5.3.3.4.2 Labine Point (West Adit & Leach Plant to Cobalt Channel)

a) Remediation Issues

1. Exposed tailings are in evidence at several locations on Labine Point. These tailings are likely the result of spills from the former leach plant with exposed tailings being found in small pockets on slopes and in slightly thicker layers in low lying areas. In the areas were surface runoff flows across them, the site and risk assessments have shown that potential localized ecological risks exist.

b) Remediation Considerations

- Health and safety of the workers needs to be addressed prior to any possible relocation of tailings.

c) Acceptable and Preferred Remediation Activities

The following table explains weighting against CDUT goals and the selection of remediation options during the evaluation discussions at the CDUT meeting.

TABLE 5.3-14
LABINE POINT EXPOSED TAILINGS
ACCEPTABLE AND PREFERRED REMEDIATION ACTIVITIES

Goals / Options	**Leave as is and monitor**	**Pick them up and dispose in TCA**	**Cover with local material**
Health and safety	High	Med	Med
Protect fish, wildlife and vegetation	Low	High	Med
Protect GBL water quality	Low	High	Med
Minimize environmental impacts during remediation	High	Med	Med
Minimize Long term care and maintenance	Med	High	Med
Return site to its original condition where possible	Low	High	Med
Is cost effective	High	Med	Med
A / P / NA	**NA**	**P**	**A**

The preferred option addressing the exposed surface tailings in Labine Point area is to excavate and relocate them into one of either the TCA depressions (Murphy TCA or Silver Point TCA) prior to covering the area with coarse rock. If room is not permitted in the depressions, the disposal of tailings in McDonough TCA will be considered. Waste rock or native fill could be used to construct a drain for the runoff flows in this area after tailings removal. This option meets the objectives of reducing human health and ecological on-site risks, reducing impacts on Great Bear Lake, has moderated environmental impact during remediation, and minimizes the need for long term care and maintenance.

d) Monitoring

Monitoring Activities (QA/QC during remediation)

Construction supervision and approval will ensure that the site works conform to the contract specifications. Limits of work (area and depth of removal) to be approved by field supervisor. Care must be taken to ensure that the positive drainage is retained at completion of the works avoid future ponding of water. Sediment control measures are to be employed during excavation and/or fill placement to minimize predicted releases from the work site.

Health and Safety Monitoring

As a minimum, standard construction health and safety measures and protective clothing will be implemented when working at the site. Dust control measures will be taken to minimize dust generation during tailings relocation and cover placement. Thermoluminescent dosimeters will be worn by all crew working on the site. When working near the waters edge coast guard approved life rings and ropes must be stationed as appropriate for the work.

Performance Monitoring (post remediation)

A long term monitoring plan has been developed that calls for the visual inspection of the site on a periodic basis. The current plan calls for twice yearly inspections for the first five years and once every two years thereafter. A site inspection form will be used to guide the inspection. In this case, the area will be visually assessed during the inspections and its condition will be documented. The site inspection report will highlight any evidence of potential concern noted (e.g. erosion of materials, etc.). Annual reports will be developed for submission to regulators and as a file record. Water sampling in the down gradient area will include sample stations PR6 (Cobalt Channel) & PR7 (Labine Point)

e) Maintenance Activities

No maintenance activities are anticipated.

f) Contingency Plan

An allowance has been made in the long term monitoring plan for cover maintenance if required.

5.3.3.5 Great Bear Lake Tailings

All options (cover/removal) discussed were not evaluated as they were not acceptable due to the amount of environmental disturbance. Therefore, no remedial works are planned with respect to tailings in Great Bear Lake as any intervention would do more harm than good.

5.3.3.6 Hazardous Waste Materials

All hazardous materials found on site will be dealt with in the appropriate manner as identified in the NWT transportation of hazardous material guidelines. Therefore, no evaluation is necessary on this component.

5.3.3.7 Hydrocarbon Fuel Areas

There is a small amount of hydrocarbon staining on site in former storage areas. Some of these platforms have been buried and some are still visible. During remediation, all areas will be covered that currently remain. Covering is chosen based on gamma levels and not hydrocarbon concentrations. Therefore no evaluation is necessary on this component.

5.3.4 Adjacent and Vicinity Mines and Facilities

5.3.4.1 Glacier Bay Airstrip

a) Remediation Issues

1. There are minimal environmental issues associated with the airstrip.

b) Remediation Considerations

- Liability concerns associated with the use of the airstrip.
- Use of the airstrip by other parties

c) Acceptable and Preferred Remediation Activities

The following table explains weighting against CDUT goals and the selection of remediation options during the evaluation discussions at the CDUT meeting.

TABLE 5.3-15
AIRSTRIP
ACCEPTABLE AND PREFERRED REMEDIATION ACTIVITIES

Goals / Options	**Leave as is**	**Decommission airstrip**
Health and safety	Med	Low
Protect fish, wildlife and vegetation	Med	High
Protect GBL water quality	High	Med
Minimize environmental impacts during remediation	High	Med
Minimize Long term care and maintenance	High	High
Return site to its original condition where possible	Med	High
Is cost effective	High	Low
A / P / NA	**P**	**A**

Identifying the airstrip as an abandoned aerodrome and leaving it to erode naturally will meet the goals set for minimizing impacts to the environment during remediation and minimizing long-term care and maintenance. Goals set for health and safety and the protection of fish, wildlife and vegetation, as well as returning the site to its original condition, are met to some degree. This option is also the most cost effective option available for this site.

d) Monitoring

Monitoring Activities (QA/QC during remediation)
As no work is proposed for the airstrip this is not applicable.

Health and Safety Monitoring
As no work is proposed for the airstrip this is not applicable. The use of the airstrip by the contractor and others is at their own risk.

Performance Monitoring (post remediation)
As no work is proposed for the airstrip this is not applicable.

e) Maintenance Activities
As no work is proposed for the airstrip this is not applicable.

f) Contingency Plan
No work is proposed for the airstrip post remediation. Prior to remediation, some maintenance activities may need to occur if the contractor chooses to use the airstrip during remediation.

5.3.4.2 Vicinity Roads

Roads were evaluated previously for both the Port Radium Mill and Mining areas as well as the extended area. The same preferred options will be carried out for the large area. For road, the preferred option is to leave them as they are to naturally revegetate.

5.3.4.3 Vicinity Cabins

This option refers to the three cabins at Cross Fault Lake. Though cabins were discussed above and evaluations were done and it was determined that all remaining infrastructure at the site would be demolished, in further discussions with Déline community members these cabins may have historical value. Additional discussions will occur prior to destroying any of these cabins.

5.3.4.4 Borrow Area

Two former borrow areas have been identified that were used during the mine operations and used to construct the airstrip. Therefore, no pristine area will be used for a soil or clay borrow sources and no evaluation needs to take place.

Rock borrow materials as needed for coarse fill cover and fill along shoreline will be taken from talus slopes in the immediate vicinity of the mine or from talus slopes along the edge of the road from the airstrip to the mine.

5.3.4.5 Cross Fault Lake Mine

a) Remediation Issues

1. A wooden head-frame and two other small wooden structures remain directly on site. The head-frame and buildings are in various states of disrepair and the shaft is sealed by metal sheets not up to today's standard. The manway/vent raise is partially covered and filled with water.
2. Waste rock has some areas with elevated gamma radiation levels.
3. Asbestos on ground and covering building.

b) Remediation Criteria

- Some logistical concerns to get to this isolated area. It is on the north side of Cross Fault Lake with no roads access to it.

c) Acceptable and Preferred Remediation Activities

The preferred remediation option for the site is to demolish the buildings in place after off-site removal of any asbestos containing materials, remove any residual debris and scrap metal for disposal in a TCA, and development of a cap seal for the shaft and vent openings. No activities are proposed for the waste rock as the area is small, isolated incremental doses would be minimal from casual access. This option meets the objectives of reducing human health risks, has moderated environmental impact during remediation, and minimizes the need for long-term care and maintenance.

d) Monitoring

Monitoring Activities (QA/QC during remediation)

Construction supervision and approval will ensure that the site works conform to the contract specifications. Limits and extent of the work are to be approved by field supervisor. QA/QC work includes concrete sampling for concrete caps and inspection of the site at completion of the works.

Health and Safety Monitoring

As a minimum, standard construction health and safety measures and protective clothing will be implemented when working at the site. Appropriate personal protective equipment and breathing apparatus will be worn when handling asbestos containing materials. Thermoluminescent dosimeters will be worn by all crew working on the site. When working near the waters edge coast guard approved life rings and ropes must be stationed as appropriate for the work. When crossing water, coast approved life jackets must be worn at a minimum.

Performance Monitoring (post remediation)

A long term monitoring plan has been developed that calls for the visual inspection of the site on a periodic basis. The current plan calls for twice yearly inspections for the first five years and once every two years thereafter. A site inspection form will be used to guide the inspection. In this case, of Cross Fault Lake mine area it will be visually assessed during the inspections and its condition will be documented. The site inspection report will highlight any evidence of potential concern noted (e.g. erosion of materials, condition of concrete cap, etc.). Annual reports will be developed for submission to regulators and as a file record. Water sampling will include sample stations PR12 & PR13 in Cross Fault Lake.

e) Maintenance Activities

No maintenance activities are anticipated.

f) Contingency Plan

An allowance has been made in the long term monitoring plan for concrete cap maintenance if required.

5.3.4.6 Echo Bay Mine

a) Remediation Issues

1. The Echo Bay adits are in various states of closure, some have been sealed with waste rock and others are fenced. Surface openings and breakthroughs from underground have for the most part been fenced, although some breakthroughs have occurred outside the fenced areas. Three small sheds cover three of the vents.

b) Remediation Considerations

- Current prospecting in the area.

c) Acceptable and Preferred Remediation Activities

The preferred remediation options for the adits are to: seal Adit No.1 the entrance with waste rock; leave No.2 Adit as is; cut open the CMP and place a waste rock seal close to the adit entrance for Adit No.3; and leave the fencing at the No.4 Adit as is with ongoing monitoring, care and maintenance. The preferred option for the management of Echo Bay mine surface

openings is to cap manways and vent raises, and to improve the fencing around the surface stope breakthroughs. The few remaining wood structures will be demolished and general cleanup of wood scrap and debris will undertaken. Asbestos material associated with the structured will be bagged and removed from site. These activities meet the objectives of reducing human health and ecological on risks, has moderated environmental impact during remediation, and have only modest need for long term care and maintenance.

d) Monitoring

Monitoring Activities (QA/QC during remediation)

Construction supervision and approval will ensure that the site works conform to the contract specifications. Limits and extent of the work are to be approved by field supervisor. QA/QC work includes concrete sampling for concrete caps and inspection of the site at completion of the works.

Health and Safety Monitoring

At a minimum standard construction health and safety measures and protective clothing will be implemented when working at the site. Appropriate personal protective equipment and breathing apparatus will be worn when handling asbestos containing materials. Thermoluminescent dosimeters will be worn by all crew working on the site. When working near surface openings appropriate care must be taken due to the risk of working at such openings.

Performance Monitoring (post remediation)

A long term monitoring plan has been developed that calls for the visual inspection of the site on a periodic basis. The current plan calls for twice yearly inspections for the first five years and once every two years thereafter. A site inspection form will be used to guide the inspection. In this case of the Echo Bay Mine area, it will be visually assessed during the inspections and its condition will be documented. The site inspection report will highlight any evidence of potential concern noted (e.g. erosion of materials, condition of concrete cap, condition of fencing, etc.). Annual reports will be developed for submission to regulators and as a file record.

e) Maintenance Activities

It is reasonable to expect that fencing repairs and replacement will be required periodically.

f) Contingency Plan

Includes for additional fencing and additional capping if and as necessary.

5.4 SUMMARY OF THE PREFERRED REMEDIATION ACTIVITIES

5.4.1 Summary Comments

The Port Radium Mine Remediation Plan is the outcome of a multi-year cooperative effort between the community of Déline and the government of Canada and through their respective representatives on the Canada-Déline Uranium Table and the Department of Indian Affairs and Northern Development. The plan has been developed to ensure that the human health and ecological concerns associated with the former Port Radium mine site are addressed in a scientific and socially acceptable manner that recognizes the unique nature of the concerns associated with the site's history as a former uranium operation and the traditional and cultural importance of Great Bear Lake, and its resources to the Dene people as a whole and the community of Déline in particular.

While the remediation plan addresses the issues identified for each element of the site on a component basis, in keeping with the guiding scientific and community principals, the fundamental elements include:

Physical Aspects

- Cap and seal all mine openings where possible, or alternatively fence to secure openings;
- Demolish all wooden structures remaining on site (with the exception of cabins on the south shore of Cross Fault Lake until history information is confirmed);
- Knock down and bury remaining vertical concrete walls;
- Cover accessible existing concrete slabs on grade;
- Remove dock wall face and cribbing (up to 4 m back) to allow for a more natural grade and erosion of the bank;
- Cut back the bank to make it more stable at outer Labine Bay and removal of debris (metal scraps and wastes);
- Pickup/remove residual scrap and debris from across site and shoreline;
- Dispose miscellaneous scrap and debris in the depressions or alternatively McDonough TCA;
- Dispose/recycle old vehicles offsite or salvage if economic and desired, or dispose in the McDonough TCA; and
- Install staff gauge for water level monitoring in and signs at the McDonough TCA.

Chemical Aspects

- Remove exposed surface tailings from runoff areas on Labine Point (vicinity of West Adit and Leach Plant area);
- Remove exposed surface tailings from perimeter of Murphy TCA;
- Fill in local depressions in Silver Point and Murphy TCAs;
- Extend waste rock cover over Murphy TCA to cover exposed surface tailings in Murphy saddle/trough area;
- Provide clay or bentonite impervious liner cover and fill cover over Siler Point TCA;
- Pick up and remove miscellaneous asbestos fragments that may be found at the mine site; and
- Remove, consolidate and cover ash from burn areas.

Radiological Aspects

- Cover flat areas of site where gamma radiation levels exceed 250 µR/hr.

At completion of the remedial works, the site will be in a stable and safe state and receptive to traditional hunting and fishing land uses. Some areas with slightly elevated gamma radiation will remain and some impacted runoff will continue, but the impacts will be minor and pose little risk to human health and the environment. In addition, the site will be licensed by the Canadian Nuclear Safety Commission which will ensure that site conditions are consistent with safe uses for the former uranium mine site and will ensure that long term monitoring and care and maintenance is continued for the site.

5.4.2 Summary of Monitoring, Maintenance and Contingencies

5.4.2.1 Summary of Monitoring During Remediation

Monitoring Activities (QA/QC during remediation)

Engineering and site monitoring will be carried out during the remediation works and at conclusion of the works to ensure that they have been carried out in accordance with the engineering plans and specifications for the remediation. In particular, radiological surveys of the site will be carried out to confirm that the radiological remediation objectives have been met. Civil surveys, using local benchmark controls, will be carried out at selected areas of the site so that selected site features (placed covers, water levels, berm cross-section, etc.) will be recorded at conclusion of the program. This will allow for future measurements, in addition to visual observations, as part of the long term monitoring program, if desired.

Environmental monitoring during remediation will be in two phases, one at the beginning of the project and one at the end of the project. In each of these phases, Great Bear Lake water samples will be collected for analysis.

Health and Safety Monitoring

Appropriate health and safety protocols will be implemented in accordance with conventional worker construction health and safety programs as well as for handling designated substances and for radiation protection and monitoring. Conventional health and safety protocols will include protective measures while working near water, dust control, and conventional safety while working in and around mobile equipment. Personal protective equipment (gloves, coveralls, safety hats, etc.) will be worn at all times and specialized equipment such as respirators will be available and worn when working with asbestos containing materials. A radiation health and safety program will be established to ensure that doses are ALARA during the remediation works. Program measures will include worker training in health and safety practices as well as proper hygiene and decontamination practices required to minimize potential radiological or chemical exposure. Worker radiation exposures will be monitoring during the construction period and report to Health Canada.

Performance Monitoring (post remediation)

A long-term monitoring plan has been developed for the site that will ensure that the site is monitored and maintained into perpetuity. The plan includes for allowances for annual site inspections that include review of site conditions, water sampling and analysis, and annual reporting. In addition to the annual inspections, periodic state-of-the-environment reports would be developed which would, collect additional sampling data from the site and vicinity area for more comprehensive reporting on the site on its surrounding environment.

5.4.2.3 Summary of maintenance plan

The remediation plan has been developed with the express intent to minimize future maintenance requirements. In this respect, only limited items, such as the fencing around underground openings, are anticipated to require periodic maintenance. Other maintenance may be necessary if monitoring inspection activities note deficiencies in the remedial work over time, or if new areas of concern become evident.

5.4.2.4 Summary of contingency plan

The contingency plan includes provisions for carrying out unplanned maintenance activities.

5.4.2.5 Reporting on Monitoring Plan to the Sahtu Land and Water Board and CNSC

A regular series of remediation performance report will be provided to the Board and the CNSC that will document all of the monitoring information and any unanticipated occurrences or activities. These are as follows:

Remediation Completion Report, March 31st 2007;
Annual Remediation Performance Report, 2007, filed by March 31st 2008;

Annual Remediation Performance Report, 2008, filed by March 31st 2009;
Annual Remediation Performance Report, 2009, filed by March 31st 2010;
Annual Remediation Performance Report, 2010, filed by March 31st 2011; and
Comprehensive Remediation Performance Assessment, Filed by March 31st 2012.

(This list of reporting requirements will continue as the site will remain licenced and therefore, it will be required).

The first report, Remediation Completion Report, will describe all of the remediation work undertaken through 2006 with detailed accounting of variances from the approved plan. The report will document all of the monitoring information collected through the remediation period for QA/QC or environmental monitoring purposes.

The Annual Remediation Performance Reports will summarize all of the monitoring information both as an annual review and as a cumulative assessment of temporal trends utilizing all of the available information. Any unexpected events or occurrences and any contingency or other actions taken will also be documented.

The Comprehensive Remediation Performance Assessment will provide a complete and thorough summary and interpretation of all of the available monitoring information to the end of the initial follow-up monitoring. Further, this report will assess the benefits of the current monitoring work and will provide recommendations for further monitoring requirements.

5.4.3 Remediation Schedule

General Approach

The general approach to the remediation schedule is as follows:

- Construct a winter road in 2006 and mobilize to site;
- Complete the bulk of the remediation activities from May to September 2006;
- Construct a winter road in 2007 to demobilize from site;
- Conduct five years of follow-up monitoring (2007-2011) to assess the performance of the remediation activities and the state of the receiving environment;
- Prepare annual reports to the CNSC;
- Prepare a comprehensive Remediation Performance Assessment for submission to the Boards and CNSC by March 31st 2012 that assesses and summarizes all the monitoring information, assesses the benefits of current monitoring program and provides recommendations regarding the benefits of further monitoring; and,
- Continue with a modified monitoring plan according to the results of Comprehensive Remediation Performance Assessment.

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APPENDICES

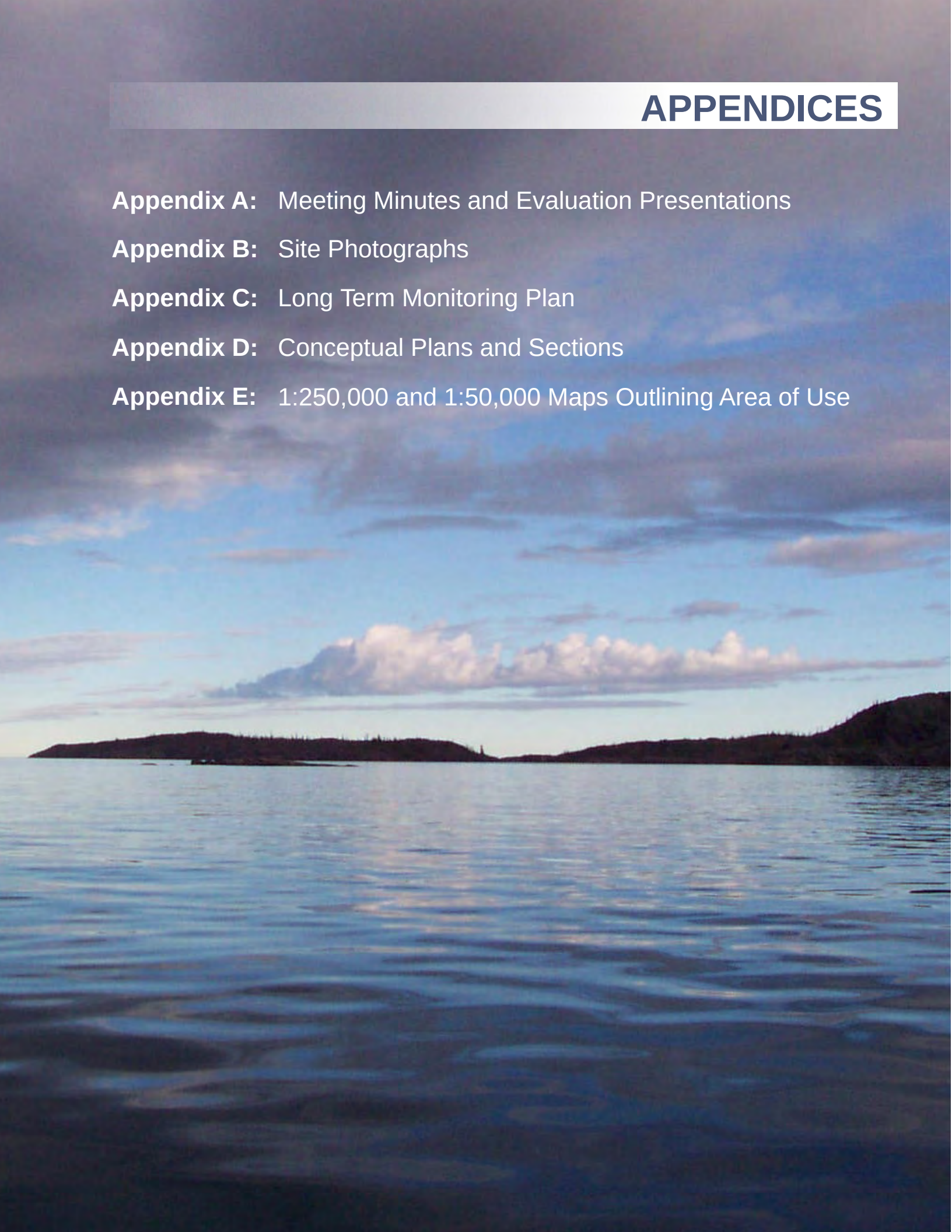
Appendix A: Meeting Minutes and Evaluation Presentations

Appendix B: Site Photographs

Appendix C: Long Term Monitoring Plan

Appendix D: Conceptual Plans and Sections

Appendix E: 1:250,000 and 1:50,000 Maps Outlining Area of Use



APPENDIX A

MEETING MINUTES AND EVALUATION PRESENTATIONS

Canada-Déline Uranium Table Meeting Minutes
March 18-19, 2005
Déline, NT

In attendance: Julie Ward, Gerd Wiatzka, Chris Cuddy, David Kennedy, Danny Gaudet, Cathy Mackeinzo, Jennifer Blomqvist, Joe Blondin Jr., Michael Neyelle, Morris Neyelle, Alfred Taniton, Walter Bayha, Andrew John Kenny, Marlene Tutcho, Jane Goulet, Frederick Kenny, Jonas Modeste

1. Agenda

- Approved

2. Site Remediation Options Selection

Chris gives an overview of Canada's objectives for the Final Report re: site remediation. When CDUT final report is presented, it has to include a preliminary site remediation plan for recommendation to Minister of INAC and Déline Chief and Council.

Danny re-iterates that the recommended clean-up plan must address Déline's objectives and must be accessible to community members. People are anxious to see the site cleaned up, and this intention must be clearly stated and described in the Final Report. Canada agrees with this objective, but notes that the clean-up plan must also go through a process of approval by various regulatory bodies.

Danny explains the process we have gone through to research, develop and recommend a remediation plan; he draws a flow chart to depict the sequence of tasks, and several meeting participants note that the visual depiction is an effective tool to understand this complex process. He states that the regulatory approval process can take a long time; Walter Bayha, who sites on the Sahtu Land and Water Board, says that applications are usually reviewed within 42 days, but the application still has to be reviewed by an additional 34 federal, territorial and regional agencies. The plan will probably not have to go through an EIA, because most of this work has already been done (site assessment, HHERA). Chris clarifies that the recommended clean-up plan that will be contained in the final report will not be that specific on logistical aspects of the clean-up operation, these will be developed further in the project description.

Both Canada and Déline agree that their goal is to begin clean-up in summer 2006, which would require filing applications for permits this summer in order to move equipment on to the site next winter. This means that all parties involved have to work efficiently to meet this goal. Déline points out that this is especially important because the current federal government is committed to cleaning up contaminated sites in Canada, but this might not be the case if there is a change in government.

Remediation Options Recommendations and Outstanding Issues
(presentation by Julie)

Airstrip

- *Preferred option: leave airstrip as is to naturally erode and identify as abandoned*

Canada still needs to investigate liability concerns, and Walter suggests that we check with Plummer's Lodge (who still uses this strip, and probably will in the future).

Roads

- *Preferred option: leave roads as they are to naturally revegetate*

This refers to roads with no concerns re: contamination.

Docking Area

- *Preferred option: remove docking area and create a more natural slope along the shore*

Danny notes that scrap metal protruding from the shore should be razed off, but not pulled out in case this would make the shoreline even more unstable and/or disturb sediments. This option should be carried out with minimal disturbance to lake sediment. It will probably be necessary to get a permit from the SLWB to carry out this task.

Buildings/Sheds

- *Preferred option: remove all structures including RCMP cabin*

Danny states that Chief and Council considered the historical value of the RCMP cabin. Canada has concerns about future liability. There is discussion about safety concerns to animals and people if structures are left on the sites. It is therefore agreed that all buildings should be removed. There may be some issues with Plummers' use of sheds; if they wish to retain them, they will have to assume responsibility.

Concrete Structures/Pads

- *Amended preferred option: break up and level protruding structures; cover accessible pads.*

The preliminary CDUT recommendation was to leave structures as they are to naturally erode. Chris thinks we should knock protruding concrete structures down to ground level. Foundations at ground level may be covered, but will not be broken up. This was agreed to by the group.

Remaining Miscellaneous Equipment

- *Preferred option: determine ownership, if any; owner/Crown haul offsite for disposal*

There is a question of where equipment will be hauled to. This will be considered in future. If Plummer still wants to use any equipment, he will have to get required permits or remove.

Surface Scrap Metal

- *Preferred option: pick up and dispose on site*

Déline is willing to dispose scrap metal on site, as long as it is disposed in an area where it is not visible or poses a hazard. Protruding pieces will be cut off or covered, not pulled out (to minimize disturbance).

Crown Pillars

- *Carry out a technical inspection of mining diagrams to determine stability before deciding if any further closure work is necessary.*

Known Mine Openings

- *Preferred option: cement cap on horizontal openings; backfill and plug vertical openings.*

Dry Contained Surface Tailings

- *Preferred option: push exposed tailings into Murphy TCA pond/depression and cover.*

Gerd explains that it would be easiest to push exposed tailings on edges of Murphy TCA into pond/depression in the centre, then cover. Whenever we are working with exposed tailings, measures will be taken to reduce worker exposure (i.e. dampen to reduce dust).

McDonough Tailings Containment Area

- *Preferred option: leave as is and monitor for water quality*

McDonough Outlet

- *Preferred option: leave as a total containment area (no release). Carry out further inspections to confirm current assumptions.*

Déline has concerns about outflow from McDonough. Chris explains and draws a diagram to illustrate why they are fairly confident that there is no outflow, and confirms that Canada also wants to ensure that there is no outflow (in fact, they would be legally obligated to do so). Monitoring will ensure that current assumptions are correct.

Morris Neyelle raises the issue of long-term monitoring and potential maintenance. He is concerned that Canada will deny responsibility for future work on the site, once this clean-up operation is complete. Danny explains that CNSC will be responsible for the site in the long-term, and is therefore obligated to fulfill future requirements with respect to maintenance of agreed conditions.

Frederick and others question the risks to animals drinking from McDonough Lake. Gerd explains process of modelling and risk assessment, which shows potential impacts to ducks from consumption of sediment/tailings (but not to large species). Risk assessments were conservative, i.e. used worst case scenarios.

Labine Point Exposed Tailings

- *Preferred option: pick up and dispose in a containment area (Murphy basin); backfill hole*

Great Bear Lake Tailings

- *Preferred option: leave in current condition and monitor*

Contaminated Drainage

- *Preferred option: cover accessible streams to limit animal uptake (Echo Bay); remove tailings near West Adit to improve water quality at Cobalt Drainage*

Silver Point Tailings Containment Area

- *Preferred option: fill in Silver Point pond, slope the area so there will not be standing water in the future; cap entire area with bentonite clay and 1m waste rock cover to reduce contaminated surface runoff*

This option was recommended by SENES. Gerd doesn't feel an armour wall at the shore is necessary, because the shore has remained stable for a long time so there is no reason that it should not remain so. Also, doing work in the lake would disturb sediments.

Murphy Drainage

- *Preferred option: cover tailings where accessible, leave those that are not accessible as is.*

SENES recommends covering tailings where accessible, and leaving those that are not. Any risk is from gamma exposure, not metals, and the inaccessible areas can not be easily traversed by either animals or people. After initially stating that their preference would be the relocation of tailings, Déline agreed to this option.

Gamma Levels

- *Preferred option: cover areas with levels over 250µR/h (where accessible).*

SENES recommendations: to address areas over 250µR/h (2ha) would require 10,000m3 of cover material; to address areas over 100µR/h (8ha) would require an additional 12,000m3. Gerd points out that, given minimal predicted risks, the value of covering the additional 8 ha is questionable (i.e. do more harm than good). Danny responds that people from Déline will be more comfortable with the biggest reduction of gamma levels possible. Canada answers that it will be very hard to justify expending this effort to achieve minimal risk reduction. Déline agrees to the recommended option.

Chris asks Gerd to identify location of possible borrow sources, to evaluate impact of obtaining this amount of cover material vs. actual risk reduction.

3. Projects Updates

Epidemiology: waiting for submission of report (expected mid-March)

Surveillance: Dr. John McLaughlin has turned this project down. No other consultants were considered for this project. SENES will investigate if they have any appropriate expertise on their staff. The Table will revisit this issue when we talk about health recommendations to be contained in the final report.

Video: Videographers have visited Déline and filmed additional footage. Rough cut is expected by the end of April. Danny informed the Table that a key theme in his interview was the unique partnership between Canada and Déline. Chris has been invited to be interviewed for the video, and Déline does agree with this. Canada anticipates that this will be a very effective communications tool, and is looking forward to seeing it.

Book: second draft is being revised. Dene and English text has been proofread, photos and cover graphics are being finalized. Staff anticipates it will go to printing some time in April. Cathy will investigate pre-payment for printer, so we can spend budget this fiscal year. Then we will know if there are any additional costs to be covered next fiscal year.

Action Item: Cathy needs to find out if she can pay printing costs this fiscal year, and determine if there will be any additional costs for next fiscal year.

Remediation Plan: There is extra money in this fiscal year's budget that could be used to being development of remediation plan. Gerd will determine how much time he can spend on this, given that he is not required to come up to Déline again this fiscal year. Therefore, Julie will amend his contract so that he can begin developing remediation plan.

Action Item: Julie to amend SENES contract to begin development of remediation plan this fiscal year.

Radium Gilbert: The Gilbert boat has been cut up, and there are only two more truckloads of scrap to be trucked out on the winter road. Danny will find out if they can get the anchor to use as a monument that recognizes the Dene contribution to uranium mining.

4. Minutes

- Dec 2-4: Approved
- Jan 31-Feb 1: Redistribute with revisions for next meeting

5. Review of Budget Variance

- Core: to be determined (probably around $50K)
- Commemorative Oral History: will probably be 0 (to be determined)
- Community Projects: 0
- Social Cultural Impacts: 0
- Site Remediation Options Selection Part 1: there is surplus here, final will be determined when SENES invoices are received; we should try to spend as much as possible on development of remediation plan this fiscal year
- Site Monitoring Program: surplus of $7,776.05
- Site Remediation Options Selection Part 2: substantial surplus (not sure how much)
- Community Health Profile: there was an overrun on this project; two travel invoices were therefore moved to Core to balance the budget, which is acceptable
- Epidemiology Project: there will be about a $20K surplus; peer review will be done next fiscal year
- Dose Reconstruction: 0
- Long-Term Surveillance Activities: $13,650
- Long-Term Capacity Building: 0
- Final Report on Action Plan Activities: 0
- Video Part 1: 0
- Video Part 2: 0

Déline expressed concern that surplus from this fiscal year should be spent because otherwise the money has to be returned. Canada noted that although surplus funds do have to be returned, those amounts will theoretically be available next fiscal year. Staff will consider initiating communications activities around remediation options selection this fiscal year.

Surplus from projects will be approximately $80K.

$11.5K to be moved from Core Legal to Core Other to cover Community Health Profile work.

Action Item: Table needs to see a projection of year-end surplus in Core next week. (Cathy)

6. Final Report Review and Discussion

Walter Bayha noticed some inaccuracies in the section in Chapter 1 on the history of Déline. Jennifer will revise this section with input from local people. Alfred Taniton talked to the Table about how much life has changed for Dene people since people started settling permanently in town (1950s). Chris acknowledged the importance of stories about how people used to live on the land, because it helps non-Dene to understand the cultural context of the issues we are dealing with. Danny pointed out that this is why Déline people want the mine site cleaned up to the highest standard possible, even though it seems far away from the community. Dene people have historically used every corner of the lake, and they want to be able to do so in the future.

Overall comments: Chris feels that the report is too long and detailed; it needs to be edited down quite substantially; stick to 80-100 pages. It still reads like a technical/academic document. Take out references to other authors (i.e. in health chapter).

Jennifer explained that the full Final Report will be printed in English only. The 77 Questions and Answers and a summary of the Final Report will be translated and used as the primary communications tool in the community. Danny pointed out that, in addition to the 77 Questions, people will want to know how far we have gone towards addressing the 14 points. This should be included in the community communications strategy.

Chris emphasizes that the Final Report will be structured around the CDUT Action Plan, which was meant to address some of the 14 points. Danny wants to mention the 14 points in the Final Report. David and Jennifer will ensure that the relationship between the Action Plan and the 14 points is explained in Chapter 1.

Chapter 1: change budget table (p.9) to reflect actual expenditures. Fact Finder will now constitute its own chapter. Councillors will look into accurate translation of “Déline”.

Morris Neyelle stated that it seems like a lot of the Action Plan objectives have been accomplished, but there are still a lot of unanswered questions in the area of health. Whether or not people in Déline have higher risks of certain health problems, there is a strong feeling in the community that local health services are poor; this has been captured and confirmed by CDUT health studies and activities. Chris points out that this is an issue that we will have to resolve in writing the final report: how do we relay findings and recommendations that go beyond the CDUT mandate?

Canada and Déline need to provide more direction on the Final Report, particularly Chapter 3 (Community Healing and Human Health Studies).

Action Item: Chris and Danny to have a teleconference March 29 to discuss final report (particularly health recommendations) in more detail.

There should be another working session for final report team; this will be planned in advance of the next CDUT meeting, likely second/third week of April.

Final Reporting Timeline: full final report projected to go to printer by April 18. The Table recognizes that this is overly optimistic, and early May is more likely.

7. Workplan/Budget for 2005

Workplan now includes completion of final report, as well as subsequent communications activities. Add negotiator to final report/communications activities.

Development of long-term monitoring plan: this will be done in conjunction with SENES remediation plan. Therefore this project should be titled "Development of Remediation Plan", which will include long-term monitoring.

Action Item: Prepare SOW for development of remediation plan (Julie).

Project design and implementation of site cleanup: this exceeds the projected three months for wrapping up Action Plan studies and activities. Canada feels that setting up a longer-term process for community involvement in site cleanup is a separate issue. Déline responds that carrying out this work in the spirit of partnership will require some continued staffing needs during the planning and implementation of site cleanup. It may be necessary to travel to Ottawa to lobby the federal government on this point.

Medical Surveillance: what should we do about outstanding physical assessments? We have tried for two years to get this done, with no success. Déline notes that it would be best to do this work within the existing health system, but this does not seem likely. Canada and Déline will consider options for completing this work.

Discussion Paper on Long-Term Surveillance Activities: look for alternative consultant to get this done.

Action Item: Investigate alternative consultant to do this work in the new fiscal year ($13K) using existing SOW.

Epidemiology Feasibility Study: Is a peer review really necessary? Maybe not; this will be revisited upon review of final report.

Community Health Profile: Communicate key findings to appropriate health and social service agencies. This will be done by Core staff, no SOW required.

Community Healing: Set up long-term healing programs.

Action Item: Prepare SOW for a consultant to develop proposals and project descriptions for long-term healing activities.

Communications: final report completion and communication. Danny had a CDROM prepared for self-government; Mark should look at this for ideas. There is already a SOW for completion of the video. We may have to pay printings costs for oral history book next fiscal year (@$22K).

Action item: Cathy to determine how much money will be needed next fiscal year for printing oral history book.

Action item: Prepare SOW for publication and distribution of final report and production of CDROM (Jennifer).

Budget: eliminate Health Research Coordinator; if required, staffing related to health projects will be covered through project budgets.
Language specialist will be changed to full-time translator (Jane).
Reduce audit fee to $5K, increase admin fee to 7%.

Canada would like to streamline next year's budget where possible, in case activities carry over into July. It will be difficult to find an additional $100K in this eventuality.

Michael Neyelle questioned the budget for honoraria. There will probably be more meetings and workshops in the next few months, in order to complete final report and conduct community communications activities. Therefore budget for honoraria will be doubled.

Action item: Cathy to revise Core budget and send to Julie to start contribution agreement.

8. Next Meeting

March 29: teleconference (Chris and Danny) to discuss final report.

Next CDUT meeting tentatively scheduled for third week of April.

Port Radium Cleanup

CDUT discussions March 18th to 19th

Outline

- Review of selected options
- Overview of outstanding options
- New information and analysis of outstanding options

Ratings for Options Against Goals

☺ High – Meets Goal

😐 Med - Somewhat meets goal

☹ Low - Least likely to meet goal

Selecting Preferred Options

P= Preferred option

A= Acceptable option

NA= Not acceptable option

Airstrip

- Physical status unknown
- Some small sheds
- Useful during remediation
- No observed contamination
- Beneficial for future use

Preferred Option:

Leave airstrip as is to naturally erode and identify as abandoned

Acceptable Option:

Scarify promoting revegetation

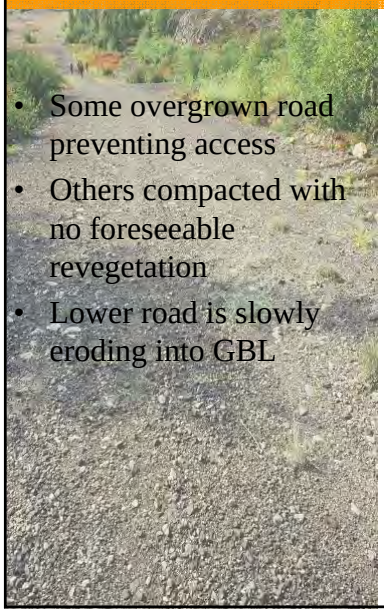
Not Acceptable:

No option

*Note: need to further identify how Transport Canada requires closure of a northern airstrips necessary to reduce INAC Liabilities

Goals / Options	Leave as is	Decommission airstrip
Health and safety	Med	Low
Protect fish, wildlife and vegetation	Med	High
Protect GBL water quality	High	Med
Minimize env. impacts during Rem.	High	Med
Minimize Long term care and maintenance	High	High
Return site to its original condition where possible	Med	High
Is cost effective	High	Low
A / P / NA	P	A

Roads



- Some overgrown road preventing access
- Others compacted with no foreseeable revegetation
- Lower road is slowly eroding into GBL

Preferred Option:

Leave roads as they are to naturally revegetate

Acceptable Option:

Scarify roads to increase infiltration and leave to naturally revegetate

Not Acceptable:

Cover and revegetate

Goals / Options	Clear then leave as is (natural reveg)	Clear, scarify then leave as is (natural reveg)	Clear, cover and revegetate
Health and safety	High	High	High
Protect fish, wildlife and vegetation	Med	Med	Med
Protect GBL water quality	Med	Med	Low
Minimize env. Impact during rem.	High	High	Low
Minimize Long term care and maintenance	High	High	Low
Return site to its original condition where possible	Low	Med	Med
Is cost effective	High	Med	Low
A / P / NA	P	A	NA

Docking Area

- Dock area is slowly eroding into Labine Bay, wood planks no longer holding back fill
- Likely necessary to use during remediation
- Old scrap metal located along shore creates a safety hazard

Preferred Option:

Remove docking area and create a more natural slope along the shore

Acceptable Option:

No option

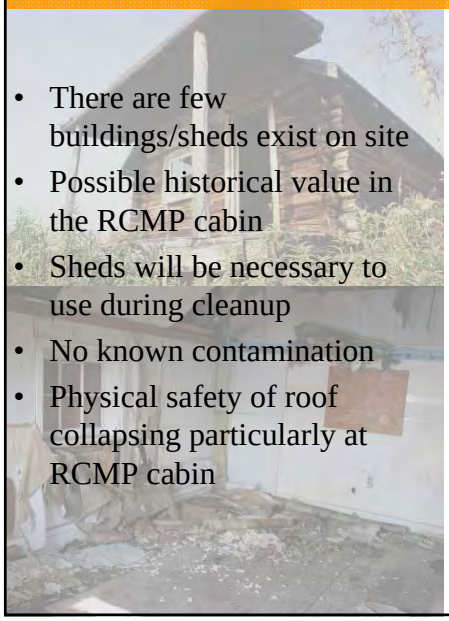
Not Acceptable:

More permanent reconstruction of docking area

Leave as is

Goals / Options	leave as is	Reconstruct docking area for future use	Remove docking area
Health and safety	Low	High	High
Protect fish, wildlife and vegetation	Med	Med	Low - Med w med. Mes.
Protect GBL water quality	Med	Med	Low Med w med. Mes
Minimize env. Impacts during rem.	Med	Med	Low Med w med mes.
Minimize Long term care and maintenance	Low	Low	High
Return site to its original condition where possible	Med	Low	High
Is cost effective	High	Med	Low
A / P / NA	NA	A	P

Buildings/Sheds



- There are few buildings/sheds exist on site
- Possible historical value in the RCMP cabin
- Sheds will be necessary to use during cleanup
- No known contamination
- Physical safety of roof collapsing particularly at RCMP cabin

Preferred Option:

Remove all structures including RCMP

Acceptable Option:

Remove all structures except RCMP cabin

Not Acceptable:

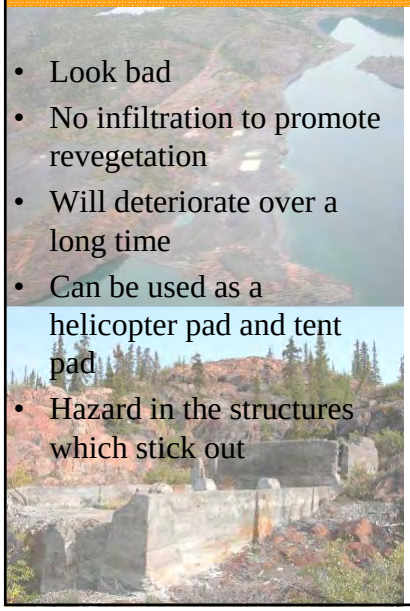
Leave as is and post signs

Restore RCMP and keep sheds

Restore RCMP and remove sheds

Goals / Options	Leave as is (post signs)	Restore RCMP and keep the sheds	Restore RCMP and remove all others	Remove all sheds, leave cabin
Health and safety	Low	Med	Med	Med
Protect fish, wildlife and vegetation	Not Ap	Not Ap	Not Ap	Not Ap
Protect GBL water quality	Not Ap	Not Ap	Not Ap	Not Ap
Minimize env. Impact during Rem.	High	High	Med	Med
Minimize Long term care and maintenance	Low	Med	Med	Med
Return site to its original condition where possible	Low	Low	Med	Med
Is cost effective	High	Low	Low	Med
A / P / NA	NA	NA	NA	A

Concrete Structures/Pads



- Look bad
- No infiltration to promote revegetation
- Will deteriorate over a long time
- Can be used as a helicopter pad and tent pad
- Hazard in the structures which stick out

Preferred Option:

Break up and level protruding structures

Cover flat accessible structures

Leave inaccessible structures

Acceptable Option:

No option

Not Acceptable:

Break up, cover and revegetate

Leave all structures as is

Goals / Options	Leave as is	Breakup and dispose	Cover with local material	Breakup, cover and revegetate
Health and safety	Not ap	Not ap	Not ap	Not ap
Protect fish, wildlife and vegetation	High	High	Med	Med
Protect GBL water quality	High	High	Med	Med
Minimize env. Impacts during rem.	High	Med	Low	Low
Minimize Long term care and maintenance	High	High	Med	Med
Return site to its original condition where possible	Low	High	Med	Med
Is cost effective	High	Med	Low	Low
A / P / NA	P	A	A	NA

Remaining Miscellaneous Equipment:

- Bus, old trucks, grader etc. located near Echo Bay operations and Airstrip
- Unnatural and visually unpleasing
- Safety concern

Preferred Option:

Haul offsite for disposal

Acceptable Option:

Drain fuel and oil and dispose on site

Not Acceptable:

Leave as is on site

Goals / Options	Leave as is	Drain fuel and oil and dispose on site	Haul offsite for disposal
Health and safety	Low	High	Med
Protect fish, wildlife and vegetation	Low	High	Med
Protect GBL water quality	Med	High	Med
Minimize env. Impacts during rem.	High	Med	Low
Minimize Long term care and maintenance	Low	High	High
Return site to its original condition where possible	Low	Med	High
Is cost effective	High	Med	Med
A / P / NA	NA	A	P

Surface Scrap Metal:

- Located throughout site
- Potential physical hazard
- Looks bad

Preferred Option:

Pick up and dispose on site in a TCA

Acceptable Option:

Pick up and dispose off site

Not Acceptable:

Leave as is on site

Goals / Options	Leave as is	Pick up and dispose on site	Pick up and dispose off site
Health and safety	Low	High	Med
Protect fish, wildlife and vegetation	Med	High	Med
Protect GBL water quality	Med	Med	Med
Minimize env. Impacts during rem.	High	Med	Low
Minimize Long term care and maintenance	Low	High	High
Return site to its original condition where possible	Low	High	High
Is cost effective	High	Med	Low
A / P / NA	NA	A/P	A/P

Crown pillars

Requirement:

Carryout a technical inspection of mining diagrams to determine stability before deciding if any further closure work is necessary.

Known Mine Openings

- 5 known horizontal openings
- Mostly backfilled and sealed by permafrost
- Slumping and collapsing of adit roof caused for reopening
- 6 known vertical openings
- Others with fencing
- Some covered by waste rock or partially sealed by metal
- Others marked by fencing
- Some slumping or collapsing causing access to the holes

Preferred Option:

Cement cap on vertical openings and backfill horizontal openings (Combo of Acceptable options)

Acceptable Option:

Backfill all openings (including fenced area

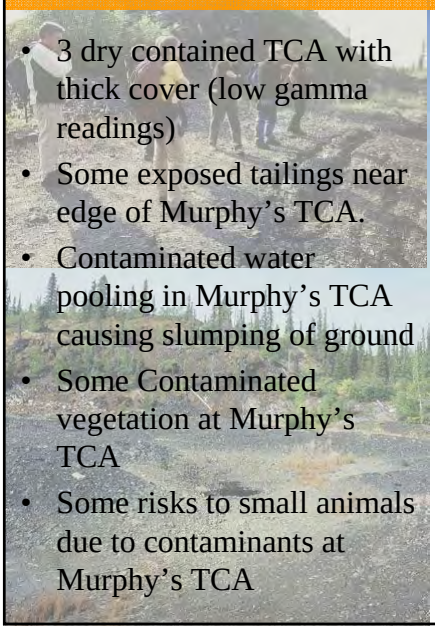
Backfill and cement all openings

Not Acceptable:

Leave as is and maintain

Goals / Options	Leave as is and maintain	Backfill all openings	Backfill and plug with cement	Combo of 2 and 3 site specific
Health and safety	Low	Med	High	High
Protect fish, wildlife and vegetation	Low	Med	High	High
Protect GBL water quality	Low	High	High	High
Minimize env. Impacts during rem.	High	Med	Med	Med
Minimize Long term care and maintenance	Low	Med	High	High
Return site to its original condition where possible	Low	High	Med	Med
Is cost effective	High	Med	Low	Med
A / P / NA	NA	A	A	P

Dry Contained Surface Tailings



- 3 dry contained TCA with thick cover (low gamma readings)
- Some exposed tailings near edge of Murphy's TCA.
- Contaminated water pooling in Murphy's TCA causing slumping of ground
- Some Contaminated vegetation at Murphy's TCA
- Some risks to small animals due to contaminants at Murphy's TCA

Preferred Option:

Fill in small pond at Murphy TCA with exposed tailings at the edges

Acceptable Option:

Fill in small pond at Murphy TCA and cover exposed tailings

Not Acceptable:

Leave as is and monitor

Consolidate and relocate to McDonough TCA

Goals / Options	Leave as is and monitor	Fill in Sm. Pond at Murphy and relocate exposed tailings	Fill in Sm. Pond at Murphy and cover exposed tailings	Consolidate and relocate to McDonough TCA
Health and safety	Med	Low	High	Low
Protect fish, wildlife and vegetation	Low	High	High	Med
Protect GBL water quality	Low	High	Med	High
Minimize env. Impacts during rem.	High	Med	Med	Low
Minimize Long term care and maintenance	Low	High	Med	High
Return site to its original condition where possible	Low	Low	Low	Med
Is cost effective	High	Med	High	Low
A / P / NA	NA	P	A	NA

McDonough TCA

- 6.3 ha in area with water cover with poor water quality
- Depth (5 to 15m) to tailings
- Repository for wastes
- Water cover is a good barrier
- No visual seepage
- Some vegetation contains elevated levels of metals above background
- Potential risk for terrestrial animals and aquatic species (if present)

Preferred Option:

Leave it as is and monitor for water quality and quantity. Develop a water balance to ensure containment (no contaminated discharge into GBL).

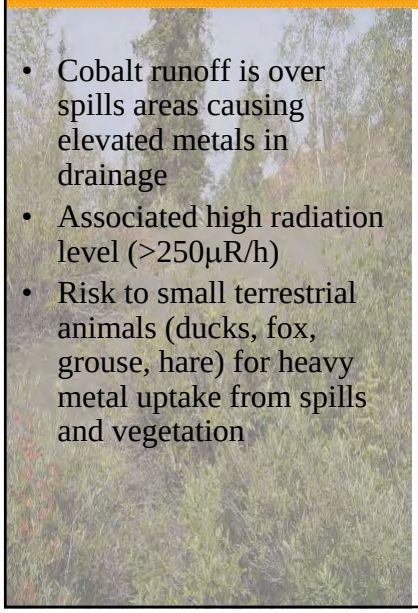
McDonough Outlet

- Deep ditch constructed for outflow
- Ditch is filled in at basin to contain water
- Weir is still present
- No visual seepage through filled area.
- Create a water balance model to assess potential fluctuations

Preferred Option:

Leave as a total containment area (no release). Carryout further inspections to confirm current assumptions.

Labine Point Exposed Tailings :



- Cobalt runoff is over spills areas causing elevated metals in drainage
- Associated high radiation level (>250µR/h)
- Risk to small terrestrial animals (ducks, fox, grouse, hare) for heavy metal uptake from spills and vegetation

Preferred Option:

Pick them up and dispose in a containment area

Acceptable Option:

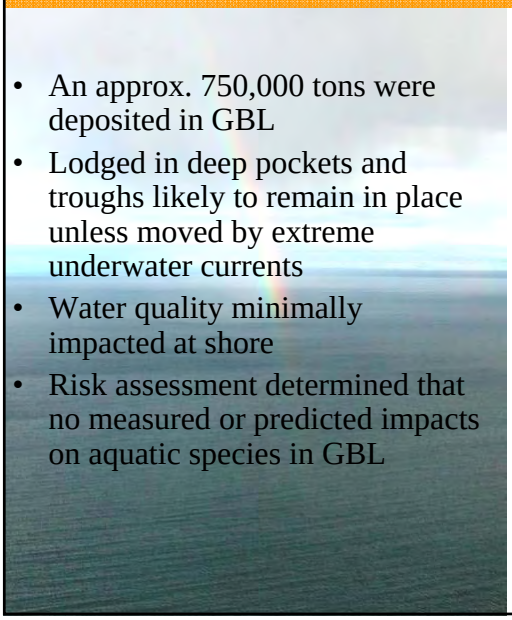
Cover spill

Not Acceptable:

Leave as is and monitor

Goals / Options	Leave as is and monitor	Pick them up and dispose in a containment area	Cover spills with some material
Health and safety	Med	Low Med with med mes	Med
Protect fish, wildlife and vegetation	Low	High	Med
Protect GBL water quality	Low	High	Med
Minimize env. Impacts during rem.	High	Med	Med
Minimize Long term care and maintenance	Med	High	Med
Return site to its original condition where possible	Low	High	Med
Is cost effective	High	Med	Med
A / P / NA	NA	P	A

Great Bear Lake Tailings

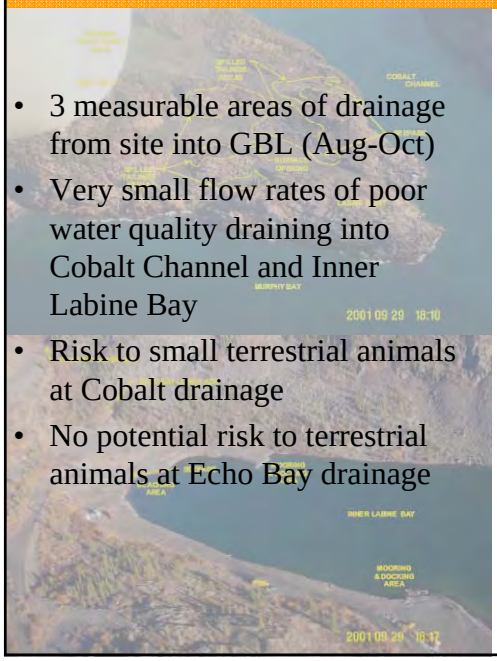


- An approx. 750,000 tons were deposited in GBL
- Lodged in deep pockets and troughs likely to remain in place unless moved by extreme underwater currents
- Water quality minimally impacted at shore
- Risk assessment determined that no measured or predicted impacts on aquatic species in GBL

Preferred Option:

Leave it in current condition and monitor.

Contaminated Drainage



- 3 measurable areas of drainage from site into GBL (Aug-Oct)
- Very small flow rates of poor water quality draining into Cobalt Channel and Inner Labine Bay
- Risk to small terrestrial animals at Cobalt drainage
- No potential risk to terrestrial animals at Echo Bay drainage

Preferred Option:

Combo of both acceptable options

Acceptable Option:

Cover to protect animals from uptake

Remove tailings near West Adit to improve water quality of cobalt drainage

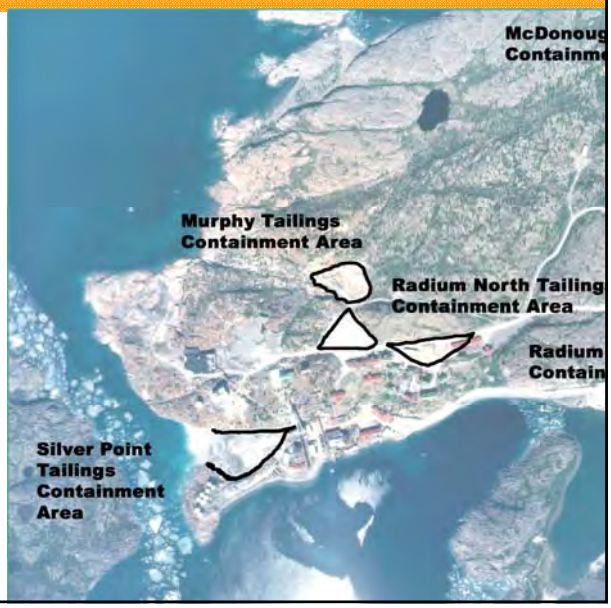
Not Acceptable:

Leave as is and monitor

Goals / Options	Leave as is	Cover to protect animal uptake	Remove tails near West Adit to improve water of cobalt seep	Combo of 2 and 3
Health and safety	Med	High	Low Med w safety mes.	Low Med w safety mes
Protect fish, wildlife and vegetation	Low	Med	Med	High
Protect GBL water quality	Low	Low	Med	Med
Minimize env. Impacts during rem.	High	Med	Med	Med
Minimize Long term care and maintenance	Med	Med	High	Med
Return site to its original condition where possible	Low	Low	High	Med
Is cost effective	High	Med	Med	Med
A / P / NA	NA	A	A	P

Outstanding Option Decisions

1. Murphy's exposed tailings
2. Silver Point tailings containment area
3. Gamma Levels (mostly associated with waste rock)



Murphy's Exposed Spill

- Exposed tailings trapped in shallow localized rock pockets/depression
- Total area ~0.22ha
- Gamma exceeds 100μR/hr
- Risks: exposure to elevated gamma radiation; erosion of sediments into GBL
- Local nature and setting of the site reduces potential access

Options

1. Leave it in current condition to recover naturally and monitor
2. Remove and relocate to a containment area (Murphy TCA, Radium TCA or McDonough TCA)
3. Cover material with ‘clean’ fill or waste rock.

Remove Tailings

•Small amount 200 to 500m3

•Site access will be difficult for conventional earth moving equipment. Earthworks equipment not suitable for excavation of material

•Hand excavation more suitable for work but will result in both conventional and radiological worker health exposure risks. Likely removal of only 80% of materials

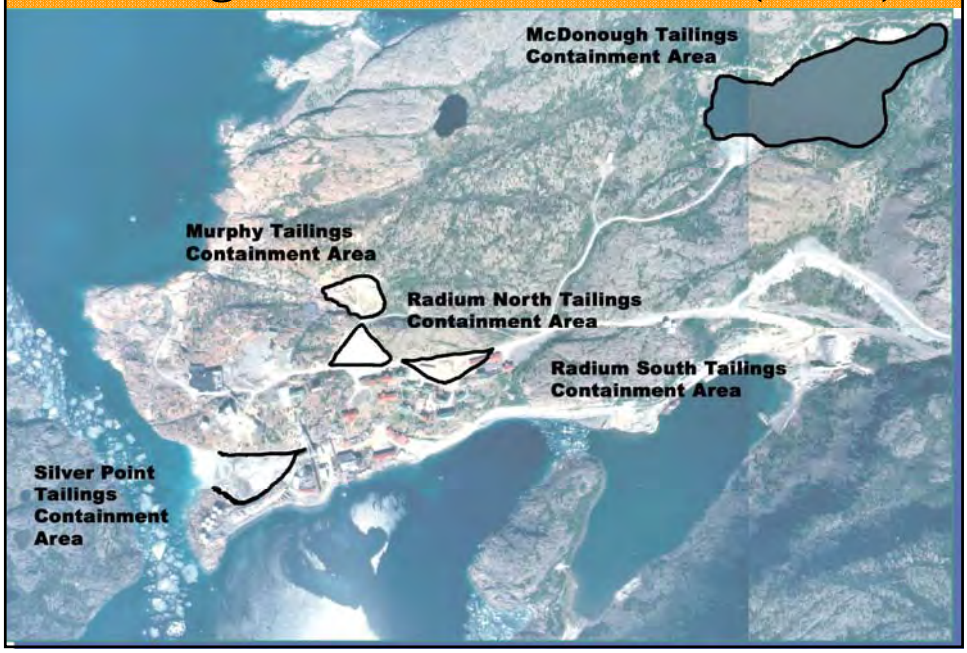
•Possible vacuum unit removal. System is labour intensive and higher costs then conventional methods (more detailed costs need to be explored).

Cover Tailings

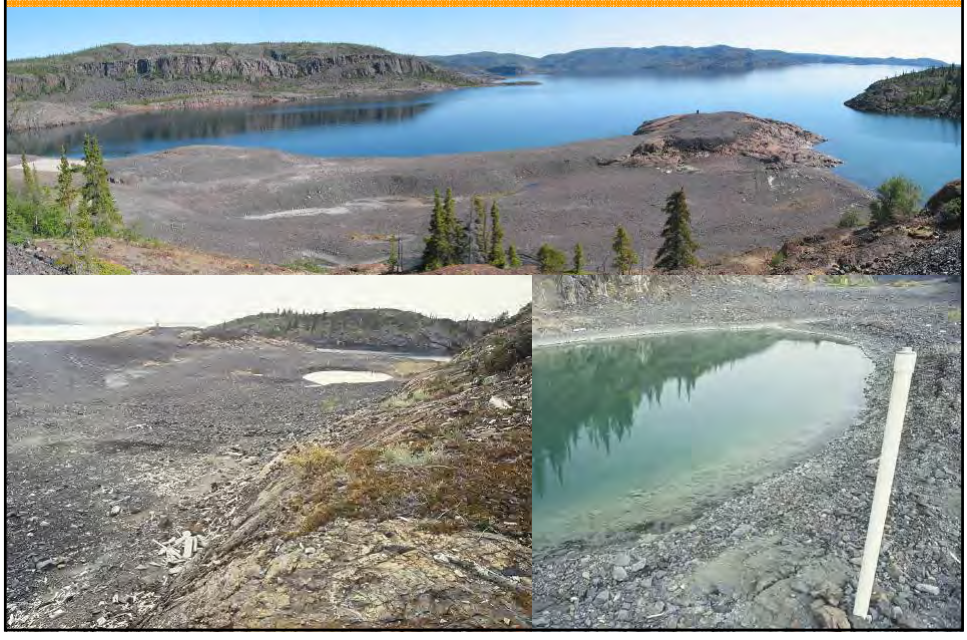
- Course rock cover more suitable for the area
- Could be carried out by large equipment but would dramatically alter the aesthetic nature of the site because cover could not be done on a patch by patch bases.
- Area needed to cover may require more than 3000m^3 of fill volume based on 0.65ha at a depth of 0.5m
- Increased costs for cover

Goals / Options	Leave as is and monitor	Remove and relocate in a containment area	Cover
Health and safety	Med	Low Med with med mes	Med
Protect fish, wildlife and vegetation	Low	High	Med
Protect GBL water quality	Low	High	Med
Minimize env. Impacts during rem.	High	Med	Med
Minimize Long term care and maintenance	Med	High	Low
Return site to its original condition where possible	Low	High	Med
Is cost effective	High	Low	Low
A / P / NA	P	A	NA

Tailings Containment Areas (TCA)



Silver Point TCA



Surface Tailings -Silver Point Tailings

- Semi-contained, covered (low gamma)
- Volume ~24,000m^3
- Possibly unstable due to wave and ice action at surface
- Elevated metals in pore water and in pooled water: concern contaminated water is leaving the tailings

•Elevated metals in some vegetation
•Risks- potential intake of ponded surface water by small game; runoff of surface and near surface waters to Great Bear Lake
•Little potential transport of contaminant groundwater transport due to water levels are similar.
•~1000m^2 of water entering Cobalt Channel through Silver Point Tailings Area

Options

1. Leave as is with periodic inspection and care and maintenance
2. Leave tailings in place and fill in small pond area with clean fill or waste rock
3. Placement of a 1m soil cover from on site materials
4. Placement of a soil cover containing bentonite (clay) which will enter into the shallow water
5. Remove all tailings and redeposit into McDonough Tailings Containment Area

Fill in Ponds

- Fill in ponds to prevent uptake of metals by small animals.
- This option will reduce potential risk of small animals drinking from this water source.
- This option does not improve water quality into Great Bear Lake

1m Cover from on site material

- Surface water Potential for contaminant movement into Great Bear Lake: All precipitation would move through waste rock and enter into Great Bear Lake.
- Placement of a cover over the waste rock would reduce infiltration to the tailings and reduce surface runoff.
  - 1m cover of local source would reduce infiltration from 40% to 20%
- This option address potential terrestrial risk and contaminated runoff.

Cover containing Clay Material

- Surface water Potential for contaminant movement into Great Bear Lake: All precipitation would move through waste rock and enter into Great Bear Lake. Placement of an impermeable cover over the waste rock would substantially reduce infiltration to the tailings and reduce surface runoff.
  - Additional of synthetic clay layer would reduce infiltration to 5% (additional $100,000)
  - Will significantly reduced Arsenic loading
- This option will address potential terrestrial risk and substantially reduce contaminant loading into Great Bear Lake.

Goals / Options	Leave as is	Fill in ponds	Fill in ponds, Local cover to 1m	Fill in ponds, local cover to 1m + clay cover	Consolidate & relocate to McDonough TCA
Health and safety	High	High	Med	Med	Low
Protect fish, wildlife and vegetation	Low	Med	Med	High	Med
Protect GBL water quality	Low	Low	Med	Med/ High	High
Minimize env. Impacts during rem.	High	High	Med	Med	Low
Minimize Long term care and maintenance	Med	Med	Med	Med	High
Return site to its original condition where possible	Low	Low	Low	Low	High
Is cost effective	High	High	Low	Low	Low
A / P / NA	NA	NA	A	P	Na

Proposed Option for Gamma

1. Use the ALARA (As-Low-As-Reasonable – Achievable) principle to determine what levels can be reduced on a site specific basis

- Quantify cover sources/types available for use
- Cover depth vs. attenuation discussion (cover type)
- Cover volumes vs. cost
- Radiation level reduction vs. cost
- Re-interpret using exposure scenarios

Gamma Levels

- 10 ha of the site has gamma radiation levels >100µR/h (8ha are between 100 and 250µR/h; 2ha >250µR/h)
- At 100µR/h someone can stand in one spot for >1000hrs before reaching public dose limit of 1mSv/hr
- Covers on hills are difficult to achieve and will erode over short time. Flat areas that are easy to cover that includes: Silver Point Causeway, lower plant site, most of the road to McDonough, some of the upper plant site (around the Murphy tailings area), tailings area around West Adit.
  - For perspective, 16 to 28cm of cover would reduce levels of 700µR/h to ~100µR/h

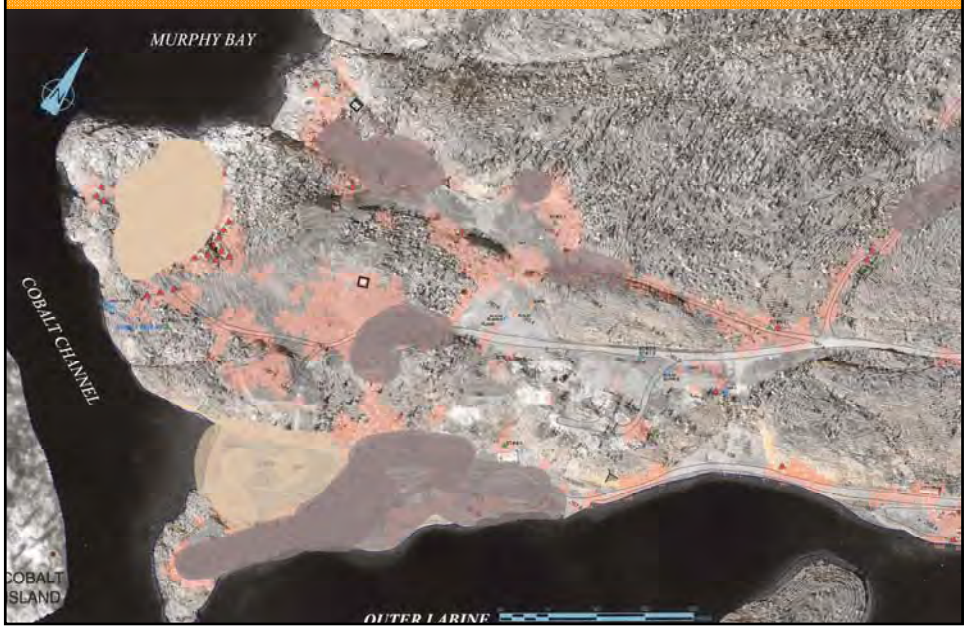
Gamma Levels

- To address the 2ha of >250µR/h with cover ~0.5m = 10,000m^3 cover
- To address the 8ha of 100-250µR/h requires <15cm cover to reduce to 100µR/h = 12,000m^3 cover (>2X the volume as the other areas) Benefits of additional 8ha cover are questionable due to other possible issues (metal leaching and water quality)

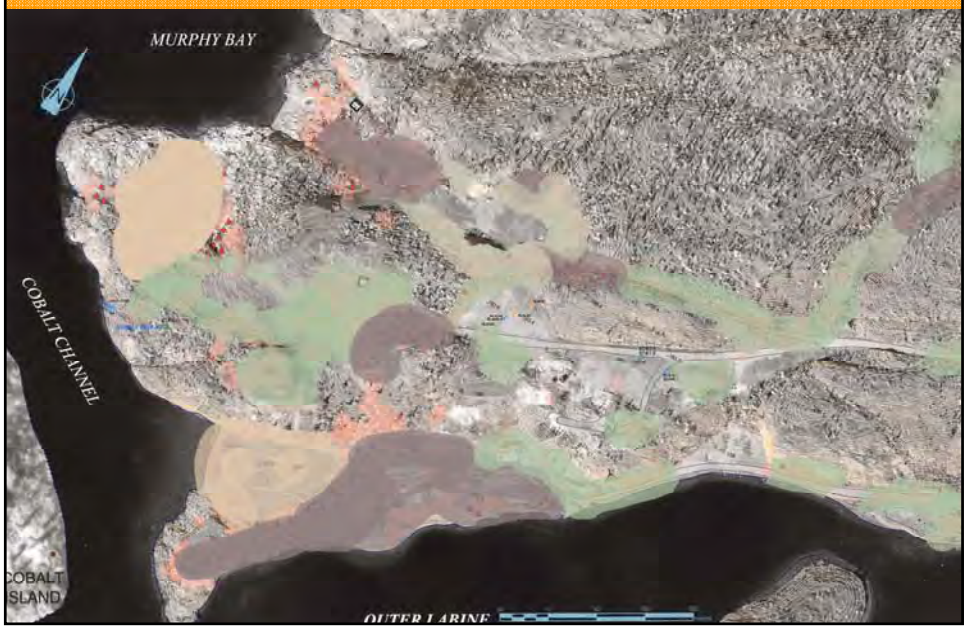
Radiation Levels at Site

Remove Tailings at Labine Point, Cover Silver Point and Address tailings at Murphy's TCA

Cover Waste rock with >250µR/hr



Cover Waste Rock from 100µR/hr



CDUT meeting
Jan. 31st to Feb. 2nd 2005

Present

Chris Cuddy –Chair
Jonas Modest
Irene Betsidea
Marlene Tutcho
Sam de Beers
Ingrid Nielson
David Kennedy
Gerd Wiatzka
Morris Neyelle
Danny Gaudet
Julie Ward- Minutes
Jennifer Blomqvist (Feb. 2nd)
Scott Mitchell (Feb 1st and 2nd)

1. Agenda: add communications update

2. Minutes review

Action: Deline to revise minutes from Dec. 2-4th with the following comments will review again at next meeting.
Dec. 2-4th 2004
-Question of the end of the page: "was there any resolution to this question?" we will consider this report and its recommendations however they will develop their own recommendations.
-The report may not be a stand alone report. It should read that 'there will be a highlights report with all key findings and recommendations'.
-#6 add part c 'SENES presentation of options'. This presentation included: Scientific overview and options overview'
-July wasn't mentioned in the meeting it was ~2-3months for core staff
-#7 'The CDUT will focus on bigger issues' last sentence.
-#8 Remove 'political' which is lack of political.
Carry forward to next meet to review 'Final'
Action: Julie to make changes.

Action: Deline to make change and finalize
Dec. 10th 2004- Conference Call
-Remove 'David suggested' line
Approved these minutes

3. Budget
-Possible funding pressure under 'Community Health Profile' - $11,403.74
-List of SOWs to review
-Need more information on Site Remediation Project Part 2 funding

Action: Sam to get draft to Ingrid on oral history book

Action Deline to look at core and project budget to see if there is any funds left over for other pressures.

Action Julie and Cathy to correct variance chart

Available ~100K unallocated
Pressures 50K video II
Epi. results communications 20k
Community profile 11k
Cover for Port Radium 1k

4. Staffing issue: Health Coordinator's position
This is now being taken care of Vera is doing a contract for writing Ch 3 of the final report. There are still some outstanding health issues which need to be taken care of.

Action: to come back to for update from Jennifer.

5. CDUT Progress Video Part 2
Action: Jennifer to work with Ingrid on SOW and contract (which include script, deliverables vrs. fees for this year and Slavey translation).
Will return to SOW on Wednesday for approval

6. Communications Update
Danny gives update on interview with Bob Webber (Canadian Press). He had questions on process, compensation, health issues, mine site contamination etc.
Danny feels we need more communications NWT wide.
Chris gives update on interview with Bob Webber. Questions were mostly on the amount of remediation necessary on site.
Irene also had an interview with Bob. He told her that she was going to tape her and use it on the radio.
The story will be out Thursday or Friday this week.

Action: Review (Mark, Ingrid & Julie) communications plan and decide on issue sheets for projects which need to be done.

Action: Ingrid to combine the media training workshop with a communications workshop (For February).

6. Site Remediation Option Selection
Overall discussions and selection went well.
A few issues need follow up:
- Silver Point Tailings options
- Exposed Tailings down the fill from Murphy's TCA
- Waste rock

Action: Danny and Chris to review options with their governments before recommending.

Concerns on what the monitoring program will detail were expressed by Deline.

Action: The remediation team will get the necessary information for next meeting

7. Final Report Review
Ch. 3- Vera is working on it and it should be in draft ~ 2 weeks time. Vera will make recommendations for the CDUT to review and decide on.
Ch. 4- Environmental studies draft is written by Dave. Recommendations will mostly come out of the option selection.
Report to principles- Jennifer will write a summary of key finding and recommendations after the recommendations are selected.
Chris/Danny's comments:
The writing is done very well. Some areas have a little too much detail. Need to make it more attractive by breaking up writing with illustrations.
Avoid taking to much from the 'Action plan' to the final report (such as details, however, it is good to refer to the document). Avoid too many appendixes so the document doesn't get to large. However, the reports should be still available in a library or electronically to look up further information. Need more clarification of radiation dose verse gamma reading (simplistic terms that area useable). Danny is more concerned with the health recommendations out of the results because the other areas of recommendations are straight forward.

Action: Jennifer will circulate the health chapter once it is drafted for comments.

Action: Jennifer to work with Mark and Ingrid to develop the possibilities on presentation of final report (electronic/paper) possible communications products.

Action: Working staff to develop a more detailed timeline (by mid February) which includes review, drafts, edits, publication etc.

Action: Final report writing team to make suggested changed for next draft.

8. DUT Work-plan for 2005 (refer to chart Jennifer drafted)
Environmental Studies
Develop a long term monitoring plan: need to determine what needs to be monitored and convince principles what the monitoring plan will consist of.
Project design and implementation of site cleanup: we need to ensure we implement what we decided on for remediation.
Traditional Knowledge
Long-term management of collected TK data: we need to develop a method to keep the capacity and information for the long term
Health

Medical Surveillance- not completed because we can't do medical surveillance under the current system.
Epidemiology- there may be further recommendations on this topic
Dose Reconstruction- there may be further recommendations on this topic
Community Health Profile- having problems on this file
Community Healing- it is important to discuss this in the report and the healing will continue afterwards.
Communications
Final Report- this will need to be communicated after the report has been completed. There may be a new chief and council and communications will need to somewhat start over again.
There is still some material that needs to be developed to communicate the report information better.

Chris's response:
We will start to implement the things we can start doing right away before a response comes from governments. Need to talk with Contaminated Sites and GNWT to see what recommendations can be started and what needs more discussions.

Action: Chris and Danny to discuss projects for next year

9. Video SOW (again)
Details
Danny would answer a series of questions which will be the narration of the video. Need to get questions first to organize thoughts to get good responses.
Need a list of deliverables and payments from now until March 31st and thereafter which includes translation.
Raymond can go to the meeting with Chief and Council to present the remediation results ~end of Feb). The beginning of the production wouldn't start until end of February.

Action: Jennifer to revise SOW as per the changes discussed. CDUT wishes to approve the video script prior to production.

10. Next meeting
In person- end of February in Deline possible a conference call before hand.

Action: Danny and Chris to follow up with available times

Port Radium Cleanup

CDUT discussions Jan. 31st to Feb. 2nd

Outline

- History of Port Radium
- History of CDUT
- Time line
- Overview of Site
  - Site Infrastructure
  - Remaining Miscellaneous Equipment and Scrap Metal
  - Mine Workings
  - Contamination (metals and radionuclides)
- CDUT Goals
- Guiding Principles to Carryout Cleanup
- Options Available to address Site Issues

Port Radium History

- Operated from 1930 to 1939 as a radium and silver mine by Eldorado Gold Mining Co.
- Reopened by Eldorado in 1942 for uranium
- Government of Canada acquired the mine in January 1944, operated as Eldorado Mining and Refining Ltd. Until 1960
- Echo Bay mines opened a silver mine on the property in 1964; reopened Shaft 1 at old Eldorado site and used milling facilities; decommissioned in 1982 to “standards of the day”

Background Deline

- Deline ore carriers and families have lost lives to cancer and other mine-related diseases
- Government and industry knew of the hazards of working with uranium ores and did not inform people in this case, ore transportation workers
- This loss of a generation of men has impacted the transfer of traditional, cultural and spiritual knowledge
- Port Radium is contaminated, as are other ore transportation sites, concern for environment

CDUT History

- Ministers Stewart (DIAND), Rock (Health), Goodale (NRCan) and Secretary of State Blondin-Andrew met with Deline representatives in Ottawa in July 1998; Deline reps expressed deep concerns about historical and present-day radiation exposure; the Ministers agreed to:
  - Setup a Canada/Deline process to work together;
  - Establish a common understanding of historical issues;
  - Undertake studies on environment and health

CDUT History Continued

- An **Interdepartmental Committee** was formed by federal departments in early 1999 (DIAND, NRCan, Health Canda, GNWT H&SS). DIAND was assigned lead agency in the negotiations on behalf of the Government of Canada.
- In 1999, Deline decided to work in partnership with Canada. Using the self government table, a new table was negotiated: the resulting body is the **Canada-Deline uranium Table (CDUT)**

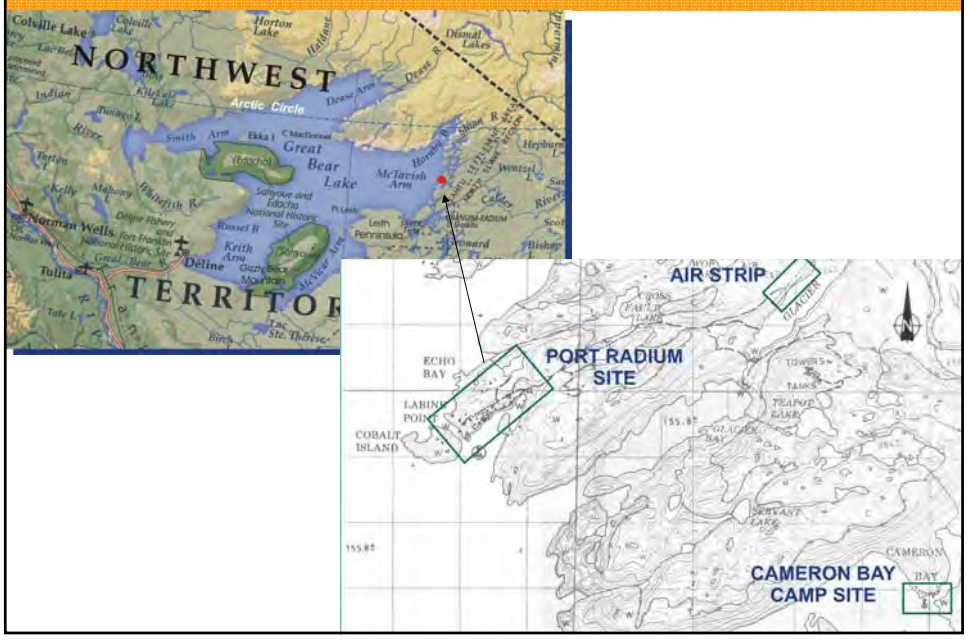
History Continued

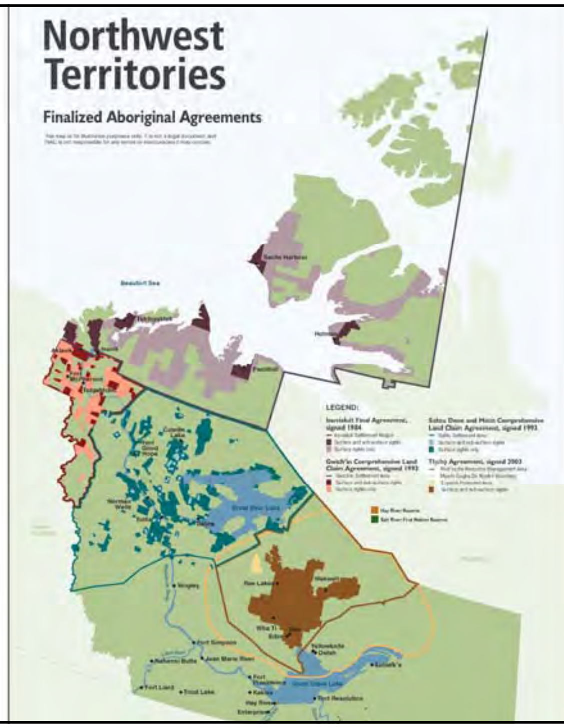
- CDUT developed an 'Action Plan' to address all concerns.

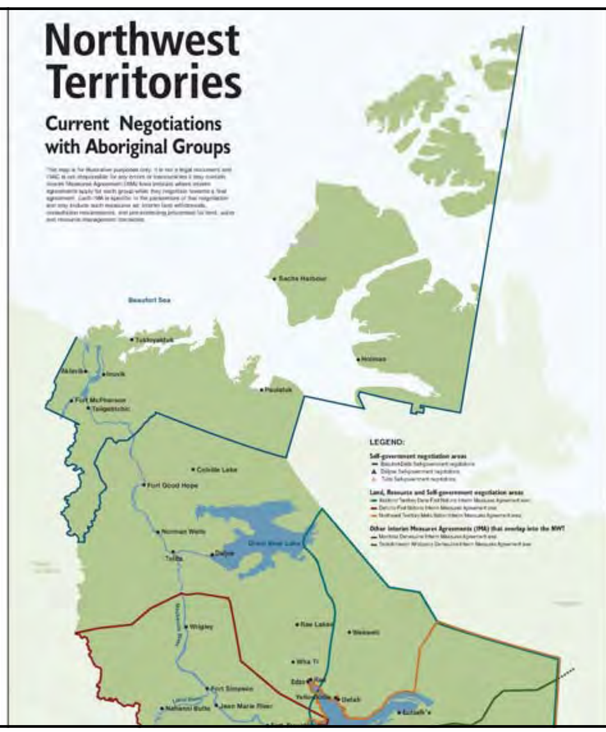
Action Plan Includes:

1. Archival information gathering
2. Traditional knowledge
3. Environmental Studies
4. Health Studies
5. Risk Communication and Education
6. Community capacity building through project management and training

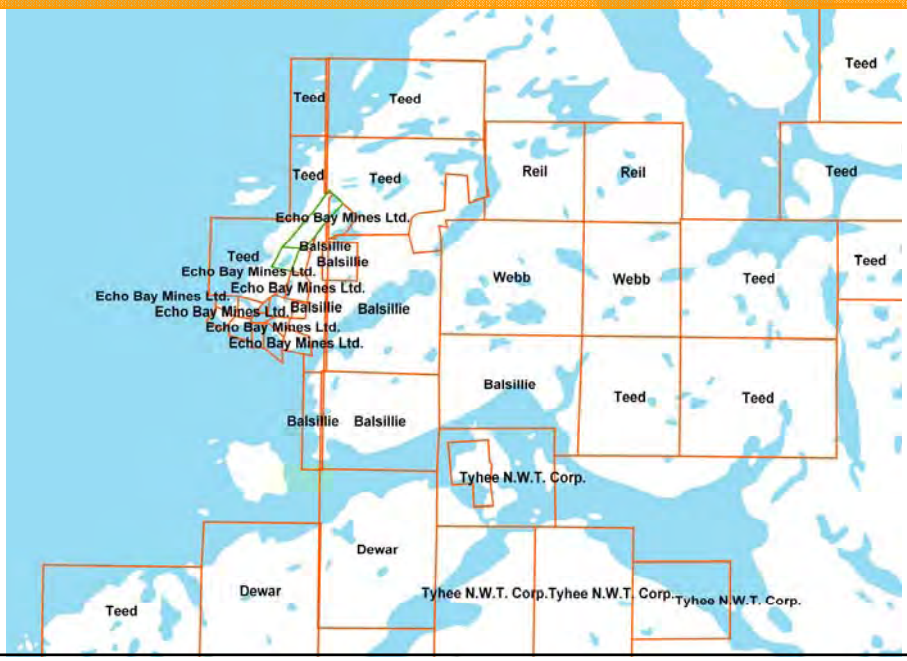
Port Radium Location & Setting




Northwest Territories
Finalized Aboriginal Agreements
LEGEND:


Northwest Territories
Current Negotiations with Aboriginal Groups
LEGEND:

Current Mineral Claims/Leases



Infrastructure

Airstrip

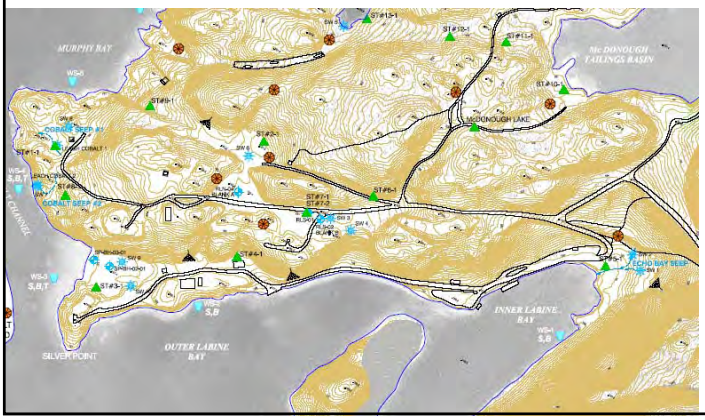
Roads, Concrete Structures and Dock


Buildings/Sheds


Equipment and Scrap Metal

Mine Openings

- Echo Bay upper Adit
- Echo Bay lower Adit
- Murphy Bay (adit/vent)
- Labine Point Vent/Portal
- •West Adit
- •Eldorado Shaft No. 1
- •Plant Site Adit
- •Inner Labine Bay Adit

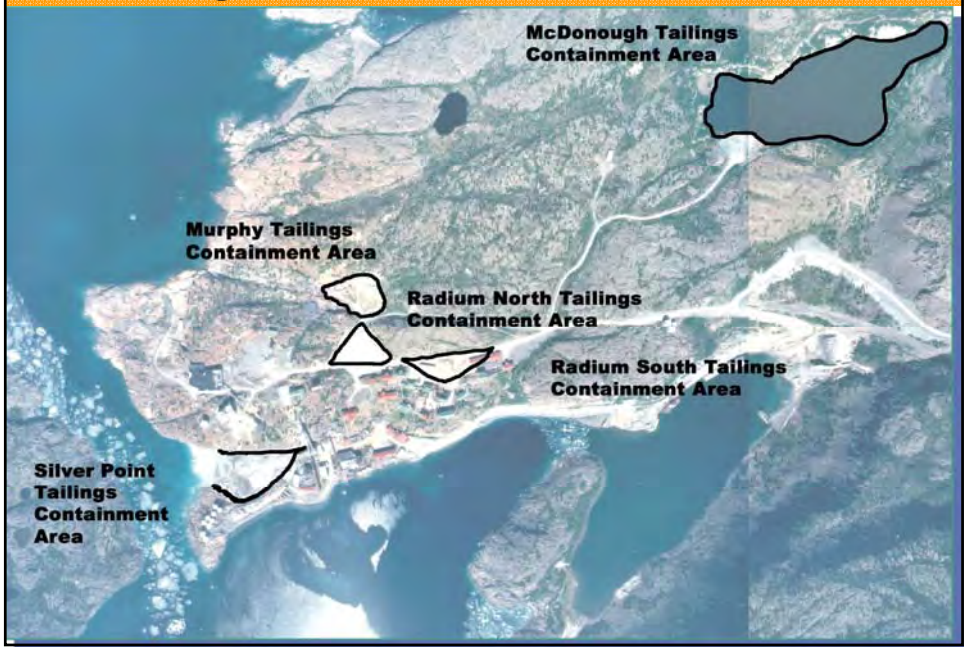


- •Surface trenching- 2 sm. Surface openings
- •Cross Fault Lake (shaft/head frame)

Horizontal Openings

Vertical Openings

Tailings Containment Areas (TCA)



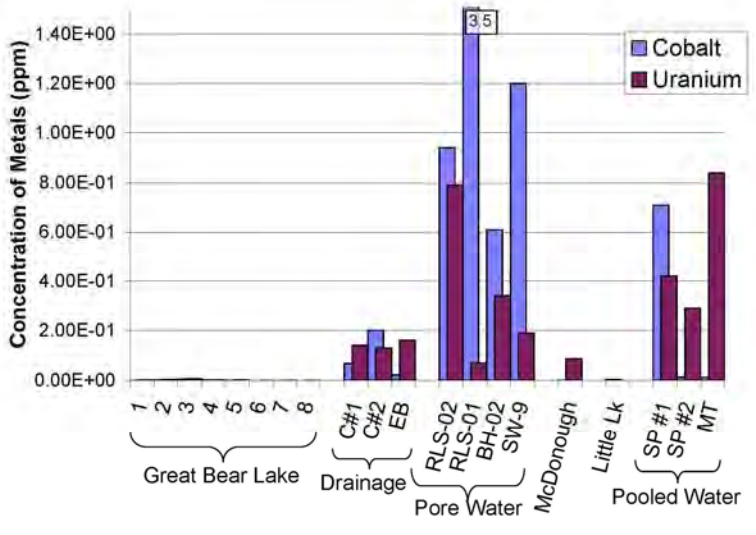
Silver Point TCA

Murphy Bay TCA

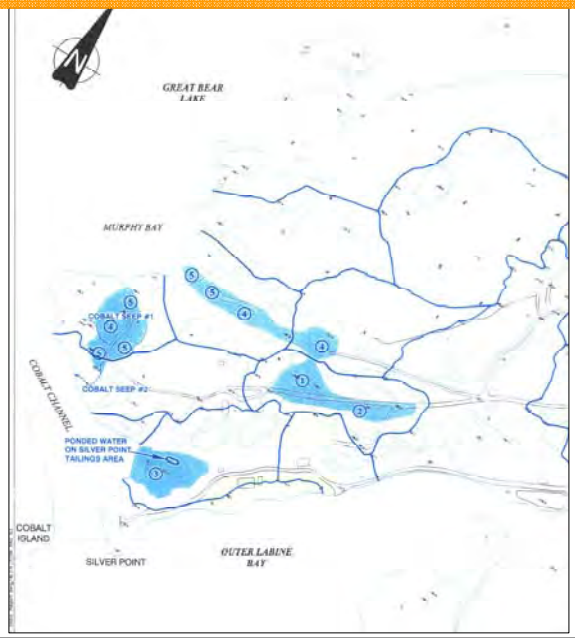
Radium North and South TCA

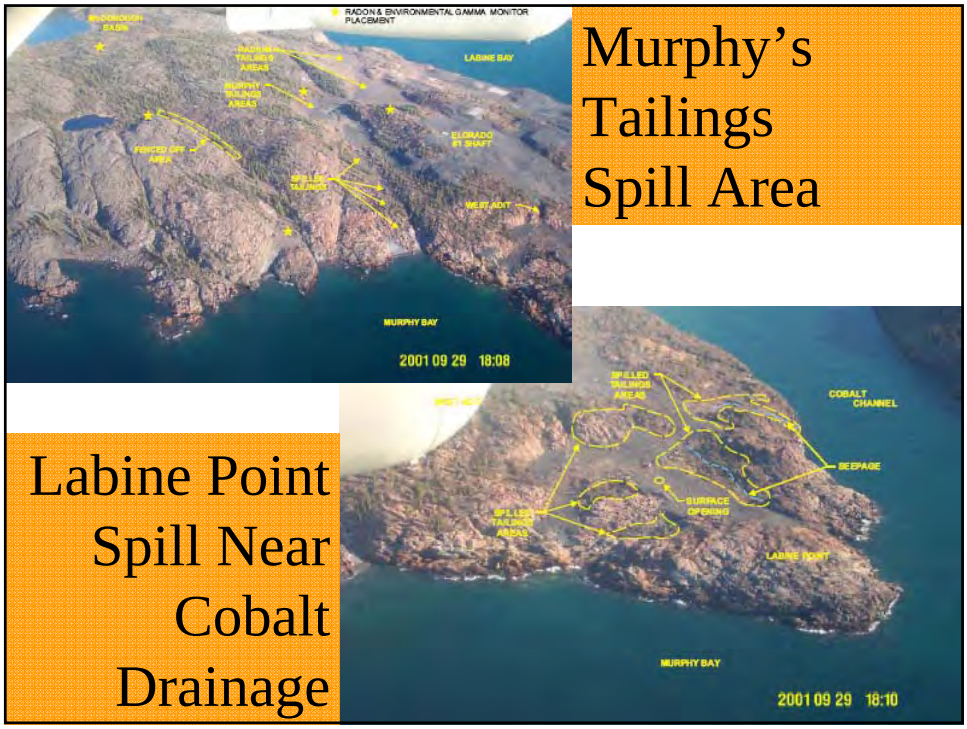
McDonough TCA

Site Water Quality for 2005



Exposed Tailings Locations

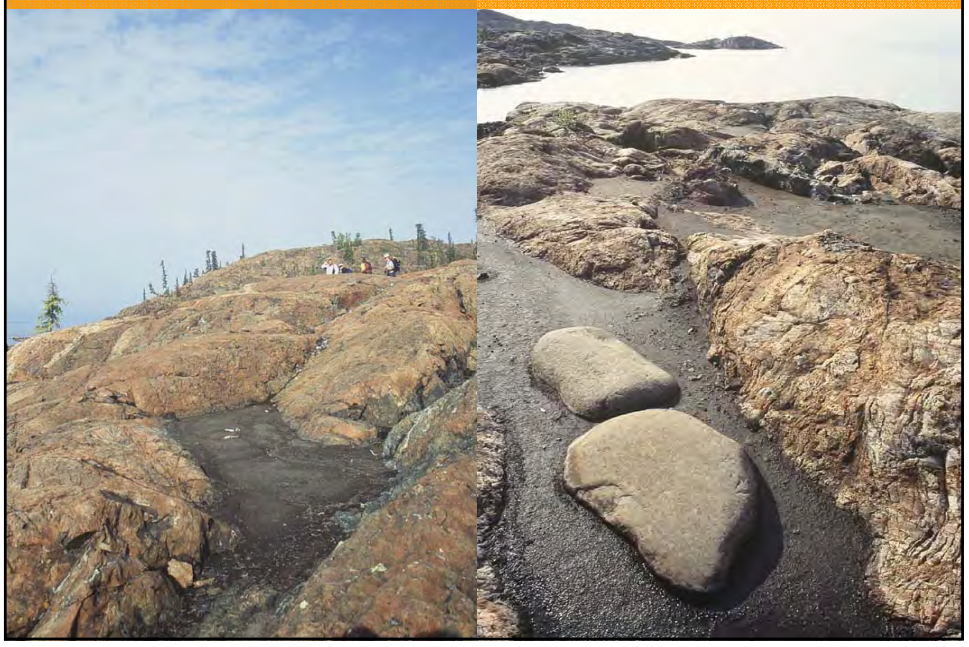




Murphy's Tailings Spill Area

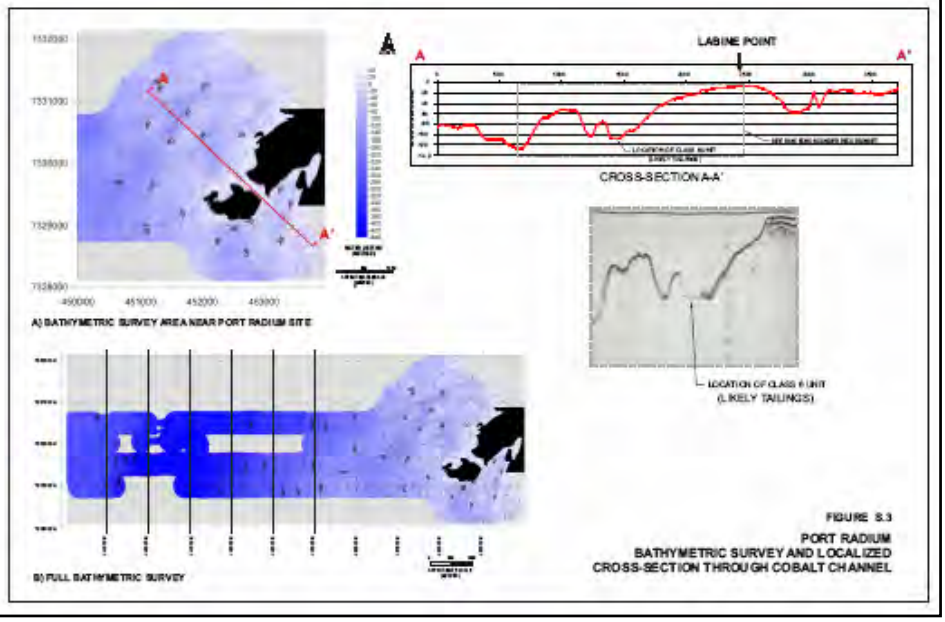
Labine Point Spill Near Cobalt Drainage

Murphy's Tailings Spill

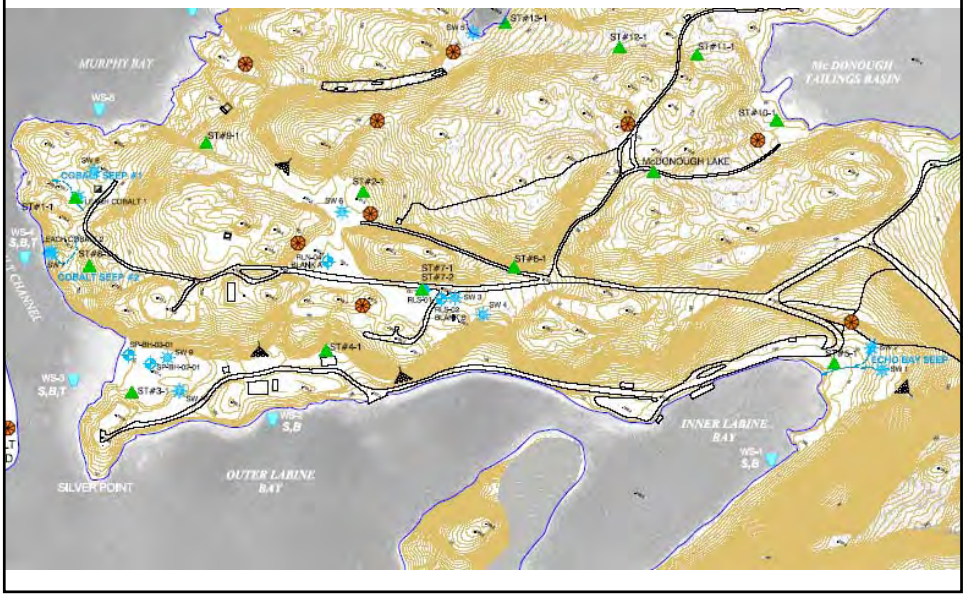


Labine Point Tailings Spill

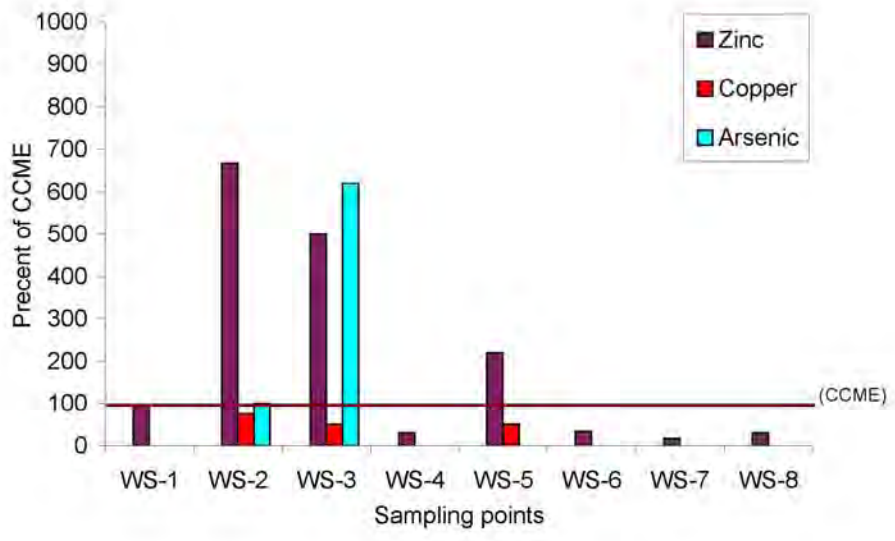
GBL tailings



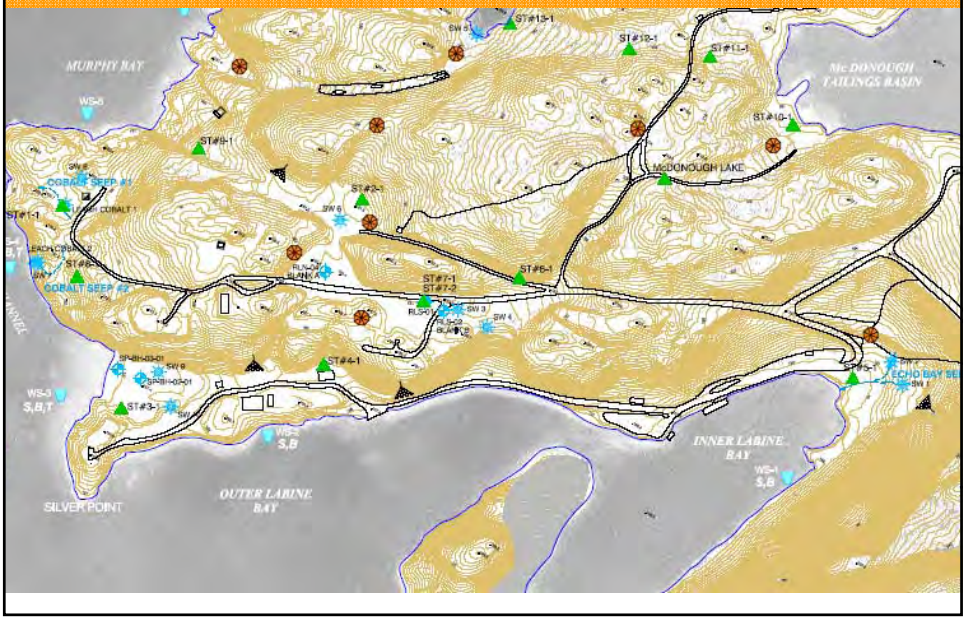
Sampling Locations



Water Quality GBL (Aug. 2005)



Site Drainage Locations



Site Drainage into Cobalt Channel

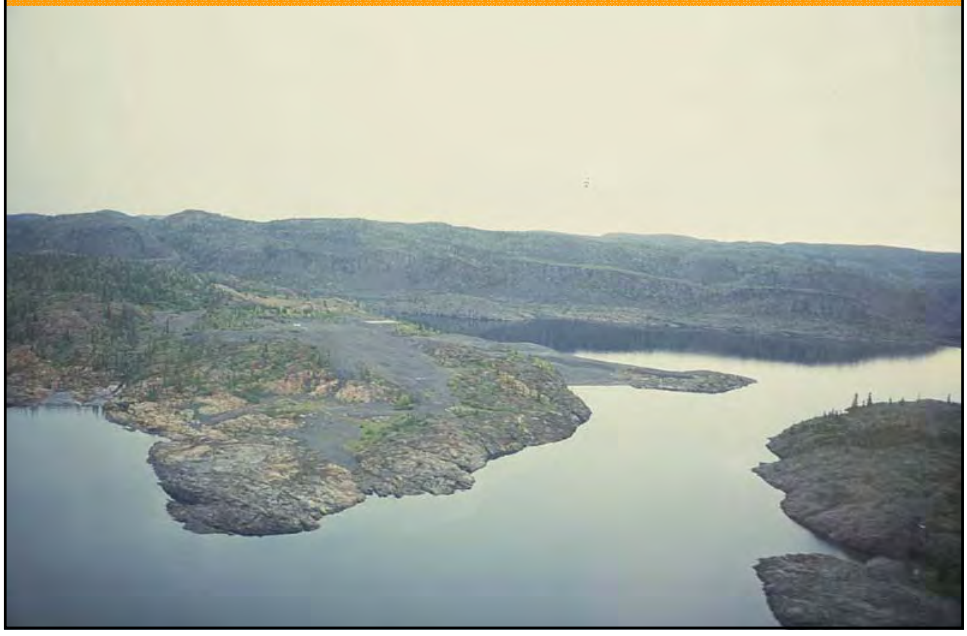
Site Drainage Cobalt #2

Site Drainage in Inner Labine Bay

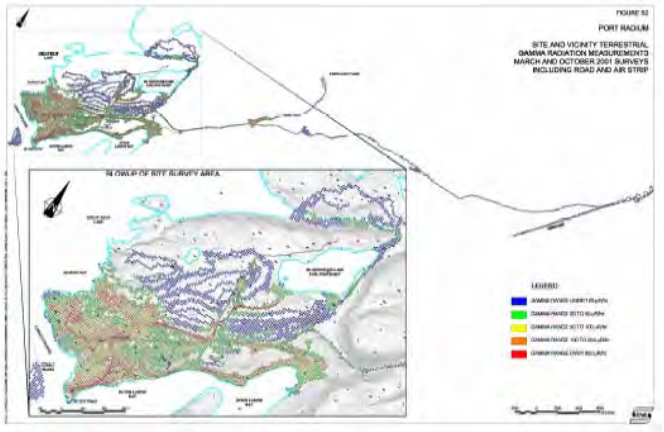
Water Quality of Drainage

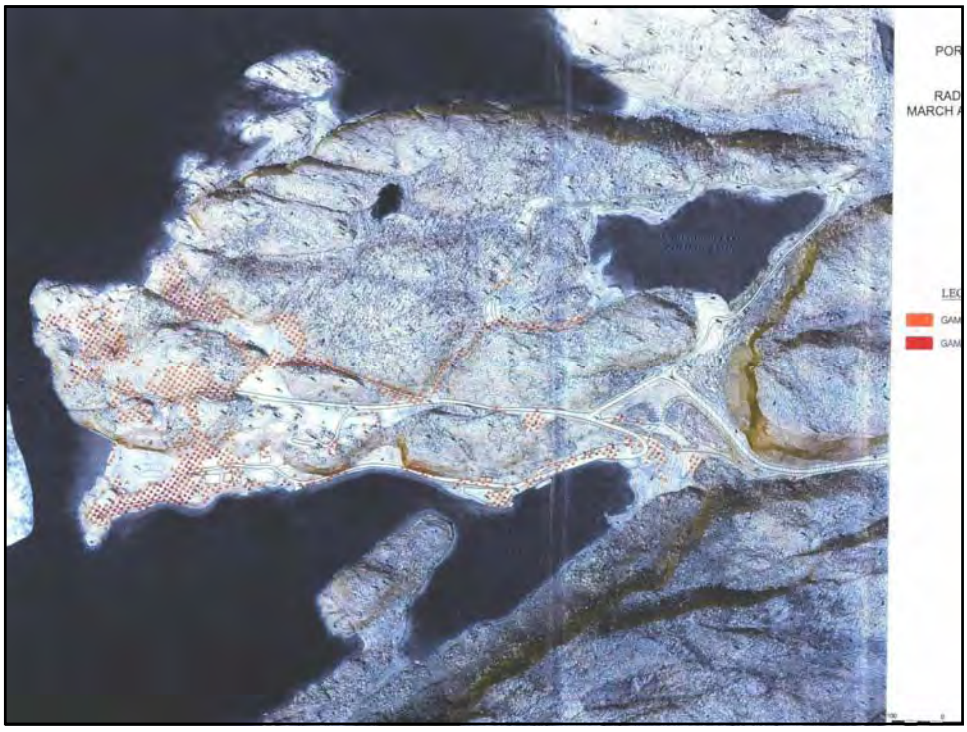
- Elevated metals
- Rate of drainage from site ~0.13 up to1L/s
- Little impact on GBL water quality
- Potential ecological risk to small animals drinking from the drainage for cobalt and uranium metals
- No radionuclide concerns in drainage

Waste Rock



Radiation Levels





Radiation Levels

Under current land use conditions and reasonable exposure scenarios a person would not receive the reference level gamma dose of 1 mSv/a. The key assumption is that it is not reasonably expected that someone would live at the site year round, and undertake traditional or employment activities for more then 3 months a year.

Preferred Option Selection

CDUT- Overall Site Goals

- Minimize human health and safety risks
- Protect fish, wildlife and vegetation
- Protect GBL water quality
- Minimize environmental impacts during remediation
- Return the site to its original condition where possible
- Minimize long term care and maintenance
- Cost effective

Guiding Principles to carry out cleanup

- Work can be done safely
- Maximize Deline capacity building and training opportunities
- Maximize Deline employment and procurement
- Compliance with all legal and regulatory requirements including H&S

General Categories of Issues

- Site Infrastructure
- Remaining Equipment and Scrap Metal
- Mine Workings
- Contamination (metals and radionuclides)

Site Infrastructure:

- Airstrip
- Roads
- Docking area and lower road
- Buildings/Sheds
- Concrete Structures/Pads

Remaining Miscellaneous Equipment and Scrap Metal:

- Bus, old trucks & grader
- Metal scraps

Mine Workings:

- **Crown pillars (stability of mine)**
- **Underground Mine – Water**
- **Known Mine Openings**

- Echo Bay upper Adit
- Echo Bay lower Adit
- Murphy Bay (adit/vent)
- Labine Point Vent/Portal
- West Adit
- Eldorado Shaft No. 1
- Plant Site Adit
- Inner Labine Bay Adit
- Surface trenching- 2 sm. Surface openings
- Cross Fault Lake (shaft/head frame)
- Other unidentified openings

Contamination (metals and radionuclides):

- **Tailings Contaminated Areas**
  - Silver Point Tailings- Saturated Surface Tailings
  - Radium North Tailings- Dry Contained Surface Tailings
  - Radium South Tailings- Dry Contained Surface Tailings
  - Murphy Tailings Deposit- Dry Contained Surface tailings
  - McDonough Tailing Basin (Silver tailings) and Outlet
- **Spilled Tailings Areas**
  - West Adit Leach Plant Spill
  - Murphy Tailings Spill
- **Great Bear Lake Tailings**
- **Contaminated Drainage**
  - Cobalt Drainage #1
  - Cobalt Drainage #2
  - Echo Bay Drainage
- **Waste rock (mine rock) with elevated gamma reading**

Ratings for Options Against Goals

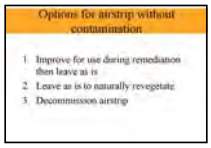
☺ High – Meets Goal

😐 Med - Somewhat meets goal

☹ Low - Least likely to meet goal

For Each Issues:

- Background Information



- Options Available

- Ranking Options Against Goals
- Select Preferred Option

Selecting Preferred Options

P= Preferred option

A= Acceptable option

NA= Not acceptable option

Site Infrastructure

Airstrip

- Physical status unknown
- Some small sheds
- Useful during remediation
- No observed contamination
- Beneficial for future use

Options

1. Improve for use during remediation then leave as is
2. Leave as is to naturally revegetate
3. Decommission airstrip

Goals / Options	Leave as is	Decommission airstrip
Health and safety	Med	Low
Protect fish, wildlife and vegetation	Med	High
Protect GBL water quality	High	Med
Minimize env. impacts during Rem.	High	Med
Minimize Long term care and maintenance	High	High
Return site to its original condition where possible	Med	High
Is cost effective	High	Low
A / P / NA	P	A

Roads

- Some overgrown road preventing access
- Others compacted with no foreseeable revegetation
- Lower road is slowly eroding into GBL

Options

1. Clear to use for remediation then leave as is (allow for natural revegetation)
2. Clear to use during remediation, then scarify to increase the chance of plant growth
3. Upgrade to use during remediation then cover with soil/fill and revegetate

Goals / Options	Clear then leave as is (natural reveg)	Clear, scarify then leave as is (natural reveg)	Clear, cover and revegetate
Health and safety	High	High	High
Protect fish, wildlife and vegetation	Med	Med	Med
Protect GBL water quality	Med	Med	Low
Minimize env. Impact during rem.	High	High	Low
Minimize Long term care and maintenance	High	High	Low
Return site to its original condition where possible	Low	Med	Med
Is cost effective	High	Med	Low
A / P / NA	P	A	NA

Docking Area

- Slowly eroding into Labine Bay, wood planks no longer holding back fill
- Useful during remediation
- Old scrap metal located along shore

Options

1. Leave as is to erode naturally
2. Improve docking area for temporary use during cleanup, then leave to erode naturally following remediation
3. Reconstruct docking area for use during cleanup and future use
4. Improve docking area for temporary use during cleanup, then take out the lower road and docking area.

Goals / Options	leave as is	Reconstruct docking area for future use	Remove docking area
Health and safety	Low	High	High
Protect fish, wildlife and vegetation	Med	Med	Low - Med w med. Mes.
Protect GBL water quality	Med	Med	Low Med w med. Mes
Minimize env. Impacts during rem.	Med	Med	Low Med w med mes.
Minimize Long term care and maintenance	Low	Low	High
Return site to its original condition where possible	Med	Low	High
Is cost effective	High	Med	Low
A / P / NA	NA	A	P

Buildings/Sheds

- There are few buildings/sheds exist on site
- Possible historical value in the RCMP cabin
- Sheds will be necessary to use during cleanup
- No known contamination
- Physical safety of roof collapsing particularly at RCMP cabin

Options

1. Leave as is to fall down and post signs of physical hazard
2. Restore RCMP cabin to minimize safety concerns and leave all sheds at site for long term storage
3. Remove all standing structures (sheds, RCMP cabin) during cleanup to return site to its most natural state

Goals / Options	Leave as is (post signs)	Restore RCMP and keep the sheds	Restore RCMP and remove all others	Remove all sheds, leave cabin
Health and safety	Low	Med	Med	Med
Protect fish, wildlife and vegetation	Not Ap	Not Ap	Not Ap	Not Ap
Protect GBL water quality	Not Ap	Not Ap	Not Ap	Not Ap
Minimize env. Impact during Rem.	High	High	Med	Med
Minimize Long term care and maintenance	Low	Med	Med	Med
Return site to its original condition where possible	Low	Low	Med	Med
Is cost effective	High	Low	Low	Med
A / P / NA	NA	NA	NA	A

Concrete Structures/Pads

- Look bad
- No infiltration to promote revegetation
- Will deteriorate over a long time
- Can be used as a helicopter pad and tent pad
- Hazard in the structures which stick out
- One pad with high gamma reading (>250μR/h)

Options

1. Leave as is to degrade naturally over time
2. Breakup and dispose
3. Cover with soil or fill
4. Breakup, cover with soil/fill and revegetate

Goals / Options	Leave as is	Breakup and dispose	Cover with local material	Breakup, cover and revegetate
Health and safety	Not ap	Not ap	Not ap	Not ap
Protect fish, wildlife and vegetation	High	High	Med	Med
Protect GBL water quality	High	High	Med	Med
Minimize env. Impacts during rem.	High	Med	Low	Low
Minimize Long term care and maintenance	High	High	Med	Med
Return site to its original condition where possible	Low	High	Med	Med
Is cost effective	High	Med	Low	Low
A / P / NA	P	A	A	NA

Remaining Miscellaneous Equipment and Scrap Metal:

Remaining Miscellaneous Equipment:

- Bus, old trucks, grader etc. located near Echo Bay operations and Airstrip
- Unnatural and visually unpleasing
- Safety concern

Options

1. Leave as is
2. Drain Fuel and oil and dispose of vehicles on site
3. Haul vehicles offsite to recycle/disposal/sale/owner

Goals / Options	Leave as is	Drain fuel and oil and dispose on site	Haul offsite for disposal
Health and safety	Low	High	Med
Protect fish, wildlife and vegetation	Low	High	Med
Protect GBL water quality	Med	High	Med
Minimize env. Impacts during rem.	High	Med	Low
Minimize Long term care and maintenance	Low	High	High
Return site to its original condition where possible	Low	Med	High
Is cost effective	High	Med	Med
A / P / NA	NA	A	P

Surface Scrap Metal:

- Located throughout site
- Potential physical hazard
- Looks bad

Options

1. Leave as is
2. Pick up all scrap metal and dispose of on site
3. Pick up all scrap metal and dispose of off site

Goals / Options	Leave as is	Pick up and dispose on site	Pick up and dispose off site
Health and safety	Low	High	Med
Protect fish, wildlife and vegetation	Med	High	Med
Protect GBL water quality	Med	Med	Med
Minimize env. Impacts during rem.	High	Med	Low
Minimize Long term care and maintenance	Low	High	High
Return site to its original condition where possible	Low	High	High
Is cost effective	High	Med	Low
A / P / NA	NA	A/P	A/P

Mine Workings:

Crown pillars

- Status currently unknown.
- Will require a technical inspection of mining diagrams to determine stability before deciding if any further work closure.
- To be done in 2005/06

Underground Mine – Water

- The mine is flooded and likely contains elevated levels of metals (no direct measurements), however ARD is not expected. All known areas to access the underground are frozen creating plugs at Port Radium. There is no evidence of groundwater seeps escaping the mine workings at Port Radium
- See seeps under Echo Bay drainage regarding possible mine water

Known Mine Openings

- 5 known horizontal openings
- Mostly backfilled and sealed by permafrost
- Slumping and collapsing of adit roof caused for reopening
- 6 known vertical openings
- Others with fencing
- Some covered by waste rock or partially sealed by metal
- Others marked by fencing
- Some slumping or collapsing causing access to the holes

Options

1. Leave it as is and continually fix fence and refill openings when slumping or collapsing of roof occurs
2. Backfilling all openings including fenced areas blasting/caving of unstable openings
3. Backfilling all openings including fenced areas blasting/caving of unstable openings and fully sealing with a cement plugs
4. Combination of 2 and 3 specific to opening (cap all shaft/vents and backfill adits)

Goals / Options	Leave as is and maintain	Backfill all openings	Backfill and plug with cement	Combo of 2 and 3 site specific
Health and safety	Low	Med	High	High
Protect fish, wildlife and vegetation	Low	Med	High	High
Protect GBL water quality	Low	High	High	High
Minimize env. Impacts during rem.	High	Med	Med	Med
Minimize Long term care and maintenance	Low	Med	High	High
Return site to its original condition where possible	Low	High	Med	Med
Is cost effective	High	Med	Low	Med
A / P / NA	NA	A	A	P

Contamination (metals and radionuclides):

Contamination (metals and radionuclides):

- 5 Contained Tailings Contaminated Areas (TCA)
  - 3 dry cover
  - 1 wet cover
  - 1 semi contained dry cover

•2 Spill Tailings Areas
•Great Bear Lake Tailings
•Contaminated Drainage offsite
•Waste rock (mine rock) with elevated gamma reading

Surface Tailings -Silver Point Tailings

- Semi contained and covered (low gamma reading)
- Volume ~24,000m^3,
- Possible unstable due to wave and ice action at surface
- Elevated metals in pore water and in pooled water ponds
- Elevated metals in some vegetation
- No risks determined associated with metal and radionuclides uptake.

Options

1. Leave as is with periodic inspection and care and maintenance
2. Leave tailings in place and fill in small pond area with clean fill or waste rock
3. Placement of armour stone fill along the edge of the shoreline and fill in small pond area with clean fill or waste rock
4. Bentonite clay layer up to 3m into the water covering the tailings deposit.
5. Remove all tailings and redeposit into McDonough Tailings Containment Area

Goals / Options	Leave as is	Leave tailings and fill in pond	Armour rock shore and fill in pond	Clay cover into water up to 3m	Consolidate & relocate to McDonough TCA
Health and safety	High	High	Med	Med	Low
Protect fish, wildlife and vegetation	Low	Med	Med	High	Med
Protect GBL water quality	Low	Low	Med	Med/ High	High
Minimize env. Impacts during rem.	High	High	Low	Med	Low
Minimize Long term care and maintenance	Med	Med	Med	Med	High
Return site to its original condition where possible	Low	Low	Low	Low	High
Is cost effective	High	High	Low	Low	Low
A / P / NA	NA				