



Alternatives North

From Despair to Wisdom:

Perpetual Care and the Future of the Giant Mine

A Report on a Community Workshop



Chief Drygeese Centre, Dettah

September 26-27, 2011

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The Workshop

In April 2008, the City of Yellowknife referred the Giant Mine Remediation Plan to environmental assessment. The Mackenzie Valley Environmental Impact Review Board (MVEIRB) is responsible for the assessment. The MVEIRB must determine whether or not the proposed Giant Mine Remediation Plan will likely cause significant adverse environmental impacts or significant public concern. The environmental assessment has five phases: 1) start-up, 2) scoping, 3) analytical, 4) hearings, and 5) decisions. The MVEIRB is now in the analytical phase. Technical sessions are scheduled to begin in October 2011. The hearing phase will likely begin in March 2012.

Alternatives North and the Yellowknives Dene First Nation want to ensure that people living near the Giant Mine understand the proposed Remediation Plan, particularly the requirements for perpetual care. To this end, the two groups hosted a workshop to discuss the proposed Remediation Plan and learn about perpetual care. The discussions at this workshop are the basis of this report. The report will be submitted to the MVEIRB to consider as part of the environmental assessment of Giant Mine remediation.

The workshop had four main objectives:

1. Learn from lessons of perpetual care from other sites and situations in the North and elsewhere in Canada and the world.
2. Better understand the perpetual care requirements for the Giant Mine.
3. Identify goals and principles for the perpetual care of the Giant Mine site.
4. Develop options and preferences for communications, periodic review, ongoing research into new technologies, and institutions or systems to ensure all of this happens.



Giant Mine, Spring 2011

Workshop Report

This report summarizes the presentations and conversations at the two-day workshop.

Day One: September 26, 2011

Welcome and Opening Remarks

Following an opening prayer by Elder Michel Paper, **Chief Edward Sangris** welcomed guests to Chief Drygeese Territory. He said that the Yellowknives have been affected by the Giant Mine since the 1930s. He referred to the many long nights, missed sleep, missed meals, daily pressures and anxieties dealing with the effects of Giant, and the risk and harm from the past.

“These are things we can’t forget about. Although we know what has been done and what is below us, we can’t let it affect our outlook. We need to have a vision and a hopeful outlook. When there is no vision, people will perish. We need to recognize and live with yesterday’s struggles. Hopefully our discussions will help us to develop a vision that causes no harm to people who live around and above the Giant Mine. We need to give voice to the animals and the aquatic life.”

**The Yellowknives
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since the 1930s.**
Chief Edward Sangris

Chief Sangris said that the Elders counselled that the west side of Yellowknife Bay was to be left for wildlife. This is why the Dene only occupied the area on the east side of the Bay. The Dene followed these laws with respect and the wish for the wildlife to survive.



Workshop participants listening to a presentation

Chief Sangris explained how gold was discovered. The prospectors knew about the gold because they had seen a rock kept by a Dene woman. A prospector kept coming to look at the rock and asked where it was from. The rock had come from the Little River or Jackfish Creek, called Baker Creek today. He said that one day the people heard thunder but there were no clouds in the sky. They thought that the world was coming to an end. He said that today the people know that it was the beginning of the end. Prospectors were blasting the rock but had not told the people about this activity. Chief Sangris said that when the Treaty was signed in 1921, it was agreed that newcomers would always consult with the Dene.

“Ideally, we want what is underground taken out of our land. If they put it there why can’t they take it out?”

Chief Edward Sangris

For 70-80 years, the Yellowknives have been the most impacted by the mining industry but the people “have always been standing in the shadows. Now, future generations are to be affected forever.” Impacts have included the fines that were levied against the Elders who crossed city boundaries to pick blueberries, the children who were harmed, and people fearful to drink or bathe in the water. Climate change will cause even more impacts. Chief Sangris said that across the NWT people think that the YKDFN are rich. “But we are just another small community and have never gotten any monetary gain from Giant.”



Giant Mine Fall 2011

Chief Sangris said that the impacts of the arsenic trioxide need to be minimized. He said: “ideally, we want what is underground taken out of our land. If they put it there why can’t they take it out? We know that there are many complications with taking it out so we have to try to do the best we can in this situation. We need to do the right thing. We need to find solutions to the problem. With wisdom, knowledge, and courage we need to contain what has already been done to our land. We need to work together.” Chief Sangris is confident that by working together proper solutions can be found.

Participant Introductions

To introduce themselves, some participants identified their interest in this workshop. For example, **Ed Hove** said that he is reviewing current plans to consider long term impacts and monitoring. **France Benoit** spoke of her interest in communications with future generations. **Dwayne Wohlgemuth** identified his interest in understanding the impacts to northern foods. **Karen Hamre** said that Yellowknife is the first line of defence to impacts downstream of Giant Mine, including Great Slave Lake. **Eddie Sikeya** expressed his concern about the high cost of living and the impacts of living costs to Elders. **John Drygeese** said that his father and brothers were signatories of the Treaty. The Treaty was a friendship agreement. He said that we need to help each other to voice concerns, find solutions, and protect the land. "The Yellowknives need some benefit or compensation (from Giant Mine) rather than just impacts."

Michel Paper said that the people love the land but mining has changed the land and made it dangerous. He referred to stories of children who ate snow and died and people who became sick. He explained that the Dene see everyone as relatives, including white people. He said that everyone wants to live a healthy life. By coming to this meeting we can share concerns, hear the ancestors stories, and work together to help each other. **Peter Sangris** spoke of the arsenic trioxide and climate change. He is concerned about the future and does not want harm to come to future generations. He is worried about how the arsenic trioxide will be safely stored underground, and who will make sure it is looked after forever. **Chief Edward Sangris** commented on the mentality of people who left a mess and the impact that it has on the Dene including on the language and culture. He said that the arsenic trioxide is dangerous for the Dene. The effects of the Giant Mine extend to the culture, land, and treaty rights of the Yellowknives Dene.

The Yellowknives need some benefit or compensation rather than just impacts.

John Drygeese



Left to right: Jonas Sangris, Rose Betsina, George Tatsiechele, Michel Paper, and Peter Sangris

George Tatsiechele said that the people never really talked about their concerns about the mining industry even though the texture of the fish was changing. He explained that some people believe that today the fish are getting healthier since mining stopped. "Trout and coney are slowly coming back." He also spoke about his father, a trapper, who ate snow and got very ill for a short time. **Jonas Sangris** referred to people in Yellowknife with their million dollar views of Back Bay and the likelihood of these people leaving "to join their friends in Kelowna while the Dene are left behind to deal with the fall out." He questioned what will happen when the power goes out or if there is an earthquake as there recently was in the Sahtu Region. He worries about the overflow of Baker Creek. He is concerned about the government, their lack of response, and lack of action. He questions the proposed plan for freezing the arsenic trioxide. "A refrigerator doesn't last forever; everyone changes their fridge." He said that he refused an invitation to speak at the City of Yellowknife's 75th anniversary celebration because the Dene were not recognized properly.

Some Perpetual Care Case Studies

Dr. **Joan Kuyek** raised her family in Sudbury. Then she moved to Ottawa to work for the non-governmental organization, MiningWatch Canada for 10 years. Currently, she is a sessional instructor at several universities including for Mining and Communities courses at Algoma University in Sault Ste. Marie and Queen's University Law School in Kingston, Ontario. Joan prepared nine case studies on perpetual care, mainly from existing documents.

Joan said that the history of contaminated sites is very short, perhaps 70 years at the most, so not a lot is known about managing these sites over longer periods of time. The challenge of managing nuclear waste has made people begin to think about how to look after sites for 10,000 years or more, and to consider engineering solutions based on a

The history of contaminated sites is very short, perhaps 70 years at the most.

Joan Kuyek



Joan Kuyek, France Benoit, Kevin O'Reilly, Lois Little, and Carolyn Raffensperger

1,000 year timeframe. The Giant Mine Remediation Plan is for 25 years even though management of the arsenic trioxide will be needed forever.

The case studies show that:

- Money to manage contaminated sites is a big problem. Funds are often allocated year-to-year which doesn't make sense for sites that have to be managed forever. Even special funds that may be set up to manage contaminated sites run out of money or funding is not renewed.
- Local communities need to be involved because they will be living with the contaminated site forever. But consultation processes can be exhausting because there are few or no resources to participate.
- Trust relationships among local communities, government and industry are needed for long term stewardship. But historically little or nothing has been done to merit trust from local communities.
- Water management is a major challenge as it is often unpredictable, and affected by changes in the natural landscape and climate.
- Efforts to manage contaminated sites over the long term have relied on institutional and administrative controls such as restricted access, fences, and signs. Most controls are expected to fail over the longer term. The Waste Isolation Pilot Project (case study #8) in New Mexico has plans for special signs and markers intended to last over a 10,000 year timeframe.

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Joan Kuyek

Joan concluded that many stupid things have been done in the name of progress and it is wrong to ask future generations to pay for our mistakes. A copy of Joan's Power Point presentation is attached. A copy of Joan's detailed report and a plain language summary are on the MVEIRB's public registry.¹

¹ http://www.reviewboard.ca/upload/project_document/EA0809-001_Perpetual_Care_of_Contaminated_Sites_Theory_and_Practice_1311181243.PDF
http://www.reviewboard.ca/upload/project_document/EA0809-001_AN_covering_letter_and_perpetual_care_study_summary_1311174638.PDF

Danny Gaudet is with the Community Government in Deline. Danny prefaced his comments about the Port Radium experience on Great Bear Lake by saying that there is a need to understand First Nations culture and lifestyles and where the Dene are at today. He said that the Dene were taken to a new life but today are a lost people, trying to find a balance and to learn to trust, forgive, and move forward.

The Port Radium mine had many different lives. It was a radium, uranium, and finally a silver mine. Danny spoke about the discovery of uranium. “Beyonie discovered uranium and Blondin discovered oil. Beyonie did better because at least he got some groceries.” Most often people got nothing except to be left behind with a mess.

People from Deline worked at the mine but no one ever told them about the risks. People from Deline went to Japan to apologize for being part of something that killed other people. This was important to the healing of the community. It was not done as a political statement as some people have said. Danny said that Canada always does a risk assessment but picks the one approach that they can afford which is not necessarily the best one.

Danny explained that it took a lot of work to get attention to the mess that was left. Cindy Kenny-Gilday was the one who started to get attention to the issue. The only way to get the attention of the federal government was to go to court. Rather than following the lead of the Federal Government, Deline took a community approach to managing the impacts from the mine. The community identified 77 questions which were grouped by water, fish, trees, and lots of other categories. The community issued a terms of reference inviting scientists to identify and assess the effects of the mine on these categories.² Deline also wanted to preserve its traditional knowledge but had to do this research quickly because knowledge was being lost.



Danny Gaudet speaking about Port Radium near Deline

It took a lot of work to get attention to the mess that was left.

Danny Gaudet

Standards are a huge issue and a source of debate and conflict.

Danny Gaudet

² See http://www.reviewboard.ca/upload/project_document/EA0809-001_Port%20Radium%20Action%20Plan_1209682932.pdf for a copy of the Action Plan on Port Radium.

The people of Deline learned that:

- It is important to ask questions and to be inclusive of the subjects that need to be covered.
- Standards are a huge issue and a source of debate and conflict. What is an acceptable standard? What is acceptable to Canada may not be acceptable to others. The people of Deline did not trust the government to come up with standards that were acceptable to the community.
- It is important “to tell some really good stories so what is out of sight is not out of mind.”
- It is very important to have good partnerships from the beginning, and to be inclusive of all groups.

Aboriginal people still live off the land and need to hear the Elders’ stories. Danny described one Elders’ story about his vision of a fire stick that would kill people and catch people on fire. “Our people believe in visions. One vision our people have is that water will become the most important resource in the world. Great Bear Lake will be an important source of water.” He also said that the Elders say that the North will be impacted by more changes to come. “We have to prepare people with stories.”

**We have to
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with stories.**

Danny Gaudet

Danny urged people in Yellowknife to clean up Giant Mine because lots of people come to the city and need to feel safe. He had considered moving here for his children’s schooling but has reconsidered this decision due to the contamination.

In response to questions about minimizing exposure to an area that has to be monitored forever, Danny said that people in Deline learned that water goes through rock. This is a big problem. He said that it is critical that the community is involved in considering the options and in the final remediation plan. Monitoring needs to pay attention to culture. Danny said that it is possible to work together to mitigate and manage impacts of contaminated sites but there is a lot of work that has to be done on regulations and with government. It comes down to trust, communications, and involvement. It takes a long time to get attention to issues and funding but lots of good things can happen when the community is involved; there are good communications; and people trust each other.

**It comes down to
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and involvement.**

Danny Gaudet

In response to a question about how people in Deline are telling the story of Port Radium, Danny said that Deline wants to set up a traditional knowledge research centre. The community has produced materials on the history of Deline and through film and other media have linked the community and the mine with the rest of the world and to world events.

In response to a question on funding, Joan said that community advocacy and pressure by First Nations together with journalists who told stories to make contaminated sites known, have helped to bring attention to these site and mobilize resources to deal with them. It is important to keep the stories front and centre because as soon as contaminated sites fade from memory, the funding dries up. People need to be vigilant forever. **Lisa Dyer** of the Giant Mine Remediation Team said that funding under the Federal Contaminated Sites Action Plan (FSCAP) has been renewed but the level of funding is unknown. Funding for Giant Mine is treated separately at this time. Danny said that funding for community work in Deline came from the Government of Canada in the amount of approximately \$7 million over a five year period.



Aerial view of Giant Mine

In response to a question about the preparation of the case studies, Joan noted that resources were not available to visit each site and talk to the local communities. Instead, existing documentation and some phone calls to key players were the main sources of information. She agreed that primary research about how people deal with contaminated sites should be done by local communities.

After lunch was served by the Dettah youth group, **France Benoit** showed excerpts from a film called *Into Eternity*. The film wrestles with the challenges of storing nuclear waste in Finland. The film has messages that are relevant to Giant Mine.

Theory and Practice of Perpetual Care

Carolyn Raffensperger is the Executive Director of a non-government organization, Science and Environmental Health Network, based in Ames, Iowa. Carolyn is a lawyer and an archaeologist by training. As a lawyer, she considers it her work to act on behalf of future generations. Carolyn's PowerPoint presentation is attached. A copy of Carolyn's paper on the *Principles of Perpetual Care: the Giant Mine Yellowknife* will be filed with the MVEIRB.

Carolyn explained that perpetual care means forever. Forever may be better understood as 10,000 generations or 250,000 years. Arsenic has its own story but only rocks know time on the scale of 10,000 generations. The challenge when remediating Giant Mine is to change the goal from cleaning up as well as we can to transforming this site from one of despair to one of wisdom. Giant Mine can be a place where wisdom sits because of the work that local people do.

It is this generation's duty to be good ancestors and to treat the Earth with care. Perpetual care has ethical, environmental, financial, technical, and cultural challenges. The 'golden rule' that underlies perpetual care is to do unto others what you would have them do unto you. The golden rule provides a compass for perpetual care and hope for future generations.

Carolyn described the four steps towards perpetual care: 1) prevention, 2) mitigation, 3) adaptation, and 4) restoration. Four principles underlie these steps:

- 1) Present generations have a responsibility to leave the commons of nature intact for future generations.

Perpetual care means forever. Forever may be better understood as 10,000 generations or 250,000 years.

Carolyn Raffensperger



Carolyn Raffensperger at Giant Mine

- 2) The commons of Earth, public health, and culture that are necessary for survival, health, and community are the foundations of community resilience. Protecting the commons is essential for the success of perpetual care.
- 3) Exercise the precautionary principle as a way to think and act to prevent harm in the future.
- 4) Nature is the measure, mentor, and model for how humans must treat the Earth including places requiring perpetual care.

When applying the principles to the four steps towards perpetual care, it is important that:

- Information is open; systems are in place; early warnings are heeded; and emergency preparedness is maintained.
- Monitoring is all inclusive; action plans are created; and funding is in place.
- All technological alternatives are examined; there are multiple backup technologies; and no solution is considered final or permanent until the site is restored to pre-mine or agreed upon standards.
- The polluter pays; no debt is left for future generations; and funding is safeguarded for the future.
- This generation's moral failure is recognized; healing of the human and natural environment is done; and successes are celebrated.

In response to questions, Carolyn said that a shift in thinking is needed to calculate rather than discount the benefits to future generations. This requires a new kind of economics. She said that as this generation struggles to come to terms with contaminated sites, a new thinking is emerging based on concepts that are outside of money. "We need to recognize that old economics were based on assumptions of money growing money, assumptions that are erroneous and have no equivalent in nature."

There is also a need to think about how monitoring will happen in 100 years and to train young people to participate in monitoring. She said that pilgrimages are part of Dene traditions and memory and may be a useful way of remembering not to forget about Giant Mine. Other ways are religious symbols connected to a place, songs, and

Pilgrimages are part of Dene traditions and memory and may be a useful way of remembering not to forget about Giant Mine.

Carolyn Raffensperger

stories of the rocks. But it is difficult to know what markers or stories can survive 10,000 generations when the oldest institution on Earth is not even 2,000 years old.

Chief Sangris said: “the Dene have to adapt but the Dene will resist if we are told that we can’t practice our culture. We will ask: ‘why should we adapt when we didn’t do it?’ The only way that the Dene will celebrate is if Giant Mine is restored to its natural state and the Dene are not afraid of the land.”

Perpetual Care of Giant Mine

Kevin O’Reilly from Alternatives North provided an overview of the Giant Mine Remediation Plan. The overview was drawn from the Federal Government’s reports filed on the MVEIRB’s public registry. Kevin provided the overview as members of the Giant Mine Remediation Team were unable to make a presentation at this workshop. Kevin’s Power Point presentation is attached.

- The government uses a 25-year timeframe for its Remediation Plan (15 years to implement, 10 years of monitoring to ensure it works, but further monitoring of some things forever).
- Long-term monitoring will include Baker Creek, tailings covers until re-vegetated, pits openings, and underground stability.
- Some remediation measures need to be maintained forever including the thermosyphons (30-50 year lifetime) and water treatment (even if all the arsenic was removed from underground).



Eddie Sikeya, John Drygeese, Aggie Brockman, and Pat Braden in the background

- An annual report will be prepared by government with a more detailed report prepared every third year.
- No independent oversight is provided.
- Public access to project data may be subject to the *Access to Information Act*.
- Perpetual care costs are estimated at \$1.9 million per year and are subject to future parliamentary approval.
- No long-term funding is identified nor is there funding for research and development of permanent solutions.
- Eight workers will manage the site after the initial work is completed.
- An environmental monitoring and management framework will be developed but is not yet available.
- There is a commitment to review new technologies every 10 years but no specifics on how this will be done.
- There is no comprehensive list of documents on Giant Mine and no plan to preserve existing records.

Kevin pointed out that the request for an environmental assessment of the remediation project was made by the City of Yellowknife at the request of the Yellowknives Dene First Nation. That was the first time that a Yellowknives Dene Chief had come to City Council.

Members of the Giant Mine Remediation Team commented on Kevin's excellent presentation. They offered two minor corrections: 1) the term 'hazardous' rather than 'toxic' materials should be used due to the varied nature of materials on the site, and 2) monitoring of the site is not limited to 10 years as some things will need to be watched forever.

Learnings from the Day

Workshop participants commented on new or surprising information learned over the day.

- It is surprising that long-term remediation data will be subject to the federal *Access to Information Act*.

It is surprising that long-term remediation data will be subject to the (federal) *Access to Information Act*.

Aggie Brockman

- It is a new challenge to broaden thinking about the timeframe for perpetual care from 25 years to 250,000 years or 10,000 generations. This is a new way of thinking.
- Societies live and die, grow and fail. The safety of the Giant Mine site relies on healthy societies being here to care for the site.
- To do justice to future generations, we need to do justice to current generations. There needs to be an apology for the injustices of Giant Mine.
- It is an interesting debate whether sites should disappear from memory or be kept visible and at the forefront of our memory. It is a reminder of the curiosity of people and the need for markers or warnings that can be understood by generations in the distant future.
- The information shared confirmed the need for acknowledgement by the government for what was done and continues to be done on this site. The inequalities and injustices that have been done need to be acknowledged and addressed even though the individuals don't acknowledge the harm they have caused. The story of Giant Mine needs to be told.
- The information shared raises the question of why did this happen. It happened because people had no heart; offered no apologies; did not communicate; and didn't care that they created illness for others. Why did no one talk about Giant? The lack of trust associated with Giant is a reason that the Yellowknives will not consider the proposal about the Avalon mine. Perhaps the Avalon mine proposal would be considered if Giant was fixed.
- There is a willingness to share information. Everyone shares the same goals. There is a common interest and good will to do the right thing.
- It is hopeful that there is funding for the Giant Mine project, interest in working with the Elders and documenting traditional knowledge, and a recognition and willingness to talk to and work with each other.

We didn't get any benefits from mining ... who is going to take care of it in a hundred years?

John Drygeese

The lack of trust associated with Giant is a reason that the Yellowknives will not consider the proposal about the Avalon mine.

John Drygeese

Workshop participants commented on information that they need to know more about.

- Who will care for Giant Mine? Where will the money come from?
- More information and lessons from Deline and the other case studies are needed.
- How can we communicate stories to generations 1,000 or 5,000 years from now?
- The wisdom and the knowledge of the Elders are so important and needs to be captured and understood now and by future generations. Although the Goyatiko Language Society started to document this knowledge and to collect stories, this work needs to be continued and completed.
- It is important to show what the land was like before Giant Mine. The people need to know that the land was healthy even though it is dead now.
- It is important to be clear about the end result of reclamation efforts. Will it be like the Salamita Mine where not a trace is left?

“We need to look at how the land was before there was mining.... The land used to be healthy.”

Eddie Sikeya

Elder Eddie Sikeya ended the first day of the workshop with a prayer.

Caring for Giant Mine –Now and Forever

Alternatives North sponsored an evening public presentation and discussion at the Northern Frontier Visitors' Centre. About a dozen Yellowknife residents attended to hear presentations by Joan Kuyek, Carolyn Raffensperger, and Kevin O'Reilly, and to raise questions. The presentations repeated information from earlier in the day on perpetual care case studies, theory and practice, and the perpetual care of Giant Mine.



Carolyn Raffensperger at the Northern Frontier Visitors' Centre

Day 2: September 27, 2011

Recap and Clarification

Following an opening prayer by Elder Michel Paper, time was dedicated to recapping the first day of the workshop and clarifying information for individuals who had not attended the workshop on the first day and in response to questions raised by the Elders. Kevin O'Reilly explained the reasons that Alternatives North and the Yellowknives Dene First Nation were holding this workshop. Joan Kuyek explained why and how the perpetual case studies were prepared, and Carolyn Raffensperger explained how her work was done.

Kevin O'Reilly explained that Alternatives North is a group of volunteers in Yellowknife who work on social justice issues and are concerned about Giant Mine. Alternatives North is not the government and is not telling people what to do. The workshop is not the government's workshop. The government has to do its own consultation. The government's plan for Giant Mine is not Alternatives North's idea. Alternatives North does not endorse freezing the arsenic trioxide and leaving it in the ground forever. It takes a long time to understand all the information about the remediation plan for Giant Mine, and the need for perpetual care no matter what is done to clean up Giant Mine. The question for people at Alternatives North is how to reduce the amount of perpetual care. This is the reason that Alternatives North got together with the Yellowknives Dene First Nation to hold this workshop to talk about perpetual care at Giant Mine.

Joan Kuyek explained why and how she prepared the case studies on perpetual care of contaminated sites elsewhere. She said that she has spent most of her life trying to change the work of the mining industry. Since it is the government's plan to freeze the arsenic trioxide at Giant Mine and keep it there forever, Alternatives North asked her to learn from the experiences of others about managing contaminated sites and how people are dealing with these terrible places. She said that she has retold the stories of seven communities who have been trying to deal with a contaminated site. In each case there are different laws and approaches that others can learn from. In

Alternatives North is not the government and is not telling people what to do. The workshop is not the government's workshop.

Kevin O'Reilly

In each case study, the presence of contamination was a burden for the people whose lands these sites are on.

Joan Kuyek

each case study, the presence of contamination was a burden for the people whose lands these sites are on. The case studies were done to show lessons from these places, lessons that might help others to do a better job of perpetual care.

Joan said that we need to acknowledge that society has done damage but it is wrong to walk away. This generation has to do whatever it can for future generations. In some cases, it is impossible not to leave damage. “We need to clean up everything we can and where we can’t, we need to take every kind of care.”



Giant Mine tailings

Carolyn Raffensperger explained that her organization, the Science and Environmental Health Network, is always challenging the US Government. The organization began because people were very concerned about how science is used to make decisions or to justify bad decisions. Science needs to be used in an ethical way. She said that she has been working with First Nations to understand how the 7th generation rule could be made into public policy. Carolyn drew from her experience in law and asking friends among the Aboriginal peoples from the desert southwest United States for dreams about Giant Mine to do her work on the perpetual care of Giant Mine.

The legacy of Giant Mine will last forever, for 10,000 generations. This is beyond human imagination. Even though Carolyn was told that the decisions about the perpetual care of Giant Mine have been made by government, she questions the basis of these decisions. “If we consider future generations, we need to recognize that the plans that are in place will fail. So as members of this generation, we have to ask ourselves whether we can still make things right.” Carolyn believes that we can. “We have the choice in this generation to leave a blessing for future generations.” Carolyn hopes that the ideas that she has shared at this workshop provide a roadmap to leave a blessing. She said that she knows that people feel lonely and powerless because people are not working together.

“We have the choice in this generation to leave a blessing for future generations.”

Carolyn
Raffensperger

Several participants had comments and questions. **Isadore Tsetta**, a member of the Yellowknives Dene Elders' Senate, spoke of the hurt associated with never being consulted about the Giant Mine or other mines; never being compensated for the damage to the land even though the Yellowknives have asked and now the youth are asking; nothing being put in place for future generations; and never getting a response to questions about what happens to the storage of the arsenic trioxide after hundreds of years.

Michel Paper said that the Yellowknives have lived on this land, now called Chief Suzie Drygeese Territory, for more than 2,000 years. The Dene were once powerful and self-sufficient people. Before the mining industry, the land was so healthy and the fish were so good. The Yellowknives have always been stewards and managers of the land. Chief Drygeese didn't want the people to live in areas that were good for the wildlife and the people honoured these wishes. Even though Michel worked at Giant, he has seen no value from it. Even though white people are powerful people, everyone needs to work together and ask the Creator for help. There needs to be something in place for future generations. Elders and others shouldn't be paying for water because it is no longer safe to drink the water around the community. Michel appreciates the messages that Carolyn and Joan have brought to this meeting. These messages reinforce his belief that we need to work together because we are all living side by side.

We need to work together because we are all living side by side.

Michel Paper



Workshop participants at the Chief Drygeese Centre

In response to a question about the expected outcomes of this workshop, Kevin O'Reilly explained that it is important that the MVEIRB understand the discussions that have taken place at this workshop. The report from the workshop will be given to all the participants and the Goyatiko Language Society, and filed on the public registry with the MVEIRB.



Peter Sangris and Chief Edward Sangris

Living with Giant Mine

Workshop participants considered the questions: If you were in charge what would you do so we can all live with Giant Mine? What would your vision be? How would you work toward your vision?

Responses to these questions are grouped under the following themes:

Reclamation

If I were in charge I would:

- Apply Carolyn's principles to think about Giant Mine together with Con Mine, the dump, and all the other impacted sites.
- Work toward a solution that is as close as possible to a 'walk-on' (rather than 'walk away) solution so we don't have to worry about the potential for harm.
- Turn Giant Mine from a place of destruction to a place of wisdom and to share this knowledge with others and be an example to the world.
- Not let any housing or other residential development be developed on the site "after they take Giant down."
- Not put a fence around the pits. This is not a good idea. The pits should be filled with rocks. The rock should be replaced.
- Follow the Salamita Mine example of a clean-up that did not leave a trace.
- Consider climate change, the flow, drainage, and seepage of water into Great Slave Lake, and other issues of concern including cumulative effects in decisions.
- Pay special attention to water flows (e.g. where it is going and if it is going into Great Slave Lake).

- Dedicate resources to removing the arsenic trioxide once and for all when these technologies become known and workable.
- View the 'frozen block' proposal as an interim solution. The government needs to stop promoting this as a permanent solution.
- Look at options (e.g. autoclave) that are available to soothe the arsenic while recognizing the dangers that are associated with trying to move it.
- Do research and work together to find solutions to prevent disaster. We need to fix things.
- Answer questions about how long the themosyphon technology will last and how long the frozen arsenic trioxide will stay frozen, and what the impacts of climate change will be. YKDFN was told that the arsenic trioxide is safe underground for only 100 years.
- Get scientists to provide direction on the options and to find ways to diminish the toxicity of the arsenic.
- Sell it.



Yellowknife Bay from Dettah

Relationships

If I were in charge I would:

- Engage and better involve YKDFN leadership and members and continue to work toward solutions that do not cause harm to future generations.
- Build a strong foundation of trustful relationships at the community level so that people are working together and have ownership and control of decisions, and recognize that this is as much about relationships as it is about engineering challenges.
- Make sure that consultation is meaningful, and require the government and others to listen to, and take the advice of YKDFN. It is important to listen.
- Involve youth in discussions, planning, and sharing information.

Healing

If I were in charge I would:

- Consider that perhaps the arsenic is mad about being separated from the rock, that the Giant Mine has to live with us, and the land needs to be happy. Maybe we could cover the land with something fresh and new to make it happy and do something with what is underground.
- Recognize that healing the land is important because it is angry and can kill and cause damage.
- Learn from the Truth and Reconciliation Commission and acknowledge the wrong doings by making an apology.
- Acknowledge the cultural and environmental damage and honour the YKDFN as the people most affected by this damage.
- In an apology, acknowledge that mistakes were made. There also needs to be learning from our mistakes. We need to do better, put in place laws so that this damage never happens again. Only then can healing processes begin especially between the Dene and the government.
- Replicate the Deline experience of healing.
- Document and preserve the Yellowknives' history and stories before and after Giant Mine.
- Find ways to bind people together to heal the land (perhaps a ceremony at Giant to ask for forgiveness). We believe that the land is alive. We believe that the land is upset, sick or in some cases dead. We agree that a gathering on the Giant site to ask for forgiveness is a good thing to do.

Compensation, Laws, and Regulation

If I were in charge I would:

- Compensate the people. Compensation would support healing.
- Issue compensation for damage done and invest in future generations.
- Get others to support YKDFN's request for compensation and improve understanding.
- Prevent people from knowingly causing damage to the land and people; make them responsible for the damage and for reclamation; and sue them for compensation for the damages

We agree that a gathering on the Giant site to ask for forgiveness is a good thing to do.

Michel Paper

I would do full cost accounting (e.g. the cost to the land, animals, and culture) and the benefits to the people and the environment.

Bob Bromley

they caused including paying to get water trucked in for residential use. It doesn't seem fair that people have to pay for water when it was destroyed by others. "We need to get some compensation at least for services."

- Do full cost accounting (e.g. the cost to the land, animals, and culture) and the benefits to the people and the environment, and use this to guide decisions and help everyone understand why this happened (e.g. lack of inspections, standards, regulation), and allocated resources to address these issues.
- Establish an independent oversight body and do ongoing research and development until acceptable, permanent solutions are found.
- Have monthly meetings to educate ourselves about Giant Mine.



Mary Rose Sundberg and George Tatsiechele

Adrian Paradis from the Giant Mine Remediation Team acknowledged that things done in the past could and should have been done better. He said that everyone shares a common goal but the challenge is achieving it. He agreed that some things can be done to bring people together to work toward a better future.

Lisa Dyer from the Giant Mine Remediation Team said that a main issue is keeping the water away from the arsenic trioxide. Freezing the arsenic trioxide is a back-up system. She said that we will never be able to walk away from managing the water. It will always need to be managed. Right now the water from the mine is treated to a safe level and the proposed water treatment plant will improve the water quality to a point that it can be discharged directly into Great Slave Lake. Even if the arsenic trioxide were cleaned up, there will still be a need to care for and manage the water forever. She said that the Remediation Team has been looking for youth who would be interested in learning about, and monitoring fish quality and Baker Creek. So far efforts to involve youth from YKDFN have been unsuccessful.

Moving Forward to Care for Giant Mine

Workshop participants identified 15 actions that should be taken to move forward to care for Giant Mine. These actions are summarized under the following subjects:



Carolyn Raffensperger and Kevin O'Reilly

Consultation and Communications

1. All parties need to talk to, and listen to each other, and agree on best ways to care for Giant Mine.

Action Required: YKDFN is awaiting approval (expected in October/November 2011) of a proposal to strike an advisory committee to maintain communications on Giant Mine remediation. Randy Freeman is the contact.

The Advisory Committee needs to work closely with youth.

Members of the Advisory Committee should include youth role models who speak only for future generations; members who can speak only for the land; and members who speak only for the water. Carolyn Raffensperger will provide information on legal guardianship for future generations.

2. The Yellowknives Dene First Nation should be treated fairly and equitably, and given the same level of resources and support to address issues associated with Giant Mine as the people in Deline received to deal with Port Radium. Further, the Yellowknives Dene First Nation should be supported to learn from the Deline Port Radium experience.

Action Required: The Yellowknives Dene First Nation (Randy Freeman) should follow-up with the Giant Mine Remediation Team to ensure fair and equitable treatment and adequate resources to address these interests. Peter Sangris will bring this matter to the Chiefs and Council for their information and follow-up.

3. There is a need to better understand processes and plans associated with the care of Giant Mine.

Action Required: The Giant Mine Remediation Team/Aboriginal Affairs and Northern Development Canada must regularly and clearly communicate processes and plans associated with the care of Giant Mine.

4. There is a need to change the language and thinking about the 'frozen block' system as a permanent answer to an interim solution until technologies are found to permanently and safely remove the arsenic trioxide.

Action Required: All parties need to change their way of thinking and talking about this method of storage. Resources need to be set aside and a plan developed to investigate more permanent methods for managing the underground arsenic.

5. Consideration should be given to designating Giant Mine as a special site such as a UNESCO (United Nations Education, Science and Cultural Organization) designation, so that people do not forget what happened here.



Giant Mine

Action Required: To the extent that resources can be found, Alternatives North will conduct research before the end of March 2012 to examine any special designations available for contaminated sites.

6. To ensure that people are kept safe, there is a need for better public information about land and resource use in the vicinity of Giant Mine. Although the Community Alliance was formed for the purpose of sharing information, it has not been effective due to poor participation. The Giant Mine Remediation Team's newsletter is another source of information.

Action Required: The Giant Mine Remediation Team should review its communications efforts to better engage the YKDFN and the

entire community. Ecology North will do a newsletter to disseminate information about its recent berry study.

Research, Monitoring, and Oversight

7. The complexities of the remediation of Giant Mine require the establishment of an independent 'watch dog' body as a safety net or extra protection for the public.

Action Required: Alternatives North and the Yellowknives Dene First Nation should make a presentation to the MVEIRB on this matter.

8. In keeping with the desire of the Yellowknives Dene First Nation, Alternatives North and others to minimize harm to future generations, funds should be set aside for research to turn the arsenic trioxide into something less toxic, and develop a research plan to do this.



Alan Ehrlich, Ray Case, and Lisa Dyer

Action Required: Alternatives North and the Yellowknives Dene First Nation should make a presentation to the MVEIRB on this matter.

9. To address concerns about water management and climate change, and the potential for these two factors and a host of others to create more safety issues, a strong monitoring system should be put in place that includes a process for widely sharing monitoring results.

Action Required: Alternatives North and the Yellowknives Dene First Nation should make a presentation to the MVEIRB on this matter.

10. Youth involvement is critical to understanding, monitoring, and living with Giant Mine.

Action Required: The Giant Mine Remediation Team and the Yellowknives Dene First Nation Advisory Committee need to make every effort to involve youth, particularly in monitoring activities.

11. Spring overflow at Baker Creek will likely continue to be a problem. Redirecting the creek and/or building a berm may be a solution.

Action Required: Issues associated with Baker Creek need to be discussed with the YKDFN's Advisory Committee and the general public.

Healing

12. As the basis for building trusting relationships, the Federal Government needs to make a public apology to the Yellowknives and others affected by the harmful effects of Giant Mine. It is important when issuing an apology to distinguish between taking responsibility as opposed to levying blame.

Action Required: The Yellowknives Dene First Nation with support from Alternatives North and others need to make a written request to the Minister of Aboriginal Affairs and Northern Development Canada for a formal apology for the decades of damage and the legacy left by Giant Mine.

13. To contribute to new relationships of trust and respect, healing the land is critical. There is a need to change the energy around Giant Mine, and to change the site from a place of despair to a place of wisdom.

Action Required: Alternatives North and the Yellowknives Dene First Nation should work together to request the Minister of Aboriginal Affairs and Northern Development Canada to support a series of healing ceremonies/events on site. All parties affected by Giant Mine need to participate in these ceremonies/events.

14. There is a need to find common ground among all interests to establish a centre of learning that speaks to the history and future of Giant Mine.



Giant Mine thermosyphons

Action Required: The Giant Mine Remediation Team/Aboriginal Affairs and Northern Development Canada should bring together the diversity of interests to work toward establishing a Wiiledeh Heritage Centre.

15. The Yellowknives Dene First Nation continue to be harmed by Giant Mine. For example, YKDFN members used to be able to drink the water that they now have to pay for. Compensation is required to begin to right these wrongs and to begin a new respectful relationship.

Action Required: The Yellowknives Dene First Nation should demand that Giant Mine Remediation Team/Aboriginal Affairs and Northern Development Canada compensate members of the Yellowknives Dene First Nation for past, current, and future costs and damages associated with Giant Mine.

Closing Comments

Workshop participants and resource people offered final comments.

Kevin O'Reilly expressed his satisfaction with the workshop, noting that it is "the beginning of a new beginning" for dealing with Giant Mine. He said that an apology and compensation are two issues that are very important to him personally. **Randy Freeman** said that the workshop is very helpful for focusing the work of YKDFN's soon to be established Advisory Committee. **Ed Hoeve** explained that the workshop was very helpful to moving him outside the technical world and to recognize that technical solutions are not the only solutions. **France Benoit** said that the workshop has given her hope. **Dwayne Wohlgemuth** expressed his appreciation to the volunteers at Alternatives North for always trying to make a difference. **Alan Ehrlich** said that the range of views expressed were impressive and it is important to include them in the public registry and for people to participate in the upcoming technical issues hearings in October and the public hearings in March 2012. **Lisa Dyer** expressed her gratitude for the 'big picture' information shared by Joan, Danny, and Carolyn. **Adrian Paradis** said that he needs to bring the information from the workshop to management. He said that the

workshop highlighted the need to put more work into the 'softer side' of remediation.

Aggie Brockman said that the workshop was a good reminder of the impacts of Giant Mine and of the divide that continues to exist between Aboriginal and non-Aboriginal people. **Eddie Sikeya** expressed his hope that documentation from this workshop will help address the issues that he raised, particularly compensation. **John Drygeese** reiterated the need to involve youth in these types of meetings. **Peter Sangris** said that he considers people at the workshop as 'friends' and looks forward to ongoing relationships. **Carolyn Raffensperger** said that as an outsider and voice for future generations, she has a responsibility to take the message of Giant everywhere she goes, and to bear witness to the "good hearts of the community and the power and commitment to heal the land and relationships." **George Tatsiechele** said that he enjoyed the good words and patience shown at the workshop. "Patience will help us heal. We need to work together one on one and to communicate more. The more we go on the land, the more aware we are and this is a basis for action."

Elder Eddy Sikeya offered the closing prayer.

Workshop Participants and Resource People

1. France Benoit, Alternatives North, Yellowknife
2. Rose Betsina, Yellowknives Dene First Nation, Ndilo
3. Aggie Brockman Alternatives North, Yellowknife
4. Bob Bromley, Weledeh MLA, Legislative Assembly of the NWT, Yellowknife
5. Ray Case, Giant Mine Remediation Team, Government of the NWT, Yellowknife
6. John Drygeese, Yellowknives Dene First Nation, Dettah
7. Lisa Dyer, Giant Mine Remediation Team, Public Works and Services Canada, Yellowknife
8. Ed Hoeve, EBA Engineering, Yellowknife
9. Randy Freeman, Yellowknives Dene First Nation staff, Yellowknife
10. Danny Gaudet, Deline Community Government, Deline
11. Shannon Gault, Yellowknives Dene First Nation
12. Karen Hamre, Alternatives North, Yellowknife
13. Joan Kuyek, Consultant, Ottawa
14. Margaret Liske, Yellowknives Dene First Nation, Ndilo
15. Kevin O'Reilly, Alternatives North, Yellowknife
16. Michel Paper, Yellowknives Dene First Nation, Dettah
17. Adrian Paradis, Giant Mine Remediation Team, Aboriginal Affairs and Northern Development Canada, Yellowknife
18. Carolyn Raffensperger, Science and Environmental Health Network, Ames, Iowa
19. Chief Edward Sangris, Yellowknives Dene First Nation, Dettah
20. Peter Sangris, Yellowknives Dene First Nation, Dettah
21. Jonas Sangris, Yellowknives Dene First Nation, Dettah
22. Eddie Sikeya, Yellowknives Dene First Nation, Ndilo
23. George Tatsiechele, Yellowknives Dene First Nation, Dettah
24. Isidore Tsetta, Yellowknives Dene First Nation, Dettah
25. Dwayne Wohlgemuth, Ecology North, Yellowknife

Observers:

26. Alan Ehrlich, Mackenzie Valley Environmental Impact Review Board, Yellowknife

Facilitator, Interpreters, and Sound

27. Lois Little, Lutra Associates Ltd., Yellowknife
28. Mary Rose Sundberg, Goyatiko Language Society, Dettah
29. Berna Martin, Dettah
30. Pat Braden, Pido Productions Ltd.

Invited but Did Not Attend
City of Yellowknife
Great Slave Cruising Club
NWT Mining Heritage Society

WORKSHOP PRESENTATIONS

1. The Perpetual Care of Contaminated Sites: Case Studies, Joan Kuyek, Consultant.
2. Principles of Perpetual Care: The Giant Mine, Carolyn Raffensperger , Science and Environmental Health Network.
3. Long-Term Care and Maintenance at the Giant Mine, Kevin O'Reilly, Alternatives North.

The Perpetual Care of Contaminated Sites: Case Studies



Joan Kuyek
September 26, 2011
Yellowknife

The case studies

- Love Canal and Superfund
- The Hanford Nuclear Reservation and the US Department of Energy
- Zortman-Landusky Mines and US abandoned mines
- Uranium Mine and Mill Tailings in Saskatchewan
- Faro Mine and Abandoned Mines in Canada's North
- Port Radium and the Sahtu Dene of Deline
- Managing Nuclear Wastes: Deep Geological Disposal
- System Accidents
- UNESCO World Heritage Sites

Questions for the case studies

- what is the site about and how it came to be,
- the role of the affected community in the cleanup of the site
- what organization(s) is charged with cleanup and long term care of the site and how does it work,
- what are some of the problems have happened in long term care at the site,
- what can we learn from the case

Love Canal

journeyofthelizardking.blogspot.com





Superfund

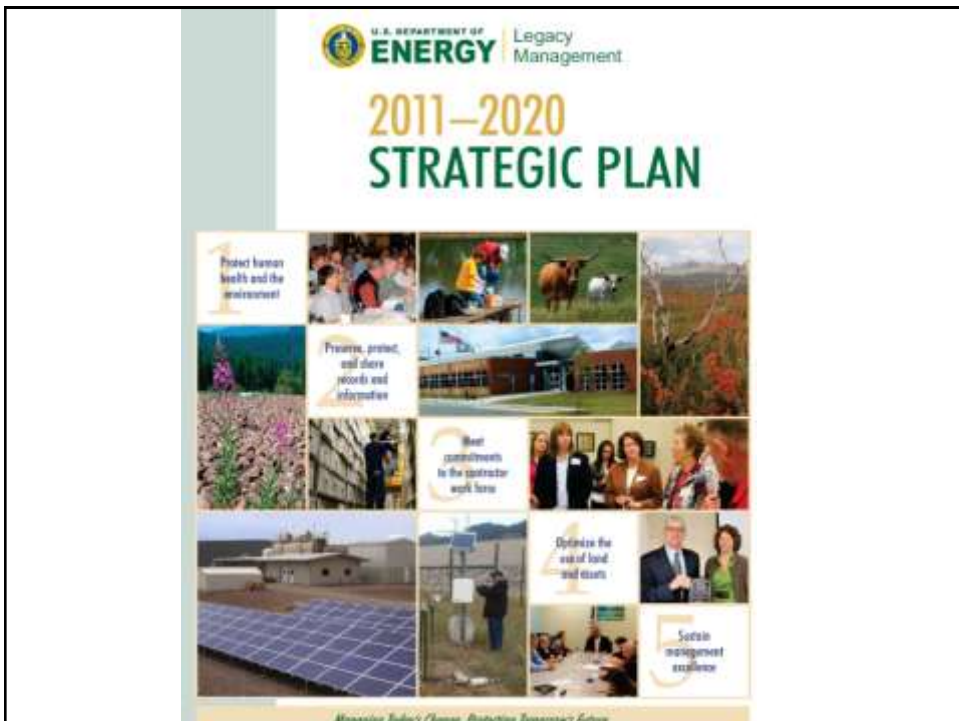
- Superfund looks at hazardous sites and decides which ones are priorities
- It can force any current or past owners of the sites to pay for the clean-up.
- The U.S. Environmental Protection Agency requires controls to work for at least 200 years.
- Sites that are deemed to be cleaned-up are transferred to States, other departments or Tribes for long term care.

Superfund money

- In 1995, the US did not renew the authorizations that collected taxes from polluting corporations.
- These special taxes had been placed in a trust fund to pay for some of the activities of Superfund.
- The fund was worth \$6 billion when it was not renewed.
- By 2003 the fund was used up
- Clean-ups are now funded out of annual appropriations from general revenues.

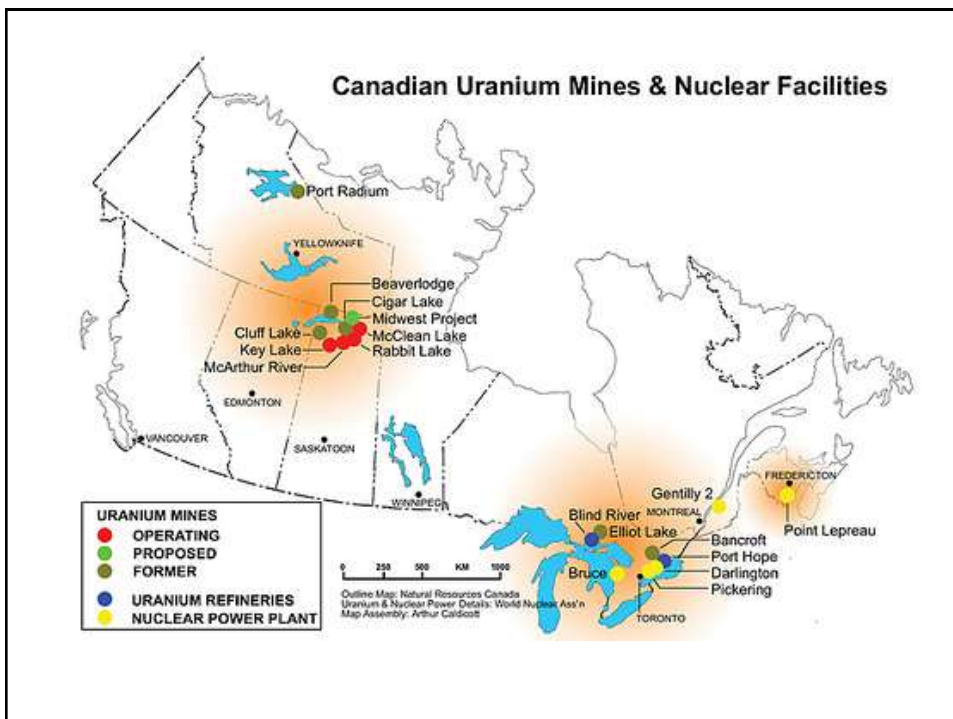
Hanford site- Jan 1960





Zortman Landusky

meic.org



Uranium City

esask.uregina.ca



Saskatchewan's Institutional Control Plan

- Institutional Control Registry
- Two funds:
 - Monitoring and Maintenance Fund
 - Unforeseen Events Fund

Uranium Tailings lessons

- Government/ industry designed “consultation” process is exhausting for First Nations and citizen’s groups
- Engineering must be based on at least a 1000 year time frame
- Designs have to work with nature in the long term management of the site

Faro Mine

cbc.ca



Faro Mine tailings

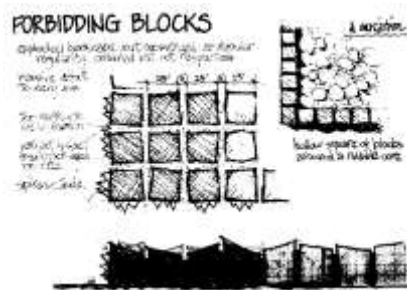
mineclosure.com



Lessons from Faro

- The FCSAP funding has not at this time been renewed, and is about to run out.
- There are serious concerns about long term funding for the work.
- The engineered covers planned for Faro will likely need to be replaced at some time in the future.
- Ensuring trained personnel, transportation systems, essential material supplies and power supply for the site over the long term will be difficult.
- Figuring out the roles of various interests in monitoring and emergency response is important.

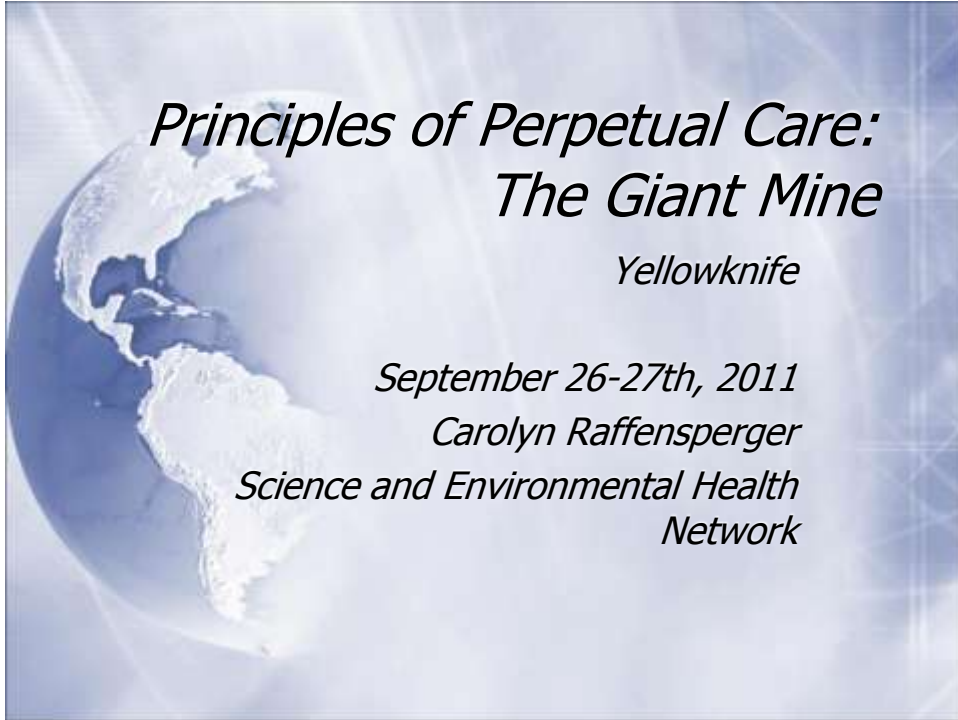
Waste Isolation Pilot Project





Lessons Learned

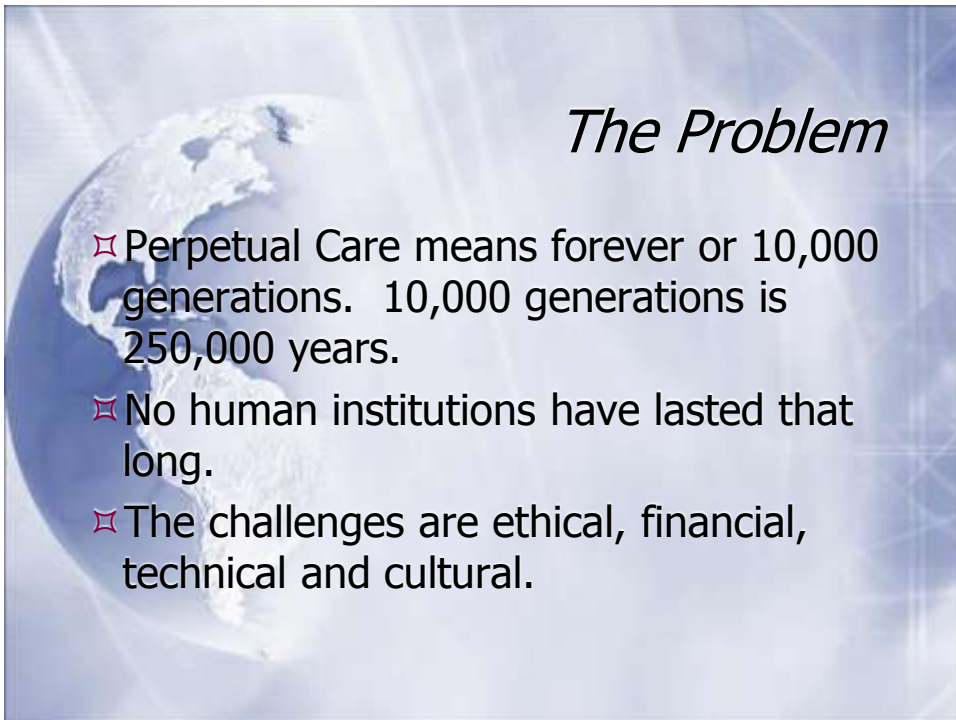
- About the community near the site
- Keeping people away (Institutional Controls)
- Managing the site over the long haul: who is in charge?
- Keeping records and accessing them
- Inspections, data analysis
- Maintenance and making things better
- Responding to slow leaks, emergencies and failures
- Money to pay for it: trust funds, how much? Avoiding crime?
- Protecting future generations; creating guardians
- Using what we learn, making new plans





*Remember
Prevent Harm
Restore*

- ✧ **Remember the Hard Things So They Don't Get Worse**
- ✧ **Prevent More Damage So There Aren't Hard Things to Remember**
- ✧ **Restore to a Pre-Damaged State So There Isn't So Much to Remember**



The Problem


- ✧ Perpetual Care means forever or 10,000 generations. 10,000 generations is 250,000 years.
- ✧ No human institutions have lasted that long.
- ✧ The challenges are ethical, financial, technical and cultural.

Only rocks know time on the scale of 10,000 generations



Steps towards Perpetual Care

- ✧ Prevention (prevent the harm)
- ✧ Mitigation (reduce existing harm)
- ✧ Adaptation (adapt to the situation)
- ✧ Restoration (restore to health, beauty and harmony)



The Principles of Perpetual Care are really One Principle

- ✧ The Golden Rule: Do unto others what you would have them do unto you.
- ✧ How do we treat others in this generation with justice?
- ✧ How do we treat future generations with respect?
- ✧ How do we treat the Earth with care?



Four Keys

- ✧ There are four ideas that will provide the foundation for the principles of perpetual care.
- ✧ We will apply the four key ideas to perpetual care issues to create ethical, environmentally sound, just principles for present and future generations.



First Key: Future Generations

- ✧ Present generations have a responsibility to leave a healthy natural world to future generations. Future generations have a right to a healthy planet.



Future generation issues

- ✧ Financial responsibility
- ✧ Duties to warn
- ✧ Duties to restore the Earth



Second Key: the Commons

The commons (all those things we share) of the Earth, of public health, and of culture are the foundation of community resilience and essential for the success of perpetual care. The commons are the legacy left to future generations by present generations.

The commons include water, air, wildlife, soil, climate. The things that are necessary for survival, health, community.



Third Key: Nature

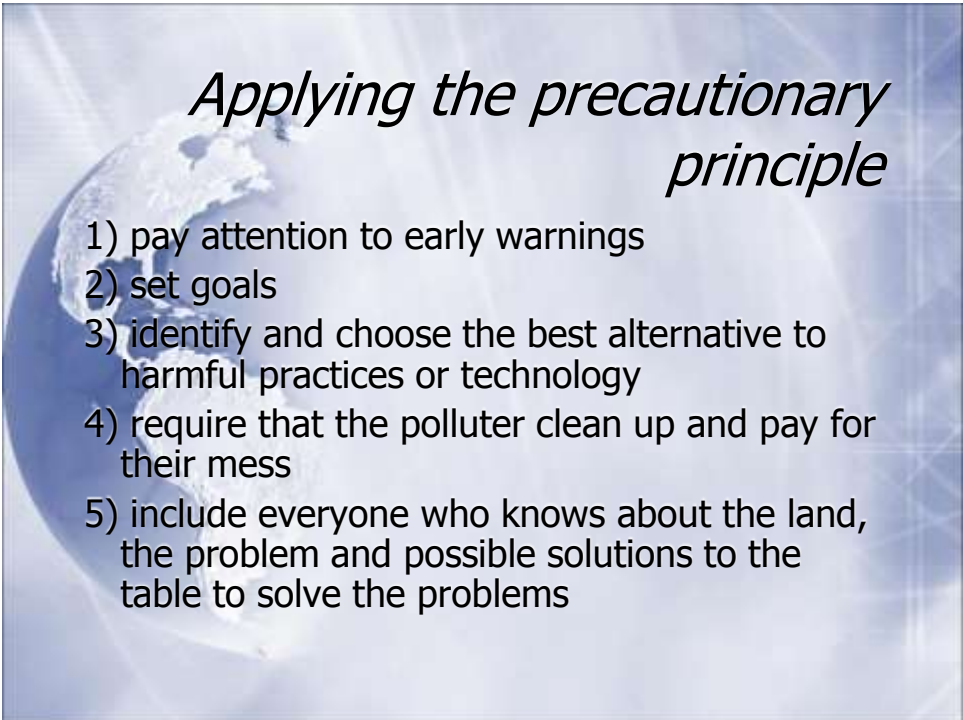
Nature is the measure, the teacher, and the model for how humans must treat the Earth, including places requiring perpetual care.



Fourth Key: the Precautionary Principle

The precautionary principle is a way of thinking and acting to prevent harm to the future even though we don't fully know what the future brings.

The precautionary principle tells us to plan ahead for a difficult future to prevent harm.



Applying the precautionary principle

- 1) pay attention to early warnings
- 2) set goals
- 3) identify and choose the best alternative to harmful practices or technology
- 4) require that the polluter clean up and pay for their mess
- 5) include everyone who knows about the land, the problem and possible solutions to the table to solve the problems



The precautionary principle to technology


Heed Early Warnings: What warning systems are in place if the technology fails?

Set Goals: What are the goals of the technology for isolation of the waste? Are these the right goals?

Will the polluter be held responsible or will the public ?

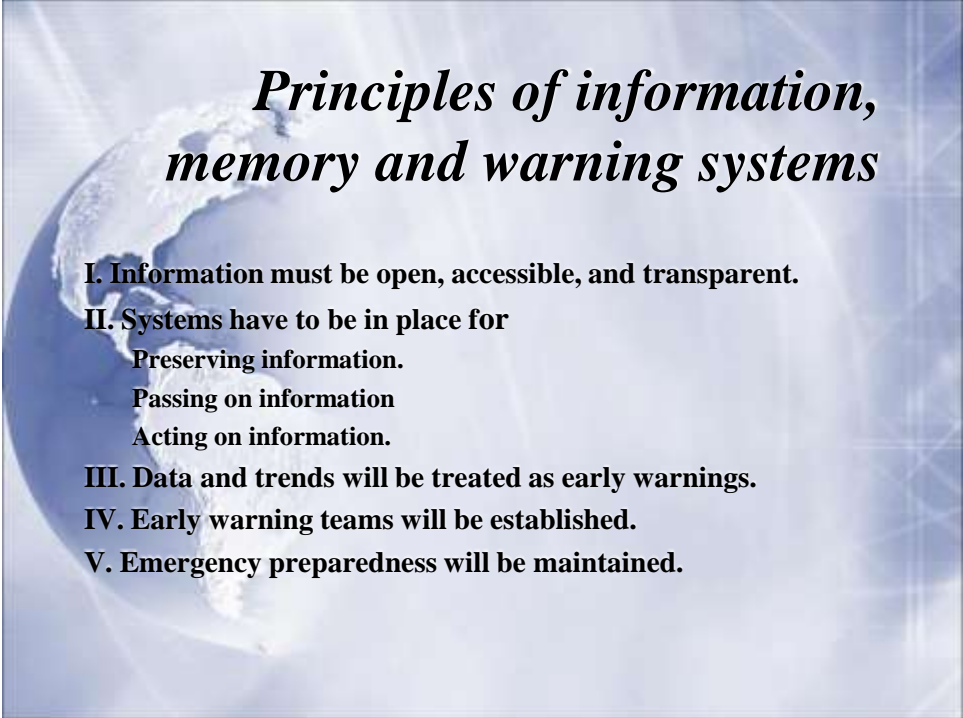
What are all the alternative technologies that have been considered?

Have all the people who have a stake in the decision been at the table?



Applying the four ideas to the key issues in perpetual care

- ✧ Information, memory and early warning systems
- ✧ monitoring
- ✧ technology
- ✧ financial mechanisms
- ✧ restoration



Principles of information, memory and warning systems

- I. Information must be open, accessible, and transparent.**
- II. Systems have to be in place for**
 - Preserving information.
 - Passing on information
 - Acting on information.
- III. Data and trends will be treated as early warnings.**
- IV. Early warning teams will be established.**
- V. Emergency preparedness will be maintained.**



Principles of monitoring

- I. Monitoring must be thorough and include the following:**
 - A. Social, community, and distinctive Aboriginal issues.**
 - B. Ecological—Soil, water, wildlife, pets.**
 - C. Site and perimeter monitoring.**
 - D. Technology used on the site to isolate waste must be monitored regularly.**
- II. Action plans are designed and put in place as part of the monitoring system..**
- III. Funding for monitoring is prepaid to the extent possible.**
- IV. Results of monitoring will be treated as early warnings.**



Technology principles

- I. Consider all alternatives and choose the best. Example:**
 - A. Technology best isolates the waste, given current ecological and geological conditions;**
 - B. requires the least short and long-term maintenance;**
 - C. requires the least energy;**
 - D. is most easily monitored;**
 - E. is easily repaired; and**
 - F. does not create additional hazards (such as the toxic chemical dispersants used in the BP oil spill in the Gulf of Mexico).**
- II. Use multiple backup technologies.**
- III. Technological decisions should reflect the interests of future generations.**
- IV. No solution should be considered final or permanent until the site is completely cleaned up and restored to pre-mine standards or an agreed upon alternative.**



Financial responsibility

- I. Polluter Pays: the first basic financial mechanism is that the polluter has a duty to pay for the pollution it generated.**
- II. Present generations pay as they go for liabilities. No debt should be left to future generations without a corresponding asset.**
- III. Funding must be safeguarded for the future. As much up-front funding as possible must be dedicated to the perpetual care facility. Investments should not be discounted**



Restoration

- I. Acknowledge this generation's moral failure as a beginning of restoration of the human and ecological communities.**
- II. Set goals for healing the human and ecological communities.**
- III. Establish robust, long-term measurement systems for the success of the restoration.**



Restoration continued

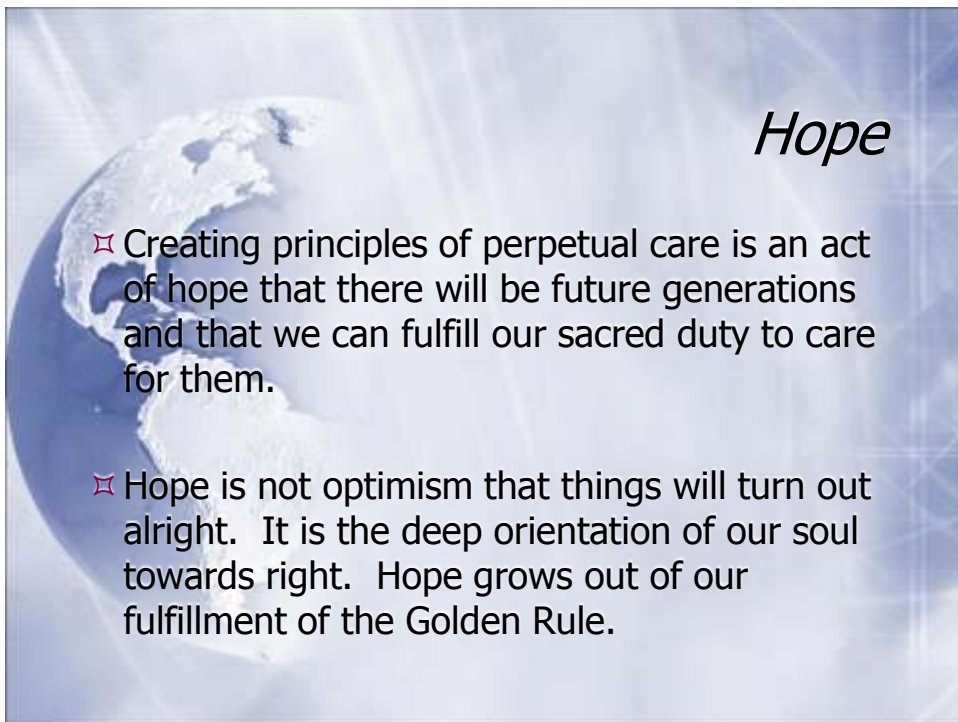
- IV. Attend to the healing and restoration of human communities.**
- V. Develop skills in ecological restoration. How does nature heal herself? Use disciplines like adaptive management.**
- VI. Use the best available information for ecological and social restoration. This includes cultural wisdom and scientific knowledge.**



Restoration continued

VII. Create measures of successful restoration, for instance, that children return or stay in the community when they are adults, that no contamination of surface water occurs, or leaks are cleaned up.

VIII. Celebrate restoration successes.



Hope

- ✧ Creating principles of perpetual care is an act of hope that there will be future generations and that we can fulfill our sacred duty to care for them.
- ✧ Hope is not optimism that things will turn out alright. It is the deep orientation of our soul towards right. Hope grows out of our fulfillment of the Golden Rule.

Long-Term Care and Maintenance at the Giant Mine



Alternatives North

Kevin O'Reilly
September 26, 2011

Presentation Outline

- **Background on Alternatives North**
- **Giant Mine Remediation Plan**
 - Background on Giant Mine
 - Background on Remediation Plan and Environmental Assessment
- **Short-term Remediation Work**
- **Long-Term Care and Maintenance**
 - Maintenance and Inspection
 - Monitoring
 - Public Reporting/Consultation
 - Funding
 - Management Systems



Alternatives North

- based in Yellowknife with supporters in communities
- began in 1992, volunteers, no office
- social justice group working with churches, labour unions, environmental organizations, women and family groups, seniors, and anti-poverty interests
- best possible mine closure that includes the interests of future generation
- party to the Environmental Assessment of the Giant Mine Remediation Plan

Giant Mine Remediation Plan

- **Background on Giant Mine**
 - 1935 property staked
 - 1948 Giant Mine went into production
 - 1951 first air pollution controls, arsenic began to be stored underground
 - 1999 Giant Mine closes and is passed on to government, ore is trucked to Con Mine until 2005
 - 2005 GNWT agree to pay \$23 million towards Giant Mine remediation and to become a partner in the frozen block method
 - 2007 water licence and Remediation Plan submitted

Giant Mine Remediation Plan

- **Background on Remediation Plan and Environmental Assessment**
 - **2007** Remediation Plan submitted with water licence application
 - **2008** City of Yellowknife makes a referral of the water licence for Environmental Assessment based on potential for environmental impacts and public concerns
 - **2009** Review Board issues Scoping Decision
 - **2010** Developer's Assessment Report submitted
 - **2011** Technical Sessions held by Board
 - **2011** Public Hearing by Board late in the year

Short-Term Remediation Work

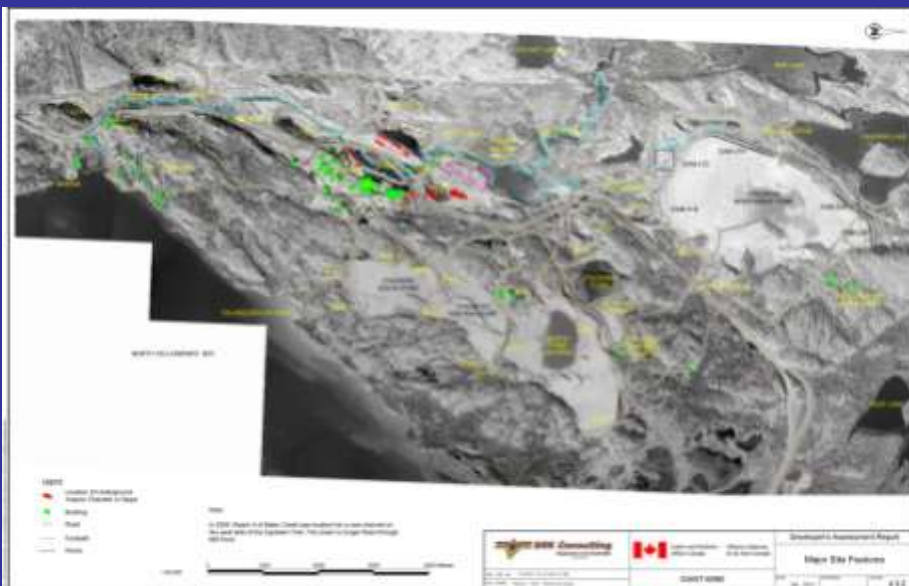
- Developer's Assessment Report uses 25 year timeline (15 years to implement and 10 years of monitoring)
- Review Board will consider long-term care and maintenance after active freezing



Short-Term Remediation Work

- remediation based on the type of mining activity (component-specific approach)
 - arsenic dust storage chambers underground (freezing)
 - open pits (fill two, put fence and berms around other six)
 - waste rock (put into pits)
 - tailings (use rock and soil covers)
 - water (new water treatment plan)
 - Baker Creek (move it to reduce flooding)
 - contaminated soils (put in B1 pit)
 - buildings (remove toxic materials, put in to pits)
 - roads (move highway, but keep roads for access)

Short-Term Remediation Work



Short-Term Remediation Work



Long-Term Care & Maintenance

- **Inspection and Maintenance**
 - **man-made features left on site will need to be regularly inspected**
 - annual inspections for ditches and Baker Creek
 - tailings covers inspected every five years or until revegetation completed
 - pits, underground stability, mine openings to be inspected annually for five years and then every 2 years unless otherwise required



Long-Term Care & Maintenance

- **Inspection and Maintenance**
 - maintenance to be carried out by staff on site (may be contracted out)
 - some features will require maintenance forever (thermosyphons, possibly water treatment)



Long-Term Care & Maintenance

- **Monitoring (forever, or until agreed otherwise)**
 - frozen ground
 - water quality (minewater, ground water, treated minewater, surface water, runoff, seepage)
 - fish and bottom dwelling life
 - air quality
 - man-made features left on site (e.g. ditches, dams, Baker Creek, tailings cover, pits, sealed openings)
 - items harvested by Yellowknives Dene



Long-Term Care & Maintenance

- **Public Reporting/Consultation**
 - annual report (summary of operational and environmental data)
 - state of the environment report every three years (for first 15 years, every five years after that)
 - Giant Mine Community Alliance to continue
 - Aboriginal and Government body to be established
 - commitment to further public consultation but few specifics
 - no independent oversight proposed
 - project information and data subject to *Access to Information Act*

Long-Term Care & Maintenance

- **Funding**
 - Cost to carry-out short-term remediation work
 - \$480 million (based on 2007 costs plus inflation, $\pm 30\%$)
 - Long-term care and maintenance work at \$1.9 million/year
 - funding subject to Parliamentary approval
 - no long-term funding identified
 - government not prepared to research other funding options

Long-Term Care & Maintenance

- **Management Systems**
 - 8 workers will manage site after initial work is completed
 - **Environmental Monitoring and Evaluation Framework proposed but not ready yet, public to be consulted**
 - Environmental Management System (audited, internal and external)
 - Intergovernmental Working Group
 - Environmental Management Plans
 - Consultation
 - Adaptive Management (no specific thresholds identified nor response actions)

Long-Term Care & Maintenance

- **Management Systems**
 - Commitment to review new technologies every 10 years (specific way not identified)
 - no active research and development into longer term solutions for managing arsenic
 - no comprehensive list of Giant Mine records, where they are stored or plans for preserving the records



Thank You

- **Yellowknives Dene First Nation**
- **Goyatiko Language Society**
- **Funding for Workshop**
 - **Aboriginal Affairs and Northern Development Canada**
 - **Western Mining Action Network**
 - **Indigenous Environmental Network**
 - **Abandoned Mines Project, Memorial University**
 - **Science and Environmental Health Network**



Alternatives North