Idaho Farm Bureau Federation
500 West Washington Street
Boise, Idaho 83702
(208) 342-2688

September 22, 2021

Mr. Gary Hess
Regulatory and Stewardship Program Manager
Forestry and Fire Division
Idaho Department of Lands
3284 W Industrial Loop
Coeur d'Alene, Idaho, 83815

RE: IDAPA 20.02.01 - Negotiated Rulemaking

Dear Mr. Hess:

On behalf of the more than 80,500 Idaho families who are members of the Idaho Farm Bureau Federation (IFBF), I appreciate the opportunity to share our comments regarding the proposed rules promulgated under authority of the Idaho Forest Practices Act. Our comments will specifically address section 030.07, the Stream Protection portion of the rules, or "shade rule" as it is commonly referred to.

Many of our members are non-industrial private forestland (NIPF) owners who are directly impacted by these rules. Many additional members are indirectly affected by these rules through business relationships they have developed with private forestland owners. They all have a keen interest in ensuring these rules are appropriate and reduce the economic burdens on private forestland owners in Idaho.

Due to the significant impacts of the shade rule on our members, we have had a policy for many years which states: "We support the Idaho Forest Practices Act except where it infringes on private property rights. We oppose the Forest Practices Act Streamside Retention Rule (shade rule) unless accompanied by fair market appraised value compensation to landowners for loss of property rights." This policy guides our comments below.

The shade rule, as proposed, is more straightforward and easier to understand. Our members sincerely appreciate the efforts that have gone into simplifying the existing rules so that landowners can more easily determine the relative stocking rate, rather than having to hire a forestry consultant as was frequently necessitated under the previous rule.

Unfortunately, the simplicity of the proposed rule does not resolve the underlying issue our members have had since the inception of the rule; it still unfairly restricts their property rights and thus their ability to

manage their private property as they see fit. The shade rule causes loss of economic opportunity with no corresponding benefit to them individually.

Contrast this with the federal Conservation Reserve Program (CRP). When farmers voluntarily choose to take land prone to erosion out of crop production and enter it into the CRP, they are given financial incentive to do so through USDA. Despite the potential for erosion and resulting degradation of downstream waters, incentives are utilized rather than coercion to encourage the planting of perennial native species. The federal government does not force participation, despite the potential downstream effects, recognizing the program restricts the owner's ability to manage their private land.

The shade rule, conversely, provides no incentive to leave trees in the Stream Protection Zone (SPZ). Even worse, if landowners violate the shade rule there are harsh financial penalties for doing so. Why are farmers with potentially erodible land treated differently than forest owners who grow trees adjacent to class I streams? One is given incentives to forego the opportunity to harvest a crop while the other is forced to not harvest with no reimbursement of any kind.

Many who have commented on the rule fail to recognize these rules apply with equal force to private lands as well as public lands. Our members have no objections to applying the rules as proposed to any forest lands managed by public agencies. Our opposition is solely focused on the rule's applicability to the small percentage of Idaho's forested lands that are owned and managed by small, non-industrial private landowners. This ownership accounts for only 6% of Idaho's forestlands or about 1.2 million acres out of approximately 21.2 million acres of forestland in Idaho.

If the NIPF is on a 50-year harvest rotation, that means on average about 24,000 acres would be harvested each year. Of that land, only a small portion would be adjacent to a class I stream, perhaps a couple thousand acres at most per year. This is a tiny fraction of Idaho forestland and will likely have an imperceptible effect on overall water temperatures while unnecessarily imposing severe economic burdens and restrictions on private property owners.

Our members maintain that since the purpose of the rule is to provide benefits to Idaho as a whole (ostensibly maintaining lower stream temperatures that will in turn benefit selected fish and other cold-water biota) then Idaho should be willing to compensate these small, private landowners for the economic value of the timber they are required to leave in the SPZ.

None of our comments would be necessary if landowners were fairly compensated for their loss. Short of that, we provide the following comments on the rule itself.

1. Measuring shade is a very crude proxy for stream temperature effects.

Shade retention is used in the current and proposed rule as a proxy for maintenance of stream temperature. No data exists in Idaho to determine if the amount of shade the rule requires is necessary to achieve the desired results. Similarly, no data exists disproving the desired result could not be achieved with less shade. We understand there are models and all sorts of measurements of percent of shade after harvest that have occurred in Idaho. However, we are unaware that any actual temperature data have been recorded and published pre-harvest and post-harvest to verify the results of the shade rule against a control.

More importantly, we are unaware of any studies that have measured stream temperatures pre-harvest, then several years post-harvest where overstory was removed, and understory was then established naturally, or through intentional planting. This data would show how temperatures vary once understory shades the stream again within a few short years. Natural systems are dynamic and will adapt quite quickly when disturbed. If overstory is thinned or removed, understory will establish itself and move the system back towards equilibrium. It is important to recognize this natural process and allow short time intervals before requiring pre-harvest temperatures to be achieved on NIPF lands.

Again, the amount of class I stream miles impacted by NIPF harvest operations in any given year is but a tiny fraction of the overall harvest amount. In fact, the amount of state, federal, and private land that is burned by wildfires along class I streams each year dwarfs the amount of land that would be harvested along class I streams by NIPF landowners. An argument could be made that any problem of stream temperature has far more to do with wildfire and little to do with NIPF landowners harvesting timber along class I streams. This certainly bears further investigation by IDL before NIPF landowners are prohibited from harvesting their own trees.

We further believe that ease of administration (measuring remaining trees to approximate remaining shade to approximate effects on stream temperature) should not override the need to ensure the result (maintain and enhance fish habitat) is realized in the least burdensome way possible.

Therefore, it is our position that IDL must demonstrate through data that the small amount of harvest conducted by NIPF owners along class I streams does in fact cause a measurable effect on stream temperatures before a rule with such serious economic consequences is required on NIPF lands.

2. Shade is Shade

Our members appreciated the discussion during the negotiated rulemaking process that indicated additional sources of shade could be counted. However, this must be specifically stated in the rule. As currently drafted, it would only be an option through a variance which requires the landowner to develop a site-specific riparian management prescription. Not only is that additional work for the landowner, but that is not the purpose of a site-specific riparian management prescription.

Understory can provide shade just as effectively as overstory while also providing additional benefits. Willows, other brush, sedges, grasses etc. provide both shade and habitat enhancement. Healthy and diverse understory communities contribute to overhanging banks, enhanced insect habitat leading to improved food sources for fish as well as habitat for other wildlife. Conversely, heavy overstory shade causes understory to be “shaded-out” and over time will become much less robust and diverse, degrading both habitat and erosion control properties.

Understory vegetation is typically better suited to controlling erosion from both stream forces as well as overland flows than is overstory. Brush, grasses, sedges, etc. have far more stems and their root systems are denser, providing both better dissipation of hydraulic energy and soil stabilization than a few large stems from conifer overstory.

We request that understory and all other sources of shade be considered in shade retention calculations rather than just conifer or hardwood shade which is far too limiting.

3. Shade alone does not guarantee healthy fish populations.

Good, productive fish habitat consists of many variables where shade (temperature) is but one. Food sources, habitat complexity, hydraulic diversity and pools are equally important. A stream may be the perfect temperature, but if there is no food, there will be no fish. Food is directly related to good habitat for insects and other invertebrates. Often, these species do not thrive in heavy overstory shade, but are typically abundant in healthy, diverse understory communities with earlier successional attributes.

Our members repeatedly share anecdotal stories relating there are far more fish in areas with healthy and diverse understory than there are in stream segments with heavy overstory shade. If healthy fish populations are what we are trying to achieve, we need to provide more opportunities to selectively reduce heavy overstory shade and allow healthy, diverse understory to be established once again.

We request that rather than focusing on one proxy for fish habitat, in this case shade, the rule should instead provide a matrix which gives credits for various fish and wildlife habitat variables. A minimum score could be established which can be reached in numerous ways by maintaining or enhancing specific habitat variables within a specified time frame.

4. The science is inconclusive, and often contradictory on this issue.

There are multiple studies of the factors affecting stream temperature, all which study various facets of this issue. However, several themes have emerged as the studies are reviewed.

a. Water temperature is a complex and dynamic system that is highly site-specific. A singular focus on only one aspect, shade, will not guarantee results.

"The establishment of vegetation shade along streams to control stream temperature may seem reasonable upon first review. However, this is a simplistic view of a complex and dynamic system." *Riparian shade and stream temperature: A perspective, August 1996, Rangelands, L.L. Larson, S.L. Larson*

"Some of the variability in maximum daily stream temperature response was dependent on the percent of catchment harvested and the catchment lithology. There was no evidence for increases in stream temperature in catchments with a high percent of catchment area harvested, but underlain by permeable geology. This may be due to the buffering effect of increases in summer low flows and greater groundwater or hyporheic exchange. Harvested catchments underlain by resistant (less friable) geology experienced the greatest increases in stream temperature. We believe that this is also an expression of variability in rock permeability and the relative contribution of cooler groundwater during the summer months, which warrants additional research focus." *A multicatchment analysis of headwater and downstream temperature effects from contemporary forest harvesting*, 2018, Hydrological Processes, Kevin Bladon, Catalina Segura, Nicholas Cook, Sharon Bywater-Reyes, Maryanne Reiter

b. Geology, stream width, depth, velocity, connection with groundwater, etc. all have an important relationship to water temperature apart from shade.

Kevin Bladon of Oregon State University, and principal author of *A multicatchment analysis of headwater and downstream temperature effects from contemporary forest harvesting* stated in an article on physics.org on January 24, 2018 "Stream temperature is one of those things that people tend to think is

simple and easy to measure. However, the dynamics and all the factors that influence it are quite complicated. Temperatures aren't just influenced by exposure of water to the sun. They depend on things like whether the water flows through the stream bed or through a stream bank, the geometry of the stream channel, how much water there is in the stream channel, and how much groundwater input there is."

c. Water temperatures drop after a period of traveling through shade below a section of stream with no shade. Since not all parcels are harvested simultaneously along streams, there will almost always be downstream shade to mitigate and counteract any potential effects on shade from harvest activities.

"In this study, we observed elevated maximum daily stream temperatures after forest harvesting in several small, non-fish bearing, headwater streams. Despite these increases, we found no evidence for downstream warming related to upstream harvesting activity. Rather, heated water from harvested sites rapidly decreased in temperature after flowing into stream reaches with full forest cover." *A multicatchment analysis of headwater and downstream temperature effects from contemporary forest harvesting*, 2018, Hydrological Processes, Kevin Bladon, Catalina Segura, Nicholas Cook, Sharon Bywater-Reyes, Maryanne Reiter

"Notably, the model predicted that it took approximately 4 hours travel time for water temperature to reach a new equilibrium below a step change of shade. This is consistent with our experimental observations in which heating/cooling rates were high for the first 1.1 – 1.6 h and significantly lower for the second 1.9 – 2.7 h below 40-70% step changes of shade. Thus, we would not expect the high heating/cooling rates reported here to persist for more than approximately 4h travel time below a step change of shade in steams similar to those studied." *Effects of patchy shade on stream water temperature: how quickly do small streams heat and cool?, 2004, Marine and Freshwater Research, J.C. Rutherford, N.A. Marsh, P. M. Davies, S.E. Bunn.*

"During a study of logging and southeastern (Oregon) trout streams, Greene (1950) reported that the maximum temperature dropped from 80 to 68~F after the non-forested steam meandered through 400 feet of forest and brush cover." *Effects of Clear-Cutting on Stream Temperature, Brown and Krygier, Oregon State University, August, 1970.*

d. Streamside vegetation does not take long to establish itself and will provide shade within a few years on its own, thus restoring stream temperatures at a harvest site back to preharvest levels.

One of the Seminal research papers which seems to be continually referenced by other researchers in this field is *Effects of Clear-Cutting on Stream Temperature* by Brown and Krygier, Oregon State University, August 1970. Their study is often cited as justification for retaining streamside shade during harvest operations. However, the authors make several important comments in their publication. Below are a few excerpts:

"Temperature amelioration is related to shade development. As stream bank vegetation becomes reestablished, temperatures drop accordingly."

"On the basis of our data, it seems that summer maximums may approach pre-logging levels within six years after logging has completely exposed the stream" once streamside vegetation has reestablished itself.

"The decline of maximum temperatures after 1967 represent the rapid return of streamside vegetation in this watershed."

In a rebuttal attempting to disprove Larson and Larson's dismissal of the importance of shade on streams to maintain temperature, Beschta admits "functional riparian plant communities that produce adequate stream shade and provide improved bank stability can usually be reestablished and restored, often over relatively short periods of time." *Riparian Shade and Stream Temperature: An Alternative Perspective,* April 1997, Rangelands, Robert L. Beschta

e. Minimum daily stream temperatures are unaffected by shade levels and are a strong buffer against excessive, or runaway daily maximum temperatures.

"We found that the daily minimum water temperature was unaffected by riparian shade. The reason is that daily minimum water temperature is largely determined by air temperature, the exchange of long-wave radiation between the atmosphere and the stream at night, and heat conduction from the stream bed." *Effects of patchy shade on stream water temperature: how quickly do small streams heat and cool?, 2004, Marine and Freshwater Research, J.C. Rutherford, N.A. Marsh, P. M. Davies, S.E. Bunn.*

"Over-night low air temperature will modify the daily temperature range of a stream by influencing pre-dawn water temperature." *Riparian shade and stream temperature: A perspective, August 1996, Rangelands, L.L. Larson, S.L. Larson*

f. A one-size-fits all rule that requires a specified relative stocking rate does not ensure desired results.

"Woody vegetation is only one component in a riparian ecosystem. Its importance is dependent upon site conditions and is site specific. Watershed attributes such as air mass characteristics, elevation gradient, adiabatic rate, channel (water) width and depth, water velocity, surrounding landscape, and interflow inputs all influence water temperature and can be of equal or greater importance to stream temperature than vegetation shade." *Riparian shade and stream temperature: A perspective, August 1996, Rangelands, L.L. Larson, S.L. Larson*

"Shade generated by the topography and/or stream channel will also contribute different levels of shading and exposure for water. Consequently, shade standards should indicate the amount of shade needed, not the quantity and size of woody vegetation." *Riparian shade and stream temperature: A perspective, August 1996, Rangelands, L.L. Larson, S.L. Larson*

The point of all these quotes is that we could have excessively restrictive harvest prohibitions along all our streams and perhaps still not achieve the water temperature goals we are seeking; or alternatively, we might be able to achieve our water temperature goals with far less shade than is currently required since temperature is dependent on many additional site-specific factors than just overstory shade which is the sole focus of the current rule.

In conclusion, we appreciate the simplification of the shade rule that has been proposed. It is an improvement over the current rule. However, it still does not resolve the underlying problem which is an unacceptable restriction on private property rights.

To address this legitimate concern, we recommend that IDL undertake a couple of pilot projects which would provide hard data upon which to inform future iterations of this rule.

IDL should undertake projects on NIPF lands which would gather data quantifying the stream temperature impact of increased harvest in SPZ within different forest types and regions, not only directly following harvest, but also a few years later after diverse understory vegetation has been established.

IDL should undertake projects on NIPF lands which would gather data quantifying the length of time for naturally regenerated shade from understory riparian vegetation in the SPZ equal to that of recently harvested overstory shade across different forest types and different systems/levels of harvest.

Until these studies are undertaken, and hard data is quantified, there will be legitimate questions about the necessity of current tree retention requirements within the SPZ for NIPF owners.

Thank you for the opportunity to comment on this proposed rule and the significant effect it has on our members. If you have any additional questions, please contact Russ Hendricks in our Boise office at 208-342-2688.

Sincerely,

Bryan Searle, President