

ᑭᓴᓂᓄᓐ
Qikiqtaaluk

Arctic Bay
Qikiqtarjuaq

Cape Dorset
ᑕᑦᑭᑦᑲᑦᑲᑦ
Clyde River
ᑕᑭᑦᑲᑦᑲᑦ
Grise Fiord

Half Beach
 $\Delta^a \Delta^b$
 Igloodik
 $\Delta^a \Delta^b \Delta^c$
 Igloodik
 $\Delta^a \Delta^b \Delta^c$

Kimnirul
 $\langle \sigma^a \sigma^b \rangle^{\epsilon b}$

Pangnirtung
Γ^cNLCc^b

Pond Inlet
 96D7ΔC96

Resolute Bay
ᑭᓂᕈᐱᑦ^b

Sanikiluaq

پښتو
Kivalliq

Amint

ADVIS
 9bLσC)49b
 Please refer to

Δ₂CL⁵V^b

Coral Harbor

Banking Information

Rankin, Thelma
a.d. 7^c
Boulder, Colo.

Reprise Bay
NP554D^{5b}
Whole Cove

PROSPE

Kitikmeot

Cambridge Books

Kugluktuk

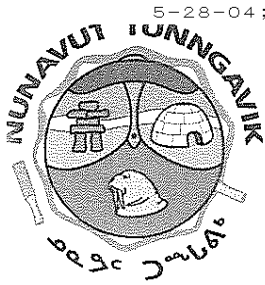
Gjoa Haven

Kugaaruk

Talovoak

Abstract

A review of the documentation provided in the various reports and supporting documents that makes up the “Nanisivik Mine 2004 Reclamation and Closure Plan” was carried out by NTI with the technical assistance of AMEC Earth & Environmental, a division of



ᑭᑭᑭᑭᑭᑭ
Qikiqtaaluk

ᐱᐱᐱᐱᐱᐱ
Arctic Bay
ᑭᑭᑭᑭᑭᑭᑭᑭ
Qikiqtarjuaq
ᐱᐱᐱᐱᐱᐱ

Cape Dorset
ᑭᑭᑭᑭᑭᑭᑭᑭ
Clyde River
ᑭᑭᑭᑭᑭᑭᑭᑭ
Grise Fjord
ᑭᑭᑭᑭᑭᑭ

Hall Beach
ᐱᐱᐱᐱᐱᐱ
Igloodik
ᐱᐱᐱᐱᐱᐱ
Igloodik
ᐱᐱᐱᐱᐱᐱ
Igloodik
ᐱᐱᐱᐱᐱᐱ

Kimmirut
ᑭᑭᑭᑭᑭᑭᑭᑭ

Pangnirtung
ᐱᐱᐱᐱᐱᐱᐱᐱ

Pond Inlet
ᑭᑭᑭᑭᑭᑭᑭᑭ

Resolute Bay
ᑭᑭᑭᑭᑭᑭᑭᑭ

Sanikiluaq
ᐱᐱᐱᐱᐱᐱᐱᐱ

ᐱᐱᐱᐱᐱᐱ
Kivalliq

ᐱᐱᐱᐱᐱᐱ
Arviat
ᑭᑭᑭᑭᑭᑭᑭᑭ

Baker Lake
ᐱᐱᐱᐱᐱᐱᐱᐱ

Chesterfield Inlet
ᑭᑭᑭᑭᑭᑭᑭᑭ

Coral Harbour
ᑭᑭᑭᑭᑭᑭᑭᑭ

Rankin Inlet
ᑭᑭᑭᑭᑭᑭᑭᑭ

Repulse Bay
ᐱᐱᐱᐱᐱᐱᐱᐱ

Whale Cove
ᑭᑭᑭᑭᑭᑭᑭᑭ

ᐱᐱᐱᐱᐱᐱ
Kitikmeot

ᐱᐱᐱᐱᐱᐱᐱᐱ
Cambridge Bay
ᑭᑭᑭᑭᑭᑭᑭᑭ

Kugluktuk
ᑭᑭᑭᑭᑭᑭᑭᑭ

Gjoa Haven
ᑭᑭᑭᑭᑭᑭᑭᑭ

Kugaaruk
ᑭᑭᑭᑭᑭᑭᑭᑭ

Taloyoak
ᑭᑭᑭᑭᑭᑭᑭᑭ

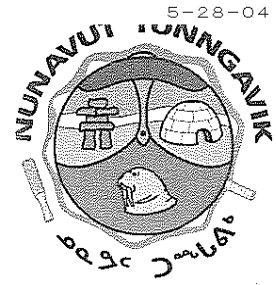
AMEC Americas Limited. This review focused on the ability of the measures proposed in the plan to achieve the objectives of long-term safety and stability of the mine site. The review addresses various aspects of the Reclamation Closure Plan in complying with best practices for Arctic Environments in the context of multiple land use for the future.

In this review NTI has identified the following issues that require clarification and elaboration to ensure that the objectives stated above are met.

Monitoring issues:

1. Frequency of monitoring during 5-year post reclamation period appears low.
2. Duration of monitoring is short. Many processes active on the site would not appear within this time frame
3. A much longer closure monitoring period is strongly recommended to adequately assess the impacts of the reclamation and closure activities

- The frequency of monitoring appears to be appropriate for the 2-year reclamation period. During the 5-year closure period, the monitoring frequency is reduced to once or twice during the summer season for all forms of monitoring, which is considered to be very infrequent. *Assessment of the practicality of more frequent readings from instruments during the 5-year period is recommended, especially during the warmer periods of the year.* Doing more appropriate and frequent readings would give the proponent a better understanding of what is happening during the reclamation period. This would allow the proponent time to react in an appropriate fashion. NTI believes that that every effort should be made to provide employment and training to Arctic Bay residents to participate fully in the reclamation and monitoring process.
- A significant concern resulting from the audit of the Reclamation Closure Plan is the very short duration of monitoring before the comprehensive review planned for the year 2010. Many of the processes active on the site that could lead to adverse environmental impacts will take decades to manifest. Some of these processes are; freeze-back of the taliks in tailings, ARD and degradation of the shale material in the reclamation covers. The intent of the 2010 review is to provide predictions of the ultimate success of the reclamation and closure works based on the 5 years of monitoring records, currently planned to be at infrequent



ᑭᑭᑭᑭᑭᑭ
Qikiqtaaluk

ᐱᐁᐱᐱᐱᐱᐱ
Arctic Bay
ᑭᑭᑭᑭᑭᑭᑭᑭ
Qikiqtaaluaq
ᐁᐁᐁᐁᐁᐁ

Cape Dorset
ᑭᑭᑭᑭᑭᑭᐱᐱ
Clyde River
ᐱᐱᐱᐱᐱᐱᐱᐱ
Grise Fiord
ᑭᑭᑭᑭᐱᐱ

Hall Beach
ᐱᐱᐱᐱᐱᐱ
Igloodik
ᐱᐱᐱᐱᐱᐱ
Iqaluit
ᐁᐁᐁᐁᐁᐁ

Kimmitut
ᑭᑭᑭᑭᑭᑭᐱᐱ
Pangnirtung
ᐱᐱᐱᐱᐱᐱᐱᐱ

Pond Inlet
ᑭᑭᑭᑭᑭᑭᐱᐱ
Resolute Bay
ᑭᑭᑭᑭᑭᑭᐱᐱ

Sanikiluaq
ᐁᐁᐁᐁᐁᐁᐁᐁ

ᐁᐁᐁᐁᐁᐁ
Kivalliq

ᐱᐱᐱᐱᐱᐱ
Arviat
ᑭᑭᑭᑭᑭᑭᐱᐱ
Baker Lake
ᐱᐱᐱᐱᐱᐱᐱᐱ

Chesterfield Inlet
ᑭᑭᑭᑭᐱᐱ

Coral Harbour
ᑭᑭᑭᑭᑭᑭᐱᐱ

Rankin Inlet
ᐱᐱᐱᐱᐱᐱ

Repulse Bay
ᐱᐱᐱᐱᐱᐱᐱᐱ

Whale Cove

ᐁᐁᐁᐁᐁᐁ
Kitikmeot

ᐱᐱᐱᐱᐱᐱᐱᐱᐱᐱ
Cambridge Bay

ᑭᑭᑭᑭᑭᑭᐱᐱ
Kugluktuk
ᐱᐱᐱᐱᐱᐱᐱᐱ

Gjoa Haven
ᐱᐱᐱᐱᐱᐱ

Kugaaruk
ᑭᑭᑭᑭᑭᑭᐱᐱ

Taloyoak

intervals. It is strongly considered that it will be impossible to predict the ultimate fate of the reclamation measures at the mine site in 2010, given the complex inter-related processes taking place, particularly within the tailings facility. A much longer closure monitoring period is strongly recommended to adequately assess the impacts of the reclamation and closure activities. The concern for NTI is that the long-term liability for this site could be prematurely released from the mining company based on predictions that eventually turn out to be inaccurate. *For example in the DND Environmental Agreement for the DEW Line sites commits to a 3 phase monitoring program:*

Phase I: 5 years +, confirm equilibrium achievable.

Phase II: 5 to 25 years, verification of equilibrium achieved.

Phase III: at 25 years, Verification of effectiveness of remediation.

NTI is suggesting that a *similar* approach be applied to monitoring of the Nanisivik site.

- In general, the contingency plans for potential failure modes range from increased monitoring through increasing levels of intervention, which is an appropriate approach to contingency measures. The ultimate contingency for water quality is to treat any water that is not acceptable for release. This and many other contingency measures are really maintenance solutions not permanent fixes, and bear a considerable commitment of time and expense possibly for the foreseeable future.

Closing

With the assistance of the residents of Arctic Bay, interveners such as DFO, GN, INAC, the reclamation and monitoring program objective can be reached at a mutual understanding where all parties are satisfied with the process.