

Appendix C

INDIVIDUAL ROADLESS AREA DESCRIPTION

ROADLESS AREA NAME: Redoubt (333)

ACRES (NFS): 74,570

BIOGEOGRAPHIC PROVINCE: West Baranof Island

ECOLOGICAL SECTION: Baranof-Chichagof Fjordlands

2003 WILDERNESS ATTRIBUTE RATING: 21

I. Overview and Description

(1) Location and Access: The area is located on the west side of Baranof Island, approximately half way between the north and south ends of the island. The South Baranof Wilderness borders the area to the south. The open Pacific Ocean and Sitka Sound border the area to the west and northwest, respectively. The community of Goddard also borders the area to the west. The Sitka Urban Roadless Area (#331) borders the area to the northeast. This roadless area includes a main section on Baranof Island and a secondary section comprised of numerous offshore islands. These islands range in size from bare rocks that hardly stick out of the ocean at high tide to larger islands, such as Gornoi Island. The city of Sitka, located approximately 5 miles north, is the closest larger-sized community to the area and is serviced by Alaska Marine Highway and regularly scheduled flights.

The primary form of access to the area is via saltwater, with most people arriving by boat from Sitka. There is also some floatplane access, especially on Redoubt Lake in the center of the area. There are a number of bays that provide sheltered anchorage for boats and several lakes accessible by floatplane. There are no places suitable for landing wheeled airplanes.

There is one National Forest System Trail within the area. The Salmon Lake-Redoubt Lake Trail, 5.9 miles in length, extends from the head of Silver Bay to the public recreation cabin at the northeast end of Redoubt Lake. Several non-National Forest System trails branch off the Salmon Lake-Redoubt Lake Trail and lead up Salmon Creek. One of these non-system trails leads to the Lucky Chance Mountain mining areas. Access into the interior is by foot or helicopter.

(2) History: This area has a long and varied history of use dating from Tlingit use in prehistoric and historic times to the present use by a variety of Alaska residents and visitors. Goldschmidt and Haas (1946) identified considerable historic use in this area. Identified sites included two former villages, a former camp, and two forts. Activities pursued in the area included hunting or trapping, salmon fishing, trolling for halibut or king salmon, and shellfishing.

Use of the area by Russian settlers began before 1800, and the Russian settlement, Ozerskoi Redoubt, was well established by 1818. Ozerskoi Redoubt was established to supply New Archangel (Sitka) with fish. The Russians constructed fish weirs and traps to obtain salmon returning to Lake Redutsky (Redoubt Lake). By 1842, the Ozerskoi Redoubt saltery had increased its production and was able to supply fish to other Russian American Company settlements as well. In addition to the saltery, by 1832 Ozerskoi Redoubt included two mills for grinding flour with storage facilities, a tannery, and a stockade. These activities were mostly located on non-National Forest System lands outside the roadless area and more associated with Goddard.

In addition to evidence of use by the Russian settlers, fisheries production and research, and other occupancies have occurred throughout the area. Remains of structures and other human cultural activity in varying degrees of deterioration can still be found. Timber harvest has occurred at the east end of Redoubt Lake, north of Salmon Lake, at the end of Deep Inlet, and at the mouth of a drainage feeding into Aleutkin Bay.

(3) Geography and Topography: The area is generally characterized by fingers of irregular, rugged mountains 2,000 to 4,400 feet in elevation with steep slopes. The area is deeply indented by Redoubt Lake and Deep Inlet. Numerous rocky crests and sharp ridges are found at higher elevations. Snow can be seen all year round on higher summits with a few cirque glaciers and small permanent ice fields in the eastern corner of the area. The shoreline is characterized by forested lowlands with a relatively gentle slope. Forested islands, rocky islands, and reefs dominate the coast along the north and west sides of the area.

Streams are generally short and flow directly to saltwater. One exception is the stream that empties into Redoubt Lake. Cascades are common and the area contains three named lakes (Irina, Redoubt, and Salmon). The largest lake and most dominant feature of the area is Redoubt Lake. Situated in the center of the area, 3,200-acre Redoubt Lake stretches approximately 9 miles and lies at an elevation of about 10 feet above sea level.

There are 290 miles of shoreline along saltwater. Approximately 11 percent of the area consists of alpine tundra, ice, snow, and rock. This includes 214 acres of alpine tundra, 386 acres of ice and snow, and 7,913 acres of rock. The area also includes 5,611 acres of islands located along the coastline, of which, 21 islands are larger than 50 acres. This area has 336 acres of freshwater lakes in addition to Redoubt Lake.

(4) Ecosystem:

(a) Classification: Biogeographic Province. The area is classified as being in the West Baranof Island Biogeographic Province. Topographically, Baranof Island is the most rugged of all the islands in Southeast Alaska. The southern half of this province is highly dissected by steep-sided fjords. The outer coast is dotted with hundreds of small islands. All forest plant associations except those in the Western red-cedar series and those found around large mainland rivers occur in this province.

Ecological Section/Subsection. The Redoubt Roadless Area is contained entirely within the Baranof-Chichagof Fjordlands Ecological Section (M247B). This area is represented by four ecological subsections (see table below). The Necker Bay Granitics Ecological Subsection (41% of the roadless area) is characterized by exposed rugged granite peaks with shallow unstable soils. Intense glacial scouring has created topographic features including long deep fjords, large lake basins, and hanging valleys. Due to shallow unstable soils, more than half of this area is alpine, rock, brush, or landslide, and forests can only grow at lower elevation. The Sitka Sound Complex Ecological Subsection (34% of the roadless area) is relatively low in elevation and there are no glaciers, although there are some permanent snowfields. Mixed conifer and hemlock-spruce forests dominate the lower elevations and shorelines, and forested wetlands of lodgepole pine and mixed conifer are abundant. The Outer Coast Wave-cut Terraces Ecological Subsection includes thousands of islands that line the western edge of Chichagof and Baranof Islands. Soils in this area are derived from bedrock, and vegetation is varied with grasses along the coastline and stunted Sitka spruce on the interior. Wetlands and lakes are common beyond the beachfront forests. The Central Baranof Metasediments Ecological Subsection has the tallest peaks, roughest terrain, and greatest extension of glaciers, icefields, and snowfields of all islands in Southeast Alaska (Nowacki et al., 2001).

Ecological Section	Ecological Subsection	Percent of Roadless Area
Baranof-Chichagof Fjordlands	Necker Bay Granitics	41%
	Sitka Sound Complex	34%
	Outer Coast Wave-cut Terraces	18%
	Central Baranof Metasediments	7%

(b) Soils: Shallow mineral soils with good drainage can be found on steeper slopes due to rapid loss of material by erosion and efficient rainwater runoff. Deep, well-drained soils commonly occur below the shallow soils on the gentler slopes where transported soil materials have collected. Poorly drained soils are found associated with low, relief and impermeable subsurface layers. Deep organic soils (muskegs) tend to form in locations with poor drainage. In riparian areas, soil zones tend to contain sand and gravels as a result of flood deposition.

Appendix C

(c) Vegetation: The proximity of this area to the open North Pacific Ocean and the unimpeded movement of storms into the area from the southwest results in a low freezing level and high snowfall total. As a result, tree line is at a low elevation and much of the vegetation of the steep watershed basins is alpine tundra. Conifer cover density varies widely even on low slopes near saltwater and is usually interspersed with muskeg and other lower forms of vegetation. Larger intertidal grass and associated meadows species are infrequent. The effects of wind and salt spray affect the character and, to some extent, the species on the west side of this unit.

The vegetation of this roadless area consists primarily of typical spruce-hemlock forests. Western hemlock-Sitka spruce dominate the overstory while the understory is composed of shrubs such as red huckleberry, rusty menziesia, and devil's club. The forest floor is covered with a mat of mosses, liverworts, and plants such as deerheart, bunchberry dogwood, single delight, and skunk cabbage. Streamside riparian vegetation is characterized by salmonberry, devil's club, alder, grasses, ferns, and currants.

Muskegs are abundant within this area, however due to their small size and association with forested sites, accurate acreage estimates are difficult and only 135 acres are mapped. These areas, dominated by sphagnum mosses, sedges, and shrubs of the heath family, are interspersed among low elevation timber stands where drainage is restricted. Trees within the muskegs are sparse and consist mainly of stunted hemlock, lodgepole pine, and Alaska-cedar.

At elevations generally above 2,000 feet, the plant communities (mapped as approximately 214 acres) are characterized by low shrubs, grasses, and sedges. Subalpine forests and meadows occur at the interface between the forested communities and the alpine tundra.

There are approximately 58,218 acres mapped as forestland, of which 32,788 acres or 56 percent are mapped as productive old-growth forest. Of the productive old growth, 8,133 acres or 25 percent are mapped as high-volume old-growth forest. The productive old growth includes about 915 acres of high-volume, coarse-canopy old growth. The area also includes 336 acres of second growth where beach harvest has occurred in the past.

(d) Fish Resources: The lakes and streams in this area support runs of coho, pink, chum, and sockeye salmon, steelhead and cutthroat trout, and Dolly Varden char. The Anadromous Waters Catalogue indicates that the major fish producers in the area are Salmon Creek and Lake, Redoubt Lake, and Kizhuchia Creek (ADF&G, 2000). Redoubt Lake is the major sockeye subsistence fishery for the nearby community of Sitka. Salmon Lake also produces sockeye taken for subsistence. Both lakes also produce substantial numbers of other salmon, trout and Dolly Varden char, and support targeted sport fisheries.

(e) Wildlife Resources: There are many varied wildlife resources in this roadless area. Generally, the area provides good habitat for Sitka black-tailed deer and brown bear. Furbearers such as mink, marten and river otter are also present on Baranof Island. Mountain goats inhabit Baranof Island, and may occur around Lake Diana in this roadless area. Moose, wolves, and black bear are not present on Baranof Island (MacDonald and Cook, 1999). Birds and waterfowl rearing and nesting areas are abundant in this area. Bald eagle habitat, including nesting and roosting trees, can be found along the shorelines.

(5) Management Direction and Current Uses: This roadless area was allocated to three different Land Use Designations (LUDs) in the 1997 Tongass Land and Resource Management Plan. These three LUDs are Modified Landscape, Old-growth Habitat, and Semi-Remote Recreation.

LUD	Acres
Modified Landscape	11,910
Old-growth Habitat	35,663
Semi-Remote Recreation	26,997

Approximately 16 percent of the roadless area was allocated to a development LUD that allows timber harvest and associated road construction (Modified Landscape). The Modified Landscape LUD is located throughout the center of the roadless area, north of Redoubt Lake.

Approximately 84 percent of this area was allocated to non-development LUDs (Old-growth Habitat, Semi-Remote Recreation). The Old-Growth LUD was assigned to approximately 48 percent of the roadless area. Approximately 36 percent of the roadless area was allocated to the Semi-Remote Recreation LUD. The Semi-Remote Recreation LUD is also located on the islands in the area.

There are a number of authorized special uses within the area. One use is an interagency agreement with the Alaska Department of Fish and Game (ADF&G) for fisheries management facilities at Salmon and Redoubt Lakes. A second use is a special use permit with the Northern Southeast Regional Aquaculture Association (NSRAA) for fish net pens in Deep Inlet. The Sitka Tribe of Alaska, NSRAA, ADF&G and the USDA Forest Service (Forest Service) just began an in-depth cooperative project to assess the Salmon Lake fisheries resources and harvest. The Forest Service has been working with various partners, including ADF&G and NSRAA, since the early 1980s to restore Redoubt Lake's sockeye salmon escapement to historical levels of over 50,000 adults annually. This has included operating an adult salmon weir, lake enrichment through fertilization, and limnological sampling to determine the enrichment effectiveness.

Recreational use of the area primarily consists of hunting, fishing, and enjoying the scenery. Use is scattered across the area, with the usual concentrations near lakes, streams, and shorelines. There are five public recreation cabins in the area: Seven Fathom Bay, Kanga Bay, Samsing Cove, Redoubt Lake, and Salmon Lake. There is one National Forest System Trail within the area, the Salmon Lake-Redoubt Lake Trail, as well as a couple of non-system trails that branch off the Salmon Lake-Redoubt Lake Trail and lead up Salmon Creek. The South Baranof Wilderness Area lies directly to the south of this roadless area. Subsistence use occurs in the area.

(6) Appearance (Apparent Naturalness): The area is unmodified except for the evidence of current and historic use of the area. Older beach (and lakeside) logging has occurred at the east end of Redoubt Lake, north of Salmon Lake, at the end of Deep Inlet, and at the mouth of a drainage feeding into Aleutkin Bay. This evidence of use, although locally noticeable, has a very low overall effect on the natural integrity of the area. Both the relative size of the developments and their shoreline location contribute to this low impact. Two areas of timber related developments extend along drainages into the area. The visual effects of these developments, located along Kizhuchia Creek and Camp Coogan Bay, are relatively localized as a result of the topographic screening provided by surrounding mountains.

(7) Surroundings (External Influences): The area is bordered by saltwater and the community of Goddard to the west. External influences from that side are primarily limited to the sights and sounds of motorized boats. The southern boundary adjoins the South Baranof Wilderness which could be considered a positive influence. The Sitka Urban Roadless Area borders the area to the northeast. Two areas of timber harvest and associated road systems extend along Kizhuchia Creek and Camp Coogan Bay into the area. The effects of these developments, located along Kizhuchia Creek and Camp Coogan Bay, are relatively localized as a result of the topographic screening provided by surrounding mountains.

Development on the non-National Forest System lands located immediately north is visible from some locations within the area. Non-National Forest System lands are located along the north shore of Silver Bay and around Green Lake. The Sitka Pulp Mill was formerly located on Silver Bay. Many of the mill structures have been removed and the city of Sitka is planning to reuse the site for industrial purposes. Activities on this site are visible from some locations in the area but are mainly screened by topography. The proximity of the city of Sitka also affects portions of this Roadless Area because of the visibility of the community itself, the relatively heavy use along the coast, and the jet noise from Sitka Airport.

(8) Attractions and Features of Special Interest: Redoubt Lake is the feature of greatest special interest in the Redoubt Roadless Area. This nine-mile-long lake, which sits at an elevation of 9 feet above sea level, was served in the past by a boat tramway that lifted and moved small boats the short distance from Redoubt Bay to the lake. The dilapidated tram was removed in the early 1990s for safety reasons. It has not been replaced. In addition, the natural features of the area, the scenery, and the opportunity to see wildlife are considered attractions. High quality fishing opportunities in the streams and lakes also provide attractions. There are five public recreation cabins in the area: Seven Fathom Bay, Kanga Bay, Samsing Cove, Redoubt Lake, and Salmon Lake. There is one

Appendix C

Forest System Trail within the area, the Salmon Lake-Redoubt Lake Trail, as well as a couple of non-system trails that lead up Salmon Creek. The South Baranof Wilderness Area lies directly to the south of this roadless area.

(9) **Differences between the 1989 and 2003 Roadless Area Boundary:** The area's boundaries did not change significantly between 1989 and 2003.

II. Capability for Management as Wilderness

(1) **Natural Integrity and Apparent Naturalness:** The area is unmodified except for evidence of current and historic use of the area, such as the small area of historic mining activity near Lucky Chance Mountain. Older beach (or lakeside) logging has occurred at the east end of Redoubt Lake, north of Salmon Lake, at the end of Deep Inlet, and at the mouth of a drainage feeding into Aleutkin Bay. This evidence although locally noticeable, has a very low overall effect on the natural integrity of the area. Both the relative size of the developments and their shoreline location contribute to this low impact. Two areas of timber developments extend along drainages into the area. The effects of these developments, located along Kizhuchia Creek and Camp Coogan Bay, are relatively localized as a result of the topographic screening provided by surrounding mountains. Overall, the area's natural integrity and apparent naturalness is high and is suitable for wilderness classification.

(2) **Opportunity for Solitude and Serenity, Self-reliance, Adventure, Challenging Experiences, and Primitive Recreation:** There is a high to very high opportunity for solitude and primitive recreation within the area. Both the size of the area and the screening offered by the topography and the vegetation provide some opportunities for solitude and primitive recreation. Recreational use of the area is relatively limited and dispersed, so encounters with other visitors are unlikely. Exceptions to this include Redoubt Lake and the areas around the five public recreation cabins.

The sight or sound of airplanes overhead and boats along the coastlines can also intrude on a visitor's solitude. The proximity of the city of Sitka decreases the opportunity for solitude in portions of the Roadless Area because of the visibility of the community itself, the relatively heavy use along the coast, and the jet noise from Sitka Airport.

The area provides a moderate opportunity for primitive recreation as a result of its size, topographic and vegetative screening, diversity of opportunities, and physical challenges. This area has a highly irregular topography and diverse vegetation that combine to offer a setting capable of providing a variety of primitive recreation opportunities. There are lakes, ponds, streams, bays, rugged mountains, and a varied coastline that contribute to these opportunities. The absence of developed recreational facilities in certain areas further enhances the opportunity for primitive recreation.

Outfitter/guide use was reported at 13 locations in and around this area in 1999. Twenty-nine groups with a total of 230 clients were reported visiting this area. Reported uses included fishing, sightseeing, camping, picnicking, and brown bear hunting. Redoubt Lake Cabin and the Taigud Islands were the most popular locations accounting for 55 and 48 clients, respectively.

The area provides primarily semi-primitive recreation opportunities. The table below lists the acreage and percent of the various Recreation Opportunity Spectrum (ROS) classes that have been inventoried in the roadless area.

ROS Class	Acres	Percent of Total ROS
Primitive (P)	14,966	20%
Semi-Primitive Non-Motorized (SPNM)	40,767	55%
Semi-Primitive Motorized (SPM)	6,946	9%
Roaded Natural (RN)	10,141	14%
Roaded Modified (RM)	1,376	2%

The area contains 23 inventoried recreation places, which cover 22,844 acres, or 31 percent of the roadless area.

ROS Class	# of Rec. Places*	Total Acres
P	0	0
SPNM	7	11,271
SPM	5	4,584
RN	10	6,593
RM	2	397

* Rec. Places may occur in more than one ROS Class; the sum of this column may exceed the total number of Rec. Places.

There are five public recreation cabins in the area: Seven Fathom Bay, Kanga Bay, Samsing Cove, Redoubt Lake, and Salmon Lake. There is one National Forest System Trail within the area, the Salmon Lake-Redoubt Lake Trail, as well as a couple of non-system trails that branch off the Salmon Lake-Redoubt Lake Trail and lead up Salmon Creek.

(3) Wilderness Attribute Rating System: In 1977, the Forest Service, along with public interest groups, developed the Wilderness Attribute Rating System (WARS), which was used to inventory the wilderness characteristics of roadless areas during the second Roadless Area Review and Evaluation (RARE II) process. The purpose of WARS was to provide a measure of the area's wilderness quality, based on the key attributes of wilderness as defined in the Wilderness Act. It is largely based on the attributes described above in items 1 and 2 of this section (natural integrity, apparent naturalness, outstanding opportunity for solitude, and primitive recreation opportunities).

In 1979, during the RARE II process, the Tongass National Forest applied WARS for the first time and rated each unroaded VCU on the Tongass. In 1989, the inventoried roadless areas (which generally include more than one VCU) were rated according to this system for the Analysis of the Management Situation (AMS) developed in support of the Forest Plan Revision. This original version of the AMS (dated 1990) included both the individual VCU ratings done in 1979 and the composite rating that was done for each roadless area in 1989. The 1989 rating for the Redoubt Roadless Area was 17 out of 28 possible points. A portion of the area was also rated separately and received a score of 19. The 1989 rating was re-evaluated for this updated version of the AMS. Based on this re-evaluation, the area was given a rating of 21. The area was rated higher to reflect opportunities associated with adjacent roadless areas and the wilderness to the south.

(4) Ecologic and Geologic Values: The Redoubt Roadless Area is part of a larger contiguous roadless land area that stretches from the north tip of Baranof Island to the South Baranof Wilderness, and from Baranof Warm Springs to Sitka and Biorka Island. The three roadless areas that comprise this roadless land area are North Baranof (#330), Sitka Urban (#331), and Redoubt (#333).

(a) Fish Resources: The Tongass Fish and Wildlife Resource Assessment identified Sugarloaf Mountain (319), Redoubt Bay (321), and Salmon Lake (323) as primary sportfish producers. The area was not identified as being a primary salmon producer (ADF&G, 1998).

The lakes and streams in this area support runs of coho, pink, chum, and sockeye salmon, steelhead and cutthroat trout, and Dolly Varden char. The Anadromous Waters Catalogue indicates that the major fish producers in the area are Salmon Creek and Lake, Redoubt Lake, and Kizhuchia Creek (ADF&G, 2000). Redoubt Lake and the inlet stream support Dolly Varden char, and sockeye, pink, chum, and coho salmon. Kizhuchia and Salmon Creeks have estimated annual peak escapements of 3,200 and 6,000 pink salmon, respectively (ADF&G, 2000). Two fishpasses were constructed on Kizhuchia Creek; one in 1980 and the other in 1981. (See additional information on the work at Redoubt Lake and Salmon Lake in earlier sections.) The fisheries restoration work at Redoubt Lake has increased the average annual sockeye salmon escapement from around 10,000 adult sockeye (pre-enrichment) to more than 30,000 adult sockeye (post-enrichment) with returns of over 60,000 adult sockeye in both 1998 and 1999. However, the 2000 and 2001 sockeye escapements were only about 3,000 adult sockeye, requiring emergency closures of both the sport and subsistence fisheries. The 2000 to 2001 returns are partly the result of juvenile fish reared in the lake during 2 years in the mid-1990s when enrichment was not done.

Appendix C

(b) Wildlife Resources: There are many varied wildlife resources in this roadless area. Generally, the area provides good habitat for Sitka black-tailed deer and brown bear. Furbearers such as mink, marten and river otter are also present on Baranof Island. Mountain goats inhabit Baranof Island. Moose, wolves, and black bear are not present on Baranof Island (MacDonald and Cook, 1999). Birds and waterfowl rearing and nesting areas are abundant in this area. Bald eagle habitat, including nesting and roosting trees, can be found along the shorelines of this roadless area.

(c) Threatened, Endangered, and Sensitive Species: The only federally listed threatened or endangered species likely to occur within or adjacent to the roadless area are the humpback whale (endangered) and the Steller sea lion (threatened). Both of these species are found in adjacent marine waters. Three Forest Service Region 10 Sensitive Species are suspected or known to occur within the area: the trumpeter swan, Peale's peregrine falcon, and the Queen Charlotte goshawk. Trumpeter swans nest in the lowlands on small lakes and along large rivers and winter in ice-free areas throughout the Tongass. Peale's peregrine falcons nest on cliff faces and islands and feed primarily on seabirds. Inhabitants of late seral forests, Queen Charlotte goshawks are closely associated with productive old growth. In addition, 12 sensitive plant species are known or suspected to occur in the Sitka Ranger District.

(d) Karst, Cave, and Other Geologic Resources: There are no known karst or cave resources in this roadless area. There are a few cirque glaciers and small permanent ice fields in the eastern corner of the area. Redoubt Lake is one of a few large meromictic lakes on the Tongass National Forest. Redoubt Lake is discussed in the following section, as well as Section III(10).

(5) Scientific and Educational Values: Redoubt Lake is the major feature of ecologic and scientific significance in this area. Meromictic lakes are characterized by a stable bottom layer that does not mix or "turn over" during the fall when cooling surface waters sink. This sinking action or annual flushing is important in aquatic ecosystems because it brings nutrients back up from the depths into the upper layers where they are available for use by photosynthetic organisms. Redoubt Lake's meromictic character results from the presence of a marine saltwater layer at the bottom of the lake. The surface of Redoubt Lake is only slightly above sea level and the lake is only separated from Redoubt Bay by a bedrock sill at the outlet. High tidal or storm surges push saltwater over the sill. Saltwater is denser than the freshwater of the lake and settles to the bottom no matter what the temperature.

There are no Research Natural Areas located in this area. The area is adjacent to the city of Sitka and, therefore, readily accessible to school-age children.

(6) Scenic Values: The visual character type of this roadless area is classified as Baranof Highland. Terrain in this character type consists of an irregular, rugged asymmetrical chain of landforms 2,000 to 4,400 feet in elevation with a steep eastern slope. The gentler western slope is deeply indented with fjords. Generally, landforms are visually massive, bulky and stark throughout the character type. Shoreline forms are very rugged with steep-sided fjord country on both east and west coasts. Rugged headwalls, cliffs and escarpments are common on the west side of this character type, as a result of exposure to the sea wind and waves. Rock faces are sometimes visible on steep-sided fjords near saltwater throughout the unit. Numerous rocky crests, sharp ridges, horns, aretes and cirques are found at higher elevations. Snow can be seen all year round on the higher summits with cirque glaciers and small permanent ice fields, especially in the western portion of the area.

The Redoubt Roadless Area on the west coast of Baranof Island presents a good representation of the Baranof Highland visual character type. This area displays a coastline deeply indented by fjords, and bays, and especially Redoubt Lake and Deep Inlet. It is further characterized by the hundreds of extremely irregular and exposed islands and rocks off the western coast of the area. These islands and rocks provide an opportunity for very dynamic surf waterforms.

The vast majority of the area is considered unmodified except for those areas primarily located near the shoreline with evidence of current or historic use. Evidence of historic use includes old fish production facilities, mineral prospecting, settlements, woodcutting, old cabins, and other historic occupancies. Timber harvest has occurred at the east end of Redoubt Lake, north of Salmon Lake, at the end of Deep Inlet, and at the mouth of a drainage feeding into Aleutkin Bay. Current use includes fish enhancement activities and facilities, fisheries research activities and facilities, various short-term occupancies, and other evidence of the use of the area and the surrounding waters. This

evidence although locally significant, has a very low overall effect on the scenic value of the area. Both the relative size of the developments and their shoreline location contribute to this low impact. Two areas of timber related developments extend along drainages into the area. The effects of these developments, located along Kizhuchia Creek and Camp Coogan Bay, are relatively localized as a result of the topographic screening provided by surrounding mountains.

The area displays natural characteristics when viewed from major and minor water travel routes and from inside the area itself. A number of Visual Priority Routes and Use Areas identified by the Forest Plan are within or adjacent to the area. Identified Visual Priority Routes include: Sitka Sound and Eastern Channel (Alaska Marine Highway); Sawmill Creek Road (public use road); and Sitka Sound, Silver Bay, Deep Inlet, Kanga Bay, Biorka Channel, Hot Springs Bay, Redoubt Bay, Eastern Channel, and Camp Coogan Bay (small boat routes). Use Areas include Sitka Sound, Silver Bay, and the Necker Islands to Eastern Channel, including the west coast of Baranof Island (Saltwater Use Areas); Salmon Lake and Redoubt Lake (Dispersed Recreation Sites); Sitka (Community); Seven Fathom Bay, Samsing Cove, Redoubt Lake, and Salmon Lake (Public Recreation Cabins); Salmon Lake and Redoubt Lake/Goddard (Hiking Trails); and Three Entrance Bay, Seven Fathom Bay, President Bay, Samsing Cove, Tava Island, Kliuchsuuio Bay, and Symonds Bay (boat anchorages).

Approximately 24 percent of this roadless area is inventoried in Variety Class A (possessing landscape diversity unique for the character type). About 42 percent of the area is inventoried as Visual Variety Class B (possessing landscape characteristics common for the character type). Approximately 28 percent of the acreage is rated as Variety Class C (possessing a low degree of landscape diversity). Approximately 6 percent of the area was not inventoried for Variety Class type.

The majority of this roadless area, approximately 86 percent, has an Existing Visual Condition (EVC) I, where the land appears to be untouched by human activity. About two percent of the area has an EVC IV, where changes in the landscape are easily noticed by the average visitor, and may attract some attention. Approximately 7 percent of the area was assigned to EVC V, where changes in the landscape are obvious to the average person and appear to be major disturbances. Approximately 6 percent of the area was not inventoried for Variety Class type.

(7) Social, Cultural, and Historical Values: This area has a long and varied history of use dating from Tlingit use in prehistoric and historic times to the present use by a variety of Alaska residents and visitors. Goldschmidt and Haas (1946) identified considerable historic use in this area. Identified sites included two former villages, a former camp, and two forts. Activities pursued in the area included hunting or trapping, salmon fishing, trolling for halibut or king salmon, and shellfishing.

Use of the area by Russian settlers began before 1800, and the Russian settlement, Ozerskoi Redoubt, was well established by 1818. Ozerskoi Redoubt was established to supply New Archangel (Sitka) with fish. The Russians constructed fish weirs and traps to obtain salmon returning to Lake Redutsky (Redoubt Lake). By 1842, the Ozerskoi Redoubt saltery had increased its production and was able to supply fish to other Russian American Company settlements as well. In addition to the saltery, by 1832 Ozerskoi Redoubt included two mills for grinding flour with storage facilities, a tannery, and a stockade.

In addition to evidence of use by the Russian settlers, fisheries production and research, and other occupancies have occurred throughout the area. Remains of structures and other human cultural activity in varying degrees of deterioration can still be found. Timber harvest has occurred at the east end of Redoubt Lake, north of Salmon Lake, at the end of Deep Inlet, and at the mouth of a drainage feeding into Aleutkin Bay.

Subsistence use occurs in the area. The Tongass Fish and Wildlife Resource Assessment indicated that seven of the nine VCUs in this area are subsistence use areas with a high sensitivity to disturbance. However, none of the VCUs in this area were included among the VCUs with highest community use value (ADF&G, 1998).

(8) Manageability as Wilderness and Boundary Conditions/Changes: The Redoubt Roadless Area is generally well defined by topographic features. The boundaries are determined by well defined watershed divides, Sitka Sound, and the open Pacific Ocean. The boundaries around the State and private lands at Goddard and the two areas of timber related developments that extend into the area are exceptions to this general pattern. South Baranof Wilderness borders the area to the south.

Appendix C

The feasibility of management of this area as wilderness or in an unroaded condition is good, as there is no significant motorized access or other current nonconforming uses within the area itself. Designating this area wilderness would extend the boundaries of the South Baranof Wilderness.

III. Availability for Management as Wilderness (including effects of wilderness designation on adjacent areas)

(1) **Recreation, Including Tourism Potential:** The varied terrain, diverse vegetation, and attractive scenery of this area provide unlimited recreation potential for dispersed recreation. Additional trails and cabins or shelters are possible.

In 1996, the Alaska Visitors Association (AVA) proposed recreation developments in two parts of this Roadless Area. The AVA proposed the following developments in the area extending from Redoubt Bay to Crawfish: backcountry recreation lodge for 150 persons/day, day-use recreation for 150 persons/day, hut-to-hut kayaking for 50 persons/day, day-use wildlife observatory for 50 persons/day, overnight wildlife observatory for 50 persons/day, leased proprietary camp for 15 persons, heli-hiking/skiing for 30 persons/day, equipment storage facility (3,000 cubic feet), flight-seeing landings for 100 persons/day, day-boat docks for 50 persons/day, and boardwalks, trails and paths. They also proposed a backcountry recreation lodge for 250 persons/day at Camp Coogan.

(2) **Subsistence Uses:** The existing patterns of subsistence activities in the area would not be affected by wilderness designation.

(3) **Fish Resources:** Two fishpasses were constructed on Kizhuchia Creek, one in 1980 and the other in 1981. Fisheries assessment and restoration work at Salmon Lake and Redoubt Lake is ongoing. NSRAA operates fish net pens in Deep Inlet.

(4) **Wildlife Resources:** No wildlife enhancement projects are planned for this roadless area.

(5) **Timber Resources:** There are 32,788 acres mapped as productive old growth in the roadless area. There are also 336 acres of second growth where beach harvest has occurred in the past. Of these acres, 21,911 acres are categorized as tentatively suitable for timber production. Based on the Forest Plan LUDs assigned to this area (and estimated falldown and scheduling reduction factors), 1,448 acres or 2 percent of this roadless area are estimated to be suitable for timber production. Approximately 321 of the suitable acres are mapped as high-volume old growth; of these acres, 16 are mapped as high-volume, coarse-canopy old growth.

The potential for managing timber in this roadless area is dependent on higher market values. Designating this area wilderness would not affect potential timber harvest in adjacent areas.

(6) **Fire, Insects, and Disease:** The area has no significant fire history. Endemic tree diseases common to Southeast Alaska are present in the area. There are no known epidemic disease occurrences.

(7) **Minerals:** This area contains 11,569 acres of land identified as a mineral activity tract having a low potential for experiencing mineral exploration and development of locatable minerals (Coldwell, 1990; USDA Forest Service, 1991). This area contains 63,176 acres of undiscovered locatable mineral resources (Brew et al., 1990; USDA Forest Service, 1991); all of these acres are considered to have low potential for development.

There is one known active claim in the area. The USGS Mineral Resource Data website (2001) shows two thorium prospects in the area.

(8) **Transportation and Utilities:** There are no transportation or utility projects proposed for this area. Additional roads will be needed to access timber that is available for harvest under the Forest Plan.

(9) **Water Availability and Use:** There are a number of authorized special uses and five public recreation cabins that create a demand for water in this roadless area. There are no existing or planned hydroelectric or

domestic water projects in this area. The Green Lake power plant, built by the City of Sitka, is about 3 miles north of the Redoubt Roadless Area boundary.

(10) Areas of Scientific Interest: Redoubt Lake is one of the only large meromictic lakes in the Tongass National Forest and a feature of major ecologic and scientific interest within the Redoubt Roadless Area. Meromictic lakes are characterized by a stable bottom layer that does not mix or "turn over" during the fall when cooling surface waters sink. Redoubt Lake's meromictic character results from the presence of a marine saltwater layer at the bottom of the lake. The surface of Redoubt Lake is only slightly above sea level and the lake is only separated from Redoubt Bay by a bedrock sill at the outlet. High tidal or storm surges push saltwater over the sill. Saltwater is denser than the freshwater of the lake and settles to the bottom no matter what the temperature.

The saltwater/freshwater density-stratified water column represents chemocline. Once in place, the salt layer is generally stable and will not allow mixing. Nutrients contained in dead organisms filtering to the bottom are trapped in bottom sediments and subtracted from the ecosystem. However, freshwater springs seeping through fractures in the bedrock may enter the bottom of the lake and gradually degrade the chemocline by dilution until it is renewed by saltwater intrusion. In some situations meromictic lake systems have been reported to act as effective concentrators of solar energy in the unmixed bottom layer, producing unusually warm temperatures at the bottom. Redoubt Lake offers the opportunity to conduct studies of these physical and ecological phenomena.

(11) Land Use Authorizations: There are a number of authorized special uses within the area. One use is an interagency agreement with the ADF&G for fisheries management facilities at Salmon and Redoubt Lakes. A second use is a special use permit with the NSRAA for fish net pens in Deep Inlet. The Sitka Tribe of Alaska, NSRAA, ADF&G, and the Forest Service just began an in-depth cooperative project to assess the Salmon Lake fisheries resources and harvest. The Forest Service has been working with various partners, including ADF&G and NSRAA, since the early 1980s to restore Redoubt Lake's sockeye salmon escapement to historical levels of over 50,000 adults annually. This has included operating an adult salmon weir, lake enrichment through fertilization, and limnological sampling to determine the enrichment effectiveness.

(12) Land Status: The area consists entirely of National Forest System lands. Encumbered land within the roadless area is located in Elovoi Island and around Kizhuchia Creek. Land owned by the City of Sitka is adjacent to the roadless area at the mouth of Redoubt Lake.

IV. Wilderness Evaluation

(1) Public and Congressional Interest:

(a) Interest Expressed by Local Users and Residents: Most use of the area is associated with recreational boating, hunting and fishing, and viewing wildlife and the scenery of the area.

(b) Congressional Interest: In 1989, U.S. House of Representatives Bill HR 987 proposed to designate 23 areas as wilderness on the Tongass National Forest. This bill did not include the Redoubt Roadless Area. In 2001, HR 2908 identified the area as a proposed LUD II addition. It also proposed that the areas surrounding Redoubt Bay and along the coastline be protected Wild and Scenic Rivers. The areas where timber harvest has occurred along Camp Coogan Bay and Kizhuchia Creek were identified for protection as Restoration Areas.

(c) Public Input During Forest Plan Revisions and Appeals: Parts of this area were specifically addressed in public input received during the Forest Plan revision and appeal. Silver Bay, Deep Inlet, Salmon Lake-Redoubt, and Seven Fathom were included in a list of areas that are strategically important to Sitka for subsistence uses (and most also for recreation) and deserve protection. Parts of the area were also identified as important wildlife areas near Sitka. These areas include the Deep Bay area (important for hunting), Redoubt Bay, and the islands towards the Biorka and Goddard area (important local hunting areas). The Sitka Conservation Society (SCS) requested that five of the seven VCUs that comprise the Redoubt Roadless Area be managed under a Primitive Recreation LUD. They identified these VCUs along with other nearby areas to be "at the heart of Sitka's economy and lifestyle." In 1996, the AVA proposed recreation developments in two parts of this Roadless Area. These were the area extending from Redoubt

Appendix C

Bay to Crawfish and Camp Coogan. The AVA's proposals for these areas are outlined in Section III. (1) of this description. Another commenter requested that four of the VCUs in the Redoubt Roadless Area be managed for timber production. The Sierra Club Juneau Group stated that there should be "no roads, period" in Management Area (MA) C50, which encompasses Redoubt Lake and the south portion of the Redoubt Roadless Area.

Parts of the area were also specifically identified in the Forest Plan appeal filed by the SCS. The SCS identified Redoubt Bay and South Lagoon near Goddard as salt chuck areas, which they define as "intertidal bodies of water, typically separated from saltwater by a narrow rocky pass." They noted that these areas are rare in southeast Alaska and requested that salt chuck areas be assigned special status to protect their biological resources, with no logging allowed. The SCS also requested that the Baranof coastal tidal river system, which likely includes part of the Redoubt Roadless Area, be given Wild and Scenic River designation because it is a rare resource that will be more valuable over time than logging the same area would be. The Forest Plan appeal filed by the Southeast Alaska Conservation Council (SEACC) identified two of the VCUs that comprise the area as part of the Sitka Local Use Area, a "SEACC Special Area," where clearcutting should not be permitted. The appeal filed by the Hoonah Indian Association et al. cautioned that the Sitka area is under subsistence stress with too much hunting planned in relation to deer habitat capability.

(d) Public Input During Roadless Area Conservation Rule and Road Management Policy

Review: This area was not specifically identified in the comments received on the Roadless Area Conservation Rule or Road Management Policy Review. However, some commenters wanted all unroaded lands in the Tongass to be protected from development.

(e) Public Input Expressed for Project-level EISs and Other Input: This area is not within the study area of any recently completed project-level EISs.

(f) Public Input Expressed During Supplemental EIS Process: The Alaska Rainforest Campaign (a coalition of national and Alaska conservation groups) identified Roadless Areas 330, 331, 332, and 333 as a contiguous complex of roadless areas that should be considered one roadless area and recommended it for permanent protection as LUD II. SEACC included this area in a contiguous complex of roadless areas consisting of Roadless Areas 330, 331, 332, and 333. They recommended this complex for permanent protection as LUD II. The combined area represents just over 500,000 acres.

Some members of the Southeast Alaska Federal Subsistence Regional Advisory Council identified the need for further protection of this area because of its importance for subsistence

The Alaska Department of Fish and Game rated the Redoubt roadless area as the fifth highest priority for protection in northern Southeast Alaska (for the Redoubt Lake sockeye). This rating is based on the VCUs with the highest value fish and wildlife resources needing additional protection. VCUs are prioritized for their very high productivity, essential role in connectivity, and/or very high value as community use areas.

A number of individuals recommended this area for protection.

(2) Nearby Roadless and Wilderness Areas and Uses: The nearest wilderness is the South Baranof Wilderness which borders the area to the south. Two other nearby wildernesses are the Admiralty National Monument Wilderness, which lies east of Chatham Strait, and the West Chichagof-Yakobi Wilderness that lies north of Salisbury Sound.

The Redoubt Roadless Evaluation Area is part of a larger roadless land area that stretches the length of Baranof Island. This area consists of four roadless areas and the South Baranof Wilderness. The four roadless areas that comprise this larger area are North Baranof (#330), Sitka Urban (#331), Redoubt (#333), and Port Alexander (#334).

(3) Distance From Population Centers (Accessibility): Approximate distances from population centers are as follows:

Community	Air Miles	Water Miles
Juneau (Pop. 30,711)	95	165
Sitka (Pop. 8,835)	5	5
Hoonah (Pop. 860)	75	145
Angoon (Pop. 572)	40	85

The nearest stop on the Alaska Marine Highway is Sitka.

(4) Relative Contribution to the National Wilderness Preservation System: The Redoubt Roadless Area is located on the west side of Baranof Island, approximately half way between the north and south ends of the island. The South Baranof Wilderness borders the area to the south. The open Pacific Ocean and Sitka Sound border the area to the west and northwest, respectively. The community of Goddard also borders the area to the west. The Sitka Urban Roadless Area (#331) borders the area to the northeast. This roadless area includes a main section on Baranof Island and a secondary section comprised of numerous offshore islands. These islands range in size from bare rocks that hardly stick out of the ocean at high tide to larger islands, such as Gornoi Island. The Redoubt Roadless Area is generally characterized by fingers of irregular, rugged mountains 2,000 to 4,400 feet in elevation with steep slopes. The area is deeply indented by Redoubt Lake and Deep Inlet. Numerous rocky crests and sharp ridges are found at higher elevations. Snow can be seen all year round on higher summits with a few cirque glaciers and small permanent ice fields in the eastern corner of the area. Forested islands, rocky islands, and reefs dominate the coast along the north and west sides of the area. The largest lake and most dominant feature of the area is Redoubt Lake. Situated in the center of the area, Redoubt Lake stretches approximately 9 miles and lies at an elevation of about 10 feet above sea level.

The Redoubt Roadless Area is mostly unmodified and natural appearing. The area has high natural integrity and apparent naturalness. Opportunity for solitude and primitive recreation is high to very high within the area.

The area has moderate to high scenic quality; approximately 24 percent of the landscape is considered distinctive from a scenery standpoint. There are a few cirque glaciers and small permanent ice fields in the eastern corner of the area. Redoubt Lake is one of a few large meromictic lakes on the Tongass National Forest.

The roadless area includes about 8,133 acres of high-volume, old-growth forest. Of these acres, approximately 915 are mapped as high-volume, coarse-canopy old growth.

The Redoubt Roadless Area is classified as being in the West Baranof Island Biogeographic Province and makes up about 9 percent of the province. It is one of eight inventoried roadless areas found within the province that collectively make up about 62 percent of the province. The majority of the South Baranof Wilderness is also within this province and makes up approximately 29 percent of the province.

The Redoubt Roadless Area lies completely within the Baranof-Chichagof Fjordlands Ecological Section and represents 4 percent of the ecological section. The ecological section is well represented in existing wilderness (28 percent) and other non-development LUDs (35 percent) with an additional 13 percent in LUD II.

The largest ecological subsection in the Redoubt Roadless Area is the Necker Bay Granitics (41 percent). This portion represents 17 percent of this ecological subsection within the Tongass National Forest boundary and is well represented by existing wilderness (83 percent) with an additional 16 percent in other non-development LUDs. The Sitka Sound Complex Ecological Subsection represents 34 percent of this roadless area. This portion represents 13 percent of the entire ecological subsection, which is well represented by non-development LUDs (67 percent), but not in existing wilderness and LUD II. The Outer Coast Wave-cut Terraces Ecological Subsection represents 18 percent of the roadless area. This portion represents 11 percent of the entire ecological subsection, which is well represented by existing wilderness (75 percent) and other non-development LUDs (21 percent). The Central Baranof Metasediments Ecological Subsection represents 7 percent of this roadless area. This portion represents 2 percent of the entire ecological subsection, which has approximately 20 percent existing wilderness and is well represented by other non-development LUDs (64 percent).

Appendix C

The Redoubt Roadless Area was rated 21 out of a possible 28 points under the Wilderness Attribute Rating System (WARS). As such, its WARS rating is ranked 47th from the highest (along with 5 other roadless areas) among the 109 Tongass inventoried roadless areas.

There is both local and national support for managing the Redoubt Roadless Area in an unroaded condition, but little support for designation as wilderness. Designation of the area would add Congressional protection to 13 percent of the Sitka Sound Complex Ecological Subsection, which does not contain any areas under long-term Congressional protection. Designation would create a wilderness that would enlarge the South Baranof Wilderness, and would include the small cirque glaciers, icefields, and Redoubt Lake. Overall, the factors identified here indicate that the relative contribution of this area to the National Wilderness Preservation System would be moderate.

V. Environmental Consequences

The Sitka Sound Roadless Area would be managed under the existing Forest Plan if Alternative 1, 2, 3, 4, 5, or 7 is implemented. Approximately 84 percent of the roadless area would be managed under non-development LUDs. Timber harvest and road development could occur within the remaining 16 percent of the roadless area. The land in the development LUDs includes an estimated 1,448 acres that are suitable for timber production (3 percent of the suitable acres on the Sitka Ranger District). Approximately 16 of the suitable acres are classified as high-volume, coarse-canopy old growth. This area contains 11,569 acres of land identified as a mineral activity tract having a low potential for experiencing mineral exploration and development of locatable minerals. This area contains an estimated 63,176 acres of undiscovered locatable mineral resources; all of these acres are considered to have low potential for development. The relatively high recreation use, research activities at Redoubt Lake, and special use permits would continue. The values associated with the natural settings of the roadless area could be affected by ongoing developments allowed by the Forest Plan. The high scenic and geologic values are protected by the Forest Plan.

Under Alternative 6, the entire roadless area would be converted to Recommended LUD II. Mineral prospecting and recreation use and developments could continue, but no timber harvest would be allowed. The values associated with the natural settings of the roadless area, including scenic and geologic values, would be provided long-term protection if designated LUD II. Designation of the area would add Congressional protection to 13 percent of the Sitka Sound Complex Ecological Subsection, which does not contain any areas under long-term Congressional protection.

With Alternative 8, the entire roadless area would be converted to Recommended Wilderness. Timber harvest would not be allowed and the potential for development, including recreation, research, special uses, and mineral, could be significantly restricted. Mineral prospecting would be allowed up to the time that the area is actually designated as wilderness by Congress. The values associated with the natural settings of the roadless area, including scenic and geologic values, would be provided long-term protection if designated wilderness. Designation of the area would add Congressional protection to 13 percent of the Sitka Sound Complex Ecological Subsection, which does not contain any areas under long-term Congressional protection.

Appendix C

Land Use Designation Allocations and Suitable Timber Lands by Alternative for Roadless Area 333 (in acres)								
Land Use Designation	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8
Recommended Wilderness								74,570
Wilderness								
Recommended Wilderness Nat. Mon.								
Wilderness National Monument								
Non-wilderness National Monument								
Research Natural Area								
Special Interest Area								
Remote Recreation								
Enacted Municipal Watershed								
Old-growth Habitat	35,663	35,663	35,663	35,663	35,663		35,663	
Semi-remote Recreation	26,997	26,997	26,997	26,997	26,997		26,997	
Recommended LUD II						74,570		
LUD II								
Wild, Scenic, Recreational River								
Experimental Forest								
Scenic Viewshed								
Modified Landscape	11,910	11,910	11,910	11,910	11,910		11,910	
Timber production								
TOTAL	74,570	74,570	74,570	74,570	74,570	74,570	74,570	74,570
Suitable Timber Lands	1,448	1,448	1,448	1,448	1,448	0	1,448	0