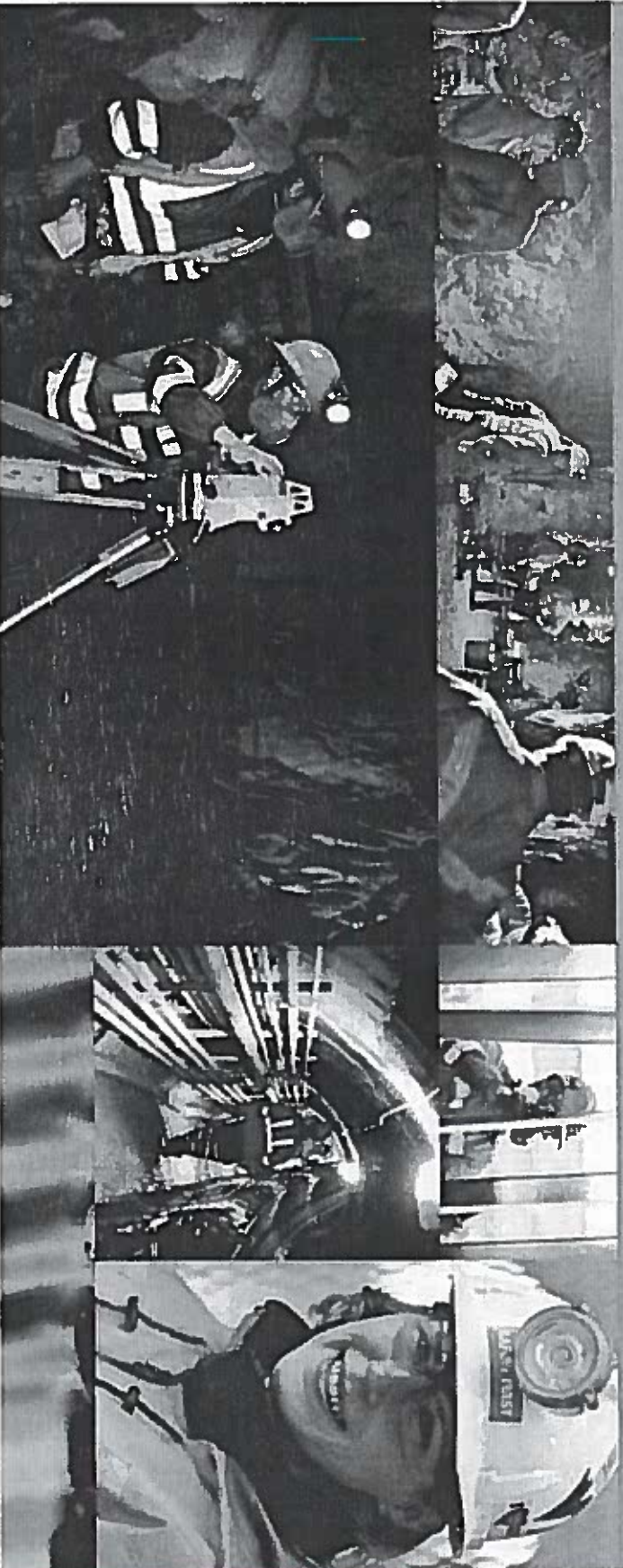




1AR-NAN0914 Application for Renewal and Amendment of Nanisivik Water Licence Public Hearing

Arctic Bay, 8 October 2014



NUNAVUT WATER BOARD	
Date:	Oct. 8/14
Exhibit No.:	2

Executive Summary

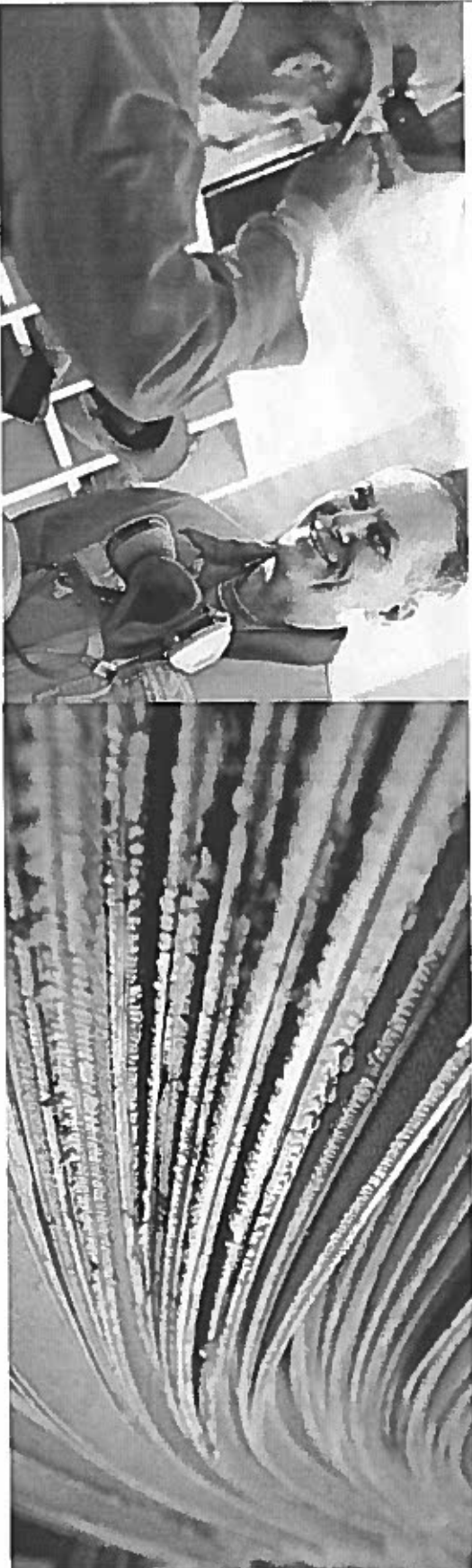
- Operations at the Nanisivik mine were terminated in 2002 and all mining areas and associated infrastructure were successfully closed and rehabilitated over the period 2002 to 2008. The Water Licence, issued in 2009, authorizes CanZinco Mines Ltd. to conduct closure and reclamation activities and post-closure monitoring.
- Activities carried out under the licence comprise three principal components:
 - Post-closure monitoring of surface water quality
 - Post-closure geotechnical monitoring of earthworks and engineered structures
 - Remediation of petroleum hydrocarbon impacted soil at the dock site
- *The nature and overall scope of these undertakings, as described in the renewal/amendment application, are fundamentally the same as those authorized through the 2009 licence.*
- The results of the water quality monitoring program implemented since 2009 have demonstrated stable conditions and confirmed that implemented closure and rehabilitation measures perform as expected. The water quality monitoring program will continue under the renewed licence. Minor modifications to monitoring stations, frequencies and parameters are proposed to account for the positive monitoring results achieved to date.
- The geotechnical monitoring program implemented since 2009 has demonstrated that completed surface reclamation covers and other geotechnical installations are performing in accordance with their design intents. The geotechnical monitoring program will continue under the renewed licence. Minor modifications to monitoring periods, frequencies and the type of instruments being monitoring are proposed to account for the encouraging monitoring results achieved to date.
- At the end of the 2014 season, approximately 6,000 m³ of petroleum hydrocarbon contaminated soil remains at the dock site. This compares to the 17,000 m³ of contaminated soil that existed on site when the remediation works commenced in 2011. The remaining soil is located in lined treatment areas and on the concrete pad of the former concentrate storage shed. The licence amendment/renewal application seeks to maintain the existing approach to the remediation of petroleum contaminated soil and, based on the updated Abandonment and Reclamation (A&R) Plan filed with the NWB, the remediation works are expected to be completed by September 2016.
- The proposed amendment seeks to establish a small landfill for the disposal of non-hazardous wastes generated during ongoing remediation and monitoring activities. The total quantity of non-hazardous waste to be placed in the landfill is expected to be around 50 m³. The preferred location for the landfill is the former outdoor warehouse yard, located three kilometers south of the dock area.
- The proposed term of the renewed licence is 5 years.

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Contents

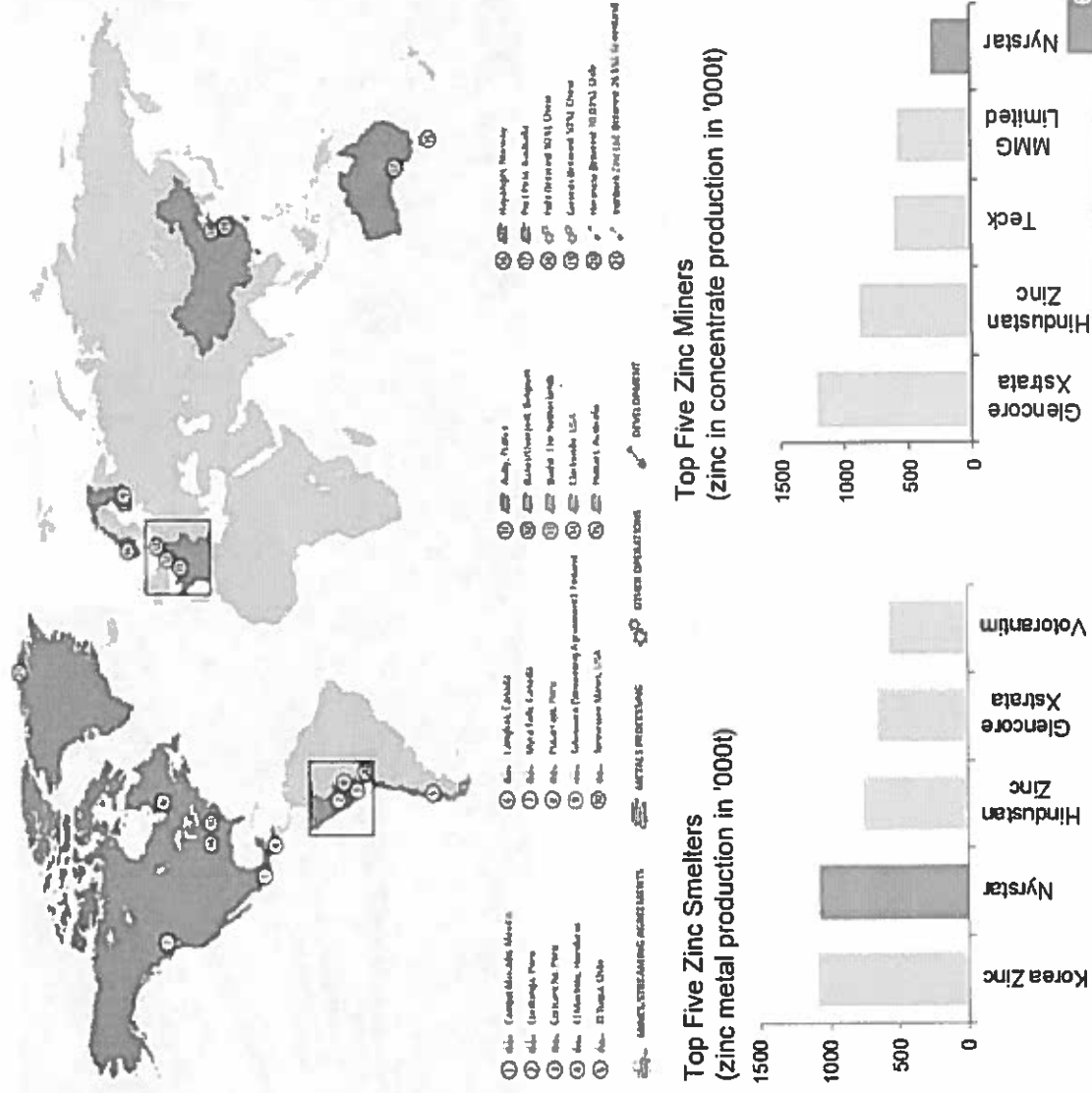
- Introduction to Nyrstar
- Summary of Site History
- Introduction to CanZinco's Water Licence Renewal/Amendment Application
- Post-Closure Water Quality Monitoring
- Post-Closure Geotechnical Monitoring
- Soil Remediation at the Dock Site
- Landfill for Non-Hazardous Waste



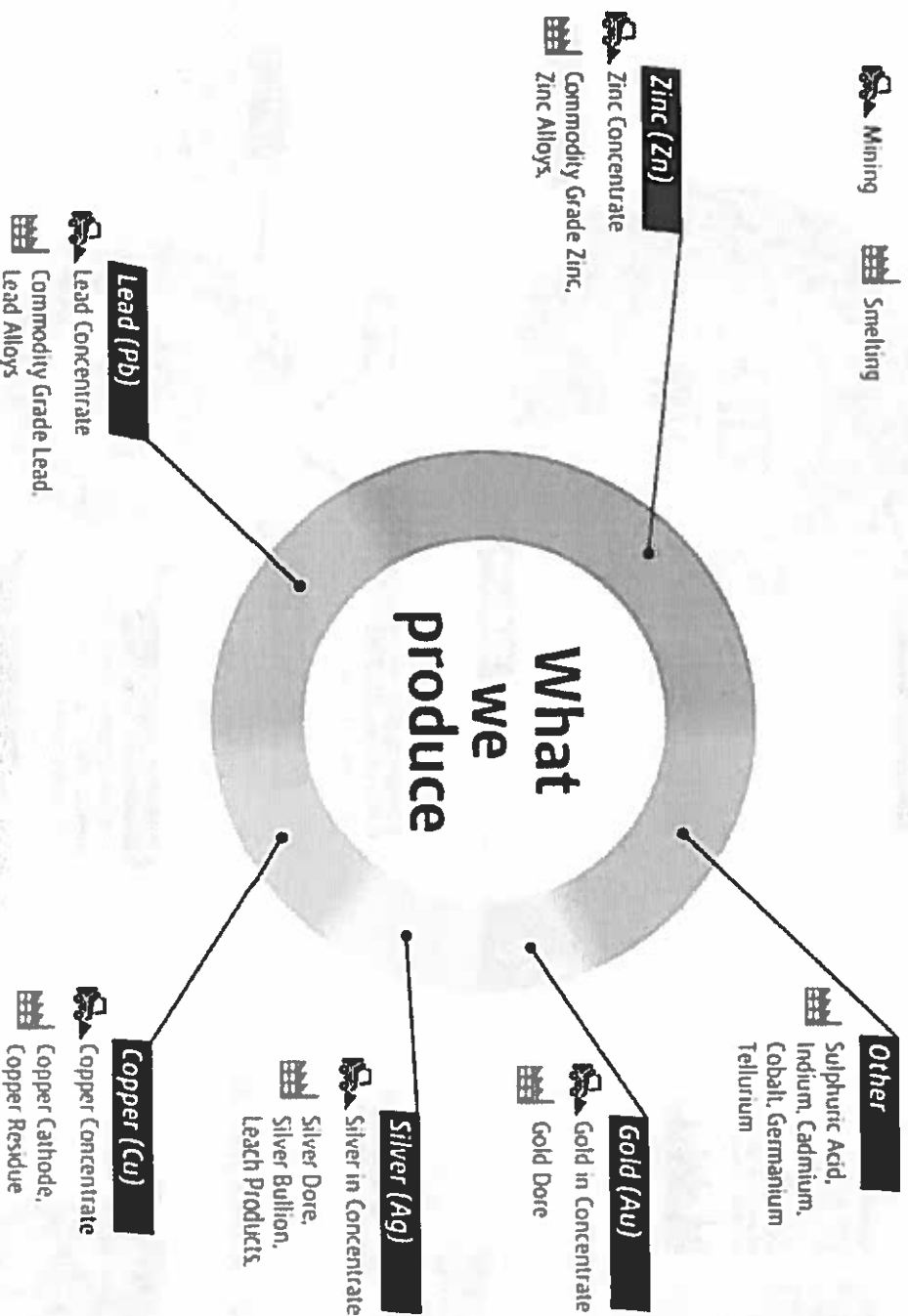
Introduction to Nyrstar

Nyrstar Overview

- Integrated mining and metals business.
- One of the world's largest zinc producers.
- Market leading position in lead, and growing positions in other base and precious metals including copper, gold, silver.
- Nine mining operations.
- Five zinc smelters, one lead smelter.
- Employing approximately 6,500 people across five continents. Corporate office in Switzerland.

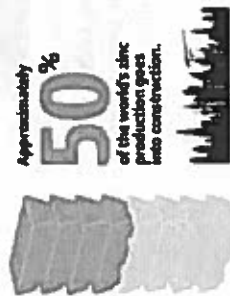


Our Products



Our Core Markets: Construction, Transport & Infrastructure

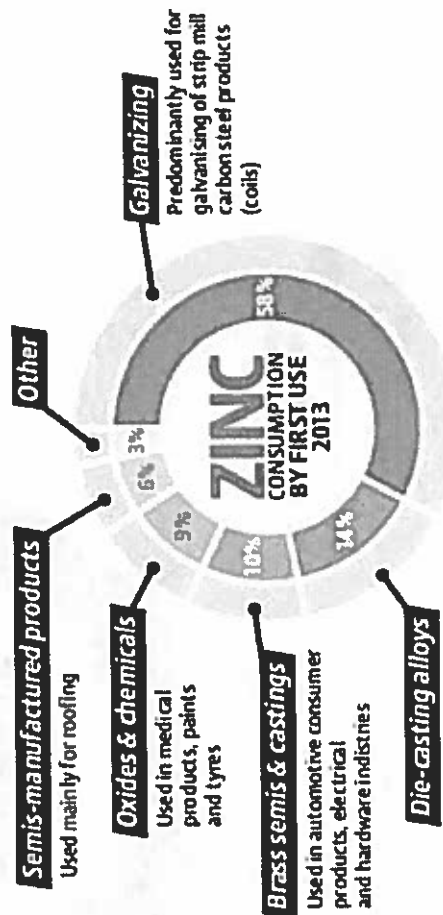
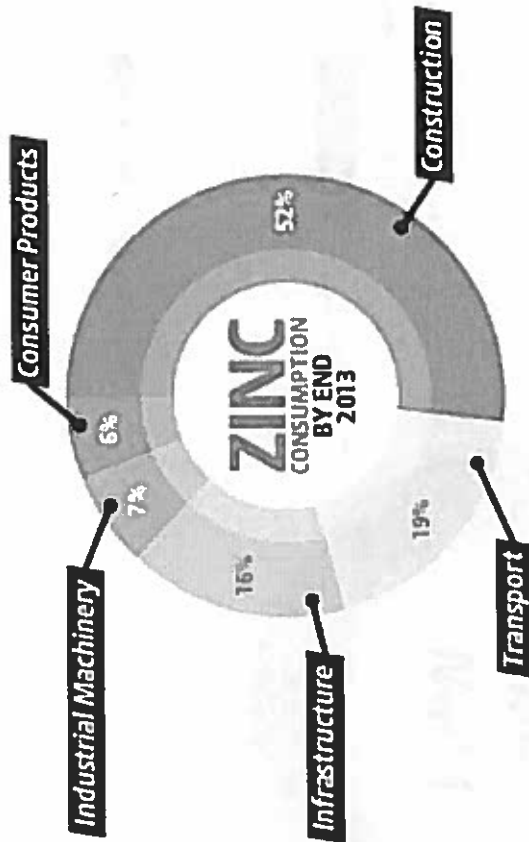
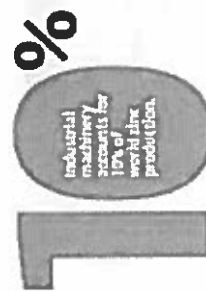
CONSTRUCTING A GREAT FUTURE FOR ZINC.



ZINC. A MOVING STORY.



ZINC. AND THE WHEELS OF INDUSTRY.



57% galvanizing, 15% die-cast alloys, 10% brass semis and castings, 8% oxides and chemicals, 6% semi-manufactured products, 4% other

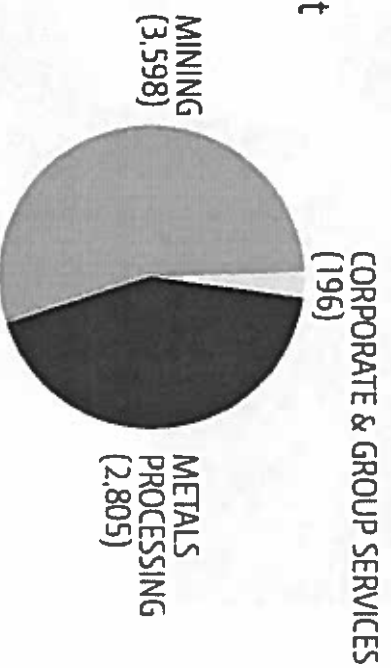
Our People

We have approximately 6,600 skilled employees working across four continents.

By region



By segment



*The numbers of employees are as December 31, 2013

The Nyrstar Way



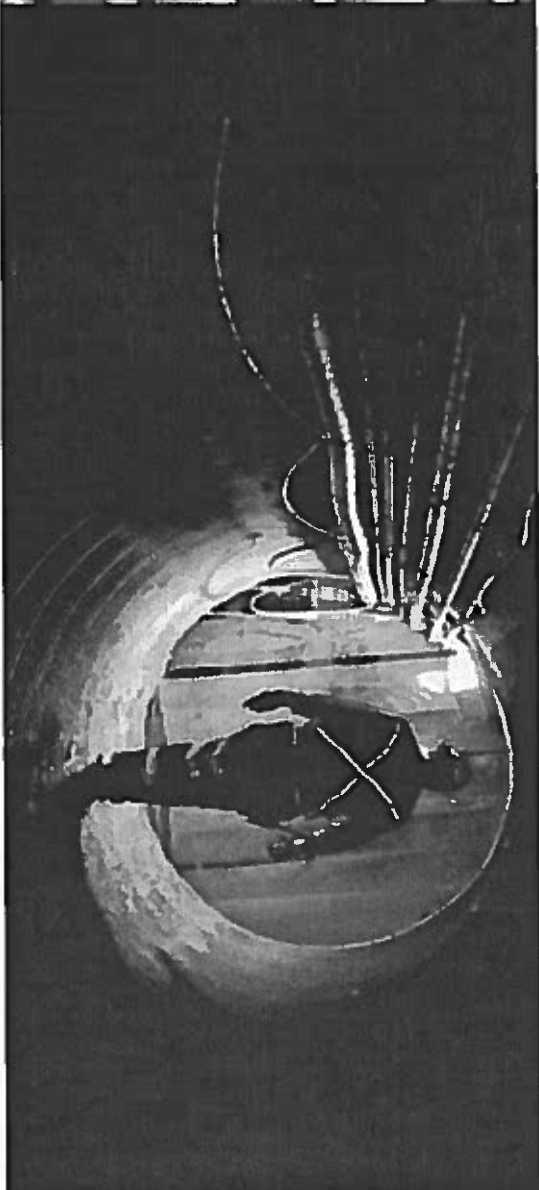
The culture promoted by the Nyrstar Way provides the foundation for how we operate and engage with stakeholders.

Environmental and Social Responsibility

Nyrstar is committed to responsible and sustainable business practices undertaken in partnership with our stakeholders. It is a prerequisite for the success of our company.

- This commitment is delivered through Nyrstar's Risk and SHEC Management Frameworks
- Environmental Management Systems are implemented at all Nyrstar sites and approximately half of the sites are certified to the ISO 14001 standard
- Conformance to Nyrstar requirements and legal obligations are monitored through our comprehensive SHE auditing programme
- A Sustainability Report is published annually to share our performance on safety, health, environment and community matters



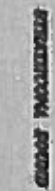


Summary of Site History

Site History

- The Nanisivik mine operated between 1976 and 2002 and produced zinc and lead concentrates
- Nanisivik was Canada's first mine north of the Arctic Circle
- Key facilities included an underground mine, several small open cuts, a 2,200 t/d concentrator and a town site
- Concentrates were stored at and shipped from the dock area
- Process tailings were deposited at the West Twin Disposal Area (WTDA) from which effluent was discharged into Twin Lakes Creek
- Nanisivik announced early closure and produced the last ore in Oct 2002
- Closure activities were completed between 2002 and 2008
- Nyrstar assumed responsibility for the site in 2011 as part of its acquisition of Breakwater Resources







Introduction to CanZinco's Water Licence Renewal/Amendment Application

Introduction to Water Licence Application

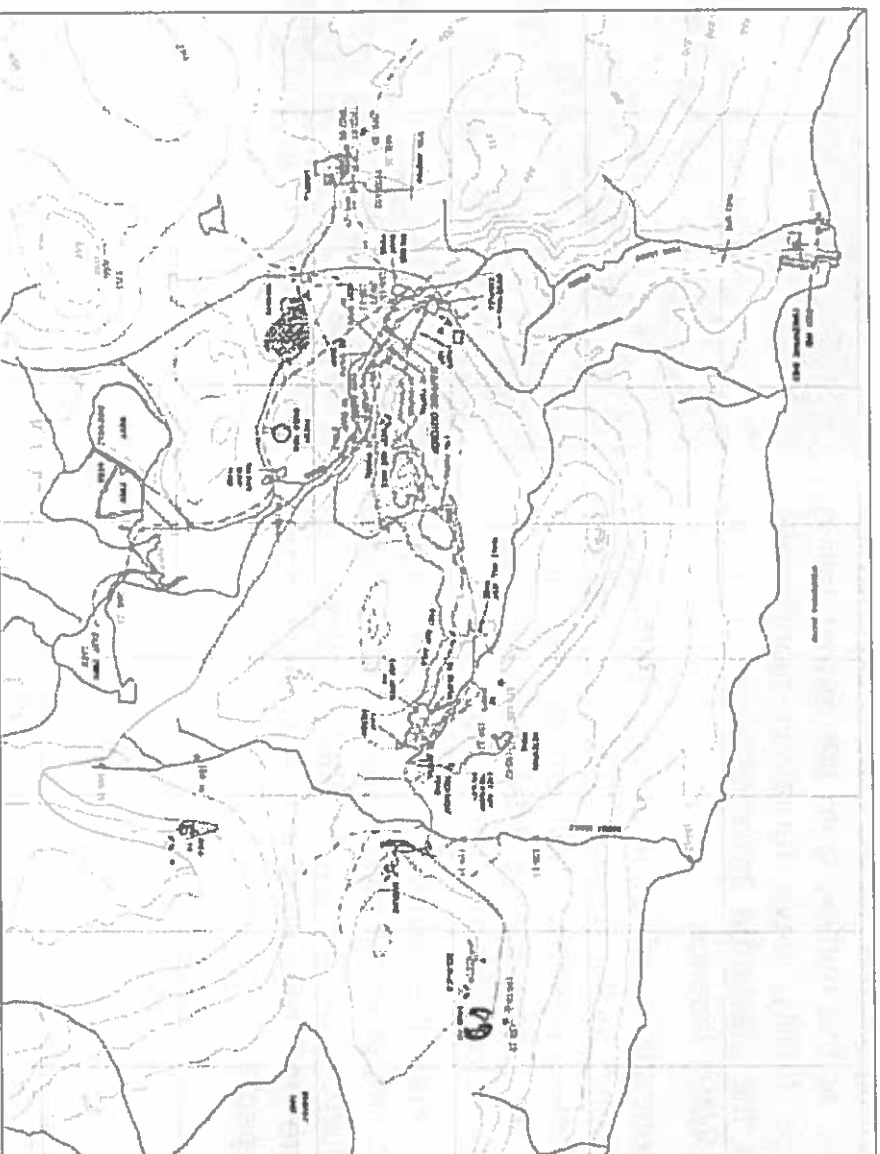
- Water Licence 1AR-NAN0914, issued on 1 April 2009, authorises CanZinco to conduct closure and reclamation activities and post-closure monitoring
- Activities carried out under the licence comprise three principal components:
 - Post-closure monitoring of surface water quality
 - Post-closure geotechnical monitoring of earthworks and engineered structures
 - Remediation of petroleum hydrocarbon impacted soil at the dock site
- *The nature and overall scope of these undertakings, as described in the renewal/amendment application, are fundamentally the same as those authorized through the 2009 licence*
- The proposed amendment seeks no changes to water uses
- Minor modifications to the water and geotechnical monitoring programs are proposed
- The approach to the remediation of contaminated soil at the dock site is proposed to remain the same as that authorised under the 2009 licence
- The proposed amendment seeks to establish a small landfill for the disposal of non-hazardous wastes generated during ongoing remediation and monitoring activities
- The proposed term of the renewed licence is 5 years



Post-Closure Water Quality Monitoring

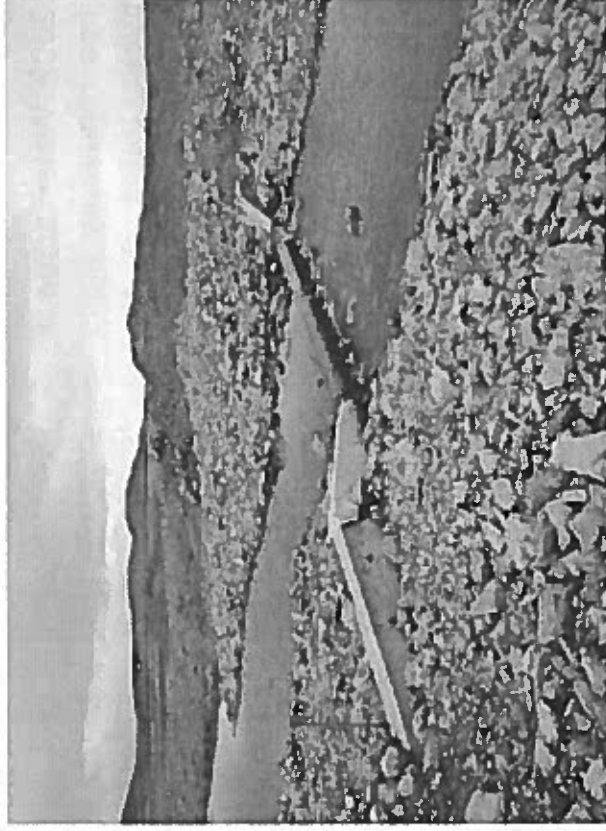
Water Quality Monitoring Program

- The 2009 Water Licence specifies regulatory limits at Station 159-4, at the outflow from the former tailing storage facility.
- Station-specific action levels have been established for an additional eight monitoring locations.
- Water quality monitoring is being completed during the summer months as prescribed in the 2009 licence.



Water Quality Monitoring Results to Date

- Monitoring results in the 159-4 compliance station, at the outflow from the former tailing storage facility, have remained significantly below the discharge limits established in the 2009 Water Licence.
- Concentrations of several key parameters have been declining since 2005 and most key parameters (arsenic, cadmium, copper, nickel and total suspended solids) have remained near or below laboratory detection limits.
- In general, the results of the water quality monitoring program have demonstrated stable conditions and confirmed that implemented closure and rehabilitation measures perform as expected.



Proposed Changes to Water Quality Monitoring Program

- Based on the positive monitoring results to date, the following modifications to the existing monitoring schedule are proposed:
 - Discontinuation of analytical test group NAN-2 (petroleum hydrocarbons and/or oil and grease) at all monitoring locations except 159-6 at the outflow of Twin Lakes Creek. Observations of sheen on the water surface will be maintained and analysis for NAN-2 completed if a sheen is observed.
 - Trace element scans (test group NAN-4) will be discontinued (although analysis for total cadmium, lead and zinc will continue).
 - Reduction of regulated parameters at Station 159-4 to be consistent with the analytical parameters required to be measured at this station. This reduces the list of regulated parameters to total cadmium, total lead, total zinc, total suspended solids and pH.
 - Removal of monitoring stations 159-10, 159-15 and 159-17.
 - Reduction in monitoring frequency from bi-weekly to monthly.



Post-closure Geotechnical Monitoring

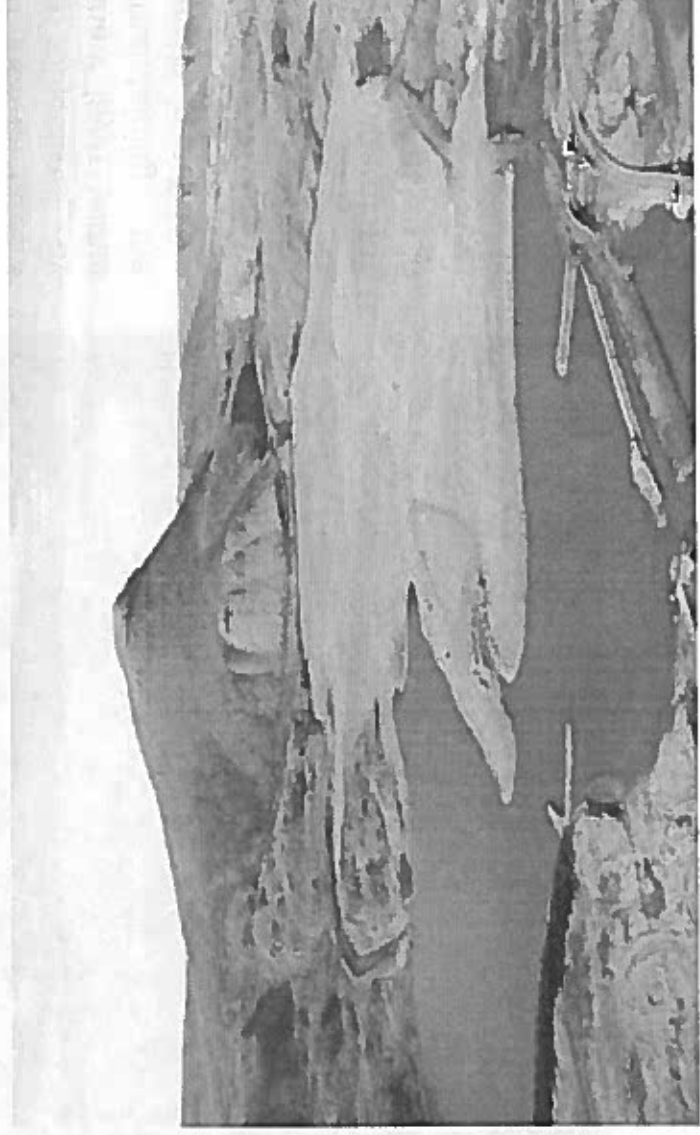
Geotechnical Monitoring Program

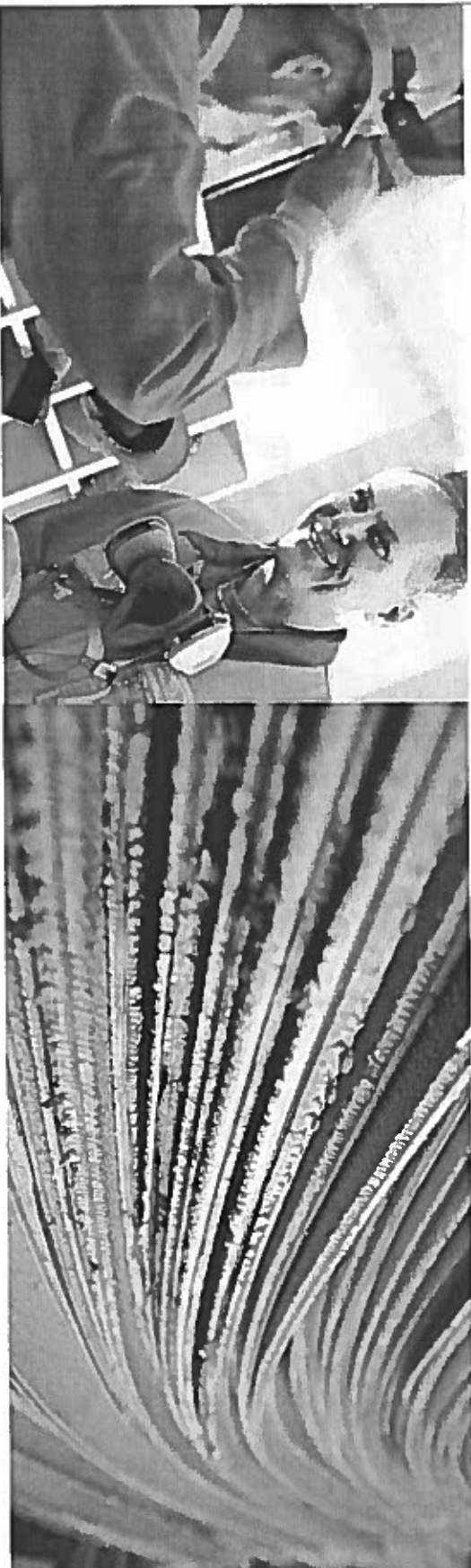
- The Water Licence requires completion of annual site inspections by a Professional Geotechnical Engineer and the collection of geotechnical monitoring data from several monitoring locations.
- The geotechnical monitoring program has demonstrated that completed surface reclamation covers and other geotechnical installations are performing in accordance with their design intents.
- In particular, geothermal monitoring data indicates that installed thermal covers achieve their design objectives by confining the active thaw layer within the covers and maintaining the underlying waste materials in a frozen state.
- In many cases, the cooling rates have accelerated in the last couple of years with the colder air temperatures experienced at site. This is reflected in the monitoring data which has demonstrated thinner active layers in many of the monitoring locations.



Proposed Changes to Geotechnical Monitoring Program

- Given the successful results to date, the following minor modifications to the existing monitoring schedule are proposed:
 - Data collection will be limited to the period July 1st to September 1st
 - Thermocouples will no longer be monitored
 - Groundwater monitoring in the Surface Cell and Test Cell talks will be discontinued

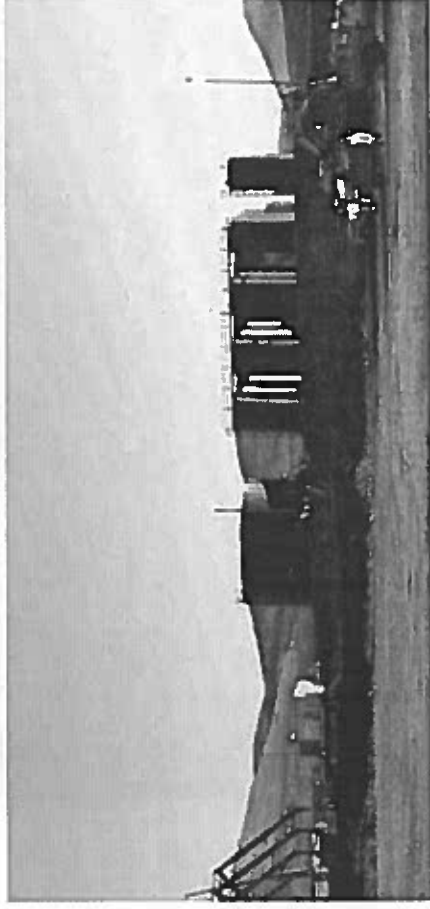




Soil Remediation at the Dock Site



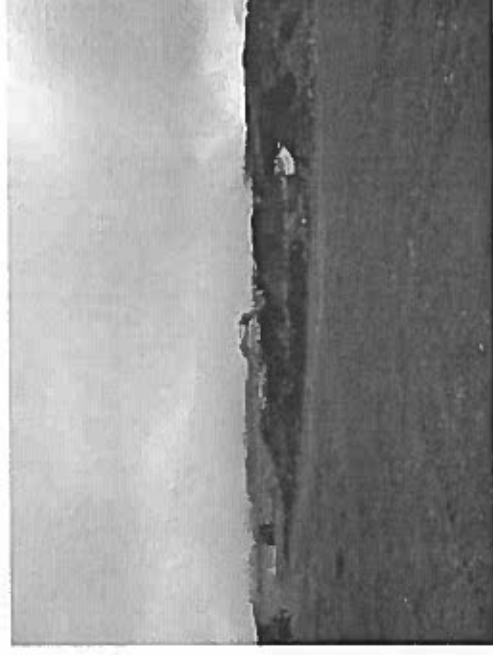
Recap of Completed Remediation Works



- Nanisivik tank farm in 2007. Decommissioning of the fuel tanks was undertaken in May and June 2011.

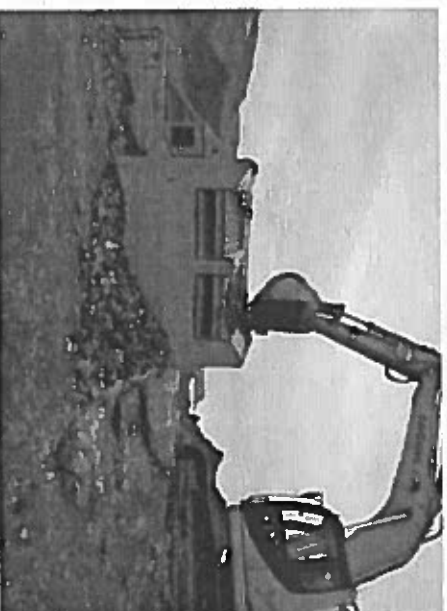
- Other remediation activities undertaken in 2011 included:

- Test pitting to delineate the petroleum hydrocarbon (PHC) contaminated soil. The quantities of contaminated soil requiring treatment were estimated at 17,000 m³.
- Construction of treatment facilities for PHC contaminated soil (2011 and 2012).
- Excavation of soil to remove liners underneath the tanks.



Recap of Completed Remediation Works

- Excavation, screening and treatment of PHC contaminated soil proceeded throughout 2012, 2013 and 2014. The treatment is undertaken using landfarming methodologies in which nutrients are added to the soil to stimulate biological activity.



Recap of Completed Remediation Works

- At the end of the 2014 field season, approximately 6,000 m³ of contaminated soil remains to be treated. This soil is located in the Upper Treatment Area, Lower Treatment Area and on the Concrete Pad.
 - Temporary stockpiling of contaminated soil on the Concrete pad is conducted under a Memorandum of Agreement with the DFO. The MOA requires that the pad be evacuated by 1 August 2015.
 - The excavation of contaminated soil is fundamentally completed. A small lens of contaminated soil (approximately 50 m³) in the east wall of the Area 1 excavation will be removed at the start of the 2015 field season.
 - Upon review of sample records, it was confirmed that laboratory documentation of the condition of a portion (~25 metres) of the remnant berm was incomplete. Further sampling will be undertaken at the start of the 2015 field season and the soil managed accordingly.
- Remaining tank liners (950 m²) will be removed in 2015.



Proposed Remediation Works under Renewed Licence

- The licence amendment/renewal application seeks to maintain the existing approach to the remediation of petroleum contaminated soil. This soil treatment approach has already been approved by the NWB and has proven to be effective.
- An updated Abandonment and Reclamation (A&R) Plan has been prepared and filed with the NWB as part of the license application process.
- Under the updated project schedule included in the new A&R Plan, the remediation works are expected to be completed by September 2016.
- Following the completion of the soil remediation, the treatment facilities will be decommissioned and the land surface contoured to prevent ponding of water.
- Confirmatory soil sampling is, and will continue to be, undertaken in accordance with the Remediation Confirmatory Sampling Methodology approved by the NWB. A memo clarifying this methodology was prepared and filed with the NWB as part of the license application process.

Soil Quality Remediation Objectives (SQROs)

- Existing SQROs are based on generic (i.e. not site-specific) soil quality guidelines for commercial land use established in the Canadian Council of Ministers of the Environment (CCME) Canada-Wide Standards (CWS) for Petroleum Hydrocarbons (PHCs) in Soil (CCME, 2008).
- The Canada-Wide Standards were derived by studying the laboratory ecotoxicity response of select plants and soil invertebrates living in certain soil types that had been spiked with fractionated samples of a sweet crude oil. The ecotoxicity data thus generated may not necessarily reflect the specific contaminant profile, soil characteristics and plant and soil invertebrate species that exist at the Nanisivik dock site.
- In order to produce a more accurate and relevant soil remediation objective, CanZinco is pursuing the development of a site specific remediation objective (SSRO) for the F2 diesel fraction (the key contaminant of concern).
- A memo describing the methodology used to develop the SSRO for the F2 fraction was prepared and submitted to the NWB as part of the license application process. The adopted approach for developing a SSRO is based on the same approach established for the development of the CWS. The adopted methodology includes the study of both soil invertebrate and plants.
- Based on the NWB's notice dated 2 May 2014, we understand the development of site specific SQROs does not constitute a licence amendment.
- In response to the AANDC's review comment regarding residual contamination and bioaccumulation, the intent of the CCME soil quality standards is to provide assurance that the ecological function will be sustained within a given land use function. This is the same regardless of whether soil chemistry results for a site are compared with (Tier I) generic environmental quality guidelines or (Tier II & III) site specific environmental quality guidelines such as SSROs.



Landfill for Non-Hazardous Waste

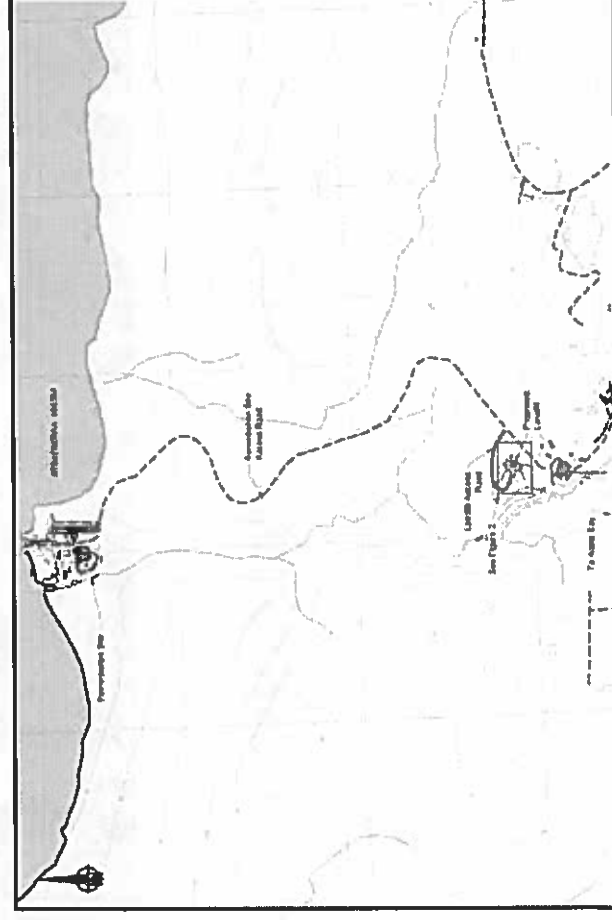
Landfill Design, Operation and Closure

- The renewal/amendment application proposes the construction of a small landfill for the disposal of non-hazardous wastes generated during the remediation and monitoring activities.
- Wastes intended to be disposed in the landfill includes metal reinforcement bars, non-reusable sheet metal and scrap steel, and geomembrane liners.
- The total quantity of non-hazardous waste to be placed in the landfill is expected to be around 50 m³.
- The preferred location for the landfill is the former outdoor warehouse yard, located three kilometers south of the dock area.

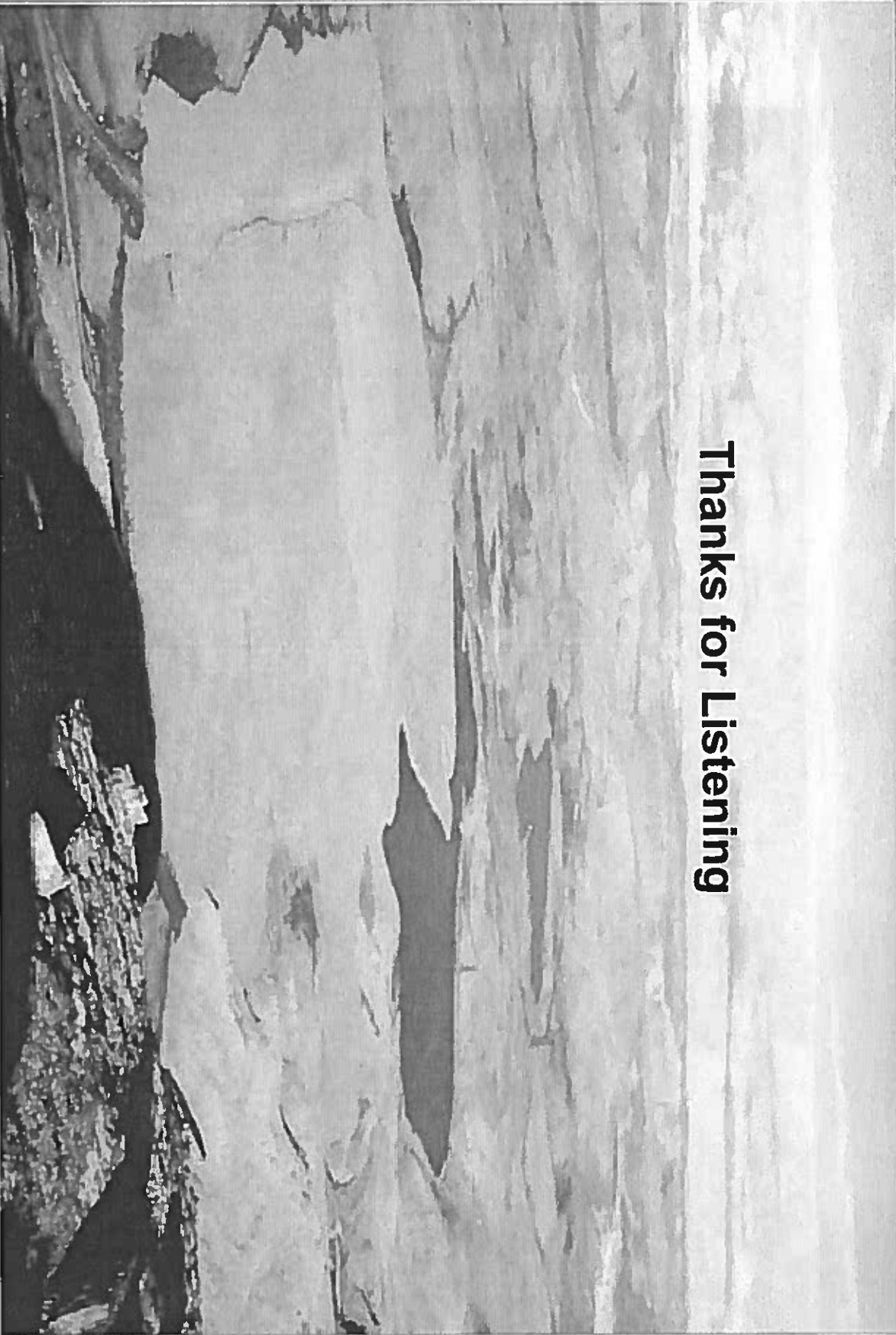
The waste will be covered by soil and a geomembrane liner to isolate it from contact with wildlife. A 60 cm thick soil cover is proposed.

- The performance of the landfill installations will be monitored as part of the annual geotechnical inspection conducted at the mine site.

CanZinco has made repeated attempts to contact the Lands Administration of the Government of Nunavut to gain clarity on the need for land use permits for the landfill. To date, these attempts have been unsuccessful.

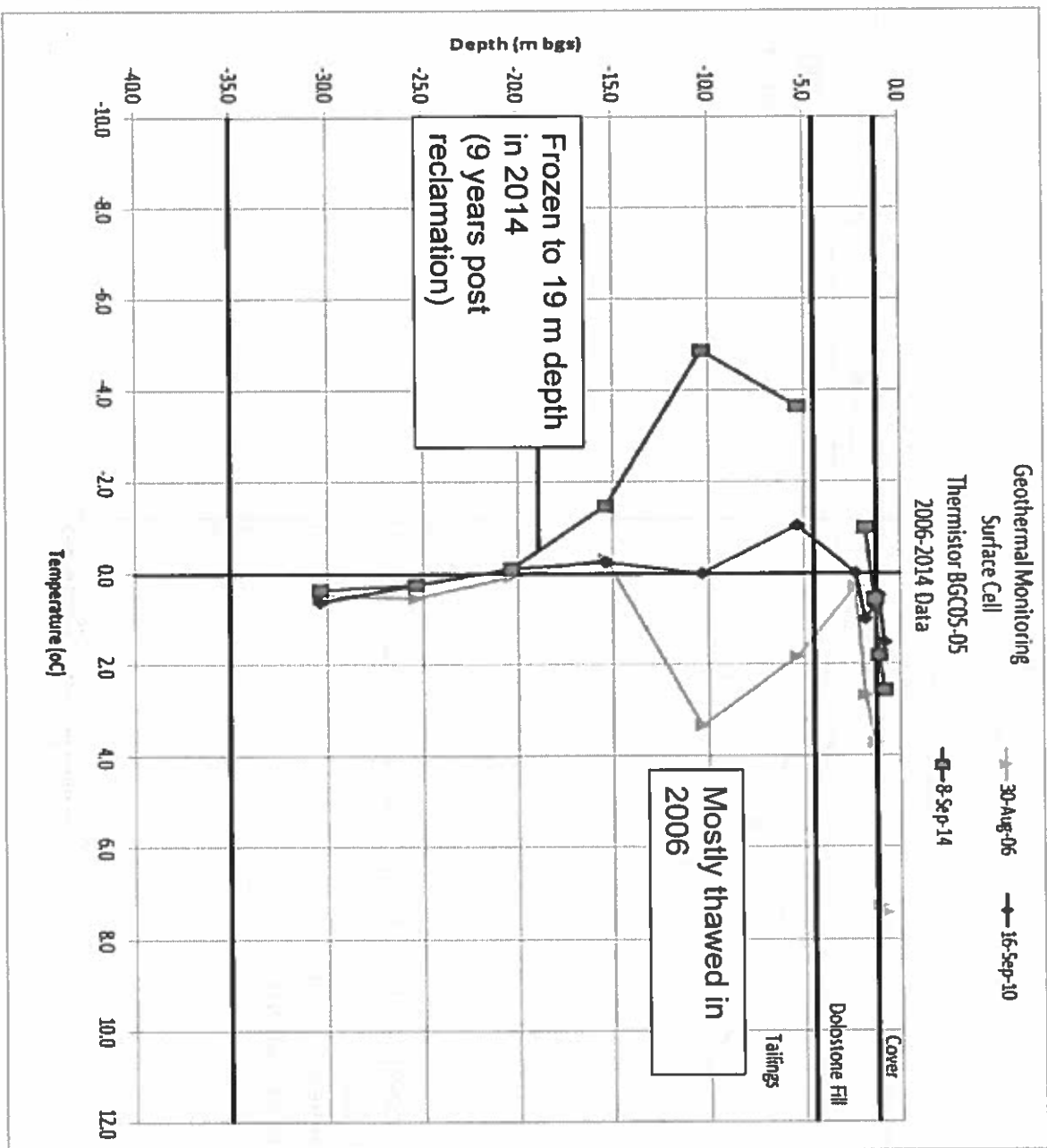


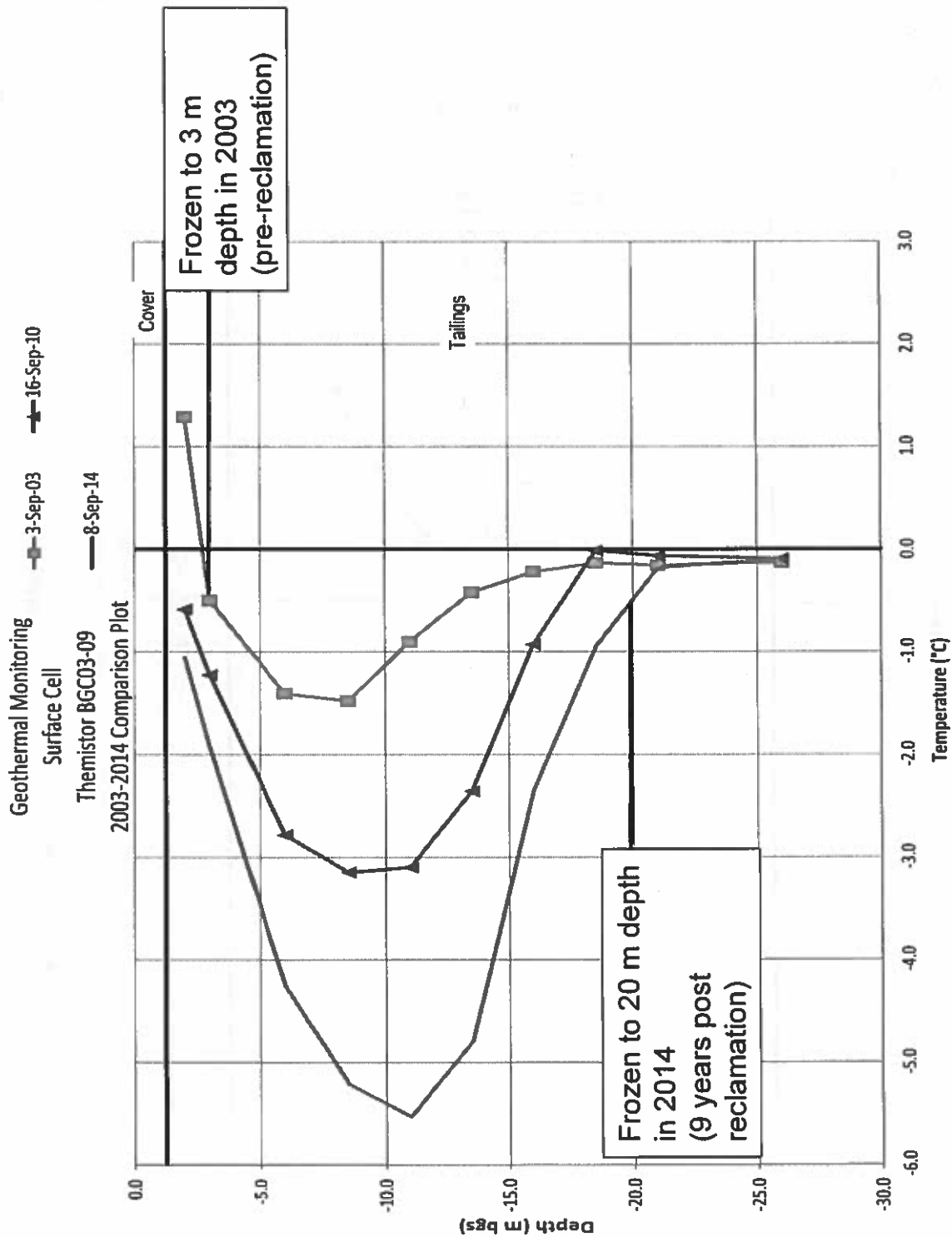
Thanks for Listening

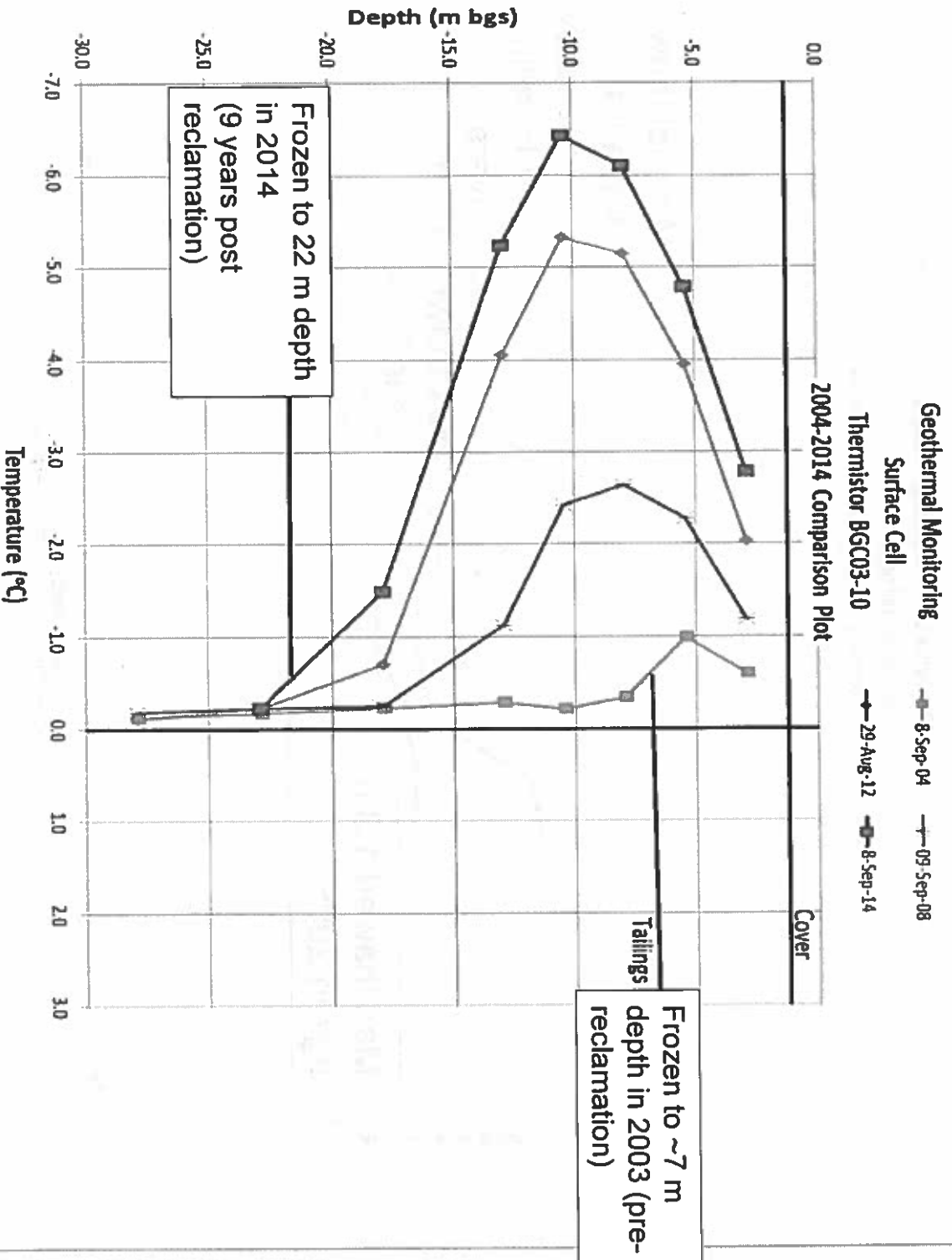




Appendix: Geotechnical Monitoring Data







2014 Active Layer Monitoring
Surface Cell Tailings Cover
Frost Gauge 1 2006-2014

2006 Data 2009 Data

2014 Data

