

Giant Mine Remediation Project Environmental Assessment Perpetual Care



Alternatives North

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Presentation Outline

- Perpetual Care Overview
- Best Practices
- Developer Position & Commitment
- Conclusions



Underground Monitoring Area for Test Freeze

Perpetual Care Overview

Key Lines of Inquiry for EA

- arsenic trioxide containment for an indefinite period
- Questions related to monitoring and maintenance activities at the Giant Mine after the active freezing stage
- Alternatives North recognizes that perpetual care at Giant Mine is inevitable

Perpetual Care Overview

- **Perpetual care raised as an issue during the development of the Remediation Plan in 2003-05, major theme in this EA**
- **Do selected remediation options minimize or reduce perpetual care requirements?**
- **Has the Developer adopted best practices and lessons learned from other perpetual care sites and situations?**
- **Is there a plan for perpetual care?**

Perpetual Care at Giant Mine

Mine Component or Feature	GMRP Remediation	Long-Term Remediation to Minimize Perpetual Care
Arsenic Storage Chamber Underground	Freeze in place forever	No need for permanent containment--removal and reprocess into a less toxic form or in-situ treatment
Tailings Areas	Drain, grade and engineered cover	No need for cover (no inspection and maintenance), removal and use as backfill
Baker Creek	Temporary measures to prevent overtop during frozen block implementation	Remove long-term risk of arsenic chambers being flooded or eroded if there is uncontrolled thawing, permanent North Diversion by rerouting drainage away from the site (no need for continued monitoring of Baker Creek, sediment transport reduced or eliminated)
Open Pits	Fencing and berms	Backfill, sloping of edges and reflooding (no need for fencing and maintenance)
Water Treatment	New water treatment plant and diffuser into Back Bay	Reduce treatment requirements Source removal? Biological or in-situ treatment? Stop or reduce infiltration (North Diversion)?
Buildings and Infrastructure	Demolition, toxic goes to frozen block or as frozen backfill, hazardous and non-hazardous landfilled on site	Recycling and reprocessing of all toxic, hazardous and non-hazardous material—nothing left on site
Contaminated Soils	Excavate and landfill or barrier containment	Removal and treatment to reduce or eliminate maintenance and monitoring

Perpetual Care Overview

- **best practices and lessons learned studied by Joan Kuyek, other information from nuclear waste sites and elsewhere**
- **Perpetual Care Planning and Management**
 - **proper record management and preservation**
 - **site designation and land use controls**
 - **long-term funding**
 - **communicating with future generations**
 - **transitioning of site from active remediation to perpetual care**
 - **scenario-building and planning**
 - **a comprehensive perpetual care plan**

Record Management and Preservation

Best Practices

- Hanford nuclear site, all records disclosed and available on-line
- France, records on acid-free paper to be kept at nuclear waste site and at the National Archives

Developer Position and Commitment

- No detailed inventory of records
- Records to be deposited with the Library and Archives Canada (Ottawa)
- No long-term plan for records preservation or public access

Site Designation and Land Use Controls

Best Practices

- **Hanford nuclear site, interpretive centres have been established**
- **Superfund sites have well developed institutional control programs**
- **Avens Associates report on site designation options for Giant as part of institutional memory**

Developer Position and Commitment

- **No plan, vague commitment to discuss with City**
- **No analysis of various tools or options for site designation or land use controls**

Long-Term Funding

Best Practices

- Hanford and other sites, work done on long-term funding option including trusts
- Pembina Institute report on long-term funding outlines some current examples of such arrangements within the federal system

Developer Position and Commitment

- Regular federal funding system is reliable and has a proven track record
- Possibly review before perpetual care phase
- No response to Pembina Institute report

Communicating with Future Generations

Best Practices

- Hanford, interpretive centres have been established
- Western Isolation Pilot Plant, extensive planning for site markers and symbols
- Finland (film “Into Eternity”), struggling with how to communicate with future generations

Developer Position and Commitment

- No plans for signage, monuments or symbols at site
- Vague commitment to discuss with advisory group

Transition Plan (active site to perpetual care)

Best Practices

- Superfund sites, planning for transfer and transition of sites to other owners
- Hanford, planning has been done to transition the site from active remediation to long-term stewardship

Developer Position and Commitment

- No plans
- Vague commitment to discuss with stakeholders

Scenario Building and Planning

Best Practices

- **Waste Isolation Pilot Project, multi-stakeholder panel developed scenarios and modeling**
- **France, national debate on nuclear disposal, reversibility emerged as the priority**
- **Other site planning includes glaciation and shoreline change**

Developer Position and Commitment

- **Risk assessment limited to a 100-year timeframe**
- **No analysis of long-term events such as glaciations, shoreline change, no central government**

Comprehensive Perpetual Care Plan

Best Practices

- **Hanford Long-Term Stewardship Plan**
- **France, debate on nuclear waste led to law where minimum 100-year reversibility is a mandatory**

Developer Position and Commitment

- **“Further discussion required”**
- **Vague commitment to examine lessons learned from nuclear waste management, but no clear commitment to prepare a plan or a timeline for one**

Conclusions

- **Remediation Plan and Developer's commitments fall far short of best practices and lessons learned for perpetual care**
- **Significant public concern with lack of perpetual care planning and management**

Conclusions

- AN recommended that a perpetual care plan requirement become a binding measure

**Developer—further discussion required,
vague commitments**

**AN stands by recommended measure to
mitigate public concern**