INFORMATION REQUEST RESPONSE

EA No: 0809-001 **Information Request No: Alternatives North #15**

Date Received:

February 28, 2011

Linkage to Other IRs

Review Board IR #11
YKDFN IR #03

Date of this Response:

May 31, 2011

Request

Preamble:
The DAR description of costs is limited to two tables with little supporting evidence or detail.

Question:
1. Please describe the difference between 'direct' and 'indirect' costs set out in Table 6.13.4.
2. Please describe how the contingency figures in Table 6.13.4 were calculated and any justification to support such calculations.
3. What assumptions and unit costs were used in preparing the calculations in Table 6.13.4 and 6.13.5? Please provide justification for same.

Reference to DAR (relevant DAR Sections):

S. 6.13.6 Financial Resource Requirement
Table 6.13.4
Table 6.13.5

Reference to the EA Terms of Reference

S.3.2.4 (14) Development Description

Summary

The cost estimates presented in the Developer's Assessment Report (DAR) follow standard definitions of direct estimate, indirect estimate and contingency. They involve several hundred inputs, which were selected and reviewed by professional engineers with extensive experience in northern mine closure.

Response 1

Direct costs in Table 6.13.4 are costs that are attributable to specific activities. Indirect costs are costs that are not attributable to specific activities, *i.e.* they are for items that are shared amongst activities. The estimate of costs for closure of the tailings ponds provides an example that might help to clarify these distinctions.

Estimates of direct costs were developed for each of the South, Central, North and Northwest Ponds. In each case, the direct cost estimates included the costs of regrading each pond's surface, placing and vegetating the various layers of soil cover, and constructing spillways. Each of those estimates was built up as a series of line items, one for each individual task. So, the estimates of direct costs for the soil cover included line items for placing geotextile, placing the coarse soil or rock layer, placing the fine-grained layer, seeding and fertilizing. Each line item included all relevant material costs, equipment costs, and labour costs.

Once all of the direct costs estimates were completed, it was possible to identify additional costs that would be incurred. These included costs for mobilization and demobilization of the equipment fleet, field office utilities and supplies, contractor profit and home office overhead, insurance, bonding, design engineering, site engineering, surveying, and quality assurance. These additional items are not attributable to particular remediation activities, but rather would be shared over the entire tailings closure portion of the Giant Mine Remediation Project (Remediation Project). Therefore they were all included in the indirect category.

These distinctions generally follow standard definitions, such as those provided by *AACE International Recommended Practice No. 10S-90 Cost Engineering Terminology* (Association for Advancement of Cost Engineering, 2004):

- Direct costs account for "... installed equipment, material and labour directly involved in the physical construction ... usually included are:
  a) Input materials
  b) Operating, supervision, and clerical payroll
  c) Fringe benefits
  d) Maintenance
  e) Utilities
  f) Catalysts, chemicals and operating supplies
  g) Miscellaneous (royalties, services, packaging, etc.)"

- Indirect costs are "... all costs which do not become a final part of the installation, but which are required for the orderly completion of the installation and may include, but are not limited to, field

administration, direct supervision, capital tools, start-up costs, contractor's fees, insurance, taxes, etc;"

The estimates in Table 6.13.4 were initially developed to support INAC's internal approval processes. They were updated and presented in the DAR as a basis for assessing the Remediation Project's economic effects. More detailed estimates are being developed as the engineering design progresses and will be used to support Treasury Board approvals and project procurement.

Response 2

The AACE practice guideline noted above defines contingency as:

- An amount added to an estimate to allow for items, conditions, or events for which the state, occurrence, and/or effect are uncertain and that experience shows will likely result, in aggregate, in additional cost. Typically estimated using statistical analysis or judgment based on past asset or project experience. Contingency usually excludes; 1) major scope changes such as changes in end product specification, capacities, building sizes, and location of the asset or project (see management reserve), 2) extraordinary events such as major strikes and natural disasters, 3) management reserves, and 4) escalation and currency effects. Some of the items, conditions, or events for which the state, occurrence, and/or effect is uncertain include, but are not limited to, planning and estimating errors and omissions, minor price fluctuations (other than general escalation), design developments and changes within the scope, and variations in market and environmental conditions. Contingency is generally included in most estimates, and is expected to be expended.

The contingency estimates shown in Table 6.13.4 were derived as percentages of the total direct and indirect costs. Most of the contingencies fell into the 15%-20% range that is typically assigned to estimates of this class. Lower percentages were used to estimate contingencies for:

- Care and Maintenance (2%) because a signed contract was in place; and
- Tailings and sludge ponds (10%) because the estimates were based on what were believed to be conservatively high estimates of geotextile, rock and soil quantities.

Higher percentages were used to estimate contingencies for:

- Baker Creek (25%) because of the high uncertainty in the design;
- Building, hazardous waste and debris disposal (50%) because of the wide variability in the building demolition estimates that had been gathered;
- Contaminated soils (30%) based on experience at other sites where actual volumes of contaminated soil have exceeded estimates; and
- Freeze system (24%) due to uncertainties in the design at the time the estimates were prepared.

Response 3

The cost estimates presented in Tables 6.13.4 and 6.13.5 are based on over 3,000 lines of spreadsheet calculations. They involve several hundred quantity, unit rate and productivity inputs. Engineering best

practices were used throughout and inputs were selected and reviewed by professional engineers with extensive experience in northern mine closure. In some cases vendors provided proprietary information.