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Nora Rasure
Objection Reviewing Officer
USDA Forest Service,
Intermountain Region
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Email: objections-intermtn-regional-office@fs.fed.us

RE: Objection for the Thompson Creek Mine FEIS

May 15, 2015

Dear Ms. Rasure,

On behalf of the Idaho Conservation League and Earthworks, we are filing the attached objection of the Draft Record of Decision, Final Environmental Impact Statement for the Thompson Creek Mine FEIS. Since 1973, the Idaho Conservation League has been Idaho's voice for clean water, clean air and wilderness—values that are the foundation for Idaho's extraordinary quality of life. The Idaho Conservation League works to protect these values through public education, outreach, advocacy and policy development. As Idaho's largest state-based conservation organization, we represent over 25,000 supporters who have deep personal interest in ensuring that mineral exploration and development activities incorporate the required measures to avoid, minimize and mitigate impacts to forest resources, including water quality, sensitive plants and wildlife.

Earthworks is a national non-profit organization dedicated to protecting communities and the environment against the adverse impacts of mineral development. Earthworks has a long history of engaging in hardrock mining issues in Idaho and on federal public lands nation-wide, and we seek to promote responsible mining practices that protect public health, fish, wildlife, and clean water.

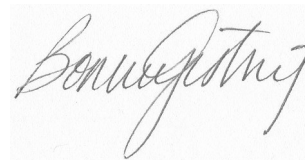
We appreciate the opportunity to use the objection process to provide additional comments before a final decision is issued. We also appreciate having had the opportunity to discuss the project with representatives of the Forest Service, BLM and Thompson Creek Mine. This additional information about the project record has helped us gain a better understanding of the project and has addressed several of our concerns. However, we still have significant concerns on several substantive issues, as outlined in the objection below.

Consistent with other objection resolution processes that we have participated in, we look forward to discussing our comments and suggested remedies. Our objection is below. Feel free to contact us at your convenience on next steps.

Sincerely,



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NOTICE OF OBJECTION

DECISION OBJECTED: On April 2, 2015, a Public Notice was issued in the Challis Messenger stating that Salmon-Challis Forest Supervisor Charles Mark had issued a draft Decision Record of Decision from the Final Environmental Impact Statement prepared for the Thompson Creek Mine Expansion and Land Exchange. Notice is hereby given pursuant to 36 C.F.R. 218 that the Idaho Conservation League and Earthworks are filing an objection to the draft Decision Record of Decision from the Final Environmental Impact Statement prepared for the Thompson Creek Mine Expansion for the relevant topics pertinent to the US Forest Service. We request that the Objection Review Officer vacate and remand the challenged action in the event that we are unable to resolve our objection. Our objection is detailed below.

The project name is the Thompson Creek Mine Expansion and Land Exchange and Charles Mark, Supervisor for the Salmon-Challis National Forest, is the responsible official. The project is proposed on the Challis-Yankee Fork Ranger District, Salmon-Challis National Forest. The Reviewing Officer is Nora Rasure. The BLM, Challis Field Office, Idaho Falls District, is the lead agency for this project.

The FEIS authorizes Phase 8 of mining and includes expansion of the open pit, expansion of the Waste Rock Storage Facilities and Tailings Storage Facility, and modifications to the existing long-term water management plan. The additional disturbance will affect 185 acres of Forest Service land.

The Idaho Conservation League has a long history of involvement in the Thompson Creek Mine and submitted extensive comments on the FEIS. Our members use the surrounding and downstream areas for hiking, hunting, fishing, camping, boating, botanizing and enjoy touring the area. We have toured the project site several times on the ground, flown over it, and toured the Broken Wing Ranch as well. We appreciate the Thompson Creek Mine Company for having hosted us on the site visits. Earthworks also has a long history of involvement with the mine, and has submitted comments and toured the mine site. Earthworks and ICL have three main concerns regarding the FEIS.

As a result of the Decision Notice's adoption of the Proposed Action, the members of the Idaho Conservation League and Earthworks and the species we care about would be directly and significantly affected by the road construction, drill pad construction, mechanized access and disturbance, surface disturbance, mineral exploration operations, degradation of habitat, and failure to properly avoid, minimize and mitigate for these disturbances.

The mine expansion and closure plans, if implemented as drafted, could adversely impact and irreparably harm the natural qualities of Salmon-Challis National Forest and could degrade water quality and habitat for native fish, wildlife and plants.

ICL and Earthworks' prior written comments on the Thompson Creek Mine Expansion are directly connected to the issues raised during this objection process. Both the Idaho Conservation League and Earthworks submitted comments on the Thompson Creek Mine Expansion Draft Environmental Impact Statement. In our prior written comments on this project, we have raised the same issues as presented here in this objection. We are also providing some additional information from the Mount Polley Tailings Failure Study that we learned of following the designated opportunity to comment. Please incorporate all previous comments as part of this objection.

The aspects of the proposed project addressed by this objection include failure for the Draft Record of Decision to meet the legal requirements of the National Environmental Policy Act (NEPA), 42 U.S.C. 4321 et seq., and its implementing regulations, the National Forest Management Act (NFMA) 16 U.S.C. 1600 et seq., and its implementing regulations, the Administrative Procedure Act, (APA) 5 U.S.C. Sec. 706, the Forest Service Organic Act, and its implementing regulations among other requirements detailed below. As mentioned above, we have raised these concerns in our comments on the Thompson Creek Mine Expansion and Land Exchange DEIS.

SPECIFIC REASONS FOR OBJECTION

Development of Alternatives for the Modified Mine Plan of Operations

Need for additional alternatives

As stated in our comments on the DEIS, we are also concerned about the lack of alternatives in the FEIS with respect to primary issues. Additional alternatives are required because the modeling provided in the EIS predicts potential spikes of a variety of Contaminants of Concern (COCs) in Thompson Creek, Squaw Creek or the Salmon River under a range of flow conditions and for prolonged periods of time that would result in numerous violations of Idaho's antidegradation and/or federal Clean Water Act regulations (CWA Section 313 and 228). In our own scoping comments, we had suggested that the agencies develop additional alternatives that are more protective of water quality in both near and long term and that will further minimize the need for post-closure water treatment.

The alternatives developed do little to address the suite of pertinent issues raised by the agencies on page 1-26 to 1-38 and that the effects comparison table ES-1 shows very few differences between Alternative M2 and Alternative M3. In fact, we note that the Thompson Creek Mining Company's Clean Water Act Section 404(b)(1), Appendix 2A) states the following:

In comparing the two action alternatives (M2 and M3), neither stands out as the least environmentally damaging practicable alternative (LEDPA) for the tailings impoundment expansion element of the proposed action. Since all of the alternatives would result in similar impacts, but Alternative M2 has fewer wetland and stream impacts than the Alternative M3, M2 is the preferred alternative. (Thompson Creek Mining Company Clean Water Act Section 404(b)(1) Alternatives Analysis, page 1, January 2014, DEIS Appendix 1.)

The agencies identified 17 major issues related to the MMPO (Modified Mining Plan of Operations) and indicators related to each so that the agencies could assess the significance of the potential effects:

- Irretrievable loss of the mineral resource
- Soil resources
- Vegetation patterns and productivity
- Livestock grazing
- Long-term changes to quantity and quality of surface water or groundwater
- Effects to terrestrial wildlife, special status species and Management Indicator Species
- Bull trout, Chinook salmon, steelhead trout, sockeye salmon and their critical habitat

- Effects to wetlands, floodplains and riparian areas
- Air quality effects
- Visual (aesthetic) resources
- Recreation and public access
- Effects on local, State and national economics from decreased production or closure of the mine
- Adequacy of current reclamation bond
- Tribal treaty rights and interests
- Cultural resources
- Potential for molybdenum spills
- Contamination of water, soil and air from chemical spills and disposal

In spite of having identified this list of pertinent, major issues, the FEIS does not present or develop alternatives to address any one of these issues beyond the proposed action alternative, M2. Alternative M3 appears designed primarily to address profitability. While economic practicality is a factor that the agencies should consider, federal agencies are not mandated to develop the most profitable alternative for the company. As such, the agencies need to develop additional alternatives to address the substantive issues.

In fact, NEPA regulations also require that environmental impacts “shall be discussed in proportion to their significance.” 40 C.F.R. § 1502.2(b). “Significance” is measured in terms of context and intensity and includes “[w]hether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.” 40 C.F.R. § 1508.27(b)(10). *See WildEarth Guardians v. Salazar*, 880 F.Supp.2d 77, 93 (D.D.C. 2012)(Section 1508.27(b) (10) requires that an EIS analyze compliance with “laws imposed for the protection of the environment”). *See also Coal. on Sensible Transp. Inc. v. Dole*, 642 F.Supp. 573, 590 (D.D.C.1986) (characterizing 40 C.F.R. § 1508.27(b)(10) as “requir[ing] consideration of whether a project threatens a violation of federal, state, or local environmental laws.”), *aff’d*, 826 F.2d 60 (D.C.Cir.1987).

As stated in our comments on the DEIS, our primary concerns with these proposals relate to the long-term protection of water quality. We want to ensure that the water treatment plant and related infrastructure are properly engineered, that funding is available to cover costs as long as treatment is needed, and that the entities in charge of the financial mechanism have the necessary regulatory authority. We believe that the bonding calculations need to be part of the NEPA analysis and that a broader discussion of the regulatory framework is still needed. The current action alternatives fail to comply with necessary water quality protective requirements.

The FEIS notes that there will likely be predicted increases in discharges of sulfate, aluminum, cadmium, manganese, selenium, uranium, molybdenum, nickel, zinc, and copper. We recognize that the latest modeling estimates show that all these discharges would meet water quality standards under most scenarios. However, the Outfall 005 discharge point is underneath the riverbed of the Salmon River. Listed fish species need to swim past this discharge point and may use S. and Thompson Creek as thermal refugia. The long-term water management system needs to be designed to meet water quality standards at all times in S. Creek, Thompson Creek and at the end of the pipe of Outfall 005. The FEIS notes that conditions may occur that may affect fish:

However, in the case of copper, concentrations may still be high enough to result in effects such as sensory impairment. It is highly unlikely that water quality would be a concern in both streams simultaneously. As a result, in a situation with elevated copper in Thompson Creek, S. Creek could also be used as thermal refuge (and vice versa in the case of cadmium). FEIS, p. 4-101.

We note that if a fish is disoriented as a result of copper concentrations in one creek, it may have difficulty navigating to another area with reduced concentrations and could thus be harmed, which would meet the definition of “take” under the ESA.

Although concentrations of all metals are expected to meet IDEQ criteria for aquatic life, there is the possibility that some metals could bioaccumulate to concentrations sufficient to cause effects. Based on current and predicted water quality in Thompson Creek, only selenium would be of potential concern for bioaccumulation. Excessive selenium bioaccumulation in fish can result in larval developmental abnormalities and mortality (Holm et al. 2005). FEIS p. 4-104.

We remain concerned about long-term, recurring exposures of fish species in S. Creek to sufficiently levels of cadmium that can lead to reduced survival (also a “take” under the ESA):

Although individual “events” would be short-term, the potential for them to occur is long-term. FEIS, p. 4-105.

As such, we recommend analyzing additional alternatives to manage copper, cadmium and selenium concentrations. Increasing in-stream flows through the retirement of water rights could assist in these efforts. Mitigation should also include permanently retiring grazing from riparian areas along S. and Thompson Creeks.

We are also concerned that the FEIS states that there may be potential effects to water quality due to unanticipated problems in the long-term water management system (FEIS p. 4-101). It is of utmost importance that the long-term water quality management system contains redundant backup systems to avoid unanticipated problems and to ensure that water quality standards are met.

The mitigation plan should also include capturing and treating any mine-affected water coming out of Red Bird Mine or Twin Apex Mine. Contaminants from sources outside TCM or TCMC facilities affect baseline flows, makes monitoring challenging, creates confusion about the actual source and can have deleterious effects on fisheries. As such, we strongly encourage that the long-term water management plan includes treating these additional, complicating sources.

We realize that alternatives need to be consistent with the project purpose and need, but believe that there are a suite of alternatives that simply have not been pursued. We point out that the agencies have a legal obligation to develop additional alternatives for the EIS. NEPA requires the agency to “study, develop, and describe appropriate alternatives to recommended courses of action in any proposal that involves unresolved conflicts concerning alternative uses of available resources.” 42 U.S.C. § 4332(E); 40 CFR § 1508.9(b). It must “rigorously explore and objectively evaluate all reasonable alternatives” to the proposed action. City of Tenakee Springs v. Clough, 915 F.2d 1308, 1310 (9th Cir. 1990). Indeed, NEPA’s implementing regulations recognize that the consideration of alternatives is “the heart

of the environmental impact statement.” 40 CFR 1502.14, *quoted in Alaska Wilderness Recreation and Tourism Ass'n v. Morrison*, 67 F.3d 723, 729 (9th Cir. 1995).

Alternative needed for a modified M1

The No Action Alternative, M1, refers to the completion of Phase 7, which was analyzed and selected in the previous EISs (1980 and 1999). The agencies also state that M1/Phase 7 will be modified in order to address the need to treat mine-affected water in perpetuity. These are conflicting mandates. Phase 7 specifically calls for the reclamation of infrastructure and lands, some of it related to water capture and treatment. However, the agencies and the company all realize the need to adjust the plan to facilitate post-closure water treatment and call for the retention of water management and treatment infrastructure:

Active water treatment is not described in the approved reclamation plan for Alternative M1, but would have to be incorporated into the current reclamation plan even if TCMC were to withdraw the proposed MMPO. That is, the approved reclamation plan requires discharged water to meet all applicable laws and regulations, and active water treatment would be required. Therefore, active water treatment (described in Section 2.1.3.6) is implicitly required. (DEIS Executive Summary, p. 2-3.)

We point out that the current reclamation plan does not address the issue of active water treatment and this factor was not evaluated in the 1980 or 1999 EISs. The changed conditions (mine-affected water) and the revision of the EIS/Reclamation Plan are still not adequately described in the current EIS, in violation of NEPA. 40 C.F.R. § 1500.1(a). NEPA requires the agencies to carefully consider detailed information concerning significant environmental impacts. By focusing agencies' attentions on the environmental consequences of their actions, NEPA “ensures that important effects will not be overlooked or underestimated only to be discovered after resources have been committed or the die otherwise cast.” *Id.*

An additional alternative (M1B, for example) is needed to describe how M1A will be adapted to the new, changed circumstance of dealing with mine-affected water. How this issue is dealt with has the potential to affect public resources, including water quality, beneficial uses of waterways, and listed fish species, among others. A discussion of the bonding and financial mechanism for long-term water treatment is also needed as part of this analysis.

Alternatives related to AMD and metals

As one of the driving issues, the agencies should show how water quality issues such as acid mine drainage and exceedances of metals can be better addressed through additional alternatives. We are particularly concerned about the potential for exceedances in selenium, copper and cadmium which may adversely affect listed fish species such as Snake River steelhead and Chinook salmon. While individual exceedance events may be temporary, they are likely to reoccur again and again in perpetuity and perhaps worsen in intensity. We believe that a reinvestigation of caps, covers, liners, water diversions and interception/pumpback stations is warranted.

The EIS should disclose the failure rate of proposed mitigation measures, and how those failures will be addressed. For example, the EPA estimated potential water collection and treatment failure rates

for mine seepage for a proposed porphyry mine, based on the track record of operating porphyry mines in its peer-reviewed Bristol Bay Watershed Assessment:¹

“Based on a review of historical and currently operating mines, some failure of water collection and treatment systems would be expected to occur during operation or post-closure periods. A variety of water collection and treatment failures are possible, ranging from operational failures that result in short-term releases of untreated or partially treated leachates to long-term failures to operate water collection and treatment systems in perpetuity. A reasonable but severe failure scenario would involve a complete loss of water treatment and release of average untreated wastewater flows into average dilution flows.”

“Reviews of mine records found that 93% of operating porphyry copper mines in the United States reported a water collection or treatment failure (Earthworks 2012). Improved design and practices should result in lower failure rates, but given this record it is unlikely that failure rates would be lower than 10% over the life of a mine. During operation, failures should be brief (less than 1 week) unless they involve a faulty system design or parts that are difficult to replace.”

Given the record of seepage collection and treatment failures at other operating porphyry mines in the U.S., the EIS should fully evaluate the potential impacts to the resource from this failure mode, and mitigation measures should be incorporated into the project and reflected in the financial assurance.

Alternatives related to increasing the long-term stability of the Tailings Storage Facility

The agencies state that the stability of the sand dam is not an issue. While the likelihood of a catastrophic failure may be relatively low, the environmental costs of a collapse would be extremely high and are not covered financially under any proposed scenario. We are concerned about the potential liquefaction of the sand dam during large-scale seismic events. We point out that this area is seismically active and that the sand dam will be a feature on the landscape for millennia. Other U.S. mines have experienced tailings failures. For example, research shows that 28% of tailings dam facilities at currently operating U.S. copper porphyry mines have experienced partial or full tailings dam failures.² The 2014 tailings dam failure at the Mount Polley Mine in British Columbia demonstrates that failures continue to occur at modern mines. The tailings facility at the Thompson Creek Mine is designed to withstand the maximum credible earthquake of magnitude 6.5, however the 1983 Borah earthquake registered 6.9 on the Richter scale. The fact that some land management agencies also mentioned this during the scoping period means that this is a shared concern. A collapse would lead to both massive sedimentation issues in the Bruno and Squaw Creek drainages and into the Salmon River, smothering riparian areas, listed fish species and their critical habitat. The displaced material would be distributed on top of the streambed, riparian areas and access roads over a considerable distance, making clean up extremely difficult. Reconstructing a proper storage facility and rehandling the material would be exceedingly expensive. In the interim, the material from the sand dam embankment would present acid generation and other chemical contamination issues for downstream waters.

¹ USEPA (U.S. Environmental Protection Agency). 2014. An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska. Region 10, Seattle, WA. EPA 910-R-14-001.

² Earthworks. 2012. U.S. Copper Porphyry Mines Report: The Track Record of Water Quality Impacts Resulting from Pipeline Spills, Tailings Failures and Water Collection and Treatment Failure, Washington D.C.

Alternative related to liner/groundwater control for the Pat Hughes Waste Rock Dump

Alternative M3 anticipates increased flow from the Pat Hughes waste rock dump into the shallow aquifer. This is largely due to the fact that the layer of relatively impermeable Challis volcanics, which is beneath the existing waste rock dump, does not extend out underneath the expanded waste rock boundary (Figure 4.6-5). Without this geologic liner, meteoric water and groundwater traveling through the waste rock can more easily enter the metasediment layer and the aquifer, bringing with it mine contaminants. Although the planned cutoff trenches are expected to capture much of the water, some water will still seep around these intercept points. Long term predictions for M3 show the possibility of spikes on copper concentrations that exceed CCC values and these intermittent exceedances are expected to occur in perpetuity with potentially detrimental impacts to listed fish species at some scale.

The EIS states that capping is not expected to alter the behavior of the affected seepage or performance of cutoff walls within the groundwater systems below these facilities (EIS p. 4-34) but provides no analysis of this reasoning. We note that the cover proposed for the Pat Hughes waste dump would be a slightly different design than the one at Buckskin to further reduce water infiltration (EIS p 4-55). The agencies should analyze additional alternatives to address this issue. Possibilities include, but are not limited to, reengineering the waste rock facilities so that their boundaries are constrained by the ability to contact the volcanics, moving some of the volcanics underneath the Phase 8 expansion, placing an impermeable clay-based liner underneath the footprint of the waste rock in advance of waste rock construction, and placing an array of groundwater-intercept pumps (in addition to PW 13, 14, 15) beyond the toe to capture this contaminated seepage.

Alternative relating to backfilling pits and other disturbed areas

We also recommended developing an alternative in which the tailings and/or waste rock are relocated back into the main pit (or other geologically stable area). While rehandling this material would require additional expense, the agencies should compare this with the cost of dealing with a catastrophic dam failure, renewed acid generation, and effects of downstream public health and fisheries issues. The agencies initially dismissed this alternative because of cost issues but did not analyze the potential cost-savings benefits and reduced environmental risks.

Alternatives related to the long-term water treatment plant

The DEIS is unclear with regard to how and where mine-affected water will be treated post-closure:

TCMC would either construct a long-term water treatment facility or modify the existing process water treatment plant. (DEIS p. ES-4).

Water treatment remains one of the major unresolved issues related to this project and the outcome will affect the environment of the area beyond the foreseeable future. The details regarding water treatment will also determine the ultimate cost for long-term water treatment and the adequacy of the financial mechanism needed so that taxpayer dollars are not needed. We understand that the current gap between the present bond and the final bond, which covers water treatment in perpetuity, is approximately \$35.5 million dollars. It appears that both construction of a new long-term water treatment facility and the modification of the existing water treatment plant are viable options, but a more detailed analysis is needed with respect to cost, efficacy, long-term viability, maintenance, power needs, ease of repair,

filter removal, pond mucking, waste disposal, treatment methods (passive vs. active), replacement schedule, upgrades, staffing needs, etc. It is not even clear what entity would maintain the TCM Access Bridge, which may be necessary to replace or upgrade water treatment infrastructure into the future. In addition, the agencies should develop alternatives regarding the design and engineering of the waste rock and tailings facilities to see if the quantity of water contacting mine waste and needing treatment can be further minimized. All of these items should be answered/ resolved prior to further permit action and the bond should be updated immediately.

In the environmental review of a proposed copper porphyry mine, the EPA highlights the uncertainties associated with long term water treatment systems for mines, saying, “Seepage and leachate monitoring and collection systems, as well as the WWTP, might need to be maintained for hundreds to thousands of years. It is impossible to evaluate the success of such long-term collection and treatment systems for mines. No examples exist, because these timeframes exceed both existing systems and most human institutions.” (USEPA, 2014)

The EIS should evaluate the potential impacts from water treatment system failure, and provide alternatives that evaluate additional mitigation measures to ensure that contaminated water isn’t released in the event of a water treatment plant failure, and that financial assurance is in place to cover the full cost of these back-up systems, as well as the regular replacement of water treatment systems during post-closure, etc.

This facility is going to need to be fully functional for centuries in order to protect public resources, and, even, then, failures are likely:

[T]he water management system consists of a series of collection points, pipelines, pump stations, and treatment plants. These facilities, during operations of 100s years or more, could be subject to equipment failures (e.g., pipeline rupture), human error (e.g., a valve improperly opened), or extended power outages (e.g., earthquake damages to the regional electricity grid). Such problems may be inevitable over the course of 100s of years or more, and could result in the release of untreated water to the environment.

It is not possible to predict how such problems would occur or what the consequences would be, as such would depend on what water was released, where and how much water was released, and the duration and timing of the release. However, in the worst case, the release of untreated water could cause exceedances of acute WQs in sections of the Salmon River, Thompson Creek, S. Creek, and Bruno Creek. **There would be no material difference in such risk (probability and consequence) between Alternative M1 and Alternative M2 for which water with similar chemistry would be treated by essentially the same facilities.** In the case of Alternative M3, the risk would be slightly greater due to the addition of a new source of water to be treated (new WRSF) and the additional water collection and transport facilities to connect the new source to the main facilities. However, the primary effect would be to Thompson Creek, which could also be affected by the release of untreated water under Alternative M1 or Alternative M2 (the Buckskin, No Name, and Pat Hughes tributaries to Thompson Creek would be part of the mine water management system under the respective MMPO alternatives, and not natural streams). The adaptive groundwater management plan (Lorax 2012b) offers three mitigation contingencies in the event that “specified Performance

Metrics” are exceeded. These include a slurry wall, a permeable reactive barrier, and additional pumping wells within the vicinity of the existing pump-back system. (FEIS p. 2-57 to 2-58, emphasis added.)

As stated in our previous comments, the current two action alternatives offer the public no difference between the end results of a treatment failure in the future, as there are material differences in the probability of consequence of these risks. As such, the EIS has failed to develop meaningful alternatives regarding the most significant environmental risk. We appreciate the commitment from TCMC “to implement and maintain, in perpetuity, whatever types of treatments are needed to maintain ambient water quality in the Salmon River” (DEIS, p. 4-103) but the agencies need to design and evaluate alternatives so that the need for these treatments are minimized and that water quality is also protected in tributaries such as Thompson Creek and S. Creek. The public deserves an opportunity to review and compare alternatives for the probability and consequence of future water contamination. The selected alternative should do the best job of protect public resources far into the future.

The FEIS states that, “There will be uncertainty associated with any prediction of water quality, with or without treatment, in both the short and long terms. Additional evaluation will not eliminate the uncertainty... In addition, the FEIS outlines relevant monitoring, mitigation, adaptive management, and regulations regarding financial guarantees in the context of long-term water management at the mine. FEIS, p. E-167).” However, an outline does not meet the NEPA requirement of “taking a hard look.” We note that the adaptive groundwater management plan proposes three mitigation contingencies, including a slurry wall, a permeable reactive barrier and additional pump-back wells. As part of this analysis, the agencies need to analyze and compare the effectiveness of each of three measures, both in isolation and in combination. It is our experience that discharges of pollutants are often the cause of multiple failures occurring simultaneously. As such, the agencies also need to compare the complexities and vulnerabilities to technological failures, human failures and power failures.

Care and Maintenance Procedures need to be developed for each alternative

In the event of a short-term halt to mining or suspension of production, “care and maintenance” procedures need to be spelled out for each alternative. This temporary suspension does not fit the category of daily operations or the category of reclamation and closure. Major pieces of infrastructure need to be retained and maintained for future start up, but daily procedures such as water use for milling and dust control may be discontinued. As such, the agencies need to describe how water balance will be affected, how capture, treatment and disposal of water will be affected, and what level of work force is needed to assist in site management. We point out that approximately 2,500 gallons per minute of water are currently used during operations but it is unclear what quantity would be used during “care and maintenance.” This “Twilight Zone” of mine management leaves many uncertainties that are best addressed in advance of the actual event. Because different alternatives may have different ways of managing water balance or treatment, care and maintenance procedures should be spelled out for each alternative.

Light pollution

We recognize that night lighting is necessary from a safety standpoint but have asked for some consideration to minimize light pollution. The FEIS notes that there are “limited receptors” in the White Clouds mountains at night. We point out that those limited receptors are often ICL members who are interested in views with minimal light pollution. We encourage the agencies work with TCM

to use lighting solutions with light shields where possible and to require that any post-closure lighting be kept minimal.

Regulatory environment

Different management scenarios

As noted in our scoping comments, an aspect that the agencies have not identified as a scoping issue is the regulatory environment under different management scenarios. The environmental effects of unplanned issues such as acid mine drainage, accidental leaks and spills, and failure of design features can be greatly reduced if there is a monitoring program to detect and respond to these situations earlier rather than later. As such, the EIS should compare the following factors under different management scenarios: number of agency inspections, the thoroughness of these inspections, the ability to review the adequacy of the reclamation bond and adjust it as needed, the frequency of bonding review, bonding amounts, the past history of bonding increases, past history of calculating the correct bond, the amount of potential fines for violations, and the ability to require and manage a fund for long term water treatment.

Inspections

The EIS maintains that public safety and transportation issues will not change between Alternatives M2 and M3, however, with the number of land-managing agencies being reduced from three to two (IDL and FS), the number of annual inspections would decrease by 4. This reduction could have real impacts on the detection and response to situations needing attention. We note that the mine is regularly inspected by an interagency taskforce consisting of the BLM, Forest Service, IDWR, IDEQ, IDL and the Idaho Department of Fish and Game (the DEIS incorrectly refers to this agency at Idaho Department of Fish and Wildlife on p. 2-25). We request that the level of inspections remain the same or be increased in the future. We also strongly recommend keeping the provision that tours may be offered to the public upon request. These tours have been extremely helpful in inform ICL staff and community members about the actual conditions on site.

Bond adjustments

The EIS states that the reclamation cost estimate will be periodically adjusted but does not provide any timeframe for this review and adjustment (every three years, every five years?). Our past experience with other mining operations managed by state or federal agencies has led us to conclude that bonds are not reviewed as frequently as needed. More frequent bond review and adjustment is essential to protect human health and the environment and protect public resources from mine failure.

Financial Mechanism

We appreciate the intent of having a financial mechanism in place as a term and condition for the ROD to be signed. However, we point out that the Idaho Department of Lands currently lacks the statutory authority to manage funds to cover water treatment costs in perpetuity for mining-related projects. We believe that Idaho code may need to be amended to provide the Idaho Department of Lands with this authority. Such an amendment could actually be beneficial for the long-term management of both this project and others.

We disagree with the concept that the specific amounts of financial guarantees are part of the BLM administrative process and are not NEPA issues (EIS, p. 1-19). We note that the Salmon-Challis

National Forest developed a FEIS and Record of Decision for the Idaho Cobalt Project that included a bond estimate of \$44 million for reclamation and water treatment in perpetuity:

Projected possible water treatment costs under the approved Plan of Operations were calculated using a conventional precipitation and solids removal system that produces a dewatered cake as the primary waste. It was estimated that two full time operators will be required to run the plant. The projected water treatment costs are calculated on an annual basis and one year of water treatment is included in the interim shutdown category. A separate category for post-closure water treatment is included, and for the purposes of calculating the financial assurance, the sum of the discounted annual costs for a 100-year period was used. The long-term water treatment estimate includes costs for offsite disposal of post-closure water treatment wastes and a 20 percent overhead and contingency component.

The estimated financial assurance requirement for the ICP is estimated to be \$44 million dollars plus or minus 20 percent. The final bond calculation will be completed following issuance of this ROD, completion of the administrative process and prior to approval of the Plan of Operations.

Idaho Cobalt Project Record of Decision, January 2009, Salmon-Challis National Forest

http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5309557.pdf

However, according to the Thompson Creek EIS, such review will only occur **after** the NEPA process is closed. The amount of money necessary for a post-closure financial surety alone is typically in the tens to hundreds of millions of dollars. If this surety is not calculated properly to protect the public from an underestimation of the cost involved, the taxpaying public would have to pay the money, as is the case at the Zortman-Landusky³ and Beal mines⁴ in Montana, and/or suffer the environmental damage associated with delays in treating the contamination. Failure to analyze this potentially significant impact violates NEPA's requirement for a full discussion of all mitigation measures and impacts.

NEPA requires that mitigation measures be fully reviewed in the FEIS, not in the future. "[O]mission of a reasonably complete discussion of possible mitigation measures would undermine the 'action-forcing' function of NEPA. Without such a discussion, neither the agency nor other interested groups and individuals can properly evaluate the severity of the adverse effects." Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 353 (1989). NEPA requires that documents: (1) "include appropriate mitigation measures not already included in the proposed action or alternatives," and (2) "include discussion of . . . Means to mitigate adverse environmental impacts (if not already covered under 1502.14(f))." 40 C.F.R. § 1502.14(f); 40 C.F.R. § 1502.16(h). "Mitigation" is defined as a way to avoid, minimize, rectify, or compensate for the impact of a potentially harmful action. 40 C.F.R. §§ 1508.20 (a)-(e). Mitigation measures must be discussed with "sufficient detail to ensure that environmental consequences have been fairly evaluated." Robertson, 490 U.S. at 352. The discussion of mitigation measures must also assess their effectiveness. "An essential component of a reasonably

³ Funding summary of Zortman Landusky expenses from 1999-August 2014, provided by Tom Livers, MTDEQ.

⁴ U.S. Department of Agriculture, Engineering Evaluation/Cost Analysis: Beal Mountain Mine, Beaverhead Deerlodge National Forest, March 2010.

complete mitigation discussion is an assessment of whether the proposed mitigation measures can be effective.” South Fork Band Council v. Dept. of Interior, 588 F.3d 718, 726 (9th Cir. 2009).

In this case, the public has no idea as to how “effective” the mitigation/reclamation bond would be for any of the action alternatives – because neither TCMC nor the federal agencies have divulged this information. Such elimination of the public’s rights to fully participate in the NEPA process cannot stand.

NEPA establishes “action-forcing” procedures that require agencies to take a “hard look” at environmental consequences.

...

An EIS serves two purposes:

First, [i]t ensures that the agency, in reaching its decision, will have available, and will carefully consider, detailed information concerning significant environmental impacts. Second, it guarantees that the relevant information will be made available to the larger audience that may also play a role in both the decisionmaking process and the implementation of that decision.

Center for Biological Diversity v. Dept. of Interior, 623 F.3d 633, 642 (9th Cir. 2010). Such public review is required in this case.

The US EPA specifically notified the USFS that bonding must be discussed and reviewed as part of the NEPA process:

EPA believes that financial assurance is an important element of the proposed action and must be disclosed in the EIS. FA is an important component of the mitigation plan, and disclosing information on the costs and form of FA is essential for the public to understand and comment on the adequacy of mitigation, risks to the environment, and financial risks to the public. EPA believe it is not possible to fully evaluate anticipated effectiveness of the mine and reclamation plan and associated risks to the environment without this type of information. (Letter from Lynne McWhorter, EPA Environmental Review and Sediment Management Unit to Dave Rosenkrance, Challis BLM, dated September 27, 2010)

The EIS must contain a review of bonding levels for the action alternatives. The final EIS and ROD should also include the bond calculations, review periodicity, and fundamental bond terms such as liquidity.

Tailings Storage Facility

Lastly, the long-term stability of the Tailings Storage Facility is of tremendous concern to us and we believe that additional clarification and analysis is needed here. The FEIS should be amended to include the lessons learned from the Mount Polley tailings failure as outlined in the recommendations segment of the investigative panel’s final report,⁵ and to prescribe any additional analysis and design features to address this information. We would particularly like to emphasize the need for an

⁵ Independent Expert Engineering and Review Panel, Report on Mount Polley Tailings Storage Facility Breach, January 30, 2015. Available at: <https://www.mountpolleyreviewpanel.ca/sites/default/files/report/ReportonMountPolleyTailingsStorageFacilityBreach.pdf>

independent tailings pond review panel to assess the final design and long-term management of the facility. We feel that the Mount Polley situation represents a changed condition and warrants additional consideration. We are attaching the official analysis of the Mount Polley tailings failure with these comments.

The current reclamation plan calls for this area to be tree-free so that root growth and tip ups do not compromise the integrity of the cap. However, the EIS states that forests are expected to regenerate in this area in 150 to 200 years. Lodgepole pine will likely recolonize the reclaimed surface of the tailings facility and will present a risk to the integrity of the cap. We believe that the agencies have two options to address this eventuality. First, the post-closure plan can require the regular removal of all tree seedlings, along with perpetual water treatment. This would entail staff physically monitoring and maintaining the tree-free status of the storage facility at least once every three years in perpetuity. Second, the agencies can design the cap of the tailings facility so it is adapted to the expected tree growth, anticipated root depth and designed to withstand tip ups. Third, the agencies should disclose the effects of a compromised tailings cap in years 150 and beyond, increased infiltration into the tailings facility, anticipated changes in water quantity and quality leaving the tailings facility, and revised costs for addressing these in years 150 and beyond so that water quality standards are still maintained into the future.

In addition, we are concerned about temporary pooling at the lip of the tailings dam during high-water events that may occur post-closure. Because this is a sand-constructed tailings facility, it is very vulnerable to erosion. We recommend designing the lip of the tailings dam with a backup or secondary spillway that will prevent any pooling. In addition, should the designed water channel across the surface of the tailings facility meander or become rerouted, the flow could be redirected away from the current spillway. To resolve this, we recommend designing the final surface of the tailings facility to accommodate meanders and to widen the spillway/incorporate secondary a spillway to capture and direct these flows.

In addition to handling hydrologic events, we recommend that the tailings facility be designed to handle significant seismic events beyond the 6.5 magnitude events.

We understand that IDWR does not approve reclamation design plans until the actual time of final reclamation, but we believe the Forest Service has an obligation to present its version of the reclamation plan to the public as part of this EIS as public resources downstream of the tailings storage facility area are managed by the Forest Service.

Emergency Action Plan for Bruno Creek Tailings Impoundment

We appreciate the having had the opportunity to review the Emergency Action Plan (EAP) for the Bruno Creek Tailings Impoundment. We note that the EAP is written for use during the operating life of the impoundment but will likely need to be modified for the long-term, post-closure phase. We appreciate the protocols for determining the emergency level, the notification and communication list and section on expected actions but believe the EAP could still be improved.

We appreciate the inclusion of the North Custer Rural Fire District and Custer County Emergency Services in the flowchart for Level 2 and Level 3 events, but recommend including them on the call list for Level 1, an Unusual Event, Slowly Developing event. In the event of an urgent situation, the EAP

calls for the evacuation of the area along low-lying portions of Squaw Creek and State Highway 75 and directs the public to proceed to high ground. A map of the low-lying areas that may be affected by a catastrophic failure should be included in the FEIS and the EAP. As with tsunami-evacuation areas along coastlines, federal agencies have mapped out anticipated safety areas in the event of a seismic event (see Tsunami Forecast Inundation Models⁶). The agencies should examine a run-out analysis under different scenarios to see how far material may travel and what type of impact that material may have on water quality and other resources. In the interest of public safety, identifying these areas ahead of time could be critically important for private property owners in the area, for North Custer Rural Fire District, for Custer County Emergency Services, and for the Idaho State Police. The EAP should be updated to include alerting and evacuating boaters and fishermen along the Main Salmon River.

We note that the emergency action steps include detection, emergency determination, notification and expected actions. Under section 5.2.3 for the EAP, we recommend adding a similar flow chart focused on assessment and cleanup steps. Of course, these would be general in nature. However, certain steps could be taken now to identify water quality sampling points both upstream and at varying points downstream, identify all private property owners or municipalities that rely on surface pumping for drinking water, irrigation water, stock water, etc.) and identifying contractors and other resources in advance that are capable of assisting with road and stream cleanup. Cleanup efforts should address both the physical issues posed by release of sediment as well as chemical issues posed by the particulates. This information should be updated as needed throughout the post-closure life of the tailings impoundment, as water uses and users will change.

A modified post-closure EAP for the impoundment will be necessary and should be analyzed as part of the FEIS. Several components of the EAP call for close monitoring, pumping, backup pumping, heavy equipment, and personnel to be on site to properly manage the situation. The list of equipment includes a number of wheel loaders, bulldozers, excavators, graders and trucks. The FEIS should describe which of these components will need to be available after closure of the tailings impoundment to properly implement this post-closure EAP. We note that a measurable earthquake within 50 miles of the dam currently ranks as Situation 1 requiring visual inspection. The FEIS should describe what type of monitoring, management and emergency equipment are necessary for the tailings impoundment post-closure. We note that a new inundation map will likely be necessary as the overall contents and fluid content of the impoundment change during Phase 8 and post-closure.

Cumulative Effects

We also note that lack of data gathered from the Twin Apex, Redbird, and Tungsten Jim Mines does not excuse the agencies from their requirements for a thorough cumulative effects analysis. As mentioned in our DEIS comments, we believe it is critical for the agencies and TCM to conduct a thorough analysis of these issues, as some of these sites may be discharging mine affected water. We point out that sulfate concentrations in Redbird Creek have increased by a factor of three over the last 10+ years (DEIS, p. 3-61). The assumption that beneficial uses are being fully supported here because it is within the S. Creek drainage (p. 3-53) is clearly not warranted. This monitoring is also necessary to establish a baseline and to determine the streams' assimilative capacity, if any. It appears that only one sample has been taken of the discharge from the Twin Apex mine and that this discharge contained elevated metals concentrations. In order to understand the role that the Twin Apex and other mines play in the larger system, additional water samples are necessary and at a variety of flow conditions.

⁶ <http://nctr.pmel.noaa.gov/sim.html>

SUGGESTED REMEDIES

- Develop additional alternative(s) focused on further ways to protect water quality.
- Incorporate bonding as part of the NEPA process.
- The FEIS should be amended to include the lessons learned from the Mount Polley tailings failure as outlined in the investigative panel's final report⁷ and to prescribe any additional design features to address this information. We would particularly like to emphasize the need for an independent tailings pond review panel to assess the final design and long-term management of the facility. We feel that the Mount Polley situation represents a changed condition and warrants additional consideration. We are attaching the official analysis of the Mount Polley tailings failure with these comments.

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- Upgrade the Emergency Tailings Facility Action Plan as discussed above.
- Complete water quality and quantity analyses for Tungsten Jim, Redbird Creek and Twin Apex Mines.
- If water quality is being adversely affected by these mines, incorporate water treatment for the Tungsten Jim, Redbird Creek and Twin Apex Mines in both short and long-term water treatment plans for Thompson Creek, including post-closure.
- These remedies highlight the most significant points in our comments. All deficiencies discussed in the Objection require agency response and remedy.

⁷ Independent Expert Engineering and Review Panel, Report on Mount Polley Tailings Storage Facility Breach, January 30, 2015. Available at:

<https://www.mountpolleyreviewpanel.ca/sites/default/files/report/ReportonMountPolleyTailingsStorageFacilityBreach.pdf>