Memo

To: Erick Walker, Deciding Official

From: Brandon Glaza, Hydrologist

Date: 5/24/2018

Re: Grouse BMU Compliance Project – Hydrology Report

The Grouse BMU Compliance project proposes to store approximately 28 miles of roads in order to meet the standards for the Grizzly bear access amendment. The project also proposes to re-route about 2 miles of Forest Road 280 away from Grouse Creek. The project proposes two alternatives, no action and the proposed action which includes the road storage and re-route segment.

Though the road segments were identified primarily for wildlife habitat reasons, the proposed action *only* includes activities that would improve and benefit hydrologic resources. The benefits of this project are summarized below in lieu of an extensive hydrology analysis and report.

The EA includes detailed descriptions of which roads and road segments are proposed for storage and re-route.

Direct and Indirect Effects

Reduced Road Densities

Road densities can provide a relative measure of road-stream interaction and the relative risk for increased flows and sediment input into the hydrologic system. Roads (including ditches and culverts) can alter hydrologic function of a watershed by moving water faster thru the system. Road density is sometimes used as a proxy for impacts to streams and watersheds and has been shown to generally reduce fisheries composition and persistence with higher densities. A review of research in Idaho and elsewhere concluded that non-channelized runoff from roads has a low probability of traveling further than 300 feet (Belt. et al. 1992). Road densities located within Riparian Habitat Conservation Areas (RHCAs) which is typically within 300 feet of streams, are at greater risk for flow modification and sediment loading.

Road densities would decrease with the implementation of the proposed action. The decrease is due to the proposed road storage of 28 miles. The overall lower road density, especially the road density within RHCAs, would help decrease the probability of modifying flows and decrease the likelihood of contributing sediment into stream networks. Road densities within RHCAs would also be further reduced by the re-routed segment of forest road 280, which would move the road away from Grouse Creek.

The no action alternative would not change road densities.

Reduced Sediment Delivery and Risk of Sediment Delivery

Forest roads can be chronic sources of sediment because; road construction, use, and maintenance compact soils, reduce infiltration, intercept and concentrate surface and subsurface runoff, and limit growth of vegetation. Road ditches can be a direct conduit of sediment from ditch and road erosion into live water bodies. Also, roads can increase the frequency and magnitude of mass wasting (i.e. landslides) by one of several ways:

- Improper alignment can undercut the base of unstable slopes.
- Roads can intercept, divert, and concentrate runoff to sections of the hillside that are unaccustomed to overland flow causing soil saturation and slope failures.
- Culverts and other drainage structures can become plugged with debris and the subsequent flow over the road surface can cause failures.

If roads are located on sensitive landtypes, the probability of failure is increased. All of these characteristics can lead to a negative effect on aquatic resources.

While some amount of sediment delivery may not be inherently detrimental to aquatic resources, sources of sediment from anthropogenic activities can be controlled and should be addressed where necessary. The most common source of sediment in the project area, resulting from anthropogenic activities, is from roads. Sediment from roads tends to be of a size which has more ecologically damaging properties. While sediment contributions from roads may be relatively minor component compared to landscape scale sediment regimes, roads are areas where sediment delivery effects from management activities can be reduced.

The proposed action would reduce sediment delivery and reduce the risk of sediment delivery from road failures as a result of the 28 miles of road storage prescriptions and the re-route of Forest Road 280. Several road crossings on the storage segments were identified during field reviews to have active erosion processes that were delivering sediment to the stream network (i.e. blocked culverts diverting water onto the road). Those sites would be addressed by the road storage prescriptions to improve drainage and remove the failed culverts. However, the majority of the roads surveyed were found to be in a heavily vegetated condition and lack of active erosion processes. Research conducted on the IPNF indicates that thick duff, vegetation, and moss layers found on brushed-in roads protects the surface from erosion (Foltz et al. 2009). Since active sediment contributions are low from these segments, benefit would primarily be realized in the form of reduced risk of sediment delivery from culvert failure due to insufficient capacity or blockage. Storage would remove high risk drainage structures and install additional drainage, such as waterbars and relief swales, to render the road stable and hydrologically inert.

The portion of the Grouse Creek Road (#280) that is proposed to be re-routed has a long history of road maintenance issues because several sections of the road are within the Grouse Creek floodplain. The most recent damage occurred during a flood event in 2015 where streamflow was diverted down the road causing heavy erosion which was deposited in the Grouse Creek channel. Relocating the road farther up the hillside, would place it where any sediment generated from the road would not be delivered to the stream network. The new road would also require less maintenance as it would not be impacted by high water events in the Grouse Creek Channel. The existing route would be decommissioned by decompacting the driving surface and recontouring the road prism. Slash and mulch would be added to disturbed soil and selected areas would be revegetated. This would reduce the risk of future sediment delivery from this segment of road.

The sediment reductions as a result of this project would be in compliance with the sediment Total Maximum Daily Loads (TMDLs) that have been developed and approved for Grouse and Lightning Creeks.

The no action alternative would not address the existing sediment sources, it would not reduce the risk of additional culvert failures nor would it contribute to the sediment load reductions specified in the TMDLs.

Water Temperature

Grouse, Lightning and Trail Creeks are listed as impaired by excessive water temperatures, however, either alternative would not further degrade water quality with respect to temperature because the proposed road activities would retain the canopy cover that prevents solar inputs to the stream.

Cumulative Effects

Cumulative effects will be examined at the 6th code hydrologic unit scale (HUC). The Grouse BMU project lies within five 6th code HUCs; Rapid Lightning Creek, Lower Pack River, Grouse Creek, Trail Creek-Deep Creek, and Twentymile Creek. Analyzing at the next higher stream level (the entire Pack River or Kootenai River drainage) would be too large to detect project related effects.

The following is a list of past, present and ongoing projects that were considered during the cumulative effects analysis.

Table 1. List of Past, Present, and Reasonable Foreseeable Activities in the Cumulative Effects Area.

Past Actions
Clear Black Roadside Salvage
Fire suppression
Grouse Creek Large Woody Debris Project
Helispot Maintenance
Noxious weed treatments
Past road decommissioning and road storage closures
Past timber harvests on all land ownerships
Precommerical thinning
Private Land Development
Reforestation
Road maintenance and reconstruction
Special forest products personal use (e.g., firewood gathering, berry and mushroom picking)
State and Private Lands road construction
Trail maintenance

Present
Grouse Creek Large Woody Debris Project
Helispot Maintenance
Northzone Roadside Salvage Project
Noxious weed treatments
Other timber projects on state and private lands
Precommerical thinning
Road maintenance and reconstruction
Special forest products personal use (e.g., firewood gathering, berry and mushroom picking)
State and Private Lands road construction
Trail maintenance
Twenty Mile Project
Western Pleasures Special Use Permit
Future Actions
Boulder Project
Fire suppression
Fire suppression and fire use activities
Helispot Maintenance
Noxious weed treatments
Other timber projects on state and private lands
Precommerical thinning
Private Land Development
Reforestation
Reforestation in burned areas
Road maintenance and reconstruction
Special forest products personal use (e.g., firewood gathering, berry and mushroom picking)
State and Private Lands road construction
Trail maintenance

Cumulative Effects Discussion

The combination of direct and indirect effects of the proposed action with past, present and reasonably foreseeable activities within the cumulative effects area would result in an overall net decrease in sediment yield and road densities to the project area watersheds upon project completion. The reduced sediment delivery and road densities from this project project would result with more natural and resilient watershed habitat and processes.

Project Design Features and Best Management Practices

The EA includes a list of design features and BMPs that would minimize impacts to aquatic resources during the implementation of the project.

Compliance with the Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

Idaho Panhandle National Forests Plan

The proposed action alternative meets the requirements of the IPNF Forest Plan for water resources and fisheries. The reduction in sediment delivery, reduced risk of road failures, improved aquatic organism passage (through culvert removals) and protection or improvement of RHCAs would all benefit aquatic resources. The hydrology project file contains information regarding compliance with specific forest plan goals, objectives, guidelines and standards.

Clean Water Act, Including State of Idaho Implementation

The proposed action would be consistent with the requirements of the Federal Water Pollution Control Act as amended by the Clean Water Act, 33 U.S.C. §1251. Water temperature would not increase in the listed segments within the project area as a result of implementation of any alternative or any of the foreseeable actions. Streamside vegetation would be preserved and will continue to grow and mature thus providing additional shade over time. As a result of the proposed action, the net sediment reduction from the road prescriptions would progress toward the required sediment load reductions specified in the TMDLs for Grouse and Lightning Creeks.

Idaho Forest Practices Act

Best Management Practices or soil and water conservation practices would be applied under the action alternative, and all activities comply with the guidelines in the soil and water conservation handbook. A recent audit of BMPs pertaining to water quality indicates the USFS averaged 99% compliance with BMP rules since 1996, and identifies that BMPs are effective when properly installed (IDEQ 2016).

Idaho Stream Channel Protection Act

The proposed action would be consistent with the requirements of this act. INFS criteria incorporates specific protections for stream channels, and is included in this project.

Executive Orders 11988 and 11990

All alternatives are consistent with these EO’s regarding floodplains and wetlands. This project proposes no development within wetlands or floodplains. Further, INFS criteria incorporates specific protections for these areas, and is included in this project.