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July 4, 2022

British Columbia Securities Commission
Alberta Securities Commission
Financial and Consumer Affairs Authority of Saskatchewan
Manitoba Securities Commission
Ontario Securities Commission
Autorité des marchés financiers
Financial and Consumer Services Commission, New Brunswick
Superintendent of Securities, Department of Justice and Public Safety, Prince Edward Island
Nova Scotia Securities Commission
Office of the Superintendent of Securities, Service NL
Northwest Territories Office of the Superintendent of Securities
Office of the Yukon Superintendent of Securities
Nunavut Securities Office

To the Above:

In response to a request for comments on the standards for disclosure NI 43-101 guidelines, please consider my entire submission in the following document.

These comments are solely on behalf of myself, a Canadian independent mining consultant over the last 20 years and a mine engineering QP for numerous 43-101 Technical Reports. I have provided comment mainly on items that I have had direct experience with, otherwise “no comment”.

Sincerely,

Ken Kuchling, P.Eng

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Consultation on National Instrument 43-101 Standards of Disclosure for Mineral Projects – Submission July 4, 2022

Submission delivered to the following addresses via email, in Microsoft Word format.

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A. Improvement and Modernization of NI 43-101

1. Do the disclosure requirements in the Form for a pre-mineral resource stage project provide information or context necessary to protect investors and fully inform investment decisions? Please explain.

Comment: *No comment on this issue.*

2. a) Is there an alternate way to present relevant technical information that would be easier, clearer, and more accessible for investors to use than the Form? For example, would it be better to provide the necessary information in a condensed format in other continuous disclosure documents, such as a news release, annual information form or annual management's discussion and analysis, or, when required, in a prospectus?

Comment: *I think the use of the Form is suitable for compiling and presenting the multi-faceted technical information in a consistent manner from project to project. The Technical Report is a standalone document that investors can choose whether to read or not. The issue with condensing information, sometimes that may omit critical information of interest to specific investors.*

It is my experience that in many cases the Form and Technical Report become the entirety of the documented pre-feasibility (or feasibility) study and hence the Technical Report becomes more detailed than necessary. Likely companies wish to save money by producing only one report document. Perhaps more focus is required on the document content with respect to what investors need (i.e. clarify and simplicity) versus what corporate management wants (i.e. a well documented study report).

b) If so, for which stages of mineral projects could this alternative be appropriate, and why?

Comment: *I am proposing no alternative. The Form already has multiple items, that may or may not be addressed, depending on the study stage. This approach is acceptable to me.*

3. a) Should we consider greater alignment of NI 43-101 disclosure requirements with the disclosure requirements in other influential mining jurisdictions?

Comment*: I am unsure which aspects would need alignment with others. Learning from others is always valuable but I don't think any other jurisdiction is better. Therefore, I don't see a need to align more with other jurisdictions.*

b) If so, which jurisdictions and which aspects of the disclosure requirements in those jurisdictions should be aligned, and why?

Comment: *No comment on this.*

4. Paragraph 4.2(5)(a) of NI 43-101 permits an issuer to delay up to 45 days the filing of a technical report to support the disclosure in circumstances outlined in paragraph 4.2(1)(j) of NI 43-101. Please explain whether this length of time is still necessary, or if we should consider reducing the 45-day period.

Comment: *I would consider reducing the time to 14 days, or even requiring the information disclosure (news release) and Technical Report to be issued simultaneously. This helps avoids significant information (or statements) being disclosed initially and then investors having to wait 45 days for the details behind those statements. Sometimes the Technical Report will shed light (positive or negative) on issues that were not mentioned or well explained in the original news release. Hence the delay should be a short as possible.*

Rapid filing also avoids situations where in the 45-day filing period, events occur such that the Technical Report supporting the news release is no longer entirely relevant or accurate anymore and hence there is a disconnect.

I don't see a major issue for the company or consultant if the filing period was reduced to zero days. In many cases many portions of the Technical Report are well advanced by the time the economics of the study are being completed.

5. a) Can the investor protection function of the current personal inspection requirement still be achieved through the application of innovative technologies without requiring the qualified person to conduct a physical visit to the project?

Comment: *This depends on which technical aspect is being considered. For example, the metallurgical engineering QP site visit is not as important as, say, independent geological sampling by the geological QP. In these cases, other QP's can use drone video, photographs, satellite images, etc. as a substitute for a site visit.*

b) If remote technologies are acceptable, what parameters need to be in place in order to maintain the integrity of the current personal inspection requirement?

Comment: *There should be confirmation in the certificate that a documented "virtual site visit" was held by all QP's if they did not physically go to site.*

B. Data Verification Disclosure Requirements

6. Is the current definition of data verification adequate, and are the disclosure requirements in section 3.2 of NI 43-101 sufficiently clear?

Comment: *No comment on this issue.*

7. How can we improve the disclosure of data verification procedures in Item 12 of the Form to allow the investing public to better understand how the qualified person ascertained that the data was suitable for use in the technical report?

Comment: *No comment on this issue.*

8. Given that the current personal inspection is integral to the data verification, should we consider integrating disclosure about the current personal inspection into Item 12 of the Form rather than Item 2(d) of the Form?

Comment: *No comment on this issue.*

C. Historical Estimate Disclosure Requirements

9. Is the current definition of historical estimate sufficiently clear? If not, how could we modify the definition?

Comment: *In my view there may be three types of historical resource estimates; (i) those prior to the introduction of 43-101; (ii) those done internally or by non-QP geologists; and (iii) those prepared by a QP for a different property owner. I think these resource estimates can be treated slightly differently in the cautionary language.*

Regarding (iii), It is not clear to me whether a QP still retains some responsibility for the technical work they did for a previous owner. If so, then I would see no issue in a company reporting the historical resource as being 43-101 compliant with the name of the QP at that time. The company could NOT use this historical resource in an economic analysis, but they should be able to clarify that the resource estimate was 43-101 complaint at the effective date of that prior report. Although economic parameters may have changed since

that effective date, "being compliant" does convey assurance that data verification and quality control review steps were undertaken at the time.

It would be beneficial to have 43-101 Technical Reports retain some degree of transferability as an exploration property changes ownership. QP's should be made aware of this and conduct their work with that in mind.

Regarding historical estimates of type (i) and (ii) described above, the current cautionary language is sufficient.

10. Do the disclosure requirements in section 2.4 of NI 43-101 sufficiently protect investors from misrepresentation of historical estimates? Please explain.

Comment: *See comments above.*

D. Preliminary Economic Assessments

11. Should we consider modifying the definition of preliminary economic assessment to enhance the study's precision? If so, how? For example, should we introduce disclosure requirements related to cost estimation parameters or the amount of engineering completed?

Comment: *I don't think the definition of the PEA needs to be made prescriptive. The Technical Report will describe how the study was done and what assumptions were made where data was lacking. Not all PEA's are done at the same stage of development and project knowledge, so it is difficult to apply specifications that will fit all. This issue is generally not the same for pre-feasibility or feasibility studies where data collection is at a higher level.*

12. Does the current cautionary statement disclosure required by subsection 2.3(3) of NI 43-101 adequately inform investors of the full extent of the risks associated with the disclosure of a preliminary economic assessment? Why or why not?

Comment: *The only suggested modification is that when a mine production plan is used in the economics of a PEA, that mine production plan also presents a summary of the annual tonnages by resource classification (measured, indicated, inferred) to illustrate when the mining schedule has greater uncertainty.*

A mineral resource could have a high proportion of inferred material, but if that material is at depth, the PEA production plan may actually use a lower proportion of inferred material and/or it might be later in the schedule. Investors should be informed of the

resource classification in each production year. With today's mining software, this is not an onerous undertaking.

13. Subparagraph 5.3(1)(c)(ii) of NI 43-101 triggers an independence requirement that may not apply to significant changes to preliminary economic assessments. Should we introduce a specific independence requirement for significant changes to preliminary economic assessments that is unrelated to changes to the mineral resource estimate? If so, what would be a suitable significance threshold?

Comment: *I would suggest that all changes to a PEA study, whether significant or not, should trigger an independent Technical Report to support that study. Modifications made to PEA's are not as frequent as modifications to resource estimates as new drilling information is acquired.*

14. Should we preclude the disclosure of preliminary economic assessments on a mineral project if current mineral reserves have been established?

Comment: *On the contrary, if the company is examining alternate development scenarios, then these should be disclosed to shareholders without negating an existing feasibility study. If such trade-off studies are only in the corporate data room, potential acquirers will have access to economic information that the retail shareholders are not privy to.*

Transparency is a good thing. Allowing companies to disclose other development options that they are considering is a good step forward in transparency and trust. However, they must be clear as to what is their base case development approach at that time, which could still be their feasibility study, even though they are examining other alternatives.

However I agree that the post-PFS PEA's must be for different development scenarios, not the same basis as the PFS or FS study and simply adding in inferred material. That should not be permitted.

15. Should NI 43-101 prohibit including by-products in cash flow models used for the economic analysis component of a preliminary economic assessment that have not been categorized as measured, indicated, or inferred mineral resources? Please explain.

Comment: *In order for the cashflow model to use revenue from by-product credits, then the grades of those by-products must in the mineral resource statement. If insufficient assaying has been done to estimate those by-products, they cannot be used in the cashflow economics. They should be permitted to be mentioned and even*

examined as an economic sensitivity to show their impact, but that case would not be the project base case.

E. Qualified Person Definition

16. Is there anything missing or unclear in the current qualified person definition? If so, please explain what changes could be made to enhance the definition.

Comment: *The main question that I have seen recently is whether the five years experience is total career or 5 years after professional registration. Clarification is required.*

Also for a mining QP (like myself), it is less relevant whether their experience is in mining gold, copper, lithium, etc since the nature of the technical role is mainly a material moving exercise. Open pit mine design versus underground mine design is more of a technical distinction for someone like me, rather than commodity.

However, resource estimation and metallurgical engineering do require specific commodity experience.

17. Should paragraph (a) of the qualified person definition be broadened beyond engineers and geoscientists to include other professional disciplines? If so, what disciplines should be included and why?

Comment: *In some instances, the discounted cashflow model presented in Item 22 ECONOMIC ANALYSIS may have been prepared by someone with a financial degree and/or finance background. These DCF models can be very complex, with detailed tax modelling, depreciation, and (sometimes) balance sheet and income statement calculations. Hence it can be difficult for a QP engineer or geologist to review and sign off on the DCF when they don't have a full understanding of tax laws in all jurisdictions.*

I would suggest for Item 22, a ***business, accounting, or management degree*** *with relevant experience be permitted to act as a QP for Item 22. Engineers must verify that the production schedule, costs, metallurgy, and other technical details have been correctly incorporated into the DCF model, but should not required to take QP responsibility for the detailed financial calculations, taxes and the overall cashflow model when prepared by others.*

One may sometimes see statements that the tax calculation is preliminary, especially when the cashflow model is prepared by a non-taxation expert QP engineer.

18. Should the test for independence in section 1.5 of NI 43-101 be clarified? If so, what clarification would be helpful?

Comment: *I would suggest replacing the wordy certificate pages at the end of the Technical Report with a checklist table format that proposes a series of very specific questions and requires specific responses. Currently QP certificates can vary somewhat from report to report, so a standardized tabular format may be simplest for everyone to understand. Multiple QP's can be listed in separate columns in the same table.*

The checklist can be sub-divided into three parts;
A - Qualifications (degree, prof registration, experience, commodity experience);
B - Independence (renumeration, employment, shares/options);
C - Technical Report responsibility (site visit, sections authored). All questions must be answered.

I may also suggest that for clarity, at the start of each chapter in the Report there is a brief introduction paragraph outlining who are the named QP's for that section.

19. Should directors and officers be disqualified from authoring any technical reports, even in circumstances where independence is not required?

Comment: *Yes, Directors and officers should be disqualified from authoring any part of the Technical Report. They generally report to no higher authority in the company so there is no restriction or check on the validity of what they may be disclosing. If independence is not required, the company should be able to rely on their own senior professional staff.*

F. Current Personal Inspections

20. Should we consider adopting a definition for a "current personal inspection"? If so, what elements are necessary or important to incorporate?

Comment: *I don't see a need for a further definition of the inspection.*

21. Should the qualified person accepting responsibility for the mineral resource estimate in a technical report be required to conduct a current personal inspection, regardless of whether another report author conducts a personal inspection? Why or why not?

Comment: *No comment on this issue.*

22. In a technical report for an advanced property, should each qualified person accepting responsibility for Items 15-18 (inclusive) of the Form be required to conduct a current personal inspection? Why or why not?

Comment: *For a PFS or FS level study I think main QP for Items 15-18 should have made a site inspection. It is important to understand the nature of the site and the local existing infrastructure to prepare a proper design and cost estimate. One QP making a site visit on behalf of the other QP's is not sufficient.*

For a PEA however*, which often is based on limited information and a limited project definition, I don't feel that each QP needs to make a site inspection. Using drones, Google Earth images, and photographs taken by other QPs can provide sufficient information on the project site conditions for this level of study.*

23. Do you have any concerns if we remove subsection 6.2(2) of NI 43-101? If so, please explain.

Comment: *I think subsection 6.2(2) is reasonable as is and should be retained.*

G. Exploration Information

24. Are the current requirements in section 3.3 of NI 43-101 sufficiently clear? If not, how could we improve them?

Comment: *No comment on this issue.*

H. Mineral Resource / Mineral Reserve Estimation

25. Should Item 14: Mineral Resource Estimates of the Form require specific disclosure of reasonable prospects for eventual economic extraction? Why or why not? If so, please explain the critical elements that are necessary to be disclosed.

Comment*: Currently one is required to provide the assumptions used to define reasonable prospects. When applying an open pit shell to constrain and report an open pit mineral resource, the strip ratio of the resulting shell should be noted in the footnotes, along with the input cost and slope parameters used.*

In the optimization step, one clearly presents the processing cost and G&A on a "per tonne ore" basis. To help assess the mining cost "per tonne ore" for the resource shell, one needs to know the strip ratio. This will also highlight if some shells result in an exceedingly high strip ratio in defining the resource.

26. a) Should the qualified person responsible for the mineral resource estimate be required to conduct data verification and accept responsibility for the information used to support the mineral resource estimate? Why or why not?

Comment: *No comment on this issue.*

b) Should the qualified person responsible for the mineral resource estimate be required to conduct data verification and accept responsibility for legacy data used to support the mineral resource estimate? Specifically, should this be required if the sampling, analytical, and QA/QC information is no longer available to the current operator. Why or why not?

Comment: *No comment on this issue.*

27. How can we enhance project specific risk disclosure for mining projects and estimation of mineral resources and mineral reserves?

Comment: *No comment on this issue.*

I. Environmental and Social Disclosure

28. Do you think the current environmental disclosure requirements under Items 4 and 20 of the Form are adequate to allow investors to make informed investment decisions? Why or why not?

Comment: *Yes, I think the current requirements in Item 4 and 20 are fine as they are written. This subject can be a broad area and each project is different, so one must maintain flexibility in content and not get very prescriptive.*

29. Do you think the current social disclosure requirements under Items 4 and 20 of the Form are adequate to allow investors to make informed investment decisions? Why or why not?

Comment: *Yes, I think the requirements are fine as they are written with some flexibility. Social issues are can (and will) change with time and can get outdated quickly. Hence, they are unlike technical information, which generally does not change rapidly.*

30. Should disclosure of community consultations be required in all stages of technical reports, including reports for early-stage exploration properties?

> **Comment:** *Yes, the author should simply provide an overview of the consultations that have been held, and with which groups, but no need to detail specific back and forth discussion in those discussions. Community consultations are an evolving process, difficult to pin down with precision at any point in time.*

J. Rights of Indigenous Peoples

31. What specific disclosures should be mandatory in a technical report in order for investors to fully understand and appreciate the risks and uncertainties that arise as a result of the rights of Indigenous Peoples with respect to a mineral project?

> **Comment:** *There should be a general overview of any indigenous communities that are involved and impacted as pertaining to traditional lands and owned lands. That level of overview should be sufficient for the investor to understand the situation.*

32. What specific disclosures should be mandatory in a technical report in order for investors to fully understand and appreciate all significant risks and uncertainties related to the relationship of the issuer with any Indigenous Peoples on whose traditional territory the mineral project lies?

> **Comment:** *Provide detailed maps showing project site, indigenous communities, and land agreement boundaries. If the indigenous groups have signed Impact Benefit Agreements or made cooperation agreements with neighboring mining companies on other properties, this should also be disclosed as best as possible, recognizing there may be confidentiality issues with those agreements.*

33. Should we require the qualified person or other expert to validate the issuer's disclosure of significant risks and uncertainties related to its existing relationship with Indigenous Peoples with respect to a project? If so, how can a qualified person or other expert independently verify this information? Please explain.

> **Comment:** *The QP can only verify that such conversations have been held but not confirm the nature or outcome from those discussions. Such discussions are ever evolving, and contentious issues are sometimes easily resolved with further information or discussion. Hence raising unnecessary red flags at any stage may be unwarranted.*

K. Capital and Operating Costs, Economic Analysis

34. Are the current disclosure requirements for capital and operating costs estimates in Item 21 of the Form adequate? Why or why not?

Comment: *Costs should always be presented as three components; Capital; Operating; Closure.*

Capital: I would suggest that capital costs be clearly presented for both initial capital expenditures and sustaining costs. If any salvage value is applied in the economics, the basis for this value must be clearly explained.

Operating: I would suggest that operating costs be presented, at a minimum, on a unit cost of material moved and unit cost per tonne of ore basis, as well as on a product cash cost basis annually. Life of mine total operating costs or annual operating cost totals would be optional to the author.

Closure and final reclamation cost estimates should be clearly presented and explained and not lumped in with capital costs.

35. Should the Form be more prescriptive with respect to the disclosure of the cost estimates, for example to require disclosure of the cost estimate classification system used, such as the classification system of the Association for the Advancement of Cost Engineering (AACE International)? Why or why not?

Comment: *I don't recommend specifying a cost classification system. The costs in a study are often developed by teams of different consulting firms, possibly based in different countries. The internal methodologies used by each firm may differ, so it may be difficult to ensure that all costs meet one specific cost classification system.*

36. Is the disclosure requirement for risks specific to the capital and operating cost assumptions adequate? If not, how could it be improved?

Comment: *I feel the current disclosure requirement is adequate.*

37. Are there better ways for Item 22 of the Form to require presentation of an economic analysis to facilitate this key requirement for the investing public? For example, should the Form require the disclosure of a range of standardized discount rates?

Comment: *It would be beneficial to specify some standard discount rates to be presented (e.g. 0%, 5%, 8%, 10%, 15%), albeit allowing the company and QP to select the Base Case discount rate of their choosing.*

Commodity prices used to define Mineral ***Resources*** *can be at the discretion of the QP and company.*

It would be good for industry working groups, like CIM, to publish quarterly standard commodity price assumptions that should be used by all QP's to define ***Reserve****s and project economics. Currently each company uses their own commodity price forecast (or simply copies others), so standardization may be of assistance by setting a ceiling price, where one can use that price or any price lower. These would be updated regularly.*

38. Are there other disclosure requirements in NI 43-101 or the Form that we should consider removing or modifying because they do not assist investors in making decisions or serve to protect the integrity of the mining capital markets in Canada?

Comment: *Currently the use of +/- sensitivity metal prices and +/- costs are inaccurate and misleading.*

Different metal prices or operating costs will change the cut-off grade and hence would affect the reserves, the mine plan and the economic model. It is dangerously misleading to assume that lowering the metal price only affects the revenue stream. It also affects the tonnage that is economically minable and the life of mine. The capital cost factor is the only sensitivity factor that can justifiable be modified in a typical +/- sensitivity analysis since it does not impact on the reserve tonnage and/or mining schedule.

Perhaps if one wishes to examine the sensitivity to metal price or operating cost, one should recalculate the cutoff grade and present the inpit resource tonnage at those cutoff grades. However, it may be an onerous task to even calculate reserves at different costs and prices given that dilution factors may change.

Other General Comments

Reporting Reserves – At an Operating Mine

Comment: *It is my impression that there is some confusion in how operating mines can report initial Mineral Reserves. If a small project is built from a PEA (or is an older operating mine), some feel they cannot report Mineral Reserves unless they undertake a feasibility study. However, they don't think the expenditure to complete such a study is warranted given that they are already operating. Hence, they cannot report any Mineral Reserves. Can there be a clarification as to what steps an operating mine must undertake to report reserves? They may already have a 43-101 compliant Mineral Resource estimate, but what steps are needed to convert those to Mineral Reserves at an operation?*

Operating Reserves vs Study Reserves

Comment: *Operating mines and projects still at the study stage are both able to report Mineral Reserves. However, in my view, they are not the same thing.*

An operating company will be generating revenue and should be recognized for that step. Hence does it make sense for an operating company to report Mineral Reserves while a exploration company that has simply completed a pre-feasibility study to also report Mineral Reserves?

One company has built a mine while the other may have spent a few months doing a paper study. One company's reserves will actually be mined in the foreseeable future while the other company's reserves may never see the light of day. Yet both companies are allowed to present the same Mineral Reserves.

As a mine operates, the remaining ore Reserves will deplete over time. An operating company can add to their Reserves by finding satellite ore bodies or converting inferred resource into a higher classification by infill drilling. The net of these adjustments will be reflected in the corporate Mineral Reserve Statement for all their operations.

The same company can also increase the corporate Mineral Reserves simply by completing a pre-feasibility or feasibility study on a new project somewhere. However, is this a true reflection of the Reserves upon which the company should be evaluated?
I would suggest that the three mineral reporting categories be used instead of two, described as follows:

*1 – **Mineral Resources (insitu):** This category is the same as the current Mineral Resources being reported according to NI43-101. It is based on reasonable prospects*

for economic extraction. Hence open pit resources would be reported within an optimized shell and underground reserves within approximate stope shapes. No external dilution or mining criteria would be applied, as is the current approach.

2 – Economic Resources: *This would be a new category that would simply be the outcome from a pre-feasibility or feasibility study, which is currently being labelled a "Mineral Reserve". This Economic Resource would incorporate mining criteria, Measured & Indicated classes only, a mine plan, and an economic analysis. The only differentiation from Mineral Reserves is because the mine is not yet operating.*

3 – Mineral Reserves: *This highest-level category could be reported only once a mine has reached commercial production. The Economic Resources would automatically convert to Mineral Reserves once commercial production is achieved. As the mine continues to operate, and as new ore sources are identified, the Mineral Reserves would increase / decrease. The Mineral Reserves would represent the remaining ore tonnage at operating mines and only that, and not reserves derived from "studies" that may never go anywhere.*

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