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Subject: Addendum to Fisheries Biological Evaluation for the No-Action Alternative (Alternative A) of the Gold Crown Fuels Reduction Project
To: Richard Kramer, Sandpoint District Ranger
Cc: Jennifer Costich-Thompson, Project Leader

The purpose of this document is to analyze the effects of the no-action alternative (Alternative A) for the Gold Crown Fuels Reduction Project on Fisheries Resources.

## Determination of Effects and Rationale

The purpose of this section is to provide an analysis of the anticipated changes in habitat conditions and fish populations as a result of the no-action alternative. This section documents the direct and indirect effects to aquatic habitat elements (i.e., INFS Riparian Management Objectives [RMO]) relevant to this project and overall effects to sensitive species (Table 6). To further analyze the fire-risks and effects of severe fire on fisheries resources, I have examined the project within the contexts posed by Dunham et al. (2003), Dwire and Kauffman (2003), and Rieman et al. (2003).

### *Direct/Indirect Effects*

Under the no-action alternative (Alternative A) of the Gold Crown Fuels Reduction Project, vegetation or fuels reduction treatments would not be performed and roads would not be constructed or reconditioned. More intense and lasting road maintenance (culvert upgrades, repair of drainage problems, etc.) would not occur in the project area. Specifically maintenance related to the 2642 C Rd where drainage problems were identified would not be performed as part of the no-action alternative (Alternative A.) As a result, the short-term negative impacts related to road maintenance work, followed by the long-term benefits derived from improving the drainage and reducing overall sediment delivery potential would not occur.

With the absence of fuel treatments, the no action alternative could have other effects. No action could indirectly result in a higher risk of a stand-replacing, high-intensity wildfire across the project area because fire suppression activities could be more difficult as a result of the more extreme fire behavior encountered in untreated areas (see Fire, Fuels, and Air Quality Report). A high-severity fire is not certain to occur within the project area during a given timeframe; however, such an event could result in indirect “fire-related” effects to fisheries resources. I note here that it is not possible to predict when and where fires will occur. To a greater extent, we know much less about fire effects in riparian areas and forecasting with any degree of certainty the exact effects of fires in riparian areas is speculative at best. Rather, we can describe, in general terms, fire risks and effects to riparian areas and fisheries resources.

In the project area, high intensity fires occurred in the not too distant past. Many of these small streams, including Gold and Hays Gulch, experienced severe wildfires in the 1920s and 1930s (Figure 1). Very little riparian forest remained intact during those events except for some patches in middle reaches and at the mouth of Gold Gulch as well as the southern slope (north-facing aspect) of Hays Gulch. Most of the small drainages were completely denuded of vegetation. Changes in channel morphology, sediment regime, and thermal conditions undoubtedly ensued. Yet, within 80 years these streams and fish communities have recovered from this disturbance.

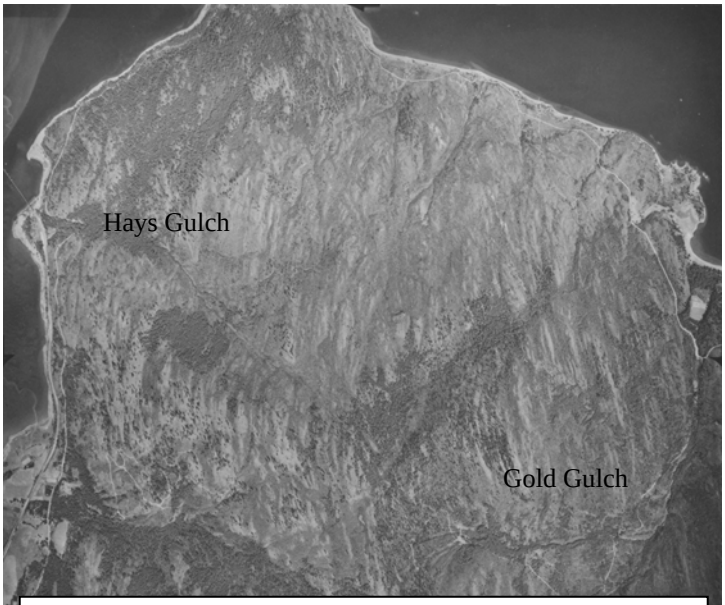

Figure 1. Aerial photo taken in 1944 showing extent of the the 1920 and 1930 fires.

Another high-intensity wildfire would have potential for impacts to Fisheries Resources in severely-burned watersheds. The Hydrology and Soils reports for the Gold Crown project concluded that a severe fire event could increase the potential for soil erosion and sediment delivery to streams. This, in turn, could pose short-term negative effects to stream habitats and fish species currently inhabiting streams. As a matter of scale and magnitude, it should be clarified that fire-induced or for that matter harvest-induced sediment yield still is considered only a fraction of the inputs of fine sediment from extensive forest road construction and forest road networks (Rieman and Clayton 1997). The road network of the Gold Crown Project Area is not considered extensive, but does contribute and has contributed greater amounts fine sediment to streams than would a fire over the course of decades that the roads have occurred.

Observational studies have detected higher water temperatures, increased nutrients in water, shifts in aquatic insect communities, decrease in gravel size, greater embeddedness due to upslope erosion, less large wood and habitat in burned streams (at least 40% burned catchment) than obeserved in nearby unburned streams (Minshall et al. 1997). Post-fire erosion has been linked to acute punctuations of sediment, from fines to boulders, and woody debris materials (Benda et al. 2003). Further, this pattern of sediment/debris inputs following fires likely produce new habitats and the patchy distribution of habitats. These short-term post-burn habitat effects can be severe enough to cause direct mortality (Minshall and Brock 1991) and local extirpation of fish popuations (Howell 2006, Rinne 1996). Fish populations in small streams, can be quite

vulnerable to extirpation by severe fires because they are primarily resident fish and are isolated from founding populations by barriers. Such is the case for Hays and Gold Gulch owing to the impassable culverts under Bottle Bay Road. Recovery of these fish populations would depend upon surviving individuals above these culverts.

Over the long-term, the understood impacts of fires and severe fires, for that matter, on fisheries can be beneficial when well connected, complex habitat network exists (Rieman and Clayton 1997). The same disturbance processes of mass sediment and wood delivery into streams that can cause those short-term negative impacts, in fact serve as processes for renewal of habitats and an influx of nutrients (Gresswell 1999). Others studies have recorded dramatic improvements in fish habitat quality and diversity as well as use of habitats by trout within 5 – 10 years post-fire (Burton 2005). As for riparian areas, our current understanding of fire risks, riparian processes related to fire, and fire behavior in riparian areas is poor.

**Determination of Effects on Bull Trout**

Although bull trout are regular inhabitants of Lake Pend Oreille, there are no streams or waterbodies within close enough proximity to this project's activities to affect this species or any of the habitats on which it depends. Because bull trout do not use any of the streams within the project area, the closest Designated Critical Habitat for bull trout is Lake Pend Oreille and there are no direct or indirect effects from no-action alternative that could affect bull trout within the lake. Therefore, this alternative would result in ***No Effect*** to bull trout.

**Determination of Effects to Sensitive Species**

Westslope cutthroat trout likely occupy portions of Gold Gulch and Hays Gulch (see Fisheries Analysis Map). The habitats in these first and second order streams are typical of steep headwaters and contain woody debris jams and step – pool habitat formations.

In the event of a severe and catastrophic wildfire, the short-term negative effects to aquatic habitat described above have the potential to negatively impact westslope cutthroat trout in Hays and Gold Gulch. Fires could cause inputs of sediments across a range of sizes and increases in temperatures, which would affect westslope cutthroat trout through gill irritation, displacement, temporarily altered feeding habits, even death and potential local extirpation. These effects would occur for a short duration (1-5 years) and likely would not affect the entire stream length because fires in riparian zones burn with mixed severity and produce patches of burned and unburned riparian forest stands. We have no models to predict the spatial extent and/or timing of fire events; however, the fuel models of riparian forest stands along fish-bearing portions suggest that they would respond in a manner consistent with patchy burns and mixed severity. This suggests that there would be patches of refuge habitat where cutthroat trout could survive and ultimately recolonize degraded stream reaches. Our current understanding of riparian fire ecology and the fact that this species has evolved with fire as a natural and renewing disturbance mechanism means that the anticipated mixed severity riparian wildfire would occur within known ecological limitations of this species. Therefore, I find that

consequences of the No Action Alternative will have ***No Impact*** to westslope cutthroat trout.

**Cumulative Effects**

This section addresses how the No Action Alternative would potentially contribute cumulatively to the past, ongoing, and reasonably foreseeable activities' effects to MIS and fisheries resources as defined by the National Environmental Policy Act of 1970. The cumulative effects area for fisheries is the same as the project area boundary and encompasses approximately 8,601 acres. The Gold Crown Fuels Project occurs within a specific area of the Lake Pend Oreille Riparian Composite 5$^{th}$ level watershed (5$^{th}$ Level HUC No. 1701021401).

A complete description of relevant past, present, and foreseeable actions related to the cumulative effects to fisheries resources can be found in the cumulative effects analysis of the Action Alternative (Alt. 2). Due to the fact that the described fire-related effects and perceived effects of not pursuing any activities of the projects <u>would not have any predictable, measurable effects, there are no effects that would contribute to a cumulative impact</u> on fisheries resources.

If high severity fire does not burn the project area in the future or only burns a very small portion, the cumulative effect of no action would likely be a continuation of the status quo. Existing fish populations would likely continue on the same current state.

If high severity fire burns an extensive portion of the Hays or Gold Gulch in the future, the existing chronic sediment inputs from the road network could overlap with a large pulse (i.e. one time shot) of sediment that follows severe fire. This overlap in disturbance regimes could exacerbate and prolong the negative effects of post-fire sedimentation for at least five years. Research indicates that the short-term pulse of sediment created by fire is clearly more favorable and tolerable for the fishery than the constant sediment inputs produced by roads (Rieman and Clayton, 1997). However, the combination of the two disturbance regimes could prolong the recovery of probable westslope cutthroat trout populations in Hays and Gold Gulch to pre-fire conditions. Given the presence of the impassable culvert barriers near the mouth of Hays and Gold Gulches, any post-fire recovery of these populations would have to come from within the drainages. With this context, if an extreme fire event occurred, probable westslope cutthroat trout populations would likely face a heightened risk of extinction.

## Consistency with Forest Plan Standards

The No Action Alternative of the Gold Crown Hazardous Fuels Project is consistent with the Forest Plan for the Idaho Panhandle National Forests (IPNF) (USDA Forest Service 1987) as amended by the Inland Native Fish Strategy (INFS) (USDA Forest Service 1995) and subsequent changes (USDA Forest Service 2005). There are no actions upon which the Forest Plan Standards and Guides can be applied. Given our knowledge of the state of the FS road network; however, failure to address known road maintenance issues

and problems does not meet the intent of INFS Standards RF-1 and RF-2 (USDA Forest Service 1995).

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## Literarature Cited


Benda, L., D. Miller, P. Bigelow, and K. Andras. 2003. Effects of post-wildfire erosion on channel environments, Boise River, Idaho. Forest Ecology and Management 178: 105-119.

Burton, T. A. 2005. Fish and stream habitat risks from uncharacteristic wildfire: Observations from 17 years of fire-related disturbances on the Boise National Forest, Idaho. Forest Ecology and Management 211: 140-149.

Dunham, J. B., M. K. Young, R. E. Gresswell, and B. E. Rieman. 2003. Effects of fire on fish populations: landscape perspectives on persistence of native fishes and nonnative fish invasions. Forest Ecology and Management 178: 183-196.

Dwire, K. A., and J. B. Kauffman. 2003. Fire and riparian ecosystems in landscapes of the western USA. Forest Ecology and Management 178: 61-74.

Gresswell, R. E. 1999. Fire and Aquatic Ecosystems in Forested Biomes of North America. Transactions of the American Fisheries Society 128: 193-221.

Howell, P. J. 2006. Effects of Wildfire and Subsequent Hydrologic Events on Fish Distribution and Abundance in Tributaries of North Fork John Day River. North American Journal of Fisheries Management 26:983–994.

Minshall, G. W., and J. T. Brock. 1991. Observed and Anticipated Effects of Forest Fire on Yellowstone Stream Ecosystems, Chapter 10 *In* The Greater Yellowstone Ecosystem: Redefining Americas Wilderness Heritage, *eds.* R. B. Keiter and M. S. Boyce. Yale University Press, New Haven, CT.

Minshall, G. W., C. T. Robinson, and D. E. Lawrence. 1997. Postfire responses of lotic ecosystems in Yellowstone National Park, U.S.A. Canadian Journal of Fisheries and Aquatic Sciences 54: 2509–2525.

Rieman, B. E., and J. Clayton. 1997. Wildfire and Native Fish: Issues of Forest Health and Conservation of Sensitive Species. Fisheries 22: 6-14.

Rieman, B. E., D. Leeb, D. Burns, R.Gresswell, M. Young, R. Stowell, J. Rinne, P. Howell. 2003. Status of native fishes in the western United States and issues for fire and fuels management. Forest Ecology and Management 178: 197-211.

Rinne, J. N. 1996. Short-Term Effects of Wildfire on Fishes and Aquatic Macroinvertebrates in the Southwestern United States. North American Journal of Fisheries Manaftement 16:653-658.

USDA Forest Service. 1987. Forest Plan and Record of Decision for the Idaho Panhandle National Forests.

USDA Forest Service. 1995. Inland Native Fish Strategy Environmental Assessment. USDA, Forest Service Intermountain, Northern, and Pacific Regions.

USDA Forest Service. 2005. Fry Emergence Amendment to the Idaho Panhandle National Forest Plan.