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September 26, 2016

Brent J. Fields, Secretary
Securities and Exchange Commission (SEC)
100 F Street, N.E.
Washington, D.C. 20549-1090

Re: Comment on Modernization of Property Disclosures for Mining Registrants (File No. S7-10-16)

Dear Mr. Fields:

Researchers at the Columbia Water Center and the Columbia Center on Sustainable Investment, both based at the Earth Institute at Columbia University, are engaged in a multi-year research project to understand mining-related environmental and water risks and their financial implications. Through this work we have come to conclude that far more environmental risk disclosure is needed in the global mining industry. The industry's exposure to water-related risks is only set to increase over time. We applaud the SEC's proposed rule on the modernization of property disclosures, particularly the requirement that each company submit a technical report summary that includes an assessment of environmental compliance for which a qualified person can be held accountable.

The mining industry faces increasing water-related risks. More frequent incidents of drought, leading to water scarcity, and flooding, leading to operation shutdowns, are the predicted results of climate change in many mining regions around the world. Water demands are increasing as miners turn to processing poorer grades of ore. Many countries where large mining operations take place are strengthening their environmental legislation and implementing stricter enforcement of environmental permits. Greater attention is being paid to the potential negative impacts on the communities that rely on the same water sources used and polluted by mining operations. Investors have a clear interest in understanding a mine's exposure to water risk and the reporting on this topic has thus far been insufficient.

General Comments

Despite improvements in water risk disclosure since the Securities Exchange Commission (SEC) released the interpretive guidance on climate change related disclosure in 2010, data on company water use and the financial impacts of water related

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risks remain infrequent in financial filings.¹ In 2013, the credit rating agency Moody's issued a report announcing that "we expect to place greater analytical emphasis on rated mining companies' environmental policies, risk-management practices and exposure to environmental event-risks in the future."² Early this year the World Economic Forum ranked water crises as the greatest risk to industry over the next ten years.³

There are lessons to be learned from the ways in which mining companies currently disclose their water risk. The World Resources Institute conducted a survey of voluntary water disclosure practices in the mining industry and concluded that one drawback of programs like the Global Reporting Initiative is that water usage data is typically reported at the aggregate corporate level.⁴ This data is thus relatively useless for an investor that wishes to make a risk assessment of a particular mining project. In addition, while many mining companies report on their exposure to water scarcity there is much less of an emphasis on reporting water *quality* data. Effluent quality and general waste management plans are "either not reported or not detailed enough to understand risk." The impact of the mines' water use on the surrounding community is "rarely reported."

These deficiencies can translate directly into an investor not fully appreciating the material risks associated with a mining operation. Water contamination risks, and conflicts with communities threatening company's social license to operate, are among the most the significant liabilities for a mining operation. Voluntary reporting schemes similarly often do not require companies to report on their exposure to natural disasters and extreme climate events at the mine-asset level.

There are many recent examples where water-related risk led to a significant increase of the cost of operations, a project slow down, or an all out cessation of mining activity.

- In Peru, Southern Copper Corporation's \$1.4-billion Tia Maria project has been repeatedly put on hold by protests over its threat to water supply
- Newmont Mining abandoned its Conga Mine project this spring, partially due to a lack of "social acceptance" and opposition to its plan to drain four mountain lakes.⁵

¹ Clearing the Waters: A Review of Corporate Water Risk Disclosure in SEC Filings, Ceres Report, <https://www.ceres.org/resources/reports/clearing-the-waters-a-review-of-corporate-water-risk-disclosure-in-sec-filings>.

² Moody's Investor Service, Global Mining Industry: Water Scarcity to Raise Capex and Operating Costs, Heighten Operational Risks, February 2013, <http://op.bna.com.s3.amazonaws.com/env.nsf/r%3FOpen%3D Davio-94wss7>.

³ Peter Brabeck-Letmathe, WEF 2016 Global Risk Report: water crises the highest concern for the next 10 years, Water Challenge, <https://www.water-challenge.com/posts/wef-2016-global-risk-report-water-crises>.

⁴ Amanda Sauer and Marta Miranda, Mine the Gap: Connecting Water Risks and Disclosure in the Mining Sector, WRI Working Paper, 2010, World Resources Institute, Washington, DC.

⁵ Brett Walton, Conga Mine in Peru Halted By Water Concerns, Civic Opposition, Circle of Blue,

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- Protests over proposed mines in drought-stricken South Africa⁶
- Protests over endangered water supplies have regularly brought operations at the Yanacocha mine in Peru to a halt for weeks at a time.⁷
- Barrick Gold's Pascua Lama mine was shut down in 2013 via an injunction by Chilean courts for an inadequate water management plan. An appeals court ruled that Barrick was potentially liable for \$10.2 million in fines for failure to comply with environmental regulations.⁸
- In 2014, a tailings dam collapsed at the Mount Polley mine in British Columbia, Canada, spilling 24 million cubic meters of mine waste into surrounding lakes and streams.⁹
- The tailings dam belonging to the iron ore mine, Samarco, collapsed in November 2015, spilling around 60 million cubic meters of mining waste which flowed more than 300 miles downstream to the Atlantic Ocean. Seventeen people were killed and hundreds were displaced.
- In 2012 Barrick temporarily halted operations at its Pierina mine in Peru following conflicts with community members demanding better access to water
- Last year the Caserones copper mine in northern Chile was fined \$11.9 million for several environmental violations including failure to prevent the contamination of groundwater.¹⁰

We applaud the SEC's recognition that non-technical socio-economic factors constitute material risks to investors in the mining industry. We support the requirement that these factors be discussed early in the project planning cycle and that a discussion of the potential conflict resulting from the mine's impact on communities be included in the initial assessment. The Munden Project analyzed 108 cases of conflict between communities and mines and found that environmental degradation is the most common cause of these disputes.¹¹ Researchers from Harvard's Kennedy School conducted more

<http://www.circleofblue.org/2016/south-america/conga-mine-peru-halted-water-concerns-civic-opposition/>.

⁶ Keith Schneider, As Drought Grips South Africa, A Conflict Over Water and Coal, Environment360, http://e360.yale.edu/feature/south_africa_drought_coal_renewables/2994/.

⁷ Manuel Vigo, Peru: Cajamarca residents plan protests against Yanacocha, Peru This Week, <http://www.peruthisweek.com/news-3536-peru-cajamarca-residents-plan-protests-against-yanacocha/>.

⁸ Madison Condon, Shareholder Litigation Puts Spotlight on Environmental Risk, State of the Planet, <http://blogs.ei.columbia.edu/2016/07/11/shareholder-litigation-puts-a-spotlight-on-environmental-risk>.

⁹ Dirk Meissner, Mount Polley mine disaster hits 2-year mark, fallout still causes divisions, CBC News, <http://www.cbc.ca/news/canada/british-columbia/mount-polley-anniversary-1.3706850>.

¹⁰ Reuters, Caserones mine in Chile fined for environmental failures, Mining Weekly, <http://www.miningweekly.com/article/caserones-mine-in-chile-fined-for-environmental-failures-2015-03-18>

¹¹ The Munden Project, <http://www.tmpsyste.ms.net/mining>.

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than 40 interviews with extractive industry executives, insurers, industry associations and others on the financial impact of social conflict.¹² From these interviews they concluded that pollution was the most common cause of conflict between a mine and the surrounding community. For large-scale mines, production delays from protests result in roughly \$20 million in losses per week. A 2013 paper from the Wharton School analyzed the relationship between company-stakeholder conflict as reported in the media and the market valuation of publicly traded gold mining firms.¹³ The results show that investors are willing to pay significantly more when it is unlikely that a mine will encounter development obstacles due to lack of stakeholder cooperation or uncertain political support.

Specific Requests for Comment

22. Should we, as proposed, require a registrant to obtain a technical report summary from the qualified person, which identifies and summarizes the information reviewed and conclusions reached by the qualified person about the registrant's exploration results, mineral resources or mineral reserves, before it can disclose those results, resources or reserves in SEC filings? Why or why not? Should we instead require a registrant to obtain an unabridged technical report, rather than a technical report summary, before it can disclose exploration results, mineral resources or mineral reserves in SEC filings? Should we require the technical report summary to be dated and signed, as proposed? Why or why not?

We believe that both a technical report summary and a technical report should be required before a registrant can disclose resources and reserves in SEC filings. While companies may complain of the reporting burden from disclosing the full report, the information contained in the full report necessarily must be produced to make the summary. Investors uninterested in, or overwhelmed by, the full report can still turn to the summary for insight into potential risks facing the company.

The qualified person should be required to sign and date the technical report and its summary. Investors should be able to rely upon the information contained in SEC disclosures. In the United States, Kuipers and Maest (2006) found that a large majority of environmental impact statements that had been prepared during the approval stage of a mine predicted compliance with water quality standards that the mine, in operation, was not able to meet.¹⁴ These technical report summaries will similarly require mining

¹² Rachel Davis and Daniel Franks, Costs of Company-Community Conflict in the Extractive Sector, 2014.

¹³ Witold Henisz, Sinziana Dorobantu, Lite Nartey, Spinning gold: The financial returns to stakeholder engagement, Strategic Management Journal, 2013.

¹⁴ Jim Kuipers and Ann Maest, Comparison of Predicted and Actual Water Quality at Hardrock Mines, 2006,

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companies to produce predictions of their environmental impacts. The expert liability incurred under Section 11 of the Securities Act for untrue statements of material fact or for an omission of a material fact will help to ensure that the predictions made regarding environmental impacts are accurately made.

Initial Assessment

70. Should we require that for purposes of the initial assessment a qualified person must provide at least a qualitative assessment of all relevant modifying factors to establish economic potential and justify why he or she believes that all issues can be resolved with further exploration and analysis, as proposed? Are the modifying factors provided as examples in the proposed instruction and table the most appropriate factors to be included? Are there other factors that should be specified in the instruction and table in lieu of or in addition to the mentioned factors? Would presentation of the modifying factors in a table benefit investors, registrants and qualified persons?

We agree that an initial assessment of mined material would not be complete without a thorough evaluation of environmental issues that could pose obstacles to the material's extraction. This assessment should include a description of the mine's water requirements and from what sources these requirements will be satisfied. Also necessary is a consideration of how water availability is predicted to change in the future, whether from increased incidents of drought, competing demands from nearby agricultural users, or groundwater drawdowns.

The assessment should demonstrate that the mining company has investigated the environmental compliance requirements of the host jurisdiction and what agencies are in charge of permitting and environmental assessment approval. An initial assessment should include any project-specific anticipated challenges to meeting the compliance requirements. The assessment should include a discussion, if applicable, of how local laws and regulations might reasonably be predicted to change in the lifetime of the mine's operation and closure period. In Chile, for example, new regulations are being reviewed that would require large mining projects to desalinate water from the Pacific Ocean and pump it 10,000 feet up to the Atacama mining region. The implementation of such regulations would significantly increase the capital and operational expenditures required by mining companies in this region.

We strongly agree that the initial assessment of a project should include an outline of requirements for baseline studies. Baseline studies are necessary in order to generate data that can later be used to monitor and compare various environmental factors, and create an understanding of how a mine impacts these factors through its operation and

https://www.earthworksaction.org/library/detail/comparison_of_predicted_and_actual_water_quality_at_hardrock_mines/#.V-inyZMrLdR.

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closure phases. In areas that have a history of conflict around the mining industry, these studies are necessary for creating a culture of trust. A company cannot demonstrate its minimal impact on soil, water, biodiversity, and other factors, without pre-mine development data.

It is also appropriate to include an initial qualitative discussion of socio-economic factors such as: proximity and impact to culturally sensitive areas; whether there has been a past history of conflict between mining and local communities; how the livelihoods of neighboring communities might be impacted by the mining project. Loss of the social license to operate is a significant risk to a mining project and can occur early in the stages of the project lifecycle.

Qualified Person and Responsibility for Disclosure

We support the requirement that a qualified person prepare the technical report summary and are in agreement that this person should be liable as an expert under Section 11 of the Securities Act for misstatements made in the technical report. We wish to point out that the qualified individual must be in a position to evaluate a project's exposure to legal and socio-economic risks as well. This person must therefore be familiar with the regulatory regime of the host jurisdiction, understand a region's past experience with the mining industry, and be able to make predictions about the societal reactions to a mining operation.

Feasibility Study

86. Should we require qualified persons to use a feasibility study in situations where the risk is high, as proposed? Why or why not? Are there other conditions, in addition to or in lieu of high risk situations, where we should require a feasibility study in support of mineral reserve disclosure?

We support the requirement of a feasibility study for high risk situations, where a proposed mining project has unique or particularly challenging conditions. Barrick's halted Pascua Lama project is located in the Andes at an altitude of 4500 meters in close proximity to fragile and environmentally protected glaciers. This May, Barrick was subject to a shareholder class action for alleged misstatements regarding its ability to comply with environmental regulations in this sensitive environment. The violation of these regulations resulted in the stoppage of the project and Barrick received the largest environmental fine in Chilean history. Barrick settled the lawsuit for \$140 million. We speculate that perhaps requiring the disclosure of a detailed feasibility study earlier in the process could have helped prevent avoid both the environmental violations and the shareholder action.

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88. Should we adopt the proposed instructions for the use of a feasibility study to support the determination and disclosure of mineral reserves? Are there any instructions that we should provide instead of or in addition to the proposed instructions for such use of a feasibility study? Are there any instructions that we should exclude?

We agree with the SEC's reasoning that "requiring a well-defined and specific technical study to support disclosure of mineral resources would provide greater assurance to investors that mineral resource disclosure is reliable." As countless examples illustrate, the existence of mineral resources and the technical capability to extract them, are necessary but not sufficient conditions to a project's success. A technical report summary can assure an investor that the company has insured there will be sufficient water supply throughout the mine's lifecycle. We applaud the requirement to report on the "source of all required utilities (e.g., power and water) for development and production." The technical report additionally forces the company to address and consider community relations at an early stage and can serve to prevent greater social conflict once the project is underway.

We agree with the proposed rules that the feasibility study should include the results of both environmental impact assessments and baseline studies. Investors have a clear interest in understanding a project's impact on the environment and a company's exposure to environmental liabilities. New environmental legislation can apply retroactively and impose pollution penalties, or a project's impact on water quality can result in a revocation of a company's social license to operate.

In addition to the proposed instructions for the feasibility study we think the SEC should require specific disclosure on:

- Design criteria for tailing dams, specifically the risk of failure
- Contingency and emergency plans for tailings dam failures
- Drought management plans
- Remediation plans

Companies should disclose their plans for tailings disposal. Mine wastes are typically stored behind tailings dams. These dams tend to fail at a much higher rate than water dams, and can have catastrophic impacts on water resources and people. While these are low probability events, they can lead to significant economic impact that should be considered a part of hydro-economic analysis of mines in a region. In particular, we advocate that the company should be required to disclose how their infrastructure has been designed to withstand a 100-year flood event, or to disclose what risk level their waste management infrastructure has been designed for, i.e., an 80 year flood event versus a 100 year event. Companies should further be required to explain their basis for

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this design, i.e. the period of record of precipitation data used to generate the 100-year event.

We additionally agree that the feasibility study should document and disclose the interests of the range of stakeholders affected by the project, including NGOs and community members. We support the requirement that the qualified person must submit her opinion on the company's plans to address potential conflicts related to social or community factors.

Requirements for Summary Disclosure

90. Should we require summary disclosure, as proposed, for all registrants with material mining operations? Why or why not? Should such summary disclosure require maps showing the locations of all mining properties, a presentation of the proposed information about the 20 properties with the largest asset values, and a summary of all mineral resources and reserves at the end of the most recently completed fiscal year, as proposed?

Summary disclosure requiring maps of all of company's mines will enable investors to better understand both a company's exposure to environmental risk across all its assets, and the investor's exposure to risk across her entire portfolio. It will further enable the use of tools that allow investors to investigate how a particular asset will be affected by climate change scenarios. Bloomberg's Water Risk Valuation Tool, for example, maps mine assets against geographic water scarcity indicators.¹⁵

110. Are there other items for which it would be appropriate to require the qualified person to include a discussion in the technical report summary?

We suggest that the technical report summary disclose information on three particular areas of water-related risk: water scarcity, tailings dam operation and extreme rainfall, and environmental performance.

1. Water Scarcity

- Source of water, percent of water reused, cost of water supply for the system, total annual water used
- Has a drought severity-duration-frequency analysis been done?

¹⁵ Bloomberg, "Water Risk Valuation Tool: Integrating Natural Capital Limits Into Financial Analysis of Mining Stocks," 2015. Available at: http://www.bloomberg.com/bcause/content/uploads/sites/6/2015/09/Bloomberg_WRVT_09162015_WEB.pdf.

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- If yes, what was the period of record used for this analysis? Were any attempts made to extend the climate record through proxies or using stochastic models or using climate change models for this analysis?
- What was the recurrence frequency, duration and severity of the worst drought identified and designed for using this analysis?
- What is the estimated cost of production stoppages or water acquisition if such a drought were to occur?
- What is the likelihood that subsequent to such a drought, it will be difficult to access the water sources previously used, and the cost of replacement water?

2. Tailing Dams and Extreme Rainfall

- What is the height, type and construction material of the tailings dam?
- What is the designed storage volume for rainfall induced by extreme rainfall, and the associated estimate of the return period of this event?
- What was the period of record for the climate data used for this analysis?
- What was the design level for the dam spillway?
- What is the estimate of the potential damage that would be caused downstream due to a failure of the tailings dam?
- What is the estimated probability of geotechnical failure of the dam, and the dominant failure mechanisms that was identified?
- What are the financial contingency plans, including insurance limits associated with the dam failure?

3. Environmental Performance

- Are wastewater discharges permitted, and specify specific discharge and water quality targets?
- Does the mine monitor ambient surface and groundwater quality in the vicinity of the mine?
- If yes, is the data available for public review, or is submitted to a state regulator?
- What are the estimated water and soil remediation costs at the mine at closure?
- What is the ratio of the current financial assurance or remediation bond relative to these costs?
- What is the most significant accidental discharge that has happened or can be expected from the mine?
- What would be the anticipated clean up costs of such a discharge?
- What is the likelihood of the suspension of mining due to the loss of a discharge permit after such an incident?

114. Should we preclude a qualified person from disclaiming responsibility if he or she relies on a report, opinion, or statement of another expert who is not a qualified person in preparing the technical report summary, as proposed? Why or why not?

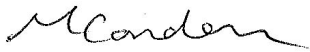
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Yes, the SEC should preclude a qualified person from disclaiming responsibility through reliance on another source of information. Expert liability exists for financial risk in order to provide reliable and accurate information that can be relied upon by an investor. Allowing a reliance defense significantly weakens this assurance.

We commend the SEC on taking these steps to modernize the reporting rules. These proposed changes should be adopted to support investors in understanding the growing environmental risks in our changing world.

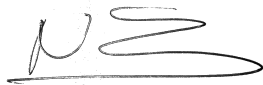
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