Appendix M

PACFISH RIPARIAN MANAGEMENT OBJECTIVES

All the alternatives would be consistent with the PACFISH Riparian Management Objectives. To assess consistency with the RMOs, the proposed project was described in term of whether or not it would maintain or restore healthy and functioning aquatic and riparian resources. The rationale for this determination is as follows:

1. **Water quality to a degree that provides for stable and productive riparian and aquatic ecosystems.**
   The project proposes to issue permits to outfitter-guides that use a combined area of 220,194 acres in the lands managed under the jurisdiction of PACFISH. Party size would be no more than 12 people or 18 head of stock.

   No part of the proposed out-fitter guide activity would create openings over streams or lakes, therefore, the project would have no effect to water temperature.

   In areas where pack stock cross streams and drink, fecal contamination may occur. This could lead to increased nutrient levels in at the site scale, but it would be quickly diluted. Stock animals would loose-herd graze, not concentrated. Stock would only enter water when drinking and crossing streams on trails. Otherwise, stock would graze in the uplands so the amount of time in water would be minimal. Camps are located at least 200 feet from lake shores. Outfitter-guides will also review and practice minimum-impact travel and camping practices with clients, including those at drop camps. The following pamphlets will be used as the standard: "Rocky Mountain Leave No Trace Skills and Ethics", "North American Leave No Trace Skills and Ethics", and “Horse Use Leave No Trace Skills and Ethics". These mitigation measures would reduce the effect of any change in nutrient levels to negligible levels and would be quickly diluted at the site scale. Some increases in nutrient level may occur at the site scale but would be quickly diluted and have not effect to aquatic resources. There would be no effects at the 6th and 5th field watershed scales.

   Fecal coliform levels at lakes and streams may be elevated where livestock drink, cross streams, and during snowmelt and rainstorms as horse manure is washed down the trail and into the stream at the site scale. Bacteria loading would be spread over the entire project area and only a small amount of bacteria would get into surface water and any point of contact. Fresh water would quickly dilute the increase in bacteria as water is constantly flowing down streams, through wetlands, and circulating in lakes. There are no known detrimental fecal coliform bacterial levels in the analysis area. There are no water bodies in the project area listed on the 2004 Washington State 303(d) list for fecal coliform. Based on the minimal effects at the site scale, there would be no effects to natural fecal coliform levels at the 6th and 5th field watershed scales.

   In summary, there would be no effects to temperature and minimal effects to nutrient and fecal coliform levels at the site scale. No changes to nutrients and fecal coliform

would occur at the 6th or 5th field watershed scales. Therefore, re-issuing the proposed outfitter-guide permits for 10 years would not prevent maintaining or restoring water quality.

2. **Stream channel integrity, channel processes, and the sediment regime (including the elements of timing, volume, and character of sediment input and transport) under which riparian and aquatic ecosystems developed.**
Stream bank vegetation across the project area consists of conifers, alders, willows, dogwoods, and coarse substrates. These species and the rock material provide excellent bank protection. Since much of the analysis area is wilderness or areas with few roads, stream bank stability is excellent.

   The primary source of sediment from the outfitter-guide activity is bank trampling when pack animals drink and to a small degree at stream crossings. From these disturbances, sediment delivery to lakes and streams would be insignificant.

   The only areas where the proposed activity would disturb shorelines, banks, and bottom configurations capable of increasing sediment levels are at lakes and streams adjacent to campsites, day use areas, and stream crossings on trails. Some bank trampling and negative impacts may occur in these areas; however it would be minimal and represents only a small portion of the resources across the entire project area. There are four campsites within the RHCA (riparian habitat conservation area) boundary of lakes and four between the RHCA boundary and 500 feet of lakes. There are 201 lakes in or bordering the entire outfitter-guide project area. Based on a GIS analysis, these lakes have a combined distance of lake shore of 58 miles. Based on a disturbed distance of lake shore for camps in the RHCA of 100 feet and 50 feet of disturbed shore distance within 500 feet of the lakes, this amounts to a combined distance of 0.1 mile or less than 0.001% of the total.

   There are 3 camps within the RHCA and 8 between the buffers and 500 feet of streams. There is an estimated 570 miles of streams in the outfitter-guide project area on PACFISH land. The Forest Service assumed a distance of 100 feet of disturbed stream banks from camps within the riparian buffers and 50 feet from camps outside of buffers but within 500 feet of streams. This equals a distance of about 700 feet total or less than 0.001% of disturbed stream banks associated with camps out of all streams in the project boundary.

   Based on a GIS analysis there are an estimated 35 stream crossings on trails in the PACFISH portion of the analysis area. Conservatively speaking, there would be 10 feet of channel disturbance at the stream crossing from the outfitter-guide trips. This equals about 350 feet total of bank disturbance out of the 570 miles total or less than 0.001% disturbance. Furthermore, these sites would be dispersed across the project area and the outfitter-guides do not use all trails, so the effect would be even less.

   The small affects to sediment at the site scale would not translate to any changes to pool depths or frequency. At most, there may be some a slight increase at the site of bank trampling but not enough to move downstream and fill pools.

Large wood levels would not change; the proposed project would not allow any wood removal or cutting trees that could enter streams. Wood levels in general are excellent in streams. With no changes in wood levels, there would be no change in pool frequency with the outfitter-guide activity. The existing wood levels are adequate to trap and sort any small increase in sediment resulting in no effects downstream.

Re-issuing the outfitter-guide permits for another 10 years would maintain the existing channel integrity, processes, and the sediment regime. There would be some inconsequential effects at the site scale but there would be no effects at the 6th and 5th field scales.

3. **Instream flows to support healthy riparian and aquatic habitats, the stability and effective function of stream channels, and the ability to route flood discharges.** Instream flows are unlikely to be affected by the out-fitter guide project. There would be no affects to stream flow from this project. Please see the Hydrology report for details.

4. **Natural timing and variability of the water table elevation in meadows and wetlands.** Water tables in wetlands may be impacted at a few spots on trails and when stock loose-herd graze. When outfitter-guides and clients use trails that cross wetlands, they may avoid the wettest areas, creating other user-made trails that increase the impact area. Users may also widen and deepen the impacted area. Water may begin to flow as a stream through the wetland, where the water eventually infiltrated into the soil. The net effect is that water leaves the wetland faster than before. Since these wetlands contribute to late season flows in down slope streams, the change in the wetland may reduce late season flows in nearby downstream locations. However, the relative impact on the wetlands in all the areas would be low because the affected wetlands are a small portion of the total wetlands. Across the entire project area, previous and current pack stock accessed only a small fraction of all the wetlands. By following these measures, effects to water tables would be insignificant at the site scale and would have not effects at the 6th and 5th field watershed scales.

5. **Diversity and productivity of native and non-native plant communities in riparian zones.**
Minor impacts to riparian vegetation occur when pack stock access water to drink and occasionally at stream crossings. Impacts to riparian vegetation would be limited to areas along camps and day use areas adjacent to streams and along at stream crossings. These areas represent only a small fraction of all riparian areas across the project area across PACFISH lands.

Outfitter-guide pack and saddle stock will be allowed to open graze in the analysis area, including in wetlands. This dispersed grazing technique minimizes concentrated effects to wetlands. Some soil compaction and displacement occurs, but the relatively small number of stock in any given group (maximum party size is 18 head of stock) and the short amount of time pack and saddle stock outfitter-guides are operating (typically early July through mid-October), minimizes impact to soil and plant communities in the wetlands that are grazed. In addition, the vast majority of wetlands in the analysis area (approximately 98.6%) are over 500 feet from established campsites, and the wetlands

are spread across the 1.1 million-acre analysis area. This results in most wetlands never being affected by pack and saddle stock grazing, and existing in a pristine condition.

The few and minimal impacts to riparian dependant vegetation would have a slight negative effect to the diversity and productivity of native plant communities but not to the extent that they would be extirpated. The few areas of impact are well dispersed across the PACFISH lands and a majority of the riparian plant communities would be undisturbed. See above for the amount of total stream and lake habitat affected by the proposed action. Therefore, the existing outfitter-guide activity and proposed continuation would not prevent maintaining or restoring species composition and structural diversity of riparian plant communities across PACFISH lands.

6. **Riparian vegetation to: provide an amount and distribution of large woody debris characteristic of natural aquatic and riparian ecosystems, provide adequate summer and winter thermal regulation with riparian and aquatic zones, help to achieve rates of surface erosion, bank erosion, and channel migration characteristics under which those aquatic and riparian systems developed.**
   The proposed project would not remove any snags, green trees, or any riparian vegetation at any locations. There would be some ground cover and shrubs impacted at campsite locations along or near creeks from the stock animals; however it would be minimal. Animals are open grazed when camping to minimize impacts at any one location. The few locations along camps would not prevent riparian areas from providing adequate large wood sources, thermal regulation, and protection from surface and bank erosion. See above discussions on the proportion of anticipated impacts from the entire project area with undisturbed sites.

7. **Habitat to support populations of well distributed native and desired non-native plant, vertebrate, and invertebrate populations that contribute to the viability of riparian-dependent communities.**
   At the site scale, pack stock have some negative impacts to riparian vegetation and habitat associated with lakes and streams when they go for a drink. The few areas along streams and lakes impacted when pack stock access water is only a fraction of all water bodies across the project area. There are 52 lakes and 570 miles of streams in the project area on lands managed by PACFISH and there are only 4 camps within the RHCA of lakes and 3 camps within the RHCA of streams. The impacted area would represent less than 0.001% of all lake shores and stream bank miles. Therefore, the area of riparian habitat impacted currently and the impacts from a continuation for 10 years, with the associated mitigation measures, would be insignificant at the site scale and no effects at the 6^{th} field or 5^{th} field watershed scales.