REPLY to The Stibnite Gold Project
Supplemental Draft Environmental Impact Statement
Sediment from Access Roads and Transmission Rights of Way
January 10, 2023

Background

Don Newberry has over 25 years of experience as a fish biologist and aquatics management of public lands. His experience includes ecology of fishes, management of anadromous and resident fisheries in streams and lakes, monitoring of anadromous spawning substrates, habitat relationships, aquatic habitat restoration and the effects of management of public lands on streams and rivers of the Boise National Forest, Cascade and Lowman Ranger Districts between 1982 and 2007. His education includes a Bachelor's degree in Zoology from Southern Illinois University-Carbondale, and a Master's Degree in Biology (fisheries and limnologic emphases) from Murray State University. He is retired from the USDA Forest Service, and resides in Cascade, Idaho.

Executive Summary

An EIS must describe the environmental baseline of the areas to be analyzed: 40 C.F.R.§ 1502.15. An accurate baseline is "essential" to an informed analysis. The current condition of fisheries habitat was not updated from the effects of wildfires in the Riordan, Trapper and Burntlog drainages starting in 2005 and occurring as recently as 2020. The baseline data is not up to date in many variables such as sediment input from fires, stream shading, habitat changes from downed woody materials, pools, etc.

Changes in the Watershed Condition Indices (WCIs) are discussed both in the DEIS and the SDEIS using the functional condition levels (e.g., Functioning Appropriately (FA), at Risk (FR), or at unacceptable risk (FUR)) only. No numeric indication of change is given to show the amount or direction of change from the proposed actions of: # Road /Stream crossings; Road miles in Landslide prone; Road miles in Riparian Conservation Areas; Change in Drainage network; Road density; and Road miles.

No evaluation of erosion or sediment delivery from either the Burntlog or the Johnson Creek access roads or the sediment potentially delivered from the Transmission line Rights of Way have been attempted in the DEIS or the SDEIS.

Monitoring of sediment in streams from road reconstruction or construction, and Right of Way construction or reconstruction is not described in any detail in the DEIS or the SDEIS. No discussion of the site locations or methods to be used for either long term fish habitat monitoring, or construction/reconstruction sediment monitoring of roads and Right of Ways is available. It is evaded through the use of, "*Expected permit stipulations from IDWR and IDEQ would ensure streambank vegetation would be protected except where its removal is necessary. New cut or fill slopes not protected with some form of stabilization measures would be seeded and planted with native vegetation to prevent erosion. Use of temporary erosion and sediment control BMPs also would be employed.*" p. 109 Fisheries Specialist report

Monitoring methods for fish substrate habitat using Nephelometric Turbidity and Total Suspended Solids were discussed in the DEIS. These metrics are different from the methods required by the Payette and Boise NFs for stream substrate. This discussion is missing from the SDEIS.

A distance of "91 meters" used as a road buffer strip for sediment and some toxic materials was used in the DEIS. Distances of both "0.5 mile" and "100 feet" occur in the SDEIS replacing the former distance without explanation.

Burntlog (FR 447) and Johnson Creek (CR-10-413) access road problems for each road and for items common to both roads reconstruction are discussed. Problems discussed include: low slope construction vs. high/mid-slope road locations; running surface and ditchline erosion; cutslope and fillslope erosion and lack of monitoring; sediment into perennial and intermittent streams leading to bull trout, Chinook and Steelhead Critical Habitat and lack of monitoring; lack of any avalanche debris storage description; Landtypes highly susceptible to erosion or slope failures being crossed; culvert /bridge installation and sediment monitoring during construction or reconstruction; and competency of the granite being proposed to be used as surfacing materials.

The Burntlog Maintenance facility in the DEIS has two possible locations-one described as within 150 ft from Peanut Creek and the other about ½ mile farther East, described as 4.4 miles from the Warm Lake/ Johnson Creek road junction. The SDEIS only describes the site at 4.4 miles. These sites are vastly different.

The Landmark Maintenance facility has problems with its closeness to the Landmark Ranger Station NHR site from noise and light pollution. The site builds in the stream RHCA, "*The nearest waterbody to the relocated Landmark Maintenance Facility would be Landmark Creek, which would be* ***just a few feet away from the facility footprint****. Landmark Creek is listed by IDEQ as impaired (Category 4A) for water temperature, with a designated beneficial use of salmonid spawning."* **A new location near the Landmark Airstrip is a proposed mitigation.**

Sediment production from the proposed Transmission Line Right of Way reconstruction and new construction are discussed. The lack of sediment monitoring during and after construction; the difficulty of the landtypes to revegetate, the lack of an estimate of potential sediment produced especially in segments adjacent to existing roads and perennial fish bearing streams; the lack of a monitoring design or program is discussed.

Three locations where cumulative effects are not described or evaluated are discussed: Cabin /Trout Creek road (FR 467) with OSV 16 ft road widening; adjacent RoW transmission line reconstruction with 14 ft access roads; The 416W (Horse Heaven) road transmission line RoW construction, and the widening of the 416W adjacent to Riordan Creek; and the Johnson Creek road widening/reconstruction with the transmission line RoW reconstruction above it for 8 miles and the 16 ft wide OSV track adjacent to the Johnson Creek road.

Mud Lake, a Class 1 Fen, is immediately adjacent to the Burntlog (FR 447) road and Peanut Creek. It contains plant species of concern, *Rannoch-rush (Scheuchzeria palustris),* and rare *Carex* *limosa* which may be potentially affected by fugitive road dust, sediment abatement chemicals, potential chemical or fuel spills; and hydrologic alteration of the fen by road reconstruction. No monitoring of the fen or any affects by road reconstruction or continued maintenance are described in the DEIS or SDEIS.

Antimony concentrate will be shipped from the mine site to the SGLF in "supersacks" on flatbed trailers before being placed in containers for shipping elsewhere. Questions about the moisture proofing of the sacks, the ability to recover the concentrate after a spill, the effects of the spilled concentrate on soils and in streams are raised. Neither the DEIS or the SDEIS discuss this.

The Western Pearlshell mussel (WEPE), *Margaritifera falcata* use the listed Threatened fish species and others to propagate their larval forms by attaching to the fish's gill filaments. They are listed in Idaho as "S2" imperiled. WEPE are listed as a subsistence food source by the NPT. The mussels require currents and coarse stream substrate, similar to fish spawning habitat requirements. No monitoring has been accomplished in Johnson Creek or any of the EF South Fork Salmon River and tributaries on the mine site or in the tributaries to Johnson Creek affected by proposed access roads.

Whitebark pine, *(Pinus albicaudata)* is a federally proposed Threatened species as of December 2020. The 2021 MMP would impact approximately 259.4 acres of occupied whitebark pine habitat and would remove an estimated 1,236 individual trees, 23 of which would be mature, cone-bearing individuals. The SDEIS does not discuss any mitigation for the trees lost.

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TOPICS DISCUSSED IN DETAIL

The comments below identify insufficient or are missing information from the SGP SDEIS and analysis. The requested information is required to understand the effects of the SGP SDEIS proposal on streams listed by IDEQ as impaired and fish listed under the ESA as Threatened.

1. What are the effects of the 2005, 2006, 2007, 2008 and 2020 fires on the Johnson Creek, Burntlog, Riordan and Trapper subwatersheds?

Comment: The baseline WCIs need to be re-evaluated before the SDEIS is considered complete so the effects of the SGP proposal will be more correctly analyzed on current baseline WCIs.

Comment: In the nearby Boise River basin Isaak, et. al. found: *"Radiation increases from wildfires accounted for 9% of basin-scale temperature increases, despite burning 14% of the basin. Within wildfire perimeters, however, stream temperature increases were 2–3 times greater than basin averages, and radiation gains accounted for 50% of warming. Thermal habitat for rainbow trout (Oncorhynchus mykiss) was minimally affected by temperature increases, except for small shifts towards higher elevations. Bull trout (Salvelinus confluentus), in contrast, were estimated to have lost 11–20% (8–16%/decade) of the headwater stream lengths that were cold enough for spawning and early juvenile rearing, with the largest losses occurring in the coldest habitats. Our results suggest that a warming climate has begun to affect thermal conditions in streams and that impacts to biota will be specific to both species and context. Where species are at risk, conservation actions should be guided based on considerations of restoration opportunity and future climatic effects."* **(Source: DANIEL J. ISAAK, CHARLES H. LUCE, BRUCE E. RIEMAN, DAVID E. NAGEL, ERIN E. PETERSON, DONA L. HORAN, SHARON PARKES, AND GWYNNE L. CHANDLER. *Ecological Applications*, 20(5), 2010, pp. 1350–1371.** _ 2010 by the Ecological Society of America

Comment: **"***Our limited understanding of the short and long-term effects of fire on fish contributes to considerable uncertainty in assessments of the risks and benefits of fire management alternatives. A primary concern among the many potential effects of fire is the effects of fire and fire management on persistence of native fish populations. Limited evidence suggests vulnerability offish to fire is contingent upon the quality of affected habitats, the amount and distribution of habitat (habitat fragmentation), and habitat specificity of the species in question. Species with narrow habitat requirements in highly degraded and fragmented systems are likely to be most vulnerable to fire and fire-related disturbance. In addition to effects of fire on native fish, there are growing concerns about the effects of fire on nonnative fish invasions."* ***(Source:*** **J.B. Dunham et. al. Effects of fire on fish populations: landscape perspectives on persistence of native fishes and nonnative fish invasions. Forest Ecology and Management 178 (2003) 183–196.)**

Comment: **"***Recent climate-driven increases in the severity and extent of wildfire suggest that basin-scale sediment yields within the next few years to decades could be greater than the long-term average rate of 146 T* *km−2 year−1 observed for central Idaho. These elevated sediment yields will likely impact downstream reservoirs, which were designed under conditions of historically lower sediment yield. Episodic erosional events (massive debris flows) that dominate post-fire sediment yields are impractical to mitigate, leaving road restoration as the most viable management opportunity for offsetting climate-related increases in sediment yield. However, short-term sediment yields from experimental basins with roads are three orders of magnitude smaller than those from individual fire-related events (on the order of 101 T km−2 year−1 compared to 104 T km−2 year−1, respectively, for similar contributing areas), suggesting that road restoration would provide a relatively minor reduction in sediment loads at the basin-scale. Nevertheless, the ecologically damaging effects of fine sediment (materialb6 mm) chronically produced from roads will require continued management efforts."* **(Source: Jaime R. Goode, Charles H. Luce, John M. Buffington .2012. Geomorphology 139-140. pp. 1-15)**

Question: How do the WCIs from the 2003 Payette NF and 2010 Revised Boise Forest Plans differ from the current baseline WCIs after three major wildfires in the Burntlog, Riordan, Trapper Creek subwatersheds within the last 13 years?

2. No listing of the actual WCI values is shown in the DEIS or the SDEIS.

Comment*: "**6.1 Watershed Condition Indicators** Furthermore, the WCI matrix comprises a series of "pathways" by which mining, reclamation, or restoration activities can have potential effects on native and desired non-native fish species, their habitats, and associated ecological functions. This ecological functionality is broken down into three separate categories: "functioning appropriately," "functioning at risk," and "functioning at unacceptable risk." Where possible, quantitative values are applied to determine the functionality. The same description of the pathways and WCIs can be found in Table B-1, Appendix B of each Forest Plan (Forest Service 2003, 2010a)."* **(Source: *Fisheries and Aquatic Habitat (Including Threatened, Endangered, Proposed, and Sensitive Species) Report p. 30.)***

Comment: The SDEIS Fisheries and Aquatics Specialist's Report, 7.2.3.3, table 7-9 used indicators of directions that the WCI's were trending. The SDEIS does not.

Comment: Positive and negative numeric trends within each WCI functionality need to be demonstrated so that short and long term changes are understood.

Question: What are the changes in actual WCI numeric values for the Upper Burntlog, Trapper and Riordan subwatersheds for the following WCI values:

- # Road /Stream crossings;
- Road miles in Landslide prone;
- Road miles in Riparian Conservation Areas;
- Change in Drainage network;
- Road density;
- Road miles.

These numeric values are missing and should be included in the SDEIS/FEIS.

3. Johnson Creek (CR 10-413), Burntlog (FDR 447) and Stibnite Roads (CR 50-412) have no sediment delivery or erosion assessment presented in the DEIS or the SDEIS.

Comment: SDEIS 3.12.4.1 p. 3.287 "*The USFWS identified threats to bull trout persistence as "the combined effects of habitat degradation, fragmentation and alterations associated with dewatering, road construction and maintenance, mining, grazing; the blockage of migratory* *corridors by dams or other diversion structures; poor water quality; incidental angler harvest; entrainment into diversion channels; and introduced nonnative species (64 Federal Register 58910)"* {**Note: The quoted statements in italics are taken from the sources.**}

Comment: GRAIP road sediment measurements and modeling were collected and completed on the Boise NF portion of the SFSR. The map developed shows that the existing Burntlog (FR 447) road has 37 sites delivering 0.5- 2.0 Tn/yr, and 16 sites delivering >2.0 Tn/yr. It also shows the Johnson Creek road (CR 10-413) has 3 sites delivering >2 Tn/yr, and 26 sites delivering 0.5-2 Tn/yr. **(Source: SFSR Subbasin GRAIP Modeling (BNF Only).**

Comment: Sediment erosion models exist for estimating erosion from constructed, re-constructed and maintained native soil roads: the older BOISED (Reinig, et. al., 1991 **in:** Ketcheson, Megahan and Kidd, 1999), or the Geomorphologic Road Analysis and Inventory Package, GRAIP (Cissel, et. al., 2012) are available.

Questions:

- Why have no existing erosion data been used for modeling sediment from the road system reconstruction, new construction maintenance and use?
- Why have no erosion data been used to model sediment from the construction and reconstruction of Transmission line right of Ways and access roads?
- Why have no sediment erosion monitoring locations adjacent to access roads been shown in the DEIS or the SDEIS?
- How does SGP plan to monitor, and then demonstrate how much sediment will or will not enter streams from road reconstruction, new construction or maintenance activities on the Johnson Creek, Stibnite and Burntlog road systems?

4. Stream fish and fish habitat data collection sites have been placed in the Burntlog, Trapper and Riordan Creek drainages.

Comment: In Brown and Caldwell, 2019b. Fisheries and Aquatic Resources Mitigation p. 8-2 it states: *"Specific SFA elements outlined below will be monitored at strategic locations at a frequency determined in consultation with the agencies and with the USACE. This is because the stream restoration would be part of a compensatory mitigation plan to be submitted by Midas Gold to the USACE for a DA permit pursuant to Section 404 of the CWA."* **(Sources: MWH 2017. Aquatic Resources 2016 Baseline Study Stibnite Gold Project, Midas Gold Idaho, Inc; Fisheries Specialists' Report, August 2022, Figure 5-3b.).**

Comment: Several year classes of resident bull trout were found in Trapper Creek, downstream of the proposed new bridge on the extended 447 Burntlog road. **(Source: raw data BNF, Cascade RD, October 2021).** Several stream fish and fish habitat data collection and potential monitoring sites exist in the Burntlog, Trapper and Riordan Creeks (**see: Fig. 5-3b, Fisheries Specialist Reports August 2022).**

Questions:

- Why are no stream monitoring efforts outside the mining area for road and Right of Way sediment generation being described in the SDEIS?
- What forms of monitoring for both bedload sediment and suspended sediment will be used at these road, bridge and road reconstruction as well as new construction sites?
- How will stream habitat monitoring sites demonstrate whether road –generated sediment is/isn't affecting the spawning /rearing/holding habitats of these and other streams, especially for bull trout?

- Why are these previously established sites not being used for annual stream habitat and fish monitoring, especially for instream bedload and suspended sediment monitoring? ***{Note:** This mitigation needs to be disclosed in order to understand the analysis of adverse effects to ESA listed fish and their critical habitat as required in Standard 2050 in Management Area 20 Upper Johnson Creek, and Standard 2154 in Management Area 21, Lower Johnson Creek.}*
- Why are no fish habitat and sediment monitoring sites proposed near the Burntlog road extension?
- Why are there no erosion monitoring sites for the proposed Trapper Creek and Riordan Creek headwater stream crossings?
- Why are no monitoring sites proposed for the Cabin/Trout (FR 467) road in Cabin Creek and Trout Creek when 1.6 miles of avalanche hazards were recognized (Fig. 3.2-6; p. 3-29) in the Transmission line and OSV reconstruction with bull trout and Chinook/Steelhead habitat downstream of this road?
- Define which metrics will be used for sediment monitoring for road construction, reconstruction and maintenance. and when monitoring will occur.

5. Stream monitoring outside of the mine site area is not discussed in the SDEIS, especially for the Burntlog, Trapper, Riordan, Trout and Cabin Creek drainages for both suspended and bedload sediment generated by roads, Transmission line RoW, clearing for OSV on roads FR 447, FR 467, FR 416W, CR 50-412 and CR-10-413.

Comment: Brown and Caldwell, 2019b. Fisheries and Aquatic Resources Mitigation 2019 states*," Specific SFA elements outlined below will be monitored at strategic locations at a frequency determined in consultation with the agencies and with the USACE….Monitoring frequency will vary for different SFA elements and across sites such as continuous hydrologic monitoring (streamflow, temperature), annual field visits included with other performance indicators above, and a full survey 5 years after restoration of each site."*

Comment: *"The ability of sediment-exposed Chinook salmon to escape to cover was impaired relative to that of control fish: there was a significant increase in stuporous behavior and a significant reduction in cover-seeking response in the sediment-exposed fish. Treatment fish were slower to seek cover from intense light and displayed erratic swimming behavior. These results suggest that even a relatively brief (48-h) exposure to elevated levels of suspended sediment could indirectly jeopardize survival in the wild, as such overt performance and behavioral changes would probably render juvenile Chinook salmon more conspicuous and therefore more susceptible to avian and aquatic predators."* ***(Source:*** **JILLIAN S. KORSTROM* AND IAN K. BIRTWELL. Effects of Suspended Sediment on the Escape Behavior and Cover-Seeking Response of Juvenile Chinook Salmon in Freshwater. Transactions of the American Fisheries Society 135:1006–1016, 2006.)**

Comment: Baseline and monitoring sites need to be established. Data need to be collected to validate that the roads transmission line RoW and access roads constructed or reconstructed do not further degrade the TES Listed Critical Habitat or fisheries in these streams.

Questions:
- Why are the few sites listed at a minimum not designated for use as annual monitoring, especially for road sediment and RoW sediment issues?

- What additional monitoring methods will be incorporated into the road and RoW sediment delivery issues for construction, reconstruction and annual use for either of the two roads systems used?
- What forms of monitoring for both bedload sediment and suspended sediment will be used at these culvert, bridge and road reconstruction sites as well as new construction sites?
- How will stream habitat monitoring sites demonstrate whether road –generated sediments are/aren't affecting the spawning /rearing/holding habitats of these and other streams, especially for bull trout?
- Why are there no additional stream monitoring sites proposed for the headwaters of Burntlog, Trapper and Riordan Creeks and tributaries where the proposed Burntlog road extension is planned?
- Why are there no monitoring sites proposed for the Cabin/Trout (FR 467) road or the FR 416W road where transmission line RoW and access road development incorporates the road system?

6. Stream Fisheries and Habitat Monitoring

Comment: Section 5.1 Analysis Area*; "**The analysis area for fish resources also includes all of the watercourses (i.e., streams and rivers) and waterbodies (i.e., lakes, reservoirs) in the 12-digit HUC subwatersheds that overlap the SGP area. Because the majority of the activities and disturbance would occur at the mine site, which is located in the South Fork Salmon River (SFSR) subbasin, greater emphasis is placed on describing the affected environment within this subbasin. However, relevant habitat conditions in other subbasins, watersheds, and subwatersheds that may be impacted by SGP activities also are described, as appropriate."*

Comment: Section: 5.2.2 Aquatic Resources Baseline Data Collection; "*Field investigations to characterize existing aquatic physical habitat in the mine site area and along the Burntlog Route area were performed between 2012 and 2020 (Great Ecology 2018; HDR 2016; Rio ASE 2019, 2020; MWH 2017; Stantec 2018, 2019, 2020; Watershed Solutions Inc. 2021) (**Figure 5-4**). These investigations collected information on aquatic habitat parameters, such as water temperature, substrate size, substrate embeddedness, surface fines, channel geometry and physical attributes, large woody debris, and pool frequency. Stream habitat condition surveys, following the Pacific Anadromous Fish Strategy/Inland Fish Strategy Biological Opinion (PIBO) protocols, collected information on bankfull width, wetted width, bank stability, sediment size, stream gradient, pool dimensions, and large woody debris."*

Comment: Section 6.1.3 Mine Site Watershed Condition Indicators; "*Baseline WCIs were determined for the stream reaches within the SGP mine site (**Table 6-3**). not all WCIs are equal in terms of evaluating the potential impacts of the SGP within the mine site. Some baseline WCIs are of historical interest, some would not be affected by the SGP, some are not well-established from a quantitative analysis perspective so they cannot be evaluated, and some WCIs are irrelevant to the SGP. For these reasons, five WCIs that have the greatest potential to accurately identify potential impacts due to the SGP were selected for detailed analysis. These WCIs are: 1.Water Temperature 2.Sediment/Turbidity 3.Chemical Contaminants 4.Physical Barriers 5.Change in Peak/Base Flows."* A description of each of these WCIs and their current condition is provided in **Table 6-3**.

Comment: Section 7.2.3.2 Impacts to Watershed Condition Indicators/Fish Habitat Elements Sediment and Turbidity Outside the Mine Site Area: "*Construction and use of roads can accelerate erosion and sediment delivery to streams and have been identified as the primary contributor of* *sediments to stream channels in managed watersheds (Trombulak and Frissell 2000). During the Burntlog Route construction, including bridge and culvert installations, the potential exists for increased runoff, erosion, and sedimentation resulting from localized vegetation removal and soil excavation which could result in increased sediment load in streams. Construction of and upgrades to access roads creates a potential for increased runoff, erosion, and sedimentation as a result of localized vegetation removal and excavation of soil, rock, and sediment, which could result in increased sediment load in streams. Expected permit stipulations from IDWR and IDEQ would ensure streambank vegetation would be protected except where its removal is necessary. New cut or fill slopes not protected with some form of stabilization measures would be seeded and planted with native vegetation to prevent erosion. Use of temporary erosion and sediment control BMPs also would be employed."*

Comment: *"Based on permit-related design requirements, use of BMPs, and required maintenance activities, the potential for access road-related erosion and sedimentation would be minimal (limited to periods of substantial overland flow, such as from very large rainfall events)."*

Questions:

- WCIs have been designated for streams within the mine site. Why have no WCIs have been designated for streams outside the mine site that are changed by mining-associated activities as road construction, reconstruction and transmission line RoW development/redevelopment?
- Why have no sediment estimates for road and transmission line R0W construction and reconstruction been completed or evaluated?
- Why is "*Based on permit-related design requirements, use of BMPs, and required maintenance activities,...."* offered as a substitute for required monitoring of WCIs outside of the mine site?

7. Competency /Hardness of local granitic rock sources for the Burntlog road gravel application is not discussed in the SDEIS.

Comment: Table 2-3 Proponent Proposed Environmental Design Features for Fisheries and Aquatic Habitat: *"Crushed rock would be placed on SGP access roads as needed to provide a durable surface and limit sediment transport."(* **Source:** ***Stibnite Gold Project, Fisheries and Aquatic Habitat (Including Threatened, Endangered, Proposed, and Sensitive Species) Report p. 16).***

Source*: SGP DEIS. Information is not found in the SDEIS.*

Comment: *"Rock, gravel, and sand required to construct and maintain the road surface would be quarried from locations along the route…. During mine operations, these borrow (quarry) sites would be used to stockpile soil/cleared vegetation for use in eventual reclamation."* **P.4.23-28. Also**, "*Midas Gold would maintain a hardened road surface with gravel surfacing to promote an efficient and useable all-weather road".* **p. 4.9-49.**

Comment: "A section of road with marginal-quality aggregate produced 3.7 to 17.3 times as much sediment as a similar section with good-quality aggregate…. The marginal quality aggregate had less resistance to cross-slope flattening and therefore, longer flow paths and hence more sediment production. Another mechanism was the inability of the marginal-quality material to resist crushing or chemical degradation, which resulted in a constant replenishment of the fine material to be transported by the flowing water." **(Source: Randy B. Foltz and Mark Truebe Transportation Research Record 1819 ■ 185 Paper No. LVR8-1050).**

Comment: Section 4.23.2.2.1.1 "poor gravel sources will not aide in fish or fish habitat recovery. "*Forest roads can accelerate erosion and sediment delivery to streams and have been identified as the primary contributor of sediments to stream channels in managed watersheds"* ***(Source: Trombulak and Frissell 2000).*** **pp. 4.23-35,36).**

Question: What is the competency /hardness of the granite to be quarried and crushed for the road surfacing at the three to eight borrow sites identified along the Burntlog Road (FR 447), or along the Johnson Road (CR10-413)/Stibnite road (CR 50-412)?

8. The SDEIS does not describe the types of monitoring proposed for the mine site or off-site streams.

Comment: "*The EMMP, which consists of a framework description and component plans, describes how environmental requirements will be met throughout the life of the Project (Figure ES-1). The program is designed to guide environmental monitoring and compliance in a manner that is transparent, concise, practicable, and adaptable to changing operational conditions."* **(Source: ES-1 20220318_EMMP Framework to agencies Brown and Caldwell 2021c).**

Description	Type	Reference
Perpetua would monitor stormwater runoff and stormwater BMPs as per the SWPPP. Stormwater monitoring, inspections, and reporting would be conducted in accordance with the NPDES Multi-Sector General Permit and the SWPPP.	Permitting Requirement	NPDES Multi-Sector General Permit and the SWPPP

(Source: Table 2-2. Prominent Regulatory and Forest Service Requirements for Fisheries and Aquatic Habitat. p. 13.)

Comment: Examples from other mining SDEIS

"2.5.6 Monitoring Plans *Numerous operational and post-operational monitoring programs proposed by MMC are described in Alternative 2. The agencies revised these plans, which are presented in Appendix C."* **(Source: Supplemental Draft Environmental Impact Statement for the Montanore Project p. 53)**

C.10.5.3 Surface Water Monitoring

C.10.5.3.1 Water Quality Locations, Frequency, and Parameters *"The monitoring of sites established during the Pre-Evaluation and Evaluation phases would continue, and additional sites on Poorman and Libby creeks would be monitored (Table C-13). Based on the project water balance, discharges from the Water Treatment Plant at the Libby Adit Site are not anticipated during the Operations Phase. Monitoring of LB-300 would only occur when there was a discharge from the water treatment plant."*

C.10.5.3.2 Suspended Sediment *"The KNF conducts continuous suspended sediment monitoring during the ice-free period with an automated sampler near LB-3000 on Libby Creek (Figure C-2), and on West Fisher Creek. The continuous suspended sediment monitoring would continue during construction and postconstruction of the mine and transmission line facilities. MMC would either fund the existing KNF monitoring, or they would implement their own monitoring efforts in Libby Creek. Any other suspended sediment monitoring required by the MPDES permit also would be implemented. If the agencies were to observe increased suspended sediment concentrations that could not be explained by natural events such as snowmelt or large precipitation events, then they would investigate the source of the increased* *sediment load to the stream. If the agencies determined that sediment discharge was occurring to a stream from a construction or post-construction mine or transmission line site, MMC would be required, after notification from the agencies, to implement measures to eliminate the sediment source to the stream within 24 hours." (***Source: Supplemental Environmental Impact Statement for the Montanore Project pp.C-61, C-63)**

3.6.4.2.1 Sediment Evaluation, Construction, and Operations Phases Streams, "The KNF's analysis of sediment delivery from roads to streams (KNF 2011b) indicates that 13.9 tons of sediment would be generated during the project (Table 107 in the Surface Water Quality section) compared to 101.3 tons of sediment generated under existing conditions over the same time frame. Alternative 2 would disturb 249 acres within RHCAs on National Forest System land; 152 acres of other riparian areas on private land would be disturbed (Table 70, Figure 53)." **(Source: Supplemental Draft Environmental Impact Statement for the Montanore Project p. 134)**

See example: Final Environmental Impact Statement for the Montanore Project Appendix C, Agencies' Conceptual Monitoring Plans, C.11 Aquatic Biology pp. 80-87

9. **The SDEIS does not describe what specific substrate monitoring will be done to protect fisheries habitats. In the DEIS, monitoring methods of NTU and TSS were described which do not agree with the stream bed sediment monitoring methods required by NMFS and NOAA Fisheries in the Biological Opinion for the Payette and Boise NF plans.**

Source*: SGP DEIS. Information is not found in the SDEIS.*

Comment: In Section 3.9.3.1.1.6 Sediment Content; and Section 4.9.2.1.2.1, Surface Water and Groundwater Quality – Mine Site Sediment – Alternative 1, pp. 4.12-30 to 31, water quality monitoring is described as*," Erosion and sedimentation effects on surface water quality are indicated primarily by **changes in turbidity and total suspended solids in the receiving environment.**"* **Page 4.9-41 continues**, *"Erosion and sedimentation effects on surface water quality are indicated primarily by changes in turbidity and total suspended solids in the receiving environment. Predictions of these water quality indicators were not included in the SWWC modeling. As such, changes in turbidity and total suspended solids have been qualitatively assessed using best available data, professional judgement, and consideration of proposed management and mitigation strategies for the SGP."*

Comment: *"The inconsistent correlation between turbidity measurements and mass of suspended solids, as well as the difficulty in achieving repeatability using turbidimeters contributes to concerns that turbidity may not be a consistent and reliable tool determining the effects of suspended solids on salmonids. Other factors, such as life stage, time of year, size and angularity of sediment, availability of off-channel and tributary habitat, and composition of sediment may be more telling in determining the effect of sediment on salmonids in Northwestern rivers"* **(Source: Bash, Berman and Bolton (2001)).**

Comment*: "For short-term construction projects, operators will need to measure background turbidities on a case by case basis to determine if they are exceeding regulations. However, transportation projects may also produce long-term, chronic effects. Short term pulses will presumably have a different effect on salmonids than chronic exposure.*

To adequately protect salmonids during their freshwater residence, TSS data on physiological, behavioral, and habitat effects should be viewed in a layer context incorporating both the spatial geometry of suitable habitat and the temporal changes associated with life history, year class, and climate variability. Spatial and temporal considerations provide the foundation to decipher legacy effects as well as cumulative and synergistic effects on salmonid protection and recovery." **(Source: Bash, Berman and Bolton (2001)).**

Comment: In the **Aquatic Resources 2016 Baseline Study** (MWH 2017) Purpose of Study (Section 1.10) states: *"The study describes the existing aquatic resources in the project study area, and it will be used to support the United States Forest Service (USFS) Environmental Impact Statement (EIS) for the Stibnite Gold Project."* **Section 3.2.1**, **Stream Habitat Surveys**, pp. 3-2 to 3-13 show the rationales tiered to the WCIs.

Comment: "*A continuous physical measure of sediment in the water column, or a surrogate such as turbidity, is not appropriate for the study area because most sediment transported is coarse (>0.0625 mm in diameter) and does not necessarily cause increases in turbidity. Acoustic backscatter may or may not be a significant predictor of sediment concentration at study-area sites and would require further investigation of feasibility. The steep gradient in the study area may contribute to bedload transport of coarse sediment and sediment-associated metals. Bedloads are not well characterized by surrogate measures of sediment concentrations in the water column.*"(**Source: Etheridge, A.B., 2015,** P. 37)

Comment: *"A high correlation exists between turbidity readings and weight for individual sediment types of suspension, but a poor relationship exists when sediment type is varied. Experiments conducted on the Hach model 2100, the Hellige, and the Jackson Candle turbidimeters resulted in a highly significant difference (a • 0.01) between readings on the same sample of suspended sediment. Turbidity is a questionable measure of suspended solids in water. A more accurate index would be suspended solids measured gravimetrically*". **(Source: RICHARD M. DUCHROW AND W. HARRY EVERHART. Turbidity Measurement. Department of Fishery and Wildlife Biology, Colorado State University, Fort Collins, Colorado 80521**

Comment: "*A review of studies conducted in Alaska and elsewhere indicated that water quality standards allowing increases of 25 or 5 nephelometric turbidity units above ambient turbidity in clear coldwater habitats provide moderate and relatively high protection, respectively for salmonid fish resources in Alaska. Even stricter limits may be warranted to protect extremely clear waters, but such stringent limits apparently are not necessary to protect naturally turbid systems."* ***(Source: Lloyd, Denby S. et. al., ,*** **Turbidity as a Water Quality Standard for Salmonid Habitats in Alaska. 1987. North American Journal of Fisheries Management: 34-45, 1987.)**

Comment *"However, in the aftermath of a sediment pollution event, the investigation should switch its focus and gather evidence of sediment deposition."* ***(Source*: Newcombe and Jensen (1996), p.708)**

Comment: *"**Bull trout are highly susceptible to sediment inputs**. They require the lowest turbidity and suspended sediment levels of all salmonids for spawning, incubation, and juvenile rearing (USFWS 1998). Bull trout are strongly associated with cover, including interstitial spaces in gravel. Additionally, they* *have protracted embryo/alevin development with approximately 220 days required from egg deposition to fry emergence (USFWS 1998). Thus they are highly susceptible to the effects of sediment deposition and bedload movement. Bull trout show preference for stream bottoms and deep pools of cold water. This strong association with the substrate makes them susceptible to human activities that directly or indirectly change substrate composition. There is also a strong association between juveniles and streambed cobble, and substrates low in fine sediment. Bull trout also require a large network of suitable freshwater habitat with migratory corridors, and deep pools for thermal refugia (USFWS 1998).*" **(Source: Thurow, R. 1987. Completion Report Evaluation of the South Fork Salmon River Steelhead Trout Fishery Restoration Program Performed for US Department of Interior, Fish and Wildlife Service Lower Snake River Fish and Wildlife Compensation Plan Contract No. 14-16-0001-86505 Period Covered: March 1,1984 to February 28, 1986)**

Questions:

- How do these two methods correlate with the monitoring methodologies that are **required f**or the Boise and Payette National Forests by the National Marine Fisheries Service (NMFS) biological opinion Term and Condition 3.B.1 which states "… required the Payette National Forest (PNF) and Boise National Forest (BNF) revise the default sediment watershed condition indicator (WCI) values to something more appropriate for the South Fork Salmon River (SFSR**)."** **(Source: Letter from: Mabe, D., UNITED STATES DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration NATIONAL MARINE FISHERIES SERVICE 10095 West Emerald Street Boise, Idaho 83704 July 28, 2005).** The current methods in use by the forests are: modified McNeil core samples; Cobble Embeddedness; and free matrix particles. Appendix J-1, Tables J1-4 and 6 shows these methods. *Reference: DEIS Section 3.12.4.1, Figure 3.12-4 and 5.*
- How do Nephelometry and total suspended solids measure stream bed load sediment movements which affect the salmonid rearing and spawning habitats, as well as macroinvertebrate habitat?
- Tables Appendix J-1.7 (pp. J1-14) in the DEIS shows the WCI Pathways and Indicators. Where does it show the use of Nephelometric Turbidity Units (NTU) and Total Suspended Solids (TSS)?
- What monitoring methodologies will be used in the replacement/new construction of culverts and bridge abutments on the Burntlog and Johnson Creek/Stibnite roads?
- What maximum limits will be used for Nephelometric Turbidity Units when monitoring construction /reconstruction adjacent to streams or with bridge/culvert construction/reconstruction?
- What monitoring will be used to determine whether bed load sediments from the reconstruction/new construction/maintenance of the Burntlog, Johnson Creek/Stibnite road systems on the spawning and rearing habitats of bull trout, Chinook salmon or Steelhead trout in the EF South Fork Salmon River, Johnson Creek Burntlog, Trapper, and Riordan Creek drainages?
- Why are these methods not brought forward in the analysis or monitoring portions of the SDEIS?

10. In the SDEIS, no mention of "91 meters" as a buffer strip occurs as described in the DEIS. The use of "…within 0.5 mile of surface water…" replaces it.

Comment: Section 4.7.2.2 2021 MMP "*Close proximity of access roads to surface water resources increases the potential for spilled material on the roadways to enter water, thus* *increasing the potential consequences of a spill. The Burntlog Route crosses 37 streams and includes 9 miles of road that are within 0.5 mile of surface water resources. The Johnson Creek Route crosses 43 different streams and includes 27 miles of road that are within 0.5 mile of surface water resources, including several miles that parallel the fish-bearing East Fork SFSR and Johnson Creek waterways. Though the Burntlog Route includes a greater number of stream crossings, the Johnson Creek Route includes significantly greater proximity to water resources. The potential consequences from trucking spills would thus be greater along the Johnson Creek Route that would be utilized during construction of the Burntlog Route."* p. 4-139.

Question: How has the "91 meter strip" buffer discussed in the in the DEIS been replaced by the "0.5 mile" value in the SDEIS?

11. Access roads for each Alternative.

"*Both the Burntlog and Johnson Creek routes have segments that are exposed to landslides, rockfalls, and avalanches. These geohazards present along the road corridors could increase the potential for truck accidents resulting in spills of hazardous materials. The Burntlog Route has exposure to 26 landslides or rockfalls and 38 avalanche paths. The Johnson Creek Route has exposure to 45 landslides or rockfalls and 94 avalanche paths. The Johnson Creek Route thus may have higher potential for increased trucking accidents and greater spill risk from these geohazards.*
Close proximity to surface water resources increases the potential consequences of a significant spill along the access routes. The Burntlog Route crosses 37 streams and includes 9 total miles that are within 0.5 mile of surface water resources. The Johnson Creek Route crosses 43 different streams and includes 27 miles that are within 0.5 mile of surface water resources, including several miles which parallel the fish-bearing East Fork SFSR and Johnson Creek waterways. Though the Burntlog Route includes a greater number of stream crossings, the Johnson Creek Route includes greater proximity to water resources. The potential consequences from significant trucking spills would thus be greater along the Johnson Creek Route." (**Source: Stibnite Gold Project Supplemental Draft Environmental Impact Statement ES-14).**

11.a. 2021 MMP- Burntlog Road access

Comment: "*The Johnson Creek Route (Johnson Creek Road and the Stibnite Road portion of the McCall-Stibnite Road) would be used for year-round access until completion of the Burntlog Route for long-term use during operations. Minor surface improvements (e.g., ditch and culvert repair, adding gravel, winter snow removal, resurfacing if required, and summer dust suppression) would occur on the Johnson Creek Route under the 2021 MMP to reduce sediment runoff and dust generation. However, there would be no road alignment modification or widening of these existing roads along the Johnson Creek Route. The road varies in elevation from approximately 4,750 to 6,700 feet amsl with an average grade of 1.5 to 2 percent with occasional local segments with grade up to approximately 8 percent.*
Portions of Johnson Creek Road (i.e., Landmark to Wapiti Meadows) are currently used as a groomed OSV trail during winter and use of the Johnson Creek Route by mine-related construction traffic would conflict with this existing groomed OSV trail. Thus, while the Burntlog Route (described below) is under construction, a temporary 16-foot-wide groomed OSV trail adjacent to Johnson Creek Road between the proposed Cabin Creek Groomed OSV Route and Landmark would be constructed. However, the OSV tail from Trout Creek Campground to Wapiti Meadows would be closed until construction of the Burntlog Route is complete; once mine traffic moves to that route, then the OSV route would return to Johnson Creek Road and would reconnect Landmark with Wapiti Meadows." **(Source: *Stibnite Gold Project, Access and Transportation Specialist Report pp. 3).***

Comment: Section 2.4.4.3 Access roads (pp. 2-17, 2-18) and Figure 2.4-5 *shows the proposed Burntlog Route, which includes the proposed new road construction. A segment of new road construction for the Burntlog Route would be located on the south side of the Riordan Creek drainage and cross Riordan Creek north of Black Lake. The approximately 5.3-mile road segment would have 12 stream crossings, three of which cross perennial streams. The elevation of this road segment is approximately 8,000 to 8,600 feet and the average grade of this road segment would be 5 to 6 percent.* ***After construction is completed, public use would be allowed on Burntlog Route when other public access roads are blocked by mine operations.*** *The connection segment between the end of Burnt Log Road and Meadow Creek Lookout Road is approximately 11 miles and would cross Trapper Creek 0.5 miles east of the intersection of Trapper Creek Road (FR 440) and FR 440A and continue northeast towards Black Lake and on to the Meadow Creek Lookout Road. The second connector between the Meadow Creek Lookout Road and Thunder Mountain Road would be approximately 4 miles and links up with Thunder Mountain Road approximately 2 miles south of the SGP. Minor surface improvements (e.g., blading) would occur on the portions of the existing Thunder Mountain Road and Meadow Creek Lookout Road that would not become part of the Burntlog Route to provide a safe road surface for transportation of construction equipment required to build the Burntlog Route. There would be no road alignment modification or widening of the portions of the existing roads that are not part of the Burntlog Route. Primary SGP access would shift from the Johnson Creek Route to the Burntlog Route near the end of the construction phase. The Burntlog Route would be compliant with all related usage and approval requirements included in 36 CFR Section 228, Part A.* ***The Burntlog Route would avoid environmental and human health and safety risks associated with the Johnson Creek Route which passes through identified areas for avalanches, landslides, and floods.*** *This route would provide another route for SGP ingress/egress, would decrease SGP and public traffic interaction with Yellow Pine and Johnson Creek area residents; and* ***would decrease the potential for spill risk adjacent to fish-bearing streams.*** *Upon completion, the Burntlog Route would serve as an alternative public access route to the Thunder Mountain area for the life of the mine until it is decommissioned following mine reclamation and closure.*

Comment: 7.2.4.1 Direct Impacts to Individual Spill Risk "*Use of the Johnson Creek Route for site access would avoid construction-related impacts from sedimentation at 21 different streams compared to the 2021 MMP. These streams include Burntlog Creek, East Fork Burntlog Creek, the East Fork SFSR, Johnson Creek, Landmark Creek, Peanut Creek, Rabbit Creek, Riordan Creek, Trapper Creek, and 12 unnamed waterbodies."*

Comment: Table 6-2 Existing Stream Crossings at Main Access Roads

Burnt Log Road	**Perennial**	**18**

Source: ***Stibnite Gold Project, Access and Transportation Specialist Report. Pp32.***

Comment: Section 3.2.4.7 Foundation Characterization and Mass Wasting Hazards ***Burntlog Route***
Landslide and rockfall hazards have been assessed along the Burntlog Route, including in-field observations (STRATA 2016). Visual evidence of slope instability was reported at several locations along the route. Potential rockfall areas are primarily tied to existing road cuts occurring in both glacial till/colluvium and granitic outcrops.
Avalanche paths were comprehensively described by DAC (2021) for the overall Burntlog Route. Along the existing road from Warm Lake to Landmark they identified 11 avalanche paths potentially affecting 1.6 miles (Figure 3.2-6). These were relatively high frequency avalanche paths (1 to 3 years) producing small (D2), loose avalanches with two larger (D3) avalanche paths that could affect the road about every 3 years.

Along the existing Burntlog Road from Landmark to the ridge above Black Lake, seven D2 sized avalanche paths were identified potentially affecting 0.5 miles of road with four of them having the potential to affect the road on average every 10 years.
From the end of the existing Burntlog Road to Stibnite, 20 avalanche paths were identified along the alignment of the proposed extension of the Burntlog Road potentially affecting 2.4 miles of road. Most of these were D2-sized paths with high frequencies (1 to 3 years). There were two potential D3 paths with moderate frequencies (3 to 10 years).
A total of 38 avalanche paths were identified by DAC (2021) along the Burntlog Route from Warm Lake to Stibnite potentially affecting 4.5 miles of road." (Figure 3.2-6). **(Source: Stibnite Gold Project Supplemental Draft Environmental Impact Statement 3-25,3-26.)**

Comment: GRAIP road sediment measurements and modeling were collected and completed on the Boise NF portion of the SFSR. The map developed shows that the existing Burntlog (FR 447) road has 37 sites delivering 0.5- 2.0 Tn/yr., and 16 sites delivering >2.0 Tn/yr. **(Source: SFSR Subbasin GRAIP Modeling (BNF Only).**

Comment: The proposed new construction of the first 4 miles of the Burntlog (FR 447) road is on **Landtypes 111b, 111a-1, 111b-1, 109a-1 and a Valley type of D01-3.** Wendt and Cole (1969, 1972, 1973, 1974) describe these landtypes as:

- *"Inherent erosion is moderate and avalanche hazard is high. Moderate to high surface erosion and mass stability impacts result from road construction.";*
- *"These are relatively unstable soils in a natural undisturbed condition. Soil disturbance produces moderate to high surface erosion and wet and dry creep. Avalanche hazard is high. Moderate impacts from slumping may result from road construction.";*
- *"These lands are relatively unstable and have a high inherent erosion and avalanche hazard. Surface erosion and mass stability hazards are moderate to high for road construction."*
- *"Soil disturbance will produce moderate to high impacts from surface erosion and wet and dry creep. Road construction hazards are from avalanches and fill slope failures."*

The Valley type, D01-3 at the Trapper Creek crossing shows:

"Low level roads will be very subject to flooding. They also may inadvertently provide an alternate stream channel during flooding. Roads built on "turn pike" fills of imported coarse material or slightly elevated on stable toe slopes will not have the high flooding hazard. Fills and bridge approaches composed of gravel and sand will be periodically eroded by flood events."
"Stream channel alteration will provide a moderately high hazard of channel erosion. Dikes, bridge approaches, or other constrictions of the flood plain will accelerate the scouring of the stream channel immediately below the constriction." **(Source: Wendt, G.T., and G. F. Cole. Soil hydrologic Reconnaissance Surveys, Boise N.F. (1969, 1972, 1973 and 1974)).**

Comment: "*Chinook salmon Critical Habitat outside the mine site* ***also would be directly affected by culvert installations and would be at risk of accidental hazardous materials spills in the streams adjacent to the access roads. Access road culvert replacements and new culverts would cause temporary disturbances of Critical Habitat and increase the risk of erosion and sedimentation.*** *The transportation of hazardous materials on access roads and throughout the mine site would increase the risk of spills adjacent to Critical Habitat or in streams/rivers that flow into Critical Habitat in the East Fork SFSR, Johnson Creek, and streams adjacent to Warm Lake Road (CR 10-579****). A total of 18 km of Chinook salmon Critical Habitat along the Burntlog Route would be at risk. Impacts to Critical Habitat resulting from risks of erosion and sedimentation, hazardous materials, and risk of spills are described in***

Section 7.2.3.2 in each respective topic area." **(Source: Stibnite Gold Project, Fisheries and Aquatic Habitat (Including Threatened, Endangered, Proposed, and Sensitive Species) Report pp. 134-135)**

Comment: *"A total of 18 km of steelhead Critical Habitat along the Burntlog Route could be affected".* **(Source: Fisheries and Aquatic Habitat (Including Threatened, Endangered, Proposed, and Sensitive Species) Report. P. 144.**

Comment: NO assessment of bull trout Critical Habitat outside the mine site was completed in the Fisheries and Aquatic Habitat Report August 2022.

Comment: . "*The TSRC activity area for the BNF (i.e., excluding IRAs, Research Natural Areas, Wilderness, and private land ownership) is comprised of these subwatersheds and totals approximately 76,196 acres. Existing conditions of TSRC within this activity area was estimated to cover approximately 904 acres, or 1 percent (**Table 6-3** and **Figure 5-1**).*

Comment: "*Per Forest Service standards, bridges on NFS roads are to be designed to handle AASHTO HL-93 loading. The SGP Feasibility Study Access Road Design (Parametrix 2018c**)** notes that there are five existing bridges (four timber and one three-sided concrete box) along Burnt Log Road. Due to the anticipated loading that these structures would experience with the mine development and operations, each of the four timber bridges would need to be replaced. A total **of six new bridges (four to replace the existing timber bridges) would be needed for the Burntlog Route alignment.** There would likely be several special transports to deliver large equipment to the site. To accommodate this additional loading, steel beams would provide temporary support, pending approval by the Regional Bridge Engineer."*
(Source: *Stibnite Gold Project, Access and Transportation Specialist Report pp. 8-11)*

Comment: "Meteoric precipitation on roadways and surrounding roadside areas increases the risk of roadway wash outs. Elements of road design and associated culvert sizing and maintenance to reduce wash out risk include:

- *Ditches would be installed on the in-sloped edge of the road, which would collect water from the gravel surfacing as well as the hillside above the road.*
- *For the Burntlog Route, an 18-inch-deep V-shaped ditch with 1.5H:1V slopes would be used along the roadway, as is typical of most gravel roads in mountainous areas.*
- ***Culverts providing drainage for non-fish bearing streams would take into account the estimated drainage basin area and would be sized to accommodate a recommended peak 25-year design flow at each culvert location.***
- *Road crossings of fish bearing streams would be designed such that structures allow fish passage. **FSH guidelines for fish-bearing streams include structures that span 120 percent of the channel's bankfull width and pass the peak 100-year design storm.***
- *Additional relief culverts would be placed at intervals depending upon the uphill drainage basin size and road profiles.*
- *The drainage system (roadside ditches and culverts) would require a reasonable amount of maintenance and inspection to ensure the system is working properly. Debris and sediment would be removed on an annual basis, in addition to any emergency situations that may arise."*

(Source: *Stibnite Gold Project, Access and Transportation Specialist Report pp. 8-11).*

Questions:

- Explain how and when the Burntlog (FR 447) road will and will not be available to the public?

- Bull trout assessment was completed for the streams in the mine area. No bull trout habitat assessment has been accomplished for the streams crossed by the existing and proposed Burntlog (FR 447) road which crosses many perennial and perennial fish bearing streams listed a Critical Habitat for the bull trout. Why not?
- **Given:** "**2.5.4.1 Access Roads "***Under this Alternative, the Johnson Creek Route would be improved and used to access the SGP through construction, operations, and closure and reclamation and would be the only route of ingress and egress for the SGP. Road widening and straightening, along with drainage and bridge improvements, would be required for the Johnson Creek Road (CR 10-413) portion of the Johnson Creek Route. The Stibnite Road (CR 50-412) portion would be improved by straightening curves, constructing retaining walls, and installing 182 18-inch culverts and two 60-inch culverts."* **Explain** how, for the Johnson Creek (CR 10- 413) road, the existing bridges can be used by the proposed heavy traffic for the first three years, but need to be replaced if the Johnson Creek road alternative is chosen?
- **Given:** *"Based on the application of permits and regulatory compliance requirements (Forest Service 2022a) to the project, regulatory requirements, standards and guidelines, best management practices, and likely permit conditions are listed in **Table 2-2**. The environmental design features that have been proposed and committed to by the proponent are listed in **Table 2-3**. All of these environmental design measures have been assumed to be effective in conducting the environmental analysis presented in **Section 7.0**."* **Explain** how the above statement alleviates the requirements for the assessment of road and transmission line RoW sediment developed during construction, re-construction and maintenance functions as they may affect Chinook, Steelhead and bull trout and their Critical Habitats?
- **Given:** "*The Burntlog Route would avoid environmental and human health and safety risks associated with the Johnson Creek Route which passes through identified areas for avalanches, landslides, and floods*." **Explain** how, given the number of landslides charted for the Burntlog (FR 447) road (Figure 3.2-6), the information provided in **Section 3.2.4.7,** and the Landtype Reconnaissance descriptions that this is a valid statement?
- Explain how the construction of the proposed bridge in Trapper Flats, upstream of a large resident bull trout population, in the **Valley type (D01-3)** that states**, "***Dikes, bridge approaches, or other constrictions of the flood plain will accelerate the scouring of the stream channel immediately below the constriction*." will be constructed not to cause additional channel scouring therefore sediment erosion downstream?
- Explain how the new road construction of the Burntlog Road (FR 447) in areas of known avalanche hazards and Landtypes requiring more than the usual road construction efforts will minimize the soil/sediment encroachment and delivery to the Burntlog, Trapper and Riordan Creek headwaters and portions downstream?
- Culverts for fish-bearing streams at 100- year flood and culverts for non-fish bearing streams at 25 -year floods are being proposed. How does this meet ***Roads Standard FRST02: To accommodate floods, including associated bedload and debris, new culverts, replacement culverts, and other stream crossings shall be designed to accommodate a 100-year flood recurrence interval unless site-specific analysis using calculated risk tools or another method, determines a more appropriate recurrence interval?***
- Will the Goat Creek culvert replacement (DEIS Attachment 9) methodology be used to replace culverts, especially those in fish-bearing streams and TES fish Critical Habitat waters?

- What monitoring methods will be used during new culvert placement, culvert replacement, and bridge abutment construction to minimize suspended and bedload sediment increases downstream into TES Critical Habitat streams, and tributaries that deliver to Critical Habitat streams?
- **Given:** ***"****The second connector between the Meadow Creek Lookout Road and Thunder Mountain Road would be approximately 4 miles and links up with Thunder Mountain Road approximately 2 miles south of the SGP. Minor surface improvements (e.g., blading) would occur on the portions of the existing Thunder Mountain Road and Meadow Creek Lookout Road that would not become part of the Burntlog Route to provide a safe road surface for transportation of construction equipment required to build the Burntlog Route. There would be no road alignment modification or widening of the portions of the existing roads that are not part of the Burntlog Route***."** **Explain** how you plan to keep recreationists off the bladed, but not-to-be-used portions of these roads to reduce sediment delivery and additional non-system roading?
- **Given:** "*The* **{2021 MMP Burntlog road}** *alternative traverses 6.5 miles of Canada lynx (Lynx canadensis) current suitable habitat, 15.5 miles of wolverine (Gulo gulo) habitat, and 14 miles of USFS-designated roadless areas",* **Explain** how the proposed rehabilitation of the FR 447 road, after mining will meet the requirements for the Lynx, the wolverine and the requirements of the Inventoried Roadless Areas?
- Why are there no additional designs for road ditchlines in steep reaches of 6-10% given the Landtype descriptions of potential problems?

11.a. 1. Burntlog Maintenance Facility- 2021 MMP Alternative

Comment: Burntlog Maintenance Facility *"The maintenance facility would be 4.4 miles east of the Johnson Creek Road (CR 10-413) and Warm Lake Road (CR 10-579) intersection in a borrow area created for the Burntlog Route. Construction of the maintenance facility may require temporary road closures and/or detours along Burnt Log Road (FR 447), thereby temporarily reducing access to recreation sites and areas along this roadway and trails/areas accessed from this road (**Figures 7-3b** and **7-4**). Localized impacts of this construction would be temporary and minor.*

Noise associated with construction activities could reduce opportunities for noise-sensitive recreation activities at and around the maintenance facility location, including wildlife-related recreation activities, because wildlife may be displaced. Noise from construction activities related to the Burntlog Maintenance Facility would be above ambient levels (40 dBA) at the Mud Lake dispersed camping area (AECOM 2019). Therefore, some recreationists may choose to visit other areas or sites to avoid delays or noise from construction activities. Any reduction in recreation opportunities, displacement of dispersed recreational use, or changes in access would be temporary until maintenance facility construction was completed. These temporary, moderate impacts would be localized to the area surrounding the maintenance facility, and the roads/trails accessed from Burnt Log Road (FR 447).

Development of the Burntlog Maintenance Facility would reduce recreation opportunities due to physical removal of acreage for the facility (3.5 acres). Impacts from operational traffic and road maintenance activities, and associated noise, are included in the impacts from the Burntlog Route, which would occur immediately adjacent to this facility. Operational noise at the maintenance facility itself would be substantially less than the immediately adjacent traffic and/or road maintenance noise. Noise could reduce opportunities for some recreation activities in this area; particularly wildlife-related recreation activities because wildlife may be displaced from the general maintenance facility area. The maintenance facility would increase man-made effects in the area surrounding the facility, including nighttime lighting. These changes may affect the recreation setting of this general area by decreasing the feeling of *remoteness, thereby affecting the recreation experience for visitors to the area. Impacts would generally be limited to the area within visual and audible distance of the maintenance facility; and would begin once the facility was operational and conclude once the facility was closed and reclaimed. Impacts are anticipated to be long term, localized, and minor".* **(Source: *Stibnite Gold Project, Recreation Resource Specialist Report p. 73*)**

Information from the DEIS

Comment: 4.9.2.2.2.4 Off-site Facilities: Burntlog Maintenance Facility (DEIS Alternatives 2 and 3) states: "U*nder Alternative 2, the maintenance facility location would be moved to a borrow source approximately 4.4 miles east of the intersection of Johnson Creek Road and Warm Lake Road. The building constructed at this new location would be referred to as the Burnt Log Maintenance Facility. The maintenance facility would include the same structures and parking areas described for the Landmark Maintenance Facility above, but the configuration would be modified to fit within the borrow source site.* ***The nearest waterbody to the Burnt Log Maintenance Facility location (approximately 100 to 150 feet away) would be Peanut Creek".***

Comment: 4.23.2.2.2 Alternative 2 states*, "[T]he Landmark Maintenance Facility would be located along Burnt Log Road (FR 447) approximately 4.4 miles east of the junction of Johnson Creek Road (CR 10-413) and Warm Lake Road (CR 10-579).* ***This location is near Peanut Creek in the Burnt Log Creek watershed.*** *The Landmark Maintenance Facility would be located in part of a proposed new borrow site that would be excavated for gravel for SGP road improvements. Following excavation, the maintenance facility would serve as a base for equipment and materials stockpiles needed for winter plowing and sanding of the Burnt Log Route. The facility would include fuel tanks and a fueling station for vehicles and heavy equipment, a building for vehicle and equipment maintenance, and space for offices and overnight accommodation for equipment operators. Approximately 2.5 acres of the 5.13-acre borrow site would be occupied by structures or storage after gravel quarry operations were complete. The facility would have an on-site generator for electricity, and would require water and septic services, presumably on-site.* ***As there are currently no buildings or operations in the Burnt Log Creek watershed, the addition of this facility would likely have an incremental increased effect on stormwater runoff, potential leaks or spills of automotive fluids, and sedimentation of dust from on-site road sanding material storage and vehicle travel over gravel surfaces."***

Comment: Table 13. 2018 eDNA Results for the Burnt Log Road Access Sites and 2017 Resampled Sites shows that lower Peanut Creek contains bull trout, westslope cutthroat trout and rainbow trout.

Comment: The existing Peanut Creek culvert appears to be able to pass fish. Boulders to sediments are visible in the top and bottom of the culvert. If this structure is capable of passing fish (AOP) then do not replace it with another structure.

Comment: Peanut Creek is listed as Critical Habitat for bull trout (75 FR 2391-2393).

Questions:

- TWO SITES appear in various SDEIS, DEIS and Specialist's documents to be the location of the proposed Burntlog Maintenance Facility site. One is adjacent to Peanut Creek, and the other at"*… approximately 4.4 miles east of the junction of Johnson Creek Road (CR 10-413) and Warm Lake Road (CR 10-579)." These two sites are 0.5 miles distance from each other and are physically different sites.* **QUESTION: WHICH OF THESE TWO VERY DIFFERENT SITES WILL BE USED?**
- If the site is adjacent to Peanut Creek:
  - Why is this facility proposed to be constructed within 150 ft of Peanut Creek?
  - Why is the proposed structure constructed within the 300 ft RCA of Peanut Creek?
  - Is the proposed construction within the floodplain of Mud Lake/Peanut Creek?
  - How will this facility's construction and occupation affect Peanut Creek/ Mud Lake?
  - Is the proposed septic system located above the flood plain?
  - Will the proposed septic system built in the "borrow site" leach into the soils and affect Peanut creek by adding nutrients such as phosphates?
  - Are the proposed gas and diesel fuel tanks located above the flood plain?
  - Describe the mitigations that will protect this facility from the "…substantial overland flow…" either from rain, rain-on-snow or flooding events??
- How will the potential loss of the dispersed camping site adjacent to Mud Lake be mitigated? Another dispersed camping site adjacent to Mud Lake will also be affected. What are the mitigations for this loss?
- In Management Area, 20, Upper Johnson Creek, how do you propose to meet the following Management Area Directions for MPC 3.2 Active Restoration and Maintenance of Aquatic, Terrestrial, and Watershed Resources: General Standard 2010; Vegetation Standard 2011; Road Standard 2012?
- How do you plan to meet the Soil, Water, Riparian, and Aquatic Resources Objectives 2014; 2015; 2016; and 2017?

11.a.2. Proposed Mitigation: The relocation of the Burntlog Maintenance Facility

I propose the following mitigation: to relocate the Landmark/Burntlog Maintenance Facility: A 6-7 acre patch of ground on the East side of the Landmark Airstrip; 11T 616358.16E, 4944756.4 N using Google Earth mapping coordinates. This location would be about 1 mile further than your proposed Landmark Facility adjacent to Landmark Creek and about 2.7 miles short of the proposed Burntlog Facility site north of Peanut Creek/Mud Lake location.

Rationale:

- The proposed new location eliminates:
  - the proposed maintenance facility structure;
  - the loss of overstory shading (Peanut Creek is listed as bull trout Critical Habitat);
  - The loss of use at two Dispersed Camping sites near Mud Lake and Peanut Creek;
  - eliminates potential for septic nutrients and petroleum spills in the RHCA and floodplain of Peanut Ck.
- Meets SWRA Objectives 2014 and 2015.
- Meets Vegetation Standard 2011.

- The Land types at the site near Mud Lake/Peanut Creek show:
  - The **LTs 104** of the proposed Maintenance Facility site near Mud Lake/Peanut Creek, is described as: ***"****Problems of road building on these lands is mainly involved with highly variable materials, numerous wet spots and avalanche hazards from above and stream encroachment problems. Another problem in these lands has been having to haul materials to get adequate bearing strength for fills across depressions and wet spots. The inherent erosion hazard on soils in this land type are moderately low to moderate"*
  - **The LT 109b-1 at the Mud Lake/Peanut Creek site is described as :** *"Water tends to concentrate at moderate speed to drainages where it is closer to the soil surface and vulnerable to interception.", and "Road construction hazards are low to moderate with dominant impacts being avalanche hazards and surface erosion. Timber and forage productivity potentials for the most part are low. Severe limitations for reforestation are a result of cold climate and low water-holding capacity of the soils."* ***(Source: INITIAL DRAFT SOIL-HYDROLOGIC RECONNAISSANCE SURVEY Landmark Ranger District Boise National Forest March 1972 George E. Wendt - Soil Scientist Gene F. Cole - Watershed Specialist)***
- Landtype characteristics are improved on the proposed site.
  - "The proposed site adjacent to the Landmark Airstrip, **LT 101a**, shows all but the Runoff Rate as being avoided [Class 2] through accepted management practices.

11.b. Johnson Creek road access

Comment: 7.2.2.2. Construction; **2.5.1 Overview** *"Development of the Johnson Creek Route would entail 216.6 acres of new cut and fill activity (including borrow sources) along existing roadways that follow segments of Johnson Creek and East Fork SFSR to make those roadways usable for mine access during its lifespan. Improvements to the Johnson Creek Route would include road widening and straightening, as well as drainage and bridge improvements to the Johnson Creek Road portion of the Johnson Creek Route. The Stibnite Road portion of the Johnson Creek Route would be improved by straightening curves, adding retaining walls, and installing culverts. It would approach the village of Yellow Pine at the junction of Johnson Creek and Stibnite roads."*

Comment: 7.2.3.1 Construction ***"****Approximately 25 miles of existing Johnson Creek Road would be widened and improved and approximately 14 miles of Stibnite Road would be widened and improved as part of the Johnson Creek Route. Improvements on the Johnson Creek Route would be completed from May into November annually, depending upon road and weather conditions. During the first year of construction, upgrades to Johnson Creek Road would require periodic full road closure throughout the entire season. During years two through four, the Stibnite Road segment would be upgraded. Tight terrain and rock blasting would require daily, full-road closures between 10 am and 4 pm, with the road open for public use each morning and night. The delay in road construction results in a delay to bring in appropriate equipment and materials to complete mine construction which would then occur during year five of construction. Seven aggregate sources along the Johnson Creek Route for construction and maintenance have been identified (****Figure 5-1****) with an estimated disturbance of 109 acres. The portion of Burntlog Route that would connect with Thunder Mountain Road and continue toward the Worker Housing Facility toward the southeast of the SGP would not be plowed in the winter and would not be accessible to the public. During construction, winter snow removal and summer dust suppression would occur under the Johnson Creek Route Alternative, including on Johnson Creek Road. Public access on Johnson Creek Road would be completely restricted for one full year during the first year of construction of the Johnson Creek Route Alternative with improvements to Johnson Creek Road.*" (**Source: S*tibnite Gold Project, Access and Transportation Specialist Report. p. 50.)***

Comment: 6.1.2.1 Johnson Creek Route *"During non-winter conditions (roads clear of snow), the SGP can be accessed from the City of Cascade by traveling northeast on Warm Lake Road for about 34 miles to Landmark, then north on Johnson Creek Road for approximately 25 miles to the village of Yellow Pine, and approximately 14 miles east on the Stibnite Road portion of McCall-Stibnite Road (Stibnite Road). The Johnson Creek Route, which only includes Johnson Creek Road and the Stibnite Road portion of McCall-Stibnite Road, is currently used to access the SGP during the summer.*
The Johnson Creek Road is a county maintained, native surface road that is open to vehicles with seasonal restrictions due to snow. During the winter, Valley County plows approximately 10 miles of Johnson Creek Road from Yellow Pine to Wapiti Meadow Ranch and Perpetua (under agreement with Valley County) plows along Stibnite Road. Valley County grooms the remaining 17 miles of Johnson Creek Road from Wapiti Meadow Ranch to Warm Lake Road at Landmark for OSV use. Valley County does not plow Warm Lake Road from Warm Lake to Landmark. This section is a designated groomed OSV route. The Stibnite Road portion of the route is also a county-maintained native surface road, open to all vehicles with seasonal restrictions due to snow. This road is plowed in the winter by Perpetua through an agreement with Valley County. Stibnite Road connects to Thunder Mountain Road on the southeastern portion of the Stibnite site and currently provides public access through the site."
Source: *Stibnite Gold Project, Access and Transportation Specialist Report. Pp30-31.*

"The Johnson Creek Route crosses 43 different streams and includes 27 miles of road that are within 0.5 mile of surface water resources, including several miles that parallel the fish-bearing East Fork SFSR and Johnson Creek waterways. Though the Burntlog Route includes a greater number of stream crossings, the Johnson Creek Route includes significantly greater proximity to water resources. The potential consequences from trucking spills would thus be greater along the Johnson Creek Route that would be utilized during construction of the Burntlog Route. **"(Source: Fisheries and Aquatic Habitat (Including Threatened, Endangered, Proposed, and Sensitive Species Report p. 116)**

Comment: 6.1.3 Existing Stream Crossings

Johnson Creek Road	**Intermittent**	**2**
	Perennial	**18**
McCall-Stibnite Road	**Intermittent**	**22**
	Perennial	**39**

(Source: *Stibnite Gold Project, Access and Transportation Specialist Report. p.32.)*

Comment: 2.5.4.1 Access Roads "*Under this Alternative, the Johnson Creek Route would be improved and used to access the SGP through construction, operations, and closure and reclamation and would be the only route of ingress and egress for the SGP. Road widening and straightening, along with drainage and bridge improvements, would be required for the Johnson Creek Road (CR 10-413) portion of the Johnson Creek Route. The Stibnite Road (CR 50-412) portion would be improved by straightening curves, constructing retaining walls, and installing 182 18-inch culverts and two 60-inch culverts. Rock blasting would be required in areas to accommodate increasing the road width. Mesh and anchors, retaining walls, and concrete barriers are anticipated to be necessary due to steep rock canyon topography to mitigate safety hazards. The Johnson Creek Route would take approximately twice as long to construct as the Burntlog Route as the level and pace of construction would be limited by space constraints and the need to maintain some level of access through the construction zone to allow for passage of equipment, materials, and laborers to the mine site. It would also require drilling and blasting of rock overhands. Approximately 1 mile of road through the village of Yellow Pine would be paved."*

“During construction, Johnson Creek Road would require periodic temporary road closures. To complete upgrades to the Stibnite Road, daily road closures would be required from 10 a.m. to 4 p.m. during a 3-year construction period to conduct the cut and fill activities required to straighten curves and install retaining walls.”

Comment: Johnson Creek Route (Avalanche hazard)
*“The Johnson Creek Route includes Johnson Creek Road (CR 10-413) and Stibnite Road (CR 50-412). Identified geologic hazards, including those based on the desktop study are depicted on **Figure 3.2-6**. There is documentation of avalanches and landslides along this route (Midas Gold 2019a). In March 2014, a series of avalanches blocked Stibnite Road (CR 50-412) in two locations and caused the river to reroute onto the road. In April 2019, a series of avalanches and related landslides caused extensive damage to Stibnite Road (CR 50-412), resulting in closure of the road for approximately two months. The slides pushed snow, timber, and other debris into the East Fork SFSR and up onto Stibnite Road, and sections of the road near Tamarack Creek were washed away.*
Avalanche paths were comprehensively described by DAC (2021) for the overall Johnson Creek Route. The portion of the route from Warm Lake to Landmark is common with the Burntlog Route and is described above. The 11 avalanche hazards affecting 1.6 miles of road for that segment are included in the totals for the Johnson Creek Route.
Avalanche terrain along Johnson Creek begins approximately 10.5 miles north of Landmark. From that point north to Yellow Pine, 20 avalanche paths were identified potentially affecting 2.4 miles of the Johnson Creek Road. Most of these paths were at relatively lower elevations and were small sized. Consequently, all paths along Johnson Creek Road were assessed to potentially produce D2-sized avalanches with frequencies of 10 to 30 years and some of the same paths could produce D3-sized avalanches with 30- to 100-year frequencies.
In the 13.5 miles from Yellow Pine to the north end of the SGP mine site, a total of 63 avalanche paths were identified potentially affecting 4 total miles of road, 2.6 miles of which were likely to produce D2- or D3-sized avalanches with low to high frequency (1 to 30 years) and 1.4 miles of which were likely to produce D2- to D4-sized avalanches with low to high frequency that could cause damage to Stibnite Road as documented in 2014 and 2019.
Avalanche paths across the East Fork SFSR have the potential to deposit snow and forest debris into the river and on the road. Avalanches in this area can also create dams which could then cause scouring of the riverbanks and damage the road.
Near the confluence of the East Fork SFSR and Tamarack Creek, about 6 miles from Yellow Pine, is a 2-mile length of the canyon containing a total of 27 avalanche paths affecting 1.4 miles of road that is almost continuously exposed to D2 and D3 avalanche paths that could impact the road with a 1- to 3-year return period. These include five paths with the potential for producing D4-sized avalanches with a frequency of 30 to 100 years, presenting a large hazard to traffic, and could severely damage the road itself. A large amount of standing dead timber remains in these paths that could be entrained in these avalanches.
*A total of 94 avalanche paths were identified by DAC (2021) along the Johnson Creek Route from Warm Lake to the SGP potentially affecting 8 total miles of road (**Figure 3.2-6**)”.* **(Source: Stibnite Gold Project Supplemental Draft Environmental Impact Statement 3-26, 3-27)**

Comment: *“Control avalanche initiation with explosives using helicopters, case charging, Avalauncher, hand charging, or remote control.*
Access road design features and construction considerations would also be made to minimize risks associated with landslides, debris flow, and rock fall, namely:

- *Avoidance of known occurrences of slope failures to the degree practicable,*
- *Incorporation of appropriate cut slopes and stabilizing features (e.g., retaining walls, soil nails) into road design to reduce the potential for slope failure.*

• Road layback design to prevent the formation of steep overhangs and prevent spalling.
• Rock bolting, netting and catch benches.
• A planned Maintenance Agreement between Perpetua and Valley County would be developed defining the procedure and protocols for removing material debris from the access route.
• Dewatering or other stabilizing structural features as control measures.
*• Roadway realignment if necessary."***(Source: 2.4 Environmental Design Features. *Stibnite Gold Project, Access and Transportation Specialist Report pp. 8-11).*)**

Comment: Critical Habitat Chinook *"A total of 18 km of Chinook salmon Critical Habitat along the Burntlog Route would be at risk. Impacts to Critical Habitat resulting from risks of erosion and sedimentation, hazardous materials, and risk of spills are described in Section 7.2.3.2 in each respective topic area.* **(Source: Stibnite Gold Project, Fisheries and Aquatic Habitat (Including Threatened, Endangered, Proposed, and Sensitive Species) Report pp. 134-135)**

Comment: Critical Habitat Steelhead "*There is no steelhead trout Critical Habitat upstream from the YPP cascade barrier, but there is Critical Habitat below the barrier…. Impacts from SGP activities at the mine site and those caused by the access roads, transmission lines, or off-site facilities could impact steelhead Critical Habitat. Access road culvert replacements and new culverts would cause temporary disturbances of Critical Habitat and increase the risk of erosion and sedimentation. The transportation of hazardous materials on access roads and throughout the mine site would increase the risk of spills adjacent to Critical Habitat or in streams/rivers that flow into Critical Habitat in the East Fork SFSR, Johnson Creek, and streams adjacent to Warm Lake that flow into Critical Habitat in the East Fork SFSR, Johnson Creek, and streams adjacent to Warm Lake (Stibnite Gold Project, Road (CR 10-579). A total of 18 km of steelhead Critical Habitat along the Burntlog Route could be affected***."** **(Source: Fisheries and Aquatic Habitat (Including Threatened, Endangered, Proposed, and Sensitive Species) Report. p. 149)**

Comment: Critical Habitat bull trout NO assessment of bull trout Critical Habitat outside the mine site was completed in the Fisheries and Aquatic Habitat Report August 2022.

Comment: 7.2.4.1 Direct Impacts to Individuals; Spill Risk "*The potential for surface water quality impacts from accidental fuel or chemical spills along the mine access roads would be comparable between the action alternatives. However, all vehicle trips would traverse the Johnson Creek Route under this alternative, resulting in greater use of the Johnson Creek Route access roads. The potential location and extent of accidental spills would therefore differ compared to the 2021 MMP. The Johnson Creek Route is located in close proximity to streams (i.e., within 100 feet) for 6.5 miles or 18 percent of its approximately 36-mile length, so the potential for fuel and hazardous chemical spills impacting surface water quality is higher than for travel on the Burntlog Route which is chemical spills impacting surface water quality is higher than for travel on the Burntlog Route which is within 100 feet of a stream for 1.69 miles or four percent of its length.*

Overall design features proposed by Perpetua, design features required by the Forest Service, and permit stipulations and regulatory requirements from state and federal agencies (including use of USDOT-certified containers and USDOT- registered transporters) would reduce the risk of spills and promote effective response should a spill occur. The effects of spills associated with the Johnson Creek Route alternative on surface water and potentially on fish and aquatic habitat would be minor to major, temporary, and localized depending on the spill location. Use of the Johnson Creek Route for site access would avoid construction-related impacts from sedimentation at 21 different streams compared to the

2021 MMP. These streams include Burntlog Creek, East Fork Burntlog Creek, the East Fork SFSR, Johnson Creek, Landmark Creek, Peanut Creek, Rabbit Creek, Riordan Creek, Trapper Creek, and 12 unnamed waterbodies."

Comment: 7.2.3.1 Total Soil Resource Commitment *Boise National Forest*
*Under the Johnson Creek Route Alternative, access to the SGP would be provided via the Johnson Creek Route instead of constructing the Burntlog Route. Not constructing the Burntlog Route would reduce the BNF activity area under the Johnson Creek Route Alternative from 13 to 11 subwatersheds, totaling approximately 158,025 acres (**Table 6-3** and **Figure 5-1**). Road widening and straightening, along with drainage and bridge improvements, would be required for the Johnson Creek Road (CR 10-579) portion of the Johnson Creek Route. The McCall-Stibnite Road (CR 50-412) portion of the Johnson Creek Route (occurring within the part of No Man's Creek- East Fork SFSR subwatershed within the BNF) would be improved by straightening curves, constructing retaining walls, and installing culverts. It is likely that most of these improvements would be permanent, and therefore considered permanent TSRC. SGP-related TSRC within the BNF activity area under the Johnson Creek Route Alternative would total approximately 321 acres, with approximately 133 of these acres occurring over areas of existing TSRC (e.g., existing roads and trails, past borrow sources, etc.). Overall TSRC under the Johnson Creek Route Alternative would be approximately 904 acres, or 2 percent of the activity area. **Table 7-5** provides an overall summary of TSRC considerations as a proportion of the activity area; refer also to **Figure 7-2**. The effects of the Johnson Creek Route Alternative on TSRC would be major, localized, and long-term. In the case of pit high walls and pit lakes, effects on TSRC would be permanent*. ***(Source: Stibnite Gold Project, Soils and Reclamation Cover Materials Specialist Report pp. 78-79.)***

Comment: 2.4 Environmental Design Features. "*Avalanches occurred in 2014 and 2019, along the Stibnite Road portion of the Johnson Creek Route and again most recently in 2021. One avalanche in 2019 obliterated approximately 0.5 mile of the Stibnite Road delivering the included road material into the stream as well as entrained sediment and hundreds of trees. Reducing the potential for avalanche/roadway interaction can be accomplished by (1) appropriate design of the access road alignment that avoids placement in the bottom of avalanche paths, (2) continual monitoring of avalanche occurrences and appropriately updating the avalanche database to inform road users, and (3) mitigating catastrophic avalanches by inducing smaller, less destructive events. Current assessments of identified avalanche paths on the Burntlog and Johnson Creek access routes are described in the Snow Avalanche Hazard Assessment for Access Roads (Dynamic Avalanche Consulting 2021)."* **(Source: *Stibnite Gold Project, Access and Transportation Specialist Report pp. 8-11).***

Questions:

- What is the actual number of perennial streams in the combined Johnson Creek and Stibnite road distances: 43 or 59?
- **Given:** Distances of 27 miles for the Johnson Creek route, and 6.5 miles have been used as the number of road miles within 0.5 miles and "100 ft" of Johnson Creek respectively: **Explain**: Which is the real detrimental distance in this road assessment; 0.5 mile distance, or a 100 foot distance from the stream?
- How will the daily deliveries of fuels and other materials occur when the Johnson Creek road is closed during daily construction?
- Given the daily road closures projected, how will you keep large delivery trucks, especially fuel haulers, from operating at night?

- **Given:** at least 43 streams are crossed on the Johnson Creek alternative. Of that, 18 are listed a perennial:
  - How many bridges on the Johnson Creek and Stibnite roads will need to be replaced?
  - How many and what size culverts will be replaced on the Johnson Creek portion of the Johnson/Stibnite road?
  - Will the Goat Creek culvert replacement (**DEIS Attachment 9**) method be employed for the bridges/culverts to be replaced on perennial, fish-bearing streams?
  - Will the replaced culverts meet the BNF LRMP Roads Standard **FRST02 of "…*crossings shall be designed to accommodate a 100-year flood recurrence interval….*"?**
- How has the "91 meter strip" buffer discussed in the in the DEIS been replaced by the "0.5 mile" or the "100-foot" distance value in the SDEIS? If so, then which one?
- **Given:** The Burntlog road (FR 447) running surface is proposed to be widened to about 26 feet, including ditchline and fill slope. **Explain:** How many miles of road widening, at what locations and to what width will the Johnson Creek road and the Stibnite road need to be widened?
- What are the actual cumulative effects of the combination of the new transmission line reconstruction above the Johnson Creek road, the 16 ft OSV trail adjacent to the roadbed and the road work required on the Johnson Creek road to the 416W road?
- What monitoring methods will be proposed for the road reconstruction efforts given the " 100 ft" or " 0.5 mile" distance from Johnson Creek/EF South Fork Salmon River for these roads?
- **Given:** "*Reducing the potential for avalanche/roadway interaction can be accomplished by (1) appropriate design of the access road alignment that avoids placement in the bottom of avalanche paths, (2) continual monitoring of avalanche occurrences and appropriately updating the avalanche database to inform road users, and (3) mitigating catastrophic avalanches by inducing smaller, less destructive events.* **(Source: 2.4 Environmental Design Features. *Stibnite Gold Project, Access and Transportation Specialist Report pp. 8-11).*** *Item* #1 describes the proposed Burntlog Alternative**. Explain:** How can Items #2 and #3 be brought into effect safely on the proposed Johnson Creek Alternative as it will be used on the Warm Lake road summit?
- Will a public closure on some portion of the Johnson Creek/Stibnite road be in effect after the road has been reconstructed? If so, where and how will it be closed.
- No bull trout habitat assessment was displayed in the SDEIS. Johnson Creek and the EF South Fork Salmon River are both listed as Critical Habitat for bull trout.

11.b.1 Johnson Creek Alternative- Landmark Maintenance Facility

Comment: 2.5.4.4 Off-site Facilities p. 2-126 "*Under the Johnson Creek Route Alternative, the access road maintenance facility would be shifted to the west and located on approximately 3.5 acres of NFS land near the intersection of Warm Lake and Johnson Creek roads, it would be accessed via Warm Lake Road. It would be called the Landmark Maintenance Facility and would include the same components as displayed in Figure 2.4-8 p. 2-42 for the Burntlog Maintenance Facility described in the 2021 MMP."*

Comment: Table 7-23 Johnson Creek Route Alternative – SGP-Attributed Noise Level at Analysis Locations During the Construction Phase. *This table shows the Landmark Ranger Station ("Station 5; Forest Service Camp at Landmark') with daytime SGP-Attributed Daytime Noise Level (dBA LEQ) of 48 decibels, and a nighttime SGP-Attributed Day-Night Noise Level (dBA LDN) of 46 decibels. These levels are determined to be; " 2 Value does not exceed the 55 dBA threshold but does exceed the ambient noise level."* **(Source: Stibnite Gold Project, Noise Specialist Report. p. 57).**

Comment: Section 7.2.3.2 Operations "*Noise Impacts Under the Johnson Creek Route Alternative, SGP-related traffic and road maintenance activities would occur along the Johnson Creek Route instead of the Burntlog Route. SGP-related traffic would contribute some noise levels during the operations phase. However, road maintenance activities would temporarily increase daytime noise levels at Site 2, Site 5, Site 10, and Site 11 as high as 75 to 84 dBA. The Johnson Creek Route Alternative would have periodic impacts on the noise environment at Site 2, Site 5, Site 10 and Site 11 during road maintenance throughout the operations phase. The estimated noise levels and noise impacts at all other noise receivers would be the same as the 2021 MMP."* **(Source: Stibnite Gold Project, Noise Specialist Report. p. 57).**

Comment: **Table 7-24 Johnson Creek Route Alternative – SGP-Attributed Noise Levels at Analysis Locations During the Operations Phase.** This table shows the Landmark Ranger Station *("Station 5;* Forest Service Camp at Landmark') with operations Noise Level (dBA LEQ) of 75 decibels, and a nighttime SGP-Attributed Day-Night Noise Level (dBA LDN) of 73 decibels. These levels are determined to" exceeds the 55 dBA threshold level." **(Source: Stibnite Gold Project, Noise Specialist Report. p. 58).**

Comment: "*Off-Site Facilities Impacts related to the SGLF would be the same as those described under the 2021 MMP. The construction of the Landmark Maintenance Facility could pose potential physical and visual effects to historic properties. The location is adjacent to the historic Landmark Ranger Station and the introduction of a modern facility would likely alter the viewshed for the Landmark Ranger Station. It is anticipated the Landmark Maintenance Facility would adversely visually affect the Landmark Ranger Station. Consideration for the potential adverse impacts to previously unidentified historic properties, including TCPs and CLs would take place as consultation continues and under the stipulations of the PA"* **(Source: p. 4-510, section 4.17.2.3 Stibnite Gold Project Supplemental Draft Environmental Impact Statement.)**

Comment: 2.4.4.8 Off-Site Facilities p. 2-40 Burntlog Maintenance Facility *[note: This also describes the Landmark Maintenance Facility]*. *"The facility footprint would be approximately 3.5 acres and would not be fenced. The facility would include three main buildings: a 7,000-square-foot maintenance building; a 7,000-square-foot aggregates storage building; and a 4,050- square-foot equipment shelter (Figure 2.4-8). It would also contain a fuel station, electric generator, propane tank, outdoor storage area, and worker sleeping quarters. It would house sanding/snowplowing trucks, snow blowers, road graders, and support equipment in the equipment shelter or maintenance buildings. The Burntlog Maintenance Facility would require a domestic groundwater well to service the facility. This well and associated water right would require permitting through the IDWR. This facility would include a double-contained fuel storage area housing three above-ground 2,500-gallon fuel tanks for on-road diesel, off-road diesel, and unleaded gasoline. Additionally, a 1,000-gallon used oil tank would be located inside the maintenance facility and a 1,000-gallon propane tank would be located at the facility for heating. Additional features of this facility could include covered stockpiles of coarse sand and gravel for winter sanding activities; temporary or emergency on-site housing for road maintenance crews during periods of heavy snow removal needs and other winter maintenance activities; and communications equipment including a tower. This facility could also serve to support snowmobile trail grooming and grooming equipment storage as needed."*

What was stated in the DEIS and not included in the SDEIS

Section 4.9.2.4.2.4 Off-site Facilities Landmark Maintenance Facility – Alternative 4 states, *"Under Alternative 4, the Landmark Maintenance Facility would be moved to a site on the south side of Warm Lake Road approximately 0.1 mile south of Landmark. The maintenance facility* *buildings, including building dimensions and parking/laydown areas would be the same as Alternative 1. The nearest waterbody to the relocated Landmark Maintenance Facility would be Landmark Creek, which would be* ***just a few feet away from the facility footprint****. Landmark Creek is listed by IDEQ as impaired (Category 4A) for water temperature, with a designated beneficial use of salmonid spawning."*

Comment: Landmark Creek is listed as Critical Habitat for Chinook salmon, steelhead trout and bull trout **(Source: Figures 3.12-8, 3.12-10, 3.12-16 DEIS).**

Comment: Landmark Creek is listed by IDEQ as impaired (Category 4A) for water temperature, with a designated beneficial use of salmonid spawning." (***Source: DEIS Section 4.9.2.4.2.4 Off-site Facilities Landmark Maintenance Facility***)

Questions:

- How do you plan to meet the Soil, Water, Riparian, and Aquatic Resources **Objective 2037**, "*Maintain the National Register status of Landmark Guard Station and other eligible properties*"?
- How do you propose to meet the following Management Area Directions for Management Area, 20, Upper Johnson Creek:
    - MPC 3.2 Active Restoration and Maintenance of Aquatic, Terrestrial, and Watershed Resources;
        - General Standard 2010;
        - Vegetation Standard 2011; and
        - Road Standard 2012?
- How do you plan to meet the Soil, Water, Riparian, and Aquatic Resources Objectives 2014, 2015, 2016 and 2018 for Management Area 20, Upper Johnson Creek?
- What are the mitigations that will protect this proposed facility from the *"…substantial overland flow…"* either from rain, rain-on-snow or flooding events??
- How do you propose to minimize the expected increase in nutrients to either Johnson Creek or Landmark Creek from the proposed septic tank leach field?
- This proposed structure is within the RHCA of Landmark Creek and is adjacent to the floodplain of this stream. How do you propose to meet Standard, "TEST06 "*Management actions shall be designed to avoid or minimize adverse effects to listed species and their habitats. For listed fish species, use Appendix B for determining compliance with this standard."?*
- Is the proposed septic system including the leach field located above the flood plain?
- How do you propose to mitigate the gray water produced by both domestic uses and wash water used on vehicles?
- Are the proposed gas and diesel fuel tanks located above the flood plain?
- What type of monitoring will occur to validate that increased nutrients from the proposed septic system, sediment from proposed construction or use, or potential petroleum product leakage associated with the vehicle wash water are not entering Landmark Creek?

11.b.2 Proposed relocation of the Landmark Maintenance Facility

I propose the following location for the Landmark/Burntlog Maintenance Facility:

A 6-7 acre patch of ground on the East side of the Landmark Airstrip; 11T 616358.16E, 4944756.4 N using Google Earth mapping coordinates. This location would be about 1 mile further than your proposed Landmark Facility adjacent to Landmark Creek and about 2.7 miles short of the proposed Burnt Log Facility site north of Peanut Creek/Mud Lake.

Note: This site could also be used for the Burntlog Maintenance Facility in the MMP *Alternative.*

Rationale:

- Enough Distance exists -approximately 1 mile- from the Landmark RD National Historical site to eliminate the noise and light pollution problems affecting the National Register status of the Landmark Guard Station.
- The proposed new location eliminates:
  - the proposed maintenance facility structure; the loss of overstory shading (Landmark Ck is IDEQ WQ limiting for stream temperature);
  - The loss of a Dispersed Camping site;
  - eliminates potential for septic nutrients and petroleum spills in the RHCA and floodplain of Landmark Ck, which is listed as critical habitat for Chinook salmon, Steelhead and bull trout.
- Meets SWRA Objectives 2014 and 2015.
- Meets Vegetation Standard 2011.
- Landtype characteristics are improved on the proposed site.
  - The **LT 106a** of the proposed Landmark Maintenance Facility site near Landmark Ck., is categorized as likely needing improved or additional special management practices [Class 3] for Sedimentation, Surface Erosion and Runoff Rate.
  - The proposed site adjacent to the Landmark Airstrip, **LT 101a**, shows all but the Runoff Rate as being avoided [Class 2] through accepted management practices. ***(Source: INITIAL DRAFT SOIL-HYDROLOGIC RECONNAISSANCE SURVEY Landmark Ranger District Boise National Forest March 1972 George E. Wendt - Soil Scientist Gene F. Cole - Watershed Specialist)***

12. Comments and questions common to road construction and reconstruction for both Action Alternatives.

12.a. Culverts replacement methods, spacing and placement

Outside the Mine Site Area

Comment: *"Construction and use of roads can accelerate erosion and sediment delivery to streams and have been identified as the primary contributor of sediments to stream channels in managed watersheds (Trombulak and Frissell 2000). During the Burntlog Route construction, including bridge and culvert installations, the potential exists for increased runoff, erosion, and sedimentation resulting from localized vegetation removal and soil excavation which could result in increased sediment load in streams. Construction of and upgrades to access roads and utilities associated with the SGP creates a potential for increased runoff, erosion, and sedimentation as a result of localized vegetation removal and excavation of soil, rock, and sediment, which could result in increased sediment load in streams. Permit stipulations from IDWR and IDEQ would ensure streambank vegetation would be protected except where its removal is necessary. New cut or fill slopes not protected with some form of stabilization measures would be* *seeded and planted with native vegetation to prevent erosion. Use of temporary erosion and sediment control BMPs also would be employed."*

Comment: *To accommodate floods, including associated bedload and debris, new culverts, replacement culverts, and other stream crossings will be designed to accommodate a 100-year flood recurrence interval unless site-specific analysis using calculated risk tools or another method, determines a more appropriate recurrence interval.*	FP Component	BNF and PNF: FRST02

Comment:

- Culverts providing drainage for non-fish bearing streams would take into account the estimated drainage basin area and would be sized to accommodate a recommended peak 25-year design flow at each culvert location.
- Road crossings of fish bearing streams would be designed such that structures allow fish passage. FSH guidelines for fish-bearing streams include structures that span 120 percent of the channel's bankfull width and pass the peak 100-year design storm.
- Additional relief culverts would be placed at intervals depending upon the uphill drainage basin size and road profiles.
- The drainage system (roadside ditches and culverts) would require a reasonable amount of maintenance and inspection to ensure the system is working properly. Debris and sediment would be removed on an annual basis, in addition to any emergency situations that may arise. To
- maintain culvert efficiency, Perpetua would monitor the roadways and clear debris from culvert inlets and outlets during and after significant storm events. **(Source: *Stibnite Gold Project, Fisheries and Aquatic Habitat (Including Threatened, Endangered, Proposed, and Sensitive Species) Report.* Table 2-2 Prominent Regulatory and Forest Service Requirements for Fisheries and Aquatic Habitat. p. 8, and pp. 15-16.)**

Comment: In the SDEIS and Specialists' reports, descriptions of culvert placement and construction mitigations are minimal and generalized. In the DEIS**, Attachment 7**-Criteria for Cross-drain spacing, and **Attachment 9-**Culvert discuss methodologies for culvert construction/replacement.

Comment: "*We quantified fine-sediment accumulation annually from 2000 to 2003 after culvert construction in five Laurentian Shield streams containing brook trout Salvelinus fontinalis. A significant spatial pattern (section effect) was observed in which the accumulation was lowest upstream of the culvert (section 1), peaked in the section directly below the culvert (section 2), and slightly decreased in sections further downstream (sections 3–5) without returning to upstream levels. The accumulation was always significantly higher downstream of the culvert than in section 1. The temporal pattern (period effect) was also significant; accumulation was lowest several weeks after construction, peaked at one full year after construction, and decreased at 2–3 years postconstruction. Fine-sediment accumulation differed significantly among all periods. The downstream distance at which sediment accumulation returned to upstream levels varied from 358 and 1,442 m below the culvert. Owing to the accumulated sediment, which probably originates primarily from construction sand or road erosion, habitat downstream of a culvert is in many cases of lower quality for brook trout incubation and rearing. Recommendations for minimizing culvert impacts on fish habitat are discussed."*
(Source: STEPHANIE LACHANCE*, MARYSE DUBE´, RENAUD DOSTIE and PIERRE BE´RUBE´.2008. Transactions of the American Fisheries Society 137:1826–1838, Temporal and Spatial Quantification of Fine-Sediment Accumulation Downstream of Culverts in Brook Trout Habitat

Questions:

- Why do neither sediment monitoring stations nor monitoring methods appear in the SDEIS at construction/reconstruction of culverts given the documented sediment movement downstream after/during construction?
- Will the Goat Creek culvert requirements **(DEIS Attachment 9)** be followed during installation of all culverts, or just fish bearing/live stream culverts?
- ARE these DEIS Attachments still to be used? If not, what supplants them?
- Will culvert spacing listed in DEIS Attachment 7 be followed in relief culvert placement?
- How will relief culvert drainage into intermittent stream channels and "swales" (zero order streams) be accomplished to minimize development of first order channels that will create additional sedimentation downstream?
- Given the need for sediment monitoring during construction, and shown the 2-3 year span of sediment moving downstream after construction, how long a time will monitoring occur for culverts /bridges constructed or reconstructed?
- Culverts for fish-bearing streams at 100- year flood and culverts for non-fish bearing streams at 25 -year floods are being proposed. How does this meet ***Roads Standard FRST02: To accommodate floods, including associated bedload and debris, new culverts, replacement culverts, and other stream crossings shall be designed to accommodate a 100-year flood recurrence interval unless site-specific analysis using calculated risk tools or another method, determines a more appropriate recurrence interval?***
- Will the Goat Creek culvert replacement (DEIS Attachment 9) methodology be used to replace culverts, especially those in fish-bearing streams and TES fish Critical Habitat waters?
- What monitoring methods will be used during new culvert placement, culvert replacement, and bridge abutment construction to minimize suspended and bedload sediment increases downstream into TES Critical Habitat streams, and tributaries that deliver to Critical Habitat streams?
- Culverts for fish-bearing streams at 100- year flood and culverts for non-fish bearing streams at 25 -year floods are being proposed. How does this meet ***Roads Standard FRST02: To accommodate floods, including associated bedload and debris, new culverts, replacement culverts, and other stream crossings shall be designed to accommodate a 100-year flood recurrence interval unless site-specific analysis using calculated risk tools or another method, determines a more appropriate recurrence interval?***
- What WCIs will be used off mine site to verify that a change in Critical Habitat for bull trout, Chinook and steelhead is not being significantly changed by construction/reconstruction of these roads systems?

12.b. Road slope placement and avalanche hazards

"*Both the Burntlog and Johnson Creek routes have segments that are exposed to landslides, rockfalls, and avalanches. These geohazards present along the road corridors could increase the potential for truck accidents resulting in spills of hazardous materials. The Burntlog Route has exposure to 26 landslides or rockfalls and 38 avalanche paths. The Johnson Creek Route has exposure to 45 landslides or rockfalls and 94 avalanche paths. The Johnson Creek Route thus may have higher potential for increased trucking accidents and greater spill risk from these geohazards.*

"Close proximity to surface water resources increases the potential consequences of a significant spill along the access routes. The Burntlog Route crosses 37 streams and includes 9 total miles that are within 0.5 mile of surface water resources. The Johnson Creek Route crosses 43 different streams and includes 27 miles that are within 0.5 mile of surface water resources, including several miles which parallel the fish-bearing East Fork SFSR and Johnson Creek waterways. Though the Burntlog Route includes a greater number of stream crossings, the Johnson Creek Route includes greater proximity to water resources. The potential consequences from significant trucking spills would thus be greater along the Johnson Creek Route." (**Source: Stibnite Gold Project Supplemental Draft Environmental Impact Statement ES-14.)**

Burntlog Route *"Landslide and rockfall hazards have been assessed along the Burntlog Route, including in-field observations (STRATA 2016). Visual evidence of slope instability was reported at several locations along the route. Potential rockfall areas are primarily tied to existing road cuts occurring in both glacial till/colluvium and granitic outcrops.*

*Avalanche paths were comprehensively described by DAC (2021) for the overall Burntlog Route. Along the existing road from Warm Lake to Landmark they identified 11 avalanche paths potentially affecting 1.6 miles (**Figure 3.2-6**). These were relatively high frequency avalanche paths (1 to 3 years) producing small (D2), loose avalanches with two larger (D3) avalanche paths that could affect the road about every 3 years.*

Along the existing Burntlog Road from Landmark to the ridge above Black Lake, seven D2 sized avalanche paths were identified potentially affecting 0.5 miles of road with four of them having the potential to affect the road on average every 10 years.

From the end of the existing Burntlog Road to Stibnite, 20 avalanche paths were identified along the alignment of the proposed extension of the Burntlog Road potentially affecting 2.4 miles of road. Most of these were D2-sized paths with high frequencies (1 to 3 years). There were two potential D3 paths with moderate frequencies (3 to 10 years).

*A total of 38 avalanche paths were identified by DAC (2021) along the Burntlog Route from Warm Lake to Stibnite potentially affecting 4.5 miles of road (**Figure 3.2-6**)." (Source:* **Stibnite Gold Project Supplemental Draft Environmental Impact Statement 3-26.)**

*"The Burntlog Route has exposure to 26 landslides or rockfalls and 38 avalanche paths. The Johnson Creek Route has exposure to 45 landslides or rockfalls and 94 avalanche paths. The Johnson Creek Route thus may have higher potential for increased trucking accidents and greater spill risk from these geohazards. A total of 94 avalanche paths were identified by DAC (2021) along the Johnson Creek Route from Warm Lake to the SGP potentially affecting 8 total miles of road (**Figure 3.2-6**)".* **(Source: Stibnite Gold Project Supplemental Draft Environmental Impact Statement 3-26, 3-27)**

"Avalanche paths were comprehensively described by DAC (2021) for the overall Johnson Creek Route. The portion of the route from Warm Lake to Landmark is common with the Burntlog Route and is described above. The 11 avalanche hazards affecting 1.6 miles of road for that segment are included in the totals for the Johnson Creek Route.)". **(Source: Stibnite Gold Project Supplemental Draft Environmental Impact Statement 3-26, 3-27)**

"In the 13.5 miles from Yellow Pine to the north end of the SGP mine site, a total of 63 avalanche paths were identified potentially affecting 4 total miles of road, 2.6 miles of which were likely to produce D2- or D3-sized avalanches with low to high frequency (1 to 30 years) and 1.4 miles of which were likely to produce D2- to D4-sized avalanches with low to high frequency that could cause damage to Stibnite Road as documented in 2014 and 2019.

Avalanche paths across the East Fork SFSR have the potential to deposit snow and forest debris into the river and on the road. Avalanches in this area can also create dams which could then cause scouring of the riverbanks and damage the road.

Near the confluence of the East Fork SFSR and Tamarack Creek, about 6 miles from Yellow Pine, is a 2-mile length of the canyon containing a total of 27 avalanche paths affecting 1.4 miles of road that is almost continuously exposed to D2 and D3 avalanche paths that could impact the road with a 1- to 3-year return period. These include five paths with the potential for producing D4-sized avalanches with a frequency of 30 to 100 years, presenting a large hazard to traffic, and could severely damage the road itself. A large amount of standing dead timber remains in these paths that could be entrained in these avalanches.

*A total of 94 avalanche paths were identified by DAC (2021) along the Johnson Creek Route from Warm Lake to the SGP potentially affecting 8 total miles of road (**Figure 3.2-6**)."* **(Source: Stibnite Gold Project Supplemental Draft Environmental Impact Statement pp. 3-26, 3-27)**

"The Burnt Log Route is closer to avalanche "starting zones" such that it may have frequent but small avalanches (Class 1 or 2) that would be unlikely to impact vehicles." ***(Source:*** **Section 4.7.2.4.4 of the DEIS.)**

Comment: Landtypes of 120a-1; 122-1 and 122 are shown on the Johnson Creek Road near the Whitehorse Rapids and the confluence of Johnson Creek with the EF SFSR. The Management Class given for these landtypes are: "**CLASS 4 - impact may be minimized or avoided only when intensive special management practices are taken." And CLASS 5 - impacts are unavoidable and are long-lasting even when intensive special management practices are taken."** ***(Source: Wendt, G.E., and G.F. Cole. 1972.*** **INITIAL DRAFT SOIL-HYDROLOGIC RECONNAISSANCE SURVEY Landmark and Boise Ranger Districts Boise National Forest.)**

Comments: In **Quigley and Arbelbide (1997)** describe problems encountered with mid-upper slope road placement:

- *"Small perennial and intermittent non-fish bearing streams are especially important in routing water, sediment, and nutrients to downstream fish habitats (Reid and Ziemer 1994).*
- *Intermittent streams account for more than one-half the total channel length in many watersheds in the Basin and therefore strongly influence the input of materials to the rest of the channel system.*
- *Channelized flow from intermittent and small streams into fish bearing streams is a primary source of sediment in mountainous regions (Belt and others 1992).*
- *In steep, highly dissected areas, intermittent streams can move large amounts of sediment hundreds of meters, though buffer strips, and into fish bearing streams.*
- *In-channel sediment flows are limited primarily by the amount and frequency of flow and by the storage capacity of the channel"* (**Source: Quigley, Thomas M.; Arbelbide, Sylvia J., tech. eds. 1997. Gen. Tech. Rep. PNW-GTR-405.)**

Comments: Quigley and Arbelbide (1997) demonstrate that many problems also occur with mid to high slope road locations:

- *"... small streams are more affected by hill slope activities than are larger streams because there are more smaller than larger streams within watersheds,*
- *smaller channels respond more quickly to changes in hydrologic and sediment regimes,*
- *stream-side vegetation is a more dominant factor in terms of woody debris inputs and leaf litter and shading.*
  - *Small perennial and intermittent non-fish bearing streams are especially important in routing water, sediment, and nutrients to downstream fish habitats (Reid and Ziemer 1994).*
  - *Intermittent streams account for more than one-half the total channel length in many watersheds in the Basin and therefore strongly influence the input of materials to the rest of the channel system. Channelized flow from intermittent and small streams into fish bearing streams is a primary source of sediment in mountainous regions (Belt and others 1992).* "

- *"In steep, highly dissected areas, intermittent streams can move large amounts of sediment hundreds of meters, though buffer strips, and into fish bearing streams. In-channel sediment flows are limited primarily by the amount and frequency of flow and by the storage capacity of the channel*." **(Source: PNW-GTR-405. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 4 vol. (Quigley, Thomas M.,tech. ed.; The Interior Columbia Basin Ecosystem Management Project: Scientific Assessment), Volume 3, pp 1365-1369. 1997.)**
- Grant and Swanson (2007) found that ridgetop and mid-slope roads tended to generate sediment, whereas toeslope roads tended to collect the sediment generated above. (in: ***W. J. Elliot, P. J. Edwards and R. B. Foltz in: D. C. Hayes et al. (eds.), Chapter 16 Research Related to Roads in USDA Experimental Forests. USDA Forest Service Experimental Forests and Ranges, DOI 10.1007/978-1-4614-1818-4_16, © Springer New York 2014)***

QUESTIONS:

- **Given:** Landslides and avalanches are present in BOTH routes to the mine site. The differences are size and intensity. **Explain:** Why are there no sediment mitigations for processing sediment from avalanche removal in the DEIS or SDEIS?
- Why is no sediment monitoring effort described or in place for either of the proposed roads given the amount of sediment research has shown enters perennial and intermittent streams?
- Where will the sediment from the potential avalanches on the Burntlog (FR447) or the Jonson Creek/Stibnite roads road be placed?
- Why is there no assessment of the amount of potential sediment that will enter the headwaters of streams that are Critical Habitat for bull trout especially, and Chinook and/or Steelhead downstream because of the proposed road construction in demonstrated avalanche -prone and erosive landtypes?
- Why are there no monitoring sites proposed on streams crossed by the proposed Burntlog road, or Johnson Creek/ Stibnite roads in the areas known to be avalanche prone?
- Will the soil nail walls described be effective against the small avalanches described in the DAC (2021) report for this area?
- Will the proposed avalanche reduction methods from the Warm Lake road if used on the Johnson Creek/Stibnite road, reduce the probability of a loss of materials, machine or potentially human life?
- Have you considered that winter operations may not be feasible at these elevations given the terrain, snowfall and soils/landtypes encountered that predispose a loss of equipment, materials and potentially human life on either road chosen as access to the mine site?
- What special treatments are to be accomplished on the Management Class 5 Landtypes that are designated, **"*CLASS 5 - impacts are unavoidable and are long-lasting even when intensive special management practices are taken*."** Such as at the Whitehorse Rapids where direct sediment delivery to Johnson Creek is unavoidable?

12.c. Erosion / Sediment from roads

Comment: The SDEIS description of the Burntlog (FR 447) road construction is located on Stibnite Gold Project Supplemental Draft Environmental Impact Statement pp. 2-17, 2-18.

Comment: Section 2.5.4.1 Access Roads of the SDEIS describe the general improvements of the Johnson Creek/Stibnite roads.*"* **(Source: Stibnite Gold Project Supplemental Draft Environmental Impact Statement p. 2-125.)**

Comment: *"Improvements on the existing roads that comprise the Burntlog Route include:*

- *Straightening tight corners to allow for improved safety and traffic visibility;*
- *Maintaining grades of less than 10 percent in all practicable locations;*
- *Placing sub-base material and surfacing with gravel;*
- *Application of a road binding agent in localized segments to increase stability and reduce sediment runoff;*
- *Widening the existing road surface (currently approximately 12 feet wide) to a 20-foot-wide travel way (approximately 26 feet including shoulders); and*
- *Installing side-ditching, culverts, guardrails, and bridges, where necessary, with design features to provide fish passage and limit potential sediment delivery to streams."*
- **(Source: *Stibnite Gold Project, Access and Transportation Specialist Report p. 39). 7.2.3 Johnson Creek Route Alternative***

Comment: *"Under the Johnson Creek Route Alternative, the Johnson Creek Route would be used to access the SGP during all phases, and the Burntlog Route would not be constructed. Upon construction completion of the Johnson Creek Route, mine vehicles would travel approximately 70 miles from the intersection of Warm Lake Road and SH 55 to Johnson Creek Road and Stibnite Road to the SGP. Road widening and straightening, along with drainage and bridge improvements would be required for the Johnson Creek Road portion of the Johnson Creek Route. The Stibnite Road portion would be improved by straightening curves, bridge improvements, constructing retaining walls, and installing culverts. In addition, the Stibnite curves, bridge improvements, constructing retaining walls, and installing culverts. In addition, the Stibnite Road portion would be improved by widening curves to accommodate 55-foot semi-truck trailers. Approximately 1 mile of road through the village of Yellow Pine would be paved. Construction an Approximately 1 mile of road through the village of Yellow Pine would be paved. Construction and improvements to the Johnson Creek Route would require approximately 4 years with a total construction schedule for the SGP of 5 years (2 years more than the Burntlog Route)"* ***(Source Stibnite Gold Project, Access and Transportation Specialist Report p. 49).***

Comment: Megahan and Ketecheson (1996) are in general agreement with the idea of, "...filter strips are generally effective in controlling sediment that is not channelized." However, culverts, especially those leading to streams, first order intermittent channels and cross ditching can create channels thus produce additional sediment:

- "…a total of 264[deposits], or about 84 percent originated from road fill slopes (table 1). Cross drains account for 26 deposits or about 8 percent of the sediment flows." (p.5)
  - "In contrast, deposits from berm drains and culverts traveled much farther and often tended to funnel into the bottom of swales (figure3)." (p.5)
  - "The maximum travel distance for cross drains was about 275 m, considerably greater than any other source where maximum distances barely exceeded 100m." (p. 6)
  - "Much of the soil loss from road sections treated by intensive erosion control measures occurred during the first over-winter period when erosion control measures were least effective (for example, vegetation growth had not yet occurred [e.g., seeding, mulching, terracing…]." (p.8) **(Source: Ketcheson, GL and WF Megahan. 1996. Sediment Production and Downslope Sediment Transport from Forest Roads in Granitic Watersheds. Department of Agriculture Forest Service Intermountain Research Station Research Paper INT-RP-486 May 1996).**

Comment: "Roads directly change the hydrology of slopes and stream channels, resulting in alteration of surface-water habitats that are often detrimental to native biota. Roads intercept shallow groundwater flow paths, diverting the water along the roadway and routing it efficiently

to surface-water systems at stream crossings (Megahan 1972; Wemple et al. 1996). This can cause or contribute to changes in the timing and routing of runoff (King & Tennyson 1984; Jones & Grant 1996; Ziemer & Lisle 1998), the effects of which may be more evident in smaller streams than in larger rivers (Jones & Grant 1996). Hydrologic effects are likely to persist for as long as the road remains a physical feature altering flow routing— often long after abandonment and revegetation of the road surface. By altering surface or subsurface flow, roads can destroy and create wetland habitats. Changes in the routing of shallow groundwater and surface flow may cause unusually high concentrations of runoff on hillslopes that can trigger erosion through channel downcutting, new gully or channel head initiation, or slumping and debris flows (Megahan 1972; Richardson et al. 1975; Wemple et al. 1996; Seyedbagheri 1996). Once such processes occur, they can adversely affect fishes and other biota far downstream for long periods of time (Hagans et al. 1986; Hicks et al. 1991). Roads have been responsible for the majority of hillslope failures and gully erosion in most steep, forested landscapes subject to logging activity (Furniss et al. 1991; Hagans et al. 1986). Because most of these more catastrophic responses are triggered by the response of roads during infrequent, intense storm events, lag times of many years or decades pass before the full effects of road construction are realized. Chronic effects also occur, however. The surfaces of unpaved roads can route fine sediments to streams, lakes, and wetlands, increasing the turbidity of the waters (Reid & Dunne 1984), reducing productivity and survival or growth of fishes (Newcombe & Jensen 1996), and otherwise impairing fishing (Buck 1956). Existing problem roads can be remediated to reduce future erosion potential (e.g., Weaver et al. 1987; Harr & Nichols 1993). The consequences of past sediment delivery are long-lasting and cumulative, however, and cannot be effectively mitigated (Hagans et al. 1986)."
*(***Source: Trombulak and Frissell 2000)**

Questions:

- What are the changes in actual WCI numeric values for the Upper Burntlog, Lower Burntlog, Upper Johnson, Lower Johnson, Trapper and Riordan subwatersheds for the following WCI values: # Road /Stream crossings; Road miles in Landslide prone; Road miles in Riparian Conservation Areas; Change in Drainage network; Road density; Road miles. These values are missing and should be included in the SDEIS/FEIS to demonstrate whether changes to the streams listed as Critical Habitat are /are not occurring based on the list of mitigation methods that has been made in the SDEIS.
- What methods are in place to handle the water intercepted by roads besides a ditchline?
- Why is SGP waiting for and assuming that other agencies will finalize mitigation practices to use, and how to use them? This does not allow for an assessment of the amount of sediment reduction by alternative in the DEIS or on-the-ground practices. It is the responsibility of SGP in this DEIS to design these practices first. How will the sediment eroded from road surfaces, ditchlines and cut/fill slopes of any road used in this DEIS be monitored?
- How will spawning and rearing habitat in the off-site affected streams- Johnson Creek, the lower EFSFSR, Burnt Log Creek, Trapper Creek, Riordan Creek and Peanut Creek be monitored?
- Intermittent channels can be formed by culvert drainage off a road system, especially a fill slope. What provisions are in place to prevent and especially to monitor and repair these channels as they generally deposit sediment into perennial channels further downstream?

12.d Running Surface Hardening

Comment: Section 4.23.2.2.1.1 Construction states**, "***Alternative 1 construction activities include widening Burnt Log Road; mining gravel, sand, and rock at several borrow sources along the Burnt Log Route for use in road surfacing; placing construction camps along Burnt Log Route; and the construction of new segments of road from its current terminus to the mine site. Soil and cleared vegetation from road widening would be salvaged and stored within borrow sources once they have been quarried"* **P.4.23- 28. Also**, **"*Midas Gold would maintain a hardened road surface with gravel surfacing to promote an efficient and useable all-weather road"*.** **P. 4.9-49.**

Comment: "*During Burnt Log Route construction, the potential also exists for increased runoff, erosion, and sedimentation as a result of localized vegetation removal and excavation of soil, rock, and sediment, which could result in increased sediment load in streams. Expected permit stipulations from the Idaho Department of Water Resources (IDWR) and Idaho Department of Environmental Quality (IDEQ) would require that:*

- *Streambank vegetation be protected except where its removal is necessary;*
- *New cut or fill slopes not protected with some form of riprap be seeded and planted with native vegetation to prevent erosion;*
- *Use of temporary erosion and sediment control Best Management Practices (BMPs) associated with a stormwater pollution prevention plan (SWPPP); and*
- *That all construction activities be conducted per Idaho environmental anti-degradation policies, including IDEQ water quality regulations and applicable federal regulations."* **P. 4.9-49.**

Comment: 7.2.2.2. Construction; **2.5.1 Overview** *"Development of the Johnson Creek Route would entail 216.6 acres of new cut and fill activity (including borrow sources) along existing roadways that follow segments of Johnson Creek and East Fork SFSR to make those roadways usable for mine access during its lifespan. Improvements to the Johnson Creek Route would include road widening and straightening, as well as drainage and bridge improvements to the Johnson Creek Road portion of the Johnson Creek Route. The Stibnite Road portion of the Johnson Creek Route would be improved by straightening curves, adding retaining walls, and installing culverts. It would approach the village of Yellow Pine at the junction of Johnson Creek and Stibnite roads."*

Comment: *"Roads concentrate surface water flows, which in turn increases erosion. Megahan and Kidd, in 1972, found that erosion from logging roads in Idaho was 220 times greater than erosion from undisturbed sites. Logging roads used by more than 16 trucks per day may produce 130 times more sediment than do roads used only by passenger cars."* (**Source: The Ecological Effects of Roads By Reed Noss, PhD)**

Comment*: "Mitigation of sediment production by graveling is a function of the erodibility of both the gravel and the underlying material. Erosion reduction by gravel surfacing is maximized by the use of hard crushed rock over highly erodible subgrade material.*" **(Source: Burroughs and King 1989).**

Comment: "*The Rocky Mountain Research Station and the Willamette National Forest conducted a 4-year study comparing the runoff and sediment production from two low-volume* *roads with aggregate surfaces (1). A section of road with marginal-quality aggregate produced 3.7 to 17.3 times as much sediment as a similar section with good-quality aggregate. One mechanism that caused the increase in sediment production from the marginal-quality aggregate was the increase in the flow path on the marginal-quality aggregate. After road maintenance, water flowed diagonally from the road crown to the road edge. With traffic, the cross slope was reduced, causing the flow to take a longer flow path. The marginal quality aggregate had less resistance to cross-slope flattening and, therefore, longer flow paths and hence more sediment production. Another mechanism was the inability of the marginal-quality material to resist crushing or chemical degradation, which resulted in a constant replenishment of the fine material to be transported by the flowing water*." **(Source: Randy B. Foltz and Mark Truebe Transportation Research Record 1819 ■ 185 Paper No. LVR8-1050)**

Comment: "*Crushing appears to have been the dominant process on our study roads based on PSD comparisons. Crushing changed the PSDs up to a certain limit, but no finer. Having road aggregate close to the PSD limit would reduce aggregate crushing and fine sediment production. Crushing and subsequent compaction can cause the aggregate volume to change, resulting in permanent deformation of road surface with ruts, washboards, and potholes; requiring road maintenance. Therefore, having aggregate close to the PSD limit (i.e., the optimum compaction) will reduce road maintenance. Further, particle-size segregation of road aggregate may occur during transport, dumping, and surfacing the subgrade, but additional work is needed to investigate this segregation and to produce aggregate with more desirable PSDs.*
Subgrade mixing can also be a dominant process in other geographical locations with different road conditions, aggregate, and subgrade properties (e.g., soft, weak subgrade, and wet road conditions). Understanding the physical processes on different road conditions will help mitigate sediment production from forest roads and reduce road maintenance efforts by providing information for best management practices. For example, strengthening the surface material (e.g., surface stabilization) is recommended if the dominant process is crushing; strengthening the subgrade (e.g., geotextile reinforcement on subgrade) if subgrade mixing is the dominant process; and collecting and recycling large aggregate particles on the shoulder and roadside for road resurfacing if sweeping occurs excessively. Future study is recommended to investigate traffic-induced processes in other locations where subgrade mixing or sweeping is the dominant process, and the effects of road treatments and management practices on the traffic-induced processes, for better road management." **(Source: Hakjun Rhee, James Fridley and Deborah Page-Dumroese. 2018. Traffic-Induced Changes and Processes in Forest Road Aggregate Particle-Size Distributions.** Forests. **2018**, 9, 181)

Comment: *"All road segments were 5 m wide and insloped with aggregate surfacing light traffic, and no overhanging forest cover. Sediment production was correlated to the product of segment length times road slope squared. Sediment production from aggregate covered roads on a silty clay loam was about 9 times greater than that from roads constructed o n a gravelly loam. Sediment production was not correlated to the Cutslope height .Road segments where vegetation was cleared from the cutslope and ditch produced about 7 times as much sediment as road segments w here vegetation was retained, showing the potential reduction in erosion by revegetation following construction and the potential impact of ditch cleaning during maintenance Relationships and estimates from this study provide a basis for improved erosion estimates by commonly used empirical procedures."(* ***Source:*** **Charles H. Luce and Thomas A. Black 1999. Sediment production from forest roads in western Oregon WATER RESOURCES RESEARCH, VOL. 35, NO. 8, PAGES 2561-2570, AUGUST 1999)**

Questions:

- Why is SGP waiting for and assuming that other agencies will finalize BMPs, and mitigation practices to use, and how to use them? This does not allow for an assessment of the amount of sediment reduction by alternative in the SDEIS or on-the-ground practices. It is the responsibility of SGP in this SDEIS to design these practices first.
- What are the sediment reduction mitigation practices for the borrow sites?
- What is the competency /hardness of the granite quarried at the three -up to eight- borrow sites along the Burntlog or Johnson Creek/Stibnite roads?"
- How much more sediment will be produced by the approximately 45 passes/day of heavy vehicles compared to the 16 passes /day cited in Megahan and Kidd, 1972?
- How will rutting and aggregate crushing from the daily heavy vehicles be held to a minimum?
- ***{note from personal experience}*** If a product like magnesium chloride or lignin sulfonate is used to harden the road surface, what methods of repair will be used on the potholed that will develop in the running surface?
- If the road running surface is hardened with a product like magnesium chloride or lignin sulfonate, and during winter months, the road has heavy amounts of sand spread on it for traction, how will these sands be kept out of the ditchlines and out of the streams that are or will feed into Critical Habitat for bull trout, Chinook or steelhead?

12.e. Fillslopes

Comment: "*Road surfaces throughout* *the SGP would be stabilized and managed to minimize transport of sediment, dust, and other materials, especially near watercourses through appropriate road engineering, surface drainage, watering, and application of dust control binding agents (magnesium chloride, lignin sulfonate, etc.), roadside ditching, road-cut stabilization, road surface maintenance, appropriate speed limits, and by limiting traffic."*

"During Burntlog Route and SGP haul road construction and use, Perpetua would install and maintain sediment control measures and devices, such as culverts, culvert inlet protection devices, ditching, silt fencing, straw wattles, straw bales, and sediment catch basins."	*Wetlands, Fish, Wildlife*
"Cut and fill slopes along roads would be mulched, hydro-seeded or have durable rock inlay material to minimize the potential for sediment generation."	*Wetlands, Fish, Wildlife*

(Source:* Table 2.4-13 Proponent Proposed Design Features p. 98 *Stibnite Gold Project, 2021 MMP Alternatives Report)

Comment:

To minimize sediment runoff from the temporary roads and roadbeds, water management features would be constructed, installed, and/or maintained on authorized temporary roads and roadbeds, on completion of use, before expected water runoff, or before seasonal shutdown. Activities and features could include, but would not be limited to, water bars, silt fencing, certified weed-free wattles, and/or weed-free straw bales, rolling dips, seeding, grading, slump removal, barriers/berms, distribution of slash, and culvert/ditch cleaning. These features would be installed in strategic downslope areas and in RCAs, where and when appropriate. **(Source: Stibnite Gold Project, Access and Transportation Specialist Report. p. 9. Table 2-2 Prominent Regulatory and Forest Plan Requirements for Access and Transportation**	Design Feature	Design Feature developed for compliance with BNF and PNF: SWGU06

Comment: "*Access road design features and construction considerations would also be made to minimize risks associated with landslides, debris flow, and rock fall, namely:*

- *Avoidance of known occurrences of slope failures to the degree practicable,*
- *Incorporation of appropriate cut slopes and stabilizing features (e.g., retaining walls, soil nails) into road design to reduce the potential for slope failure.*
- *Road layback design to prevent the formation of steep overhangs and prevent spalling.*
- *Rock bolting, netting and catch benches.*
- *A planned Maintenance Agreement between Perpetua and Valley County would be developed defining the procedure and protocols for removing material debris from the access route.*
- *Dewatering or other stabilizing structural features as control measures.*
- *Roadway realignment if necessary. "***(Source: Stibnite Gold Project, Access and Transportation Specialist Report. p. 15.)**

Comment: Many of the Landtypes associated with roading and transmission line RoW in this proposal show the following for revegetation potential: "*Management Qualities. Timber and forage productivity potentials are low and limitations for reforestation are severe due to cold climate and low water-holding capacity of some of the soils."* ***(Source:*** **SOIL-HYDROLOGIC RECONNAISSANCE SURVEY Landmark Ranger District Boise National Forest March 1972 George E. Wendt - Soil Scientist Gene F. Cole - Watershed Specialist.)**

Information from the DEIS:

Comment: 4.5.2.1.3.1 Volume of Available RCM: "*On disturbed areas with greater than 30 percent slope, Midas Gold also would apply mulch to aid in stabilizing the area and promote revegetation. Straw mulch would be certified as weed-free and applied over a roughened seed bed at a rate of about 3,000 pounds per acre. The straw mulch also would be considered a nominal amount, and it would have a short duration of effectiveness due to its quick rate of decomposition and susceptibility to wind."*

Comment: Appendix D, page D-24: "*Cut and fill slopes along roads will be mulched, hydro-seeded or have durable rock inlay material to minimize the potential for sediment generation."*

Comment: "*Initially, fillslope sediment production was responsive to rainfall, partially because of the absence of mulch and the availability of easily eroded particles on the unconsolidated fillslopes. About half of the total fillslope sediment production measured over a 2-year period took place in the first summer and fall. Thus, erosion control measures that can be put in place immediately after fillslope construction have a much larger potential to appreciably reduce sediment production compared to measures that are implemented later."* **(Source: Burroughs and King 1989).**

Comment: Many of the Landtypes associated with roading and transmission line RoW in this proposal show the following for revegetation potential: "*Management Qualities. Timber and forage productivity potentials are low and limitations for reforestation are severe due to cold climate and low water-holding capacity of some of the soils."* ***(Source:*** **SOIL-HYDROLOGIC RECONNAISSANCE SURVEY Landmark Ranger District Boise National Forest March 1972 George E. Wendt - Soil Scientist Gene F. Cole - Watershed Specialist.)**

Comment*: "The effectiveness of any mulch treatment can be reduced if traveledway drainage contributes to the fillslope, promoting accelerated rill and gully erosion. …. Almost all of the larger gullies in the fillslope were generated from traveledway drainage. This process was more dominant than any* *sheet or splash erosion process. On fillslopes with a vertical height of less than 20 ft, reductions due to seed, hydromulch (1,500 lb per acre), or straw mulch (2 tons per acre) with an asphalt tackifier (250 gal per acre) were statistically similar and ranged from 46 to 58 percent over a 3-year period. The treatment effects were also statistically similar on fills with vertical heights of 20 to 40 ft, resulting in only a 24 to 30 percent reduction. For the straw mulch with an asphalt tackifier, the reductions were much smaller than expected because the mulch was not able to protect the fills from concentrated drainage from the traveledway."* (**Source: Burroughs and King 1989).**

Comment: *"Filter windrows are barriers constructed of logging slash that slow the velocity of any surface runoff, causing deposition of most sediments. They can be constructed on or immediately below the fillslope. The advantage of this treatment is that it can be constructed concurrent with road construction to provide immediate control of fillslope sediment. Filter windrow construction by hydraulic excavator (backhoe) is a cost-effective method to incorporate erosion control into forest road construction. Field evaluation of seven machine-constructed windrows in the Horse Creek watersheds over a 3-year period indicated a 75 to 85 percent reduction in sediment leaving the fillslope compared to adjacent hydromulched slopes (Cook and King 1983***).”** **(Source: Burroughs and King 1989).**

Comment: *"Although the initial rate of fillslope erosion can be high compared to erosion rates on other road components, it is the transport of eroded material below the fillslopes that determines the degree that streams are affected by fill erosion. For most midslope forest roads, only those fillslopes near stream crossings have a high potential to contribute eroded material to streams. The slope distance required to prevent material from reaching a stream is a function of many interacting site and climatic factors, making it difficult to predict with any degree of accuracy."* **(Source: Burroughs and King 1989).**

Comment: *'Those situations that resulted in the longest average transport distance were rills formed in slumped material and rills either below relief culvert outflows or rills whose flow paths combined with culvert flow paths."* **(Source: Burroughs and King 1989).**

Questions:

- Why is there no analysis of potential constructed fillslope/cutslope sediment delivery to streams?
- Why is no type of holding material for the straw or wattles designed for steep slopes?
- Why is FS Mitigation # FS-52, "*To minimize sediment runoff from the temporary roads and roadbeds, water bars, silt fencing, certified weed-free wattles, and/or weed-free straw bales will be installed in strategic downslope areas and in RCAs*" not being addressed here?
- Given the poor recovery of vegetation due to cold, and poor soil nutrients, and the lack of function of hydro-seeding on slopes over about 30%, why is hydro-seeding being proposed?

12.f. Cutslopes

Comment: Road surfaces throughout the SGP would be stabilized and managed to minimize transport of sediment, dust, and other materials, especially near watercourses through appropriate road engineering, surface drainage, watering, and application of dust control binding agents (magnesium chloride, lignin sulfonate, etc.), roadside ditching, road-cut stabilization, road surface maintenance, appropriate speed limits, and by limiting traffic.

During Burntlog Route and SGP haul road construction and use, Perpetua would install and	**Wetlands, Fish, Wildlife**

maintain sediment control measures and devices, such as culverts, culvert inlet protection devices, ditching, silt fencing, straw wattles, straw bales, and sediment catch basins.	
Cut and fill slopes along roads would be mulched, hydro-seeded or have durable rock inlay material to minimize the potential for sediment generation.	**Wetlands, Fish, Wildlife**

Comment: Many of the Landtypes associated with roading and transmission line RoW in this proposal show the following for revegetation potential: *"Management Qualities. Timber and forage productivity potentials are low and limitations for reforestation are severe due to cold climate and low water-holding capacity of some of the soils."* ***(Source:*** **SOIL-HYDROLOGIC RECONNAISSANCE SURVEY Landmark Ranger District Boise National Forest March 1972 George E. Wendt - Soil Scientist Gene F. Cole - Watershed Specialist.)**

Comment: "*Access road design features and construction considerations would also be made to minimize risks associated with landslides, debris flow, and rock fall, namely:*

- *Avoidance of known occurrences of slope failures to the degree practicable,*
- *Incorporation of appropriate cut slopes and stabilizing features (e.g., retaining walls, soil nails) into road design to reduce the potential for slope failure.*
- *Road layback design to prevent the formation of steep overhangs and prevent spalling.*
- *Rock bolting, netting and catch benches.*
- *A planned Maintenance Agreement between Perpetua and Valley County would be developed defining the procedure and protocols for removing material debris from the access route.*
- *Dewatering or other stabilizing structural features as control measures.*
- *Roadway realignment if necessary. "***(Source: Stibnite Gold Project, Access and Transportation Specialist Report. p. 15.)**

Comment: 2.2. Landslide Erosion from Forest Roads ***"****Forest roads increase landsliding by disrupting the balance of driving and resisting forces acting upon and within hillslopes. As shown in Figure 3, road-related increases in landsliding are commonly attributed to: 1) oversteepening and/or overloading of downslope areas by road fills; 2) removing support for unstable hillslopes by undercutting road cutslopes; and 3) and concentrating road surface runoff onto potentially unstable portions of the road fillslope and lower hillslopes (Benda et al., 1998; Sidle and Ochiai, 2006). Landsliding from roads can exceed natural landsliding rates by one to two orders of magnitude (Table 2). Sediment production rates from road-induced landslides are also an order of magnitude higher than from clearcut hillslopes (Sidle and Ochiai, 2006). Road-induced landsliding is generally only an issue in relatively steep terrain, with most road-initiated failures occurring on hillslopes greater than 31-39° (i.e., 60-80%) (Chatwin, 1994; Montgomery, 1994; Benda et al., 1998; Veldhuisen and Russell, 1999). Landslides initiated from fillslopes are typically larger* ***Figure 3.*** *Schematic showing how a road increases the likelihood of landsliding (modified from Benda et al., 1998). than those initiated from cutslopes (Wemple et a., 2001). Fill material is particularly unstable when it is placed on slopes greater than 35° and on unstable landforms such as colluvial hollows and inner gorges (Chatwin, 1994; Benda et al., 1998). Fillslope failures are more likely on cut-and-fill roads and can be largely eliminated by the more costly approach of full bench construction (Figure 4). This design excavates a bench into the hillslope that is equal to the entire width of the travelway (Figure 4), but the trade-off is that this generates a much higher cutslope.* ***(Source: MacDonald, Lee. H., and D.B.R. Coe. 2008.***

Information from the DEIS:
Comments:

- "*Cutslope erosion processes are often quite different from those on the fillslopes with gentler gradients. Dry raveling during the summer months is a dominant process on cutslopes, especially on noncohesive soils (Megahan 1978)*". **(Source: Burroughs and King 1989).**
- "*Cutslope sediment production from the coarse sand Idaho Batholith soils was usually two to five times higher during the summer and early fall than during the remainder of the year (Boise State University 1984). However, the partitioning between dry ravel and rain-caused sediment was not measured. Bank sloughing when soils are saturated, especially during spring snowmelt, may produce larger soil losses than dry ravel on cohesionless soils. Of the total 2-year cutslope sediment production from border zone gneisses and schists in the Horse Creek watersheds (Nez Perce National Forest), 80 percent was produced from November through mid-June and 20 percent during the summer and early fall. King and Gonsior (1980) observed that bank sloughing during saturated soil conditions was the dominant process.*" **(Source: Burroughs and King 1989).**

Personal knowledge:

- Hydro-seeding was tried experimentally in the late 1980s on small steep, eroding cutslopes on roads in the Idaho batholith slopes in the South Fork Salmon River drainage. It failed after the coated seeds sprouted and used up the nutrient coating. The cutslopes had no moisture in them to support seeding.
- Plantings in road cutslopes have a high failure rate. They are buried under the raveling DG soils.

Questions:

- Why is FS Mitigation # FS-52, "*To minimize sediment runoff from the temporary roads and roadbeds, water bars, silt fencing, certified weed-free wattles, and/or weed-free straw bales will be installed in strategic downslope areas and in RCAs*" not being addressed here?
- Why is there no analysis of potential constructed cutslope sediment delivery to streams?
- Given the poor recovery of vegetation due to cold, and poor soil nutrients, why is hydro-seeding being proposed?
- Besides straw, what other mulches are listed to work on granitic soils in cut/fill slope applications?
- **Given:** *"Incorporation of appropriate cut slopes and stabilizing features (e.g., retaining walls, soil nails) into road design to reduce the potential for slope failure."* And given that they will remain after the Burntlog road is reclaimed, Why not use them on the Johnson Creek/Stibnite roads where the public can employ them?
- How much full bench road excavation will be accomplished in the over-steepened landtypes of the Burntlog Road extension especially?
- How will the cutslopes be mitigated to reduce sediment delivery in full bench road excavation?

12.g. Ditchlines

Comment: Meteoric precipitation on roadways and surrounding roadside areas increases the risk of roadway wash *outs. Elements of road design and associated culvert sizing and maintenance to reduce wash out risk include:*

• Ditches would be installed on the in-sloped edge of the road, which would collect water from the gravel surfacing as well as the hillside above the road.
• For the Burntlog Route, an 18-inch-deep V-shaped ditch with 1.5H:1V slopes would be used along the roadway, as is typical of most gravel roads in mountainous areas.
• Culverts providing drainage for non-fish bearing streams would take into account the estimated drainage basin area and would be sized to accommodate a recommended peak 25-year design flow at each culvert location.
• Road crossings of fish bearing streams would be designed such that structures allow fish passage. FSH guidelines for fish-bearing streams include structures that span 120 percent of the channel's bankfull width and pass the peak 100-year design storm.
• Additional relief culverts would be placed at intervals depending upon the uphill drainage basin size and road profiles.
• The drainage system (roadside ditches and culverts) would require a reasonable amount of maintenance and inspection to ensure the system is working properly. Debris and sediment would be removed on an annual basis, in addition to any emergency situations that may arise.(**Source: *Stibnite Gold Project, Access and Transportation Specialist Report. pp. 12-19.}***

Comment: "*Roads in midslope and ridgetop positions may affect the drainage network by initiating new channels or extending the existing drainage network. By concentrating runoff along an impervious surface, roads may decrease the critical source area required to initiate headwater streams (Montgomery 1994). In addition, concentrated road runoff channeled to roadside ditches may extend the channel network by eroding gullies or intermittent channels on hillslopes and by linking road segments to small tributary streams (Weaver and others 1995, Wemple and others 1996a). These effects of roads on the channel network have implications for slope stability, sedimentation, and streamflow regimes".* **(Source: Forest Roads: A Synthesis of Scientific Information Hermann Gucinski, Michael J. Furniss, Robert R. Ziemer, and Martha H. Brookes Editor Pacific Northwest Research Station General Technical Report PNW-GTR-509 May 2001.)**

Comment: "*Megahan and Ketcheson (1996) found that sediment travel distances from road cross drains in the Idaho batholith are proportional to slope gradient (in percent) raised to the 0.5 power. This study was conducted below roads on forested lands and includes slope gradients ranging from 9 to 59 percent. Megahan and Ketcheson (1996) and Ketcheson and Megahan (1996) present equations for estimating sediment travel distance below road fills and cross drains which incorporate sediment volume, obstructions, slope angle, and source area as significant explanatory variables. Slope is a significant predictor of distance, and it is not unreasonable to adjust an RHCA width to slope when lacking other intensive site variable information. At slopes greater than 70 percent, other screening tools that incorporate mass erosion risk are needed (Tang and Montgomery 1995)."* **(Source: Quigley, T.M and Arbelbide, 1997. PNW-GTR-405. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 4 vol. (Quigley, Thomas M.,tech. ed.; The Interior Columbia Basin Ecosystem Management Project: Scientific Assessment), Volume 3, pp 1365-1369.**

Comment: "*Reduction of sediment production from road traveledways and cutslopes, through mitigation treatments, allows water with lowered sediment concentration to flow down the ditch. This relatively clean ditch water has increased capacity to detach soil from the ditch bottom and transport it to the stream crossing. The most common erosion control treatment for roadside ditches is a rock blanket, or riprap. The D_{50}, Dmax, and riprap thickness may be designed as a function of flow rate, channel slope, and channel shape."* (S**ource: Burroughs and King 1989).**

Comment: "*Ditch grading can increase sediment yields on a level comparable to or greater than wet weather hauling. Ditch grading is an important and necessary step in the maintenance of roads when significant sediment inputs (e.g. from a slump or upslope gully) block the ditch, however indiscriminate ditch grading to clean ditches may not be the best use of equipment time. The practice of placing rock in ditches and design criteria for ditch rocking were proposed by Burroughs and King (1989), and our results support their suggestion."* **(Source: EFFECTS OF TRAFFIC AND DITCH MAINTENANCE ON FOREST ROAD SEDIMENT PRODUCTION Charles H. Luce, 2001. Research Hydrologist, and Thomas A. Black, Hydrologist, USDA Forest Service, Rocky Mountain Research Station, Boise, Idaho).**

Comment: Luce and Black show an additional location from which sediment are delivered: "*There are important implications for the design of BMPs or forest practice regulations. Ditch grading can increase sediment yields on a level comparable to or greater than wet weather hauling. Ditch grading is an important and necessary step in the maintenance of roads when significant sediment inputs (e.g. from a slump or upslope gully) block the ditch, however indiscriminate ditch grading to clean ditches may not be the best use of equipment time. The practice of placing rock in ditches and design criteria for ditch rocking were proposed by Burroughs and King (1989), and our results support their suggestion." (p. 5)*

"*Ditch grading is an important and necessary step in the maintenance of roads when significant sediment inputs (e.g. from a slump or upslope gully) block the ditch, however indiscriminate ditch grading to clean ditches may not be the best use of equipment time. The practice of placing rock in ditches and design criteria for ditch rocking were proposed by Burroughs and King (1989), and our results support their suggestion." (P.5)*

"*Grading of the ditch increased sediment yields more than heavy traffic on a road built in a fine grained parent material with high quality basalt aggregate. The combination of both traffic and ditch grading produced on average more sediment than either treatment alone,…." (p.7)* **(*Source:* Luce and Black (2001))**

Questions:

- How are the ditchlines to be maintained along with the running surface of the roads?
- SGP proposes to maintain ditchlines at least twice annually. Does this cause additional sediment into the streams at fall rains?
- How are ditchlines to be protected from the erosive power of water on steep slopes?
- Will the proper size of riprap be used where needed in ditchlines to armor and slow down erosion and sediment movement from cut slopes and road running surfaces?
- How will ditchlines leading directly to live and /or intermittent stream channels be designed to reduce sediment movement to the stream channels?

13 Transmission Line RoWs, reconstruction and new construction sediment production.

13.a. Transmission RoW common to all Alternatives

Table 7-13

Losses (in Acres) of Wetland Area by Major SGP Component within the Off-site Focus Area

Stibnite Gold Project, Wetlands and Riparian Resources Specialist Report

SGP Component	Total Wetlands (acres)		Perennial Streams (feet)		Non-Perennial Streams (feet)		RCAs (acres)1	
	2021 MMP	Johnson Creek Route Alternative	2021 MMP	Johnson Creek Route Alternative	2021 MMP	Johnson Creek Route Alternative	2021 MMP	Johnson Creek Route Alternative
Transmission Line Access Roads	3.2	3.2	3663.6	3663.6	1,913.1	1.913.1	57.8	57.1
Transmission Line ROW	43.3	43.3	16,115.1	16,098.9	7,185.4	7,185.4	147.2	146.1
Transmission Line Work Areas	12.3	12.3	1,445.3	1,445.3	1,947.5	1,946.8	36.9	36.7
Wetland Conversion Losses from Tall Tree Clearing2			8.9			8.9		

Source: Stibnite Gold Project, Wetlands and Riparian Resources Specialist Report p. 106

***Stibnite Gold Project, Access and Transportation Specialist Report* Table 2-1 Action Alternatives Summary 2021 MMP**

2021 MMP

• Upgrade approximately 63 miles of the existing 12.5 kilovolt (kV) and 69 kV transmission lines.

• New approximate 9-mile, 138 kV line would be constructed from the Johnson Creek substation to a new substation at the mine site.

• Upgrade the substations located at Oxbow Dam, Horse Flat, McCall, Lake Fork, and Warm Lake.

• Reroute approximately 5.4 miles of transmission line to avoid the Thunder Mountain Estates subdivision.

Reroute approximately 0.9 miles of transmission line between Cascade and Donnelly to use an old railroad grade on private property.

• Installation of approximately 3 miles of new underground distribution line along Johnson Creek Road from the Johnson Creek substation south to Wapiti Meadows

Johnson Creek Route Alternative

- **Same as 2021 MMP.**

Comment: "*The new and upgraded transmission line corridor and access roads would be constructed during the 3-year SGP construction phase (Mine Years -3 through -1). Soil disturbance associated with upgrading the existing transmission line and construction of the new transmission line would involve laydown yards, pulling and tensioning areas, new access/spur roads, and structure work areas. The construction laydown areas, tensioning areas, and some of the new roads would be reclaimed immediately following construction. Final reclamation of the new transmission line corridor would occur during the post-closure period beginning after Mine Year 15. After final closure of the mine, the upgraded section of transmission line to the Johnson Creek Substation would remain in use by Idaho Power Company (IPCo), so there would be no post-closure reclamation or monitoring requirements for Perpetua. The new transmission line between the Johnson Creek Substation and the SGP would be removed and reclaimed during the closure and reclamation phase. Any remaining access roads or disturbed areas would be recontoured to match surrounding topography, scarified, capped with 6 inches of GM, seeded and mulched. Culverts would be removed, and stream channels in the access road corridor would be excavated to original grades.*" ***(Source: Stibnite Gold Project, Soils and Reclamation Cover Materials Specialist Report p. 69.)***

Comment: 7.2.2.1 TSRC ***Boise National Forest. "This analysis assumes recovery of greater than 40 percent soil productivity of natural background within a 50-year*** *timeframe would not occur (due to the nature of disturbance and the conditions at the site) and, therefore, the duration of impacts would be longer-term, well beyond the 50-year threshold. For full bench road construction and road cuts, including soil nail walls and rock cuts, recovery of soil productivity to 40 percent of natural background would be on a much longer timescale (e.g., likely centuries to millennium) such that they would be considered permanent TSRC.*

Transmission line access roads and structure footings associated with the upgraded transmission line would be retained and used by IPCo after mining ceases, which also would be permanent TSRC. The SGLF (approximately 25 acres) would be located on private land outside permanent TSRC. The SGLF (approximately 25 acres) would be located on private land outside of NFS lands, and therefore is not considered in the analysis of TSRC. However, it should be noted that the post-mining land use for the SGLF site is designated as light industry, where the facility would remain un-reclaimed after mine operations (a permanent commitment of land) and transferred to a third-party for light industrial uses. The effects of the 2021 MMP on TSRC would be major, localized, and long-term. In the case of pit high walls and pit lakes, effects on TSRC would be permanent." ***Source: Stibnite Gold Project, Soils and Reclamation Cover Materials Specialist Report p. 70.***

Comment: 7.2.2.2. Detrimental Disturbance *"DD resulting from clearing of tall vegetation within the* ***transmission line ROW*** *could occur as a result of equipment operations on steep slopes, uncohesive soils, and/or wet soils. Detrimental soil displacement could occur where at least 2 inches of the A horizon is removed through impacts of wheeled or tracked equipment or dragging of logs across the site. Detrimental soil compaction and soil puddling/rutting could occur through equipment use mainly on poorly drained mineral or organic soils. Compaction in deep soil layers would not normally occur without repeated disturbance. Burned areas also may be susceptible to DD where the organic litter layer has been removed. Conditions of DD can potentially reduce soil productivity by reducing soil fertility and aeration, limiting root growth, reducing soil infiltration and permeability, and increasing runoff and soil erosion."*

Comment: *"DD within the* ***transmission line ROW*** *would be limited by the fact that clearing would typically only occur within forested areas, which for this analysis are assumed to make up approximately one-third of the ROW (36 percent of the mapped corridor contained forest [Tetra Tech 2018]). For this analysis, existing DD within the transmission line ROW is estimated at 8 percent. This is an estimate based on average extent of DD from ground-based forest harvesting operations in the Forest Service Northern Region (Reeves et al. 2012****). It is estimated that SGP-related vegetation clearing could initially result in DD as high as 16 percent of the ROW.*** *This is the highest Forest Service-modeled average extent of DD based on variables of land type, topography, and harvest season for ground-harvesting in Northern Region forests (Reeves et al. 2012). However, based on the estimate of forest land within the ROW, proportion of highly erodible soils, the limited extent of forested wetlands, and the infrequency and short duration of ground disturbing impacts,* ***DD would more likely be somewhere between 8 percent and 15 percent.*** *Additionally, the Forest Service and Perpetua have established Environmental Design Features based on regulatory and Forest Plan requirements (****Table 2-7*** *and* ***2-8****) designed to minimize DD impacts. Measures that would reduce DD involve soil moisture operability requirements, slope restrictions for ground-based operations, guidelines for skidding (i.e., tree removal within forest) and skid trail construction/use, etc.*

The DD activity area is the area within the ***transmission line ROW*** *that would be subject to vegetation clearing only and is estimated at up to 500 acres. The magnitude of impacts from vegetation clearing* *potentially include detrimental soil displacement, compaction and puddling on a conservative estimate of up to 75 acres (15 percent) within the ROW, which would be further reduced by the Forest Service-required environmental protection measures that target DD."* ***(Source: Stibnite Gold Project, Soils and Reclamation Cover Materials Specialist Report. Pp. 62-65.)***

Comment: 7.2.1.1 ***Loss of Wetland and Riparian Resources "****Impacts from some roads and transmission line facility construction may cause only temporary to short-term loss or alteration as they would be restored as soon as possible following standard reclamation practices, including segregating and stockpiling topsoil, implementing stormwater and sediment BMPs, backfilling and placing topsoil, and revegetating. Although the full extent of temporary effects has not been quantified, temporary construction roads used for transmission line construction and the transmission line ROW are considered temporary effects for this analysis, with permanent structures such as poles considered permanent effects. In addition, areas of tall tree clearing where wetland conversion may occur are considered permanent, as discussed in the next paragraph. As design and engineering for the SGP advances, acreage estimates would be refined, temporary impacts would be better quantified, and the CMP revised accordingly (Tetra Tech 2021a). It is also important to note that 1) not all impacts would occur at the same time (i.e., some would occur during initial stages of construction, but others would not occur until later in the life of the project), and 2) all impacts would be mitigated as part of compensatory mitigation described in the CMP. The time period between the loss of wetlands and riparian areas (and their functions and values) and the restoration or replacement of these functions and values are termed temporal effects in the CMP and are discussed further in* ***Section 7.3.1****."* (**Source: Stibnite Gold Project, Wetlands and Riparian Resources Specialist Report. Pp. 70-71**

Questions:

- Given the 50 year or greater time span estimated for soil recovery to occur, how do you plan to meet recovery goals and reduce potential sediment from entering IDEQ listed impaired streams, and streams that have ESA-listed fish and Critical Habitat?
- Why are there no estimates of sediment production and abatement for the transmission line RoW reconstruction and new construction for streams listed as Critical Habitat for bull trout, Chinook and steelhead trout?
- Why is monitoring of sediment into streams from transmission Right of Ways not being proposed?
- Why are no gates being recommended to reduce access to the transmission RoW access roads to reduce sediment generation from public access?
- How will:
  - the widening of approximately 63 miles of existing power lines from 50 to 100 ft wide,
  -the construction of approximately 4 miles of access roads,
  -the construction of *laydown areas, tensioning areas*,
  -the addition of new, taller transmission towers
  -and new construction of about 8 miles of utility lines specifically affect the water quality of IDEQ listed impaired streams, and ESA-listed fish and Critical Habitat?
  What are the, "… *erosion control and sediment BMPs*…." that will reduce sediment production at the pole construction areas? Define them.
- What processes will reduce sediment at stream crossings where new towers are to be replaced?

- What are the “reclamation processes” for the utility pad, lay down /tensioning areas and roads?
- Define: “Immediately after construction”. Is this after the three years construction period has been completed, or after each one of the “…construction laydown areas, tensioning areas, and some of the new roads….” Have been completed?
-

13.b. Specific Transmission RoWs with cumulative effects

13.b. 1 Cabin/Trout (FR 467) road, Transmission line RoW and OSV route has:

- **Transmission line RoW reconstruction with access roads to 14 ft width**
- **Bull trout population exists near headwaters**
- **Chinook/Steelhead spawning/rearing habitat downstream near and in the SF Salmon River**
- **OSV reconstruction of FR 467 to 16 ft width**
- **Winter closure of FR 467 will be removed for OSV use.**

Comment: *X“A 14-foot-wide ROW is being requested for the existing/proposed roads outside of the power line corridor ROW to accommodate construction and maintenance equipment. For FR 467,* ***{Cabin/Trout}*** *a 16-foot-wide ROW is being requested to accommodate OSV.*
During construction, the new section of transmission line between the Johnson Creek substation and the SGP would require major improvements to Horse Heaven Road (FR 416W), NFS Trail 233 (no name), and approximately 4 miles of new spur roads would be constructed. Minor upgrades to Cabin Creek Road (FR 50467) would also be required.
Road maintenance requirements prior to construction would vary depending on the type of road, level of use, and condition of the road. However, maintenance generally would consist of clearing vegetation and rocks, as well as repairing cut and fill slope failures, as necessary, to allow for a 14- foot-wide road surface. In most cases, the roads would be left as close to an undeveloped nature (i.e., two-track road) as possible without creating environmental degradation (e.g., erosion or rutting from poor water drainage). Equipment to perform the required road maintenance would include hand tools (e.g., chainsaws), track driven machines (bulldozers and graders) and crew- haul vehicles (such as 4-wheel-drive pickups and/or off-highway vehicles [OHV; includes all terrain vehicles (ATVs), utility task vehicles (UTVs) and side-by-sides]). Roads would be opened/cleared for use by trucks transporting materials, excavators, drill rigs, bucket trucks, pickup trucks, and crew-haul vehicles. Specific actions, such as installing water bars and dips to control erosion and stormwater, would be implemented to reduce construction impacts and would follow standard designs.” ***(Source: Stibnite Gold Project, 2021 MMP Alternatives Report pp.31-33)***

Comment: Transmission Line and Associated Facilities *“The upgraded transmission line from Lake Fork to Johnson Creek substation would be retained and used by Idaho Power Company (IPCo). The associated facilities along the upgraded transmission line (i.e.,*
switching station, substations) would remain in place and would not be decommissioned. Therefore, impacts described under Operations for the upgraded transmission line would remain after mine closure, which include impacts to the recreation setting and recreation experiences.
The new transmission line, transmission line access roads, and metering station at the SGP would be decommissioned. Impacts during decommissioning would be the same, as those described for construction: potential temporary closure or delays on Horse Heaven Road (FR 416W) and FT 233.”
***Source: Stibnite Gold Project, Recreation Resource Specialist Report pp.74*-80**

Comment: *"The effects of the SGP construction of temporary roads and transmission lines on sedimentation on fish and aquatic habitat are expected to be moderate, short-term, and localized*."
(Source: p. 111 Fisheries Specialist Report.)

Avalanche hazards on Cabin/Trout saddle.

Comment: Figure 3.2-6 Identified Geohazards Along Burntlog and Yellow Pine Access Routes Stibnite Gold Project Stibnite, ID (SDEIS p. 3-28) identifies avalanche hazards near the headwaters of Cabin/Trout Creeks.

Comment. Proposed Cabin Creek to Trout Creek OSV Route

"*The OSV Route was assessed for avalanche hazards by DAC (2021) to aid with managing this route during the winter months with respect to avalanche hazards. It was assumed that snowmobilers would follow the proposed alignment, which mostly follows an existing forest service road. Deviating from this alignment closer to either side of the valley could expose snowmobilers to a higher avalanche hazard. Like Warm Lake Summit, the OSV Route receives higher precipitation than other parts of the project area, which is expected to result in higher avalanche frequency than drier areas to the northeast. A total of 18 avalanche paths potentially affecting 1.6 miles of the road were identified by DAC (2021) along the proposed OSV route (**Figure 3.2-6**). The relatively high snowfall along this route suggests that most of these paths are expected to produce D2-sized avalanches on an annual basis with potential D3 avalanches with a 10- to 30-year return period."* **(Source: Stibnite Gold Project Supplemental Draft Environmental Impact Statement p. 3-29.)**

Fisheries and fish habitat

- **Comment:** Three culverts were removed from the mouth of Cabin Creek in 1993 by the Payette NF to allow chinook and steelhead passage upstream.
- **Comment:** A bull trout population resides in the headwaters of Cabin Creek, below the "falls" downstream of the saddle between Trout Creek and Cabin Creek.
- **Comment:** Chinook salmon have spawned in the reach of Cabin Creek adjacent to and downstream of Knox Ranch Historic site.
- **Comment:** Chinook salmon and steelhead trout spawn in the SF Salmon River at the confluence of Cabin Creek, upstream of the IDFG weir.

Landtypes of the FR 467 road and transmission line RoW.

Comment: Landtypes in the headwaters of Cabin Creek are: 111a-1, 110x and 111d. **(Source: Wendt and Cole. 1972, 1974).**

LT 111a-1:

- **Slope Hydrology**. These areas accumulate heavy snowpacks which begin melting earlier than on northerly aspects. Snowmelt produces major shallow subsurface flow and some surface flow where channels drain the soils. These slopes drain to field capacity early in the summer. p.41
- **Management Qualities**. These are relatively unstable soils in a natural undisturbed condition. Soil disturbance produces moderate to high surface erosion and wet and dry creep. Avalanche hazard is high. Moderate impacts from slumping may result from road construction.

LT 110x

- **Slope Hydrology**. Overland flow is common in portions of the unit having shallow soils and rock outcrop. Much of this runoff is stored in the deeper soils and fractured bedrock and leaves the unit as perennial stream flow. Snow deposited by avalanches remains well into the summer. p.37

- **Management Qualities**. These lands have management qualities similar to unit 110. The avalanche hazard is high and the productivity potential is somewhat lower due to the amount of rock outcrop. Reforestation potentials are very severe because of cold climate and droughty soils.

LT 111d

- **Management Qualities:** This landtype has moderate to high hazards with major limitations associated with a high inherent surface erosion hazard on natural and disturbed surfaces, and a high mass stability hazard associated with road cutslopes and fillslopes. Heavy snowpacks and other climatic factors associated with high elevations are the major limitations to activities within this unit.
- **Roads.** Major problems to construction within this landtype involve a moderate to high surface erosion hazard of exposed surfaces and a low to high hazard for mass failures of cut-slopes and fillslopes. Cutslope failures will not be the typical bow-shaped slumps but will be dominated by extensive areas of rock fall. A moderate surface creep hazard and a moderate debris slide hazard will create hazards from accumu¬lations of sediment and other materials in drainages resulting in seasonal maintenance at culvert installations.

Questions:

- Why were cumulative effects assessments not completed on this combination of effects?
- What are the effects of year-round use of the FR 467 road with the OSV and summer use being allowed on the bull trout population and habitat near the headwaters of Cabin Creek?
- What will the impacts be of spring OSV use coupled with late spring /early summer ATV use on the road and on the stream sediment content?
- How will the access roads from the FR 467 to the Transmission line RoW be kept from being used by the summer public, especially in the wetlands on the Trout Creek side of the road?
- Will the hardened crossings on the Cabin Creek tributaries be replaced with a culvert?
- Are the tributaries considered perennial, fish bearing streams?
- Are widening of the FR 467 road to 16 feet for OSV use, reconstruction (widening and soil erosion from RoW access roads of 14 feet and structure replacement) combined with high avalanche probabilities a direction the NFS wants to take with public recreation?
- What are the effects of these proposed activities on the Chinook and Steelhead habitat further downstream in Cabin Creek, or potentially in the SF Salmon River spawning reaches at the mouth of Cabin Creek?

13.b.2. Johnson Creek road reconstruction, reconstructed transmission line and 8 miles of groomed snowmachine trail.

Comments: "Landtypes along the Johnson Creek road include: 111a-1, 111a, 122, 123-1. **(Source: Wendt and Cole. 1972, 1974).**

LT 111a-1:

- **Slope Hydrology**. These areas accumulate heavy snowpacks which begin melting earlier than on northerly aspects. Snowmelt produces major shallow subsurface flow and some surface flow where channels drain the soils. These slopes drain to field capacity early in the summer. p.41

- **Management Qualities**. These are relatively unstable soils in a natural undisturbed condition. Soil disturbance produces moderate to high surface erosion and wet and dry creep. Avalanche hazard is high. Moderate impacts from slumping may result from road construction.

LT 111a:

- Slope Hydrology. These areas accumulate considerable snowpack which melts and enters the soil mantle. This water moves off the slopes as moderately deep subsurface flow at a moderate rate. Where channels are present they drain some of the subsurface flow to become rapid surface flow. Very large quantities of water are handled by these slopes during the spring snowmelt period.
- Management Qualities. These lands are relatively stable under normal undisturbed conditions. Soil disturbance causes moderate impacts from surface erosion. Avalanche hazard is high. In addition, road construction may cause moderate impacts from slumping and slope hydrology alteration. Timber and forage productivity is low and reforestation limitations are severe, primarily due to cold climate.

LT 123-1:

- **Slope Hydrology.** Most of the runoff leaves as deep subsurface flow except for small areas of shallow subsurface flow. P. 101
- **Management Qualities.** These lands are relatively stable under natural undisturbed conditions. Impacts from disturbance such as road construction can usually be limited by a few special management practices. Timber productivity potential is moderate and reforestation has moderate limitations due to vegetative competition. Forage productivity potential is low to moderate for domestic livestock and big game animals.

LT 122

- **Slope Hydrology.** Runoff leaving by subsurface flow is quite variable. Overland flow is common during high intensity rains. Runoff quickly concentrates in drainage channels or moves downslope to the drainages below.
- **Management Qualities**. These are very fragile slopes that are adjacent to rivers or live streams. These lands are unstable even in a natural p. 95 undisturbed condition. Surface erosion and mass stability hazards are very high and impacts from any use is very high. Productivity potential of timber and forage is low."

Questions:

- Why were cumulative effects assessments not completed on this combination of effects of RoW reconstruction, cleaning of the OSV route and reconstruction of the Johnson Creek road in the Johnson Creek Alternative?
- Why are there no estimates of sediment production and abatement for the transmission line RoW reconstruction for streams listed as Critical Habitat for Chinook and steelhead trout downstream of this reach?
- Why is monitoring of sediment into streams from transmission Right of Ways and road reconstruction not being proposed?
- Why are no gates being recommended to reduce access to the transmission RoW access roads to reduce sediment generation from public access?
- Given the low probability of revegetation on some of these LTs, what other methods of revegetation are to be used?

13.b.3 FR 416W, Transmission line new construction
Comments:
Riordan Creek

- Bull trout populations are in Riordan Lake and the headwaters of Riordan Creek
- Rainbow trout are listed as numerous in the bottom reach of Riordan Creek in the Boise NF fisheries database for 1992 and 2003.
- Chinook/Steelhead trout rearing habitat is in Johnson Creek downstream of confluence of Riordan Creek.
- No habitat or fisheries evaluation of Riordan Creek below Riordan Lake is apparent e since 1992 and 2003.

Comment: GRAIP road sediment map
416W to FT 233: 10 sites showing > 2 ton/year erosion. 5 sites showing 0.5-2 ton/yr erosion.

Comment: LTs and Valley Type long FR 416W including the transmission line RoW

LT 109

- **Slope Hydrology.** *Most of the runoff is by shallow and moderately deep subsurface flow. Seeps and springs are common in many portions of the unit, especially in convex positions or in the drainageways.*
- **Management Qualities**. *The rounded ridges and lack of dissection of these lands indicate a stable slope under natural conditions.* ***Largest impact from soil disturbance is surface erosion. Road construction cuts may cause interception of subsurface water. Timber and forage productivity potentials are low and limitations for reforestation are severe due to cold climate and low water-holding capacity of some of the soils.*** *Mass Wasting 3; Sedimentation 3; Surface Erosion 3; Runoff Rate 3.*

LT 120b-4

- **Slope Hydrology**. *Most of the runoff is by moderately deep and deep subsurface flow. Drainages are first and second order and some lateral concentration of subsurface water occurs from areas adjacent to the drainageways. Little overland flow results except during high intensity summer storms.*
- **Management Qualities.** *These lands are relatively stable under normal undisturbed conditions.* ***Impacts from road construction are usually no more than moderate.*** *Timber productivity potential is low, except in areas having a Douglas-fir - ninebark habitat type which is moderate. Reforestation limitations are moderate due to vegetative competition and climate. Forage productivity potential is moderate for both range and wildlife use. Recreation is limited to big game hunting.* ***Past mining activity has left some visual impact and disturbed areas have not healed.*** *Mass Wasting 3; Sedimentation 3; Surface Erosion 3; Runoff Rate 4.*

Valley Type for Riordan Creek: S09-3

- *Sideslopes are less rocky and less steep than those of valley type S09-2. Stream alignment is straight. No valley widening has occurred from sidecutting by the stream.* ***Sideslopes are typically strongly dissected fluvial mountain slopes and contribute much material to the stream due to slumps, slides, creep and runoff.***

- **Management Qualities:** ***These valleys are one of the most hazardous for roading.*** *They are slightly wider than valley type S09-2, but the steep sideslopes have less competent rock and backslopes will be less stable**. Fillslopes will encroach on streams at many places and require structures to protect fills and streams.***
- *Hazard of overbank flooding is moderately low to low. The capacity of the valley area for stopping and storing eroded soil material is poor to very poor**. The hazard for sedimentation of water courses from a valley bottom road is high.** The hazard for reducing stream shading by vegetation due to valley bottom road construction is high. Stream channel erosion hazard from alteration of the channel is moderately low.*
- **Roads.** ***Overall hazard to soil and water values from roading is high. Hazard to roads from soil stability and water runoff conditions is high. Slumps, slides, and flashy small tributaries can be expected to cause frequent road damage.*** **(Source: 9 Wendt and Cole 1974.**

Questions:

- **Given** the heavy amount of sediment seen in the GRAIP report for the 416W road, and **Given** the LTs and Valley Type showing generation of heavy amounts of sediment, **Explain** why a ground-based use of the 416W road for the transmission line is being proposed in the 2021 MMP or Johnson Creek Alternative? An aerial placement of the structures will reduce the potential sediment delivery to a stream reach that would not store sediment but deliver it downstream.
- Why is no sediment or fish habitat monitoring site proposed for the lower reaches of Riordan Creek given the high likelihood of heavy sediment generation with ground-based transmission line structure placement?
- Why is no sediment monitoring being proposed to be conducted during the placement of the structures and the construction of the access roads to the RoW?
- How can the 416W road and transmission line access roads be temporarily gated in the summer months to protect the bare soils and allow the re-establishment of vegetation

14. Mud Lake Fen

Comment: 6.1.2.4 Fens *"IDFG considers wetlands associated with Mud Lake, Tule Lake, and Warm Lake, to be poor fens (IDFG 2004). Mud Lake and its associated wetlands are designated as a Class I site under the Wetland Conservation Prioritization Plan (IDFG 2012), indicating that this area is in near pristine condition and likely provides habitat for high concentrations of state rare plant or animal species (IDFG 2004). All these sites are within the analysis area for wetlands and riparian resources but outside of the construction footprint for the SGP. Mud Lake occurs near the existing Burnt Log Road (FR 447) and Warm Lake and Tule Lake occur south of Warm Lake Road (CR 10-579). For this analysis, wetlands associated with Mud Lake, Tule Lake, and Warm Lake are considered fens."* **(Source:** ***Stibnite Gold Project, Wetlands and Riparian Resources Specialist Report. P. 58)***

Comment*: "In addition, the Burntlog Route would be near Mud Lake, which is characterized by IDFG as a poor fen (IDFG 2004). Indirect impacts of road improvements and vehicle travel (i.e., increased dust) are likely to impact this fen and degrade its function as habitat for a fen-specific special status plant, Rannoch-rush (Scheuchzeria palustris), which is described further in* ***Section 4.10*** *Vegetation. Although the impact of dust deposition has not been quantified, effect magnitude would most likely be minor (small but measurable change) and long-term, limited to the life of the SGP. Effects from changes to hydrology (e.g., construction effects on local drainage and shallow* *groundwater paths) and water quality could range from negligible to moderate and could be long-term or permanent depending on the actual impact." (***Source: Stibnite Gold Project Supplemental Draft Environmental Impact Statement 4-316).**

Comment: "*Related increased recreational use of existing recreation facilities and areas along this road (e.g., trails, trailheads, Mud Lake dispersed camping area, Burntlog dispersed camping area) also may continue past decommissioning."* **(Source: Section 4.19.2.2 Recreation Stibnite Gold Project Supplemental Draft Environmental Impact Statement p. 4-545)**

Comment: "*A study by Waser et al. (2017) found that flowering plants approximately 3 to 7 feet from roadsides received substantially more dust and less pollen than those 131 to 164 feet from roadsides, and that most dust was deposited within 98 feet from the road. For the SGP, the potential for dust deposition is likely to be higher in the immediate area of roads and other surface-disturbing actions but would diminish with distance from these actions. The impacts of increased dust propagation from SGP activities would be minimized with implementation of measures described in Tables 2-2 and 2-3 and BMPs in the Fugitive Dust Control Plan associated with access roads in the SGP analysis area and haul roads at the mine site (Air Sciences Inc. 2018), which are: 1. Allow natural conditions such as wet weather (rain and snow) or inherent material moisture content to maintain dust control until the use of conventional dust control methods is necessary. 2. Limit the speed of all SGP-related vehicles. 3. Apply water and chemical dust suppressants on road surfaces. However, even with strict adherence to dust suppression measures, it is likely that dust propagation would increase due to SGP construction and operations and that vegetation species within and adjacent to the SGP analysis area may be negatively impacted (i.e., metabolic inhibition and inhibition of pollination) as a result of increased dust deposition. Dust impacts on plants would start during construction and continue through closure and reclamation. Some dust deposition also may occur in the post-closure period where monitoring-related travel on dirt roads would occur; however, this would be negligible. Effects of dust on individual plants would occur immediately at the time of dust propagating activities and is likely to continue throughout the lifetime of affected plants.* **(Source: Stibnite Gold Project, Vegetation Communities, Botanical Resources, and Non-Native Plants Specialist Report pp. 54-55.)**

Comment: Increased Soil Erosion Effects on Plants *Removal of vegetation and disturbance of soil increases the susceptibility of an area to soil erosion, which results in a variety of effects that tend to limit vegetation reestablishment and growth in an area (Jiao et al. 2009). The exact location and extent of these potential impacts are difficult to predict in relation to SGP components but would likely be more pronounced in areas downslope or downstream of facilities and surface-disturbing actions.* **(Source: Stibnite Gold Project, Vegetation Communities, Botanical Resources, and Non-Native Plants Specialist Report pp. 54-55.)**

Comment: Alterations of Hydrology in Habitat for Hydrophilic and Wetland *Plants* *"Road building such as that which would occur for the SGP has been shown to alter wetland hydrology at distances greater than 328 feet through such mechanisms as alteration of hydrologic fluxes, increased nutrient inputs, increased sedimentation rates, and facilitation of the spread of invasive exotic species (Jones 2003). These sorts of impacts could impact wetlands and fens in ways that that could affect the ability of these areas to function as habitat for wetland plants. The effects of hydrological alteration would be greater for species that are highly sensitive to changes in environmental conditions.*" **(Source: Stibnite Gold Project, Vegetation Communities, Botanical Resources, and Non-Native Plants Specialist Report pp. 54-55.)**

Comment: "*Rannoch-rush (Scheuchzeria palustris)* *One occurrence of Rannoch-rush, a forest watch species on the BNF, is located in a wetland in the Mud Lake area in the BNF (IDFG 2004; IFWIS 2017). This occurrence is within 300 feet of an existing portion of Burnt Log Road (FR 447). This occurrence is likely to be impacted by dust associated with road widening and vehicle travel on the Burntlog Route in this location. This occurrence also could be subject to other potential indirect effects described, under Indirect Impacts. The most likely impact of the SGP on this occurrence is dust associated with construction of the road and vehicle travel in this area. Increased dust deposition could result in impacts ranging from metabolic inhibition or mortality of individuals. This potential impact would result primarily in localized, long-term and permanent, moderate impacts to the Rannoch-rush. Therefore, the 2021 MMP may indirectly impact Rannoch-rush individuals (one) and habitat but would not likely contribute to loss of viability to the species within the planning area (i.e., BNF-administered lands)."* ***(Source: Section 4.10.2.2 Vegetation Stibnite Gold Project Supplemental Draft Environmental Impact Statement pp. 4-294.)***

Comment: *Rarity: Mud Lake includes extensive Poor Fen habitat including the* ***rare Carex limosa*** *plant association and a population* ***of Scheuchzeria palustris, a species of special concern.*** *)."* ***(Source: Section 4.10.2.2 Vegetation Stibnite Gold Project Supplemental Draft Environmental Impact Statement pp. 4-294.)***

Comment: ***MA 20 Upper Johnson Creek***

- **Objective 2014** Improve water quality by reducing road-related accelerated sediment delivery to upper Johnson Creek and its tributaries.
- **Objective 2015** Assist in de-listing South Fork of Salmon River drainage, including upper Johnson Creek, from the State of Idaho's impaired water bodies list by applying appropriate and active watershed restoration to reduce sediment, which is the identified pollutant of concern.

- ***Objective 2023*** *Consider establishing the Mud Lake and Shell Rock Peak areas as Botanical Special Interest Areas due to the presence of unique wetland habitats and plant species of concern.*

  •***Objective 2024*** *Evaluate and develop, if needed, a management plan for the special botanical areas in the Shell Rock Peak and Mud Lake areas.*

  - ***Landtype 102-4 states:*** *"Management Qualities.* ***However,*** *problems with road construction will occur if the wet areas have to be crossed. The hazard of intercepting ground water aquifers and speeding runoff rate is high with deep cuts or ditches."* ***(Source: INITIAL DRAFT SOIL-HYDROLOGIC RECONNAISSANCE SURVEY, Landmark and Boise Ranger Districts Boise National Forest 1972, 1974. George E. Wendt - Soil Scientist Gene F. Cole - Watershed Specialist)***

Questions:

- o How will this proposed road reconstruction, the proposed maintenance facility construction and operations be completed as to not affect the Mud Lake Class 1 fen?
- o How will the proposed Burntlog (FR 447) road reconstruction and year round maintenance impact bull trout critical habitat listed in Peanut Creek? **(Federal Register 75 FR 2391-2393).**
- o How will the reduction in and/or loss of recreation in the existing Mud Lake dispersed area itself and adjacent areas be mitigated in the year-round use of the Burntlog (FR 447) road
- o How will the widening of the FR 447 road at Mud Lake be mitigated to accept the limitations described in Landtype 104-2?
- o How will the widening of the FR 447 road at Mud Lake affect MA 20 Upper Johnson Creek Objective 2023?
- o How will MA 20 Upper Johnson Creek Objectives 2014 and 2015 be met when no monitoring strategies for fugitive dust or sediment have been presented for the Burntlog (FR 447) road?

- Will the use of sediment abatement chemicals proposed for the Burntlog (FR 447) road other than water reduce the fugitive dust that may affect plants in the Mud Lake fen?
- What forms of monitoring will be accomplished to verify the effectiveness of sediment abatement practices for fugitive dust on the plants in and adjacent to the Mud Lake fen?
- What forms of monitoring will be accomplished to verify whether hydrologic alteration in the Mud Lake fen occurs?
- What forms of monitoring will be accomplished to verify whether the three species of plants will be maintained in the Mud Lake fen: *"Rannoch-rush (Scheuchzeria palustris, a forest watch species); the Carex limosa plant association; and Scheuchzeria palustris, a species of special concern?*

15. Antimony concentrate in shipping

Comments: *"The antimony concentrate would contain approximately 55 to 60 percent antimony by weight. The remaining balance, 40 to 45 percent by weight, of the concentrate includes sulfur and common minerals with trace amounts of gold, silver, and mercury. As described in the Transportation Management Plan (Perpetua 2021e) for transportation of antimony concentrate, Perpetua would load the sealed 2-ton super sacks containing the concentrate into a shipping container at the processing facility. Perpetua would load the concentrate by forklift and hooked lifting racks to safely move the super sacks, which are equipped with lifting straps, into fully enclosed shipping containers for the full course of their transport from the SGP site to their final destination. The supersacks and shipping container would provide primary and secondary containment for the antimony concentrate (Perpetua 2021e). The concentrate would be trucked via SH 55 to a commercial truck, train, barge, ship loading facility depending on the refinery location. An estimated one to two truckloads of antimony concentrate would be hauled off site each day. It is assumed that the concentrate, when sold, would be shipped to facilities outside of the U.S. for smelting and refining because there are currently no smelters in the U.S. with capacity for refining the antimony concentrate."* (**Source: Stibnite Gold Project Supplemental Draft Environmental Impact Statement 2-50).**

Comment: *"Known effects of antimony on aquatic organisms are more limited than for other metals and most available information pre-date the last three decades. Antimony can be toxic to aquatic life and bioaccumulate in tissues but has not consistently shown a tendency to biomagnify within aquatic food webs as other metals (Obiakor et al. 2017). Ambient water quality criteria for the protection of aquatic life have not been established for antimony. Average antimony concentrations currently exceed the analysis criteria at every assessment node except YP-T-11 in Fiddle Creek (Table 6-6)".* **(Source: *Stibnite Gold Project, Fisheries and Aquatic Habitat (Including Threatened, Endangered, Proposed, and Sensitive Species) Report p. 51)***

Comment: The antimony concentrate will be loaded into supersacks and onto flatbed trailers for transport from the mine site to the SGLF.

Questions:

- What is the percent Arsenic in the Antimony concentrate being shipped to the SGLF?
- Are the "supersacks" that will be shipped on the flatbed trailers waterproof?
- In the situation of an accident, are the "supersacks" able to contain their contents if thrown off the flatbed trailer?
- What is the percent recovery of the Antimony concentrate in the situation of a spill between the mine site and the SGLF?

- What is the likelihood that the expected Antimony(V) can be changed into Antimony (III) the toxic phase of Antimony, especially if it is in streams waters?

16. Western Pearlshell mussel, *Margaritifera falcata*

Comment: Section* 3.24.4.1 Nez Perce Tribe** *"Fishing, hunting, and gathering across the vast Nez Perce Tribe aboriginal territory and at their traditional places, including areas within and surrounding the SGP, and in waters directly downstream of the SGP, continues to be vital to the culture, religion, subsistence, and commerce of the Tribe (Nez Perce 2019). Anadromous fish, such as Chinook salmon; roots, such as camas; and a variety of game were, and continue to be, important subsistence resources (Hunn et al. 1998; Nez Perce Tribe 2019, 2020). Principal plant resources included camas, cous, wild onion, balsam root, and bitterroot. Noted tribal resources of concern include spring/summer Chinook salmon, steelhead, bull trout, westslope cutthroat trout, redband rainbow trout, mountain whitefish, western pearl shell, Rocky Mountain bighorn sheep, North American wolverine, fisher, gray wolf, Clark's nutcracker, whitebark pine, limber pine, bent-flower milkvetch, Sacajawea's bitterroot, and Idaho Douglasia. Some of their traditional-use resources of concern include huckleberries, serviceberry, elk thistle, yarrow, wild onion, wild tobacco, Indian hemp, tule, elderberry, chokecherry, Indian tea, Oregon grape, thimbleberry, alder, birch, kowskows, elk, mule deer, moose, and white-tailed deer. Further, the Nez Perce Tribe utilized Ponderosa Pine and Lodgepole Pine as a food resource (Churchill 1983). Through their ethnographic study, the Tribe has presented historical presence and continued use by tribal members in the analysis area." (Source:*** **Stibnite Gold Project Supplemental Draft Environmental Impact Statement p. 3-506).**

Comment: Idaho State rank: S2 *"Imperiled because of rarity or because other factors demonstrably make it very vulnerable to extinction (typically 6 to 20 occurrences)."* **(Source: IDFG 2005. https://idfg.idaho.gov/species/taxa/20574)**

Comment: HABITAT AND *ECOLOGY* *"Western pearlshell populations occur in cold, clear streams and rivers, often in reaches having fast current and coarse substrate. This species is intolerant of heavy nutrient loads, siltation, and water pollution (Frest 1999). Larval western pearlshells are fish parasites that attach to the fins or gills of host fish. Host species include Chinook salmon, rainbow trout, brown trout, brook trout, and speckled dace (Frest 1999)."* **(source: IDFG. August 2005).**

Comment: *"M. falcata seem to prefer cold clean creeks and rivers that support salmonid populations. They can inhabit headwater streams less than a few feet wide but are more common in larger rivers. Less commonly, this species can be found in more degraded habitats such as irrigation ditches in Washington and Oregon. Sand, gravel, and cobble are preferred substrates, especially in stable areas of the streambed. Large boulders help create these stable environments by anchoring the substrate and creating a refuge from strong currents. Banks and pools are often favorable habitats because the currents are weaker, shear stress is lower, and the substrates are more stable 51,92. M. falcata does not tolerate sedimentation. In Idaho's Salmon River, M. falcata covered with a substantial amount of sand and gravel were unable to move to the surface and perished105. In environments where host fish are abundant, physical habitat is ideal, and human threats are minimal, M. falcata can attain very high densities (>300 per square yard), often carpeting the stream bottom. In 1981, Clarke wrote, "In favourable localities in British Columbia the mussels may be so abundant and closely packed that they* *completely obscure the stream bottom." pp. 33,34.* **(Source: Freshwater Mussels of the Pacific Northwest. Second Edition, Ethan Jay Nedeau, Allan K. Smith, Jen Stone, and Sarina Jepsen. The Xerxes Society 2009.)**

Comment: Host Fish Glochidia Infections. *"We documented WEPE glochidia on all salmonid species captured, including non-native brook, rainbow, brown trout and mountain whitefish (1st time ever field documented). Typically, browns, brook trout and mountain whitefish had low infection rates (<10 glochidia per gill side) compared to Oncorhynchus spp. captured in the same reach. In streams with native westslope cutthroat trout (WCT) present (Upper Willow, Moose Meadows, Elliston and W.F. Rock Creek) or Columbia Redband trout (Yaak River Basin), WEPE glochidia infection loads were higher on these species' gills compared to non-native trout species captured in the same reach (Figure 3)."* **(Source: American Fisheries Society. 2020. Western Pearlshell Mussel (WEPE) Reproduction and Life History Study in Five Watersheds of Montana: Aquatic SWG Implementation. Tributary, Volume 44 | Issue 3| Fall 2020. Western Division of the American Fisheries Society. Pp 9,10.**

Comment: Synthesis and Conclusions "*Comparisons among the 25 WEPE populations indicated that while host fish densities and salmonid infection rates were significantly higher at viable, recruiting WEPE streams, benthic sedimentation may ultimately be responsible for recruitment failure in at least 50% of these non-viable populations. The presence of juvenile mussels less than 30 mm (a determining factor in the viability of stream populations) was negatively related to fine sediments. In streams with high-quality benthic habitat (low % fine sediments) (Marshall Creek and Yaak River,), even lower salmonid densities and corresponding infection rates are producing recent WEPE juveniles, so it likely doesn't take many infected fish to produce viable WEPE juveniles, if the benthic habitat is suitable for post-parasitic survival (Figure 1)."* **(Source: Western Pearlshell Mussel (WEPE) Reproduction and Life History Study in Five Watersheds of Montana: Aquatic SWG Implementation. Tributary, Volume 44 | Issue 3 | Fall 2020. Western Division of the American Fisheries Society. Pp 9,10.**

Questions:

- Have monitoring for populations of the Western pearlshell been conducted in the East Fork South Fork Salmon River, Johnson Creek or the lower portions of Riordan and Burntlog Creeks?
- Have mussels, specifically *Margaritifera falcata*, the Western pearlshell mussel, been tested for antimony or other heavy metal accumulations?
- Will there also be a loss of the Western pearlshell mussel in the stated losses of fisheries habitat as Threatened and Sensitive fish are used by the mussel glochidia for propagation?
- How do the proposed WQ testing methods of Nephelometry, and Total suspended sediments demonstrate the changes on substrate quality for the Western pearlshell habitat in streams? **(Source: Bash, Berman and Bolton (2001)).**

17. Whitebark pine (pinus albicaudata)

Comments:

Comment: Section 3.10.4.2 Whitebark Pine *"The whitebark pine is a federally proposed-threatened species to be listed as threatened without proposed or designated Critical Habitat. On December 2, 2020, the USFWS published a proposed rule (85 FR 77408) to list the whitebark pine as a threatened species under the ESA of 1973, as amended (16 USC 1531 et seq.). Included in the proposed rule is a special rule pursuant to section 4(d) of the ESA that identifies actions necessary to conserve and recover the*

whitebark pine, as well as a limited number of prohibited acts (85 FR 77408). While the 4(d) rule does not relieve federal agencies of their obligations under section 7 of the Act, it includes exceptions that allow for optimal, flexible, and adaptive forest activities that can advance whitebark pine conservation."
"Whitebark pine is a long-lived tree, commonly living over 400 years. Whitebark pine populations are declining in North America due to white pine blister rust disease (caused by the introduced pathogen white pine blister rust [Cronartium ribicola]) ((85 FR 77408; Keane et al. 2017), historical and current mountain pine beetle (Dendroctonus ponderosae) outbreaks, and fire exclusion management policies. Climate change also is predicted to negatively affect whitebark pine as a result of warming temperatures and major shifts to disturbance regimes (Keane et al. 2017).
"Special status plant surveys in which whitebark pine was among the targeted species were performed in 2012, 2013, and 2014 in portions of the analysis area (HDR 2017g). These surveys documented approximately 164 acres of whitebark pine at the SGP mine area and along Burnt Log Road (FR 447) and several existing roads, including Horse Heaven Road (FR 416w) and Meadow Creek Lookout Road (FR 51290), along the existing Old Thunder Mountain Road (FR 440), and within the transmission line corridor between Johnson Creek Road (CR 10-413) and the SGP mine area (HDR 2017g)." **(Source: Stibnite Gold Project Supplemental Draft Environmental Impact Statement p. 3-226.)**

Comment: *"Forest Service botanists determined that the 2012, 2013, and 2014 whitebark pine surveys were not conducted throughout the extent of suitable habitat within the SGP footprint and data were not collected in a manner that would be useful for a comprehensive and meaningful effects analysis for this species. Therefore, Forest Service botanists requested that known habitat parameters be used to model potential habitat for whitebark pine (AECOM 2019a). Approximately 6,130 acres of potential habitat for this species was modeled along Warm Lake Road (CR 10-579), Cabin Creek Road (FR 50467), the Burntlog Route, Meadow Creek Lookout Road (FR 51290), the transmission line right-of-way, and the SGP mine area. ")."* **(Source: Stibnite Gold Project Supplemental Draft Environmental Impact Statement p. 3-226**

Comment: *"Surveys for whitebark pine using potential habitat modeling developed in 2019 were performed in spring, summer, and fall of 2019. The results of these surveys are reported in the 2019 Whitebark Pine Survey Report (Tetra Tech 2020b). Approximately 2,069 acres of occupied whitebark pine habitat were identified within the analysis area for vegetation resources (i.e., Tetra Tech 2020b survey data within the 300-foot buffer on either side of all action alternative components). The 300-foot buffer was selected to encompass an area where direct and indirect impacts (e.g., dust, impacts to pollinators, etc.) from the action alternatives could impact vegetation.)."* **(Source: Stibnite Gold Project Supplemental Draft Environmental Impact Statement p. 3-226**

Comment: Impacts to Whitebark Pine *"Based on the results of the species-specific field surveys conducted for the SGP in 2019 (Tetra Tech 2020b), the 2021 MMP would impact approximately 259.4 acres of occupied whitebark pine habitat and would remove an estimated 1,236 individual trees, 23 of which would be mature, cone-bearing individuals. This would result primarily in localized, long-term and permanent, moderate impacts to the whitebark pine".*
"Detailed calculations of impacts to whitebark pine occupied habitat and individual trees are reported in the SGP Vegetation Specialist Report Appendix F (Forest Service 2022g). The Forest Service has preliminarily determined that the 2021 MMP would impact whitebark pine but would not jeopardize the continued existence of this species)." **(Source: Stibnite Gold Project Supplemental Draft Environmental Impact Statement p. 4-291)**

QUESTION:

- With the proposed Threatened Whitebark pine being surveyed along the Burntlog road, transmission line RoWs and at the proposed mine site, how do you propose to mitigate the loss of this proposed Threatened species at these locations which are slated for vegetative removal?

Literature Cited

American Fisheries Society, Western Division. 2020. Western Pearlshell Mussel (WEPE) Reproduction and Life History Study in Five Watersheds of Montana: Aquatic SWG Implementation. Tributary, Volume 44 | Issue 3 | Fall 2020. Western Division of the American Fisheries Society. Pp 9,10.

Bash, J., C. Berman and S. Bolton. 2001. EFFECTS OF TURBIDITY AND SUSPENDED SOLIDS ON SALMONIDS by Jeff Bash Cara Berman Research Technician Research Scientist Susan Bolton Associate Professor and Director Center for Streamside Studies University of Washington, Box 352100 Seattle, Washington 98195

Black, Thomas A., R. M. Cissel, and C.H. Luce. 2012. The Geomorphic Road Analysis and Inventory Package (GRAIP) Volume 1: Data Collection Method. 2012 Edition. United States Department of Agriculture / Forest Service. **Rocky Mountain Research Station.** General Technical Report RMRS-GTR-280WWW. May 2012

Burroughs, E. R., and J.G. King. 1989. Reduction of Soil Erosion on Forest Roads. United States Department of Agriculture Forest Service Intermountain Research Station General Technical Report INT-264 July 1989. 22pp.

Cascade RD, Boise NF. Trapper Creek electrofishing raw data sheets. Collected October 2021.

DUCHROW, Richard M. and W. HARRY EVERHART. 1971. Turbidity Measurement. Transactions American Fisheries Society 1971, #4. Pp. 682-690.

Dunham, J.B. et. al. 2003. Effects of fire on fish populations: landscape perspectives on persistence of native fishes and nonnative fish invasions. Forest Ecology and Management 178 (2003) 183–196.)

Elliot, W.J., P. J. Edwards and R. B. Foltz 2014. In: D. C. Hayes et al. (eds.), Chapter 16 Research Related to Roads in USDA Experimental Forests. USDA Forest Service Experimental Forests and Ranges, DOI 10.1007/978-1-4614-1818-4_16, © Springer New York 2014)

Etheridge, A.B., 2015, Occurrence and transport of selected constituents in streams near the Stibnite mining area, central Idaho, 2012–14: U.S. Geological Survey Scientific Investigations Report 2015–5166, 47 p., http://dx.doi. org/10.3133/20155166. ISSN 2328-0328 (online)

Federal Register. 85 FR 77408-77424. December 2, 2020.

Fly, Chase, K. Grover-Wier, J. Thornton, T. Black, and C. Luce. 2010. Bear Valley Road Inventory (GRAIP) Report. USDA Forest Service, Boise NF. 54pp.

Foltz, R.B., and M. Truebe. 2003. Locally Available Aggregate and Sediment Production. Transportation Research Record 1819. 185 Paper No. LVR8-1050. Pp. 185-193.

Goode,J.R. Charles H. Luce, John M. Buffington .2012. Enhanced Sediment Delivery in a changing climate in semi-arid mountain basins: Implications for water management and aquatic habitat in the northern Rocky Mountains. Geomorphology 139-140. pp. 1-15 (Abstract)

GRAIP Modeling Map, SFSR Subbasin (BNF Only). Nez Perce Map

Goat Creek Culvert Replacement. Appendix 1- Us Department of Interior https: www.blm.gov/or/fcp/files/Attachments_2005.doc.
U.S. **Department of Agriculture, Forest Service, and U.S. Department of** Interior, Bureau of Land Management, Gen Tech Rep **PNW-GTR-405**. 14 Northwest **Forest** Plan, 1994. Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth **Forest** Related Species Within the Range of the Northern Spotted Owl.

Gucinski, H; Furniss, M. J.; Ziemer, R.R.; Brookes, M. 2001. Forest roads: a synthesis of scientific information. Gen. Tech. Rep. PNWGTR-509. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 103 p.

Idaho Department of Fish and Game. 2005. Idaho Fish and Wildlife Information System. Margaritifera falcata, Western pearlshell. https://idfg.idaho.gov/species/taxa/20574

ISAAK, Daniel J., CHARLES H. LUCE, BRUCE E. RIEMAN, DAVID E. NAGEL, ERIN E. PETERSON, DONA L. HORAN, SHARON PARKES, AND GWYNNE L. CHANDLER. 2010. Effects of climate change and wildfire on stream temperatures and salmonid thermal habitat in a mountain river network. *Ecological Applications*, 20(5), pp. 1350–1371.

Ketcheson, G.L., and W.F. Megahan. 1996. L Sediment Production and Downslope Sediment Transport from Forest Roads in Granitic Watersheds. United States Department of Agriculture Forest Service Intermountain Research Station Research Paper INT-RP-486 May 1996. 13. pp.

Ketcheson, G.L., W.F. Megahan, and J.G. King. 2007. **"R1-R4" AND "BOISED" SEDIMENT PREDICTION MODEL TESTS USING FOREST ROADS IN GRANITICS.** Journal of the American Water Resources Association Vol. 35(1) pp. 83-98.

KORSTROM, Jillian S., and IAN K. BIRTWELL. **2011**. Effects of Suspended Sediment on the Escape Behavior and Cover-Seeking Response of Juvenile Chinook Salmon in Freshwater. Transactions of the American Fisheries Society 135:1006–1016, 2006.

LACHANCE, Stephanie, **MARYSE DUBE´, RENAUD DOSTIE and PIERRE BE´RUBE´.2011**. Temporal and Spatial Quantification of Fine-Sediment Accumulation Downstream of Culverts in Brook Trout Habitat Transactions of the American Fisheries Society 137:1826–1838.

LLOYD, D.S., J.P. Koenigs and J.D. LaPerriere. 1987. Turbidity as a Water Quality Standard for Salmonid Habitats in Alaska
North American Journal of Fisheries Management 7 :34-45, 1987.

Luce, Charles H. and Thomas A. Black. 1999. Sediment production from forest roads in western Oregon WATER RESOURCES RESEARCH, VOL. 35, NO. 8, PAGES 2561-2570, AUGUST 1999)

Luce, C.H., and T.A. Black. 2001. EFFECTS OF TRAFFIC AND DITCH MAINTENANCE ON FOREST ROAD SEDIMENT PRODUCTION. USDA Forest Service, Rocky Mountain Research Station, Boise, Idaho. 8 pp.

Mabe, David. 2005. UNITED STATES DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration NATIONAL MARINE FISHERIES SERVICE 10095 West Emerald Street Boise, Idaho 83704 July 28,2005. Letter to: Mark J. Madrid, and Richard K. Smith. RE: ' Payette National Forest and Boise National Forest Revision of Sediment-Related Watershed Condition Indicators for the South Fork Salmon River Basin. 2. pp.

MacDonald, Lee H. and Drew B.R. Coe. 2008. Road Sediment Production and Delivery: Processes and Management @inproceedings {Macdonald2008RoadSP,title={Road Sediment Production and Delivery: Processes and Management},author={Lee H. Macdonald}, year={2008}

Megahan W.F. and W. J. Kidd. 1972. Effects of Logging and Logging Roads on Erosion and Sediment Deposition from Steep Terrain**.** *Journal of Forestry*, Vol. 70 (3) pp.136–141,

Montanore mine Supplemental Draft Environmental Impact Statement pp. 53; 61-63; FEIS pp. 81- 87.
https://deq.mt.gov/files/Public/EIS/Montanore%20Mine/MontanoreMine_SupplementalEIS.pdf;
https://www.dropbox.com/s/wmkx2dnca0rginv/FEIS%20vol.%20III%20montanore.pdf?dl=0

Nedeau, E.J. Smith, A.K., Stone, J. and S. Jepsen, Eds. **2009.** Freshwater Mussels of the Pacific Northwest. 2nd Ed. The Xerxes Society, Pub. 51. Pp.

Nelson, R.L., and D.C. Burns. 2005. DEVELOPING APPROPRIATE SEDIMENT–RELATED WATERSHED CONDITION INDICATORS FOR NATIONAL ENVIRONMENTAL POLICY ACT ANALYSES AND BIOLOGICAL ASSESSMENTS IN THE SOUTH FORK SALMON RIVER BASIN. USDA Forest Service, Payette NF. 101pp.

Newcombe, C. and J.O.T. Jensen, 1996. Channel Suspended Sediment and Fisheries: A Synthesis for Quantative Assessment of Risk and Impact. North American Journal of Fisheries Management. Vol 16 (4). Pp. 693 -727.

Noss, Reed. The Ecological Effects of Roads. 2018. Ecology. Reprint by roadblock Earth First, Bloomington, IN.

Quigley, Thomas M.; Arbelbide, Sylvia J., tech. eds. 1997. An assessment of ecosystem components in the interior Columbia basin and portions of the Klamath and Great Basins: Gen. Tech. Rep. PNW-GTR-405. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 4 vol. (Quigley, Thomas M., tech. ed.; The Interior Columbia Basin Ecosystem Management Project: Scientific Assessment). Volume 3, pp 1365-1369. 1997.)

Rhee, H., J. Fridley, and D. Page-Dumroese. 2018. Traffic-Induced Changes and Processes in Forest Road Aggregate Particle-Size Distributions. Forests. Vol. 9. 16 pp.

Stagliano, D., M. Anderson and K. Cook. 2020. Western Pearlshell Mussel (WEPE) Reproduction and Life History in Five Watersheds of Montana: Aquatic SWG Implementation. Western Division, American Fisheries Society. Tributary, Fall 2000 Vol 44, (3) 2020. Pp. 9-10.

Thurow, R. 1987. Completion Report Evaluation of the South Fork Salmon River Steelhead Trout Fishery Restoration Program Performed for US Department of Interior, Fish and Wildlife Service Lower Snake River Fish and Wildlife Compensation Plan Contract No. 14-16-0001-86505 Period Covered: March 1,1984 to February 28, 1986)

Trombulak, S.C., and C. Frissell. 2000. Review of Ecological Effects of Roads on Terrestrial and Aquatic Communities. Conservation biology. Vol. 14(1). Pp. 18-30.

Wendt, George E., and Gene F. Cole. 1969. Initial Draft SOIL - HYDROLOGIC RECONNAISSANCE of Cascade Ranger District, Boise National Forest. 181 pages.

Wendt, George E., and Gene F. Cole. 1972. INITIAL DRAFT SOIL-HYDROLOGIC RECONNAISSANCE SURVEY, Landmark Ranger District, Boise National Forest. 148 pages.

Wendt, George E.; Wallace T. Shiverdecker; E. Nelson Dean. 1973. INITIAL DRAFT SOIL-HYDROLOGIC RECONNAISSANCE SURVEY, Idaho City Ranger District, Boise National Forest. *** pages.

Wendt, George E., and Gene F. Cole. 1974. Revised Soil-Hydrologic Reconnaissance of the Boise Ranger District, Boise National Forest. 295 pages

World Health Organization, 2003. Antimony in Drinking-water. WHO/SDE/WSH/03.04/74 14 ***pp.

Thank you for the opportunity to comment on the SGP Supplemental Draft Environmental Impact Statement.

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