Idaho Rivers United - PO Box 633 - Boise, ID 83701 - (208) 343-7481 - idahorivers.org

Protecting and Restoring the Rivers and Fish of Idaho

Sherri Stumbo
USDA Forest Service
4350 Cliffs Drive Pocatello, ID 83204

We are pleased for the opportunity to comment on the proposed Smoky Canyon Mine clean-up in Caribou County, ID within the Phosphate Mining District. We appreciate the Forest Service and other agencies involved in developing the proposed alternatives and acknowledging the long-term impacts on the environment and human health resulting from the mining operations at the Smoky Canyon site.

Idaho Rivers United (IRU) is an environmental advocacy organization dedicated to protecting Idaho rivers and restoring our native fish populations. Since our inception in 1990, IRU has been working to defend Wild and Scenic rivers, advocating for endangered and threatened aquatic species, reforming hydropower policy, and promoting enhanced water quality in all of Idaho's rivers. IRU represents over 5,000 members throughout Idaho and beyond. Our members and supporters expect the protection of rivers for their ecological, scenic, and recreational values; accordingly, our mission is to protect and restore the rivers and fisheries of Idaho. We have successfully advocated for and defended Wild and Scenic designations and protections in the Owyhee Canyonlands and the Lochsa-Clearwater River corridor, among many others, and helped protect numerous rivers and watersheds throughout the regions from harmful mining and extraction impacts.

IRU closely monitors any action or activity that may influence water quality, fish habitat, river-based recreation, or riverside recreation in Idaho. As such, please see the subsequent comments related to the proposed clean-up actions. Thank you for the opportunity to submit comments on this project, and please keep us informed of any future developments regarding this proposal and consider including IRU in any future project discussions.

Sincerely,

Nick Kunath

Nick Kunath
Conservation Program Manager
nkunath@idahorivers.org
Idaho Rivers United

Selenium and Aquatic Species

While selenium is a naturally occurring element present in sedimentary rocks and soils, as stated in the Smoky Canyon Proposed Plan[1] (Plan) selenium is also the primary risk driver for both current and future aquatic and terrestrial biota within the site. Based on past studies and the recent Implementation Guidance for Idaho Selenium Criteria published by the Idaho Department of Environmental Quality (IDEQ) it is clear that in aquatic biota, the primary detrimental effects of chronic selenium exposure can result in severe reproductive impairment and stunted juvenile growth. It is chronic selenium exposure due to its bioaccumulative properties, which causes the most deleterious effects on aquatic organisms, leading the U.S. EPA to develop a chronic criterion composed of four elements.[2] This informed IDEQ's own development of both a statewide criterion and site-specific criteria for selenium.[3]

Selenium poisoning in fish populations has been described in research as a "time bomb", because the primary point of impact is at the egg-stage - leading to juvenile deformity and mortality - not necessarily showing up in sampling of surviving adults. [4]

"An important factor in the time bomb scenario is that food-chain bioaccumulation and resultant dietary exposure cause the response curve for selenium poisoning in fish to be very steep. For example, a transition from no effect to complete reproductive failure can occur over a range of only a few g/L (parts per billion) waterborne selenium (Figure 1). Thus, even slight increases can light the bioaccumulation fuse of the selenium time bomb and push it over the toxic threshold." [3]

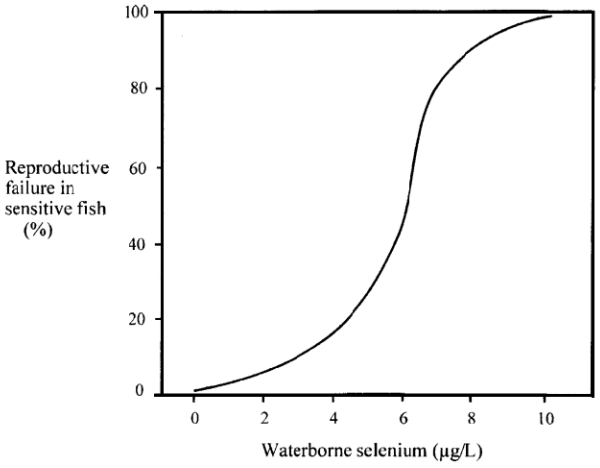

Figure 1. Relationship between the concentration of selenium in habitats favorable for bioaccumulation (*e.g.*, lakes, wetlands) and the degree of reproductive failure in sensitive fish species (*e.g.*, bluegill, *Lepomis macrochirus*). A small increase in waterborne selenium can result in catastrophic impacts on reproductive success. Recent escalation in human activities that promote the mobilization of selenium into aquatic ecosystems threatens to activate this time bomb on a widespread scale in the United States and elsewhere.

[1] USDA Forest Service. 2023. Smoky Canyon proposed plan.

[2] EPA 822-R-21-006

[3] IDAPA 58.01.02 - Water Quality Standards

[4] Lemly, Dennis. (1999). Selenium Impacts on Fish: An Insidious Time Bomb. *Human and Ecological Risk Assessment:* Vol. 5, No. 6, pp. 1139–1151

Within the Smoky Canyon remediation site, Yellowstone cutthroat trout (YCT), brook trout, longnose dace, and sculpins were present in sampling. While none of these species are threatened or endangered species, YCT in particular have seen an incredible decrease in population and habitat range and were petitioned to be included as a Threatened species by the US Fish and Wildlife Service in 1998. Further, YCT in Crow Creek, downstream of the remediation site, constitutes a core conservation population for the species.[5]

Selected Alternative and Analysis

After reviewing the range of alternatives provided in the Plan, we are generally pleased with the selected preferred elements that compose the combined remedy to reduce identified contaminants of potential concern (COPCs) to levels that meet standards outlined in the Plan's Remedial Action Objectives (RAOs).

In the report, it is identified that groundwater transport to the Wells Formation, which in turn is discharged to surface waters via Hoopes Spring and South Fork Sage Creek Springs, as the primary mechanism for selenium and other COPC dissemination. Continued water treatment **must** be a focal point in the final ROD. In particular, we fully support the selection of Alternative 2b, which calls for an increased water filtration capacity to 4,000 gpm at the Hoopes Water Treatment Plant.

As the Plan notes, the increased surface water treatment under Alternative 2b will achieve the RAO for surface water in a shorter time period than that of Alternative 2a, and 2b "provides the highest level of performance with respect to protection of the environment."

By providing an immediate and easy-to-implement action, this remedy must be incorporated into the ROD for this project to help meet ARARs, and construction of the updated water treatment facility must be expedited.

Considering that the Smoky Canyon site is an active mine site and it is foreseeable that additional mining will continue to take place, it is imperative that a robust and durable surface water treatment plant, coupled with the selected alternatives related to ground water treatment and source control covers, are in the ROD as part of the Preferred Alternative if there is to be rapid and permanent reductions of COPCs at this site.

We would also request that in the final ROD, updated data and maps be presented to help visualize the issues at hand. In particular, in reviewing analysis documents, it is clear that selenium within fish tissue samples far exceeds Idaho site-specific whole-body fish tissue criterion (IDAPA 58.01.02 - Water Quality Standards), however, it would be extremely beneficial to have access to any data that shows any trends in sampling that have been conducted up to

5 Gresswell, R. E., 2011. Biology, status, and management of the Yellowstone Cutthroat Trout. North American Journal of Fisheries Management 31:782-812.

this point. Additional sampling will also be required to track the potential impacts of the proposed remedy.

Given that the proposed remedies can reduce selenium concentrations in surface and groundwater in a short time horizon, it is critical that implementation of the Preferred Alternative is not unnecessarily delayed.

We also recommend monitoring and reporting requirements that include the following. 1) Annual monitoring of selenium in water and in fish throughout affected waters with results reported to the Idaho Department of Environmental Quality before February of the year following the sampling. 2) Fish size measurements and population estimates to be conducted once every two years where selenium in fish tissue is less than two times ARARs and annually where selenium in fish tissue is more than two times ARARs. Fish population estimate results should be reported to the Idaho Department of Fish and Game before February of the year following the sampling. Fish population monitoring is important to document any fish population recruitment failures. 3) Continuation of participation with the selenium working group to maintain communications and share data with affected stakeholders.

RAO's and Monitoring

In the Plan, the established RAOs for groundwater, surface water, and soils help guide this process. These objectives do help create a framework to gauge effectiveness, they also lack strong and discrete timelines to help further guide the process. We strongly recommend that in the final ROD, immediate action is taken to work towards implementing the selected remedies, clear deadlines are established, and monitoring and reporting requirements are clearly outlined.

For example, rather than setting the bar around 2035 to see reductions in selenium within site surface waters, creating language within the RAOs that establishes the expectation - *selenium concentrations in downstream surface waters will demonstrate a clear declining trend line towards ARARs immediately following remediation action.*

Language that ties sampling and monitoring efforts to the Plan's RAOs - for groundwater, surface water, and soils - is necessary in order to ensure accountability and meaningful progress towards compliance with ARARs, as opposed to a "wait and see" approach that jeopardizes the health of fish populations in the face of continued selenium bioaccumulation in the system.

Remediation and Ongoing Mining

While current and future phosphate mining in the Smoky Canyon Mine complex is touched on in the Plan, how this activity and subsequent release of COPCs into waters and soil in the area will influence the efficacy of remediation work needs to be investigated. In relation to selenium, where bioaccumulation in fish represents a "time bomb" scenario of irreversible damage at a

population level, discussion in the Plan of how ongoing mining may alter the timeline of Preferred Alternative actions in meeting RAOs and moving selenium towards compliance with ARARs is certainly warranted.