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Iqaluit, NU
February 19, 2002

Bill Heath
General Manager
Nanisivik Mine, CanZinco Ltd.
P.O. Box 225
Nanisivik, NU X0A 0X0

RE: September 18, 2002 Industrial Water Use Inspection - Report

The Water Resources Officer (WRO), appreciates the assistance of Jeffery Hanson provided during the tour of the Nanisivik's water use and waste disposal facilities. Enclosed for your records is a copy of the Industrial Water Use Inspection Report, performed on September 18, 2002. During the inspection the following observations were noted.

- **Tailings Line Spills**: As previous Licence inspections have noted, conveyance line clamping flanges have caused a number of spills. In order to address this problem the Licencee advised the WRO on November 16, 2001, that the Licencee had developed a maintenance program in which all of the conveyance line flanges were to be replaced. During the inspection on September 18, 2002 the WRO was informed that only conveyance line flanges that had previously failed have been replaced. The flange replacement preventative maintenance program has yet to be fully implemented. The latest tailings spill caused by a failure occurred on April 10, 2002 (Photo 1). This spill has occurred adjacent to the Duck Pond Tailings Dump. During the inspection of the spill site, Nanisivik mine representative stated that the spilled tailings were removed from the spill site. Visual inspection of the affected area revealed that mine tailings were still present at spill site 02-260 (Photo 2). Further cleanup of the spill site 02-260 will be required before the WRO suggests closure of the file.

- **Solid Waste Disposal Facility**: There is segregation of waste practiced at the Solid Waste Disposal Facility. The combustible waste are taken to the burn pit where they are incinerated. The ash from the burn pit is then added to the dump

Canada

030219NAN Water Use Inspect Rep - ILAE

tipping face. A large portion of the dump consists of industrial waste that is periodically buried. During the inspection a large amount of asbestos pipe insulation was observed (Photo 3). This asbestos pipe insulation should be disposed of in accordance with Nunavut Department of Sustainable Development regulations. No seepage was visible emitting from the toe of the dump. The creek below the dump was sampled for dump seepage (Photo 4). Enclosed analysis indicate pH (7.90 vs 6-9.5) is within the Licence discharge criteria however Total Suspended Solids (405 mg/L vs 30 mg/L) are not in compliance with *Water Licence Discharge Maximum Allowable Concentrations*.

☐ **Chemical Storage Area**: Inspection of the lay down (chemical storage) area adjacent to the tank farm revealed a spill of production chemicals. The production chemicals stored at the lay down area are located within 10 meters of the high water mark (Photo 6). Production chemicals namely Copper Sulphate is purchased in 1,000 kilogram totes. Tote bags are damaged in transport or undergo weathering causing contents to leak or spill. The spilled production chemicals are transported by the action of rain and melting snow to the ocean. A flow path of Copper Sulphate was noted emitting from the lay down area to the shore. Copper Sulphate has entered a tidal pool of Strathcona Sound (Photo 5). No spill report had been submitted by Nanisivik in respect to the spill of Copper Sulphate. Enclosed analysis indicate that Total Suspended Solids (<3 mg/L vs 30 mg/L) is in compliance with the *Water Licence Discharge Criteria*. Further analysis have yet to be received by WRO, these chemical analysis results will be forwarded once received.

☐ **Tank Farm**: The tank farm retention berm is in good shape with most of the berm liner being covered with aggregate material. No accumulation of water or spilled fuel within the retention berm was observed. Considerable staining of waste oil or fuel oil was noted in the waste oil storage consolidation area (Photo 8). A open tray with waste oil was noted in the oil consolidation area, this oil tray should be emptied and covered to reduce the potential of oil spills associated with waste oil consolidation. No oil spill or remediation equipment could be located in the waste oil storage area. A fuel oil spill was observed under the pump house adjacent to the tank farm (Photo 11). Four drums were located beneath the pump house to capture spilled or leaking fuel oil. The use of drums to capture leaking fuel oil was a standard operating procedure. When inspected all of the four drums were at or near capacity. The WRO attempted to gain access to the pump house to locate the origin of the spill but the Nanisivik representative stated they did not have keys required to gain access to the building. Nanisivik representatives were told to address the fuel oil spill by the WRO's.

☐ **Ocean View Open Pit:** Since the last inspection dated May 20, 2002 the

drainage hose from Ocean View Open Pit to the underground mine workings has been removed. To date no spill report has been submitted with respect to the unauthorized discharge of Ocean View wastewater to the underground mine workings. Enclosed analysis of water from the Ocean View Open Pit taken at (SNP) 159-14 indicate that Total Suspended Solids (195 mg/L vs 30 mg/L), pH (3.46 vs 6 - 9.5) are not in compliance with *Water Licence Discharge Maximum Allowable Concentrations*.

☐ **East Adit Treatment Facility**: Signs of refurbishment at East Adit Treatment Facility were noted, installation of geotextile and placement of aggregate material to the EATF berm/access road. No signs of seepage through the Treatment berm or access road were observed at EATF, this may be due to the low level of water in the treatment pond at the time of inspection. The water level at East Adit Treatment Facility was below the level required to operate the discharge structure (Photo 14). Attached analysis of samples taken at EATF SNP 159-12 indicate that Total Suspended Solids (707 mg/L vs 30 mg/L), pH (4.63 vs 6.5 - 9.0) are not in compliance with *Water Licence Discharge Maximum Allowable Concentrations*.

☐ **West Open Pit**: The water level in WOP was fairly low. A variety of waste were located in West Open pit, these waste include mine tailings, and waste batteries. (Photo 17 & 18). Enclosed analysis of samples indicate that Total Suspended Solids (221 mg/L vs 30 mg/L) pH (7.37 vs 6-9.5) are not in compliance with *Water Licence Discharge Maximum Allowable Concentrations*.

☐ **Non-Compliance of Act or Licence**: Failure to provide spill reports for unauthorized discharge of Ocean View wastewater to mine underground workings, failure to provide spill reports for chemical spill at lay down area, spill report for fuel oil spill at tank farm pump house and no spill report provided for wind blown tailings on May 2002. Security bond (Part B section 2) $1.0 million outstanding due on July 31, 2002.

If there are any concerns or questions in regards to this inspection please contact me at (867) 975 4298 or bodykevichc@inac.gc.ca

Sincerely,

Constantine Bodykevich
Water Resources Officer (WRO)
INAC, Nunavut District

cc. -Nunavut Water Board, Gjoa Haven (Jim Wall)
-CG&T, Iqaluit (Doug Sitland)
-Baffin Health & Social Services, Iqaluit (Shannon Mackie)
- EC Environmental Protection, Yellowknife (Anne Wilson)
- INAC Water Management, Iqaluit (Michael Roy)

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INDUSTRIAL WATER USE INSPECTION REPORT

Date: September 18, 2002 **Company Rep.** (Name/Title): Bill Heath, General Manager

Licensee: Nanisivik Mine, CanZinco Ltd. **Licence No.:** NWB1NAN9702

WATER SUPPLY

Source(s) East Twin Lake **Quantity used:** 132,518 m3 **Meter Reading:** NI

Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

Intake Facilities: NI **Storage Structure:** NI **Treatment Systems:** NI **Recycling:** NI

Flow Meas. Device: NI **Conveyance Lines:** NI **Pumping Stations:** NI **Modifications:** NI

Comments: Water Intake Facility and storage facility not inspected due to road conditions and lack of keys for access to Water Storage and Treatment Facility.

WASTE DISPOSAL

Tailings: **Tailings Pond:** X **Natural Lake:** **Underground:**

Sewage: **Sewage Treatment System:** **Tailings Pond:** **Natural Water Body:** **Continuous Discharge:** X **Intermittent Discharge:**

Solid Waste: **Open Dump:** **Landfill:** X **Burn & Bury:** X **Underground:**

Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

Discharge Quality: NI	**Decant Structure:** A	**Dyke Inspections:** A
Conveyance Lines: U	**Pond Treatment:** Sampled	**Runoff Diversion:** A
Discharge Meas. Device: NI	**Dams, Dykes:** A	**Erosion:** A
Freeboard: A	**Seepages:** A	**Spills:** 02-260
Effluent Discharge Rate: A	**Samples Collected:** Dump, chemical spill, fuel oil spill Ocean View 159-14, creek by EATF, EATF159-12, West open pit	

Comments: Unauthorized disposal of waste(batteries and mine tailings) at West Open Pit. Samples taken from East Adit Treatment Facility and West Open Pit exceed Licence Discharge Criteria.

GENERAL CONDITIONS

Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

Ore & Waste Rock Stockpiles: A	**Records & Reporting:** U	**SNP:** A
Geotechnical Inspection: A	**Posting/Signage:** A	**Contingency Plan:** U
Restoration Activities: U	**New Construction:** NA	**Fuel Storage:** U
Mine Water Discharge: U	**Chemical Storage:** U	**Annual Report:** A

Comments: Two spills were observed during the inspection by the WRO's, one at the chemical storage area dealing with copper sulphate, and the other at the pump house adjacent to the tank farm concerning flue oil.

Violations of Act or Licence: Failure to provide spill reports for unauthorized discharge of Ocean View wastewater to underground mine workings, wind blown tailings. Non compliance of (Part B Item 2) of the Water Licence, provide $1.0 million security bond by July 31, 2002.

General Comments:

Constantine Bodykevich
Inspector's Name

Inspector's Signature

Nanisivik Inspection Pictures September 18, 2002

Photo #1 Tailings conveyance line flange, cause of spill 02-260.

Photo # 2 Mine tailings present at spill site 02-260.

Photo # 3 Asbestos pipe insulation at Nanisivik dump.

Photo # 4 Sample of dump seepage in creek behind dump, centre left of photo.

Photo # 5 Totes of Copper Sulphate at lay down area. Centre of photo, spill path of chemical down slope to shore.

Photo # 6 Copper Sulphate in tidal pool of Strathcona Sound.

Photo # 7 Lay down (chemical storage) area.

Photo # 8 Ground contaminated with waste oil at waste oil storage and consolidation area. Open oil tray in centre of photo.

Photo # 9 Twin Lake Creek by chem storage area.

Photo # 10 Tank farm pump house spill. Note hose draining floor to drums below.

Photo # 11 East Adit Treatment Facility treatment pond.

Photo # 12 East Adit Treatment Facility stabilization pond.

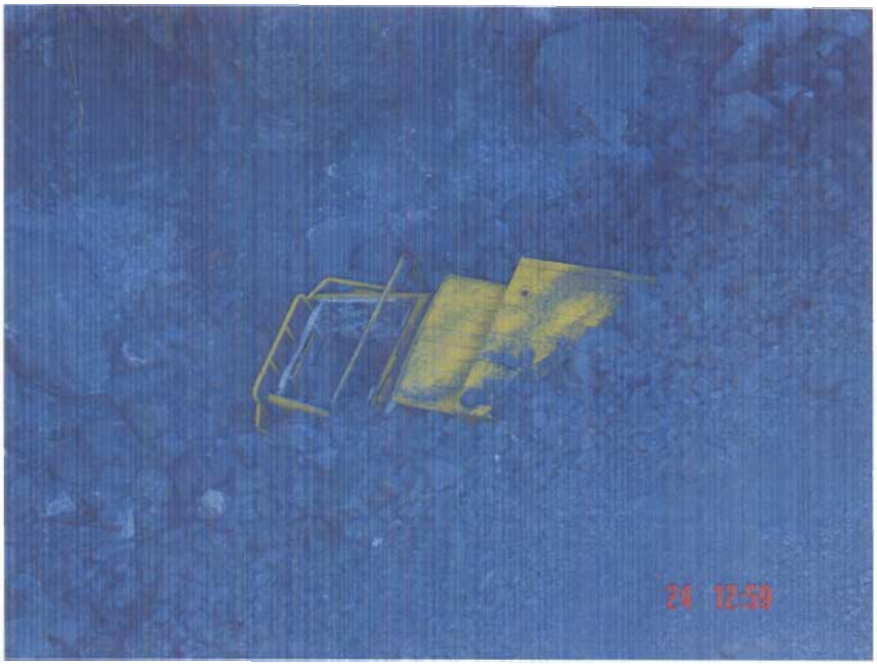

Photo # 13 East open pit, photo taken July 24, 2002.

Photo # 14 East open pit, photo taken September 18, 2002.

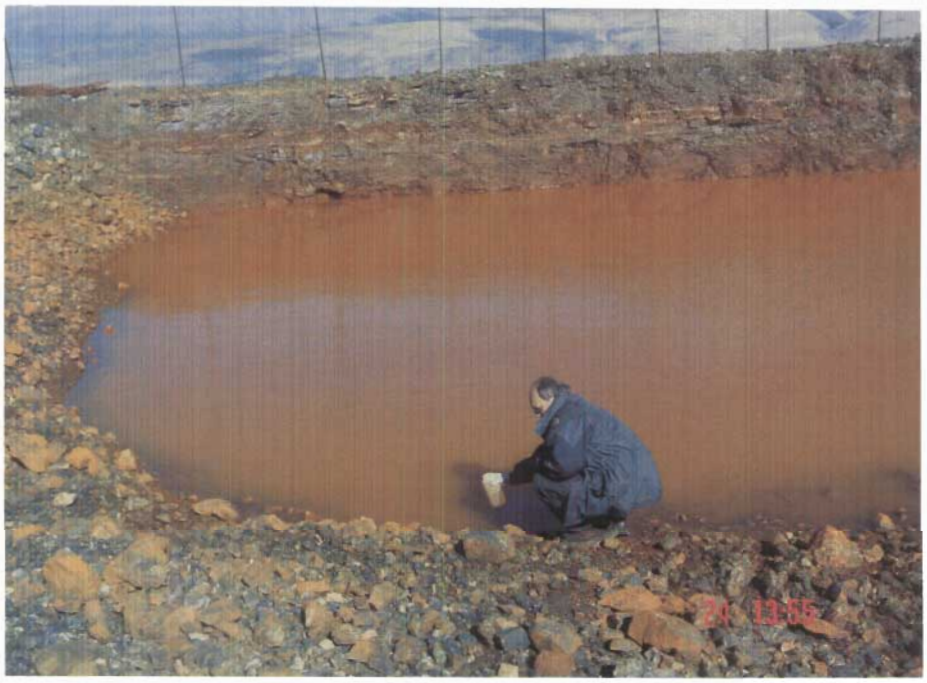

Photo # 15 Ocean View Open Pit, photo taken July 24, 2002.

Photo # 16 Ocean View Open Pit, photo taken September 18, 2002.

Photo # 17 West Open Pit, waste battery in Centre of photo.

Photo # 18 West Open Pit, mine tailings observed in photo Centre.

Photo # 19 Location of water sample in West Open Pit.