CHAPTER 3 – ENVIRONMENTAL CONSIDERATIONS

Introduction

This chapter briefly describes the environmental consequences of each alternative by issue and affected resource. Other considerations are disclosed as required by the National Environmental Policy Act. Included in Appendix A are maps and existing condition summaries for each study area.

Issue 1 - Provide stable business opportunities for the outfitter and guide industry.

Alternative 1 – Proposed Action

This alternative allocates use for both guided and unguided recreation use. In home ranges, outfitters and guides are allocated up to 10 percent of the capacity. Unguided users will account for the remaining capacity. Outside home ranges, guided visitors are allocated up to 25 percent of the carrying capacity.

Alternative 2 – Increased Solitude

This alternative provides the same allocations of use to guided and unguided users for all study areas as Alternative 1 with the exception of Study Areas 12A and 14. In these study areas guided use is reduced in the spring and fall by 3 and 5 percent, respectively.

Issue 2 – Adequately address conflicts within the outfitter and guide industry.

Alternative 1 – Proposed Action

In this alternative the district proposes to allocate outfitter and guide use by season; 10 percent in the spring, 65 percent in the summer, 15 percent in the fall and 10 percent in the winter (Table 2.3). Allocation by season puts greater limitations on outfitter and guide use in the spring and fall, aims to reduce user conflicts by providing more opportunities for solitude and helps indirectly manage outfitter and guide recreation use by activity.

Alternative 2 – Increased Solitude

This alternative provides the same seasonal allocations of use to outfitter and guide users as Alternative 1 with the exception of Study Areas 12A and 14. In these study areas, guided use is reduced in the spring and fall by 3 and 5 percent, respectively. By further restricting outfitter and guide use in these study areas, this alternative aims to reduce black bear hunting guide conflicts and provide more opportunities for solitude.

Environmental Considerations

Air Quality

Outfitter and guide use on the Petersburg Ranger District is not expected to affect air quality in any of the alternatives. Impacts are approximately the same for each alternative.

Aquatic Resources

This section will primarily address how outfitter and guide use affects the areas' aquatic resources. Four general concerns arise from outfitted and guided fishing.

1) Outfitted and guided sport fishing may lead to aquatic or riparian habitat degradation because popular fishing areas will receive use beyond what would normally occur (i.e., use by private individuals only);
2) Some species or stocks may be negatively affected by outfitted and guided sport fishing by direct take (i.e., harvest that results in population reduction), delayed mortality from hooking injuries or handling stress, and egg destruction from redd (i.e., spawning nest) trampling;
3) Sport fishing activities may lead to invasive species introduction that may cause resource damage through predation, competition, and/or disease introduction; and,
4) Reduced resource availability to subsistence users because of competition with sport fishers, including outfitted and guided sport fishers.

These concerns will be discussed throughout this Aquatic Resources section.

Affected Environment – Existing Condition of Aquatic Resources

The affected aquatic resources being considered for this analysis are the submerged and riparian lake and stream habitats and the fish populations within the land management jurisdiction of Petersburg Ranger District (PRD). It is important to note that the management and regulation of fish populations is wholly the responsibility of the Alaska Department of Fish and Game (ADF&G) - sport fish populations are managed by applying regulations onto anglers.

Habitat

The approximate 1.9 million acres within the PRD contains numerous watersheds of varying scale ranging from simple island drainages to larger, glacial mainland systems. This region's streams and lakes are physically complex due to the mixture of island and mainland environments, steep topography, and past and present glacial activity.

Most waters are colored from tannins or glacial silt and are generally unproductive because of a limited nutrient base. Most in-stream habitats are formed and controlled by bedrock and large woody debris input. In addition to these physical controls, beavers (*Castor canadensis*) can play a key role in altering stream channel morphology. Riparian habitats are usually densely forested with forest canopies completely shading stream

channels. Stream banks are often occupied by dense shrubs and ground-cover (e.g., mosses and ferns) with very little exposed mineral soil. Overall, these systems tend to be resistant and resilient to most disturbances aside from indiscriminant land management practices or major natural occurrences like landslides.

In general, the aquatic habitats across the analysis area are in good to excellent condition. Most watersheds across PRD are largely intact because logging occurred after many regulations were in place to protect aquatic resources.

Trout and Char

Cutthroat trout (*Oncorhynchus clarki*), rainbow trout (*O. mykiss* – see next section), and Dolly Varden char (*Salvelinus malma*) are the only trout/char species found in southeast Alaska freshwaters. Cutthroat and Dolly Varden are found in both resident (permanent stream/lake dwelling) and anadromous (sea-going) populations throughout the area. Both species are routinely sought after in sport fisheries, but resident population individuals do not generally attain sizes attractive to sport fishers. Anadromous varieties can be found in area streams and lakes in early spring and fall – these individuals spend their summers at sea taking advantage of the productive coastal environments.

Both resident and anadromous populations are likely stable due to general harvest restrictions promulgated by ADF&G in 1994, with subsequent revisions. The ADF&G manages cutthroat for limited harvest and Dolly Varden for fairly liberal harvest with additional restrictions in place to protect particularly high quality fisheries[18]. However, cutthroat are particularly susceptible to sport fishing over-harvest, and despite conservative restrictions, population declines can still occur when sport fishing pressure increases (Gresswell and Harding 1997).

Steelhead

Steelhead are the anadromous form of rainbow trout. They are a popular game fish because they are relatively "catchable" with a variety of fishing gear, attain large sizes, and are extremely hard-fighting when played on sport tackle. Steelhead tend to prefer medium-sized and larger stream systems with abundant areas of turbulent, well-oxygenated flows.

Though most area runs tend to be very small (10s to a few hundred fish), PRD encompasses a multitude of systems that support this species. Some of the largest returns occur in Kadake Creek on Kuiu Island (Study Area 12B) and Petersburg Creek on Kupreanof Island (Study Area 7). Recent data suggest steelhead populations throughout Southeast Alaska were once substantially more abundant than they are now (Lohr and Bryant 1999; Harding and Love 2008). In fact, significant population declines prompted the ADF&G to severely restrict steelhead harvest starting in 1994 and continuing to the present day[19]. Steelhead densities appear to have had a mixed response to these regulation changes with some populations during some years having near record returns while

[18] Please refer to current Southeast Alaska sport fishing regulations for specific regulations.

[19] Please refer to current Southeast Alaska sport fishing regulations for specific regulations.

others remain stable at very low levels (Harding and Love 2008). The PRD population likely falls into the latter category with a few exceptions.

Salmon

Salmon – Pink (*O. gorbuscha*), chum (*O. keta*), sockeye (*O. nerka*), coho (*O. kisutch*), and king (*O. tshawytscha*) salmon can all be found at certain times of year in area freshwaters.

Pink salmon are typically the most abundant in terms of sheer numbers, which can substantially fluctuate from year to year. They are widely distributed across PRD. They tend to prefer lower gradient and larger streams, but can be found in most every physically accessible stream. There is likely little harvest of this species by sport fishers because there flesh tends to be pale and soft once they enter freshwater in preparation for spawning.

Chum salmon use similar habitats to pink salmon and share a similar life history. However they tend to be far less abundant and attain a much greater size. Their distribution across PRD is considerably less than that of pink salmon. Like pink salmon, they are typically not highly sought after by sport fishers.

Sockeye salmon are often intimately linked to watersheds containing large lakes as the juvenile of this species mostly rears in these habitats. As such, sockeye have a limited distribution across the area and run sizes usually number a few thousand fish. Sockeye are highly sought by subsistence fishers because of their localized abundance and excellent qualities as a food fish.

Coho salmon can be very aggressive and are highly regarded as a sport fish because of their catchability, size, and quality as a food fish. Coho are widely distributed across PRD, but run sizes are typically only a few hundred fish. They are a very successful species largely because they have a highly tenacious disposition and are good at exploiting a wide range of habitats. Runs in this area are likely stable with minimal to moderate fluctuation from year to year.

King salmon are only found in an artificially maintained run occurs in Blind Slough on Mitkof Island (Study Area 1). Kings are prized sport fish because of their large size and qualities as a food fish. Though regulations allow for liberal harvest of the Blind Slough fishery, ADF&G regulations prohibit fishing for king salmon in freshwaters. Wild stocks in this area could be stable but at low densities.

Subsistence Fishing

Subsistence and personal use harvest of fishes occurs in both marine and freshwater environments. The State of Alaska manages all personal use and saltwater subsistence harvest, and the Tongass National Forest regulates the subsistence harvest of fishes within the freshwaters of its jurisdiction. There are eight reported personal use and subsistence harvest areas on PRD. Kutlaku Creek (Study Area 11) is the most fished location on this district. Sockeye salmon are the most harvested personal use and subsistence species on the district.

Direct and Indirect Effects to Aquatic Resources

Alaska's fisheries and aquatic habitats are virtually pristine compared to many places in the world. Despite the areas' robust aquatic resources, many environmental and man-made factors exist that could quickly change this condition. Sport fishing alone can have a profound effect on fisheries resources (Clark and Gibbons 1991; Muoneke and Childress 1994; Bartholomew and Bohnsack 2005; Lewin et. al. 2006). Effects may be more severe on relatively small fisheries like those found around PRD. This analysis examines the effects of outfitter and guide sport fishing on local fisheries.

There is a moderate amount of outfitted/guided sport fishing in the area and most of it is localized to a few key systems. This discussion focuses on those areas that receive the most pressure - areas that have over 50 RVDs (total for all years), for the available record period. The highest use areas (in RVDs) in PRD are Kah Sheets Creek (300.58), Blind River Rapids (251.70), Petersburg Creek (133.88), Big Creek, Mitkof Island (117.25), Alecks Creek (66.30), and Twelvemile Creek (50.50). Effect determinations for each aquatic resource category will be based primarily on local knowledge and professional opinion of these resources and documented information, where available.

Habitat

Most fishing locations on PRD are somewhat remote and many require a float plane or boat trip to gain access to them. As a result, many locations see very little recreational use and are in a relatively pristine condition. Sites that are more accessible generally have infrastructure improvements (i.e., designed access corridors) that direct movement to and from the fishing location to help minimize habitat disturbance. The combination of these two factors suggests that there are likely very little or no negative effects to aquatic habitats on PRD as a result of outfitted/guided sport fishing. Because the proposed alternatives do not suggest any significant change to the amount of outfitted/guided sport fishing in this area, there should be no significant negative effect to aquatic habitats for either alternative.

Fish

Recreational effects on fish occur primarily through sport fishing, and trout, steelhead, and salmon are a primary target for many anglers. Sport fishing may have minor or major adverse effects on fish and much of the effect magnitude is dependent upon the fish population/species, environmental conditions, angling methods, and fishing pressure intensity. Adverse effects to fish species or populations as a result of recreational fishing can result from harvest, hooking and/or handling mortality, introduction of diseases or non-native organisms, and litter/pollution (Clark and Gibbons 1991; Muoneke and Childress 1994; Bartholomew and Bohnsack 2005; Lewin et. al. 2006). The following discussion assesses how outfitter and guide recreational fishing activities may affect area fish populations.

Trout and Char – Permitted outfitted and guided sport fishing poses a risk to adversely affecting trout and char populations at high-use locations on PRD. This is possible because trout and char are highly susceptible to sport fishing gear and techniques, harvest is practiced by some anglers and can be high at some locations, and catch-and-release mortality is variable and can be high. Petersburg Creek on PRD is a popular fishery and trout/char comprise a large part of the catch at this location. Average annual outfitted and

guided fishing at this location is 9.56 RVDs per year. There is, however, no evidence to suggest that this fishery is being negatively affected by outfitted and guided sport fishing at this time. Because the proposed alternatives would not change the current permitted outfitted and guided sport fishing policy in this area, there should be no significant negative effect to trout and char populations.

Steelhead – Permitted outfitted and guided sport fishing poses a risk to adversely affecting steelhead populations at high-use locations on PRD. This is possible because steelhead are susceptible to sport fishing gear and techniques, harvest is practiced by some anglers, and catch-and-release mortality is variable and can be high. Petersburg Creek, Big (Bear) Creek, and Kadake Creek are popular and productive PRD steelhead fisheries. Average annual outfitted/guided fishing use at these locations is 9.56, 8.38, and 7.46 RVD's per year, respectively. There is, however, no evidence to suggest that these fisheries are being negatively affected by outfitted and guided sport fishing at this time. Because the proposed alternatives do not suggest any significant change to the amount of outfitted and guided sport fishing in this area, there should be no significant negative effect to steelhead.

Salmon – Salmon populations in Southeast Alaska vary considerably in size and distribution from year to year. Chum salmon are generally not a popular sport fish and have a relatively limited distribution around PRD. Consequently, there is likely no effect to chum salmon populations as a result of outfitter and guide fishing activities. Pink salmon are widely distributed across PRD and returns to a single system can be in the 1000s. Pink salmon are not a widely popular game fish, and are often caught while fishing for other species. Because of their wide distribution, large overall population size, and low popularity as a sport fish, there is likely no risk to negatively affecting pink salmon populations as a result of outfitter and guide sport fishing activities.

King salmon have a limited distribution across PRD and the only legal fishery in the area occurs at Blind Slough/Blind River Rapids on Mitkof Island. Because this is an artificial or hatchery-supported population, and because there is only one outfitter/guide permitted to access this fishery, there is no risk to negatively affecting this resource as a result of outfitted and guided sport fishing activities.

Sockeye salmon have a limited distribution across PRD and are only a moderately-popular sport fish in this area – sockeye are considerably more important to commercial and subsistence fisheries. There are two locations on PRD where sockeye are abundant. These include Petersburg Creek and Kah Sheets Creek on PRD. Of these systems, Kah Sheets is the only one that has received high outfitter and guide use (21.47 RVDs per year). However, because there is no outfitter and guide currently permitted for this system, there is no risk to adversely affecting this resource as a result of outfitted and guided sport fishing. There would also be little to no risk of negatively affecting sockeye populations at Petersburg Creek as a result of outfitter and guide activities.

Coho salmon are a popular sport fish and can be caught on a variety of tackle. However, despite being a widely pursued sport fish in this area, there is likely little risk to negatively affecting PRD populations as a result of outfitter and guide sport fishing for the following reasons: 1) coho salmon return to area streams and lakes later in the season making them less targeted by outfitters and guides; 2) coho populations are widely

distributed across the region, which distributes sport fishing pressure; and 3) there are no coho population concerns in this area.

Subsistence Fishing

Subsistence fishing occurs in both salt and freshwaters of Southeast Alaska. A rural Alaska resident can legally subsistence fish for all salmon species, trout, char, and steelhead. Sockeye salmon are the most harvested subsistence and personal use species in this area, and, therefore, have the highest potential to be adversely affected by outfitter/guide sport fishing activities. Kutlaku Creek has the highest reported sockeye harvest (>1000 fish total from 2001-2007). There should be no effect to subsistence/personal use sockeye fisheries at any of these locations because 1) most sockeye subsistence/personal use harvest occurs in saltwater and most recreational fishing occurs in freshwater (i.e., little spatial overlap-little chance for physical interference), 2) the aforementioned location is not a 'high-use' outfitter and guide sport fishing locations (<50 total RVDs reported from 1994-2007), and sockeye salmon are not typically the primary sport fish sought after by recreational anglers in this area.

There is only minimal subsistence or personal use harvest of coho salmon, steelhead, trout, and/or Dolly Varden on PRD. As a consequence, there should be no effect to subsistence or personal use harvest of these species as a result of outfitter and guide sport fishing activities.

Cumulative Effects to Aquatic Resources

As previously mentioned, many factors can contribute to the condition and sustainability of a fishery. Some of the more prominent variable categories that can negatively affect aquatic resources include natural environmental conditions (climate and habitat), size and species of the fish stock, land management activities, fishing pressure (all types), and, more recently, invasive species.

With respect to aquatic systems on PRD, overall environmental conditions, commercial fishing, and sport fishing likely have the most impact on these systems. Of these three factors, sport fishing likely has the least effect. However, sport fisheries can have localized, and even severe, negative effects to aquatic resources in high-use areas like Blind River Rapids that necessitated access improvements to decrease environmental damage. In general, most negative effects to area aquatic resources should be minimized because administrative controls (i.e., fishing regulations, controlled/directed access points, etc) are already in place to protect these resources.

Based on the rationale above, PRD freshwater aquatic resources should not be at risk due to the additive cumulative effect of outfitter and guide sportfishing for either alternative.

Botany

Affected Environment – Existing Condition of Botanical Resources

Threatened and Endangered Species

The only federally listed or proposed plant in Alaska by the U.S. Fish and Wildlife Service is *Polystichum aleuticum*. It is listed as endangered and is only documented on Adak Island in the Aleutian Island chain. It is not expected to occur on the PRD.

Sensitive Species

Sixteen plant species and one lichen specie are on the Regional Forester's Sensitive Species List (Bschor 2009) (Table 3.1).

Table 3.1. Alaska Region Sensitive Species. Species known or suspected in the planning area are in bold.

Scientific name	Common name
Aphragmus eschscholtzianus	Eschscholtz's little nightmare
Botrychium spathulatum	**spatulate moonwart**
Botrychium tunux	moosewort fern
Botrychium yaaxudakeit	moosewort fern, no unique common name
Cirsium edule* var. *macounii	**edible thistle**
Cypripedium guttatum	spotted lady's slipper
Cypripedium montanum	**mountain lady's slipper**
Cypripedium parviflorum* var. *pubescens	**large yellow lady's slipper**
Ligusticum calderi	**Calder's loveage**
Lobaria amplissima	**lichen, no common name**
Papaver alboroseum	pale poppy
Piperia unalascensis	**Alaska rein orchid**
Platanthera orbiculata	**lesser round-leaved orchid**
Polystichum kruckebergii	**Kruckeberg's swordfern**
Romanzoffia unalaschcensis	Unalaska mist-maid
Sidalcea hendersonii	**Henderson's checkermallow**
Tanacetum bipinnatum* subsp. *huronense	**dune tansy**

Rare Plants

Ninety-six plants are considered rare on the Tongass National Forest. Eleven of these species are recorded in the TNF rareplant GIS data layer, although more species likely exist because the majority of rare plant surveys conducted on the district were not recorded in the data layer.

General Vegetation

General vegetation cover types include beach fringe, estuarine and supratidal meadows, riparian vegetation, deciduous forest, coniferous forest, mixed deciduous-coniferous forest, young growth, scrub, peatlands, fens, heath, alpine meadows, and rocky areas.

Invasive Plants

Invasive plants are absent from much of the undeveloped areas of the PRD, but are common on roadsides and occasionally occur on recreation sites, particularly when they

are in close proximity to the road system. Invasive plants have been observed growing in a handful of undeveloped recreation sites on the PRD.

Direct and Indirect Effects to Botanical Resources

Both alternatives potentially affect the entire range of plant habitats and vegetation cover types present on the PRD. Recreational use can harm plants and vegetation by crushing plants under foot and tents, constructing fire rings, moving of natural materials such as rocks and logs and constructing semi-permanent structures such as tarpaulin frames (Bell and Bliss 1973, Cole and Trull 1992, Monz et al. 2000, Roovers et al. 2004).

No effects are expected to threatened and endangered plants since none have been documented on the district.

Effects to sensitive species are detailed in the project's Biological Evaluation, located in the project record. A "may adversely impact individuals, but not likely to result in a loss of viability in the planning area or cause a trend to federal listing" determination was made for 11 of the 16 sensitive plant species. No surveys specific to sensitive plants have been conducted within the recreation places covered in this environmental assessment. Due to the largely administrative nature of the proposed action, effects to rare species are expected to be identical to those outlined for sensitive plants.

Cumulative Effects to Botanical Resources

Compared to National Forests in other parts of the United States, recreational use of the Tongass is light and widespread. Although some sites may experience high levels of impact due to proximity to population centers or unique natural features that are a draw for the recreating public, most sites will experience only minor impacts to vegetation. The cumulative effects of either alternative are not likely to result in adverse impacts to the botanical resources.

Impacts on all types of vegetation are mitigated by an informal process of recreation site evaluation by district recreation staff that has a basic understanding of impacts to vegetation by recreational users who are following the principles of *Leave No Trace* best practices[20]. These practices can be expected to limit harm to vegetation to a reasonable degree, but may not prevent all harm to sensitive or rare species.

Cultural Resources

Affected Environment – Existing Condition of Cultural Resources

Cultural resources on the Tongass National Forest include a diverse array of ancient and historical sites and are evidence of at least 10,000 years of human occupation and use. Although the exact date of Tlingit occupation is not known, oral histories and

[20] For more information about Leave No Trace principles, visit:http://www.fs.fed.us/r10/outdoor_ethics/leave_no_trace/intro/lnt_principles_v2.shtml or the Leave No Trace website: http://www.geocities.com/yosemite/falls/9200/leave_no_trace.html

ethnographic accounts indicate that the Tlingit people have occupied Southeast Alaska for centuries and were expanding their occupation northward at the time of European contact. The Petersburg Outfitter and Guide analysis area encompasses the central portion of the Tongass National Forest and lies within the traditional territory of the Kake and Wrangell or Stikine Tlingit. The Tlingit Indians have left their mark on the land evidenced by a variety of sites including villages, seasonal campsites, fish traps and weirs, rock art, sacred and religious areas, and subsistence or resource gathering places. The Tlingit continue to recreate, hunt and gather on these lands today.

The historical period in Southeast Alaska began in 1741 when Aleksei Chirikov, a member of Russia's Kamchatka Expedition, sighted land somewhere between Yakobi and Chichagof islands. The Russian's brought back sea otter pelts, which sparked fur trade with the Orient. The trade boomed and the British and American traders soon joined in the pursuit of this valuable commodity. The Russian-American Company rapidly built up its presence in Southeast Alaska and established settlements in Yakutat, Sitka and Wrangell. Russia eventually lost control of the sea otter trade, the company became financially strapped and maintaining a presence in Southeast Alaska became less important. Eventually Russia sold the rights to Alaska to the United States. Since then, enterprises including fishing, whaling, mining, fur farming, tourism, and timber harvest have developed in the analysis area and left evidence on the land.

Archaeological work in the analysis area has occurred over the last several decades. The work is driven primarily by project compliance requirements specified in the National Historic Preservation Act with supplemental Section 110 survey. Most of the work was done by forest service archaeologists with occasional assistance from contract archaeologists. Research partnerships with academic institutions have also added to our knowledge about the area.

A review of our Tongass Sites Database, which tracks all cultural resource work that occurs on the forest, indicates that since 1974, approximately 258 archaeological surveys of varying size and intensity have been conducted within the Petersburg Ranger District boundaries (Area of Potential Effect). Total cultural surveys have covered about 15,000 acres and resulted in the documentation of approximately 554 sites within the study area boundaries which include some state, private, and municipal holdings. Since 2006, Petersburg Zone archaeologists have implemented a monitoring program to assess the effects on historic properties from outfitter/guide use on the Petersburg and Wrangell Ranger Districts. We have visited 32 *Leave No Trace*[21] campsites on Etolin, Kuiu and Kupreanof islands as well as several Day Use Activity areas. All of the outfitter and guide sites we monitored were in the high sensitivity zone for cultural resources. No effects to historic properties were identified at any of the camp or use sites we monitored.

[21] For more information about Leave No Trace principles, visit: http://www.fs.fed.us/r10/outdoor_ethics/leave_no_trace/intro/lnt_principles_v2.shtml or the Leave No Trace website: http://www.geocities.com/yosemite/falls/9200/leave_no_trace.html

The Forest Service has consulted with the State Historic Preservation Officer (SHPO) on outfitter and guide permitting in the past. In 1996, the Forest Service and the SHPO agreed that the types of activities addressed in the Stikine Area Outfitter and Guide EA (1997) would have no effect to historic properties if no ground disturbance is allowed. Results of consultation with the SHPO were similar regarding the Shoreline Outfitter and Guide Environmental Impact Statement (2004). The SHPO concurred that there would be no adverse effect to historic properties by Shoreline Outfitter/Guide activities if stipulations such as *Leave No Trace* principles[21] were followed and archaeologists periodically monitored activity sites.

Direct and Indirect Effects to Cultural Resources

Potential effects to cultural resources due to human use come primarily from vandalism. Sites can be dug up, looted, or destroyed. Outfitter and guide permits require the protection of cultural resources and therefore permitted guided use has little, if any, direct effect. Concentrated recreation use at a site can also cause indirect effects such as site trampling, increased erosion, and disturbance and displacement of cultural artifacts. For example, trampling the surrounding area can result in site erosion or plant cover loss, thereby exposing the site to weathering. Effects on historic properties from guided recreation can be eliminated or reduced by avoiding the site or by using mitigation measures to reduce the potential impacts.

Outfitter and guide use will not occur uniformly across the analysis area. Effects on cultural resources will be mitigated through permit stipulations such as the use of *Leave No Trace* practices, oversight and enforcement of pertinent cultural resource laws and regulations, interpretation, and use restrictions where necessary, as referenced in Chapter 2. Past monitoring of outfitter/guide permitted use areas has resulted in our conclusion that the types of activities permitted under this agreement will have no effect on historic properties.

Cumulative Effects to Cultural Resources

Cumulative effects on cultural resources occur through natural erosion, weathering, and decay, as well as from land development and increased visitation. Increases in recreation use may expedite erosion and could lead to vandalism. Monitoring known sites would identify site changes and enable early mitigation to reduce cumulative effects. Site interpretation that includes a strong stewardship message could help to prevent future negative site impacts.

Based on past monitoring of known cultural sites and recreation use, no cumulative effects on cultural resources from the commercial recreation proposed in the alternatives are anticipated beyond the natural decaying process. The types of non-ground-disturbing recreation activities and the relatively low levels of use over the analysis area as a whole combined with mitigation measures, administrative oversight, and enforcement of regulations are expected to result in minimal effects.

Forest Health and Productivity

Affected Environment – Existing Condition of Forest Health and Productivity

Forest Stand Structure

Stand structures on PRD include uneven-aged (multi-storied), two-aged (two-storied), and even-aged (single-storied). Uneven-aged structure accounts for the majority of the suitable timber lands and is typically greater than 300 years old. Western hemlock is typically the dominant overstory tree species, with cedars and spruce present in varying amounts. Hemlock typically dominates the lower stories too.

Most timber stands originate from wind disturbance. Single large wind events and several smaller wind events have resulted in the variety of stand age and structural characteristics found across the landscape.

Species Composition

PRD tree species composition by basal area includes: western hemlock, mountain hemlock, Sitka spruce, yellow-cedar, western redcedar and shore pine.

Wind Disturbance

Wind is the major natural disturbance agent on PRD. It occurs in two forms: small-scale gap-phase disturbance and large-scale stand-replacing disturbance. During gap-phase windthrow events individual trees, or small groups of trees, blow over during wind storms, opening the canopy and allowing young trees to grow to fill the openings. This results in complex, multi-aged stands. Areas exposed to severe but infrequent storms are subject to large-scale windthrow events resulting in complete or partial stand replacement. The resulting stand structure is typically even-aged or two-aged, depending on the level of disturbance. Stands in high-risk wind-hazard areas rarely attain ages greater than 250 years old, and are more often replaced before reaching 150 years old.

Nearly all forested lands in Southeast Alaska contain evidence of past windthrow, but not all lands are subject to the same windthrow risk (Harris 1989). Wind hazard can be strongly influenced by topography (Harris 1989, Harcombe et al. 2004) increasing with slope, elevation, soil hazard and aspect (exposure to prevailing winds) (Nowack and Kramer 1998, Kramer et al. 2001). Windthrow patches can be the result of single wind events or multiple events over time (Harcombe et al. 2004).

Hemlock Dwarf-mistletoe

Dwarf mistletoe (*Arceuthobium tsugense*), a parasitic plant, reduces the vigor and growth rate of western and mountain hemlock and often produces low quality timber. Cankerous swellings often occur at the point of infection on limbs and main stems. These cankers offer an entrance for wood-destroying fungi, which can lead to heart rot.

Yellow-cedar Decline

Yellow-cedar mortality became abnormal around 1900 and has accelerated (USDA 2007). Mortality occurs in open canopy stands occupying wet, poorly drained soils (Hennon et al. 1997). Research suggests that the primary cause of approximately 500,000 acres of yellow-cedar mortality in Southeast Alaska is freezing plant tissue (USDA 2007b). Over the past 100 years, a warming trend has diminished the historic protective snow pack at lower elevations, allowing solar radiation to warm up the forest floor

earlier, triggering early loss of cold tolerance in the cedar's shallow fine-root system, and predisposing the Alaska yellow-cedar to late spring freezing injury (USDA 2007b). Cedar mortality ranges in intensity from scattered patches to larger contiguous areas.

Decay Fungi

Decay fungi are present on the PRD at various levels. Approximately one-third of the volume of old-growth in southeast Alaska is defective due to heart rot (USDA 2007b). Root diseases are also considered significant.

Porcupine Damage

Porcupine (*Erethizon dorsatum*) presence is island specific in Southeast Alaska. Porcupine can negatively affect tree regeneration, defect, and growth in young stands (particularly stands 15 to 35 years of age) (Sullivan and Cheng 1989). The inner bark of dominant and co-dominant spruce and hemlock trees is the major foods for porcupine during the winter months; in summer they prefer grasses, forbs, and shrubs (Sullivan et al.1986). Cumulative porcupine damage to regenerating stands can result in slower tree growth, creation of entry points for stem decay due to scarring, and eventual girdling of the tree - causing dead tops or tree mortality.

Direct, Indirect and Cumulative Effects to Forest Health and Productivity

Outfitter and guide use on the Petersburg Ranger District is not expected to effect forest health and productivity in any of the alternatives. Impacts are approximately the same for both alternatives.

Karst and Cave Resources

Affected Environment – Existing Condition of Karst and Cave Resources

An inventory of many of the karst areas has been completed for the Petersburg Ranger District and it has been determined that the district has a limited but significant cave and karst resource.

Most caves[22] on PRD are known as solution caves. They form from water dissolving soluble carbonate bedrock, usually limestone and marble. As rain falls in Southeast Alaska, it absorbs carbon dioxide from the atmosphere and soil to produce diluted carbonic acid. This carbonic acid migrates directly from the soil through small joints and fractures in the limestone. Because the limestone is very soluble, the carbonic acid dissolves it and over time creates caverns or caves. Many times the surface above the cave collapses and sink holes develop. Areas where these collapse features are particularly numerous are said to display karst topography[23].

[22] A *cave* is any naturally occurring void, cavity, recess, or system of interconnected passages which occurs beneath the surface of the earth or within a cliff or ledge. It is large enough to permit an individual to enter whether or not the entrance is naturally formed or human-made.

[23] *Karst topography* is an irregular limestone region with sinkholes, collapse channels, underground streams, caves, and caverns.

Carbonate bedrock is less common on the PRD than on other areas of the Forest. Therefore, where karst and caves have formed, the specialized habitats and features create unique opportunities.

Limestone caves have the potential for unique and fragile interior mineral formations. These formations are called speleothems and can take the form of white strawlike structures known as soda straws, hanging curtains of stone, circular pompoms, or soft gelatinous white material known as moon milk.

Another type of cave found on the PRD is the littoral cave. Littoral caves are sea caves usually found on shores and formed by wave action.

Direct, Indirect and Cumulative Effects on Karst and Cave Resources

Outfitter and guide use on PRD is not expected to affect the ecological or geological processes that create the karst landforms. Likewise, outfitter and guide use of caves will be regulated and little damage is anticipated for all alternatives.

Recreation and Tourism

Affected Environment – Existing Condition

Recreation

The Petersburg Ranger District offers an impressive array of features, including muskeg, glaciers, offshore islands and bays, and abundant fish and wildlife populations. Forested mountains rising from the saltwater provide unique and remote coastal recreation opportunities. These experiences impart a feeling of vastness, wildness, and solitude and are enhanced by the small resident population and relative absence of development compared to most other national forests. There are, however, abundant opportunities for local, concentrated recreation use on the district.

Residents and non-residents alike can enjoy day-use activities, such as hiking, fishing, hunting, and scenery and wildlife-viewing on the national forest, just a short distance from Petersburg. Other activities such as the winter use of snowmobiles or the use of off-road vehicles and mountain bikes are steadily increasing on the district. The wheelchair-accessible, Blind River Rapids Trail is one of the most popular recreation sites on Mitkof Island. It offers visitors a chance for picnicking and also accesses the mouth of Blind Slough for excellent coho and king salmon fishing. A few miles south, the Blind Slough Recreation Area, Man Made Hole, and the Swan Observatory are also available for fishing and sightseeing. The Three Lakes Trail system contains miles of hiking trails, with fishing platforms, picnic tables, and rowboats at each of the lakes. The newly-constructed Adirondack-style shelter on an adjacent lake is also a convenient destination.

If visitors are seeking overnight accommodations, the Ohmer Creek Campground is open most of the year. Ohmer Creek offers fair to good trout and salmon fishing in late summer and fall. The Twin Creek Shelter, up the Twin Creek Road from Mitkof Highway, has a three-sided shelter with a stove that can also be used for overnight stays. In the winter months, the surrounding area offers some of the best skiing, snowshoeing, and snowmobiling that the National Forest on Mitkof Island has to offer.

Across the Wrangell Narrows from Petersburg lies the town of Kupreanof, with access to the Petersburg Mountain and Petersburg Lake Trails. The hike up Petersburg Mountain can be accomplished in a day, and gives visitors a challenging experience with a grand view. The Petersburg Lake Trail follows Petersburg Creek, which is popular with hikers (both guided and unguided), fishermen, boaters, and kayakers, and opens up to the Petersburg Creek-Duncan Salt Chuck Wilderness.

Also within the Petersburg Ranger District is the town of Kake, located on the northwest side of Kupreanof Island. It can be reached by the Alaska Marine ferry, boat, or floatplane. The north end of Kupreanof Island has an extensive road system, which makes available hiking trails and fishing spots on the National Forest.

Twenty Forest Service public recreation cabins are available for rental, and are scattered throughout the district, accessible to the towns of Petersburg, Kupreanof and Kake. They are located at remote lakes, streams, and on saltwater beaches, with some only accessible by floatplane. The cabins are semi-restricted to non-commercial use.

The marine setting is a predominant feature within the Tebenkof Bay and Kuiu Wildernesses, located on Kuiu Island about 50 miles west of Petersburg. Recreation users have a higher expectation of wildness and solitude in these areas. Those seeking a remote experience often fly to the areas to participate in hiking, fishing, hunting, and sightseeing, while traveling by kayak or boat. Visitors often seek the knowledge of commercial outfitters and guides for fishing and hunting in these areas.

Hunting (both guided and unguided) is the predominant recreation activity occurring along shorelines in the spring and fall during black bear and deer hunting seasons. Black bear hunting occurs mainly along the shoreline and for distances up streams, while deer hunting may occur anywhere inland. Residents and non-residents may also hunt for moose or mountain goat inland and in the alpine areas. Because the spring and fall hunts are in the shoulder seasons (rather than the peak summer season), the number of other non-hunting recreation users in spring and fall is less than during the summer season. Conflicts in certain areas of the district during the shoulder seasons have occurred, however, between some user groups.

Because of the remote and rugged nature of the Tongass, much of the forest requires good outdoor skills and/or specialized equipment for recreation. Many people do not have the skills or equipment but have the desire to try a particular activity or visit a remote area. For this reason, commercial outfitters and guides are important recreation partners with the Forest Service. They are able to provide access to the Tongass National Forest, where appropriate, for those people who cannot or do not desire to experience the area on their own. Commercial outfitters and guides often provide outdoor education and an appreciation of the natural environment. They are also required by their permits to follow the *Leave No Trace* principles[24], and limit group size in Wilderness. They can help

[24] For more information about Leave No Trace principles, visit: http://www.fs.fed.us/r10/outdoor_ethics/leave_no_trace/intro/lnt_principles_v2.shtml or the Leave No Trace website: http://www.geocities.com/yosemite/falls/9200/leave_no_trace.html

maintain different classes of recreation settings by distributing people into underused areas. Commercial providers of recreation activities base much of their marketing strategy on particular environmental settings and identified recreation places within those settings.

Commercial outfitters and guides operating on national forests are required to have a special use permit authorizing them to provide commercial services to the public. Commercial use is defined as any use of the National Forest for which a fee is charged by the outfitter or guide. Types of activities provided by outfitters and guides on the Petersburg Ranger District include big game hunting, freshwater fishing, remote setting nature tours and wildlife viewing, and camping. They also provide gear, boats, and access to the national forest.

Both residents and non-residents may use the services of outfitters and guides. However, non-residents use outfitters and guides more often because they lack the knowledge or necessary equipment. Residents express more concerns than non-residents that some areas are too crowded or will be too crowded in the near future. There is often a strong local interest in maintaining the status quo. Although difficult to predict, areas such as the Tebenkof Bay and Kuiu Wildernesses may see an increase in use as more people seek remote places for the sense of wildness and solitude.

There are reports of illegal outfitting and guiding (outfitters and guides without permits to operate on National Forest System lands), which does not show up in the actual commercial use data; however, this use is minor in relation to the overall amount of authorized commercial use.

Tourism

The Forest Service recognizes the importance of the tourism industry to the economy of Southeast Alaska. Much of the tourism use on the Petersburg Ranger District is associated with small cruise ships and ferries that travel southeast Alaska's Inside Passage. The majority of tourists experiences the area from the water, and may only go ashore in towns and communities.

Tourists, or non-resident recreation users, can be broadly categorized into two major groupings: the *independent visitor* and the *package visitor*. The independent visitor constitutes a small, but growing group. The independent visitor is one who arrives by ferry or airplane and engages in a variety of activities. They are able to spend more time in the communities and on the Forest than the package visitor. The independent visitor has itineraries that are planned mostly by themselves and may include the services of outfitters, guides, motels, and transportation services. Package visitors include cruise ship clients, and some who arrive by ferry or airplane. These visitors usually spend less time on the National Forest, and often follow pre-planned itineraries. This group uses the forest primarily as a scenic resource. Although excursions into the Forest are increasing, they are mainly oriented around boat and flight-seeing trips.

Direct and Indirect Effects to Recreation and Tourism

The effects of either alternative on the recreation and tourism experience are varied. While outfitters and guides may accommodate new users or visitors to Alaska, local users

may be adversely affected by perceived or realized overcrowding. This is especially likely at popular fishing, hiking, viewing or hunting areas near the shore of local island or mainland recreation places. Once inland, competition or crowding becomes less likely or evident.

Solitude and the Alaska wildland experience are important components of the recreation experience for both guided and unguided recreation users. Solitude is a social experience measured in terms of the expected number of groups encountered and the size of those groups. The opportunities for solitude for each alternative can be measured by the total commercial outfitter and guide allocation by season for each study area. Both alternatives offer the same opportunities for solitude with the exception of Study Areas 12A (Saginaw, Security, and Washington Bays) and 14 (Keku Strait, Port Camden) in Alternative 2 where allocated use to outfitters and guide is reduced in the fall and spring seasons (Table 2.3).

Concerns from black bear guides prompted the development of the Increased Solitude Alternative (Alternative 2). Black bear guiding activities are directly affected by the presence of other user groups, specifically in Study Areas 12A and 14. Black bear hunting occurs mainly along the shoreline and up streams, and any disturbance, whether from large or small groups, can be unfavorable. In both study areas the allocated use is still higher than or equal to the actual use for both alternatives. Other user groups, such as sightseeing and fishing outfitters and guides were also considered in Alternative 2, as a reduction in spring and fall allocations affects their commercial services as well.

Both alternatives allow outfitters and guides to continue to facilitate and accommodate resident and non-resident recreation users. In every study area on the district, except one, the actual use numbers are significantly lower than allocated numbers, allowing for the growth of the commercial outfitter and guide industry.

Cumulative Effects to Recreation and Tourism

Many of the cumulative effects were analyzed at the Forest Plan level when recreation and tourism levels and effects were determined. Given the programmatic nature of this planning document, it is not possible to predict site-specific changes that would occur under either alternative. Potential impacts to recreation places and recreation activities in other areas would be evaluated on a project-by-project basis and in accordance with the applicable Forest Plan standards and guidelines under all alternatives.

Recreation and tourism in Southeast Alaska and on the Tongass is influenced by a number of factors that are largely independent of forest management decisions. For example, factors affecting the current level of visitation to the region likely include the current economic downtrend. Tourism demand is difficult to predict with any precision and no attempt is made to quantify future demand in this analysis.

Socioeconomics

This EA is limited to the management and allocation of commercial guiding activities on the Petersburg Ranger District. The following discussion concentrates mainly on the socioeconomic aspects of recreation and tourism within this analysis area. For more

information on the overall socioeconomic conditions in Southeast Alaska, see the analysis completed for the Tongass Forest Plan Amendment EIS (USDA 2008b).

Affected Environment – Existing Conditions for Petersburg and Kake's Socioeconomics

Petersburg Community Profile

Petersburg is the largest community in the analysis area (population approximately 3,050) and a center for recreation use by both local residents and out-of-state tourists. Tourism is a significant contributor to the local economy during the summer months. Scheduled jet flights and air taxis are available at the Petersburg Airport. The Port of Petersburg has a variety of marine services such as fuel service, boat ramps, grids and hoist, professional marine repair and shipwright services and engine repair. Petersburg's harbors feature a total of 499 berths, 105 transient spaces and can accommodate vessels up to 140 feet. The Alaska State ferry system transports people and vehicles between several ports in Southeast Alaska, and Prince Rupert, British Columbia and Bellingham, Washington.

Since its beginning, Petersburg's economy has been based on commercial fishing and timber harvests. Petersburg currently is one of the top-ranking ports in the U.S. for the quality and value of fish landed. 469 residents hold commercial fishing permits. Several processors operate cold storage, canneries and custom packing services. Petersburg is the supply and service center for many area logging camps. Independent sportsmen and tourists utilize the local charter boats and lodges, but there is no deep water dock suitable for cruise ships (ACDED 2009, http://www.commerce.state.ak.us/dca/commdb/CF_BLOCK.cfm, accessed July 31, 2009).

Kake Community Profile

Kake is located on the northwest coast of Kupreanof Island, approximately 38 air miles from Petersburg. It was once a traditional Tlingit village, but is now home to a number of different cultures: Tsimshian, Haida, Yupik as well as some of the Lower 48 native cultures. The American Indian (Alaska Native) population accounts for about 75% of the community (http://www.kakealaska.com/AboutKake.html, accessed July 31, 2009). The village has a fishing, logging and subsistence lifestyle.

As of 2007 the Kake population was 519. The population has been experiencing a steady decline since the 2000 census. The decline is likely due to its economy being hard hit in 2003 when two of their major employers virtually eliminated their workforce. Kake is currently pursuing tourism income and opportunities, but has not experienced the increase in tourism that larger communities in the region have (ACDED 2009, http://www.commerce.state.ak.us/dca/commdb/CF_BLOCK.cfm, accessed July 31, 2009).

Importance of the Tongass National Forest in SE Alaska's Socioeconomics

The Tongass National Forest plays an important role in the formal and informal economies of Southeast Alaska. The formal economy includes those economic activities that are recorded in official statistics. The informal economy includes activities that are not typically recorded in official statistics. Elements of the informal economy include

subsistence activities, in-kind contributions, non-cash income, unpaid labor and labor exchanges, and care-giving to the young and old.

Importance of Recreation and Tourism in SE Alaska's Socioeconomics

Recreation and tourism are heavily represented in the economy of Southeast Alaska. Recreation and tourism-related activities are distributed over a number of standard economic sectors, mainly retail trade and services.

The largest and fastest growing element of recreation and tourism in Southeast Alaska is the cruise ship industry. One estimate places the total number of visitors that could come to Petersburg by cruise ship in 2009 at about 8,800 (Viking Travel 2009). Whether this expansion can continue, however, is open to question, and anecdotal evidence suggests that total tourism growth in Alaska may be slowing (Colt et al. 2002).

As stated in the 2008 Forest Plan FEIS, the number of visitors to Southeast Alaska has grown substantially since the early 1990s. Summer visitors to Southeast Alaska more than doubled between 1993 and 2006 (USDA 2008b, p. 3-511). Outfitter and guide data for the Tongass indicates a twenty-two percent increase from 2004 to 2005 in the number of clients served by outfitters and guides. In the Petersburg area, outfitter and guide use increased over 2004 actual use by 25 percent in 2005, 22 percent in 2006, nine percent in 2007. In 2008 outfitter and guide use decreased 6 percent from 2004.

Table 3.2. Actual use by study area from 2004 to 2008.

Study Area	Actual Use (RVDs)				
	2004	2005	2006	2007	2008
1	377	610	487	334	335
2	79	117	73	43	20
4	0	0	0	0	0
5	58	42	7	50	0
6	397	379	467	344	230
7	309	339	179	150	164
8	168	178	355	167	170
9	0	0	42	0	0
10	176	619	318	407	396
11	108	174	147	117	120
12A	366	479	554	678	396
12B	189	127	148	188	160
13	545	456	668	274	187
14	355	404	388	403	300
15	177	396	162	208	416

Study Area	Actual Use (RVDs)				
	2004	2005	2006	2007	2008
16	50	128	96	171	273
21	124	197	348	324	70
22	246	339	319	221	286
23	14	12	62	56	17
24	23	22	6	13	6
	3,761	**5,018**	**4,826**	**4,148**	**3,546**

The majority of clients who utilize Petersburg area outfitters and guides come from cruise/tour ships, are independent travelers, or part of a guided group such as the National Outdoor Leadership School (NOLS).

Out-year predictions of the outfitter and guide industry remain speculative. As the industry grows, it will be important to anticipate changes in the clientele or local conditions to continue prosperous growth. Southeast Alaska generally imparts a feeling of vastness, wildness, and solitude. Various management activities on the Forest might change how a person/visitor views this vastness, wildness, and solitude to the area. Continued growth of the outfitting and guiding industry in Southeast Alaska will not only depend upon management influences but on the success of the outfitters and guides to provide for the satisfaction of their guests and the ability to market their services effectively.

Direct and Indirect Effects to Petersburg's Socioeconomics

In Alternative 2 there may be less potential growth in the outfitter and guide industry in Study Areas 12A and 14 in the spring and fall seasons due to fewer allocated RVDs. In general, however, actual use is much lower than the proposed allocated use in both alternatives and as demonstrated in the Carrying Capacity Report for this project (Appendix A), the area has the capacity to accommodate more users on National Forest System lands.

Growth in outfitter and guide business does not guarantee business equity. Competition at popular locations may diminish the experience for some users or displace other guided or unguided users. Coordination within the industry may alleviate some of these problems. However, to maintain the integrity of the experience for users or to maintain viable businesses there may be some situations where limitations of the number of RVDs or the number of permits issued for either a particular location or activity may be considered.

For local residents, it is reasonable to assume the more commercial use allocated, the more potential there is for that use to negatively affect their experience. The total capacity allocated to commercial use across the district, however, far exceeds overall use. As such there should be very little difference in effects on local users for both alternatives.

The local economies of Petersburg and Kake would likely find advantages to the increase in outfitter and guiding activities as needed fuel, supplies, or goods are likely to be purchased in those communities.

Cumulative Effects to Petersburg's Socioeconomics

Cumulative effects of both alternatives in terms of increased employment and revenue on Petersburg and Kake's economies would likely be positive. The higher the alternative's allocation is to outfitters and guides, the more potential the alternative will have for cumulative growth in this sector.

However, another less tangible, but no less important, factor is the amenity values and recreation opportunities provided by the national forest. These values and opportunities are a major ingredient in the quality of life enjoyed by the residents of Southeast Alaska. This analysis centers around how commercially guided recreation fits within the context of non-commercial recreation and the area's natural character, which is highly valued by residents and non-residents alike. Growth in regional population and independent travelers who do not use outfitting and guiding services will continue to reduce the opportunities for experiencing solitude in certain areas.

Soils

Affected Environment – Existing Condition for Soils

Soil productivity is the inherent capacity of a soil to support the growth of specific plants or plant communities. It is critical to the forest because it affects the productivity of most other forest resources. Soil productivity is a product of soil quality and can be affected by on-site disturbances ranging from natural erosion and landslides to human-related disturbances, such as roads, boat ramps, recreation trails and picnic areas. Tree growth, wildlife and fish habitat, and recreation opportunities are all influenced by soil quality.

Soil productivity varies between soil types. In mineral soils most nutrients are produced and stored in the upper organic layers. Soil drainage, texture, depth, and site characteristics (including elevation, slope, and aspect) all determine the soil's productivity. The most productive soils, which generally support coniferous forest stands, are well drained to moderately well drained and moderately deep. They are found on floodplain terraces, moderately stable alluvial fans, hillslopes, mountain slopes, and uplifted beaches.

Most organic soils are found in non-forested and forested wetlands that support low-volume forest, scrub-shrub, peat lands and alpine meadow plant communities. Organic soils are not considered highly productive, in terms of timber stand volume, but they are productive in terms of species richness and biomass. Poorly to very poorly drained organic soils support a wide variety of plant communities with high biomass and species diversity, and they are home to many species of fish and wildlife.

Direct and Indirect Effects to Soils

Recreation management practices that tend to reduce soil productivity include construction of roads, trails and campgrounds. Loss of productivity is caused by removal of surface organic layers and disturbance of surface and subsurface layers. The recreation

activities proposed in the alternatives do not involve any construction or ground-disturbing activities and will not have an effect on soil productivity.

Some amount of soil disturbance is an unavoidable consequence of recreation use on the land due primarily to trampling. The level of disturbance varies with management practices and site characteristics. Soil Quality Standards (FSM 2554) address the potential of affecting soils from compaction, puddling, displacement, surface erosion, altered wetness, and damage by severe burning. Soil Quality Standards are national standards that set the limits on the amount of an activity area that can be in a disturbed soil condition. The Soil Quality Standards in the shoreline zone limit soil disturbance to 15 percent of the activity area. Any greater soil disturbance, exceeding the standards, constitutes significant impairment to the productivity of the land. The effects of soil disturbance are minimized through the implementation of Best Management Practices (FSH 2509.22) and mitigation measures provided in Table 2.2.

The effects of recreation use on soils are not well documented. However, the guided recreation uses proposed in the alternatives are not expected to have any significant direct or indirect effects on soils because of the relatively low impacts of the activities and the low levels of use spread across the analysis area.

Both alternatives would meet or exceed Forest Plan standards and guidelines. Recreation activities proposed in the alternatives might have minor effects depending on the amount and type of guided activity that actually occur and the soil type on which it would occur. These effects would be mitigated with Best Management Practices and protection measures listed in Table 2.2. Monitoring would indicate when recreation use approaches Soil Quality Standards. If adverse effects on the soil resource should be noticed, recreation use will be limited or restricted or the site will be hardened to prevent or mitigate adverse soil effects.

Cumulative Effects

Cumulative effects of the proposed actions on long-term soil productivity are directly related to the amount of soil disturbance that occurs through time and the amount of recovery that takes place in the soil system in that time. Since the alternatives do not propose any activities that cause soil disturbance, no cumulative effects are expected.

Minor soil disturbance, erosion, and the associated loss of productivity resulting from the proposed activities could occur from recreation use. Most effects of recreation would be relatively short term; they would last until disturbed sites recover with indigenous species sufficient to protect the soil surface and maintain soil productivity. Any necessary re-vegetation of disturbed sites, either through natural regeneration or by planting, would depend on the level of disturbance at each site.

Cumulatively, the level of soil disturbances from guided recreation use within each study area or recreation place is estimated to be far less than 1 percent of these areas. It would not exceed or approach the Soil Quality Standard of 15 percent of the area.

Subsistence

Affected Environment – Existing Condition for Subsistence

A number of the wildlife species on the PRD are important for subsistence, general hunting, or trapping. Sitka black-tailed deer, mountain goat, brown bear, black bear, moose, wolf, marten, river otter, and waterfowl (collectively) are all species with hunting and/or trapping seasons managed by the ADF&G. These species are also important for a variety of native and traditional uses that vary across the geographic area and cultural framework of Alaska.

Section 810 of ANILCA requires the analysis of the potential effects on subsistence uses of all actions on federal lands in Alaska. This analysis focuses on those food-related resources most likely to be affected by commercial outfitter and guide use.

Three factors related to subsistence uses are specifically identified by ANILCA: 1) resource distribution and abundance, 2) access to resources, and 3) competition for the use of resources. These factors are discussed in general terms in the following paragraphs.

Resource Distribution and Abundance

Southeast Alaska subsistence resources include terrestrial wildlife (including deer, moose, mountain goat, black and brown bear, furbearers, and small game), waterfowl (including ducks, geese, and seabirds), marine mammals (harbor seal), salmon, other finfish, marine invertebrates, plants, and firewood. The abundance and distribution of these resources appears to be stable or increasing on the Tongass as described in the 2008 Forest Plan. Marine mammals are inherent to the coast and are managed through regulations issued by NMFS and the USFWS.

Access to Subsistence Resources

Southeast Alaska is comprised of isolated islands unconnected by road systems; however, with the transportation means available (floatplanes, ferry systems, automobiles, boats), Southeast Alaska residents are very mobile in their subsistence resource use activities. Petersburg, the fourth largest community in Southeast Alaska, has documented their subsistence gathering from the southern tip of Prince of Wales Island to Yakutat, covering most of the islands in between (Kruse and Muth 1990, USDA 2008b). The majority of community use is on Mitkof Island, Kupreanof Island, and the mainland between Le Conte Bay and Thomas Bay. Road management recommendations that have the potential to affect access will be carried forward and analyzed during the District Access Travel Management process.

Competition for the Use of Resources

The Petersburg Ranger District contains large amounts of undeveloped land and includes extensive subsistence resources. These resources are not, however, distributed or used evenly across the district. Where the resources are confined to island groups or river systems and access is costly or nonexistent, use of the resources is low. Where the resource is abundant, and a community is present but access by other communities is costly, the resource tends to be used primarily by the community that resides in the area.

Where resources are abundant and access is available to local and other communities of Southeast Alaska, competition for resources may exist.

The improvement of access, as well as increased interest in non-consumptive uses, could increase the competition for the use of some resources in specific locations. However, an increase in competition may not be fully attributed to outfitter and guide use since uses by unguided forest users and general population growth in Southeast Alaska will also contribute to the competition for resources. Historically, allocations have not been fully utilized by guides in most locations, and the increases in allocations in either alternative from existing conditions would not necessarily result in increased use of any particular area important for subsistence users.

Of all subsistence species important to local residents, competition for resources with guided users is most likely to occur for species that are commonly targeted by hunting and fishing guides. Deer, mountain goat, black bear, and steelhead are the most likely subsistence resources that could be restricted through competition with guided users.

Competition does not seem to exist between federally qualified and non-federally qualified deer hunters. Few nonresidents hunt deer in Unit 3, and most hunters are local residents. Non-residents comprised just 3 percent and 2 percent respectively, of all Unit 3 deer hunters in 2004 and 2005. Deer populations are greater and seasons and bag limits more liberal in other nearby units, attracting most non-local hunters to those areas (ADFG 2007).

Competition exists between federally qualified and non-federally qualified goat hunters. This competition is managed by the State and Federal governments to prevent restrictions to subsistence users. Goat harvest numbers are reviewed annually and non-federally qualified goat hunters may be restricted to maintain subsistence opportunities.

Demand for black bears as a subsistence resource is thought to be low, and if implementation of either alternative in this project results in a restriction to subsistence users, permitting of guided bear hunting would need to be reviewed and adjusted to ensure that the needs of subsistence users are met. Allocations proportioned out by season at 10 percent in the spring, 15 percent in fall and 10 percent in winter are thought to address any issues. There is currently a moratorium on the number of outfitters and guide hunts for black bear at the 2007 levels on the Tongass National Forest (Cole 2008). Use at this time is within the existing limit. No new black bear hunting guide permits will be issued through this project.

Guided steelhead fishing is currently very limited within the project area, which has eliminated competition with most local subsistence users for this resource.

Direct, Indirect, and Cumulative Effects on Subsistence Resources

As demonstrated in the Carrying Capacity Report for this project, the area has the capacity to accommodate more users on National Forest System lands. An increase in outfitter and guide use could occur in both the alternatives presented in this analysis; however increasing the allocated use days will not necessarily result in an increase in permitted or used allocated use days by guides in general, or by hunting or fishing guides

in particular. The need to monitor effects of use on subsistence is important to its management.

The Forest Plan provides a comprehensive analysis of subsistence resources and potential effects, both Tongass-wide and for each rural community of Southeast Alaska. The Forest Plan determined that the primary subsistence resource likely to be significantly affected by Forest Plan actions was Sitka black-tailed deer. Therefore, deer are considered the "indicator" for potential subsistence resource consequences concerning the abundance and distribution of the resources (USDA 2008b, p. 3-428). Neither of the alternatives propose ground disturbing activities and none are anticipated to have a negative effect on deer habitat or any other subsistence resources.

Potential Impacts on Distribution and Abundance

No affect to the distribution and abundance of wildlife is anticipated. Of the wildlife species discussed, mountain goat and black bear appear to be the most sensitive species to human disturbance on land. Reportedly, these creatures temporarily abandon habitat as a result of road building, and other have been found to utilize less of their range due to construction noise and human disturbance (USDA 2008b, pp. 3-232 and 3-235). There are no ground disturbing activities proposed, and impacts to mountain goats and black bears are expected to be minimal.

Marine mammals can be harvested by Alaska Natives for traditional use. Outfitters and guides will not affect the long-term abundance and distribution of marine mammals.

Potential Impacts on Access

Neither of the alternatives will unduly result in a significant restriction to subsistence access. Instead, the expansion of outfitter and guide activities may facilitate access to subsistence resources. Recommendations for additional road closures, use designations, and road decommissioning were developed through the update of the Kake Road System RAP. While these road management objective recommendations have the potential to affect access, they were carried forward and analyzed during the District Access Travel Management process (USDA 2009a). Implementation of the road management objectives are dependent on the decisions made in the Petersburg District Access and Travel Management Plan Decision Notice and FONSI (USDA 2009b).

Potential Impacts Due To Competition

Competition for future subsistence resources is difficult to predict. The number of rural and urban hunters may increase in the foreseeable future. A continued use and increase in non-consumptive guided activities could contribute to the competition for resources.

Should undue competition between urban and rural residents become a problem for any subsistence resource, the Southeast Alaska Federal Subsistence Regional Advisory Council may recommend that the Federal Subsistence Board restrict sport or commercial competition for subsistence species. Additionally, the State Board of Game may also choose to intervene in order to protect the long-term health of wildlife populations.

ANILCA 810 Subsistence Determination

This project will not result in a significant possibility of a significant restriction on subsistence use of any subsistence resources because it will not affect abundance or

distribution of any subsistence resource, nor will it change access to or competition for those resources.

Wetlands

Affected Environment – Existing Condition for Wetlands

Wetlands are defined as:

> "…areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" {40 CFR 230.41 (a)(1)}.

According to the wetlands resource inventory database, approximately 842,896 acres or 44 percent of the PRD is inventoried as wetlands. The major types of wetlands occurring in the project area include: muskegs, estuaries, freshwater sedge meadows, forested wetlands, and freshwater streams. These wetlands were classified according to the Federal Interagency Committee for Wetland Delineation, 1989.

Executive Order 11990, as amended, requires Federal agencies exercising statutory authority and leadership over federal lands to avoid, to the extent possible, the long and short-term adverse impacts associated with the destruction or modification of wetlands.

Direct, Indirect, and Cumulative Effects to Wetlands

No outfitter or guide activities that result in long-term impacts (filling, dredging, etc.) to wetlands will be permitted under this document (USDA Forest Service Manual 2527.01-04). Therefore, none of the alternatives are expected to have an impact on wetlands within the project area.

Wilderness

On December 2, 1980 as a part of the enactment of Public Law 96-487, the Alaska National Interest Lands Conservation Act (ANILCA), Congress designated two Wilderness areas on the Petersburg Ranger District (Tebenkof Bay and the Petersburg Creek – Duncan Salt Chuck). On November 28, 1990, the President signed Public Law 101-626, the Tongass Timber Reform Act (TTRA). This act amended ANILCA in part, and designated an additional Wilderness on the Petersburg Ranger District, the Kuiu Wilderness area.

The National Wilderness Preservation Act of 1964 mandates that designated

> "wilderness areas …shall be administered for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness."

The Act prohibits commercial services within wilderness but allows for,

> "Commercial services …within the wilderness areas …to the extent necessary for activities which are proper for realizing the recreational or other wilderness purposes of the area."

Agency policy pertaining to the management of the wilderness is as stated in Forest Service Manual 2320 and Regional Supplements.

A component of the wilderness experience is a sense of solitude, and a feeling of risk and challenge associated with use of the wilderness. Increased use by outfitters and guides is likely to affect wilderness users several ways. The risk and challenge associated with the use of a wilderness may be diminished depending upon the number and types of encounters one may have. As most use of the wilderness is water-based, there is likely to be some loss of isolation along the perimeter since more persons come to see or visit these areas. Persons using the uplands will likely be less affected as this use is generally more arduous and infrequent.

In September 2007, the Forest Supervisor completed a Determination of Need for Commercial Services within Wilderness Areas on the Tongass National Forest. In this document, the Forest Supervisor determined that there is a need for commercial uses within wilderness areas on the Tongass National Forest. Subsequent decisions regarding the type, extent, amount, and location of commercial use for all wilderness areas on the Tongass are to be made on a wilderness-by-wilderness basis. A Determination of Need for Commercial Services has been completed for the three Wilderness Areas on the district (see Appendix B). The determinations of need are tiered to the Forest Plan.

Affected Environment – Existing Condition for Wilderness

Tebenkof Bay Wilderness

The 66,812 acre Tebenkof Bay Wilderness is on central Kuiu Island, north of the Kuiu Wilderness. The area is a complex system of bays, islets and coves that first attracted the Tlingit Indians to the bay long ago. Even the most remote beaches in the bay have had a human presence in the past. The land offered hunting, trapping, camping and gardening, and the water was rich with a variety of shellfish and saltwater and freshwater fish. In the mid-1900's, fox farm operations were abundant on the small islands, and today commercial fishing is an important way of life. Most of the time, it is a serene place, where the only sound in the distance is the call of a young sea otter or the blow of a humpback whale.

The area's main attractions are its: remoteness and solitude, protected waters in relation to the surrounding unprotected waters of lower Chatham Strait and the Pacific Ocean, terrestrial and marine wildlife, and subsistence value for the community of Kake.

In 2008 the Tebenkof Bay Wilderness had seven active permits.

Kuiu Wilderness

The 60,581 acre Kuiu Wilderness is on the south-central portion of Kuiu Island which is contained by two large bodies of water: Sumner Strait to the east and Chatham Strait to the west. The Tlingit Indians braved these waters and sought protection in the deep bays that now make up the Kuiu Wilderness. The remoteness of this wilderness, coupled with the challenge and risk of travel by water or land, offers excellent opportunities for solitude. Kuiu Island has a high density of black bears, which visitors are more likely to encounter than a human.

There were three active permits in the Kuiu Wilderness in 2008.

Petersburg Creek – Duncan Salt Chuck Wilderness

The 46,849 acre wilderness is composed of two major sections: the Petersburg Creek watershed, and the area surrounding the salt chuck at the head of Duncan Canal. The eastern border of the wilderness is about five miles west of the City of Petersburg. It abuts the small community of Kupreanof on the east. The western side of the wilderness can be reached by boating or flying to the Duncan Salt Chuck at the northern end of Duncan Canal. Petersburg Lake is in the central portion of the wilderness and can be reached by hiking or flying into the lake.

Petersburg Creek spills down a typical u-shaped glacier-cut basin with mountain peaks overlooking the valley. With the close proximity to the communities of Petersburg and Kupreanof, the mouth of the creek is enjoyed by residents of Petersburg, Kupreanof and visitors alike, for picnicking, fishing for salmon and steelhead, paddling and hiking. The Petersburg Lake Trail and the primitive Portage Mountain Loop trail allow access to two Forest Service public cabins. The Duncan Salt Chuck, a large, tidally influenced salt marsh, offers wonderful opportunities for bird watching, coho and trout fishing, hunting, and exploring.

In 2008, there were two outfitter/guides that operated in the Petersburg Creek – Duncan Salt Chuck Wilderness.

Direct and Indirect Effects on Wilderness

The Forest Service is directed to manage wilderness areas in such as manner as will preserve wilderness character (Wilderness Act of 1964). Commercial recreation use in wilderness could affect wilderness character, including the qualities of untrammeled, natural, undeveloped, and solitude or primitive and unconfined recreation.

Cumulative Effects on Wilderness

Untrammeled – *Wilderness is essentially unhindered and free from modern human control or manipulation.*

There have been very few, if any, actions that manipulate plants, animals, pathogens, soil, water, or fire, within these three wilderness areas. An exception has been the removal of very small populations of non-native plants at old fur farm sites in Tebenkof Bay.

The wilderness has been managed over the years to allow natural processes to operate freely and that is expected to continue.

Undeveloped – *Wilderness retains its primeval character and influence, and is essentially without permanent improvement or modern human occupation.*

There have been few outfitters and guides that use base camps and when they have, there has not been any structures built for camp use. Outfitters and guides are required to have an annual operation plan and a camp plan if using a camp. The Forest Service has worked closely with outfitters and guides with the development of the camp plans to incorporate *Leave No Trace* techniques[25] to minimize impacts.

There can be use by cruise ships in the waters nearby the two wilderness areas on Kuiu Island. These highly developed boats with many luxuries, and the boat's lights and sounds, can influence the impression of the wilderness being undeveloped. Even though the use is taking place off of the wilderness, the waterways can intertwine with the National Forest in a way that allows this use to appear to be within the wilderness area.

In general, outfitter and guide activities and operations in these three wilderness areas do not have a negative effect on the undeveloped character of the wilderness.

Natural – *Ecological systems are substantially free from effects of modern civilization.*

The goal is for the trend for the effects of outfitter and guide activities on plant, animal, pathogen, physical, and biophysical resources to be stable or decreasing. At this time there have been no studies showing otherwise. The natural characteristics of the wilderness have had effects from modern civilization upon them, such as introduction of non-native plant species, but this change has not been shown to be linked to outfitter and guide activities. Past timber harvest activities have also affected the natural characteristics, but again are not from outfitter and guide activities.

The current number of outfitters and the types of uses in PRD wilderness areas are not having a negative effect on the natural conditions in the wilderness.

Opportunities for solitude or primitive and unconfined recreation – *Wilderness provides outstanding opportunities for solitude or primitive and unconfined recreation.*

The goal is for a trend that is stable or improving for: remoteness from sights and sounds of people inside and outside wilderness; number of facilities that decrease self-reliant recreation; number of trails and level of trail classes; and amount of management restrictions on visitor behavior. Due to the remoteness of these two wilderness areas, solitude is an especially valuable characteristic and the goal is to preserve the opportunity.

While floatplanes are allowed on lakes through enabling legislation (ANILCA), permitting guides to conduct this activity does allow a higher level of motorized activity and could contribute to a loss of solitude in these areas. As long as these activities are low

[25] For more information about Leave No Trace principles, visit:http://www.fs.fed.us/r10/outdoor_ethics/leave_no_trace/intro/lnt_principles_v2.shtml or the Leave No Trace website: http://www.geocities.com/yosemite/falls/9200/leave_no_trace.html

levels of use, day-use and temporary in nature, they would not be expected to significantly impact the natural, untrammeled and undeveloped qualities already present.

There is potential for permit requests for commercial use in the Tebenkof Bay and Kuiu Wilderness areas by operators using small or medium-sized cruise ships. It was not evaluated in the 2009 commercial services needs assessment since this is not an existing use nor has there been a demand. If this type of use is requested in the future, it would be a significant change in the type of use occurring and the wilderness areas' needs assessment would be revisited (Forest Service Handbook 2709.11, 41.53e).

The number of outfitters and guides who have used the Petersburg Creek – Duncan Salt Chuck Wilderness area between 2002 and 2008 has ranged from one to three. The RVDs have ranged from two to 10.

The number of outfitters and guides who have used the Tebenkof Bay and the Kuiu Wilderness areas between 2002 and 2008 has ranged from seven to 13. RVDs have increased over the past five years from 15 to 29.

Wildlife

Affected Environment – Existing Condition for Wildlife

Threatened and Endangered Species

Federally listed threatened and endangered species are formally listed by the U.S. Fish and Wildlife Service (USFWS) or National Marine Fisheries Service (NMFS) under authority of the Endangered Species Act (ESA) of 1973, as amended. Endangered species are those listed in the Federal Register as being in danger of extinction throughout all or a significant portion of its range [ESA Section 3(6)]. Threatened species are those likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range [ESA Section 3(20)].

The humpback whale and Stellar sea lion are federally listed wildlife species within the boundary of the Tongass National Forest. Humpback whales are commonly observed in the waters adjacent to the project area. No critical habitat for these species has been designated on the PRD.

Sensitive Species

Sensitive species are those identified by the Regional Forester for which population viability is a concern on National Forest System (NFS) lands within the region. The goal of the Forest Service Sensitive Species Program (FSM 2670) is to ensure that species numbers and population distribution are adequate so that no federal listing will be required and no extirpation will occur on NFS land.

The Queen Charlotte/Northern goshawk, Kittlitz's murrelet, and black oystercatcher are known or suspected to occur within the analysis area. The Aleutian tern is not known on the Tongass National Forest outside of the Yakutat area. This project does not propose to change or alter any habitat. Forest Plan provides standards and guidelines to maintain nesting habitat and general direction for sensitive species and seabird rookeries and shorebirds. This project is not expected to disturb sensitive species especially during nesting season. If a disturbance occurs it is expected to be infrequent and very short in

duration, therefore no impacts are expected for these species as a result of the activities associated with the project.

Management Indicator Species

Management Indicator Species (MIS) are species whose population changes are believed to indicate the effects of management activities (36 CFR 219.19(a)(1), 1982). MIS are also used to predict the likely response of other species with similar habitat requirements. NFMA regulations of 1982 require the selection of MIS during development of forest plans (36 CFR 219.19(a), 1982) with clearly stated rationale.

Terrestrial MIS species or their habitat found on the PRD include: Alexander's Archipelago wolf, American marten, bald eagle, black bear, brown bear, brown creeper, hairy woodpecker, mountain goat, red-breasted sapsucker, red squirrel, river otter, Sitka black-tailed deer, and Vancouver Canada goose.

The Forest coordinates with the Alaska Department of Fish and Game (ADF&G), other state agencies, the National Marine Fisheries Service (NMFS), the U.S. Fish and Wildlife Service (USFWS), tribal governments, and other cooperators and partners during the planning of activities that may affect these wildlife species.

Migratory Birds

Neotropical migratory birds (referred to as migratory birds) are far ranging species that require a diversity of habitats for foraging, breeding, and wintering. Many of the 298 species of birds that occur regularly in Alaska are migratory, some coming from as far away as Central or South America to their nesting, breeding, and rearing grounds in Alaska. Approximately 236 species of birds occur regularly in Southeast Alaska. Roughly, 160 species are known or suspected to breed in Southeast Alaska (Armstrong 2000). Migratory birds that occur but generally only winter in or migrate through Southeast Alaska include species of seabirds, gulls, and shorebirds.

The Migratory Bird Treaty Act of 1918 (amended in 1936 and 1972) prohibits the taking of migratory birds, unless authorized by the Secretary of Interior. Executive Order 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds) provides for the conservation of migratory birds and their habitats and requires the evaluation of the effects of Federal actions on migratory birds, with an emphasis on species of concern. Federal agencies are required to support the intent of the migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the extent practicable, adverse impacts on migratory birds when conducting agency actions.

A Memorandum of Understanding (MOU) was entered into between the Forest Service and the FWS to strengthen migratory bird conservation (USDA 2008c). The MOU identifies strategies that promote conservation and avoid or minimize adverse impacts on migratory birds through enhanced collaboration between the Forest Service and FWS and in coordination with State, Tribal, and local governments. The MOU requires that the Forest Service, within the NEPA process, evaluate the effects of agency actions on migratory birds, focusing first on species of management concern along with their priority habitat and key risk factors. This includes, to the extent practicable, evaluating and balancing the long-term benefits of projects against short and long-term adverse

effects, pursuing opportunities to restore or enhance habitat, and considering approaches to identify and minimize take.

Endemics

The Federal Endangered Species Act (ESA) defines endemic as "a species native and confined to a certain region; having comparatively restricted distribution." Forest Plan standards and guidelines for endemic mammals direct the Forest to "maintain habitat to support viable populations and improve knowledge of habitat relationships of rare or endemic terrestrial mammals that may represent unique populations with restricted ranges."

Due to its historic isolation, ecological complexity and narrow distribution between the Pacific Ocean and coastal mountain ranges the North Pacific Coast is considered a hot spot of endemism (Cook and McDonald 2001, Cook et al. 2006). Southeast Alaska has been found to be a region with an especially high degree of endemism in its small mammal fauna, principally because of the combination of its archipelago geography and its highly dynamic glacial history (Demboski et al. 1998). In "Conservation of highly fragmented systems: The north temperate Alexander Archipelago" (Cook et al. 2006) Kupreanof Island rated relatively low as was not considered a real hotspot in comparison to other southeast islands.

The following species are known to occur in the project area: Northern flying squirrel, red squirrel, American beaver, meadow jumping mouse, Long-tailed Vole, meadow vole, southern red-backed vole, muskrat, Keen's mouse, northern bog lemming, brown rat, North American porcupine, common shrew, dusky shrew, water shrew, silver-haired bats, Keen's myotis, little brown bat, long-legged myotis, mountain lion, wolf, black bear, wolverine, northern river otter, American marten, northwestern pine marten, ermine, American mink, American moose, elk, Sitka black-tailed deer, mountain goat, Canada lynx (mainland only), Northwestern salamander, long-toed salamander, rough-skinned newt, boreal toad, Pacific treefrog, and Columbia spotted frogs (MacDonald and Cook 2000, MacDonald and Cook 2007).

Direct, Indirect and Cumulative Effects for Wildlife

Impacts to wildlife resources are anticipated to be minimal. There are areas of concern that have been listed in this EA in Chapter 2 in the Mitigation section that will be monitored. However, it is hard to determine if future impacts will increase from outfitter and guide use or general population growth.

Threatened and Endangered Species

Forest Service authorized and approved that concentrated human activities will be located as far from known marine mammal haul outs and known concentration areas as feasible to meet the Alaska Coastal Management Program (ACMP) consistency requirements and Marine Mammal Protection Act (MMPA).

Direct effects to humpback whales and Steller sea lions can result from disturbances that adversely affect individuals or their young. Indirect and cumulative effects can result if activities alter potential foraging habitat or reduce limiting habitats or long-term productivity.

Humpback whales and Steller sea lions may inhabit shallow coastal areas where they are increasingly exposed to human activity. Recovery plans for the humpback whale (NMFS 1991) and the Steller sea lion (NMFS 2008) identified potential human induced factors that could affect individual reproductive success, alter survival, and/or limit the availability of habitat for these species. National Forest management activities that could have an effect on habitats or populations of these species generally fall into the categories of direct disturbance, acoustic disturbance and habitat degradation (including effects to prey species). These effects are generally associated with the development and use of marine access facilities (MAFs), increased marine activities, and activities that alter stream habitats that flow into marine environments.

Marine transits between the islands and mainland will occur. However, neither the humpback whale nor the Stellar sea lion are known to congregate in any known marine transit areas where outfitters and guides may be operating with a Forest Service permit. Existing permitted levels have not exceeded allowable RVDs with the exception of one study area[26].

Though humpback whales and the eastern Distinct Population Segment of Steller sea lions regularly occur in the waters surrounding the Tongass National Forest, the proposed activities are limited to the land-based permitting system, and would not affect stream or marine environments, so would result in a negligible level of influence and "no effect" to these species as well. No critical habitat for these species has been designated on the PRD. The MMPA (NMFS 2004) and 50 CFR 224 establish measures to protect marine mammals. These measures includes prohibiting the harassment, hunting, capturing, or killing of any marine mammal and prohibiting approaching within 100 yards of a humpback whale.

Outfitters and guides are expected to abide by the Marine Mammal Viewing Guidelines (http://www.fakr.noaa.gov/protectedresources/mmv/guide.htm) and are required by the Outfitter and Guide special use permit (see Chapter 2 for specific mitigation).

Sensitive Species

Neither of the alternatives will impact the habitat of sensitive species. Direct effects can result from disturbances that adversely affect individuals or their young. Indirect and cumulative effects to bird species can result if activities alter potential nesting or foraging habitat or reduce limiting habitats or long-term productivity. Concentrated human activities will be located at distances minimizing disturbance at known nesting sites or areas of concentration. Both alternatives include mitigation to minimize disturbance. A determination of 'no impact' was made for all sensitive species.

Management Indicator Species

Direct effects to MIS can result from disturbances that adversely affect individuals or their young. Indirect and cumulative effects can result if activities alter potential breeding

[26] In Study Area 6 (Kupreanof Island – North Shore), 90 percent of the use is from one outfitter and guide in one recreation place. The recreation place is a camp located on a harden site and it does not experience many impacts. There is some other use the study area, but the users do not conflict.

or foraging habitat or reduce limiting habitats or long term productivity. Neither of the alternatives (proposed allocations) will have an impact to habitat for these species. Neither of the alternatives propose to alter potential breeding or foraging habitats or reduce liming habitats or long-term productivity. Concentrated human activities will be located at distances minimizing disturbance at known nesting and denning sites, or areas of concentration. Habitat descriptions and other factors looked at with regard to MIS are displayed in the Wildlife Specialist Report for this project.

Migratory Birds

Direct effects to migratory birds can result from disturbances that adversely affect individuals or young including removing active bird nests or causing nest abandonment. Indirect effects result from a reduction in perching, foraging, and nesting habitat.

The magnitude of effects would vary depending on the bird species, the amount of habitat altered and the season in which disturbance would occur. Migratory birds would be most susceptible to impacts from activities occurring in suitable nesting habitat during the nesting/fledging period; which generally begins in mid-April and ends about mid-July when young birds have fledged. Productive old growth habitat can be used to assess changes in nesting habitat because most migratory bird species use hemlock/spruce/cedar forest as primary or secondary habitats. Effects to birds can be minimized by altering the season of activity, retaining snags, maintaining the integrity of breeding sites, considering key winter and migration areas, and minimizing pollution or detrimental alteration of habitats (USDA 2008c). The FWS recommends times to avoid vegetation clearing (USDI FWS 2006d) (see Appendix II of Fish and Wildlife Resource Report). Neither of the alternatives will have an impact to migratory bird habitat. Neither of the alternatives propose to alter potential breeding or foraging habitats or limit habitat or long-term productivity.

Endemics

Direct effects to endemic species can result from disturbances that adversely affect individuals or their young. Indirect and cumulative effects can result if activities alter potential breeding or foraging habitat or reduce limiting habitats or long-term productivity. Neither of the alternatives will have an impact to habitat for these species. Neither of the alternatives proposes to alter potential breeding or foraging habitats or limit habitat or long-term productivity. Concentrated human activities will be located at distances minimizing disturbance at known nesting and denning sites, or areas of concentration.

Findings and Disclosures

Several of the laws and executive orders listed in Chapter 1 require project specific findings or other disclosures. These are included here, and will be included in the Decision Notice and FONSI (Findings of No Significant Impacts). They apply to all alternatives considered in detail in this EA.

National Forest Management Act

All project alternatives fully comply with the Forest Plan. This project incorporates all applicable Forest Plan Forest-wide Standards and Guidelines and management area

prescriptions as they apply to the project area, and complies with Forest Plan goals and objectives. All required interagency review and coordination has been accomplished; new or revised measures resulting from this review have been incorporated.

The Forest Plan complies with all resource integration and management requirements of 36 CFR 219 (219.14 through 219.27). Application of Forest Plan direction for the Petersburg Outfitter and Guide Management Plan ensures compliance at the project level.

Endangered Species Act

Neither of the alternatives is anticipated to have a direct, indirect or cumulative effect on any threatened or endangered species in or outside the project area. A Biological Evaluation was completed to analyze threatened, endangered, and petitioned species and is included in Appendix C. Consultation with the FWS and NMFS is contained within that record.

Bald Eagle Protection Act

The Bald Eagle Protection Act provides for special management for the bald eagle. Bald eagle habitat will be managed in accordance with the Interagency Agreement established with USFWS to maintain habitat to support the long-term nesting, perching, and winter roosting habitat capability for bald eagles. Coordinate with USFWS for bald eagle habitat management.

Bald eagle nests are protected under agreement with the U.S. Fish and Wildlife Service. Currently, a 330-foot radius protective habitat management zone surrounds all identified bald eagle nest trees (USDI 2002) and a 1,000 foot beach buffer is maintained along the shoreline (USDA 2008a, p. 3-239). Activities of outfitters and guides in all alternatives will be restricted away from nest trees through the permitting process.

National Historic Preservation Act

The Forest Service program for compliance with the National Historic Preservation Act (NHPA) includes locating, inventorying and evaluating the National Register of Historic Places eligibility of historic and archeological sites that may be directly or indirectly affected by scheduled activities. Regulations (36 CFR 800) implementing Section 106 of the NHPA require Federal agencies to consider the effects of their actions on sites that are determined eligible for inclusion in or are listed in the National Register of Historic Places (termed "historic properties"). The Alaska Region of the USDA Forest Service, the Alaska State Historic Preservation Officer, and the Advisory Council on Historic Preservation have established streamlined Section 106 review guidelines and stipulations in a Programmatic Agreement (Agreement # 02MU-111001-076, 2002).

Outfitter and guide use is not expected to result in the discovery or disturbance of human remains. However, if human remains are discovered, they will fall under the inadvertent discovery provisions of the Native American Graves Protection and Repatriation Act (NAGPRA).

Outfitter and guide use is also not expected to restrict Alaska Native access to traditional religious or spiritual sites that are protected under the American Indian Religious Freedom Act (AIRFA) and Forest Service standards and guidelines for the treatment of sacred sites (USDA 2008a, p. 4-19).

A Forest Service archeologist has reviewed this project and made a determination of No Historic Properties Affected in the area of potential effect for the proposed project. Obligations using modified procedures of the 36 CFR 800 review process, as defined in the Programmatic Agreement, have been met.

Federal Cave Resource Protection Act

No known significant caves in the project area will be directly or indirectly affected by project activities. Forest Plan Karst and Caves Standards and Guidelines are applied to areas known or suspected to contain karst resources.

Alaska National Interest Lands Conservation Act (ANILCA)

An ANILCA Section 810 and 811 subsistence evaluation was conducted. The evaluation can be found in the Subsistence section of this chapter. No significant restrictions on the abundance and distribution of, access to, or competition for subsistence resources in the project area are anticipated. (See the Subsistence Report in the project record.)

Clean Water Act

The decision based on this analysis will not authorize any ground disturbance, or use of or discharge of potential pollutants. Implementation will not result in non-point or point sources of pollution; therefore the project is fully compliant with the Clean Water Act.

Clean Air Act

No emissions are anticipated from the implementation of any project alternative; therefore the State of Alaska ambient air quality standards (18 AAC 50) will not be exceeded.

Coastal Zone Management Act and the Alaska Coastal Zone Management Program (ACMP)

Under the Coastal Zone Management Act (CZMA) of 1972, activities conducted by the Forest Service that affect the coastal zone must be consistent, to the maximum extent practicable, with the enforceable policies of the Alaska Coastal Management Program (ACMP). In addition, activities affecting the coastal zone that are conducted by non-federal parties under a Forest Service permit must also be consistent with the ACMP. The types of Forest Service permits that the State of Alaska and the Forest Service have agreed are likely to affect the coastal zone—and therefore require ACMP consistency review of the permit applicant's proposal—are listed in section 302 of the Memorandum of Understanding (MOU) between the State and the Forest Service on CZMA/ACMP consistency reviews. The types of special use permits that will be authorized for issuance by this decision are not among those listed in the MOU as requiring ACMP review.

Magnuson-Stevens Fishery Conservation Act of 1996

Essential Fish Habitat (EFH) is the water and substrate necessary for fish spawning, breeding, feeding, or growth to maturity. The marine EFH in Alaska includes estuarine and marine areas from tidally submerged habitat to the 200-mile exclusive economic zone (EEZ). The freshwater EFH includes streams, rivers, lakes, ponds, wetlands and other bodies of water currently and historically accessible to salmon. EFH for Pacific salmon recognizes six critical life history stages: (1) spawning and incubation of eggs, (2) juvenile rearing, (3) winter and summer rearing during freshwater residency, (4) juvenile

migration between freshwater and estuarine rearing habitats, (5) marine residency of immature and maturing adults, and (6) adult spawning migration. Habitat requirements within these periods can differ significantly and any modification of the habitat within these periods can adversely affect EFH.

Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act states that all federal agencies must consult the National Marine Fisheries Service (NMFS) for actions or proposed actions that may adversely affect Essential Fish Habitat. The Act promotes the protection of EFH through review, assessment, and mitigation of activities that may adversely affect these habitats. On August 25, 2000 the Forest Service, Alaska Region, and NMFS came to an agreement on how consultation will be accomplished in Alaska.

This EA satisfies the consultation requirements by providing a description and assessment of EFH in the project area, a description of the Petersburg Outfitter and Guide Management Plan and its potential impacts on these habitats, and a description of the mitigation measures that would be implemented to protect these habitats. The formal consultation will start when NMFS receives a copy of the Environmental Assessment with the EFH Assessment. NMFS may then respond in writing as to whether it concurs with the findings of the assessment or make conservation recommendations. The USDA Forest Service must respond to any recommendations made by NMFS within 30 days. For specific information on the location and the alternatives under consideration, please refer to the EA.

The project area includes the entire land area of the Petersburg Ranger District of the Tongass National Forest. The streams and lakes within the project area support a variety of anadromous and resident fish species. Anadromous species that spawn in freshwater streams or lakes in the project area include: pink salmon (*Oncorhynchus gorbuscha*), chum salmon (O. *keta*), sockeye salmon, (O. *nerka*), coho salmon (*O. kisutch*), chinook salmon (*O. tshawytscha*), coastal cutthroat trout (*O. clarkii*), steelhead (rainbow) trout (*O. mykiss*), and Dolly Varden char (*Salvelinus malma*). The project area also supports resident populations coastal cutthroat trout (*O. clarki*), rainbow trout (*O. mykiss*), Dolly Varden char (*Salvelinus malma*), and non-game fish species including sculpin (*Cottus spp.*) and three-spined stickleback (*Gasterosteus aculeatus*).

The analysis area provides a large amount of EFH and includes all of the freshwaters on the Petersburg Ranger District. Since no Marine Access Facilities would be utilized for the proposed project, marine habitats would not be affected and are therefore not analyzed with this project.

This EA would authorize a variety of outfitted and guided activities around the Petersburg Ranger District. The Aquatic Resources section of this EA specifically examines the effects of outfitted and guided sport fishing, which is the primary activity that would affect EFH, on the aquatic resources around the district.

The Forest Service believes that the Petersburg Outfitter and Guide Management Plan EA may adversely affect EFH. However, the effects, as described in the EA, will be minimal or virtually immeasurable. By implementing Forest Plan Standards and Guidelines, Best Management Practices, and Outfitter and Guide permit stipulations, effects to EFH should not occur. Additional impacts to EFH may occur only from unforeseen events.

Executive Order 11593

Executive Order 11593 directs federal agencies to provide leadership in preserving, restoring and maintaining the historic and cultural environment of the Nation. The work accomplished in accordance with Section 106 of the National Historic Preservation Act for the Petersburg Outfitter and Guide Management Plan meets the intent of this Executive Order.

Executive Order 11988

No outfitter and guide permits will be issued that seek to permanently develop floodplains within the project area; therefore the project is fully compliant with Executive Order 11988.

Executive Order 11990

No outfitter or guide activities that result in short-term (disturbance to wetland vegetation and soil drainage) or long-term impacts (filling, dredging, etc.) to wetlands will be permitted under this document (USDA Forest Service Manual 2527.01-04).

Environmental Justice/Civil Rights

A specific consideration of equity and fairness in resource decision-making is encompassed in the issue of environmental justice and civil rights. As required by law and Title XI, all federal actions will consider potentially disproportionate effects on minority or low-income communities. Disproportional potential impacts or changes to low-income or minority communities in the project area due to the proposed action should be considered. Where possible, measures should be taken to avoid impact to these communities or mitigate the adverse effects.

The issuance of outfitter and guide permits will have no disproportionate effect on minority or low-income populations.

Executive Order 12962

With the application of Forest Plan Standards and Guidelines, including those for riparian areas, no significant adverse effects to freshwater or marine resources will occur.

Effects on Prime Farm Land, Range Land, and Forest Land

No prime farm land or range land exists in the project area. Forest land will maintain its productivity.

Threatened, Endangered and Sensitive Species (TES)

A biological evaluation was completed for TES plants. A biological evaluation/assessment was completed for TES vertebrates. Consultation with the U.S. Fish and Wildlife Service and National Marine Fisheries Service to review the effects of this project on threatened, endangered, and proposed species is not required. ESA does not require consultation for “no effect” determinations. Standards and guidelines have been applied as needed to ensure that any listed threatened or endangered species or its habitat will not be adversely affected. The Forest Plan contains standards and guidelines for each designated sensitive species, and these are incorporated into the project as applicable.

Wild and Scenic Rivers Act

Neither alternative will affect rivers eligible for Wild and Scenic River designation.

Swan Observatory on Mitkof Island, Petersburg Ranger District. Photograph by Carin Christensen.

3 Environmental Considerations

Columbine flower, Tongass National Forest. Photograph by Ashley Atkinson.