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DATE:	<u>Sept 4 01</u>	FROM:	<u>Anne Wilson</u>
TO:	<u>Louis Agzolinai</u> <u>Environmental Assessment officer</u>		<u>Environment Canada</u>
			<u>Yellowknife, NT</u>
PHONE:		PHONE:	<u>(867) 669-4735</u>
FAX:	<u>(867) 920-4761</u>	FAX:	<u>(867) 873-8185</u>

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Please contact (867) 669-4710 if this facsimile is not complete.



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Environment Canada  
Prairie and Northern Region  
#301 - 5204 - 50<sup>th</sup> Ave  
Yellowknife, NT X1A 1E2  
Ph. (867) 669-4700

August 31, 2001

Our File: 4780 006

Louis Azzolini  
Environmental Assessment Officer  
Mackenzie Valley Environmental Impact Review Board  
P.O. Box 938,  
Yellowknife, NT X1A 2N7

By Facsimile: (867) 920-4761

Re: **Technical Review of the Environmental Assessment Reports Submitted by Canadian Zinc Corporation:**

- Phase II Mineral Exploration Drilling Program (MV2001C0022, MVEIRB File EA01-003),
- Metallurgical Pilot Plant Program (MV2001L2-0003, MVEIRB File EA01-002)
- Underground Decline and Exploration Drilling (MV2001C0023, MVEIRB File EA01-002)

Environment Canada (EC) staff have reviewed the above mentioned Environmental Assessment Reports (EAR). Our contribution to the assessment of these reports is based primarily on Environment Canada's mandated responsibilities for the enforcement of the *Canadian Environmental Protection Act (CEPA)*, section 36 of the *Fisheries Act*, the *Canadian Wildlife Act*, and the *Migratory Birds Convention Act*. The following comments are offered for your consideration pursuant to Section 22 of the *Mackenzie Valley Resource Management Act*

**Comments:**

**Spills and Spill Contingency Plans**

Environment Canada has reviewed the June 2001 version of the Spill Contingency Plan / Safety and Procedures Manual, and finds it acceptable. Updates will be required subsequent to the regulatory stage, and minor technical comments noted will be provided at that time.

**Water Management**

**Monitoring:**

To ensure that aquatic systems are protected, monitoring of both the receiving environment and of any waters or wastewaters to be discharged will be needed. EC will be available to assist in design of the monitoring program in the regulatory stage.

CZN proposes acceptable monitoring for the minewater as far as frequency and parameters. It should be noted that Quality Assurance/Quality Control will be the responsibility of the company (e.g. field blanks, equipment blanks, replicates) as well as being done at the analytical laboratory.

**Canada**



### Minewater

The discharge of minewater will need to be subject to limits for both chemical and physical parameters, however this can be addressed in the regulatory process.

CZN states in their response to RWED's IR#2 and DIAND's IR#8 on Water Quality that minewater quality will be influenced by particulates, hydrocarbons, and nitrogen compounds. The IR response does not deal adequately with the issue of ammonia in the minewater, focusing instead on nitrogen loadings, and stating that settling in a sump will provide suitable treatment. This is highly unlikely to be adequate, and alternative treatment and/or handling needs to be planned for. Measurements of the 870m adit minewater indicate that metals may also be an issue (acknowledging that this is a "worst case" scenario being associated with the mineralized vein); although the decline will be in non-mineralized alkaline host rock. Metal parameters will need to be measured to ensure that they are not a concern.

CZN proposes to collect minewater in a sump adjacent to the portal entrance. EC concurs that the sump should be lined to prevent seepage.

### Drilling Waste Management

Drilling wastes from the underground decline would report to the portal sumps, and unless circulation is lost, return water would contribute solids, hydrocarbons, and residues from any drilling additives to the minewater collection system. This waste stream has not been identified in the EAR, but disposal should not pose any problems.

### Effluent Quality

The proponent has been asked to predict effluent quality (DIAND IR#4) but has deferred that as being beyond the scope of the current EA. EC disagrees with this position, as effluent quality will dictate disposal methods, as well as define risks associated with its release. However, in 1994 there was bench scale testing done of liquid and solid fractions, which provides a helpful indication of potential effluent quality. For the liquid effluent, metal parameters were generally all above values set for the protection of freshwater aquatic life, but were below limits contained in the Metal Mines Liquid Effluent Regulations. Once the pilot plant is operating, actual water quality measurements can be taken, and treatment can be identified, if needed. Effluent monitoring should include bioassay testing.

Limits can be set for effluent parameters at the regulatory stage, and will have to take into account receiving water quality, as well as any site sensitivities. It is recommended that all surface discharges of water and wastewater to the environment be regulated.

### Camp Wastewater Management

Sewage is currently disposed to a sump in the flood plain of Prairie Creek, where it exfiltrates through the gravel substrate and enters groundwater. EC has concerns that inappropriate or harmful substances may be included with sewage flows (such as cleansers, oils, solvents) whether inadvertently or routinely. Camp practices should include making employees aware that sewage and greywater are effectively discharged to the environment, and care must be taken to avoid groundwater contamination. EC encourages CZN to plan for eventual installation of a sewage treatment system, effecting at least primary treatment prior to disposal of effluent to the sump.

The bulk fuel storage area is bermed, and retains runoff and precipitation which must be pumped out to maintain capacity. Although no spills have been reported for this facility, there is considerable evidence of hydrocarbon staining on the berm walls, and pooled product along the edges and in the sump. There is concern that decant of the water, although done from the bottom of a sump, will result in transport of some amounts of diesel fuel into Harrison and Prairie Creeks. It is recommended that this be analyzed prior to decant, and that limits for hydrocarbons be imposed.

### Tailings Pond

Rip rap on the outside of the tailings pond has been eroded by the stream flow such that only the larger rocks remain where the higher stream velocities hit the dam (south-east portion). It should be checked whether additional armour materials are needed to maintain this structure in the long term. The area of erosion is noted in the Dec. 2000 BGC Engineering Inc. report, but remedial measures are not discussed (the need for re-assessment is noted). This will more be at issue at the feasibility stage of this project; at that time alternative tailings pond locations should be reviewed and evaluated.

### Tailings Management

Use of the thickener tanks to retain the tailings solids and process water is supported. This will provide CZN the opportunity to assess the logistics and practicality of using paste backfill for tailings disposal. Information can also be gained on water use, tailings quality and quantity, and process water quality. EC supports CZN's undertaking to test process water stored inside the mill, and treat if necessary, to ensure acceptable quality prior to discharge to the tailings pond. Because loadings, as well as concentrations, of metals entering the environment have to be considered, simply diluting the process water with the existing contents of the tailings pond to meet discharge criteria is not the best option.

### **Migratory Birds**

The Canadian Wildlife Service has not identified any concerns with migratory birds in connection with the proposed projects.

### **Cumulative Effects**

For this level of activity, the cumulative effects assessment provided in the EARs is reasonable.

### **Abandonment and Restoration (A&R)**

Discussion of abandonment and restoration measures is very limited, as would be expected for a program of this scale. The pre-existence of infrastructure is a factor which confuses the planning to some extent, as CZN's tenure involves what may be transient use of long-standing facilities. At a minimum, planning needs to cover those activities carried out by CZN and use of supporting facilities. For example, while CZN may not need to plan for removal of the full camp, they should be prepared to remediate the areas used for sewage and solid waste disposal. Their A&R plan should include disposal of the tailings solids in the thickener tank, and of the liquid fraction whether stored in the other thickener tank or in the tailings pond. It is acknowledged that CZN has effected improvements at the site in the areas of reagent storage and cleanup of waste oil and batteries, as well as general housekeeping. CZN would be responsible for final disposal of any new reagents and wastes associated with their projects, and that would need to be outlined in the A&R plan.

### **Conclusions**

For these Environmental Assessments, Environment Canada has conducted its review for the exploration-level of activity as proposed. The proponent has generally identified appropriate mitigation measures, and with the preceding points addressed, Environment Canada is of the opinion that the project impacts reviewed will be minimal; provided that CZN adopts the mitigation measures put forward in the Environmental Assessment Report and other related documents.

Please do not hesitate to contact me at (867) 669-4700 with any questions or comments regarding the foregoing.

Yours truly,

*M. A. Wilson*

Anne Wilson  
Water Pollution Specialist

cc: Steve Harbicht (Head, Assessment & Monitoring, EPB) \*  
Paul Latour (Canadian Wildlife Service, ECB)