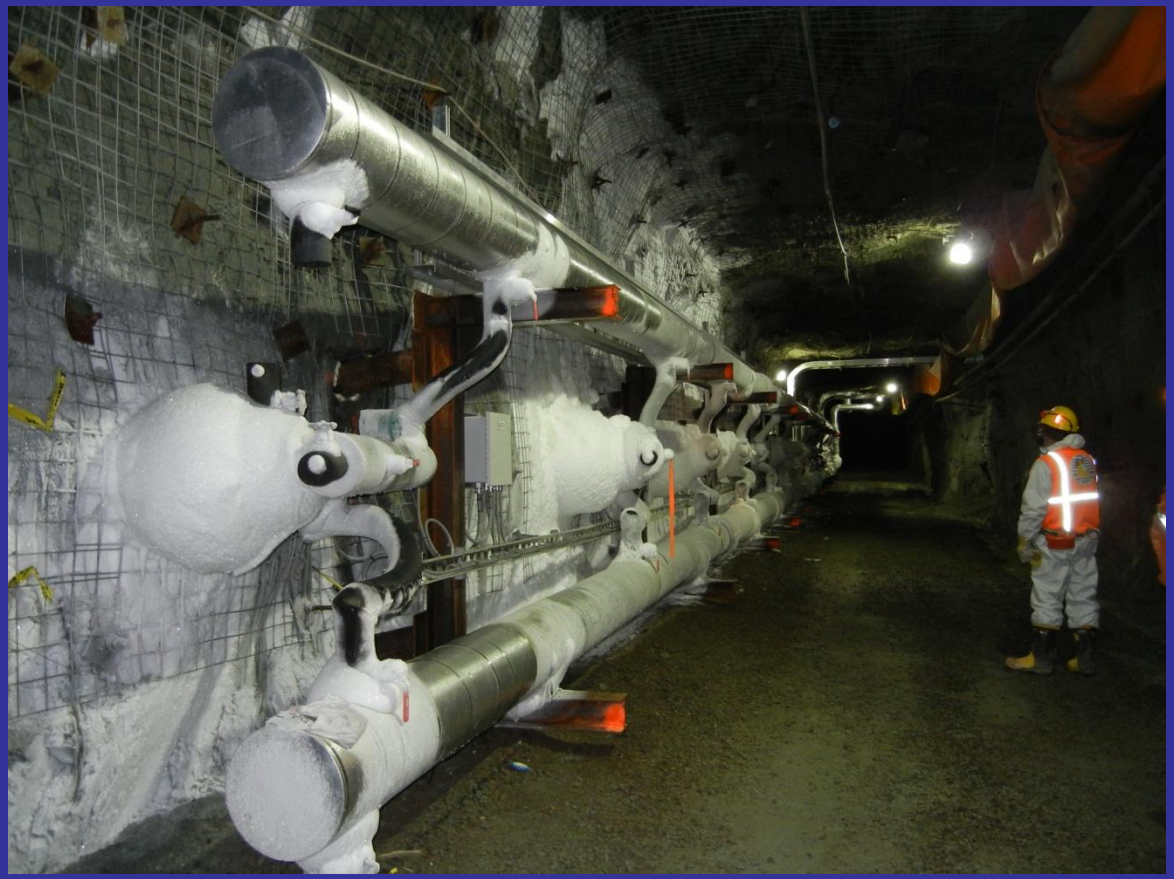
Giant Mine Remediation Project Environmental Assessment Frozen Block and Underground



Alternatives North

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Presentation Outline

- Frozen Block Method Trade-Off
- Unresolved Technical Issues
- Community Involvement?
- Conclusions

Frozen Block Method

- Little doubt that Frozen Bock will help contain arsenic and can be made to work

TRADE-OFF?

- Frozen Block will require human monitoring and management forever
- Transfer of risk to future generations
- No perpetual care plan
- Not a permanent solution

Unresolved Technical Issues

- concern with effects of wetting on integrity of chambers
  - Injecting water may cause cracking of walls and ceiling of chambers
  - Concerns with reversibility of frozen block with wetting
- good news from Freeze Optimization Study
  - wetting may not be necessary
  - hybrid thermosyphons may work without an active freezing system

Community Involvement?

- No meaningful involvement of the community with Frozen Block method

Past (1999-2005)

- no participant funding offered
- no involvement in the selection or application of the evaluation criteria

Present

- poor communications of results of Freeze Optimization Study
- No commitment to involve parties in final design

Community Involvement?

Future?

- Parties should be involved in selecting evaluation criteria for final design options
  - Reversibility, can we thaw it out if needed?
  - Minimize energy needs, use low technology
  - Minimize perpetual care requirements
- public reporting of monitoring results?
- public access to ‘live’ monitoring results

Community Involvement?

Future?

- **Performance criteria or measures of success not identified for final design**
  - **Little progress through Environmental Management Working Group, Frozen Block should be the priority**
  - **Should be comprehensive but easy to understand**
  - **Should provide ‘early warning’ to community of any problems**

Community Involvement?

Future?

- Freezing arsenic forever is not a permanent solution
- Need for a proactive research and development program into a more permanent solution than trying to freeze arsenic forever
  - 'Freeze it and forget it' approach not acceptable
  - 10-year technical review makes us wait, does not show a strong commitment to future generations
  - Should conduct state of the art review, identify information and technological gaps, allocate funding for competitive proposals to do the work

Conclusions

- Significant public concern with frozen block
- Start to think of Frozen Block method as an "interim solution"
- A perpetual care plan is needed to monitor and manage Frozen Blocks for long-term

Conclusions

- **Start to better involve the community**
  - **Final design of the Frozen Block**
  - **Designing public reporting of monitoring results**
  - **Setting the performance criteria (measures of success) that include early warning of problems**
  - **Develop a proactive research and development program for a more permanent solution**
- **Preferred method to involve the community and mitigate public concern is through a legally binding Environmental Agreement**