT CLIMATE,

IN 50 YEARS...

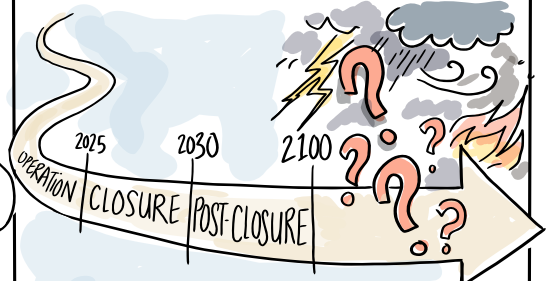


MAY NOT KEEP OUR ENVIRONMENT SAFE IN **THE FUTURE**

WHILE MANY CLOSURE PLANS DO TOUCH ON **POST-CLOSURE**

- ON HOW THEY WILL MONITOR THE SITE AND MANAGE ANY PROBLEMS THAT MIGHT ARRISE.

THIS LONG-TERM PLANNING RARELY CONSIDERS THE RISKS ASSOCIATED WITH CLIMATE CHANGE...



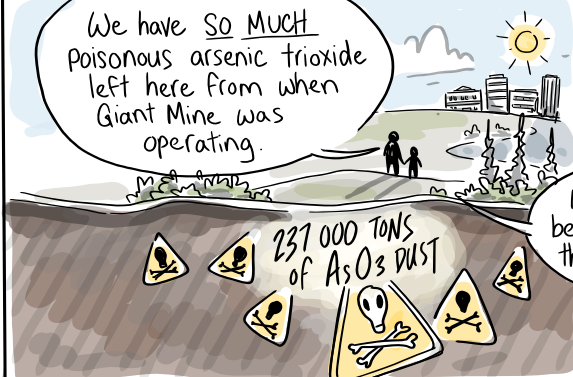
... AND GENERALLY DOES NOT LOOK BEYOND THE YEAR 2100!

PLANNING FOR THE LONG-TERM

HAZARDS LEFT BEHIND BY MINES CAN CONTINUE TO CAUSE RISKS TO OUR DESCENDANTS FOR GENERATIONS TO COME.

GIANT MINE IS AN EXAMPLE OF THIS:

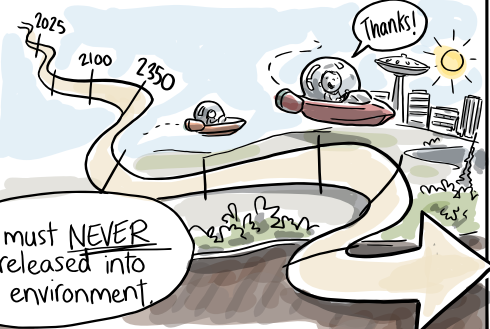
We have SO MUCH poisonous arsenic trioxide left here from when Giant Mine was operating.



237 000 TONS of As_2O_3 DUST

It must NEVER be released into the environment.

IN THIS CASE, THE POST CLOSURE PLAN THAT IS CURRENTLY BEING DEVELOPED MUST ESTABLISH HOW THE TOXIC DUST WILL BE MANAGED FOREVER.



THIS IS WHAT IS CALLED A PERPETUAL CARE PLAN.

IN YEARS TO COME, CLOSURE PLANS WILL NEED TO BE MADE FOR MANY OTHER MINES IN CANADA AND IN THE NORTH.

We need to decide how to best manage our liabilities.



IT IS IMPORTANT THAT THEY TOO PLAN FOR THE VERY LONG-TERM, TO BE SURE ECOSYSTEMS AND COMMUNITIES NEAR FORMER MINE SITES REMAIN SAFE FAR INTO THE FUTURE.

THE REMEDIATION MEASURES THAT ARE CHOSEN (NATURAL AND ENGINEERED) NEED TO WITHSTAND THE CLIMATE CHANGING.



That makes sense...

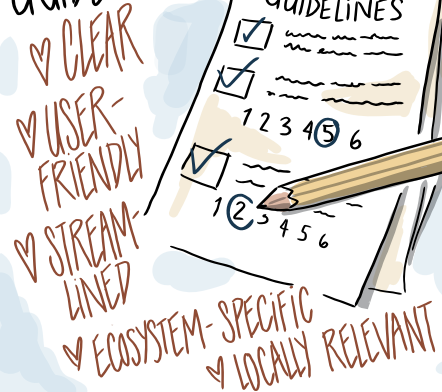
But what SHOULD we specifically be considering when trying to plan for Climate Resiliency.



There is currently no clear guidance for this.

THE CLIMATE READY MINE PROJECT IS WORKING TO DEVELOP A TOOL THAT WILL HELP DECISION-MAKERS.

STEP-BY-STEP GUIDELINES

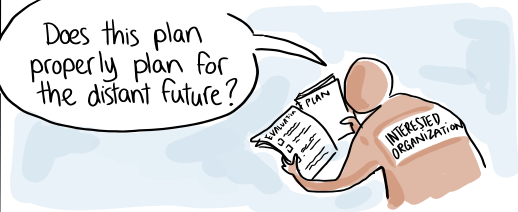


THE GUIDELINES WILL BE A TOOL FOR:

✓ THE PEOPLE CREATING THE PLANS



✓ GROUPS OR GOVS. EVALUATING THE PLANS



THE GUIDELINES WILL BE DEVELOPED THROUGH A COMBINATION OF:



SPRING 2024

FALL 2026

THE GUIDELINES WILL BE DISTRIBUTED STARTING IN THE FALL OF 2026.

We can use these to evaluate if the Giant Mine Perpetual Care Plan is as Climate resilient as possible!



THE PROCESS & TIMELINE

FOR DEVELOPING A CLIMATE CHANGE RISK ASSESSMENT FRAMEWORK FOR MINE CLOSURE.

PHASE 1 DISCOVERY AND BACKGROUND RESEARCH

How does mining closure and post-closure currently take climate change into account?

What are the best practices?

The regulations and policies?

2024 APRIL 2024 SEPT

PHASE 2 RESEARCH AND ASSESS EXISTING CLIMATE CHANGE RISK ASSESSMENT FRAMEWORKS Literature Review

What other similar documents exist?

What are their strengths?

How do they fall short?

What can we learn from them?

2024 SEPT 2026 MARCH

PHASE 2 CONTINUED! ENGAGE

We want this document to be co-created.

We want it to work in the real world.

WHAT ARE THE CHALLENGES TO ENSURING CLOSURE PLANS ARE CLIMATE RESILIENT?

WHAT TOOLS OR TRAINING WOULD BE NEEDED?

CREATE AN ADVISORY COMMITTEE

HOLDERS OF KNOWLEDGE AND EXPERIENCE (RELATED TO CLIMATE CHANGE AND MINE CLOSURE PLANNING)

COLLABORATE WITH THE GIANT MINE REMEDIATION PROJECT WORKING GROUP

INDIVIDUALS, COMPANIES OR ORGS DIRECTLY INVOLVED WITH CULTURE, REMEDIATION OR PERPETUAL CARE.

HOW COULD THE GUIDELINES BE MOST USER-FRIENDLY?

CONSULT THE PUBLIC

COMMUNITY MEMBERS WHO WOULD BE IMPACTED IF THE MINE CLOSURE WASN'T CLIMATE READY

WHAT MATTERS MOST? WHAT CLIMATE CHANGE RISKS ARE MOST CONCERNING?

We will check in and follow-up throughout the process!

2024 SEPT 2026 JUNE

PHASE 3 DEVELOP THE FRAMEWORK

We are taking everything we have learned, and turning it into clear streamlined guidelines.

We will test and improve the guidelines by using them to assess the quality of numerous existing Canadian mine closure plans.

2025 JUNE 2026 JUNE

PHASE 4 SHARE & DISSEMINATE KNOWLEDGE

We are getting this tool to everyone who can use it.

FRAMEWORK

CHECKLIST

1 2 3 4 5 6 7

1 2 3 4 5 6 7

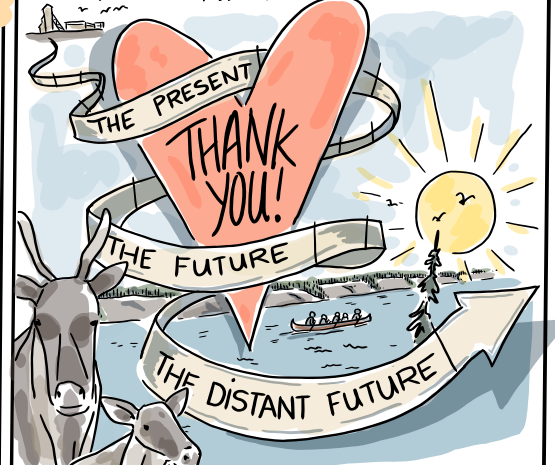
1 2 3 4 5 6 7

This is a structured tool to identify long-term climate related hazards...

...and make sure there are strategies in place to mitigate these risks!

2026 JULY 2026 DEC

IN PARTICIPATING IN THIS PROCESS, YOU ARE CONTRIBUTING TO MAKING THIS TOOL AS SUCCESSFUL AS POSSIBLE.



TO SUPPORT MINE CLOSURES THAT PLAN FOR THE SAFETY OF GENERATIONS TO COME!