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November 4, 2019

Ms. Paula Wilson
Idaho Department of Environmental Quality
1410 N. Hilton
Boise, ID 83706

Submitted via email: paula.wilson@deq.idaho.gov

Re: DEQ Negotiated Rulemaking – Ore Processing by Cyanidation
Docket No. 58-0113-1901 (Negotiated Rule Draft No. 2)

Dear Ms. Wilson:

The Idaho Mining Association (IMA) appreciates the opportunity to provide the following comments to the subject draft rule.

Since 1903, IMA has represented miners and mining companies engaged in mineral exploration, mineral developments, and land reclamation throughout the state of Idaho. Our membership also consists of companies and industries that provide services to the mining industry within the state. IMA and its members are committed to responsible and sustainable mineral withdrawal in Idaho and our member companies continue to utilize and explore more innovative and science backed methods to extract minerals needed for everyday life while protecting and preserving the environment in Idaho for future generations.

IMA appreciates IDEQ's willingness to generally rely upon Nevada regulations in setting forth minimum design criteria for cyanidation facilities. We also support IDEQ's approach of setting forth different minimum design criteria for various features of a cyanidation facility. As set forth more specifically below, IMA is concerned about certain aspects of the draft rule that depart from Nevada minimum design criteria. We are also concerned about the heightened water quality concepts that are set forth in the subject draft. Our specific comments on these issues are set forth below.

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A. Minimum Design Criteria.

1) Section 200.04.a.v.

The draft of Section 200.04.a.v. states, “Wildlife shall be positively excluded from contact with process waters having a WAD cyanide concentration in liquid fraction exceeding 30 mg/L. Additional measures may be required if wildlife mortality is observed.”

IMA requests that IDEQ replace “30 mg/L” with “50 mg/L” and clarify/define “positively excluded from contact.”

Section 200 of the Rule is intended to establish minimum design standards, and the International Cyanide Management Institute (ICMI) has set 50 mg/L WAD as that minimum in their Cyanide Code, based on the collective international experience of cyanidation facility operators. Therefore, IMA believes the triggers for taking additional measures to protect wildlife should be 50 mg/L. While it is acknowledged that 50 mg/L WAD CN may impact certain species and in certain circumstances, for many combinations of species present and facility configuration, the 50 mg/L standard should generally be protective. The sentence (“Additional measures...observed.”) that follows the draft standard allows for additional restrictions based on observation. We further note that Nevada regulations (NAC 445A) require that that facilities be protective of wildlife without specifying a particular maximum CN concentration for that purpose. Under Nevada regulations, it remains the operator’s obligation to take measures to protect birds and terrestrial wildlife.

2) Section 200.04.b.iii (Subbase)

Section 200.04 b. iii. now requires a “prepared subbase” of 36” compacted clay, installed to stringent and prescriptive specifications (95% Proctor, +/- 2% of optimum moisture, 6x6” lifts, minus ¾” particle size, and 10⁻⁶ cm/s permeability), under all liners.¹

IMA believes IDEQ should strike this entire subsection and add appropriate text to each individual facility type in sections 201 through 204, aligning with equivalent sections of Nevada rules.

¹ The draft contains a provision for “or comparable layer approved by the Department” but it is unclear what material(s) or layer thickness might be considered “comparable” and thus subject to approval under this section, or what goals the “subbase” is actually intended to accomplish. This implies that any substitute materials, means, or methods, no matter how modest of a change, could be subject to the additional documentation and review of Section 205 (alternative design procedure), while still lacking an obvious path to approval.

Rationale:

36” of compacted clay does not appear to be a “subbase” in the common usage of the term; such thickness is unprecedented as a subbase in practice. Rather, it is in effect a liner in and of itself. Since a synthetic liner is already required in the Rule, such an approach far exceeds any workable “minimum design standard.” Moreover, such a subbase is technically and economically infeasible at many or most prospective metal mine sites in Idaho, and is not the standard of practice nor representative of a “minimum” design standard in Nevada, Arizona, or Alaska – all of which have robust and protective regulations governing the types of facilities that would fall under the Idaho Cyanidation rule, and all of which have active and proposed facilities under their present permit regime. We understand that the 36” of clay requirement appears in Oregon’s standards; however, we are not aware of any cyanide facilities that have been permitted in Oregon. Moreover, we are unaware of any tailings facilities in any state where such a subbase combined with a geosynthetic liner is required.

Supporting information – subbase versus clay liner

In heavy earthworks projects, “subbase” generally refers to a layer of material placed prior to overlying materials, for the purpose of protecting the overlying materials. When the overlying material is a liner, the subbase serves three purposes:

1. Prevent damage to the overlying liner from differential settlement of the subgrade or subbase.
2. Prevent puncture of the overlying synthetic liner from large, angular protrusions in the subgrade or subbase.
3. Provide a measure to prevent piping of contained material into the subgrade (i.e., piping of fine-grained tailings through a leak into a permeable subgrade). A sand layer would accomplish this purpose by acting as a filter.

IDEQ’s proposed prescriptive specifications for “subbase” do not positively ensure that the resulting “subbase” will be suitable for these purposes; rather, the prescriptive specifications are typical of minimum standards for a compacted clay liner used to minimize migration of liquids and are furthermore infeasible at most sites. Specifically:

1. Compaction to 95% Proctor may not be necessary for all subbase materials and potential loading conditions.
2. The requirement for 6-inch thick lifts is overly prescriptive; if the goal is a particular level of compaction or permeability the lift height sufficient to effectively and consistently provide it should be identified and used. This could be as much as 9 to 12 inches, or as little as 4 inches, depending on the material properties and construction methods.

3. The 10^{-6} cm/s permeability specification implies use of low-permeability clay. Use of clay, or achieving such low permeability, is unnecessary to achieve the goals outlined above, without precedent in installations with geomembrane liners, and clay capable of meeting this specification is not widely available in Idaho.
4. A thickness of 36 inches is not necessary for a functional subbase; this thickness of clay is in fact a clay liner and redundant with other liner materials required elsewhere in the rule.
5. Even if clay capable of otherwise meeting the specifications is available, emplacing a 36" thick clay layer in thin, horizontal lifts is only feasible on relatively flat terrain. Installation of the described clay liner on slopes, particularly steeper than 3 horizontal to 1 vertical, is not feasible. Clay lining on steep slopes would require a wider section sufficient to operate equipment and would promote unsafe working conditions during final dressing of the slope to achieve a smooth surface for geosynthetic liner placement.
6. The maximum particle size of $\frac{3}{4}$ " is overly prescriptive in that many geosynthetics can be safely deployed directly over subgrades with larger particle size and/or utilize a protective geotextile. There does not appear to be a need for this specification on the lower lifts of multiple-lift emplacement of material since only the final lift will be in direct contact with the liner – and then only if geotextile is not present. Screening oversize rock from clay borrow material to this specification, particularly at the near-optimum moisture content required by the specification, is nearly impossible, which would further limit the number of sites where such a "subbase" could be built and therefore, the ability to feasibly permit sites in Idaho.
7. As clay is particularly difficult to moisture-condition in the field, borrow sources would be required to have an in-situ moisture content within 2% of optimum. Along with other specifications for particle size and permeability, this makes obtaining suitable clay infeasible.

Supporting information – Relevant or Analogous Nevada Regulations

Nevada regulations relevant or analogous to the proposed IDAPA subbase requirement are separated by facility type or design feature as follows:

Leach Pads

For leach pads, NAC 445A.434, subpart 2 requires that the containment system provide performance of a synthetic liner above 12 inches of 10^{-6} cm/s soil, unless leak detection is provided, in which case the permeability specification is 10^{-5} cm/s:

2. *Containment of process fluids must consist of an engineered liner system which provides containment equal to or greater than that provided by a synthetic liner placed on top of a prepared subbase of 12 inches of native, imported or amended soil, which has a maximum recompacted in place coefficient of permeability:*

(a) Of 1×10^{-6} cm/sec; or

(b) Of 1×10^{-5} cm/sec when combined with a system for the detection of leaks which must be located at least beneath those portions of the liner which have the greater potential for leakage. The potential for leakage must be determined by:

(1) The extent of the hydraulic head exerted on a portion of the liner; and

(2) The period of time a portion of the liner is exposed to process fluids.

Nevada commonly approves the use of geosynthetic clay liner (GCL) as equivalent to 12” of 10^{-6} cm/s material beneath leach pad liners.

Ponds, Vats, and Tanks

For ponds containing process water (NAC 445A.435), Nevada requires primary synthetic liner, secondary liner, and leak detection, but does not have any provisions related to subbase and subgrade preparation and on the nature of the secondary liner (i.e., whether it must be synthetic). NAC 445A.436 (vats, tanks, and other containers) similarly does not address the need for subbase.

Tailings Facilities

As with leach pads in NAC 445A.434, the requirements in NAC 445A.437 (tailings impoundments) amount to a subgrade preparation step, as in practice the 12 inches of required material may be the native foundation material that has been ripped and recompacted – notably without a lift thickness specification. While NAC 445A is general in nature as opposed to strictly devoted to cyanidation facilities, it is also notable that NAC 445A.437 **does not explicitly require geosynthetic liner for tailings impoundments**, and allows for geologic containment in lieu of the 12” of 10^{-6} cm/s material:

1. A tailings impoundment must utilize a system of containment equivalent to:

(a) Twelve inches of recompacted native, imported, or amended soils which have an in place recompacted coefficient of permeability of no more than 1×10^{-6} cm/sec; or

(b) Competent bedrock or other geologic formations underlying the site which has been demonstrated to provide a degree of containment equivalent to paragraph (a).

Subsection 2 of 445A.437 allows the NDEP to require an alternate level of containment for a variety of factors; in actual practice cyanide tailings facilities in Nevada typically utilize a low-permeability geosynthetic membrane liner over either GCL or compacted soil. Flotation and

placer facility containment is dependent on the nature of the stored material; no minimum standards are listed (NAC 445A.428).

Liners

NAC 445A.438 (somewhat analogous to elements of draft section 200) outlines general specifications for liners when they are used but does not require liner for particular facilities. Subsection 1 relates to performance requirements soil liners not subbase, and as noted above is overly prescriptive in its own right, considering that if it is possible to achieve other specified features of the final liner then the lift thickness is not relevant to ultimate performance:

1. When placed on native materials, soil liners must have a minimum thickness of 12 inches and be compacted in lifts which are no more than 6 inches thick. Except when used in tailings impoundments, a soil liner must have a permeability of not more than that exhibited by 12 inches of 1×10^{-7} cm/sec material.

2. Synthetic liners must be rated as having a resistance to the passage of process fluids equal to a coefficient of permeability of 1×10^{-11} cm/sec.

3) Section 500.02 (Final Construction Report)

Section 500.02 states that “Department review and approval of the final construction report, including record plans and specifications, results of quality control and quality assurance testing, must be obtained before operation of the facility.” Earlier (existing) text of 500.02 requires submittal of record plans and specifications within 30 days of “each critical phase” but also states that submittals must include a “final construction report.”

IMA recommends that all text relating to Department approval to operate already-constructed facilities be eliminated as having an indefinite time period for Department approval of cyanidation facility startup could place a significant financial burden on operators, employees, and related industries in the event of a long delay. Nevada has no such requirement for affirmative approval; NAC 445A.426 requires the operator issue a notice of intent 30 days prior to introduction of process solutions into a new or materially-modified process component, and 445A.427 requires submittal of as-built drawings, QC procedures that were followed, and final operating plans, within 30 days of completion of construction.

B. Additional Suggested Rule Revisions

In addition to the more technically complex items identified above, we propose a number of minor revisions to improve the organization and clarity of the draft Rule. These are enumerated below:

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1) Since IDEQ is proposing different design standards for different facilities, we believe it would be helpful to specifically define each of these facilities. We think this especially applies to the distinction between process ponds and tailings impoundments.

2) Section 100.03.r and Section 200.b.viii

IMA suggests clarifying these sections to make clear that all of its requirements do not necessarily apply to all facilities in Sections 201 through 204.

3) Section 100.03.r.ix (Cap and Cover)

Cap and cover is not defined and it could be construed that a cover is required for all facilities. A cap and cover is not likely required for tailings impoundments or ponds but may be required for heap leach pads.

4) Section 100.03.r.x

Replace “stabilization” with “stability.”

5) Section 200.02

Replace “meandering” with “migrating.”

6) Section 200.04.a.iii.a (Depth to Groundwater)

The intent of this section seems to be to evaluate hydraulic equivalence versus 100 feet of soil at 10^{-5} cm/s. As coefficient of permeability is itself not related to the thickness of the material as the rule implies, but rather the rate of fluid passage is related to the product of the coefficient of permeability and gradient. Therefore, we suggest replacing “coefficient of permeability” with “ability to transmit fluid.”

7) Section 200.04.a.iv (Dwelling)

It is likely that personnel may reside near a facility during certain times of the year. We would recommend for clarification that the “dwelling” restriction only apply to a dwelling not owned by the operator.

8) Section 200.04.b.v

Insert “interface” before the word “friction.”

9) Section 200.05

IMA suggests deleting the phrase, “process wastes, process waters and pollutants” from this section or to make clear that such handling, use and storage only apply to enclosed buildings where process water and pollutants are handled.

10) Section 200.09

IMA suggests striking the words “ground water” as it appears out of context with IDEQ’s proposed changes.

11) Section 200.10 (Construction of Monitoring Wells)

Please clarify which monitoring well construction plans that IDEQ is requiring in this section that vary from IDWR requirements and why any such additional construction requirements are necessary for cyanidation facilities.

12) Sections 201.02, 202.01 a and c, and 204.01.a (Liner Thickness)

Draft rule sections 201.02 (leach pads), 202.01 a. and c. (ponds); and 204.01 a. (tailings impoundments) specify minimum liner thicknesses of 80 milli-inches for leach pads and ponds, and 60 milli-inches for tailings impoundments. While these thicknesses are typical in practice today for these types of facilities, they may become overly restrictive in the future as materials technology advances, and already preclude certain products available today that have been used successfully elsewhere. With a thickness specification written into the rule, it is uncertain how a thinner liner might be approved under the “or comparable liner” clause, rather than triggering the additional requirements of section 205. In addition, it does not appear necessary that both primary and secondary containment liners should be subject to the same minimum 80-mil thickness. We suggest eliminating the minimum thickness requirement for all liners.

13) Section 202.b (Expectation of Discharge)

IMA would suggest some threshold related to the phrase “reasonably expected to result in a discharge.” We would suggest qualifying this phrase to apply to only discharges that will not protect beneficial uses.

C. Water Quality and Liability Issues

1) Section 001.02.b (No Permit-Shield)

IMA is concerned about this new section, which appears to suggest that an IDEQ permit provides no protection from “liability for degradation” to waters of the state. We are not sure what the justification is for such a broad disclaimer and we do not believe that any of IDEQ’s other permit rules has such a disclaimer. If the reference to “state waters” is to ground water, we question whether such a broad disclaimer is consistent with the Ground Water Rule and the state Ground Water Plan which requires an accommodation of mining with ground water protection goals. If the reference to “state waters” is to surface water, any discharges from a cyanidation facility would presumably be covered by an IPDES permit and the associated permit-shield such a permit would provide. Thus, we do not believe this new section is necessary or appropriate and we request it be deleted.

2) Section 200.04.a.i (No Degradation)

Similar to our comment above on the permit-shield language, IMA is concerned about this new section which requires cyanidation facilities to be designed so that there will be no degradation to ground water. IMA questions the justification for this requirement and it appears to be contrary to Idaho’s Ground Water Rule and the associated point of compliance provisions in the Rule which allows mining activities to degrade water. Similarly, Idaho Code 39-102(4) authorized localized degradation of ground water from mining operations. Accordingly, we request that IDEQ delete this new section.

3) Section 200.04.a.iii (Groundwater near the surface)

We understand that this provision came from Nevada rules. IMA would appreciate some additional clarification from IDEQ as to what the criteria IDEQ may apply in determining whether additional containment of process water will be required when groundwater is near the surface.

4) Finally, in light of the fact that IDEQ is revamping the subject rules and IDEQ is now administering the IPDES permit program for cyanidation facilities, we question the need for a “water management plan” and “water balance” in the rules. Such operational aspects of a cyanidation facility would be adequately addressed in any IPDES permit for such a facility. We are not sure why it is necessary to have such additional requirements in the subject rule. We would welcome further discussions about this issue with IDEQ.

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Thanks again for the opportunity to comment on the draft Rule. IMA appreciates the efforts IDEQ has made so far in modernizing the subject rule. We believe if IDEQ adequately addresses the IMA comments herein, IDEQ should be able to propose a rule in the spring of 2020.

Sincerely,

A handwritten signature in blue ink, appearing to read "BJD", with a large, sweeping flourish extending to the right.

Benjamin J. Davenport