



Public Registry
BGC ENGINEERING INC.
 AN APPLIED EARTH SCIENCES COMPANY

1605, 840 – 7 Avenue S.W., Calgary, Alberta, Canada. T2P 3G2
 Phone (403) 250-5185 Fax (403) 250-5330

PROJECT MEMORANDUM

To: Nunavut Water Board **Fax No.:** (867) 360-6369
Attention: Dionne Filiatrault **CC:** Carl McLean
 (867) 975-4286
From: Holger Hartmaier (Ext. 113) **Date:** April 16, 2003
Subject: Polaris Mine Landfill Operating Protocols
No. of Pages (including this page): 3 Pages **Project No:** 0308-001-05

INTERNAL	
PC	JP
LA	
OM	
TA	
BS	
ST	COPY
ED	
CEO	
BRD	
EXT.	

This memorandum summarizes our comments on the Polaris Mine Landfill Operating Protocols, received from Bruce Donald of Teck Cominco Ltd. on April 11, 2003.

General

The landfill operating protocols cover the placement of non-hazardous demolition debris and domestic wastes during the decommissioning and reclamation of the Polaris mine site. Details of the landfill cover designs and final closure cap will be submitted under separate, future submissions. These final details will be dependant on the final volume of the landfill and surface contouring required.

The protocols cover three landfills at the Polaris site:

- The Little Red Dog Quarry (LRD), which has been designated for the disposal of demolition debris, site services debris, equipment and other non-hazardous materials.
- The Operational Landfill, which is used for domestic waste and other industrial waste. No building debris is being placed into the Operational Landfill.
- The Reclamation Landfill, which is an area of subsidence over the underground mine workings and was used as part of the ongoing progressive reclamation, prior to mine closure. The depression was used to dispose of old vehicles, scrap shipping containers and other non-hazardous materials.

This communication is intended for the use of the above named recipient. Any unauthorized use, copying, review or disclosure of the contents by other than the recipient is prohibited.

BGC Project Memorandum

To: Dionne Filiatrault

From: Holger Hartmaier

Date: April 16, 2003

Subject: Polaris Mine Landfill Operating Protocols

Proj. No: 0308-001-05

The protocols include:

- Acceptable and prohibited waste types.
- Requirements to limit void space.
- Safe working practices.
- Documentation of waste types and volumes.
- Permanent closure requirements.
- Monitoring of landfill temperatures.
- Copies of landfill documentation forms

Comments

We understand that these protocols were adopted last year for the placement of waste into the landfills. The specific protocols meet or exceed the general requirements included in the NWB/DIAND joint decision dated April 15, 2002 and should prevent the formation of voids and excessive settlement or erosion of the landfill. For instance, large flat pieces such as building siding will be processed through a bailer to minimize void spaces between individual pieces. Also, individual pieces are being cut into small sizes to minimize void spaces. Material is mixed with rock and/or overburden in maximum 4 m thick lifts to fill void spaces and provide compaction. Water will be allowed to saturate the fill and freeze, thereby reducing the possibility of future settlement. Temperatures will be monitored with thermistors, which will be installed within the pipe casings that are currently being placed from the bottom of the quarry, through the fill. This will allow installation of the thermistors without having to drill through the landfill materials.

With regard to the Reclamation Landfill, there are several issues that should be addressed by Teck Cominco:

1. Provision of data to show that subsidence has stopped, or what the expected future (minimal) subsidence is expected to be. Also sufficient information to show that the underground workings associated with this subsidence zone have been adequately backfilled or supported to prevent long-term subsidence from re-developing after closure.
2. The cover for the Reclamation Landfill should be overbuilt to a level that would incorporate any expected future subsidence, so that a surface depression will not be formed.
3. The fact that all the disposal records for this landfill were lost as recently as the Mine Closure work in October 2002 is a serious concern. In addition to the signed statement from the Mill Superintendent, regarding the contents of the landfill, Teck Cominco should provide the Board with a copy of the other (LRD) landfill disposal records on an ongoing basis so that this information can be safely stored in an off-site location. Item 1.3.3 mentions that the records included a "spare" set of photographs. Does this mean that

This communication is intended for the use of the above named recipient. Any unauthorized use, copying, review or disclosure of the contents by other than the recipient is prohibited.

BGC Project Memorandum

To: Dionne Filiatrault

From: Holger Hartmaier

Date: April 16, 2003

Subject: Polaris Mine Landfill Operating Protocols

Proj. No: 0308-001-05

another set still exists? I would recommend that the photographs be done with a digital camera, so that transfer of this information can easily be made electronically or by making a CD-ROM copy that can be kept on file by the regulators.

With respect to the landfill documentation forms, the disposal location details should give fairly accurate coordinate (UTM) and elevation data for each of the cells containing the various items placed in the landfill. Copies of these records should be sent to NWB and DIAND for future reference. The requirement to provide the above details should be included as a condition of the new water licence, as these protocols were written for the contractor and do not address the specific reporting requirements required by the regulators.

Closure

BGC recommends that the landfill operating protocols, submitted by Teck Cominco on April 11, 2003, be approved by the Nunavut Water Board and DIAND, subject to receiving the additional information recommended above. We look forward to receiving the details of the final cap and cover design in the future, as the final contours of the landfill become established.

We trust that this memorandum will meet with your requirements at this time. Should you have any questions, or require additional information, please do not hesitate to contact me.

Yours truly,

BGC Engineering Inc.

Per



Holger Hartmaier, M.Eng., P.Eng.

Senior Geotechnical Engineer

HHH/sf