



# Establishing a Long Term Environmental Monitoring Program (LTEMP) for the Giant Mine Remediation Project

October 14, 2015  
Banff, AB

Aaron Braumberger, AANDC,  
Chris Doupe, PWGSC

**Giant Mine Remediation Project**



Canada



---

## What is the Long-Term Environmental Monitoring Program?

- The Long Term Environmental Monitoring Program is a consolidation of all monitoring components that are currently ongoing or will be required at Giant Mine



# LTEMP Objectives

- Over the longer term, the LTEMP will inform:
  - the criteria and methods by which remediation activities with respect to the environment are prioritized;
  - the development and refinement of the predictive models of ecosystem response against which environmental remediation objectives will be assessed; and
  - the identification of areas where further scientific or other knowledge may be required to advance GMRP planning and implementation.



# Why have an LTEMP?

- A synergy of all monitoring—
  - To ensure stability of program with same look and feel:
    - individual monitoring component (SoP) development
    - data management
    - reporting
  - To ensure that cross-cutting issues are addressed in other components of the project
  - To inform stakeholders on continuous improvements through Monitoring activities
  - To consolidate overall management under a single entity
  - To liaise with the project team through a single portal



# LTEMP Components

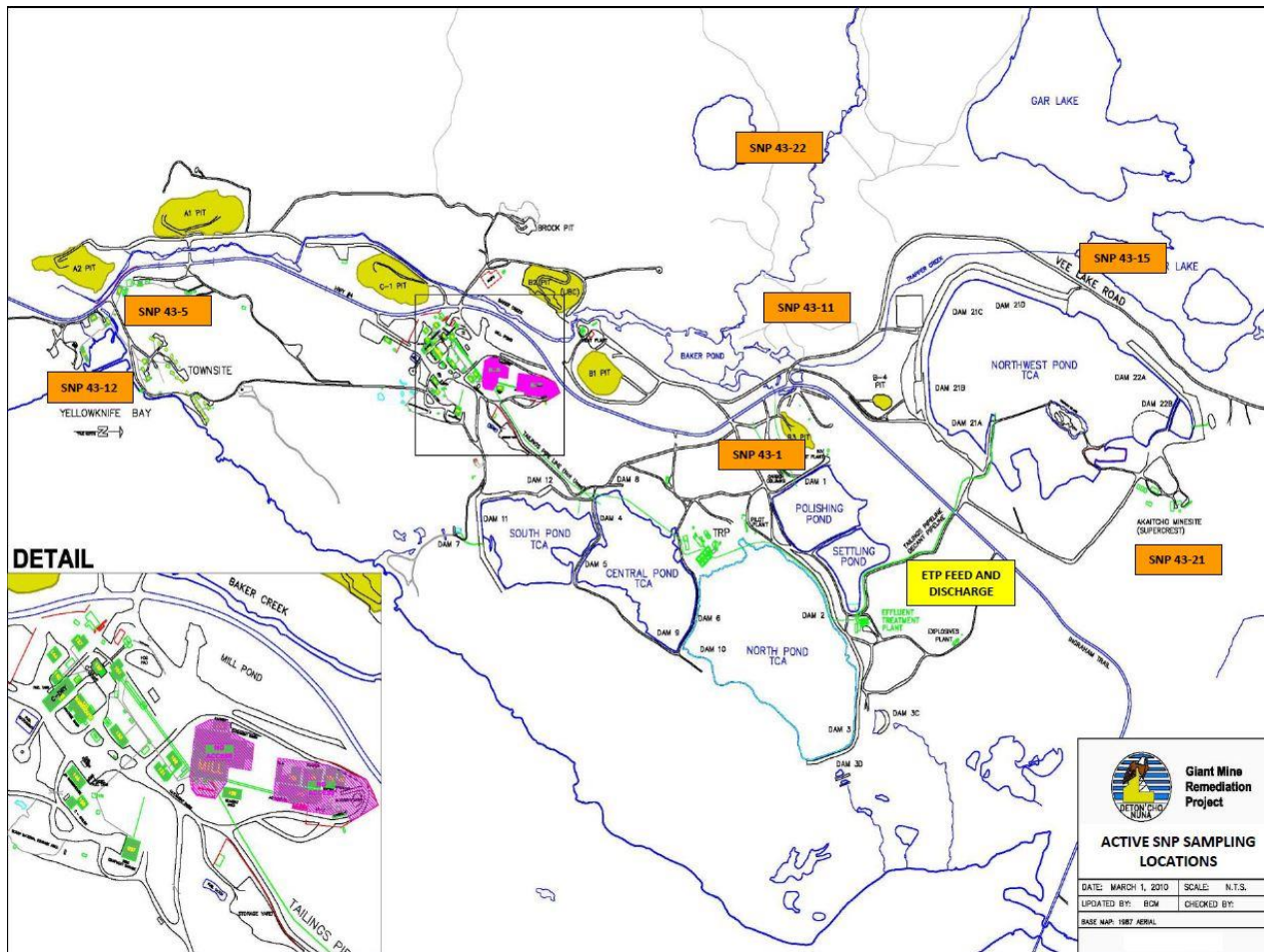
## **Regulatory**

- Surveillance Network Program (SNP)
- Metal Mining Effluent Regulations (MMER) including Environmental Effects Monitoring (EEM)
- Aquatic Effects Monitoring Program (AEMP) – water licence requirement
- Wildlife Management Program (WMP) – water licence requirement
- Air quality

## **Due Diligence**

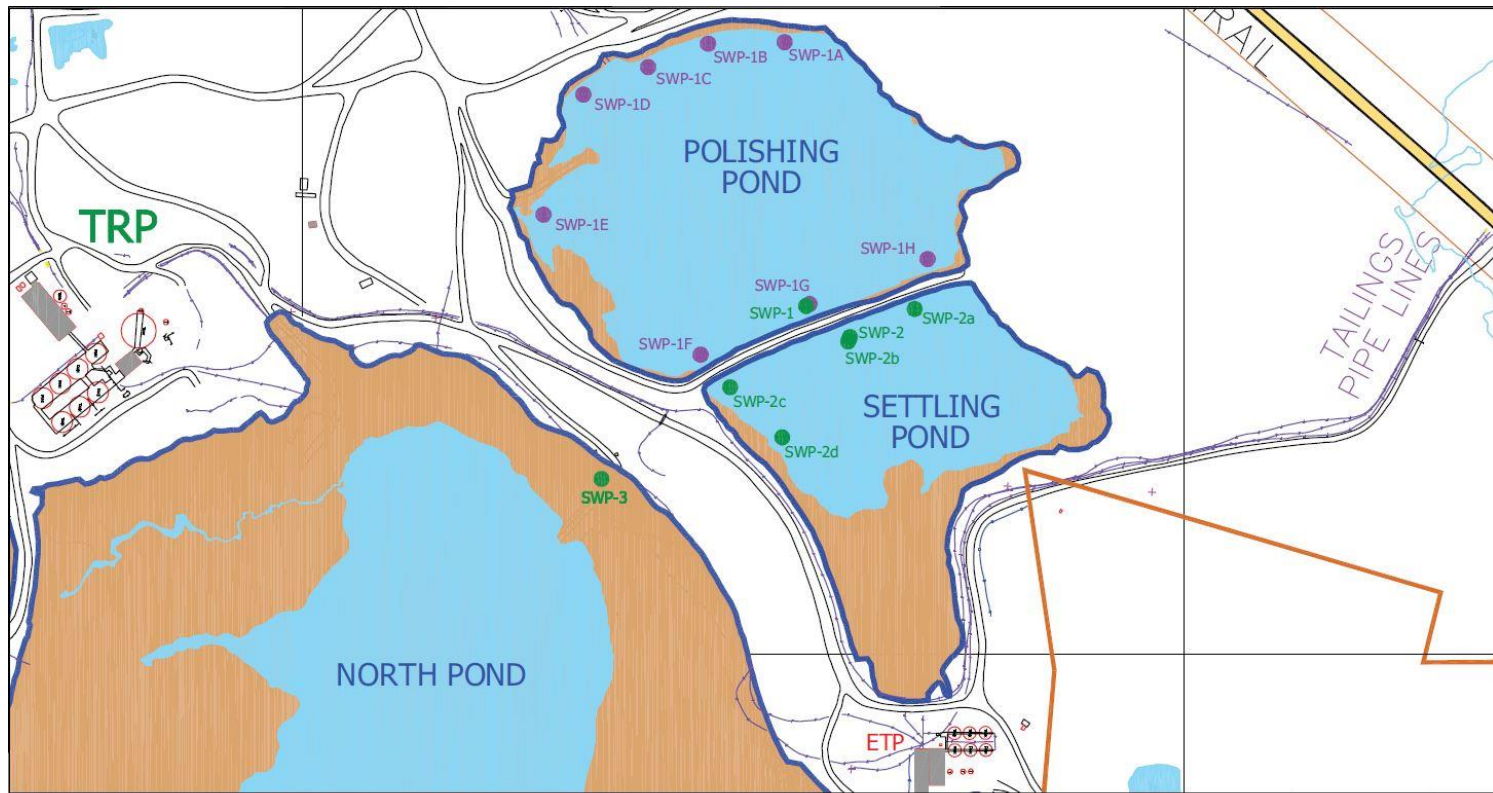
- Terrestrial & aquatic ecosystems including cumulative effects
- Freeze Program
- Lots of data needs to be analyzed to fill current gaps

# SNP Sample Points





# MMER Sample Points



Polishing Pond Profile Sample Locations

FIGURE 3: Perimeter Sampling Locations in the Polishing and Settling Ponds



# Aquatic Effects Monitoring Program

- The high level objectives for this work include:
  - Providing a plan for how water, sediment and biological monitoring (fish, benthics, plankton) will be conducted and how the results of the AEMP will be used to inform Adaptive Management;
  - provide a basis for feedback on aquatic effects monitoring with regulatory agencies (EC, DFO, MVLWB), aboriginal groups (YKDFN, NSMA) and public (AN, Oversight, City of YK);
  - provide a framework to allow the incorporation of TK.





# Baseline Work in Terrestrial Environments

- Completed terrestrial baseline studies:
  - Site Runoff & Storm Event Surface Water Quality Sampling Program (to update arsenic loading estimates to downstream aquatic receptors)
  - Pre- and Post-Roaster Deconstruction Breeding Bird Surveys
  - Site-Wide Bird Surveys
  - Site-Wide Bird Habitat Mapping Study
  - Site-Wide Contaminated Soils Assessment
  - Townsite Contaminated Soils Assessment (planned for completion in Summer 2016)
  - Site-Wide Baseline Noise Assessment



# Current Status of the Program

- Regulated components are being developed
- Due diligence components will incorporate baseline information & input from the public, and will be developed in the near future
- LTEMP will be structured in three phases:
  - pre-remediation;
  - remediation; &
  - post-remediation.
- The intent is for the LTEMP to be operational for the lifetime of the project (100 years).
- Flexibility must be drafted into each monitoring component of the LTEMP such that monitoring may be reduced or phased out as recovery goals and benchmarks are met
- Procedures for changing any monitoring program will be clearly detailed in a change procedure for each monitoring component.



# Community Consultation & Program

- Intent is to present results of baseline studies and ongoing program components to communities seeking input.
- Input may take various forms but needs to meet the following objectives:
  - Contribute to program objectives;
  - Be cost effective; and
  - Scientifically defensible and reproducible.



# Questions and Comments?

