Scenery – Direct and Indirect Effects

The project area is primarily seen by forest visitors when traveling between Hollis, Klawock and Hydaburg. Views are generally within foreground and middle ground distance zones.

Extensive timber harvest occurred in the Harris River watershed during the 1960's. As a result of past harvest abundant second-growth regeneration blankets most of the seen landscape. Little if any variation in form, line, color and texture is visibly evident. This continuous vegetative cover with little or no pattern results in a landscape with minimal visual features.

Due to the continuous vegetative blanket of second young in the project area, changes to the visual appearance of the landscape are easily noticed and perceived as disturbances. Disturbances that exist in the project area are generally not of size or shape to completely dominate the viewshed. In some cases changes are noticeable but resemble natural patterns as a result of aging second growth. As a result of past harvest within the project area the Existing Visual Condition (EVC) is a Type IV.

Cumulative Effects of the No Action Alternative on Scenery

Cumulatively the disturbances caused by past management activities are well within the percent allowable disturbance thresholds for change in each LUD designation.

Alternative 2: Proposed Action

The preferred action alternative would have a long-term benefit to channel function, aquatic and riparian habitat, and reductions in turbidity and channel diversions. This alternative would store or decommission approximately 9 miles of road, improve 3.5 miles of road, improve 4 miles of trail, complete 5 miles of instream rehabilitation, and improve about 100 acres of riparian and floodplain.

Vegetation—Direct and Indirect Effects

The goal of riparian thinning within priority treatment areas is to accelerate the growth and development (successional pathways) of young-growth riparian areas toward their climax successional stage. These characteristics typically include large and widely spaced trees having a diverse understory of shrubs. There are 439 acres of thinned riparian area in the Harris River Watershed.

Preliminary monitoring results from early thinning treatments and stand modeling elsewhere on the Tongass indicate that the direct effects of thinning can reduce the time it takes to attain desired future riparian stand conditions by as much as 50 percent (Twelvemile Arm Landscape Assessment, 2006).

Several management objectives have been identified to address thinning treatments in riparian areas. Since the riparian area is an important ecological corridor for a number of ecosystem functions, we have broken the objectives into three broad groups of indirect effects: Stream morphology/fish habitat; nutrient cycling/energy regimes; and wildlife

habitat. Treatment prescriptions are tailored to each objective and site condition. However, loss of individual trees to windthrow in some areas may negate growth gained. Prescriptions will have to carefully consider windthrow potential.

- Stream morphology/fish habitat: Provide for pool development and bank and channel stability by encouraging the development of short and long-term vegetative cover along stream corridor, including incorporation of large, wood (boles, tree roots, branches) within the stream channel.
- Nutrient cycling/energy regimes: Provide for short and long-term vegetation characteristics that promote shading and litter fall from streamside vegetation (Gregory et al. 1991, Koning 1999).
- Wildlife habitat: Provide for the development of large and small trees and snags that provide perching sites, cavities, and retain travel routes.

Raw material needed for instream large woody structures would be gathered from the Harris River, Maybeso Creek, and Indian Creek drainages. A portion of the standing trees would either be cut or pushed over to retain the stabilizing root mass. Approximately 1,500 logs and an adequate number of rootwads would need to be collected to complete all proposed instream wood projects. Selection of trees would be dispersed and limited to existing road systems to minimize the impacts of harvest and commercial equipment. Log selection would first target down or standing dead trees, old decked logs, and non-merchantable young growth and old growth trees suitable for instream rehabilitation needs and project budget requirements. When all other selection options have been exhausted, old growth non-merchantable and commercial grade trees would then be selected.

Individual tree selections would be made by an interdiciplinary team to assure feasiblity, BMP's are followed, and impacts are minimized. Coniferous hemlock is the primary target species, but spruce and cedar may also selected. The target size are trees 14 inch to 24 inch diameter second growth trees and up to 36 inch old growth. The target resulting log length desired would be 40 to 60 feet. Additional ground disturbance is expected when trees are pushed over. This additional impact is not expected to be significant for the reason that the percentage of trees where this technique would be achievable will be small. Mulching and possible seeding and planting of disturbed ground in these areas would minimize soil mobilization. Logs may be collected from the following road systems: 2025000, 2026000, 2026200, 2024200, 2024300, and 2016000. Logs would be collected within 100 feet of the road using shovel heavy equipment and choker. Road and ground disturbance associated with heavy equipment and log extraction is expected to be dispersed and short-term. Mitigation measures may include mulching, seeding, road surface reconditioning, and inboard ditch clearing.

As available, additional logs will be collected from adjacent instream project areas that meet riparian and wildlife thinning goals.

Cumulative Effects of the Proposed Action on Vegetation

Aproximately 20 acres of riparian thinning would occur to treat stands not yet treated or needing additional thinning treatment. These treatments would accelerate rate of stand

succession to the desired old growth condition. As the young growth stands mature and trees begin to fall through natural processes, indirect effects to the floodplain and instream habitats would occur.

Rehabilitation activities would work to restore the watershed to an ecologically functioning condition. As part of this rehabilitation, selected locations would be altered by management activities either to restore degraded riparian and instream conditions or to provide benefits to wildlife. The proposed action would restore riparian habitat along Harris River and its tributaries to pre-timber harvest conditions and enhance fish and riparian wildlife habitat. Up to 1,500 trees collected from the watershed or from other adjacent watersheds, with or without rootwads would have the immediate effect of changing the appearance of the area in and around stream segments selected for instream rehabilitation and the areas from which the trees would be collected. There would be changes in the general appearance of the project locations until the vegetation grows back in areas of intense activity. The trees would provide the materials necessary for project activities. Temporary access points to instream worksites would remove trees and understory vegetation from the project area. Trees removed in access construction can be used for project materials in stream restoration. Effects of access point construction on vegetation would be low. In summary, the project would have the net effect of improving riparian conditions by thinning young growth trees and improving streambank conditions. Instream project access construction would temporarily displace vegetation until native vegetation grows back.

Forest management treatment access is not expected to be significantly impacted by road storage and decommission treatments. Roads proposed for storage and decommission are either already partially stored, vegetatively closed, or are physically cut off from drivable road systems. These roads may be failing to the point of requiring major rebuild and pose risk of fill or stream crossing failure. These roads may also exhibit potential for slope soil loss and/or stream sedimentation through mass movement initiation. Roads that access stands available for commercial thinning treatment under 5 years, depending on site conditions, would be defered from storage or decommission treatments until forest stand treatments are completed. Road storage treatments intend to preserve and protect road reaches from fill failure, fluvial erosion, and damaging vegetation. Road reaches that are failing or that have a high risk of failure would be stabilized by removing unstable road fill and require future entry efforts to rebuild removed sections of road. These roads are in compliance with the current Craig and Thorne Bay Ranger District Access Travel Management (ATM) plan.

Water Quality—Direct and Indirect Effects

Increased turbidity is a direct effect of instream restoration. Heavy equipment, mobilization of large wood or rock have the ability to affect the levels of instream turbidity. A monitoring effort following restoration of Fubar Creek showed increased levels of turbidity for a short duration (Prussian 2007). The increased levels of turbidity were a function of instream activity and coincided with rainfall events. Fubar Creek Restoration included heavy equipment instream and the input and mobilization of large wood and rock, and stream gravels. Turbidity levels during this work exceeded 250

NTU's for a short duration of time. The initial flush of turbidity occurred following the diversion of water back into the lower channel following three weeks of instream work. This increase in turbidity exceeded 250 NTU's; however, the turbidity decreased by 87 percent in three hours and 96 percent in 15 hours. The time needed to attain background condition was not available from the Fubar Creek Restoration monitoring project.

State Water Quality Standards and Forest Service BMP's suggest attaining levels of turbidity within 5 NTU's above background condition within 48 hours of instream work. The potential for attaining this standard is largely dependent upon the flushing of the turbidity and the mobilization of the streambed and the type of instream work prescribed. If a large rainfall event occurs, water levels will rise, streambed materials may become mobilized, and turbidity will flush out of the system in a short period of time. However, if the water levels remain low, turbidity may occur in small levels over a longer period of time. In all cases, sediment fences, silt fencing, and careful attention to details of work will reduce the impacts of turbidity and improve the condition of surface waters for fish and other aquatic animals.

Cumulative Effects of the Proposed Action on Water Quality

Adverse effects to water quality would be primarily short-term and would occur during construction.

Road decommissioning and stormproofing treatments would significantly reduce the potential for catastrophic fill and stream crossing failure on non-maintained roads in the Harris River. Sediment otherwise at high risk of mobilization to streams systems in the basin would be safely stockpiled and contoured with the landscape. Road drainage improvement would correct fish/road passage issues and restore hydrologic connectivity such that streams would flow freely without diversion across roads and storm flow timing and duration may reflect conditions that are more natural.

Sediment supply would be expected to continue to fluctuate in response to residual and new bank and hillslope disturbances. Rehabilitation efforts would attempt to stabilize stream channels by introducing stable instream structures that redirect water energy to produce work (expend energy) that will scour, store sediment or move them through the system, and provide for stream bank protection. In response to natural processes and rehabilitation efforts, sediment transport capabilities would increase and sediment supply would decrease.

Large wood structures and increased bank stability would provide a more defined stream channel with greater lateral migration resistance, which directly decrease width-to-depth ratios in the short term. Analysis of previous restoration efforts suggests that width-to-depth ratios may be reduced by one-third or more in the year following structure installation (USDA Forest Service 1997). This immediate enhancement of channel morphology would foster recovery of riparian vegetation and improvement of stable riffle and pool development.

There would be no measurable long-term effects to water quality or water quantity as a result of the proposed action. Water quality and quantity would improve as erosion controls, road drainage improvements and storm proofing, and road cut and fillslope stabilization projects are completed throughout the watershed.

Fish and Aquatic Habitat—Direct and Indirect Effects

The increase in primary pools from instream rehabilitation activities would directly and indirectly benefit all species and life stages of fish by providing low water velocity resting habitat, bubble curtains, and depth that provide hiding cover from predators. In addition, the increase in pool habitat would indirectly increase foraging efficiency for juvenile and resident life stages of fish.

Instream and riparian rehabilitation directly affects the floodplain and wetted stream channel. Instream and riparian rehabilitation may include the use of heavy equipment and power tools to manipulate large wood, rock, and gravel in order to move or harvest raw materials, build or rebuild existing access routes, and construct instream habitat features.

One of the objectives of this project is to increase floodplain stability and increase large woody debris levels within side channels and on floodplains that would reduce the risk of adverse affects of channel avulsions and would indirectly accelerate the recovery of riparian vegetation in the long term.

Large wood structures and increased bank stability would provide a more defined stream channel with greater lateral migration resistance, which would indirectly decrease width-to-depth ratios in the short term. Analysis of previous restoration efforts suggests that width-to-depth ratios may be reduced by one-third or more in the year following structure installation (USDA Forest Service 1997). This immediate enhancement of channel morphology would foster recovery of riparian vegetation and improvement of stable riffle and pool development. Reduction of width-to-depth ratio and increased stream shade in the long term could also locally decrease water temperature and therefore provide additional cold water refuge in otherwise shallow homogeneous reaches.

The addition of large woody debris would dramatically increase channel complexity, protect riparian conifers, increase pool quality and retain nutrients. Benefits to adult and juvenile salmonids from the addition of large woody debris include the addition of cover, increased pool depths and retention of carcasses and other organics. Salmon carcasses may contribute anywhere between 20-30 percent of the nitrogen and phosphorus into a particular system (Bilby, 1993). The marine-derived nutrients associated with salmon carcass decomposition are now known to play a major role in the productivity of aquatic and riparian systems associated with anadromous fish watersheds in the Pacific Northwest (Cedarholm, 2000). The addition of large woody debris and the increased retention of these nutrients would indirectly affect all ecosystem aspects, ranging from stream microorganisms and benthic macro invertebrates, to top-level predators such as eagles and bear.

Implementation of this alternative would indirectly benefit both juvenile and adult salmonids by creating large lateral pools for rearing and resting during migrations and over-wintering.

Heavy equipment can disturb soil and potentially destabilize stream banks that can lead to surface erosion and bank failure. Heavy equipment also poses a risk of hazardous material exposure to the affected areas. Additionally, in order to access the floodplain

and channel, old roadbeds would be re-opened and new temporary surfaces created. Through project planning, protection of surfaces, reconditioning of banks, hazardous spill prevention and contingency planning, and other mitigating measures, physical and water quality impacts (see Water Quality section) would not be significant. Best Management Practices would be applied to protect resources.

Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act of 1996 (hereafter referred to in this section as "the Act") require consultation with the National Marine Fisheries Service on activities that may affect Essential Fish Habitat (EFH). EFH is defined as "those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity." EFH for Pacific salmon includes marine waters, intertidal habitats, and freshwater streams accessible to anadromous fish. Marine EFH for the salmon fisheries in Alaska includes all estuarine and marine areas utilized by Pacific salmon of Alaska origin, extending from the influence of tidewater and tidally submerged habitats to the limits of the U.S. exclusive economic zone. The Act promotes the protection of these habitats through review, assessment, and mitigation of activities that may adversely affect these habitats.

The EFH assessment follows the agreement dated August 25, 2000 between the National Marine Fisheries Service and the USDA Forest Service and includes: 1) a description of the Proposed Action; 2) an analysis of individual and cumulative effects of the action on Essential Fish Habitat (EFH), the managed species, and associated species such as major prey species, including affected life histories; 3) the USDA Forest Service's views regarding effects on EFH; and 4) a discussion of proposed mitigation, if applicable.

The Proposed Action and alternatives to the Proposed Action are described on pages 15-25. This report contains specific discussions of watershed restoration projects by alternative and its effects on the aquatic environment. This analysis assumes fish habitat would benefit by; riparian projects improving floodplain function, removing crossing structures, decommissioning roads, and placing LWD within the stream on Class I and II streams. The more crossings removed from these stream classes along with placement of LWD, the greater the long-term benefit. Short-term sediment inputs would be expected during structure removal or placement of LWD.

EFH in this analysis includes all stream segments and lakes where commercially fished salmon species occur during any period of the year. In essence, this includes all Class I stream and lake habitat on the Craig Ranger District. Anadromous species in the project area include coho, pink, and chum salmon, steelhead, cutthroat, and Dolly Varden char. These species spawn, incubate, and rear primarily in the lower stream reaches. The juvenile coho, steelhead, cutthroat, and Dolly Varden char feed predominantly on aquatic and terrestrial insects in freshwater. Juvenile chum and pink salmon feed in estuary and near shore habitats.

Potential effects of roads on EFH would be degraded water quality and altered physical stream habitats. Storing roads and removing culverts may cause small, localized reductions in water quality during implementation, but improve water quality thereafter. Degraded water quality results from increased water temperature or suspended sediment. Potential changes in physical habitat include filling pools with sediment and changing

substrate composition. Pools are important for rearing and over-wintering of juvenile coho and other fish. Higher sediment (fines) levels in the substrate can reduce survival of fish eggs and change the assemblages of aquatic insects used by fish for food.

The action alternative would not cause detectable effects (negative) on the managed fish species because Forest Plan direction and applicable Best Management Practices (BMPs) and Project Design Criteria (PDCs) would be applied during implementation of road closures, decommissioning, and maintenance activities and the scale of the project area is small compared to EFH as a whole. Forest Plan direction and BMPs were developed through interagency negotiation and provide state-of-the-art protection of fish habitat.

Occasionally, Forest Plan direction, PDCs, and BMPs are not fully implemented or are not fully effective. Thus, there is always some risk to EFH when management actions are taken. The risk of this restoration project is minimal. Stream crossing structures would be removed on stored or decommissioned roads, which would reduce their potential for failure during storms. This action would also remove structures that interfere with natural fish movement patterns. On non-decommissioned roads, efforts to restore fish passage through improperly installed stream culverts would continue. Thus, the action alternative would benefit salmon streams by storing or decommissioning roads, removing stream crossing structures, and placing LWD in streams.

Essential Fish Habitat (EFH) is designated by the Magnuson-Stevens Fishery Conservation and Management Act of 1996 as habitat that is currently or was historically available to pink salmon (*Oncorhynchus gorbuscha*), chum (*O. keta*), coho (*O. kisutch)*, sockeye (*O.nerka*) and chinook (*O. tshawytscha*) salmon (Federal Register 2006 Vol. 71, No. 232). All projects would occur within or adjacent to EFH.

Cumulative Effects of the Proposed Action on Fish and Aquatic Habitat

The rate of instream habitat recovery from historical impacts would increase as long-term floodplain and riparian area treatments increase floodplain roughness, stabilize banks, and ultimately provide a source of instream large woody debris. Instream rehabilitation treatments would provide an immediate source of large woody debris that would increase habitat complexity through pool formation and sediment sorting. These treatments, in conjunction with decreasing sediment supply (barring additional catastrophic road or hillslope failures), would continue to improve fish habitat by decreasing channel width and increasing channel depth.

Substrate characteristics – There would be measurable effects to substrate as a result of all projects. Sediment is expected to decrease as riparian projects improve floodplain function. Upland and road projects would disconnect or remove sediment sources to fish-bearing streams, and instream projects would create roughness and allow substrate sorting.

Large woody debris (LWD) within the channel and LWD source areas – There would be a measurable effect to large woody debris or large woody debris source areas due to the proposed action. Following Aquatic Habitat Management Handbook (FSH 2090.21) guidelines, LWD would be installed in various stream reaches throughout the watershed

currently lacking LWD.

Channel geometry – There would be no measurable impact to fisheries or aquatic organisms from peak flows capable of altering the channel geometry due to wildlife improvement projects. Channel geometry would be altered and improved during instream projects and as chronic sediments sources are disconnected over time by storing or decommissioning roads and removing corresponding cross drains.

Fish passage – There would be an effect to fish passage. As recommended in this document, up to 6 culverts on fish bearing streams would be restructured to allow fish species in all life stages access to historical habitat (Map 2, Table 2).

Forage species (aquatic and terrestrial invertebrates) – Forage for pink, chum, coho, sockeye, and chinook salmon would increase as habitat improvement projects create more complex habitat. Riparian vegetation would continue to provide sources of terrestrial invertebrates. Aquatic invertebrate populations would increase since there is a positive measurable effect to water quality or substrate.

Federal agency conclusions regarding the effects of the action on EFH:
The proposed action "*Will Not Adversely Effect"* (WNAE) EFH for pink, chum, coho, sockeye, or chinook salmon in Harris River or its tributaries.

Proposed mitigation (if applicable):
Without any mechanisms for an adverse affect on EFH, there are no mitigation measures proposed.

Wildlife—Direct and Indirect Effects

It is anticipated road storage/decommission, wildlife emphasis thinning, and riparian habitat improvements in the proposed action will improve habitat for a wide variety of native and desired non-native wildlife species and subspecies that are associated with old-growth forests within the Harris River watershed.

1. ESA Species
No direct, indirect, or cumulative impacts are expected to occur to any threatened, endangered, or proposed species from activities related to the Harris River Restoration Plan in the foreseeable future. No marine environment habitats are included in this project which has the potential to provide nesting, roosting, foraging, cover or dispersal habitat to the U.S. Fish and Wildlife Service (FWS) listed species: Stellars eider (*Polysticta stelleri*), spectacled eider (*Somateria fischeri*), Eskimo curlew (*Numenius borealis*), short-tailed albatross (*Phoebastria albatrus*) or northern sea otter (*Enhydra lutris kenyoni*).

ESA species managed by the National Marine Fisheries Service (NMFS) that may occur in Alaska or on the Tongass NF include the Blue whale (*Balaenoptera musculus*), North Pacific right whale (*Eubalaena japonica*), Fin whale (*Balaenoptera phyalus*), Sei whale (*Balaenaoptra borealis*), Sperm whale (*Physeter macrocephalus*), Bowhead whale

(*Balaena mysticetus*), Humpback whale (*Megaptera novaeangliae*), Steller sea lion (*Eumetopias jubatus*), snake River Sockeye Salmon (*Onchorhynchus nerka*).

2. Species of Concern

The Tongass National Forest cooperates with the FWS and NMRS to maintain a current list of Species of Concern. Species of Concern is an informal term, not defined in the federal Endangered Species Act (ESA). The term commonly refers to species that are declining or appear to be in need of concentrated conservation actions or insufficient information is available to indicate a need to list the species under the ESA.

The Prince of Wales flying squirrel (*Glaucomys sabrinus griseifrons*), spruce grouse (*Falcipennis canadensis*), marbled murrelet (*Brachyamphus marmoratus*), and harlequin duck (*Histrionicus histrionicus*) may potentially be present in the Project Area. However, these habitats are protected by existing Forest Plan Standards and Guidelines for riparian areas, therefore, effects due to habitat removal or modification are not anticipated. Various migratory bird species may also occur within the Project Area seasonally which are identified as Species of Concern in Southeast Alaska. There are no anticipated effects to these species.

Other Species of Concern which may be present on the Tongass NF or Project Area include the blue grouse (*Dendragopus obscurus*), Western screech owl (*Otis kennicottii*), black swift (*Cypseloides niger*), Vaux's swift (*Chaetura vauxi*), rufous hummingbird (*Selasphorus rufus*), red-breasted sapsucker (*Sphyrapicus ruber*), olive-sided flycatcher (*Contopus cooperi*), western wood-peewee (*Contopus sordidulus*), Hammond's flycatcher (*Empidonax hammondii*), Pacific-slope flycatcher (*Empidonax difficilis*), Steller's jay (*Cyanocitta stelleri*), northwestern crow (*corvus caurinus*), chestnut-backed chickadee (*Poecile rufescens*), American dipper (*Cinclus mexicanus*), varied thrush (*Ixoreus naevius*), Townsend's warbler (*Dendroica townsendi*), blackpoll warbler (*Dendroica striata*), MacGillivray's warbler (*Oporornis tolmiei*), golden-crowned sparrow (*Regulus satrapa*), golden-crowned kinglet (*Zonotrichia atricapilla*).

3. Sensitive Species

Sensitive species are those plant and animal species identified by the Regional Forester for which population viability is a concern on Forest lands. Either a significant current or predicted downward trend in population numbers, density, or habitat capability indicates a viable concern. The Alaska Region Sensitive Species List was last updated in June 2002.

The Queen Charlotte goshawk (*accipiter gentillis laingi*), osprey (*Pandion haliaetus*), Peale's peregrine falcon (*Falco peregrinus anatum*), and trumpeter swan (*Cygnus buccinator*) have potential to be present in the action area. The Forest Plan has specific protective standards and guidelines to address goshawk habitat and support viable populations of goshawks over the long-term. Additional protection of habitat elements important to these species is provided by Marten Habitat standards and guidelines. The project is not anticipated to increase the likelihood of any adverse effects on these species populations, nesting habitat, winter habitat, or result in a loss of species viability.

4. Management Indicator Species

Management Indicator Species (MIS) are vertebrate or invertebrate species whose response to land management activities can be used to predict the likely response of other species with similar habitat requirements (USDA Forest Service 1997).

Ten of 13 MIS species identified in the Tongass Forest Plan are known to occur on Prince of Wales Island and may be present within the Project Area. These species include the Alexander Archipelago wolf (*Canis lupus ligoni*), American marten (*Martes americana*), black bear (*Ursus americanus*), river otter (*Lutra canadensis*), Sitka black-tailed deer (*Odocoileus hemionus sitkensis*), bald eagle (*Haliaeetus leucocephalus*), brown creeper (*Certhia americana*), hairy woodpecker (*Picoides villosus*), red-breasted sapsucker (*Sphyrapicus ruber*), and Vancouver Canada goose (*Branta canadensis*). Most of the current MIS represent varying needs related to old-growth associated species.

The proposed projects short-term affects due to road closure, riparian thinning, floodplain roughening, and instream channel restoration are not anticipated to produce habitat reductions for MIS species within the Project Area.

Road storage or decommission in the Project Area will benefit MIS that are vulnerable to road density and habitat fragmentation. For example, scientific information from Southeast Alaska suggests that road densities of greater than 0.7 to 1 mile of open road per square mile can lead to mortality rates that cannot be sustained by wolf populations (Person 2001). Wildlife studies indicate that Sitka black-tailed deer, black bears, wolves, and marten abundance may be inversely correlated with road density.

Riparian thinning is expected to increase critical deer winter habitat within the Project Area. Restoration on winter habitat critical to deer in these forest stands would occur by opening the canopy and allowing sunlight to the forest floor, increasing understory diversity. By increasing forage potential and maintaining snow-shedding capabilities, local deer populations could remain stable even in heavy snow years.

The Proposed Action would not substantially impact threatened, endangered, proposed, or sensitive species, nor would it impact populations or viability of MIS, species of concern, or any other wildlife species or habitats. In summary, indirect effects include improved habitat quality over time and direct effects include temporary disturbance to individuals and habitat for MIS, species of concern, and migratory birds.

Effects to wildlife habitat are expected to be beneficial in the long-term. Habitat quality would increase as vegetation composition and structural diversity increases. The larger surface area rehabilitated will provide the greatest overall benefit to wildlife species.

Direct effects include temporary disturbance of wildlife that may currently use the area for traveling, feeding, resting, or reproduction such as black bear, and migratory birds. In the short-term, removal of vegetation may provide temporary disturbance and reduction of cover in foraging habitat for black bears. Following restoration efforts, increased riparian vegetation will enhance foraging habitat over time. Disturbance due to restoration work may cause some wildlife species to avoid the area during the periods of ongoing work. Restoration of the stream channel will improve salmon spawning habitat, which will benefit species that feed on salmon such as black bear, bald eagles, gulls, wolves, marten, and other birds and mammals.

Indirect effects of rehabilitation include increase in habitat quality, as diversity of composition and structure, and numbers of snags and downed logs increase over time. Individual tree selection and thinning, while leaving many of the dominant trees can reduce competition and enhance growth, promoting future nesting habitat and cover for a wide variety of bird species, as well as increased understory browse for deer.

Trees removed within the watershed or adjacent watersheds for instream rehabilitation may result in wildlife habitat loss due to vegetation removal and potential disturbance from construction equipment. Removal of trees may destroy existing nests, roosts, cover, or foraging areas.

Cumulative Effects of the Proposed Action on Wildlife

Cumulative effects of the analysis (reasonably foreseeable) were not calculated for State or private lands. The Project Area does not include Corporation lands. Portions of State lands located in the lower mainstem Harris River have been subdivided in recent years. Private landowners in these areas are clearing forested lands and building homes. The Forest Service Habitat Capability Model for MIS in 2052 predicts a reduction from current deer and wolf habitat capability for the Project Area due to existing young growth entering the canopy closure stage by 2050.

Subsistence—Direct and Indirect Effects

Subsistenc opportunities are very important to both Native and non-Native people on POW. Subsistence hunting, fishing, trapping, and gathering activities occur within the proposed action area. Effects on subsistence resources and uses important to rual communities are discussed in three caegories: abundance and distribution, access, and competition.

Abundance and Distribution

The Harris River Restoration Plan encompasses a geographical area that includes diverse subsistence resources such as deer, black bear, furbearers, small game, waterfowl, salmon, plants, and firewood throughout the proposed Project Area.

Community use of deer for subsistence purposes is well documented and studied for the rural communities of SE Alaska. Community use of specific geographic areas for obtaining deer is estimated by the WAAs used by the State of Alaska. The WAAs included in this Project Area have the following average deer harvest numbers: WAA 1317 (76 deer), WAA 1318 (328 deer) and WAA 1332 (67 deer).

With application of the riparian standards and guidelines on the Forest Plan, no significant adverse effects on salmon or trout species are anticipated. No significant adverse effects are anticipated for wildlife species, including deer.

Access

The road network on POW provides access to many areas that were previously unconnected and can affect subsistence both positively and negatively by providing access, dispersing hunting and fishing pressure, and creating the potential for increased competition. While road systems tend to bring more people into an area, roads also

provide subsistence hunters access to previously remote regions and provide a greater opportunity for subsistence harvest.

This project proposes to improve long-term access through road storm-proofing and road improvements. A slight decrease in road density may be important for wolf conservation regarding high mortality from trapping and hunting, where human access is an important consideration of the wolf conservation strategy.

Deer hunters will have access to most areas in the action area due to proposed long-term road improvements. Other subsistence hunters may prefer to hunt "non-motorized" areas to avoid other hunters and competition, therefore, the small amount of roads proposed for storage or decommissioning may improve their hunting experience or success. This analysis concludes that no significant restriction on any subsistence resource in the Project Area, from past, current and reasonably foreseeable future actions, will occur.

Overall, there would be no significant possibility of a significant restriction on subsistence use of deer, black bear, marten, wolf, otter or other wild foods as a result of the proposed action.

Competition

Subsistence resources are distributed across POW. The extensive road system on POW tends to disperse competition for available resources. No reduction in wildlife populations is expected due to this project or overall subsistence harvest of deer, bear, or wolves due to changes in competition. Overall long-term access into the area should be improved, due to road improvements which distributes subsistence users and decreases competition. There would be no significant possibility of a significant restriction on subsistence use of deer, black bear, marten, wolf, otter or other wild foods as a result of the proposed action.

Cumulative Effects of the Proposed Action on Subsistence

Cumulative effects on subsistence are similar to direct effects. The harvest of State of Alaska lands by the Alaska Department of Forestry is possible in the adjacent Indian Creek watershed. Three areas adjacent to Indian Creek have been identified for potential harvest in 2009. These potential sale areas are based on aerial photos. Access to these harvest areas may occur from the lower Harris River area. Portions of State lands located in the lower mainstem Harris River have been subdivided in recent years. Private landowners in these areas are clearing forested lands and building homes. Overall, use of the Harris Watershed by subsistence users is expected to remain moderate for the foreseeable future. From a cumulative standpoint, there would not be a significant possibility of a significant restriction on subsistence use as a result of this proposed rehabilitation work. Increased spawning and rearing habitat created by the proposed action stream channel rehabilitation projects are expected to provide a long-term, net positive benefit to the fisheries resources for the foreseeable future. Rehabilitation of the stream channel will improve salmon spawning habitat, which will benefit species that feed on salmon such as black bear and other mammals. Riparian thinning will improve habitat conditions for deer and black bear.

Recreation—Direct and Indirect Effects

Two established trails, converted from haul roads and directly related to environmental resource concerns, would be improved. Hydrologic connectivity would be restored and foot traffic across streams enhanced to meet drainage and safety concerns. In addition, trail/stream interaction would be improved with either trail bank hardening or relocation of trail. These treatments would be similar to other road improvement and bank stabilization treatment effects to the physical environment where heavy equipment is used. Additionally, unofficial Fubar Creek trail, a closed haul road contained in the riparian management area (RMA) of Fubar Creek, would be re-opened for access to instream rehabilitation treatment sites. Work completed of instream rehabilitation, would support a maintained District trail, including surfacing and stream crossing structures. This new trail would inform visitors about restoration work, its purpose and its effects.

Use is likely to increase in the Harris River resulting from improved trails, but the recreation and fisheries pressures are not expected to exceed standards for recreation use in the area. In addition, by converting the closed Fubar Creek Road to an improved trail, the fishing and recreation use may be spread out between the Harris River and Fubar Creek trails. Thus, the effect may be to have more users but fewer visitor contacts with each other.

The 2025100 road is a tributary road to the Twentymile Trail and is only accessible by pedestrians. This road is not part of the maintained Twentymile Trail and receives very little use. Stormproofing treatments of road 2025100 may deter some visitors from accessing clearcut areas and closed mining sites up in the steep sub-basin. Visitors accessing clearcut areas along the abandoned 2025100 would find multiple waterbars to traverse. Excavated fill material would be stockpiled along cutbank such as to minimize impediment of foot traffic, but users would still have to climb down and out of excavations at their own risk and with additional effort.

Renovations to Road 202500, which leads to the Twentymile Trailhead, would create a safer and more comfortable drive to the recration trailhead. A small use level increase to Twentymile Trail is likely due to the road improvements.

The One Duck Trail is located within the Harris River Restoration Project Area. This trail is slated for reconstruction in 2008-2009, depending on funding availability. One Duck Trail reconstruction would provide a safer ascent to the top of the Indian Creek watershed. Although these improvements would create better drainage, the reconstruction is not likely to have an effect on the Harris River, its tributaries or the restoration project.

The reconstruction or relocation of trails would limit use for the short period of reconstruction, but would eventually increase use in the area through the trail improvements. The increase in use is not likely to be significant because it would not exceed the standards determined by the land use designation and recreation opportunity spectrum (ROS) classifications. Furthermore, the trail restoration work would improve human health and safety conditions, coordinate with fish and wildlife initiatives and

enhance an existing recreation opportunity, keeping with Forest Plan direction (Forest Plan 4-36).

Improvements to the existing recreation sites, restoration of the Fubar Creek road, and closure of the 2025100 road fit with the planned level of recreation development for the Harris River area. The Forest Plan along with the draft Prince of Wales Recreation Management Plan identify the Harris River area as a chance to enhance existing, and provide additional, recreation opportunities to meet local and non-local visitor demands. Members of the public during meetings held in Prince of Wales communities, expressed interest in expanding recreation opportunities in the Harris River Valley. They also showed an interest in reconstructing the Harris River Trail and Trailhead to improve the existing opportunity. Based on the Forest Plan direction demonstrated by the LUD and ROS classification and the encouragement of local stakeholders, it is unlikely that the actions associated with the Harris River Restoration Project would have significant cumulative effects on the recreation resources of the area.

Increased traffic, dust, noise, smell, visual distraction, water turbidity, construction equipment, and safety concerns associated with stream rehabilitation activities could have short-term direct effects on recreation users. The improvement of two established trails would improve foot traffic across streams would be enhanced to meet drainage and safety concerns. Bank hardening and/or trail relocation would improve trail/stream interactions. Designating the Fubar Creek Trail from the decommissioned 2024050 (south) road would provide a maintained trail through Fubar Creek to the Harris River mainstem. This new trail would inform visitors about rehabilitation work, its purpose and effects. A direct effect would be the increased emphasis on educating the public through interpretation.

Machinery operating within the river channel, along roads to be placed into storage, and chainsaw thinning activities within riparian areas could cause short-term indirect effects to recreationists. Unexpected loud noises, smells and even the sight of large machinery have the potential to spook an animal causing them to rear up and run away. An indirect effect of stream restoration is the potential for the temporary displacement of recreational users to other drainages on the island during implementation of the rehabilitation projects. An indirect effect of stream restoration is the potential for an increase in salmon populations that would potentially attract more people and bears to the area than there are now. By reopening the Fubar Creek trail, the fishing and recreation use may be spread out between the Harris River and Fubar Creek trails.

Cumulative Effects of the Proposed Action on Recreation

The rehabilitation projects would create the short-term direct effects of increased construction equipment in the watershed, noise and smells from machinery along roads proposed for storage, trail improvements, and for instream rehabilitation work. These effects combined with the short-term effects described above would directly affect recreational users who access the project area. Upon completion of all these projects, these effects would subside.

Developed recreation improvement projects are planned for the One Duck Trail in 2008-2009. Improvement to the Harris River Trail and Twenty Mile Trail are part of this analysis. This project has the potential to displace some trail users during construction. This displacement of recreational users may increase pressure on trails in other areas on

the island. The long-term effects of the rehabilitation projects include improved trail systems and new interpretation opportunities in the watershed.

Heritage—Direct and Indirect Effects

Consideration of the effects of the proposed project on heritage resources in the "area of potential effects" is a process defined by the National Historic Preservation Act (1966 as amended). The process consists of (1) defining the area of potential effects, (2) conducting a review of existing historic and archaeological information about the project area including the results of past heritage surveys, and through consultations with affected tribes and groups, (3) implementation of any additional fieldwork deemed necessary to assess potential effects, (4) development of recommendations based on the results of 1, 2, and 3, and (5) consultation with the State Historic Preservation Officer to achieve concurrence with recommendations regarding significance and effect. The Alaska Region of the Forest Service, the State Historic Preservation Officer (SHPO), and the Advisory Council on Historic Preservation Programmatic Agreement (Agreement # 02MU-111011-176) establishes the National Historic Preservation Act Section 106 review process for certain types of projects. For projects that are found to contain no historic properties within the area of potential effects, the Forest Service may authorize project clearance after completing and documenting the analysis process. Under the terms of the Programmatic Agreement completed reports are forwarded to the SHPO annually for programmatic review.

The Harris River Watershed Rehabilitation Project is a group of relatively small scale projects located in different parts of the watershed. The area of potential effects for heritage resources is considered to be only the area of direct effects for each project, rather than the watershed as a whole. The projects analyzed in this plan generally present little risk to historic properties, known or yet undiscovered. The cumulative and indirect effects are considered negligible.

Archaeological survey and research in the project area by the Forest Service has been very limited. Forest Archaeologist, Chris Rabich Campbell, conducted archaeological test excavations in 1984 at the site of the Maybeso Bridge crossing. Test pits on three recognized river terraces and survey of the modern floodplain and gravel bars did not result in recording of any cultural sites (Campbell 1984). Portions of the planned Klawock/Hollis Highway were surveyed in the early 1980s. In 2005 archaeological reconnaissance was conducted for the Fubar Creek Restoration Project (Hankins and Fifield 2006) and the Upper Harris River Partial Barrier (Carlson and Fifield 2006). No cultural resources were noted in any of these investigations. Two historic sites are documented in the project area.

Although there has undoubtedly been extensive use of the project area by Alaska Native people including the construction of shelters and camps, there are very few recorded archaeological sites in the area. This is attributable principally to two factors. Very little archaeological survey has been conducted in the assessment area. Mining and timber extraction were conducted prior to the enactment of cultural resource laws. Secondly, the industrial and residential activities related to mining and timber harvest in the watersheds of the project area affected the areas most likely to contain earlier sites. Modern

buildings were built on the sites where old camps once stood. Stream mouths attracted modern interests as they did in the past.

Cumulative Effects of the Proposed Action on Heritage

Classes of historic and archaeological sites (heritage resources) that might be expected to occur in the Harris River Project Area include (1) Native fishing structures (in stream) and associated camps (possibly in stream terraces), (2) remnants of historic trails represented by patterned blazes or trail tread, (3) historic mining roads, adits, and camps, and (4) historic logging roads, structures, and equipment.

Appendix C of the Region's Programmatic Agreement with SHPO and the Advisory Council (USDA FS 2002) stipulates certain classes of undertakings have little to no potential to affect historic properties because of their nature or size. The heritage specialist will determine if the undertaking meets the conditions of one or more of the following classes. The Specialist will determine the level of inspection, monitoring, or other identification necessary. The following examples are listed.

1. Activities in locations where previous natural or human disturbance has modified the landscape so extensively that the likelihood of finding a heritage resource is negligible. A field inspection may be needed to determine if the disturbance itself may be of historic importance. An example would be expansion of vertical quarries.
2. Heavy maintenance, reconstruction, or replacement of existing facilities in areas that have been previously inventoried to current standards, provided that the facility is either less than 50 years old or has been determined ineligible for listing in the National Register. The facility cannot be located within a National Historic District and such work must not affect any nearby historic properties. Examples may include buildings within administrative sites, recreation cabins, and facilities within developed recreation sites.
3. Watershed restoration activities that address road erosion and sedimentation with road decommissioning activities for roads less than 50 years old; such as removing culverts, decompacting road surfaces, recontouring road surfaces, waterbarring, stabilizing unstable fills, and mulching, seeding, and planting native vegetation as needed.
4. Road or trail closures accomplished with gates, barricades, berms, and/or waterbars.
5. Resource activities where minimal ground disturbance will occur and where no properties 50 years old or more are involved. This activity type may include timber stand improvement and precommercial thinning, single hazard tree removal, vegetative manipulation to create fire safety zones around structures, personal use wood permits, and noncommercial firewood cutting. These activities are limited to using powered or manual hand tools and heavy machinery is restricted to access that is already established. Slash burning, staging areas, and field camps are not included in this activity.

Many of the projects proposed in the Harris River Watershed Rehabilitation Project meet these criteria and may be cleared without additional fieldwork and review. Several projects would result in ground disturbance, which may require the Heritage Specialist to

make a determination of effect. The following table lists proposed projects and their status regarding Applicability of FS/SHPO/ACHP Programmatic Agreement (# 02MU-111001-076, Appendix C). **Projects for which the Programmatic Agreement does not apply will require project specific NHPA Section 106 analysis and concurrence prior to implementation.**

Table 5: Harris River Watershed Restoration Projects Applicability of FS/SHPO/ACHP Programmatic Agreement: Appendix C

Project Name	Project Type	Appendix C Applies
2000220 Road Storage	Road Storage	Yes
2024050 Trail Upgrade/Stream Rehabilitation	Instream – Hydrologic Connectivity/Stream Stabilization	No
2024060_0.048L Road Stormproofing	Remove culverts, road storage	Yes
2924080 Harris Peak Road Stormproofing	Remove culverts, road storage	Yes
Stormproofing	Remove culverts, road storage	Yes
924_25.94R State Road Stormproofing	Remove culverts, road storage	Yes
2024100 RR1 State Trail Improvement	Road Hydrologic Connectivity-Public Safety – install culverts	Yes
2024110 Hydrologic Connectivity Restoration	Install culverts – existing road	Yes
2024185 Road Stormproofing	Remove culverts, road storage	Yes
2025000 RR1 Hydrologic Connectivity Restoration	Install culverts – existing road	Yes
2025000 RR2 Trail and Stream Bank Stabilization	Install culverts	Yes
2025100 Road Stormproofing	Remove culverts - storage	Yes
2026000 & 20262000 Decom/Storage	Road storage and decommission	Yes
Tributary LWD Modifications and Enhancements	Instream placement of large woody debris	No
Fubar Creek Rehab II	Instream work – bank modification	Previously Cleared
Lower Harris River Mainstream LWD Structure-Bank Stabilization	Instream work – bank modification	No
Lower Harris River Mainstream LWD Structure-Bank Stabilization	Instream work – bank modification	No
Riparian Thinning and Floodplain Roughening	Riparian thinning	No

Scenery—Direct and Indirect Effects

This section will address visual effects relating to the implementation of the rehabilitation projects discussed in this document. Projects of particular concern to scenery resources in this document are thinning, trail upgrades and all management activities within the Scenic Viewshed Land Use Designation (LUD). Key management activities disclosed in this document that pose potential for change to scenery resources in the project area are:

- Riparian thinning in the upper Harris River
- Wildlife thinning in the lower Harris River
- Road Storage along Hydaburg Rd (#13)
- Trail upgrades in both the Scenic Viewshed and Old Growth LUDs.

The visual resources within and adjacent to the project area were analyzed using the Forest Service's Visual Management System (1979). The Region 10 Visual Management Handbook (1985), and the Tongass Land and Resource Management Plan of 1997, as amended, hereafter referred to as the "Forest Plan".

Key indicators used to determine effects to scenery are:

1. To what extent do management activities correspond to adopted visual quality objectives (VQOs) within the project area.
2. Cumulatively are thresholds for change exceeded in the project area as a result of past and proposed management activities.

Visual Priority Travel Routes and Use Areas

The Forest Plan includes the designation of Visual Priority Areas, such as Travel Routes and Use Areas (VPR's). There are nine Visual Priority Use Areas in the project boundary.

- Klawock Highway to Hydaburg Jct (FH#6)
- Hydaburg Jct to Hollis Highway (FH#6)
- Hydaburg Rd (#13)
- Hollis
- One Duck Trail
- Harris River Trail
- One Duck Recreation Site
- Harris River Campground
- One Duck Shelter

Visual Quality Objectives

Forest-wide scenery standards and guidelines include Visual Quality Objectives (VQO). These objectives are measurable goals used for the management of visual resources. Visual Quality Objectives vary by land use designation and apply to any activity (including thinning) that could affect the visual character of the landscape. There are four VQOs in the project area: Retention, Partial Retention, Modification and Maximum Modification.

The majority of the project area is within Timber Production and Modified Landscape Land Use Designation (LUD). The corresponding VQO for most of the project area including Upper and Lower Harris River project areas are Modification and Maximum Modification.

The foreground corridor along Highway FH 13 Hydaburg Rd is in Scenic Viewshed LUD. Retention is the VQO in this area. Retention is highly sensitive to visual change where activities must not be visually evident to the forest visitor. If exceeded during management activities Retention objective is to be accomplished within six months following project completion.

Proposed actions in the Scenic Viewshed LUD include:

- Road Storage #2000220
- Trail Upgrade /Stream Rehabilitation #2024050

Little to no visual change as a result of road storage is anticipated. Removal of culverts and construction of waterbars/cross road drains will not be visible from any VPR. Hand seeding along cut slope banks will improve the visual condition caused by past disturbance. This action will meet Retention VQO.

Trail upgrades are anticipated to be seen from VPR Hydaburg Highway #13. On a case-by-case basis the Forest Plan allows small areas of non-conforming developments within Scenic Viewshed LUDS. Treatment descriptions include installation of a trailhead, parking area, bulletin board, sign-in box, and trail map. Currently the trail is badly damaged and is interacting with natural processes causing resource damage. Further review to evaluate recreational, fisheries, and hydrologic needs will be completed prior to the development of a detailed plan of action. Construction material and design elements such as color, scale, texture and massing will be carefully analyzed prior to implementation to ensure a non-contrasting, natural appearance. Retention VQO will be met.

Proposed actions in the Modified Landscape and Timber Production LUDs include:

- Riparian thinning in the upper Harris River
- Wildlife thinning in the lower Harris River

Cumulative Effect the Proposed Action on Scenery

Both direct, and indirect effects caused by all proposed thinning activities in the project area described in this document will meet their corresponding Modification and Maximum Modification VQO's. Cumulatively the disturbances caused by past management activities as well as the proposed thinning activities are well within the percent allowable disturbance thresholds for change in each LUD designation.