Public Notice

US Army Corps
of Engineers
Alaska District
Regulatory Branch (1145b)
Post Office Box 6898
Anchorage, Alaska 99506-0898

Date: March 8, 2006

Identification No: SPN 2006-349

In reply refer to above Identification Number

EXPIRATION DATE: 8 April, 2006

SPECIAL PUBLIC NOTICE 2006-349

Sealaska Corporation Mitigation Bank Proposal

Natzuhini Bay

Notice is hereby given that the U.S. Army Corps of Engineers, Alaska District under the authority of Section 404 of the Clean Water Act (Public Law 95-217, 33 U.S.C. 1344 et. Seq) is soliciting comments on the proposed Natzuhini Bay Mitigation Bank Proposal (NBMB).

INTRODUCTION: Sealaska Corporation is a private regional native Corporation for Southeast Alaska, created under the Alaska Native Claims Settlement Act ("ANCSA") of 1971, and incorporated pursuant to the laws of the State of Alaska. In 2004, Sealaska Corporation established a regional riparian corridor mitigation banking program on Sealaska-owned lands in Southeast Alaska, known as the Southeast Alaska Regional Mitigation Banking Instrument (RBI). The purposes of the banking program are to:

1) Protect site-specific areas from uses that are incompatible with the goals of the mitigation bank through appropriate covenants.

2) Restore, enhance and preserve wildlife and anadromous fish stream riparian zones and adjacent tidal estuarine wetlands for the protection of fish and wildlife habitat and water quality in Southeast Alaska.

PROPOSAL DESCRIPTION, LOCATION, ETC.: In keeping with the conditions of the RBI, Sealaska has prepared the attached site-specific NBMB, which describes the site location, description, purpose, etc. Please read attachment for further details.

APPLICANT: Sealaska Corporation, One Sealaska Plaza, Suite 400, Juneau, Alaska 99801-1276.

AGENT: Forest Industry Consulting, 6725 Marguerite Street, Juneau, Alaska 99801-9431; Attn: Mr. Peter Huberth, (907) 463-3604.

WATER QUALITY CERTIFICATION: A Department of the Army (DA) permit would not be required for the proposed NBMB. Accordingly, a certification or waiver of certification as required under Section 401 of the Clean Water Act (Public Law 95-217) would not be required in association with a DA permit.

COASTAL ZONE MANAGEMENT ACT CERTIFICATION: Section 307(c)(3) of the Coastal Zone, Management Act of 1972, as amended by 16 U.S.C. 1456(c)(3), requires the applicant to certify that the described activity affecting land or water uses in the Coastal Zone complies with the Alaska Coastal Management Program. A DA permit would not be required for the proposed NBMB.

PUBLIC HEARING: Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearings shall state, with particularity, reasons for holding a public hearing.

CULTURAL RESOURCES: As currently proposed, the NBMB would not directly affect any cultural resources. The latest published version of the Alaska Heritage Resources Survey (AHRS) has been consulted for the presence or absence of historic properties, including those listed in or eligible for inclusion in the National Register of Historic Places. There is one property in the vicinity of the Natzuhini Bay bank proposal site, listed as CRG-00126, Natzune Bay Village. Consultation of the AHRS constitutes the extent of cultural resource investigations by the District Engineer at this time, and he is otherwise unaware of the presence of such resources. This application is being coordinated with the State Historic Preservation Office (SHPO). Any comments SHPO may have concerning presently unknown archeological or historic data that may be lost or destroyed by work under the requested permit will be considered in our final assessment of the described work.

TRIBAL CONSULTATION: The Alaska District fully supports tribal self-governance and government-to-government relations between the Federal government and Federally recognized Tribes. This notice invites participation by agencies, Tribes, and members of the public in the Federal decision-making process. In addition, Tribes with protected rights or resources that could be significantly affected by a proposed Federal action (e.g., a permit decision) have the right to consult with the Alaska District on a government-to-government basis. Views of each Tribe regarding protected rights and resources will be accorded due consideration in this process. This Public Notice serves as notification to the Tribes within the area potentially affected by the proposed work and invites their participation in the Federal decision-making process regarding the protected Tribal right or resource. Consultation may be initiated by the affected Tribe upon written request to the District Engineer during the public comment period.

ENDANGERED SPECIES: The project area is within the known or historic range of the humpback whale and Stellar sea lion. The NBMB proposal would not affect any threatened or endangered species or their critical habitat designated as endangered or threatened, under the Endangered Species Act of 1973 (87 Stat. 844). This application is being coordinated with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. Any comments they may have concerning endangered or threatened wildlife or plants or their critical habitat will be considered in our final assessment of the described work.

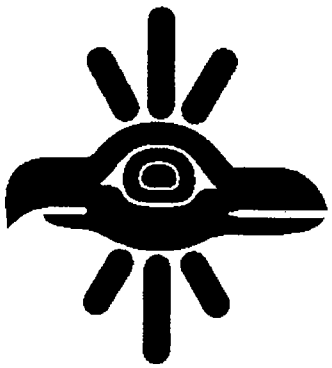
ESSENTIAL FISH HABITAT: The proposed work is being evaluated for possible effects to Essential Fish Habitat (EFH) pursuant to the Magnuson Stevens Fishery Conservation and Management Act of 1996 (MSFCMA), 16 U.S.C. et seq and associated federal regulations found at 50 CFR 600 Subpart K. The Alaska District includes areas of EFH as Fishery Management Plans. We have reviewed the January 20, 1999, North Pacific Fishery Management Council's Environmental Assessment to locate EFH area as identified by the National Marine Fisheries Service (NMFS).

We have determined that the described activity within the proposed area will not adversely affect EFH, including anadromous fish and federally managed fishery resources. The proposed banking system is being designed to improve and protect potential essential fish habitat. This determination is being coordinated with NMFS.

Written comments concerning this banking proposal may be submitted directly to the District Engineer, U.S. Army Corps of Engineers, Alaska District, CEPOA-CO-R-N; Attn: Ms. Shannon Hansen, Post Office Box 6898, Elmendorf AFB, Alaska 99506-0898, within the comment period as specified above to receive consideration. Inquiries regarding the proposed action may be directed to Ms. Shannon Hansen by e-mail at Shannon.r.hansen@poa02.usace.army.mil, or at (907) 753-2712, if further information is desired concerning this notice.

District Engineer
U.S. Army, Corps of Engineers

Attachments



SEALASKA CORPORATION

Natzuhini Bay Mitigation Bank Proposal

Sponsored by:

Sealaska Corporation

February 24, 2006

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Natzuhini Bay Mitigation Bank Proposal

Memorandum of Understanding between Sealaska Corporation and The U.S. Army Corps of Engineers

This is a Memorandum of Understanding (MOU) between the U.S. Army Corps of Engineers/Mitigation Bank Review Team (Corps/MBRT) and Sealaska Corporation (Sealaska) to implement the establishment of the Natzuhini Bay Mitigation Bank (Bank) as described below. This Bank is comprised of waters of the United States including riparian and estuarine areas with the purpose of establishing an additional mechanism to compensate for wetland, estuarine, stream, tributary, riparian corridor and other aquatic resource losses caused by development activities in Alaska, and to provide greater flexibility to Clean Water Act applicants to mitigate proposed projects in regulated wetlands and other waters of the United States.

I. Introduction

The Natzuhini Bay Mitigation Bank (Bank) seeks to establish a mitigation banking system to provide effective compensatory mitigation for unavoidable, minimized impacts to waters of the United States including wetlands, estuarine areas, creeks, streams, tributaries, riparian corridors, and other waters of the U.S. in Southeast Alaska caused by activities regulated under the Clean Water Act. This Bank is subject to the terms and conditions of the Southeast Alaska Regional Mitigation Banking Instrument (RBI), previously approved by the Corps/MBRT on October 12, 2004, except as specifically supplemented herein. In the event of a conflict, the RBI shall control. In addition, the Corps has held a meeting with the interagency Mitigation Bank Review Team (MBRT) to discuss this Bank. Subsequently, the MBRT has viewed the proposed Bank site and commented on its feasibility.

The MBRT consists of representatives from:

National Marine Fisheries Service
U.S. Fish and Wildlife Service
Environmental Protection Agency
U. S. Army Corps of Engineers
Alaska Department of Environmental Conservation

This banking instrument includes the establishment, maintenance, restoration, enhancement, preservation and "protection of riparian and estuarine areas including special aquatic sites," of two major stream systems within the Natzuhini Bay watershed and is made and entered into by and among Sealaska (the Sponsor and owner), the Corps, the U.S. Environmental Protection Agency (EPA), the U.S. Fish and Wildlife Service (FWS), the National Marine Fisheries Service (NMFS), and the Alaska Department of Environmental Conservation (ADEC) with reference to the following:

The purpose of this banking instrument is to establish operating guidelines and procedures for the Bank. This banking instrument does not affect statutory authorities and

responsibilities of the signatory agencies. The establishment, maintenance and protection of waters of the United States are carried out in accordance with the authorities cited in the afore cited Regional Banking Instrument to which this Bank is an attachment.

The main objective of the proposed Bank is the protection and environmental enhancement to improve the biological and physical functioning of riparian corridors adjacent to identified reaches of Flat Creek and Natzuhini Creek, including a small tributary to Natzuhini Creek. These streams and their estuarine areas are the main contributors of fresh water nutrients, anadromous fish and other attributes to Natzuhini Bay. In addition this Bank shall assure the preservation of the adjacent tidal estuarine Natzuhini salt chuck also within Natzuhini Bay. The proposed Bank will undertake management actions that will lead to the restoration and enhancement of the riparian corridors along these streams for the benefit of water quality, and habitat for terrestrial mammals, stream dependent mammals, and species living in the aquatic stream environment. During Bank related work, Sealaska will provide fish passage through existing/remnant culverts and bridges in accordance with applicable law. In addition Sealaska will partially remove the collapsed log stringer bridge, located in the Natzuhini tributary sufficiently to enhance in-stream habitat structure, but will not seek bank credits for this work.

These restoration, enhancement and preservation activities, as described in the "Regional Banking Instrument," will significantly improve aquatic and other ecological functions, as well as improve water quality within anadromous fish stream riparian zones. The improved riparian attributes shall be sufficiently manifested within 15 years from the establishment of the Bank to demonstrate that the environment within the Bank area will continue to evolve and mature to the specified desirable characteristics over time.

The Bank will be developed using on the ground defined riparian zone[1] areas, including the specified streams on each bank of Flat Creek, Natzuhini Creek, and a tributary of Natzuhini Creek as displayed on the stream detail maps included in "Appendix Two – Riparian Zone Maps." The option exists for Sealaska to add additional riparian zone areas of similar second growth and old growth forested land adjacent to the Natzuhini Creek system to the Bank if accepted as appropriate and if a justifiable demand for credit exchange exists in the future. As part of this project, Sealaska agrees to enhance the plant community by implementing the work plan described in the RBI, i.e. manipulating (precommercial thinning[2], planting, brush control) the plants (trees, shrubs, and other vegetation) within the riparian zones adjacent to the existing stream banks. The Bank has three components that currently are managed using separate guidelines.

- Palustrine-Upland Riparian - The riparian zone contains 70.24 acres including 46,360 lineal feet of stream bank.

[1] The term "Riparian Zone" means; A strip of land sixty six feet wide as measured landward from ordinary high water (OHW) of both sides of the stream, for the stream reaches included in the Bank.

[2] The term "precommercial thinning or PCT" is used when thinned trees are left on the ground where they are cut down as compared to other thinning where cut trees are removed to make a commercial product, to reduce fire hazard or any other management objective that requires further treatment of the cut trees.

- Stream Bed - The stream bed contains 30.18 acres (23,180 lineal feet). It is defined as the area within each defined reach as measured between each stream bank at OHW.

- Estuarine - This contains 47.59 acres adjacent to and including tidal estuarine wetlands and a 66 foot riparian zone including 18,498 lineal feet of shoreline at the high tide line (HTL). The riparian zone extends landward from Mean High Water (MHW) to 66' above the HTL around the salt chuck at the mouth of Natzuhini Creek. This area has been affected by historic timber harvest practices that took place within the past seventy years. Incorporating it into the Bank guarantees its integrity as the riparian zone matures.

Therefore, the total riparian zone to be deed restricted is approximately 148.01 acres.[3]

II. Ownership of Bank Lands

Sealaska Corporation is the sole owner in fee title of all of the land to be located in the Bank. Title to the property by interim conveyance from the United States occurred at two different times. The conveyances include ownership outside the boundaries as described in this banking instrument. The conveyances are included in Appendix Six – Title to Land and Appendix Six, Exhibit A which defines the boundaries of the Bank.

III. Service Area

The geographic service area for the Bank as approved under the Regional Banking Instrument is Sub region 1901 of the U.S.G.S. Hydrologic Unit Map of the State of Alaska (1987) (see Appendix One), which is inclusive of the Southeast Alaska region. The Corps/MBRT will consider on a case-by-case basis use of this Bank to mitigate for impacts to waters of the United States that are outside of the identified geographic service area. Upon the establishment of multiple site-specific banks it will, in most cases, be preferable to draw mitigation credits from the bank closest to the site on which impacts are authorized by a Department of the Army (DA) permit.

IV. Bank Goals and Objectives

The goal of this Bank is to preserve and protect the lands within the Bank and to aggressively manage the trees and shrubs in the riparian zone, to provide the streamside environment within the defined riparian zone the opportunity to achieve desirable natural characteristics, as described in the Regional Banking Instrument, sooner than if the existing second growth is left to compete for space under current conditions. Following are major goals and objectives:

[3] As determined by the Sealaska Geographic Information System Department using the GIS land layer developed by the USDA Forest Service.

Provide Future LWD - In large portions of the Bank past timber harvest occurred to the stream banks. This resulted in the potential for increased bank instability and a simplified instream environment due to future reduced LWD recruitment, more dynamic gravel/cobble bars, reduced cover, and a lower quality habitat for terrestrial species. Aggressive thinning can result in shortening the time when the LWD gap will exist. The target leave trees will grow at an optimum rate for the site. Therefore, the objectives of creating an enhanced instream and riparian environment to benefit native fish and animal species will be achieved fifty or more years sooner than if no management actions were taken.

Within fifteen years from Bank inception trees released due to thinning and other management actions will have begun to attain the minimum size necessary to be contributors of replacement LWD, especially for much of the Flat Creek and Natzuhini tributary systems. The Natzuhini main stem candidate trees, while the same average size, shall take another ten to fifteen years to reach adequate LWD size because this reach is classed as a moderate width mixed control channel (MM2).

Create a Biodiverse Habitat - Within twenty years the riparian zones will exhibit full crown closure and slowly emulate mature riparian characteristics over time. Lower branches will die and sunlight will enter the riparian zone from a lateral position, such as the opening created by the streams, which is more typical of light conditions in mature stands. As the Bank continues to evolve into a variety of canopy layers it will support a greater diversity of birds and mammals tending to favor old growth dependent species over time.

The near bank (closest ten feet to OHW) environment will become more biodiverse. There will be a mixture of red alder and conifer with conifer being favored. The understory will include a variety of shrubs and forbs that will directly contribute organic material to the instream environment, overhanging shade for cover, and indirectly contribute insect detritus.

Managing the riparian zone provides opportunities for wildlife to create protected transportation corridors, nesting habitat for indigenous and migratory bird species, cover for old growth dependent species, foraging habitat for birds and mammals, and a more natural setting for recreational visitors.

Enhance Instream and Stream Bank Protection - Other natural functions that will be provided by the Bank include enhanced bank stability, reduced risk of water quality degradation during and immediately after major storm events, and the opportunity for natural variations in stream flow to create a more diverse instream environment.

Protect the Natzuhini Salt Chuck - That portion of the riparian zone adjacent to the Natzuhini salt chuck contains conifer second growth over 60 years of age and young second growth dating from the late 1970s. The objective for this part of the Bank is to allow it to protect and preserve it allowing it to continue evolving into a mature riparian zone that will provide cover for wildlife and other ecological benefits. As time goes on large trees will fall into the salt chuck area and provide cover for fish below the HTL and cover for mammals and birds that depend on fish as food.

Provide Mitigation Credits for Development Projects in Southeast Alaska - As credits are released, this Bank will contribute to streamlining the permit process as administered by the Corps. This Bank will be in a position to furnish credits that can be designated according to the schedule defined in the Regional Banking Instrument to mitigate project impacts to aquatic resources occurring within the Bank Service area. This will benefit developers, the Corps, other state and federal agencies, and the general public by not only streamlining the permitting process but also by the public benefits the Bank lends to public fish, wildlife and other natural resources.

Much time is lost during the permitting process by negotiating permitting requirements and locations. Additional time is needed after permit issuance for compliance checks, monitoring reports, etc. By using this Bank, compliance with mitigation requirements will be centralized, greatly reducing the time to accomplish these activities. Furthermore, the likelihood for mitigation success will improve because most of the Bank will be functioning in advance of any project impacts. This allows the permitting process to be expedited and the workload of the Corps and everyone involved to be lessened. Permits can effectively be conditioned to allow compensation provided by the Bank if onsite and/or other mitigation is not more practical or feasible, and the site is located within the geographic service area.

Create a Self Sustaining Bank - The Corps has stated that riparian management should be planned to perform in a in a self-sustaining manner after initial Bank treatment. This proposed Bank meets that criterion. Scheduled monitoring would assure that trees are attaining projected growth rates, and that stocking levels are achieved with young trees that demonstrate windfirm character. By the fifteenth year this Bank will have met all of the conditions that will assure a diverse and healthy riparian/estuarine zone into the future.

V. Bank Specifications

The Bank is composed of two tracts, one containing Natzuhini Creek, the salt chuck at the stream mouth, and a tributary stream, and the other containing Flat Creek up to what is thought to the be the upper extent of fish habitat. These are the major creeks flowing into Natzuhini Bay. They are located approximately 5 miles north and 7 miles north respectively of Hydaburg and can be accessed from the state highway that connects Hydaburg to the Hollis-Klawock highway. A legal description of that portion of the watershed that is in the Bank is included in Appendix Three - Natzuhini Watershed Baseline Report. A vicinity map is enclosed as Appendix Two - Maps of Natzuhini Bay Mitigation Bank.

The candidate enhancement project area contains 46,360 lineal feet (LF) of stream bank as determined by the Sealaska Geographic Information System Department using the GIS land layer developed by the USDA Forest Service. The total stream bed and adjacent riparian zone to be deed restricted is approximately 100.43 acres. As part of this Bank, Sealaska agrees to restore and enhance the riparian zone adjacent to the stream bed by implementing the tasks described in the RBI and summarized below:

1. Within the adjacent riparian zone of the Bank, 57 acres have been thinned, 5 acres have been treated to reduce brush and hardwoods, and less than 1.0 acre has been interplanted with conifer transplants.

2. Except for minimal tree spacing operations there has been no intensive management within the first ten feet from OHW except to release key coniferous trees that will contribute to future LWD. This ten foot corridor contributes important attributes to the in-stream habitat for fish and stream dependent mammals.
3. This Bank includes 12.40 acres of estuarine wetlands extending from MHW to the HTL around the salt chuck at the mouth of Natzuhini Creek. To help protect this estuarine area, the bank includes a riparian zone along 18,498 LF of shoreline at HTL landward 66' in width that totals 35.19 acres. Currently this shoreline riparian zone is being preserved in an unmanaged condition to reduce any risk of degraded surface and subsurface waters entering the water column as it fluctuates in diurnal tidal variations. However, at a time in the future, Sealaska may want to implement a management plan that will enhance the ecological contribution of this riparian zone, subject to the approval of the Corps/MBRT.

VI. Riparian Zone Prescriptions

Natzuhini Creek Main Stem – Manage the young conifer stand for rapid growth to promote bank stability, provide LWD, and reduce the time until the plant community fosters optimized instream and terrestrial wildlife habitat conditions. The conifers have been thinned to about 75 trees per acre (TPA) to accelerate growth while providing a diverse plant environment for terrestrial mammals, lesser animals, insects, and invertebrates important to the food chain of resident and anadromous fish species. Precommercial thinning[4] (PCT) is the dominant management technique implemented. PCT will be a 21 foot spacing from ten feet to 33 feet from the stream bank; and 29 feet spacing from 33 to 66 feet from the stream bank. Alder reduction to accelerate conifer growth occurs on a relatively small portion, and conifer planting takes place on a very small portion of the area due to high conifer stocking in most of the riparian buffer zones. See Appendix Four – Idealized Diagram and Riparian Zone Sketch, for a diagram and illustrative sketch of the instream area and adjacent riparian zone including the different managed areas and dimensions.

Red Alder is retained according to the following guidelines developed as a result of the Corps/MBRT field trip in September 2002.

Individual alder trees, or clumps of alder trees, will be controlled when:

1. the alder is not necessary to provide stream bank stability, (i.e. remaining trees scheduled for retention will likely fulfill that function);
2. the alder is not likely to provide significant detritus material into the stream, (i.e. the further away from the stream, the less likely it is for this material to actually enter the stream, or if numerous alder scheduled for retention are likely to fulfill this contribution to the stream);

[4] Precommercial thinning – The cutting down of trees too small to have commercial value to a specified distance between trees (spacing) or number of trees per acre.

3. their control is likely to provide substantive growth release and LWD potential for conifer or alder trees scheduled for retention treatment will be achieved as prescribed in the RBI.

Natzuhini Tributary – The most important riparian management action taken has opened up the dense alder so that the scattered conifer in the understory can be released for rapid growth to attain LWD size. Two acres of red alder riparian zone were treated to favor the growth of suppressed and intermediate conifer second growth. In addition, the conifer was fertilized to accelerate its growth to a dominant character within the riparian zone. This will result in a more diverse habitat for fish, stream dependent animals and other terrestrial wildlife.

Flat Creek – The dominant riparian management activity was to PCT the conifers in the riparian zone in order to accelerate growth for future LWD recruitment and provide more favorable habitat for terrestrial mammals. PCT was the dominant management technique conducted. The conifers were thinned to about 75 TPA to accelerate growth while providing a diverse plant environment for terrestrial mammals, lesser animals, insects, and invertebrates important to the food chain of resident and anadromous species. In addition, fertilization, brush control, and red alder stem reduction, and planting favoring cedar was done on scattered selected sites.

Red Alder was retained according to the following guidelines that were developed as a result of a field trip in September 2002 of a number of MBRT representatives.

Individual alder trees, or clumps of alder trees, were controlled as described under the Natzuhini Creek Main Stem section above.

Natzuhini Salt Chuck – Currently, Sealaska contemplates only preservation and protection management actions for this portion of the Bank. Sealaska recognizes that management actions taken within the riparian zone would enhance the ecological characteristics of the riparian zone and the estuarine area. A significant portion of the shoreline riparian area contains dense second growth dating from about sixty years and 25 years due to timber harvest. Introduction of future LWD into the estuarine and marine systems is ecologically important. Management actions similar to those used elsewhere within the Bank (PCT, brush control, etc.) would result in enhancing the shoreline areas within the estuarine salt chuck system. This salt chuck is an important schooling and rearing area. Providing large woody debris would result in a meaningful contribution to ecosystem dynamics. The lower elevations of the salt chuck will temporarily trap the occasional LWD that washes down Natzuhini Creek during major storm events or trees falling into the salt chuck from its adjacent riparian area. Therefore, Sealaska reserves the right to offer to the Corps/MBRT a management plan for the estuarine riparian zone that would enhance its ecological characteristics.

VII. Mitigation Credits

This Bank contains three distinct categories,: estuarine, streambed, and palustrine upland riparian, which are described below. Credits generated from the estuarine class should not be used to mitigate palustrine impacts and vice versa. Each credit represents a unit of area equal to

1/10 acre (1/10 acre = 66' X 66' = 4,356 ft^2) that is subject to a functional capacity index factor (FCI) as defined in Appendix Five – Natzuhini Bay Mitigation Bank Riparian Zone Functional Assessment. The Bank will maintain records of units and fractional units to the nearest 0.01 units. There are a total of 665.06 credits in the bank from all classes and subclasses as defined above and as shown in the following table:

Natzuhini Bay Mitigation Bank Origin of Net Credits		
Category	Credits	Percent
Estuarine (Preservation)	118.97	17.9%
Stream Bed (Preservation)	75.46	11.3%
Palustrine-Upland Riparian	470.63	70.8%
Total	665.06	100.0%

1. Estuarine – There are 47.59 acres located from MHW to the HTL plus sixty-six feet of vegetated riparian zone within the defined Natzuhini salt chuck available for sale as mitigation bank credits that meet the conditions as set forth in the RBI. This area is classified for preservation credits because no enhancement management actions are currently contemplated. Therefore, 118.97 net credits are available for sale as explained in section VIII "Planned Compensation", upon completion of the bank approval process.

2. Stream Bed - This portion of the Bank contributes 75.46 net credits that are represented by the area within the stream bed, defined as the area between the stream banks at the level of ordinary high water (OHW). This contribution receives a classification of preservation credits that have a Corps assigned 25% (FCI). In the future, if Sealaska offers a plan acceptable to the Corps/MBRT that involves active, in-stream management then an appropriate Hydrogeomorphic analysis of the stream bed component will be conducted to determine the change in FCI in order to assess the net number of credits that will be made available due to the enhancement activities.

3. Palustrine-Upland Riparian – Credits in the Bank that represent the riparian zone as previously defined may be sold as mitigation credits that offset impacts from permitted development projects on palustrine wetlands. There are 100.43 acres available for sale as explained in section VIII "Planned Compensation". The net number of credits available for sale is 470.62.

   The net number of credits is determined from a field analysis using the Hydrogeomorphic (HGM) system of analysis (See Appendix Five Natzuhini Bay Mitigation Bank, Riparian Zone Functional Assessment). For this Bank, predetermined dates were used to estimate the Functional Capacity Index (FCI). Immediately after timber harvest in 1977 the FCI calculated for the riparian zone averaged 0.32 compared to 1.00 which is the ideal value for palustrine wetlands immediately adjacent to the riverine environment. By approximately 2000 the FCI had increased to 0.44 largely due to the ingrowth of vegetation that provided enhanced habitat and water retention value. The FCI increased to 0.46 after the thinning treatment implemented in 2001. It is estimated that by 2037 the

FCI will have increased in value to 0.67 showing increases in each of the three ecological functions, but especially habitat.

This Bank functions in a dynamic environment that includes opportunities for Sealaska to recommend potential modifications and improvements to the stream riparian zone, in-stream (stream bed), and estuarine riparian zone, that receive approval by the Corps/MBRT. All such modifications shall be reviewed to determine the degree to which they enhance the Bank. Any additional net credits shall be added to the Bank and apportioned for release based on a reasonable number of credits that recognize work done, costs incurred, and the expected enhancement to the Bank in the future.

VIII. Planned Compensation

The Bank is designed to provide mitigation credits that may be sold to applicants to compensate for permitted activities that will take place in palustrine and estuarine jurisdictional wetlands. Bank mitigation credits may be used to compensate for impacts to jurisdictional waters of the United States such as streams, tributaries, intertidal, estuarine, and palustrine wetlands. The Alaska District, Corps of Engineers is the final authority to determine if use of the Bank is the appropriate compensatory mitigation for any Department of the Army permit decision. The Corps will also determine the class and number of debits needed to compensate for unavoidable impacts after consultation with the agencies, as appropriate.

The procedure for proportioning stream riparian credits is as follows:

Upon submittal of all appropriate documentation by Sealaska, and subsequent approval by the Corps in consultation with the MBRT, it is agreed that the following credits will become available for transfer to a third party in accordance with the RBI and summarized in the following schedule:

1. Twenty-five percent (25%) of the available credits which equals 117.66 credits shall be available for debiting upon approval of the Bank and execution of a restrictive covenant or other instrument acceptable to the Corps that insures protection and preservation of Bank lands. Such approval includes that adequate funds exist to carry out all project steps, monitoring for the requisite time period, and security of real estate assurance to the satisfaction of the Corps. Sealaska anticipates that these initial credits will be available for sale.

2. Twenty-five percent (25%) of the available credits which equals 117.66 credits shall be immediately available for debiting because all of the precommercial thinning activity has been completed on all lands where stocking is greater than the target average of 75 trees per acre. The Corps/MBRT will determine if the Bank has met this performance criterion based on monitoring reports submitted by Sealaska.

3. Twenty percent 20% of the credits totaling 94.12 credits will be available for sale when all of the other activities (red alder management, planting of wild/nursery stock, brush control, and fertilization has been completed; and two years have passed after the last of these activities has been completed. In order to comply with the terms of the Partners for Fish and Wildlife Agreement, No. 701819J222, dated September 7, 1999, between Sealaska and the U.S. Fish and Wildlife Service, 67.30 credits will not be available until the ten year agreement expires on September 7, 2009. Therefore, 26.83 credits will be released when the management action criteria and the two year waiting period have been met. After September 7, 2009, the remaining 67.30 credits will be released for sale and debiting from the Bank. In addition, Sealaska will submit to the Corps/MBRT a monitoring report that demonstrates that these criteria have been met.

4. Fifteen percent (15%) of the credits totaling 70.59 credits will be available for debiting seven years after the last increment and when Sealaska has submitted a monitoring report that confirms the progress expected during the elapsed time from the approval of the Bank instrument.

5. The remaining fifteen percent (15%) of the credits totaling 70.59 credits will be available for debiting fifteen years from the date of Bank approval, but not less than three years after step # 4 of this section has been implemented; and when Sealaska has submitted a monitoring report that confirms the progress expected during the elapsed time from the approval of the Bank instrument.

The procedure for proportioning the preservation credits in the bank is as follows:

Preservation credits are awarded at the time the Bank is approved and recorded with the State of Alaska, Department of Natural Resources, Division of Mining, Land, and Water. The preservation credits include 118.97 net credits to be allocated for reserving the estuarine and estuarine riparian zone, plus 75.46 net credits derived from the area attributed to the stream bed inside OHW.

Summary of Credit Release

Category	Credits	Time of Release
Estuarine Preservation	118.97	Corps approval and covenant registered with State of Alaska
Stream bed Preservation	75.46	Corps approval and covenant registered with State of Alaska
1st 25% of Credits	117.66	Corps approval and covenant registered with State of Alaska
2nd 25 % of Credits	117.66	Completion of thinning trees in riparian zone
Portion 20% of Credits	26.83	Two years after other vegetative management is complete
Portion 20% of Credits	67.30	September 7, 2009 when FWS agreement terminates
15% of credits	70.59	Usually 7 years after the first part of the 20% step
15% of credits	70.59	Usually 15 years after bank approval
Total	665.06	

IX. Accounting Procedures

Sealaska will require certification from the Corps that a potential buyer has been approved by the MBRT to use the NBMB. Sealaska agrees to submit a statement to the Corps each time credits are debited. The Corps will be responsible for distribution of the statement to the other members of the MBRT. Sealaska will submit an annual statement to the Corps for distribution to all members of the MBRT, showing all transactions at the Bank for the previous year. The Bank will not be for sale until three criteria are met: 1) All of the members of the MBRT have agreed to the banking instrument; 2) The Bank has been recorded with the appropriate office of the Alaska Department of Natural Resources, Division of Lands, and 3) Sealaska provides proof of financial assurances as referenced in the RBI dated October 12, 2004, and the conservation/preservation instrument is executed and accepted by the Corps/MBRT.

X. Performance Standards and Monitoring

A. Standards for Tree Species

Where stocking standards are insufficient and the soil will support productive growth, wild conifer transplants will be planted on an average target spacing of 75 trees per acre for all trees, planted as well as residual, on well-drained sites or well-drained hummocks in wetter sites. The trees will be greater than 12" above the root collar, possess one terminal stem, not be browsed back by animals, have a well developed root system and be not greater than 5 years old. Due to variability in site wetness a spacing variation of 50-125 TPA is acceptable.

Nursery stock will be a minimum of Plug+1 bare root transplants of a provenance compatible with the south Prince of Wales Island latitude. Nursery transplants will be planted on an average target spacing 75 trees per acre for all trees, planted as well as residual, on well-drained sites or well-drained hummocks in wetter sites. Due to variability in site wetness a spacing variation of 50-125 TPA is acceptable.

Second growth developed since timber harvest will be thinned to a target of 75 trees per acre (or 660' linear feet of stream bank and 66' deep), on one side of the stream. However, because natural spacing is highly variable, a variation of 50-125 TPA is tolerated. Tree spacing is modified to 65 %, (49 trees), in the 0-33' zone, and 35%, (26 trees), in the 33-66'zone. This spacing criterion accounts for potential leave tree mortality, and prevents excessive openings that are not likely to benefit residual trees (future LWD sources). Residual tree target spacing guidelines to achieve this stocking are, 21' for the 0-33' zone, and 29' for the 33'-66' zone[5]. Where naturally available the objective is to have a variety of all four conifer species. Since the cedar species are rarely present, those few in evidence will be favored unless they are subordinate in height. Sealaska shall field check tree spacing to ensure that it is not lower than 60 TPA or higher than 90 TPA after PCT. If mortality during the first ten years of the life of the Bank reduces spacing to below 60 TPA, Sealaska shall interplant with conifers and monitor the

[5] Southeast Alaska Regional Banking Instrument, Appendix 3, A. Target Spacing

survival and growth for 10 years from the time of such interplanting. Sealaska will monitor conifer growth during the first ten years after PCT[6].

- Individual alder trees, or clumps of alder trees, will be controlled in accordance with the RBI and as summarized under the Natzuhini Creek main stem above.

B. Standards for Management of Brush Species

Competition from brush species (such as salmonberry) can significantly reduce growth rates of target conifer trees. Treatment to reduce such competition included spot herbicide applications applied to the brush around each tree in 2001, 2002 or 2003. This treatment enhanced target tree growth by removing competing vegetation around the tree's crown and root zones. Brush control was conducted within three years of conifer PCT. Sealaska will monitor effects of brush control on conifer growth, brush mortality and reduction at the 5th and 10th years after conifer PCT. All herbicide applications were conducted in accordance with herbicide label instructions and other applicable laws. If brush species start to out-compete young target trees, Sealaska shall return to those affected areas and reduce the brush competition using methods reviewed and approved by the Corps and MBRT. No herbicide spraying will occur in the ten foot bankside zone. Any future herbicide application will be conducted in accordance with label instructions and other applicable laws. Applicators will be licensed or will work directly under the supervision of a licensed applicator.

C. Standards for Fertilization

Sealaska has had favorable experience with sulfur coated urea fertilizer application in the Big Salt area, near Klawock, Alaska. Fertilizer was applied by hand application within the leave tree "free to grow zone."[7] The fertilizer was SCU (Sulfur coated Urea) 32-0-0 which was applied at about 500 lbs per acre. Sulfur helps the hemlock respond to nitrogen and increases the longevity of nitrogen in a wet environment. Within two years of fertilization Sealaska will monitor effects on conifers regarding mortality and needle color. At five and ten years from project inception, Sealaska will measure growth of the residual conifers and compare measurements to the control plot area. If planted tree growth falls below anticipated standards, Sealaska shall return to the affected areas and apply fertilizer sufficient to increase growth to meet accepted standards. In addition, Sealaska can retain an acceptable third party to review the affected areas to determine if the sites are not able to maintain growth rates originally forecasted due to characteristics such as imperfect drainage or other characteristics that fertilization can not overcome. However, if there are microsites that can support optimum tree growth in the immediate area, Sealaska will plant new seedlings or transplants and fertilize them.

D. Remedial Responsibilities

Sealaska agrees to perform all necessary work to maintain the Bank. This includes PCT, red alder control, brush control, planting, and fertilization. In addition, Sealaska agrees that all

[6] Ibid
[7] Ibid

activities, applications, etc. will meet environmental standards to assure protection of the terrestrial and instream environments.

In the event that the Bank fails to achieve its anticipated success criteria, Sealaska shall develop necessary contingency plans and implement appropriate remediation actions for the Bank in coordination with the Corps/MBRT. Each contingency plan shall address the specific deficiency on a case-by-case basis, based on which specific success criteria are not meeting standards. The plan shall review the standard itself to make sure that it reflects realistic field conditions. A remediation plan will be submitted to the Corps/MBRT for review and approval within 90 days of discovering the failure and will be implemented during the next appropriate season.

An example would be if the projected tree growth is falling well below expectations, a contingency plan could include a more intensive site investigation to better determine the site index. If the thinned target trees are not meeting expectations, extra fertilizer will be applied if the updated site analysis supported such action. Maintenance funds generated from the sale of credits would finance the effort. However, if the maintenance funds were insufficient, then Sealaska is be liable for providing the additional funding required.

The escrow account established under the terms of this agreement is to provide a source of funds and would be available for the Corps/MBRT to contract with a third party to perform additional work in the event Sealaska Corporation has legally been determined to be insolvent and therefore is unable to fulfill its obligations as described in the RBI.

E. Site Identification

The boundaries of the Bank have been established by locating the four corners for each stream (one each at the upstream outer limits and one each at the down stream outer limits), with the Natzuhini tributary being a separate stream, using GPS instruments. These were located on the ground and staked referenced to two witness trees for each corner. The corners were located on orthographic photography that was digitized for the Sealaska GIS equipment. Sealaska measured the length of each of the three streams, and the digitized length determined the lineal feet in the Bank from which the correct number of credits are calculated. At spatial intervals measuring back from OHW of the stream bank 66 feet plastic flags were hung between the points in a manner that conformed to the meander of the stream bank. The standards for hanging the flagging was that a person should be able to observe two flags in each direction along the line when deciduous vegetation has lost all of its leaves. Flagging was done to guide the contractor who did work, and for Corps/MBRT inspections. Once the Bank has been established the flagging will not be maintained.

F. Monitoring

The objective of the monitoring is to measure the techniques that Sealaska performed to better the ecological characteristics within the riparian zone and to assure that performance standards objectives are being attained. Each time monitoring is to be done, sample plots will be established for each stream course based on analysis of the most current aerial photography. The

sample plots will represent the various communities found within the riparian buffers. A minimum of six representative plots will be located along Flat Creek, 4 plots along Natzuhini Creek and two plots along the Natzuhini tributary. The plots shall be located in representative plant communities. No monitoring plots are contemplated in the salt chuck preservation area. The Corps/MBRT shall be notified at least two weeks prior to the date scheduled for monitor measurements.

Formal monitoring studies shall be conducted during the May-August period of those years for which reports are required in order for the Bank to receive mitigation credits. If after the fifteenth year, the Bank has met, or shows progressive improvement towards meeting the performance standards set forth in this document, contingent upon Corps/MBRT review of the site, further monitoring will not be expected. However, Sealaska is encouraged and plans to monitor the site comparing field observations with performance results on an interim basis to ensure that Bank performance is on track with expectations and to allow for any needed remediation to be implemented in a timely manner. If the site does not sufficiently meet the anticipated requirements of the Corps/MBRT, further monitoring and improvements may be required at the discretion of the Corps/MBRT. The monitoring reports are the responsibility of Sealaska and shall be submitted prior to each time credits are proposed for release.

G. Periodic Reports

Specific performance criteria are required by the Corps/MBRT before the Bank can be used as a mitigation site. Since plant community manipulation is the major activity undertaken to enhance the riparian environment, its criteria are the most important when evaluating the success of the Bank. Appendix Four, The Riparian Zone Functional Assessment provides the measurement criteria that determine how well the Bank is meeting ecosystem goals. Identified standards are established to ensure that the Bank is meeting the minimum conditions for a viable ecosystem that supports anadromous fish spawning and rearing habitat and riparian wildlife in southern Southeast Alaska. Except for initial approval of the Bank, scheduled field-monitoring reports shall be submitted to the Corps/MBRT prior to mitigation credits being credited to the Bank.

XI. Long Term Management and Maintenance

See Southeast Alaska Regional Mitigation Banking Instrument

XII. Force Majeure

As the Bank sponsor, Sealaska will not be responsible for Bank failure that is attributed to natural catastrophes such as flood, drought, disease, regional pest infestation, acts of terrorism, acts of war, forest fire, or other events that the MBRT, acting through the Corps, determines are beyond the control of the owner to prevent or prudently mitigate.

XIII. General Provisions

A. Effective Date. The Natzuhini Bay Mitigation Bank instrument shall become effective on the date of signature of the District Engineer, Alaska District, U.S. Army Corps of Engineers, or his representative and the other members of the MBRT.

B. Dispute Resolution. Resolution of disputes about application of this Bank shall be in accordance with those stated in the Federal Guidance for Establishment, Use and Operation of Mitigation Banks (60 F.R. 58605 et esq., November 28, 1995).

C. Modification. This Bank instrument may be modified with the written approval of Sealaska and the appropriate U.S. Army Corps of Engineers representative. Prior to approving any modification, the District Engineer shall obtain the consensus of the MBRT.

D. Guiding Document. In the event of any conflict between this agreement and the Federal Guidance, the Federal Guidance shall control.

E. Agency Authority. Nothing in this agreement shall be construed as altering, or in any way limiting, any agency or participant's ability or responsibility to act in accordance with all applicable law and regulations. An agency's undertakings pursuant to this agreement are subject to the availability of funds. Any of the MBRT members may terminate their participation upon written notification to all signatory parties.

F. Property Encumbrances. Sealaska shall not grant additional easements, rights-of-way, or any other property interest in or to the project areas without written consent of the Corps, in consultation with the MBRT.

G. Term. This agreement will remain effective for 5 years from the effective date of this agreement. At that time Sealaska and the MBRT may elect to terminate or renew the agreement by mutual consent. If no election is made to terminate, the Agreement will remain in effect for periods equaling 5 years until a mutual election to terminate is made and agreed to by Sealaska and the MBRT.

H. Signature Authority. Each undersigned representative certifies that he or she is fully authorized to enter into the terms and conditions of this agreement and to execute and legally bind such party to this Agreement.

XIV. Disclaimer

This mitigation-banking instrument has been prepared in support of the Natzuhini Bay Mitigation Bank project in Southeast Alaska. The goals and objectives of this project are to develop and implement sound and efficient mitigation opportunities within the private sector. The Corps/MBRT and Sealaska agree that a secondary goal of this project will be to "fine tune" the mitigation banking process for future projects and proposals. Support of this project by the participating federal and state agencies represents their efforts to meet the objective stated above.

This Bank, in a sense, is a pilot project; therefore, endorsement of these policies and procedures does not set a precedent for future mitigation banking projects within the Alaska District.

XV. Contact Information

Please contact the following with any questions or comments with respect to this Bank:

Ronald R. Wolfe
Natural Resource Manager/Corporate Forester
Sealaska Corporation
One Sealaska Plaza, Suite 400
Juneau, Alaska 99801
Email: ron.wolfe@sealaska.com
Phone: (907) 586-9277
Fax: (907) 463-3897

Sealaska Corporation respectfully submits the Natzuhini Bay Mitigation Bank Proposal to the Regulatory Branch, U.S. Army Corps of Engineers, Alaska District, and other members of the MBRT for approval per the requirements of the Federal Guidance for the Establishment, Use, and Operation of Mitigation Banks (60 *Fed. Reg.* 58,605 (1995)).

Sincerely,

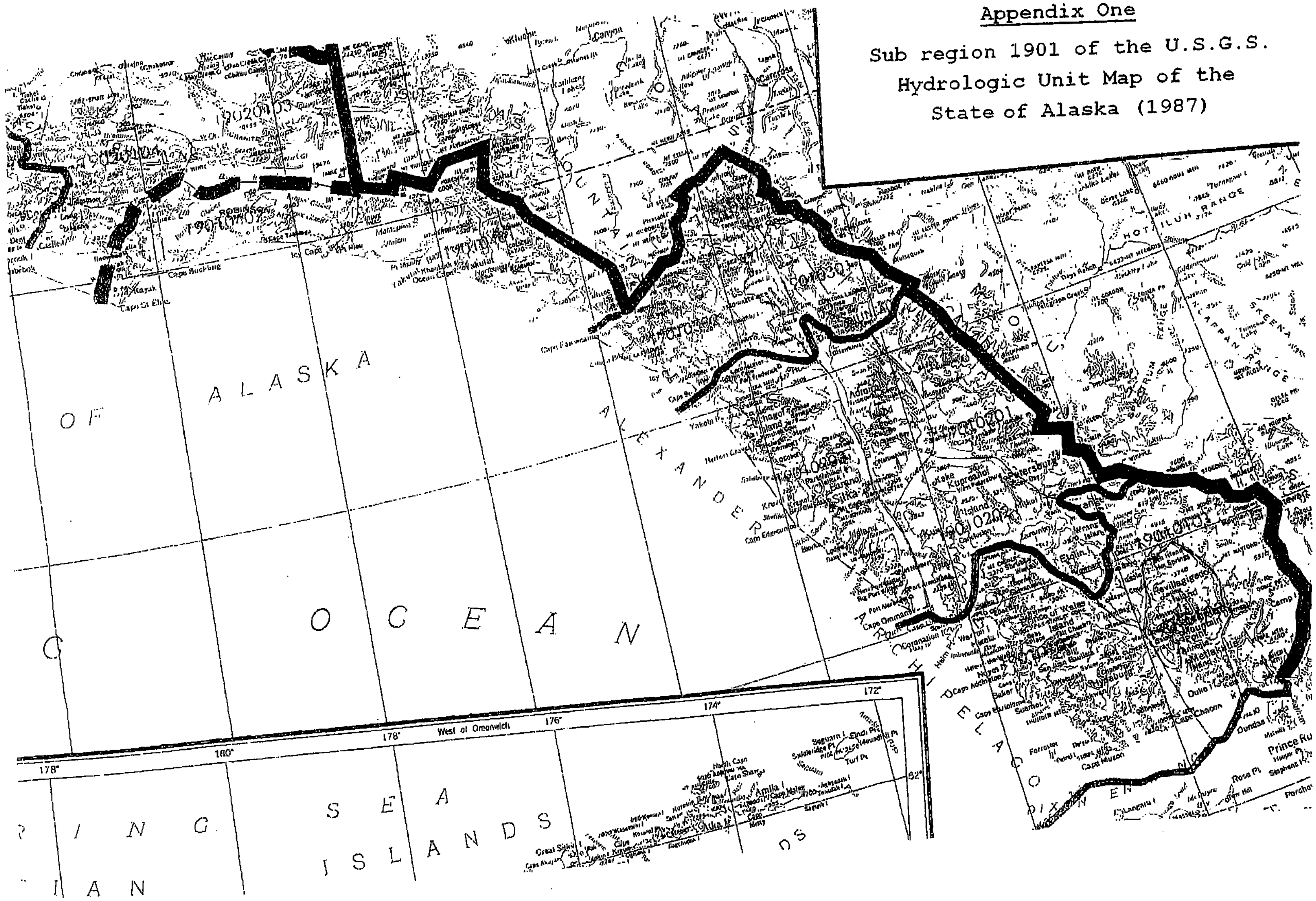
SEALASKA CORPORATION

Richard P. Harris
Executive Vice President

_____
Date

Appendix One

Sub region 1901 of the U.S.G.S.
Hydrologic Unit Map of the
State of Alaska (1987)



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

HYDROLOGIC UNIT MAP—1987
STATE OF ALASKA

COMPILED FROM THE GEOLOGICAL SURVEY ALASKA TOPOGRAPHIC MAPS
SCALE 1:250 000, AND OTHER OFFICIAL SOURCES
MODIFIED TRANSVERSE MERCATOR PROJECTION

SCALE 1:2 500 000
1 INCH EQUALS APPROXIMATELY 40 MILES

50 0 50 100 150 MILES

50 0 50 100 150 KILOMETRES

NATIONAL GEODETIC VERTICAL DATUM OF 1929

FOR SALE BY U.S. GEOLOGICAL SURVEY
FAIRBANKS, ALASKA 99701, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092

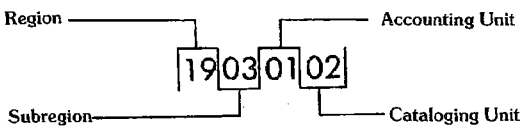
1987

EXPLANATION

This map and accompanying table show Hydrologic Units
it are basically hydrographic in nature. The Cataloging Units
own will supplant the Cataloging Units previously used by the
S. Geological Survey in its Catalog of Information on Water
ta (1966–72). The previous U.S. Geological Survey Catalog-
lexing System was by map number and letter, such as 49M.
e boundaries as shown have been adapted from "The
talog of Information on Water Data" (1972), "Water Re-
urces Regions and Subregions for the National Assessment of
ater and Related Land Resources" by the U.S. Water Re-
urces Council (1970), "River Basins of the United States" by
e U.S. Soil Conservation Service (1963,1970), "River Basin
aps Showing Hydrologic Stations" by the Inter-Agency Com-
ttee on Water Resources, Subcommittee on Hydrology
961), and State planning maps.

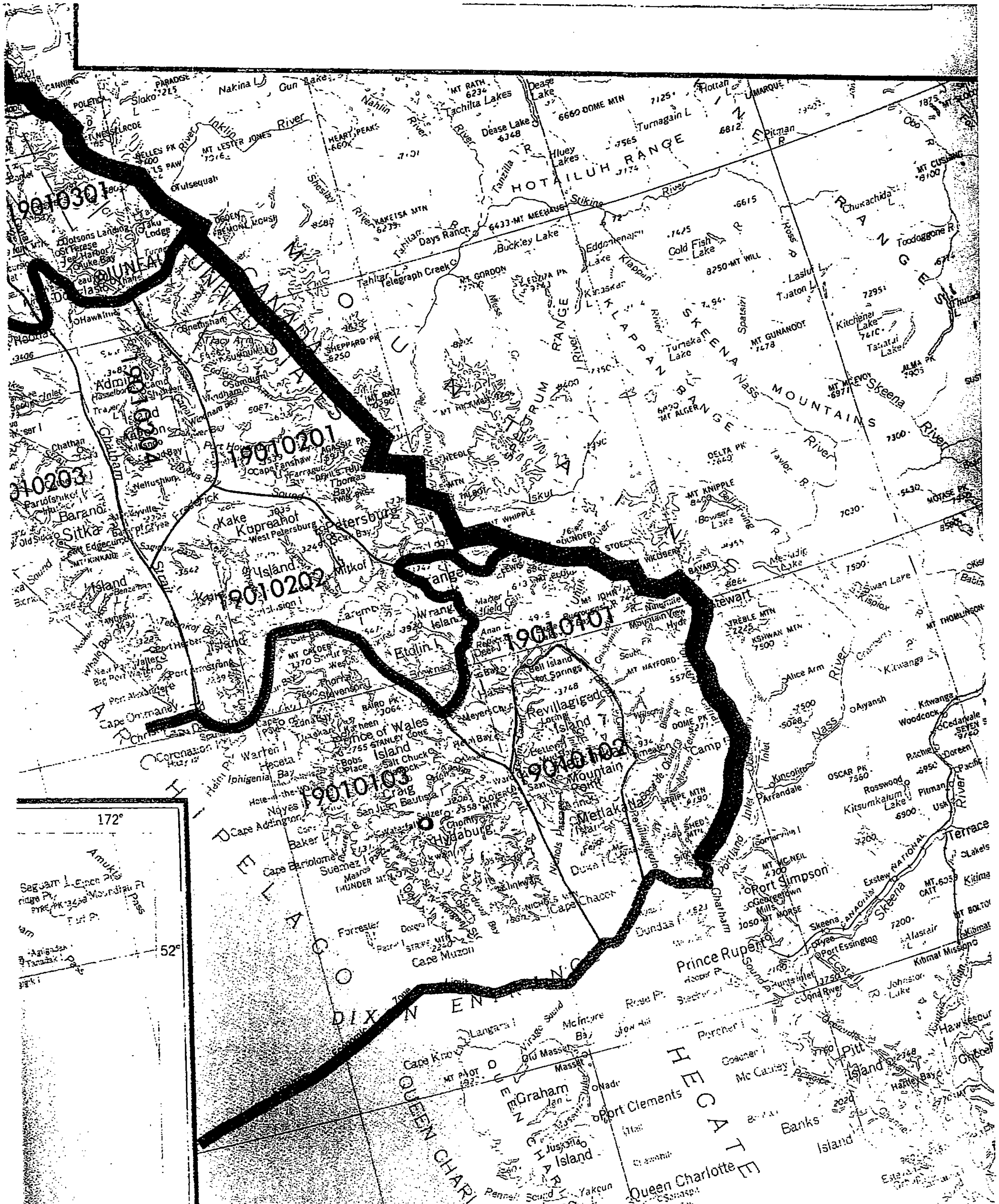
The Regions, Subregions and Accounting Units are aggre-
tes of the Cataloging Units. The Regions and Subregions are
987) used for comprehensive planning and as a standard
ographical framework for more detailed water and related
id-resource planning. The Accounting Units are those (1987)

HYDROLOGIC UNIT CODE



Regional Boundary

Subregional Boundary

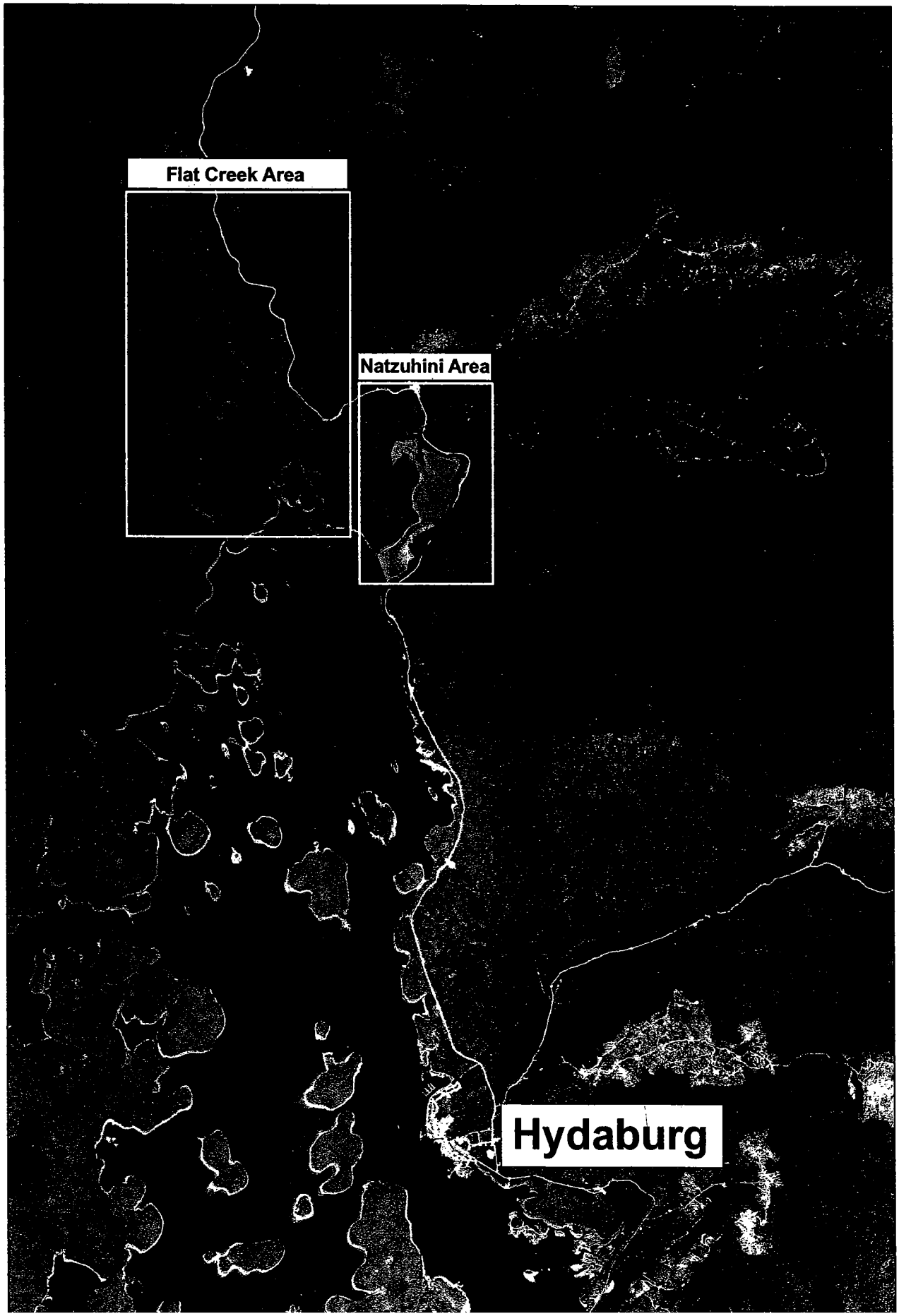

19010301
19010201
19010203
19010202
19010103
19010102
19010401
Sitka
Baranof
Kake
Kupreanof
Petersburg
Mitkof
Etolin I
Prince of Wales Island
Craig
Hydaburg
Revillagigedo Island
Metlakatla
Stewart
Prince Rupert
Port Simpson
Terrace
HOTAILUH RANGE
SKEENA MOUNTAINS
DIXON ENTRANCE
HECATE STRAIT
QUEEN CHARLOTTE ISLANDS
Graham Island
Port Clements
Queen Charlotte
Moresby I
Banks Island
Pitt Island
172°
52°
136°
134°
132°
130°

Appendix Two

Maps of Natzuhini Bay Mitigation Bank

Appendix Two - Vicinity Map

Natzuhini Bay Mitigaton Bank

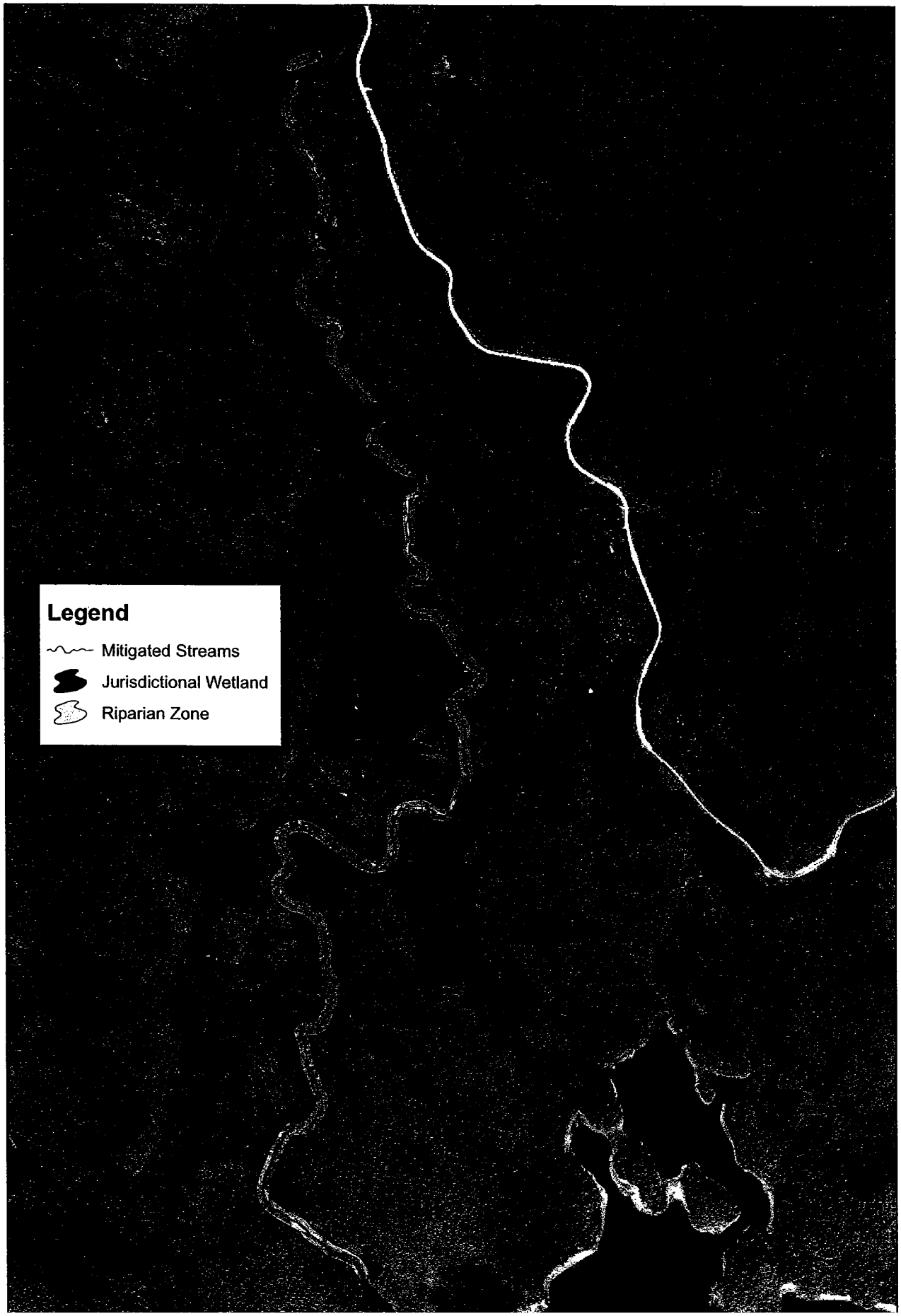


Appendix Two - Natzuhini Area

Natzuhini Bay Wetland Mitigation Bank

Appendix Two - Flat Creek Area

Natzuhini Bay Mitigaton Bank



Appendix Three

NATZUHINI BAY MITIGATION BANK
BASELINE REPORT

Natzuhini Bay (NWI E1UBL – Open water estuary, unconsolidated bottom) is served by two major stream systems plus several small streams. The two major systems are named Natzuhini Creek and Flat Creek, and both are productive anadromous fish streams providing the Hydaburg fishery with a significant portion of its annual salmon harvest. These two streams, a small tributary to Natzuhini Creek and the Natzuhini Salt Chuck at the mouth of Natzuhini Creek constitute the Natzuhini Bay Mitigation Bank (Bank). Timber harvest activities between 1975 and 1985 affected both streams, in that practically all of the large trees in the riparian area were harvested. A significant majority of the area was harvested when the Forest Service sold timber in the early 1970s. In addition, Sealaska harvested a small amount of the area in 1982. In each instance, the harvest designs conformed to generally accepted standards at the time. Subsequently, scientific studies showed that these practices did not conform to newly acquired knowledge which affords Sealaska the opportunity to create a bank that will accelerate the conversion of the streamside environment to a more favorable habitat zone. In addition there was timber harvest to the shoreline of the estuarine salt chuck in 1976 and prior to 1945. Following are specific attributes that existed in and along each stream prior to bank activities taking place:

Original Forest Prior to 1975 – Prior to timber harvest, except for very wet areas largely restricted to the south bank of Natzuhini Creek, the old growth trees in the riparian area were relatively widely spaced, large diameter (greater than 40" on the stump) and tall. The underlying brush was tall and quite thick despite occasional flooding. The portion of the Bank protecting the intertidal area was harvested in small clear cuts by A-frame and individual tree selection at least 70 years ago. In addition individual trees have been taken for cultural purposes such as canoes or fish boxes, etc. The residual forest bordering more than 70% of the estuarine area still has significant commercial volume, has the potential for future development as the State continues to grow, and contains easily harvestable timber. Over half of the estuarine shoreline is accessible from the Hydaburg public road affording the opportunity to develop highly desirable real estate shore front lots. The rest of the shoreline can be accessed from existing logging roads. Including this productive estuarine area in the Bank assures that mammal and fish schooling and rearing habitat is protected into perpetuity

Natzuhini Creek, Main Stem (ADF&G Catalogue #103-40-35) – That portion of Natzuhini Creek dedicated to the Bank starts at a small salt chuck in Natzuhini Bay located in NW¼, Section 20, Twp 76 South, Range 83 East, CRM. . The Bank riparian zone buffers a combination of an intertidal area and a fresh water anadromous stream. Other sections included in the bank are; 8, 9, and 16, all in T76S, R83E.

The riparian zone included in the Bank totals 3,580 lineal feet of stream and contains 17.42 acres. Currently the portion of Natzuhini Creek that is in the bank is the

first 3,580 lineal feet of main stem starting at MHW where the creek enters the Natzuhini estuary. This is divided into the stream bed (6.57 acres) and the riparian area (10.85 acres). In aggregate these two components contribute 89.12 net credits.

Location in the Bank – This watershed empties into the northeast part of Natzuhini Bay. It is separated from the bay by the Natzuhini salt chuck. The stream crosses under the Hollis-Hydaburg road. The watershed is about 5 miles long and is bounded by ridges that are as high as 2,300 feet elevation and contains 5,649 acres.

Class and Measurements - The main stem is classed as a modest low gradient alluvial stream and is similar to the Forest Service stream class FP4 – Low Gradient Flood Plain in its lower reaches where the bank is located The new USFS stream classification system describes this portion of Natzuhini as Moderate width Mixed Control (MM2). In its lower reaches, the main stem is roughly 80 to 100 feet wide. The portion of the stream channel within the bank is 3,580 feet in length measured from MHW at the head of the Natzuhini salt chuck to the upstream limits of the Bank. The main stem of Natzuhini Creek is a modest low gradient alluvial stream with a low gradient (1-2%) alluvial channel. The stream reaches in this category appear to reasonably fit the "C1" stream categories of Paustian as used by Murphy and Koski. The large active channel width has been subjected to moderate to heavy spring runoff and fall storm events. The substrate is primarily bowling ball-size cobble with some gravel. Some large instream LWD is present and is affecting channel characteristics where it exists. However it is forecasted that these large logs will be washed out of the stream within fifty years. If no management action is taken, there will be an additional fifty years before the new trees will start to contribute meaningful LWD into the stream. The management actions taken by the bank can reduce the time until meaningful LWD is available by forty to fifty years.

Resident and Anadromous Fish - The State of Alaska, Department of Fish and Game has catalogued Natzuhini Creek as anadromous stream #103-40 35. Fish of economic importance include chum, coho, pinks and steelhead. Although Pink salmon can spawn in this habitat, this portion of the stream is mainly a passageway for anadromous fish traveling upstream to more desirable spawning gravel bars. The streambed is quite uniform largely because there are few LWD and no bedrock outcrops to trap gravel and sand so that pools and riffles are infrequent. Gravel/cobble bars exist only to a minor extent on the inside of existing bends. However, these are not extensive because of the high-energy storm and melt events that push lighter material down the stream in the spring and in late summer and fall. The characteristic of few pools and riffles probably will continue regardless of LWD recruitment because of high water events. Eddies developing from fallen bank-anchored trees will form and be available for resting fish until the bank-anchored root wad is dislodged to migrate down the stream. Deposition and pools do form at the upper tidal limits, so anadromous fish do have resting areas with reasonable cover while waiting to travel upstream to the spawning areas.

Vegetation – Occasional old growth western hemlock and Sitka spruce are scattered along the stream bank. The riparian area on the north bank is dominated by western hemlock, Sitka spruce, and some red alder dating from 1979. The riparian area on the south bank is dominated by western hemlock, Sitka spruce and very little red alder dating from approximately 1987. Understory vegetation is dominated by salmon berry and vaccinium species. Other than the area of old growth, the remaining riparian area consisted of over stocked conifer second growth aged from 15 to 20 years, except for two small tributaries that are dominated by red alder approximately 20 years old. Codominant conifer trees average 47.9 feet high in 2000. The stocking of the conifers and red alder varied between 500 – 2,000 trees per acre. On the south side within the riparian area there is one jurisdictional wetland approximately 720 feet long totaling 1.1 acre; the rest of the riparian zone is Upland. The lower tributary is included in the Bank and is described later in this appendix

Substrate and Soil - The bowling ball size and smaller substrate indicate that the main stem is subjected to moderate to high runoff during major storm events. In the riparian zone most of the soil is medium depth Upland series that is well drained. In one place an area within the riparian zone should be classed PFO4/SS4B – Flood plain forested swamp with a scrub component exceeding 50% of the cover. The area of this wetland class within the riparian zone totals 1.14 acres.

Timber Harvest and Post Harvest Conditions – Recent timber harvest took place at two different times between 1976 and 1985. In 1976 units 3, 4 and 5 were harvested in accordance with the provisions of the Flat Creek stumpage sale which was planned and supervised by the Tongass National Forest. This affected lands along and up slope from the northerly bank of Natzuhini Creek and the estuarine area. Old growth trees were quite widely spaced and included very large Sitka spruce trees and a mix of western hemlock. There were significant areas of tall brush species between the old growth because openings were sufficiently large to allow direct and lightly filtered sunlight to reach the forest floor during growing season. Timber harvest extended substanially beyond the 1,000 feet from the bankfull water line of Natzuhini Creek.

Timber harvest in 1976 occurred in units on the northerly bank of Natzuhini Creek. This unit was harvested to the stream bank with only a few scattered old growth trees being left adjacent to the stream bank. Immediately after timber harvest the unit was largely bare ground around the landing. Within sixty-six feet of the stream bank there was some brush and forb species occupying up to 50 % of the area. About 25 % of the area was mineral soil and the remaining 25% was relatively undisturbed forest duff. Any trees or logs that entered the stream were pulled out. Brush species and small residual conifers were scattered throughout the unit. Immediately after harvest, the stream banks were very exposed due to the lack of brush and tree species. Aerial photography taken in 1979 is available to closely document this early harvest and the general condition of the area. (See photograph section at the end of this appendix.)

In 1983 to 1985 Sealaska Corporation continued timber harvest activities on the north side of Natzuhini Creek and on the south side of Natzuhini Creek upstream from

the Hydaburg-Hollis road bridge. Near the stream the old growth trees had been quite widely spaced partly due to scattered areas with high water tables near the creek bank. From a distance back from the bank greater than 50' to 250' the toe of the hill commences and the trees, while not as large, grew more densely in a mix of Sitka spruce and western hemlock. Timber harvest activities extended a minimum of 2,000' back from the stream.

In 1983 to 1985, timber harvest was confined to the south bank of Natzuhini Creek. Logging occurred to the bank, but several old growth trees, largely spruce, were left immediately adjacent to the stream bank. Any trees or logs that entered the stream were pulled out. Pulling logs out of the stream was an accepted practice at that time because having no debris in a stream provided unimpeded fish passage. This unit contains a mosaic of wetlands/uplands near the stream bank, from which very few trees were harvested because the water table is perched near the surface. Other than harvest logs within 66 feet of the stream bank, the area within 66 feet of the stream bank was left in a relatively undisturbed state in that much of the brush survived because yarding was done away from the stream, not across it. Much of the small residual conifers, brush species and forbs species survived elsewhere in the unit. The road that accessed the unit followed the contour lines except one spur traversed the hillside to the southeast. Bridges and culverts were placed frequently and there is no evidence of soil/subsoil scouring. 1986 aerial photography is available to generally document the condition of the area following this timber harvest.

The active channels are too wide from stream bank to stream bank for canopy closure, which is a characteristic that will remain even when trees in the riparian area reach maturity. However, because this is largely an east-west running stream, there will be some shade on the southerly banks. Significant portions of the stream have high banks, up to 10 feet at low water, because of the occasional torrents in large storm events. As vegetation redevelops, these banks will provide cover because of the occasional small developing trees and shrubs that will be undercut and fall into the stream. Eventually, the occasional old growth trees left by the previous timber harvest will fall into the stream to provide continued opportunity for some pool/riffle development. At this point in time there are too few old growth trees to provide an optimum recruitment population during the next seventy years.

The Natzuhini main stem contributes 89.12 net mitigation credits[1] to the Bank.

Natzuhini Salt Chuck – Location in the Bank – The Natzuhini salt chuck is found near the head of Natzuhini Bay along the northeast shore. It is bounded by the entrance into Natzuhini Bay at the salt chuck outlet and the mouth of the Natzuhini main stem. Much of it can be seen from the Hydaburg-Hollis road from just south of the Natzuhini bridge.

Class and Measurements - This intertidal zone is encompassed by 18,498 feet of shoreline (measured at HTL) and the riparian zone contains 47.59 acres based on

[1] Appendix Four, Natzuhini Watershed Mitigation Bank, Riparian Zone Functional Assessment

measurements from MHW to 66' above HTL. Because this is currently classed for preservation credits, it contributes 118.97 net credits.

This salt chuck is part of the Natzuhini Creek system which the State of Alaska, Department of Fish and Game has catalogued as anadromous stream #103-40 35. It bounds the shoreline from the entrance of the salt chuck to include the salt chuck, marshes, and vegetated tidal meadows. The sixty six foot riparian zone above the HTL is largely Upland except for 0.4 acres of jurisdictional wetland located to the west of the outlet of Natzuhini Creek.

The entrance to the salt chuck (NWI class E1UBL) is sub tidal permanently flooded with brackish water that is mixed except for the time of flood tide when it is largely salt water. The bottom is classed as unconsolidated.

The preponderance of the salt chuck (NWI class E2AB1/USN) is composed of intertidal, regularly flooded estuarine sand/silt flats and tidal influenced shorelines. This class dominates the inlet to and most of the east half of the salt chuck.

The vegetated tidal areas are composed of a combination of high salt marsh (E2EM1P), which dominates and to a lesser extent low salt marsh (E2EM1N). The lower areas of brackish marsh are regularly flooded by tidal water for up to six hours at a time. The high salt marsh areas are flooded by tidal water less frequently. Both are dominated by emergent vegetation including sedge species, arrow grass, plantain and sea milkwort. The very highest portions are irregularly flooded only during tides higher than MHHW. There are even several microsites in the highest portions where Sitka Spruce have become successfully established and are clearly visible in aerial photos. These highest areas totaling 12.40 acres could be classified as a salt meadow as described by Cowardin[2]. Therefore, the upper reaches of this area provide a rich variety of habitat for mammalian species. There are numerous ditches that have some standing water that contribute to the rich habitat when the tide is out. Therefore, the sixty six foot protective tree buffer provides important habitat and water filtration protections for the estuarine area.

Resident and Anadromous Fish – The salt chuck provides habitat for coho, chum, and humpback salmon. In addition Dolly Varden and cut throat trout have been found in this area. There is no record of any marine species including fish, mammals or lower order species using this estuarine area. However seal species may enter the area to hunt schooling salmon.

Riparian Zone Vegetation – The riparian zone above HTL is largely forested, well stocked with western hemlock and Sitka spruce in three age categories. The boundary between the estuarine component and the riparian component measures 18,498 lineal feet

[2] Cowardin, Lewis M., Etal. Classification of Wetlands and Deep Water habitats of the United States. Office of Biological Services, Fish and Wildlife Service, U.S. Department of Interior, Washington, DC 20240, FWS/OBS 79/31, December 1979.

which equates to 3.50 miles as measured along the shoreline by the Sealaska GIS department.

1. Within this area are 5,785 lineal feet of mixed western hemlock-Sitka spruce old growth located in two separate areas along the west shoreline; and 8,625 lineal feet located in four separate areas along the easterly shoreline. This forest cover provides significant shade so that there is little vegetation under, except for areas receiving sunlight from the open shoreline. This old growth component totals 14,410 lineal feet.
2. There are four separate areas of western hemlock-Sitka Spruce old second growth harvested by A-frame sometime before 1945. The natural forest that has grown up since that time is dense and affords little opportunity for natural understory vegetation to occur except for limited areas along the shoreline. This zone totals 2,213 lineal feet.

3. There is one area of western hemlock-Sitka Spruce second growth that was harvested in 1976 that is 1,875 lineal feet all located adjacent the E2EM1P estuarine component in the upper reaches on the westerly side.

Soil and Substrate – The riparian zone above the HTL for the full circumference of the salt chuck, is just about exclusively Upland, well drained soils. The intertidal area within the salt chuck is a combination of low salt marsh (E2EM1N) in the lower elevation areas and high salt marsh (E2EM1P) in the highest elevations of brackish marsh irregularly flooded by tidal water. In one location within the riparian zone there is a wetland that should be classed PFO4 – Flood plain forested swamp. The area of this wetland class within the riparian zone totals 0.38 acres.

Harvest - This area easterly from the outlet of Natzuhini Creek was A-frame harvested approximately in 1940±. Portions of the riparian zone westerly from the outlet of the salt chuck were harvested to the shoreline in 1976 and 1977.

This portion of the bank totals 118.97 net marine/estuarine credits[3] that are available for sale to mitigate development projects located within the classified estuarine/marine areas of Southeast Alaska.

Natzuhini Creek, North Tributary (Catalogue #103-40-35) – This Small Low Gradient Alluvial Stream flows into the Main Stem of Natzuhini Creek approximately 200 yards below the State highway bridge. The description for this reach includes the 66 foot riparian area to the stream bank of the main stem of Natzuhini creek. This portion of the Bank occupies 4.19 acres, including the stream bed and contributes 26.25 net credits to the Bank.

Location in the Bank – This tributary enters Natzuhini Creek from the north, about 200 yards downstream from the state highway bridge. The bank starts at a large

[3] Appendix Four, Natzuhini Watershed Mitigation Bank, Riparian Zone Functional Assessment

box culvert on the Hydaburg highway and includes the entire stream to the main stem of Natzuhini Creek.

Class and Measurements - According to GIS calculations this tributary is about 1,240 feet long and, based on field observation, the bank full width averages about 20 feet through the reach that constitutes the Bank. This is a Small Low Gradient (1-2%) Alluvial Stream that most closely fits the Forest Service classification of FP3 - Narrow Low Gradient Flood Plain Channel. Much of the channel is unconstrained with alternating pools and gravel bars that become riffles in high water. The watershed measures about 417 acres and is included in the watershed for the Natzuhini main stem. Its features are being strongly influenced (or controlled) by large pieces of instream woody material and whose banks are being stabilized by riparian vegetation. This is an unconstrained channel flowing through local flood plains. This channel reasonably fits the "B1" channel classification of Paustian (1984), as used by Murphy and Koski (1989). When observed on two occasions in 2000, the width containing flowing water varied between six and 12 feet. The streambed material is primarily small grained with minor areas of fine to coarse gravel. There are many small pools and riffles formed from old LWD, red alder branches and tops, and red alder growing in the stream channel forcing it to make small meanders. Back eddies and pools contain large amounts of organic detritus. V. W. Kaczynski, PhD, (fisheries biologist retained by Sealaska to review all of the streams in this Bank) characterizes this stream as being excellent for rearing Coho salmon because the transitions between pools and riffles are very gentle, there is a large amount of detritus, and there is plenty of cover for protection.

Resident and Anadromous Fish - The State of Alaska, Department of Fish and Game has catalogued Natzuhini Creek and this tributary as anadromous stream #103-40 35. Fish of economic importance include chum, coho, humpbacks. This is an ideal Coho rearing stream.

Vegetation - Red alder, with scattered Sitka spruce and western hemlock suppressed in the understory, dominates the second growth. All of the second growth dates from approximately 1979. Understory brush, where it occurs is mostly salmon berry.

Soil – The riparian zone contains well drained upland soil series. Small areas that receive annual and biennial flooding are overlaid with fine silt and organic material that rarely extend beyond ten feet from that portion of the stream that has low, unconstrained stream banks. Occasional skunk cabbage grows within these overflow areas. The riparian zone is classed as Upland or Upland/wetland mosaic with the mosaic occupying less than 0.1 acres well scattered along the stream bank where overflow occurs during significant storm events.

Timber Harvest and Post Harvest Conditions – The area around this small tributary was harvested in 1976. On the easterly side the very low stream bank probably was ignored during the process of timber harvest. This is part of the Natzuhini flood plain that had widely scattered old growth trees, all of which were harvested. There is

evidence of some deposition, probably due to occasional flooding from high rainfall events that cause the main stem of Natzuhini Creek to overflow. The shallow duff was subject to running and standing water therefore; red alder was able to successfully invade the site after harvest. The easterly stream bank parallels a natural bench that contained excellent old growth, all of which was harvested. A sufficiently large portion of the ground was torn up so that small conifer residual seeds were able to occupy the site. Red alder was largely restricted to the westerly stream bank. Immediately after harvest, the stream banks were very exposed due to lack of brush and tree species.

Stream banks vary from less than one foot high to 8 feet high where the stream has been cutting into an old terrace bank. Since this creek empties into the main stem of Natzuhini creek not far above high tide, the high bank may have been created centuries in the past when the Natzuhini main stem channel was closer than it is now. The catchment basin for this creek is quite small (317 acres), so that water flow is low, even during main storm events. However, one logging road bridge left from harvest in 1977-1978 has collapsed into the stream with the abutments remaining. These abutments may constrict water flow for up to an estimated 12 days each year with no one period lasting more than three days however fish passage, including rearing fish is otherwise unconstrained.

This tributary has a closed canopy primarily of red alder (Alnus rubra) trees, and red alder is the dominant tree in the riparian buffer areas near the stream. There are clumps of twenty-year-old hemlock and spruce, mostly growing in well drained soil on the higher bank which generally is on the westerly (right) bank. On the easterly side, the stream bank is very low. This side is over 90% red alder in the riparian buffer with scattered and overtopped hemlock and spruce. The stocking of the conifers and red alder varies between 500 – 800 trees per acre. Codominant conifer trees average 47.9 feet high in 2000. The soil strata are a matrix of sand, gravel, clay and silt laid down by Natzuhini Creek main stem over the centuries.

This tributary contributes 26.25 net credits[4] mitigation credits to the Bank.

Flat Creek (Catalogue No. 103-40-30) - This Small Low Gradient Alluvial Stream flows into the northwest portion of Natzuhini Bay in Section 18, T76S, R83E, CRM. The southern boundary of the Bank terminates north of the bay approximately on the Sealaska property line. This part of the bank contains 78.82 acres including 23.18 acres of stream bed. It contributes 430.71 net credits to the Bank.

Location in the Bank – This north to south flowing creek comprises the western component of the bank. It parallels the Hydaburg-Hollis highway at a distance of 150 yards to 800 yards. The Bank is located in sections 6, 7, and 18, T76S, R83E, and section 13, T76S, R82E, CRM.

Class and Measurements - This is a Small Low Gradient Alluvial Stream that most closely fit the Forest Service classification of FP4 - Low Gradient Flood Plain Channel for most of its length. In addition, very isolated areas are controlled by bedrock

[4] Ibid

for short distances up to 200 feet on one side of the channel only. The portion of Flat Creek within the bank is 18,360 feet in length as measured by the Sealaska GIS from known points on the ground. The stream averages about 60 feet bank full, in width throughout its length. Much of the lower half of the stream within the bank is devoid of LWD. The low gradient (1-2% average) alluvial channel is strongly influenced (or controlled) by large pieces of instream woody material. The stream banks are being stabilized by riparian vegetation and LWD that has been in place for well over 100 years. This is an unconstrained channel flowing through local flood plains. This channel reasonably fits the "B1" channel classification of Paustian (1984), as used by Murphy and Koski (1989). When observed on two occasions in 2000 the width containing flowing water varied between 50 and 80 feet. Therefore, this stream is at the upper end of the FP3 class. The streambed material varies from small-grained gravel, to coarse gravel, to small-uncemented cobbles in limited areas. Even though there are numerous pieces of LWD embedded in the stream, high seasonal water flow causes the downstream migration of the coarse bedload. In addition, eddies and pools contain organic material and detritus during lower flow periods.

The streambed has several locations where old beaver dams (some as high as 9 feet on the downstream side) have been breeched during the past 20 years. Beaver continue to be active in and along the stream, but all recent attempts to fully dam the stream have failed. There are many small pools, back eddies, and riffles formed from old LWD in the stream channel. Stream banks vary from less than three feet high to over 12 feet high where the stream has been cutting into the bank or is stabilized by bedrock. However, for most of the stream, bank full varies between three feet to five feet above normal summer flow. One logging road bridge crosses the creek. Its abutments meet State forest practices BMP's and might only restrict water flow during a two-year flood or greater for a day or two.

Resident and Anadromous Fish – The State of Alaska, Department of Fish and Game has catalogued Natzuhini Creek as anadromous stream #103-40-30. Fish of economic importance include chum, coho, humpback. The upper half of the creek within the bank has excellent spawning gravel bars and good pool and riffle habitat.

Vegetation - Natural regeneration, mostly Sitka spruce and western hemlock with a mix of red alder in some places, is well established. The under story and minor openings have salmon berry and vaccinium as the major species. The small, silted areas created from sediment buildup behind very old beaver dams are occupied by very slow growing scrub conifers, sedge species and vaccinium species mostly growing on small elevated areas of ground.

Soil - The riparian zone is largely Uplands as defined in the National Wetlands Inventory. The Upland soil in all the riparian areas is a matrix including stream alluvium, old gravel beds, intermixed with clay and silt dominated soils. Most of the soil is very well drained; however, there are small areas of wetland soils in which there is a perched water table on top of a cemented layer dominated by silt or clay. These include areas of very old and current beaver activity. The areas of Palustrine wetlands are so small that

they are not shown on the NWI maps. There are eleven small areas totaling 3.5 acres of jurisdictional wetlands within. The rest of the riparian zone is dominated by Uplands. The small wetland areas within the riparian zone should be classed PFO4/SS4B – Flood plain forested swamp with a scrub component exceeding 50% of the cover.

Timber Harvest and Post Harvest Conditions – The full length of the proposed mitigation bank was harvested in 1976 by the USFS largely as a 'salvage sale' due to extensive wind thrown trees in the area. Units were established to salvage the timber and to allow the sale to be economical for the operator/purchaser. Prior to wind throw and timber harvest, a relatively high volume of spruce and hemlock trees grew within the riparian area. Generally the spruce trees were very large and tall, averaging over 40 inches in diameter on the stump. Brush species were quite tall due to the fertility of the site and to the filtered light reaching the forest floor. All of the timber harvest included falling and yarding, and salvaging wind thrown timber to the stream bank. The scattered wet areas had very few trees large enough to harvest, so that these areas are largely intact. There were two bridges built to cross the creek. The upstream bridge site is difficult to locate because the abutments are gone and the stream has reasserted its course. The downstream bridge location is located where Sealaska has installed a new pre-fabricated bridge that meets Forest Practices Act best management practices. Except for the very wet areas, the ground was torn up so that mineral soil was exposed. In places not exposed, numerous conifer seedlings and brush species survived. Therefore, the site was ideally suited for having many conifers per acre compete for space. Immediately after harvest, the stream banks were very exposed due to lack of brush and tree species. Much of the stream above the existing bridge had residual red alder that was not damaged by timber harvest activities.

The riparian are is composed of a mix of 20-year-old second growth with conifers being the more dominant. Codominant conifer trees average 50.8 feet high in 2000. Before management actions, the stocking of the conifers and red alder varied between 500 – 2,000 trees per acre. In addition, there are isolated areas of brush species (mostly salmonberry followed by blueberry) scattered along the banks. There are some areas, mostly in the upper reaches, where red alder is starting to provide complete cover from bank to bank.

The portion of the stream in the Bank is 18,360 lineal feet and includes 78.82 acres of riparian zone which equals 430.72 net[5] mitigation credits.

[5] Ibid

Following is a list of woody plant species found in the riparian buffers[6]:

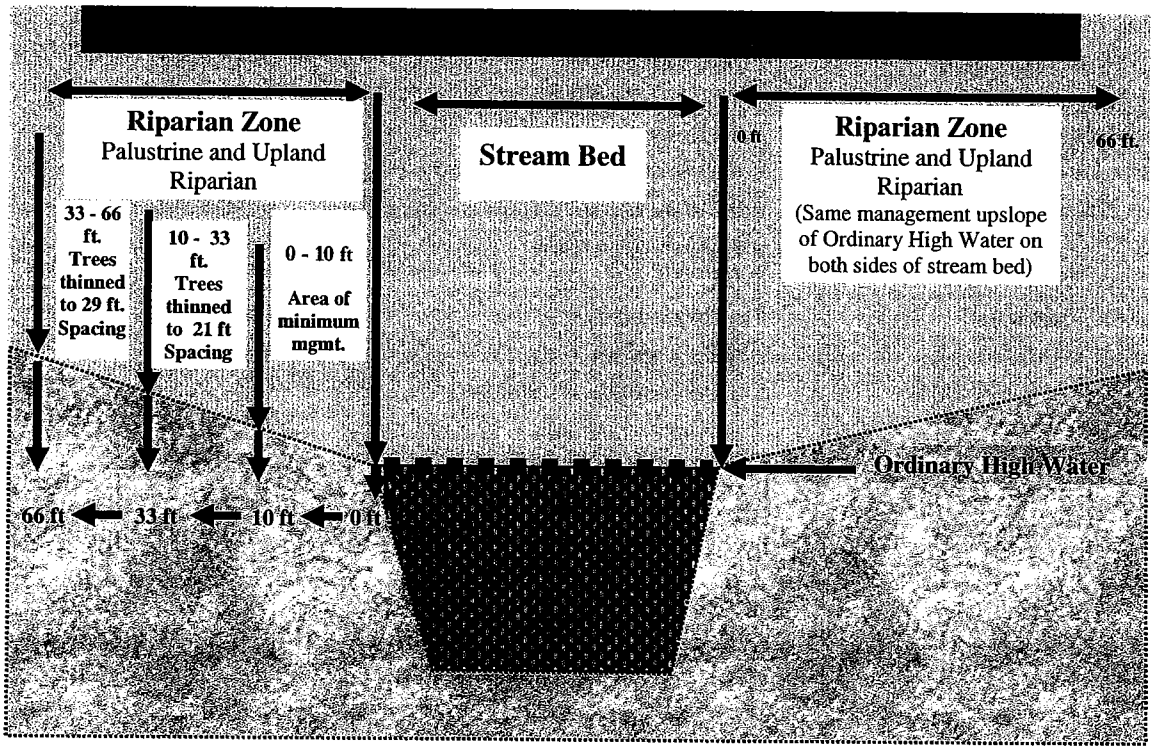
Common Name	Scientific Name	Wetland Indicator
	Trees	
Alder, red	*Alnus rubra*	FAC
Cedar, Alaska Yellow	*Chamaecyparis nootkatensis*	FAC
Cedar, western red	*Thuja plicata*	FAC
Hemlock, western	*Tsuga heterophylla*	FAC
Spruce, Sitka	*Picea sitchensis*	FACU
	Shrubs and Common Persistent Forbs	
Salmonberry	*Rubus spectabilis*	FACU
Pacific red elder	*Sambucus callicarpa*	UPL
Devils club	*Oplopanax horridus*	FACU
High bush cranberry	*Viburnum edule*	FACU
Rusty menziesia	*Menziesia ferruginea*	UPL
Red Huckleberry	*Vaccinium parvifolium*	FAC
Alaska blueberry	*Vaccinium alaskaense*	FAC
Early blueberry	*Vaccinium ovalifolium*	FAC
Salal	*Gaultheria shallon*	UPL
Black current	*Ribes bracteosum*	NI
Five leaf bramble	*Rubus pedatus*	FAC*
Fernleaf goldthread	*Coptis asplenifolia*	FAC
Yellow skunk cabbage	*Lysichitum americanum*	OBL
Simple-stemmed twisted stalk	*Streptopus roseus*	FACU
Labrador tea	*Ledum groenlandicum*	FACW
Thimbleberry	*Rubus parviflorus*	FACU

[6] Reed, Porter B. Jr. National List of Plant Species that Occur in Wetlands: Alaska (Region A). USDI, Fish and Wildlife Service Biological Report 88(26.11). May 1988.

Appendix Four

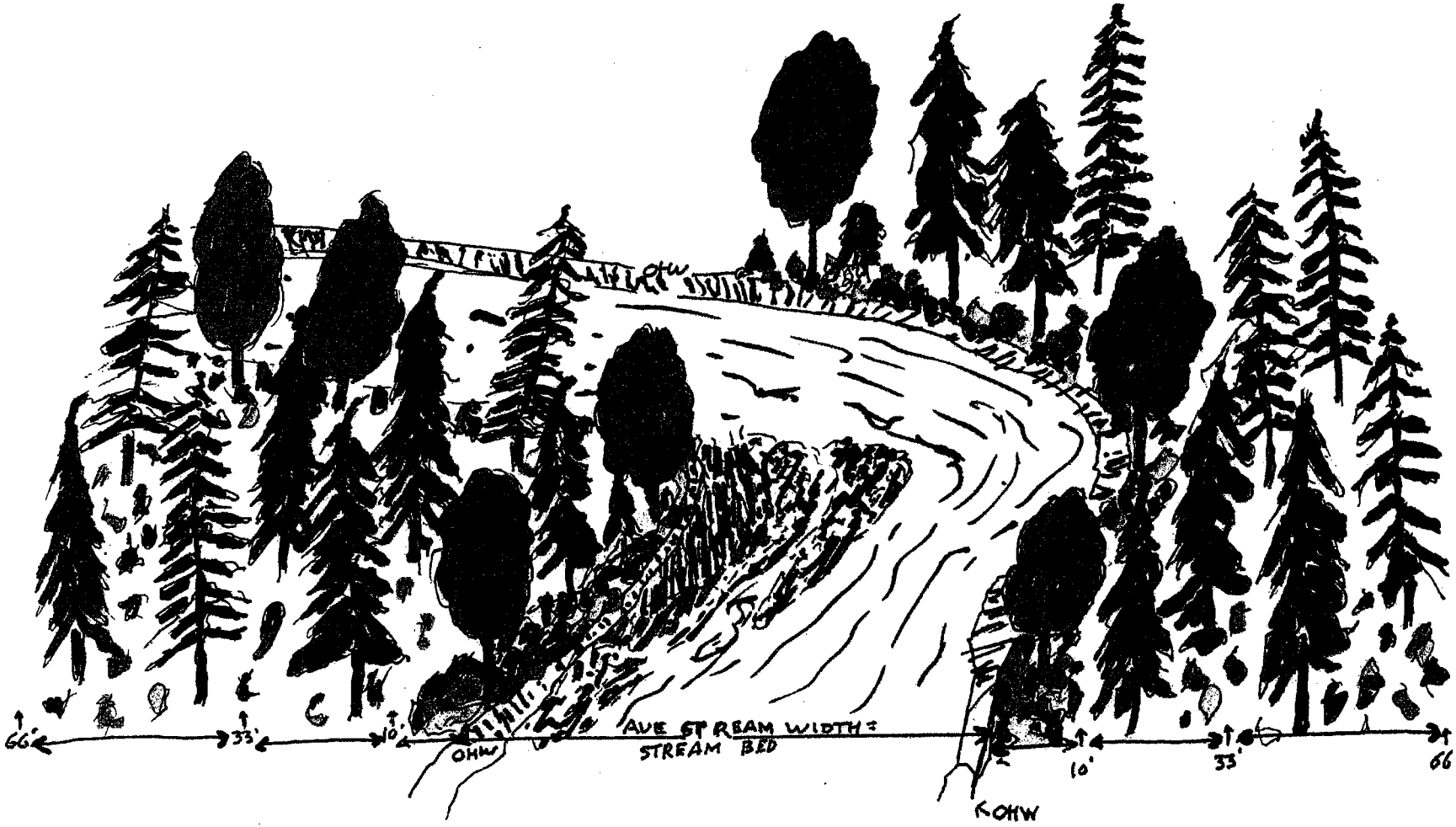
Idealized Diagram and Riparian Zone Sketch

Following is an idealized diagram of a stream/riparian cross section (not to scale) that displays the managed treatment zones as defined in the Bank. There is a ten foot minimum management zone immediate to the stream. Inland from it are two zones managed for two regimes of tree spacing that will provide future large woody debris candidates and habitat biodiversity.



The succeeding page displays a sketch that describes average conditions that one could expect to find in the field. It includes hardwoods, conifers and brush. In the ten foot zone, the trees and brush are found in a random spacing. In the other zones management actions have resulted in the trees having a more uniform spacing.

Sketch of Riparian Zone as Defined in the Natzuhini Bay Mitigation Bank



Average Stream Width – Distance across the stream channel between ordinary high water on each bank.
OHW – Ordinary High Water. When viewed in the field, this is normally where brush species have become established on the bank.
10 foot zone – Area of minimum management to promote streamside diversity for instream organisms. There is no brush spraying in this area. Cutting of trees is minimized except to foster growth of conifers when red alder is the dominant tree species.
10 to 33 foot zone – Trees are thinned to a 21 foot spacing to maximize growth and promote a diversity of undergrowth. Brush may be reduced to foster rapid growth and establishment of forbs for biodiversity. Where insufficient trees, interplanting is allowed.
33 to 66 foot zone – Trees are thinned to a 29 foot spacing. Other management actions, similar to the 10 – 33 foot zone are allowed.

Appendix Five

Sealaska Corporation Inc.

Natzuhini Bay Mitigation Bank

Riparian Zone Functional Assessment

I. Introduction

The Natzuhini Watershed Mitigation Bank ("Bank") will be created to enhance and protect the streamside and estuarine riparian zones as defined by the Bank. Under the U.S. Army Corps of Engineers (Corps) national guidelines for establishing a mitigation bank a functional assessment must be conducted to assess the condition of wetland functions within the area in the Bank. The Bank is proposing to use aspects of the Hydrogeomorphic (HGM) field assessment protocols including the appropriate subclass, functional assessment model and key hydrogeomorphic functions and variables. The functions and variables being proposed are drawn from the HGM Wetlands Guidebook for Southeast Alaska.[1] The following functional assessment model will be used to measure the condition of the ecological functions contained in riparian zones. In addition, this functional assessment model will be used to measure changes in functional character over broad time spans.

II. Characterization of the Streamside and Estuarine Riparian Buffer Zones

Riverine Riparian - The National Wetlands Inventory (NWI), which is developed from aerial photos having a 1:80000 scale, displays the riparian areas as 100% Upland. From photos with a scale of 1:12000, and ground sampling, Sealaska determined that there are small inclusions of wetlands. The observed wetland component within the riparian zone usually is a mosaic of scattered, very small, isolated wetlands. The area identified as the riparian buffer zone (66 feet from the top of ordinary high water (OHW) on the bank of a stream) in the Bank is included in the national HGM classification system as riverine and slope wetland classes. The Regional HGM Wetland Assessment Guidebook for Coastal Southeast and Southcentral Alaska, includes the appropriate subclass and can be used as the basis for a measuring protocol for the Bank.

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[1] See: Powell, J. E., D'Amore, D. V., Thompson, R., Huberth, P, Bigelow, B., Walter, M. T., and Brock, B. "Wetland Functional Assessment Guidebook, Operational Draft Guidebook for Assessing the Functions for Riverine and Slope River Proximal Wetlands in Coastal Southeast and Southcentral Alaska Using the HGM Approach," State of Alaska Department of Environmental Conservation June 2003 / U.S. Army Corps of Engineers Waterways Experiment Station Technical Report: WRP-DE-__.

Classification and Geographic Location of Riparian Zone

Geomorphic Class	Riverine Waters/Wetlands and Slope Wetlands.
Geomorphic Subclass	Riverine Waters/Wetlands and Slope River Proximal Wetlands on Low Permeability Deposits and Bedrock.
Established Reference Domain	Southeast Alaska from Ketchikan (North) to the Southern Coastal areas of the Kenai Peninsula, to the coastal mountain range divide (East) to the down-gradient integrate with estuarine fringe wetlands (West).
Applicable Areas	Riverine Subclass: Coastal Southeast and Southcentral Alaska from the vicinity of Kodiak Island (North) to the vicinity of Roseburg, Oregon (South), to the coastal mountain range divide (East) to the down-gradient integrate with estuarine fringe wetlands (West). Slope River Proximal Subclass: Same as riverine class except that the southern extent of the reference domain is somewhat more limited - the vicinity of Southern Puget Sound/Olympia, Washington.

Coastal southeast and south-central Alaska riverine waters/wetlands are set within a landscape of extensive wetlands as defined in the NWI. The HGM subclass fits streams classed by the Forest Service as FP (narrow, low gradient, flood plain process group) and MM (narrow to moderate width, moderate gradient mixed control process group). Peak streamflows are driven by rainfall and rain-on-snow events and not glacial meltwater. Base flow is driven by discharge of shallow groundwater (interflow) from slope wetlands and from deep groundwater discharge from bedrock or surficial aquifers. The downstream extent of riverine waters/wetlands is the point at which they integrate with tidal influenced rivers and estuarine wetlands (Cowardin 1992).

Estuarine Riparian - In Southeast Alaska the Estuarine zone has not yet been classified in terms of subsets of a geomorphic class. However, the Bank contemplates dedicating the riparian zone, as defined, to a preservation status. Therefore, the HGM analysis displays what has been happening in the estuarine riparian zone and forecasts expected changes into the future. Should Sealaska, with approval of the Corps/MBRT, undertake management actions in the riparian zone, then new measurements would have to be taken to determine the new and future values for the purpose of selling mitigation credits. A fully functioning riparian zone will benefit the estuarine area largely due to mitigating the results of development on lands adjacent to the riparian zone.

3) Wetlands and Upland Functional Assessment

The riparian zone is linked functionally to the riverine/estuarine and several of the ecological functions are interlinked to adjacent lands. The riparian zone functions as a cohesive unit. The HGM principles and analysis used in the HGM Guidebook can be applied to the riparian zone and used to measure the ecological functions of the zone.

Many of the indicators (variables) used to determine the condition or level of functioning of the area occupied by the riparian zone will be analyzed using aerial photos of a scale $\geq$ 1:12000 and will be verified through limited field testing Each variable shall reflect the best professional judgment from looking at the entire riparian zone.

The following three ecological functions and eight variables comprise a framework and draft model for measuring the condition of the ecological characteristics within the defined riparian zone. With one exception (Large Woody Debris Recruitment), the variables that are measured within each function were derived from the HGM model cited above. They are proposed as the best representatives for measuring the conditions of each riparian zone as those conditions relate to the goals of the bank. By restricting the list of variables to just those that represent the most important ecological attributes, the value of each variable has a greater impact on the each of the ecological functions.

a) Riverine/Estuarine Riparian Zone Ecological Functions

1) **Nutrient Recycling and Transport** - Abiotic and biotic processes that convert elements from one form to another normally occur within the duff layer, if an organic soil, or in the litter on the surface of mineral soil. This represents the capacity to recycle and transport nitrogen and organic carbon in dissolved and particulate forms to stream aquatic ecosystems. Mechanisms for recycling are related to the condition of the surface vegetation, surrounding land use, amount of surface and subsurface water, the extent of water filled depressions, and some soil characteristics.

The variables to be used for measuring this function are: evidence of surface water, especially during the growing season, number of decomposition classes, microtopographic features, and duff horizon. The functional value shall be the total of the four variables divided by 4.

Nutrient Recycling and Transport - Functional Capacity Index (FCI):

FCI: VDuff + VSurwat + VMicro + VDecomp

2) **Maintenance of Fish-Wildlife Habitat Structure** - The capacity of the ecosystem to maintain self-sustaining fish and wildlife populations through mechanisms providing vertical and horizontal spatial structure. (food, water, and cover).

The variables to be used for measuring this function shall be: overhanging shade at the stream bank, number of vegetative strata, large woody debris recruitment (tree height) and microtopographic features. The functional value shall be the total of the four variables divided by 4.

Maintenance of Wildlife Habitat Structure

FCI: VMicro + VStrata + VLWDrecruit + VShade

3) **Dynamic Water Retention** - This characteristic demonstrates the ability to dissipate energy and detain (temporarily store) surface water and to a lesser extent, flood water.

The variables to be used for measuring this function shall include, evidence of surface water, especially during the growing season, soil permeability, microtopographic features and duff horizon. The functional value shall be the total of the four variables divided by four.

FCI: Vsoilperm + VSurwat + Vmicro + VDuff

A comparison of functional values for the three time frames shown in the table above follows:

Natzuhini Mitigation Bank Draft Preliminary Assessment Indexes
Streamside Riparian Zone

Riparian Zone Ecological Functions		1977	2000	2001	2037
1) Function: Nutrient Recycle & Transport					
Surface Water		0.25	0.50	0.50	0.50
Log Decomposition		1.00	0.50	0.50	0.50
Microtopographic Features		0.25	0.25	0.25	0.25
Duff Horizon		0.10	0.50	0.50	1.00
	Total	1.60	1.75	1.75	2.25
Functional Index	/ 4	**.40**	**.44**	**.44**	**.56**
2) Function: Maintenance of Habitat Structure					
Streamside Shade		0.25	0.50	0.50	1.00
Number of Vegetation Strata		0.25	0.50	0.50	1.00
Large Woody Debris Recruitment		0.10	0.25	0.50	1.00
Microtopographic Features		0.25	0.25	0.25	0.25
	Total	.85	1.50	1.75	3.25
Functional Index	/ 4	**.21**	**.38**	**.44**	**.81**
3) Function: Dynamic Water Retention					
Soil Permeability		0.80	0.80	0.80	0.80
Surface Water		0.25	0.50	0.50	0.50
Microtopographic Features		0.25	0.25	0.25	0.25
Duff Horizon		0.10	0.50	0.50	1.00
	Total	1.40	2.05	2.05	2.55
Functional Index	/ 4	**.35**	**.51**	**.51**	**.64**
		.963	1.326	1.389	2.014
Aggregate Functional Index	/ 3	**.32**	**.44**	**.46**	**.67**

This Aggregate Functional Index for the stream riparian component is based on the projected enhancement of habitat over time due to implementing the management plan within the riparian zone. The implementation enhanced the riparian zone from a value of 0.44 (value before management actions) to 0.67 which represents the projected functional

index in 2037. If calculations are made based on a ten acre portion of the riparian zone, following represents the net value available to offset the functional index value of the degradation of wetlands in a project proposed for purchasing mitigation credits in the Bank.

.67 Projected Functional Index - .44 current Functional Index = .23 projected change in Functional Index as a result of implementing bank management plan.

10 acres X 10 credits/acre = 100 potential credits

100[(44% for pre-bank value) + .23 change in Functional Index}

100(.44 + .23) =

100 X 0.67 = 67 actual credits

Using this procedure for determining the net value for the riparian area adjacent to the Flat Creek, Natzuhini Creek and the Natzuhini tributary. The following table displays the mitigation credits that will become available for sale to offset impacts of permitted development in the non estuarine/marine environment within the defined service area.:

Creek Reach	Acres	Ac X 10=Gross Credits	FVI	Net Credits
Flat Creek	55.64	556.36	.67	372.76
Natzuhini Main Stem	10.85	108.48	.67	72.68
Natzuhini Tributary	3.76	37.58	.67	25.18
				470.62

Natzuhini Wetland Mitigation Bank Draft Preliminary Assessment Indexes
Natzuhini Estuarine Riparian Zone

Riparian Zone Ecological Functions		1977	2000	2001	2037
1) Function: Nutrient Recycle & Transport					
Surface Water		0.50	0.50	0.50	0.75
Log Decomposition		0.10	0.25	0.25	0.50
Microtopographic Features		0.75	0.75	0.75	1.00
Duff Horizon		0.50	0.50	0.50	0.50
	Total	1.85	7.00	2.00	2.75
Functional Index	/ 4	**.46**	**.50**	**.50**	**.69**
2) Function: Maintenance of Habitat Structure					
Estuarine Shoreline Shade/Cover		0.25	0.50	0.50	1.00
Number of Vegetation Strata		0.50	0.50	0.50	0.50
Large Woody Debris Recruitment		0.50	0.75	0.75	0.75
Microtopographic Features		0.75	0.75	0.75	1.00
	Total	2.00	2.50	2.50	3.25
Functional Index	/ 4	**.50**	**.63**	**.63**	**.81**
3) Function: Dynamic Water Retention					
Soil Permeability		0.80	0.80	.80	1.00
Surface Water		0.75	0.75	0.75	0.75
Microtopographic Features		0.75	0.75	0.75	1.00
Duff Horizon		0.50	0.50	0.50	0.50
	Total	2.80	2.80	2.80	3..25
Functional Index	/ 4	**.70**	**.70**	**.70**	**.81**
		1.66	1.83	1.83	2.31
Aggregate Functional Index	/ 3	**.53**	**.61**	**.61**	**.77**

The following table displays the mitigation credits that will become available for sale to offset impacts of permitted development in the estuarine/marine environment within the defined service area:

MHW to HTL	Acres	Ac X 10=Gross Credits	FVI	Net Credits
Rocky Shoreline	0.52	5.22	.25	1.30
Beach Shoreline	30.64	306.37	.25	76.59
High Marsh Area	12.40	124.00	.25	31.00
				108.90

The estuarine riparian zone table is displayed for the record in this baseline report in case at a time in the future, Sealaska, with approval of the Corps/MBRT, determines that management actions that would improve riparian zone would enhance the habitat.

These tables follow the HGM assessment protocol.

Variables for Mitigation Bank

1) Riparian Shade (V_{SHADE})

Definition: Tree cover, shrub cover, and overhanging vegetation within and near the bankfull channel or shoreline at MHW.

Rational for Selection of Variable: Tree, sapling, and shrub cover provide shade that regulates water temperature and in-channel light interception. Overhanging vegetation provides potential food sources and habitat for aquatic dependent taxa.

Measurement Protocol: Measure percent of canopy cover over entire water surface as if the sun was directly overhead. Use aerial photos to estimate, or estimate how far trees and branches overhang the stream from each bank. In the Estuarine area consider the effects of shaded area from MHW out to the first 30 feet.

Scaling: V_{SHADE}

MEASUREMENT OR CONDITION FOR (V_{SHADE})	INDEX
40% - 60% vegetative shading of stream surface area. A mixture of conditions where some areas of water surface are fully exposed to sunlight and others receive various degrees of filtered light.	1.0
20% - 39% or 61% - 80% vegetative shading of stream surface area. Covered by sparse canopy, entire water surface receiving filtered light.	.50
1% - 19% or 81% - 100% vegetative shading of stream surface area. Water surface is approaching either complete vegetative shading or full exposure to overhead sunlight conditions.	.25
No vegetative shading of stream surface area. Variable is recoverable or sustainable through natural processes under current conditions (e.g., natural regeneration of riparian vegetation).	.10
No vegetative shading of water surface. Variable is not recoverable or sustainable through natural processes.	0.0

2) Soil Permeability ($V_{SOILPERM}$)

Definition: Permeability is defined as the ease with which gases, liquids or plant roots penetrate or pass through a bulk mass of soil or a layer of soil. Where it can be observed, the type of soil parent material that makes up the stream bank below bankfull depth is a fair estimate of soil permeability.

Rational for Selection of the Variable: The type of soil in the bank of a stream will influence the rate of water gain or loss into a channel. In addition, the type of soil greatly influences the character of the plant communities growing on it. If the dominant size

fraction is coarse, the rate of loss/gain may be high, whereas if the material is fine (sand, clay, or sapric material), the rate will be much slower. This is a rough estimate of hydraulic conductivity and may play an important role in nutrient spiraling and organic carbon export as well as aquatic habitat functions. Stream banks also regulate the amount and size of the sediment. If the banks are sandy and unstable, the probability of having sand-sized sediment is high. That is in contrast to having clay banks, which can be unstable but, due to the small size of the clay particles, generally don't contribute to sediment loading.

Measurement Protocol: Observe soil in embankments, cuts at the stream edge and in the riparian area. If unsure, dig a soil pit, at least 18 inches deep, close to the stream bank and determine if the soil material is organic, mineral or a mixture of organic/mineral layers. Pay attention to indicators that will help the observations of permeable depth such as, areas of standing water (whether or not water is present at the time), stunted plant growth, Obligate and Facultative Wet plant species, subsurface to surface flow (upwelling), surface channels, etc. In addition, determine the dominant size fraction of the mineral (e.g., clay, silt, sand, gravel, stones). Estimate the proportion of each type of soil within the bank riparian area and factor into the scaling.

Scaling: $V_{SOILPERM}$

INDIRECT MEASURE FOR ($V_{SOILPERM}$)	INDEX
Sandy or gravelly material has porosity and is able to transmit water either into or from the channel. Organic soil is dominated with fibric- sized material.	1.0
Silty soil material that has limited porosity and not likely to transmit much water into or from a channel. Organic soil is dominated with hemic-sized material.	.5
Clay soil material that has no porosity and not able to transmit water into or from a channel. Organic soil is dominated with sapric-sized material.	.1
No natural stream banks (e.g., concrete) or impervious channel liner.	0

3) Presence and Structure of the Duff Layer (V_{DUFF})

Definition: Duff is the surface fibric zone commonly called the Oi soil horizon. It serves as a permeable layer for the overland flow of water. Surface water transport is enhanced with an intact duff layer. A healthy system is indicated with a thick, well-developed surface fibric layer. This is the acrotelm layer in a jurisdictional wetland.

Rationale for Selection of the Variable: The duff is the litter layer horizon in soils. This organic layer is porous, oxygen rich, and not saturated with water. These are sites of most of the nutrient exchanges, habitat for soil biological communities, and where the

roots of most of the plants abound. The lateral movement of water through this layer is quick and efficient. Water movement downslope is unimpeded through the duff and acts as the source for many of the small streams and pools found in soils throughout Southeast Alaska.

Measurement Protocol: Evaluate the depth range of the Oi horizon (Usually the duff layer). Kick the organic layer with your boot to determine the thickness, or grab a handful and rip it from the ground making sure that the sample reached mineral soil. The scaling variables are quite broad so that a visual measurement should be sufficient. Do this in a variety of places to determine an average for the whole riparian area in the bank.

Scaling: V_{DUFF}

MEASUREMENT OR CONDITION FOR (V_{DUFF})	INDEX
Oi present at the soil surface and has a depth greater than 4.0 inches. The lateral movement of water is unimpeded.	1.0
Oi present with a minimum depth of 2.5 inches and the lateral movement of water is unimpeded. Or, the Oi is greater than 2.5 inches depth, but the flow of water through the Oi layer has been disrupted. The function is recoverable with restoration efforts.	.5
Oi absent or damaged and recoverable after decades of being undisturbed. The Oi is either absent or disrupted to such an extent that the function is not operational.	.1
There is no soil present on the site.	0

4) Number of Vegetative Strata (V_{STRATA})

Definition: The average number of vegetation strata present within the bank area. Vegetation strata were defined as follows: trees (single-stem, woody species >10 ft tall); small trees (single-stem, woody species > 3 to 10 ft (>1 to < 3 m tall); shrubs (multiple-stem, woody species); herbs, including forbs, graminoids, ferns and fern allies; and mosses, lichens, and liverworts.

Rationale for Selection of the variable: The number of strata is an indicator of the development and maintenance of native plant communities. In addition, the number of strata represents the presence of the habitat structure and complexity necessary to support faunal assemblages. Similarly, the numbers and types of vegetation strata represent the diversity of habitat niches, as well as the types and amount of food and cover resources available.

Measurement Protocol: Determine the dominant vegetation class (i.e., the species controlling the bank area environment) and record the number of strata present within that class. Forested wetlands are dominated by woody vegetation that is 6 meters tall or

taller. Scrub/shrub wetlands are dominated by woody vegetation less than 6 meters tall, including true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions. Herbaceous (emergent) wetlands are characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. The vegetation is usually perennial and present for most of the growing season in most years. If the dominant vegetation is herbaceous, record the number of vegetation strata at 10 ft (3-meter) intervals along a 100 ft (30.5-meter) transect in the project assessment area (Figure 63 in the Guidebook). The average number of strata is calculated for the transect, and rounded to the nearest integer to yield an estimate for the Project Assessment Area.

Scaling: V_{STRATA}

CONDITIONS FOR (V_{STRATA})	INDEX
Three or more forest strata present and dominated by native plant species.	1.0
Three or more forest strata present and dominated by native plant species (i.e., foot trails, selective cutting).	.75
Two or three forest strata present and dominated by native plant species (tree removal for ROW).	.50
One forest strata present and may include native and non-native plants.	.25
Site historically forested but no forest strata present and site significantly altered by human activity. The variable is recoverable and sustainable through natural processes.	.10
Site historically forested but no forest strata present and site significantly altered by human activity. The variable is **NOT** recoverable to reference standard conditions or sustainable through natural processes.	.00

5) Microtopographic Features (V_{MICRO})

Definition: Small scale topographic relief in the form of pit-and-mound or hummock-and-hollow patterns that occur in the wetland.

Rationale for Selection of the Variable: Microtopographic features contribute to surface roughness, which influences how water flows through the riparian area. These features are important components of several hydrologic, biogeochemical, and habitat functions. For example, small depressions provide areas for temporary storage of surface water, which provides sinks conducive to elemental cycling and organic soil development. Microtopographic relief also provides for more diverse vegetation communities by creating topographic complexity and varying substrates which, in turn, creates more diverse habitat structure for wildlife.

Measurement Protocol: After reviewing in the field the microtopographic character of the riparian area, choose at least two transects that parallel the topographic relief and either by pacing or using a 100 foot measuring tape, at every ten feet determine if there is a 50 cm (20 inches) deflection from the general soil surface or forest floor. Include depressions hummocks, old logs and stumps in various levels of decay, outcrops, etc.

Scaling: V_{MICRO}

MEASUREMENT OR CONDITION FOR (V_{MICRO})	INDEX
The project assessment area is characterized by complex microtopographic relief (e.g., 50->80% of observed features are non-planar) AND assessment area is predominantly undisturbed, native soils, and plant communities.	1.0
The project assessment area is characterized by moderately complex microtopographic relief (e.g., 25-50% of observed features are non-planar) AND assessment area is predominantly undisturbed, native soils, and plant communities.	0.75
The project assessment area is characterized by moderately complex microtopographic relief (e.g., 25-50% of observed features are non-planar) AND assessment area is predominantly disturbed, native soils, and/or plant communities.	0.50
The project assessment area is characterized by some microtopographic relief (e.g., 1-25% of observed features are non-planar) AND assessment area is predominantly disturbed or undisturbed, native soils, and/or plant communities.	0.25
Microtopographic features are absent.	0.0

6) Presence of Surface Water (V_{SURWAT})

Definition: Detention of water in surface features. Sources include precipitation and subsurface and surface flow into the riparian area. Mechanisms for storage are position and depth of depressions and depth to the water table.

Rationale for Selection of the Variable: Surface water ponding, short and long term storage of surface water, and shallow subsurface water augments accumulation of organic matter in surface horizons, establishes a variety of substrates and hydrologic regimes for vegetative communities, and provides areas for invertebrate production. Exchange of water between surface and shallow subsurface components facilitates biogeochemical processes associated with elemental cycling and organic carbon export and contributes to subsurface flow out of the wetland and/or recharge to the water table.

Measurement Protocol: Conduct a visual reconnaissance or measured 100 ft transect, of the assessment area and determine the percent cover of ponds and other depressions that store water. When there has been no rain for a while, look for depressions that contain no

vegetation, black colored organic material, old waterlines, "muddy" material, and any other indicators that are clues that water is present a large part of the growing season.

Scaling: V_{SURWAT}

MEASUREMENT OR CONDITION FOR (V_{SURWAT})	INDEX
Observations or evidence of surface water or ponds in >50% or more of the assessment area, project assessment area is either predominantly undisturbed soils and native plant communities OR Observations or evidence of surface water or ponds in >50% or more of the assessment area, minor anthropogenic modifications may be present but no substantial impact to site topography is apparent (e.g., vegetation clearing, foot paths, wooden walkways, etc.).	1.0
Observations or evidence of surface water or ponds in 10-50% of the assessment area, project assessment area is predominantly undisturbed soils and native plant communities OR Observations or evidence of surface water or ponds in 10-50% of the assessment area, minor human disturbances or modifications may be present but no substantial impact to site topography is apparent (e.g., vegetation clearing, foot paths, wooden walkways, etc.).	.75
Observations or evidence of surface water or ponds in <10% of the assessment area, minor human disturbances or modifications may be present but no substantial impact to site topography is apparent (e.g., vegetation clearing, foot paths, wooden walkways, etc.)	.50
No observations or evidence of surface water or ponds within assessment area, project assessment area is predominantly undisturbed soils and native plant communities.	.25
No observations or evidence of surface water or ponds within assessment area, project assessment area is predominantly disturbed by human activities but recoverable through natural processes.	.10
No observations or evidence of surface water or ponds within assessment area, variable is not recoverable through natural processes.	.00

7) Log Decomposition (V_{DECOMP})

Definition: Number of decomposition classes of logs present (up to 5 feet) in assessment area.

Measurement Protocol: Count the number of logs using a point-center quarter (PCQ) method. The plot center should be located beyond thirty feet from the bankfull width of the stream channel. After identifying a log, use the chart below to identify the class of decay for the log. Then count the number of classes and scale according to the Scaling chart below.

Rationale For Selection of the Variable: Logs in various stages of decomposition provide a continuous source of refractory organic carbon.

COARSE WOOD DECAY CLASSES	Y /N
1. Logs Recently fallen, bark attached, leaves and fine twigs present.	
2. Logs with loose bark, no leaves/fine twigs, fungi present.	
3. Logs w/o bark, few stubs of branches, fungi present.	
4. Logs w/o branches or bark, heartwood in advanced decay state.	
5. Logs decayed into the ground and covered.	

Scaling: V_{DECOMP}

MEASUREMENT OR CONDITION FOR (V_{DECOMP})	INDEX
Greater than or equal to three decomposition classes present with in the assessment area AND assessment area is predominantly undisturbed, native soils and plant communities.	1.0
Two decomposition classes present within the assessment area AND assessment area is predominantly undisturbed, native soils and plant communities.	0.50
One Decomposition class present with in the assessment area AND assessment area is predominantly disturbed, native soils and/or plant communities.	0.25
No logs present within assessment area and coarse woody debris sources have been altered/eliminated by human disturbance, variable is recoverable nor sustainable through natural processes under current conditions.	0.10
No logs present within assessment area and coarse woody debris sources have been altered/eliminated by human disturbance, variable is NOT recoverable nor sustainable through natural processes under current conditions.	0.0

8) Large Woody Debris Recruitment ($V_{LWDRECRUIT}$)

Definition: Trees are defined as single-stem, woody species >10-ft tall.
Measurement Protocol: Visually choose a combination of dominant and codominant species of Sitka spruce, western hemlock, cedar species. Use red alder if conifer species are insufficient on the photo sample plot. Use photo measurement techniques or, if samples are made on the ground, use a clinometer or similar instrument to measure tree height from the estimated root crown. This sample should ***not*** include very wet areas with trees exhibiting impaired growth due to saturated soils for all, or close to all, of the growing season. Projected growth will be based on determining the site index range and applying it to tree species growth in the Southeast Alaska Prognosis model available from the Forest Service Laboratory.

Rationale for Selection of the Variable: LWD recruitment is largely dependent upon number of trees per acre, height of the dominant and codominant trees, the diameter of the dominant and codominant trees, and their distance from a stream bank. In managed stands, tree height is a reasonable indicator of tree diameter, likeliness of falling into a stream to provide LWD, ability to modify stream flow and bedload conditions, ability to add to stream complexity, and likelihood of providing habitat for some indigenous animal and bird species. Generally, the closer a tree is to the stream bank, the greater is the chance that it will fall into the stream and provide in-channel LWD.

Condition ($V_{LWDRECRUIT}$)

MEASUREMENT OR CONDITION FOR ($V_{LWDRECRUIT}$)	INDEX
Dominant and codominant conifer trees exceed 75 feet in height. For each 66 feet of stream bank an average of 2.5 trees are within 33 feet of the stream bank or shoreline.	1.0
Dominant and codominant conifer trees exceed 60 feet in height. For each 66 feet of stream bank an average of 2.5 trees are within 33 feet of the stream bank or shoreline.	.75
Dominant and codominant conifer trees exceed 45 feet in height. For each 66 feet of stream bank an average of 2.0 trees are within 33 feet of the stream bank or shoreline.	.50
Dominant and codominant conifer trees exceed 30 feet in height **or** a combination of red alder and conifer species exceed 40 feet in height. For each 66 feet of stream bank an average of 1.5 trees are within 33 feet of the stream bank or shoreline.	.25
Tree species exceed 10 feet in height and trees are the dominant occupants of the zone, or the site is temporarily devoid of trees, but there are seed sources, the soil can support natural regeneration, and potential seedlings have the ability to grow to LWD size.	.10
Site historically rock covered by a thin organic mantle or very wet and largely supports scrub trees, brush and herbaceous species. A lack of, or very few, stumps indicates that large trees have not existed in the zone for many tree generations.	.00

Appendix Six

Exhibit A - Legal Description of Bank Lands

and

Title to Land

Interim Conveyances Received By

Sealaska Corporation

Interim Conveyances

Interim Conveyance 225

This is the first major land Interim Conveyance to Sealaska Corporation issued August 17, 1979 under the provisions of the Alaska Native Claims Settlement Act (ANCSA). Lands in the Bank can be found in sections 17 and 20, T. 76 S., R. 83 E, CRM.

Interim Conveyance 1590

This Interim Conveyance was issued August 19, 1994. Lands that are in the Bank, include sections 1, 12, and 13, T. 76 S., R. 82 E., and sections 7 and 18, T. 76 S., R. 83 E., CRM.

The layout of the actual Bank boundaries are described in X. Performance Standards and Monitoring, E. Site Identification.

EXHIBIT A

1. **FLAT CREEK RIPARIAN ZONE**: The riparian zone of Flat Creek is a strip of land sixty-six (66) feet wide as measured landward from the ordinary high water (OHW) for the stream reaches, and the stream bed, which is defined as the area with each defined reach as measured between each stream bank at OHW; all of which is located in Sections 1, 12, and 13 of Township 76 South, Range 82 East, and in Sections 7 and 18 of Township 76 South, Range 83 East, Copper River Meridian, First Judicial District, State of Alaska; and having the four corners of this zone marked by State Plane Coordinates of: X Coordinate: 2852040; Y Coordinate: 1270420 and X Coordinate: 2852140; Y Coordinate: 1270250 for the upper reach of the Zone, located in Section 1; and X Coordinate: 2852620; Y Coordinate: 1257660 and X Coordinate: 2852460; Y Coordinate: 1257550 for the lower reach of the Zone, located in Section 13.

2. **NATZUHINI CREEK AND TRIBUTARY OF NATZUHINI CREEK ZONE**: The riparian zone of Natzuhini Creek and the Tributary of Natzuhini Creek is a strip of land sixty-six (66) feet wide as measured landward from the ordinary high water (OHW) for the stream reaches, and the stream bed, which is defined as the area within each defined reach as measured between each stream bank at OHW; all of which is located in Section 17 of Township 76 South, Range 83 East, Copper River Meridian, First Judicial District, State of Alaska; and having the four corners of each riparian zone for each stream marked by State Plane Coordinates as follows:

A. **Natzuhini Creek**: X Coordinate: 2862910; Y Coordinate: 1262520 and X Coordinate: 2863050; Y Coordinate: 1262360 for the upper reach of Natzuhini Creek, located in Section 17; and X Coordinate: 2860480; Y Coordinate: 1260870 and X Coordinate: 2860710; Y Coordinate: 1260830 for the lower reach of Natzuhini Creek, located in Section 17; and

B. **Tributary of Natzuhini Creek**: X Coordinate: 2860710; Y Coordinate: 1262470 and X Coordinate: 2860780; Y Coordinate: 1262340 for the upper reach of the Tributary of Natzuhini Creek, located in Section 17; and X Coordinate: 2860480; Y Coordinate: 1261410 and X Coordinate: 2860350; Y Coordinate: 1261340 for the lower reach of the Tributary of Natzuhini Creek, located in Section 17.

3. **NATZUHINI BAY ESTUARY ZONE**: This estuarine zone is adjacent to and including the tidal estuarine wetlands and a sixty-six (66) foot riparian zone (including 18,498 lineal feet of shoreline at the High Tide Line (HTL)) extending landward from the Mean High Water (MHW) to sixty-six (66) feet above the HTL around the salt chuck at the mouth of Natzuhini Creek, all of which is located in Sections 17 and 20 of Township 76 South, Range 83 East, Copper River Meridian, First Judicial District, State of Alaska; and having the four corners of this zone marked by State Plane Coordinates of: X Coordinate: 2860480; Y Coordinate: 1260870 and X Coordinate: 2860710; Y Coordinate: 1260830 for the upper end of the Zone, located in Section 17; and X Coordinate: 2858940; Y Coordinate: 1256360 and X Coordinate: 2859440; Y Coordinate: 1255100 for the mouth of the Zone, located in Section 20.

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INTERIM CONVEYANCE

WHEREAS

Sealaska Corporation

is entitled to a conveyance pursuant to Secs. 14(h)(8) and 22(j) of the Alaska Native Claims Settlement Act of December 18, 1971, as amended, (85 Stat. 688, 705, 715; 43 U.S.C. 1601, 1613(h)(8), 1621(j) (1976)), of the surface and subsurface estates in the following described lands:

Copper River Meridian, Alaska (Unsurveyed)

T. 42 S., R. 60 E.
Secs. 17 and 18 (fractional), all;
Sec. 19, all;
Secs. 20, 21, 22 and 25 (fractional), all;
Sec. 26 (fractional), excluding U.S. Surveys 1355 and 1475;
Sec. 27 (fractional), excluding U.S. Survey 1475;
Sec. 28 (fractional), all;
Secs. 29 to 34, inclusive, all;
Sec. 35 (fractional), excluding U.S. Survey 1355;
Sec. 36 (fractional), all.

RECEIVED
OCT 9 1979
SEALASKA CORP.
JUNEAU, ALASKA

Containing approximately 7,539 acres.

T. 43 S., R. 60 E.
Secs. 1 to 11, inclusive, all;
Sec. 12, W½NW¼;
Sec. 14, all;
Secs. 17 to 20, inclusive, all;
Sec. 21, N½;
Sec. 28, SW¼;
Secs. 29 to 32, inclusive, all.

Containing approximately 13,276 acres.

T. 44 S., R. 60 E.
Sec. 3 (fractional), all;
Sec. 4, all;
Secs. 9, 10 and 16 (fractional), all.

Containing approximately 1,555 acres.

T. 57 S., R. 73 E.
Sec. 1, all;
Sec. 11 (fractional), E½NE¼, SE¼SW¼, SE¼;
Sec. 12, all;
Secs. 13 and 14 (fractional), all;
Sec. 15 (fractional), NE¼NE¼, S½N½, S½;
Sec. 23 (fractional), excluding historical place application AA-10485;
Secs. 24 and 25 (fractional), all.

Containing approximately 3,227 acres.

T. 72 S., R. 80 E.
Secs. 1, 2, 11 and 12, all;
Sec. 13 (fractional), all;
Secs. 14, 19 and 20, all;
Secs. 21 to 24 (fractional), inclusive, all;

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Sec. 25 (fractional), N½, SW¼;
Secs. 26 to 29 (fractional), inclusive, all;
Sec. 30, all;
Secs. 31 and 32 (fractional), all;
Sec. 33 (fractional), excluding Mineral Survey 2201;
Sec. 34 (fractional), N½NE¼, SW¼NE¼, NW¼, N½SW¼, SW¼SW¼, excluding Mineral Survey 2201;
Sec. 35 (fractional), N½NW¼.

Containing approximately 8,957 acres.

T. 72 S., R. 81 E.
Secs. 1 to 7, inclusive, all;
Secs. 8 to 11 (fractional), inclusive, all;
Sec. 12, all;
Secs. 13, 14 and 15 (fractional), all;
Sec. 16 (fractional), N½NE¼, SE¼NE¼, NW¼, W½SW¼, E½SE¼;
Secs. 17, 18 and 19 (fractional), all;
Sec. 20 (fractional), NW¼NE¼, NW¼, N½SW¼, SW¼SW¼;
Sec. 21 (fractional), E½;
Secs. 22 to 27, inclusive, all;
Sec. 28, NE¼, E½NW¼, S½;
Sec. 29 (fractional), S½SE¼;
Sec. 32, NE¼, S½;
Secs. 35 and 36, all.

Containing approximately 16,516 acres.

T. 72 S., R. 85 E.
Secs. 5, 6, 7 and 8 (fractional), all;
Secs. 17, 18 and 19 (fractional), all;
Sec. 20, all;
Secs. 26 and 27 (fractional), all;
Secs. 28 to 34, inclusive, all;
Sec. 35 (fractional), all.

Containing approximately 9,449 acres.

T. 72 S., R. 86 E.
Secs. 1 and 2, all;
Secs. 3 and 10 (fractional), all;
Secs. 11 to 14, inclusive, all;
Secs. 15, 22 and 23 (fractional), all;
Secs. 24 and 25, all;
Secs. 26, 35 and 36 (fractional), all.

Containing approximately 7,325 acres.

T. 73 S., R. 85 E.
Secs. 1 and 2, all;
Sec. 3 (fractional), all;
Sec. 7 (fractional), S½N½, S½;
Sec. 10 (fractional), all;
Sec. 11 (fractional), N½, SW¼, N½SE¼, SW¼SE¼, excluding U.S. Surveys 1019, 1447 and 1784 and Mineral Survey application AA-24795;
Sec. 12 (fractional), N½, N½S½, excluding Mineral Survey application AA-24795;
Secs. 18, 19 and 20 (fractional), all;
Secs. 27 to 32 (fractional), inclusive, all;
Sec. 33 (fractional), excluding U.S. Survey 2336;
Sec. 34 (fractional), all.

Containing approximately 5,680 acres.

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INTERIM CONVEYANCE NO. _____

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T. 74 S., R. 85 E.
Secs. 5 and 6 (fractional), all;
Secs. 7 and 8, all;
Secs. 17 to 20, inclusive, all;
Sec. 28, W½W½;
Secs. 29 to 32, inclusive, all;
Secs. 33 and 34 (fractional), all.

Containing approximately 8,429 acres.

T. 75 S., R. 80 E.
Secs. 9 and 10 (fractional), all;
Sec. 11 (fractional), W½W½;
Sec. 13 (fractional), S½SW¼, SW¼SE¼;
Sec. 14, SW¼NE¼, W½, W½SE¼, SE¼SE¼;
Secs. 15, 16 and 17 (fractional), all;
Secs. 20, 21 and 22 (fractional), all;
Secs. 23 to 28, inclusive, all;
Secs. 29 and 33 (fractional), all;
Secs. 34, 35 and 36, all.

Containing approximately 8,675 acres.

T. 76 S., R. 83 E.
Secs. 1 to 5, inclusive, all;
Secs. 8 to 16, inclusive, all;
Secs. 17 and 20 (fractional), all;
Secs. 21 to 28, inclusive, all;
Sec. 29 (fractional), all;
Secs. 35 and 36, all.

Containing approximately 16,650 acres.

T. 76 S., R. 84 E.
Secs. 1 to 9, inclusive, all;
Sec. 10 (fractional), excluding U.S. Surveys 691 and 1885;
Sec. 11 (fractional), excluding Mineral Survey 743;
Sec. 12, excluding Mineral Survey 743;
Sec. 13 (fractional), excluding Mineral Survey 743;
Sec. 14 (fractional), excluding Mineral Surveys 743 and 562B;
Sec. 15 (fractional), excluding Mineral Survey 562B and U.S. Surveys 691 and 1885;
Secs. 16 and 17 (fractional), all;
Secs. 18 and 19, all;
Sec. 20 (fractional), all;
Sec. 21 (fractional), excluding Mineral Survey 562B;
Sec. 22, excluding Mineral Surveys 562A and 562B;
Secs. 23 and 24, all;
Sec. 28 (fractional), excluding U.S. Survey 1191 and Mineral Surveys 562B, 1525, 1542, 1596 and 1599;
Sec. 29 (fractional), all;
Sec. 30, all;
Secs. 31 and 32 (fractional), all;
Sec. 33 (fractional), excluding U.S. Survey 1191 and Mineral Surveys 562B, 1525 and 1596.

Containing approximately 15,972 acres.

T. 77 S., R. 82 E.
Sec. 5 (fractional), excluding AA-22286, request for designation under Sec. 3(e) of the Alaska Native Claims Settlement Act, Lively Island Aid to Navigation Site;

225

INTERIM CONVEYANCE NO. _____

Date AUG 17 1979

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Petersburg Recording Dist.

AA-14015

BOOK 81 PAGE 83
Ketchikan Recording District

Secs. 7, 8 and 9 (fractional), all;
Secs. 16, 17 and 18 (fractional), all;
Secs. 19 and 20, all;
Sec. 21 (fractional), all;
Secs. 28 and 29 (fractional), all;
Sec. 30 (fractional), N½, N½SW¼, SE¼;
Sec. 31 (fractional), S½SE¼;
Sec. 32 (fractional), NE¼, N½NW¼, SE¼NW¼, N½SE¼;
Sec. 33 (fractional), N½, N½S½, SE¼SW¼, SE¼SE¼.

Containing approximately 4,202 acres.

T. 77 S., R. 84 E.
Sec. 1 (fractional), N½, E½SW¼, SE¼;
Sec. 2, N½NE¼, NW¼;
Sec. 3, N½.

Containing approximately 1,100 acres.

T. 77 S., R. 85 E.
Secs. 1 and 2, excluding Power Site Classification 192 and Mineral Survey 1524;
Sec. 3, excluding Power Site Classification 192 and Mineral Surveys 419A, 886 and 1023;
Sec. 4 (fractional), excluding Power Site Classification 192 and Mineral Surveys 419A, 419B and 1023;
Sec. 5 (fractional), excluding historical place application AA-10456;
Sec. 6 (fractional), all;
Sec. 8 (fractional), excluding Mineral Survey 419B;
Sec. 9 (fractional), excluding Power Site Classification 192 and Mineral Surveys 419B, 884B, 1522B and 1523B;
Sec. 10, excluding Power Site Classification 192 and Mineral Surveys 884A, 1522A and 1523A;
Sec. 11, excluding Power Site Classification 192 and Mineral Surveys 884A and 1523A;
Secs. 12 and 13, all;
Sec. 14, excluding Mineral Surveys 884A, 1522A and 1523A;
Sec. 15 (fractional), excluding Mineral Surveys 884A, 1522A and 1523A;
Sec. 16 (fractional), all;
Sec. 22 (fractional), excluding historical place applications AA-10458 and AA-10460;
Sec. 23, excluding historical place application AA-10458;
Secs. 24 and 25, all;
Sec. 26 (fractional), excluding historical place application AA-10458 and U.S. Survey 312;
Sec. 27 (fractional), excluding historical place applications AA-10458 and AA-10460 and U.S. Survey 315;
Sec. 34 (fractional), all;
Secs. 35 and 36, all.

Containing approximately 10,731 acres.

T. 78 S., R. 82 E.
Secs. 2 and 3 (fractional), all;
Sec. 4, S½S½, NE¼SE¼;
Sec. 5, NW¼NW¼, S½N½, S½;
Secs. 6 and 7 (fractional), all;
Secs. 8, 9 and 10, all;
Secs. 11 and 14 (fractional), all;
Sec. 15, all;
Secs. 16 and 17 (fractional), all;
Sec. 18, all;
Sec. 19, excluding Mineral Survey 2208;

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Date AUG 17 1979

Sec. 20 (fractional), N½, N½SW¼, NW¼SE¼, excluding Mineral Survey 2208;
Sec. 21 (fractional), N½, N½SE¼;
Sec. 22 (fractional), N½, N½S½, SE¼SW¼, S½SE¼;
Sec. 23 (fractional), excluding Mineral Surveys 1556, 1565 and 1567;
Sec. 25 (fractional), excluding Mineral Survey 2231;
Sec. 26 (fractional), excluding Mineral Surveys 1556, 1566, 1567 and 2231;
Sec. 27 (fractional), NE¼, NE¼NW¼, S½NW¼, N½S½, SE¼SE¼;
Sec. 28 (fractional), SE¼NE¼, W½SW¼ excluding Mineral Survey 2208, NE¼SE¼;
Sec. 29, W½NE¼, NW¼, S½, excluding Mineral Survey 2208;
Secs. 30, 31 and 32, excluding Mineral Survey 2208;
Sec. 33, SW¼NE¼, NW¼NW¼ excluding Mineral Survey 2208, S½NW¼, SW¼, W½SE¼, SE¼SE¼;
Sec. 34 (fractional), E½NE¼, NE¼SE¼, S½S½;
Secs. 35 and 36 (fractional), all.

Containing approximately 11,422 acres.

T. 78 S., R. 83 E.
Sec. 31 (fractional), all.

Containing approximately 30 acres.

T. 78 S., R. 85 E.
Sec. 1, all;
Sec. 2 (fractional), all;
Sec. 3, all;
Secs. 10 to 24 (fractional), inclusive, all;
Sec. 25, all;
Secs. 26 to 31 (fractional), inclusive, all;
Sec. 32 (fractional), excluding Mineral Survey 1430;
Secs. 33 to 36 (fractional), inclusive, all.

Containing approximately 7,419 acres.

Aggregating approximately 158,154 acres.

NOW KNOW YE, that there is, therefore, granted by the UNITED STATES OF AMERICA, unto the above-named corporation the surface and subsurface estates in the land above-described, TO HAVE AND TO HOLD the said estates with all the rights, privileges, immunities, and appurtenances, of whatsoever nature, thereunto belonging, unto the said corporation, its successors and assigns, forever:

EXCEPTING AND RESERVING TO THE UNITED STATES FROM THE LANDS SO GRANTED:

1. The right to itself, its permittees or licensees, to enter upon, occupy and use, any part or all of that portion lying within twenty-five (25) feet of the center line of the transmission line right-of-way of Power Project 2432, for the purposes set forth in and subject to the conditions and limitations of Sec. 24 of the Federal Power Act of June 10, 1920, 41 Stat. 1075, as amended (16 U.S.C. 818). Such portions located in T. 57 S., R. 73 E., Copper River Meridian, Alaska; and

2. Pursuant to Sec. 17(b) of the Alaska Native Claims Settlement Act of December 18, 1971 (85 Stat. 688, 708; 43 U.S.C. 1601, 1616(b) (1976)), the following

public easements, referenced by easement identification number (EIN) on the easement maps attached to this document, copies of which will be found in casefile AA-18968, are reserved to the United States. All easements are subject to applicable Federal, State, or municipal corporation regulation. The following is a listing of uses allowed for each type of easement. Any uses which are not specifically listed are prohibited.

25 Foot Trail - The uses allowed on a twenty-five (25) foot wide trail easement are: travel by foot, dogsleds, animals, snowmobiles, two and three-wheel vehicles, and small all-terrain vehicles (less than 3,000 lbs Gross Vehicle Weight (GVW)).

50 Foot Trail - The uses allowed on a fifty (50) foot wide trail easement are: travel by foot, dogsleds, animals, snowmobiles, two and three-wheel vehicles, small and large all-terrain vehicles, track vehicles and four-wheel drive vehicles.

60 Foot Road - The uses allowed on a sixty (60) foot wide road easement are: travel by foot, dogsleds, animals, snowmobiles, two and three-wheel vehicles, small and large all-terrain vehicles, track vehicles, four-wheel drive vehicles, automobiles, and trucks.

100 Foot Proposed Road - The uses allowed on a one-hundred (100) foot wide road easement are: travel by foot, dogsleds, animals, snowmobiles, two and three-wheel vehicles, small and large all-terrain vehicles, track vehicles, four-wheel drive vehicles, automobiles, and trucks. All roads in this category must be proposed for construction within a five-year period. If the road is not constructed the easement will be reduced to a trail width. If after the road has been constructed a lesser width is sufficient to accommodate the road, the easement shall be reduced to a 60 foot wide easement.

One Acre Site - The uses allowed for a site easement are: vehicle parking (e.g., aircraft, boats, ATV's, snowmobiles, cars, trucks), temporary camping, and loading or unloading. Temporary camping, loading, or unloading shall be limited to 24 hours.

a. (EIN 1a C5) An easement for an existing access trail twenty-five (25) feet in width from a point in Sec. 21, T. 74 S., R. 85 E., Copper River Meridian, westerly to public lands. The uses allowed are those listed above for a twenty-five (25) foot wide trail easement.

b. (EIN 6 G) An easement sixty (60) feet in width for an existing road from the City of Kake easterly to a fork in the road in Sec. 1, T. 57 S., R. 73 E., Copper River Meridian. Thence northerly and southerly to areas of public lands. The uses allowed are those listed above for a sixty (60) foot wide road easement.

c. (EIN 30 G) An easement sixty (60) feet in width for an existing road from a point in Sec. 1, T. 72 S., R. 81 E., Copper River Meridian, southerly to public lands. The uses allowed are those listed above for a sixty (60) foot wide road easement.

d. (EIN 31 G) An easement one hundred (100) feet in width for a proposed road from EIN 30 G in Sec. 24, T. 72 S., R. 81 E., Copper River Meridian, southerly to Black Lake. The uses allowed are those listed above for a one hundred (100) foot wide road easement.

e. (EIN 33 G) An easement one hundred (100) feet in width for a proposed road from a point in Sec. 27, T. 72 S., R. 85 E., Copper River Meridian, westerly to public lands. The uses allowed are those listed above for a one-hundred (100) foot wide road easement.

f. (EIN 35 G) An easement one hundred (100) feet in width for a proposed road from a point in Sec. 36, T. 72 S., R. 86 E., Copper River Meridian, northerly to public lands. The uses allowed are those listed above for a one hundred (100) foot wide road easement.

g. (EIN 35a G) An easement one hundred (100) feet in width for a proposed road from a point in the SW 1/4 of Sec. 35, T. 71 S., R. 86 E., Copper River Meridian, southerly into Sec. 2, T. 72 S., R. 86 E., thence curving northeasterly into the SW 1/4 of Sec. 36, T. 71 S., R. 86 E., Copper River Meridian. The uses allowed are those listed above for a one hundred (100) foot wide road easement.

h. (EIN 35b G) An easement one hundred (100) feet in width for a proposed road from EIN 35c G in Sec. 24, T. 72 S., R. 86 E., Copper River Meridian, northerly to public lands. The uses allowed are those listed above for a one hundred (100) foot wide road easement.

i. (EIN 35c G) An easement one hundred (100) feet in width for a proposed road from EIN 35 G in Sec. 23, T. 72 S., R. 86 E., Copper River Meridian, easterly to public lands. The uses allowed are those listed above for a one-hundred (100) foot wide road easement.

j. (EIN 36 D9) An easement for an existing access trail twenty-five (25) feet in width from a point in Sec. 36, T. 72 S., R. 86 E., Copper River Meridian, northerly to public

lands. The uses allowed are those listed above for a twenty-five (25) foot wide trail easement.

k. (EIN 48 G) An easement sixty (60) feet in width for an existing road from the shore of Hetta Inlet in Sec. 33, T. 76 S., R. 84 E., Copper River Meridian, easterly to public lands. The uses allowed are those listed above for a sixty (60) foot wide road easement.

l. (EIN 53 D1) An easement for an existing access trail twenty-five (25) feet in width from EIN 55 D9 in Sec. 24, T. 77 S., R. 85 E., Copper River Meridian, easterly to public lands. The uses allowed are those listed above for a twenty-five (25) foot wide trail easement.

m. (EIN 55 D9) A site easement upland of the ordinary high water mark in Sec. 24, T. 77 S., R. 85 E., Copper River Meridian, on the east shore of Hetta Lake. The site is one (1) acre in size with an additional twenty-five (25) foot wide easement on the bed of the lake along the entire waterfront of the site. The uses allowed are those listed above for a one (1) acre site.

n. (EIN 56 D1) An easement for an existing access trail twenty-five (25) feet in width from Hetta Point in Sec. 22, T. 77 S., R. 85 E., Copper River Meridian, easterly to EIN 55 D9. The uses allowed are those listed above for a twenty-five (25) foot wide trail easement.

o. (EIN 62 D1) An easement for an existing access trail twenty-five (25) feet in width from View Cove in Sec. 20, T. 78 S., R. 82 E., Copper River Meridian, westerly to Manhattan Arm. The uses allowed are those listed above for a twenty-five (25) foot wide trail easement.

p. (EIN 62a C5) A one (1) acre site easement upland of the mean high tide line in Sec. 20, T. 78 S., R. 82 E., Copper River Meridian, on the west shore of View Cove. The uses allowed are those listed above for a one (1) acre site.

q. (EIN 68 C5) A one (1) acre site easement upland of the mean high tide line in Sec. 33, T. 76 S., R. 84 E., Copper River Meridian, on the east shore of Hetta Inlet. The uses allowed are those listed above for a one (1) acre site.

r. (EIN 69 C5) An easement for a proposed access trail twenty-five (25) feet in width from a point below Nutkwa Falls in Sec. 12, T. 78 S., R. 85 E., Copper River Meridian, northerly approximately 1/4 mile to a point above the falls. The uses allowed are those listed above for a twenty-five (25) foot wide trail easement.

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Date AUG 17 1979

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Petersburg Recording Dist.

AA-14015

BOOK 81 PAGE 88
Ketchikan Recording District

s. (EIN 70 C5) An easement for a proposed access trail fifty (50) feet in width from the beach in Sec. 13, T. 43 S., R. 60 E., Copper River Meridian, westerly to isolated public lands. The uses allowed are those listed above for a fifty (50) foot wide trail easement.

The grant of the above-described lands is subject to:

1. Issuance of a patent confirming the boundary description of the unsurveyed lands hereinabove granted after approval and filing by the Bureau of Land Management of the official plat of survey covering such lands;

2. Valid existing rights therein, if any, including but not limited to those created by any lease (including a lease issued under Sec. 6(g) of the Alaska Statehood Act of July 7, 1958 (72 Stat. 339, 341; 48 U.S.C. Ch. 2, Sec. 6(g) (1976))), contract, permit, right-of-way, or easement, and the right of the lessee, contractee, permittee, or grantee to the complete enjoyment of all rights, privileges, and benefits thereby granted to him. Further, pursuant to Sec. 17(b)(2) of the Alaska Native Claims Settlement Act of December 18, 1971 (85 Stat. 688, 708; 43 U.S.C. 1601, 1616(b)(2) (1976)) (ANCSA), any valid existing right recognized by ANCSA shall continue to have whatever right of access as is now provided for under existing law; and

3. Requirements of Sec. 22(k) of the Alaska Native Claims Settlement Act of December 18, 1971 (85 Stat. 688, 715; 43 U.S.C. 1601, 1621(k) (1976)), that, until December 18, 1983, the portion of the above-described lands located within the boundaries of a national forest shall be managed under the principles of sustained yield and under management practices for protection and enhancement of environmental quality no less stringent than such management practices on adjacent national forest lands.

79-3045
21-
RECORDED-~~FILED~~
KETCHIKAN REC. DISTRICT
AUG 24 1 47 PM '79
REQUESTED BY Sealaska Corporation
ADDRESS One Sealaska Juneau, AK 99801 *
Robert Loescher
Hanger

79-0010
21
RECORDED-~~FILED~~ PETERSBURG RECORDING DISTRICT
AUG 24 2 48 PM '79
REQUESTED BY Sealaska Corp.
ADDRESS *

IN WITNESS WHEREOF, the undersigned authorized officer of the Bureau of Land Management has, in the name of the United States, set his hand and caused the seal of the Bureau to be hereunto affixed on this Seventeenth day of August, 1979, in Anchorage, Alaska.

UNITED STATES OF AMERICA

U.S. DEPARTMENT OF THE INTERIOR OFFICIAL SEAL BUREAU OF LAND MANAGEMENT

[signature]
Assistant to the State Director for ANCSA

United States of America)
State of Alaska) ss

THIS IS TO CERTIFY that the foregoing is a full, true and correct copy of the original as the same appears in the records and files of my office.

IN WITNESS WHEREOF, I have hereunto set my hand and have affixed my official seal at Ketchikan, Alaska, this 24th day of August 19 79

[signature]
District Recorder

INTERIM CONVEYANCE NO. 225

Date AUG 17 1979

BOOK 111 PAGE 627

Sitka

Ketchikan

BOOK 0045 PAGE 850

Petersburg

AA-14015 RETURN TO:

SEALASKA CORPORATION
ONE SEALASKA PLAZA, SUITE 400
JUNEAU, ALASKA 99801

GRANTOR: UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
222 WEST SEVENTH AVENUE, #13
ANCHORAGE, ALASKA 99513-7599

RECEIVED
OCT 3 1994
Sealaska Corpor

INTERIM CONVEYANCE

WHEREAS

Sealaska Corporation

is entitled to a conveyance pursuant to Secs. 14 (h)(8) and 22(j) of the Alaska Native Claims Settlement Act of December 18, 1971, 43 U.S.C. 1601, 1613 (h)(8), 1621(j), of the surface and subsurface estates in the following-described lands:

Copper River Meridian, Alaska.

T. 44 S., R. 60 E.,
Sec. 11;
Sec. 13;
Sec. 14, E½E½;
Sec. 23, NE¼, N½SE¼;
Sec. 24, N½, N½SW¼, NW¼SE¼;
Sec. 36, NE¼, E½SE¼.

Containing approximately 1,535 acres.

T. 44 S., R. 61 E.,
Sec. 7, SE¼;
Sec. 18, W½, W½E½;
Sec. 19, NW¼, W½NE¼, E½SW¼, SE¼;
Sec. 30, E½W½, E½;
Sec. 31, N½, SW¼, N½SE¼.

Containing approximately 2,152 acres.

Interim Conveyance No. 1590

Date AUGUST 8 1994

RE RECORD IN KETCHIKAN, PETERSBURG AND SITKA

AA-14015

T. 56 S., R. 73 E.,
Sec. 10, SE¼SE¼.

Containing approximately 40 acres.

T. 76 S., R. 82 E.,
Sec. 1, E½, SE¼NW¼, NE¼SW¼;
Sec. 12, E½E½, NW¼NE¼;
Sec. 13, E½.

Containing approximately 920 acres.

T. 76 S., R. 83 E.,
Sec. 6, W½;
Sec. 7, SW¼NE¼, SE¼NW¼, W½NW¼, SW¼, W½SE¼, SE¼SE¼;
Sec. 18, N½, SE¼;
Sec. 19, NE¼NE¼.

Akida area

Containing approximately 1,159 acres.

T. 76 S., R. 84 E.,
Sec. 27, excluding Mineral Survey (M.S.) No. 562-A;
Sec. 34, excluding M.S. No. 562-A, M.S. No. 1545, M.S. No. 886, M.S. No. 1006, and M.S. No. 419-A;
Sec. 35, excluding M.S. No. 562-A, M.S. No. 1545, M.S. No. 1006, M.S. No. 419-A, and that portion of M.S. No. 886 which was patented under Patent No. 385872.

Haida area

Containing approximately 785 acres.

358.22

T. 72 S., R. 85 E.,
Sec. 3;
Sec. 4, NE¼, E½SE¼;
Sec. 9, NE¼NE¼, E½SE¼;
Secs. 10 and 14;
Sec. 15, N½, SE¼, N½SW¼, SE¼SW¼;
Sec. 16, E½NE¼, NE¼SE¼;

977.22

Kasaan area

Interim Conveyance No. 1590

Date AUGUST 1 9 1984

AA-14015

Sec. 22, NE¼, E½NW¼, NE¼SW¼, N½SE¼, SE¼SE¼;
Sec. 23.

Containing approximately 2,195 acres.

Aggregating approximately 8,786 acres.

Excluded from the above-described lands are the submerged lands, if any, up to the ordinary high water mark, beneath streams 3 chains wide (198 feet) and wider, and lakes 50 acres and larger, which are meanderable according to the 1973 Bureau of Land Management Manual of Surveying Instructions, as modified by Departmental regulation 43 CFR 2650.5-1, and navigable waters, if any, of lesser size. These submerged lands will be identified at the time of survey.

Also excluded from the above-described lands are lands covered by tidal waters up to the line of mean high tide. The actual limits of tidal influence for those bodies, if any, will be determined at the time of survey.

NOW KNOW YE, that there is, therefore, granted by the UNITED STATES OF AMERICA, unto the above-named corporation the surface and subsurface in the lands above described; TO HAVE AND TO HOLD the said lands with all the rights, privileges, immunities, and appurtenances, of whatsoever nature, thereunto belonging, unto the said corporation, its successors and assigns, forever.

EXCEPTING AND RESERVING TO THE UNITED STATES from the lands so granted:

1. Pursuant to Sec. 17(b) of the Alaska Native Claims Settlement Act of December 18, 1971, 43 U.S.C. 1601, 1616(b), the following public easements, referenced by easement identification number (EIN) on the easement maps, copies of which can be found in the Bureau of Land Management's Public Land Records, are reserved to the United States. All easements are subject to applicable Federal, State, or municipal corporation regulation. The following is a listing of uses allowed for each type of easement. Any uses which are not specifically listed are prohibited.

Interim Conveyance No. 1590

Date [illegible] 1994

25 Foot Trail - The uses allowed on a twenty-five (25) foot wide trail easement are: travel by foot, dogsleds, animals, snowmobiles, two-and-three-wheel vehicles, and small all-terrain vehicles (ATVs) (less than 3,000 lbs. Gross Vehicle Weight (GVW)).

60 Foot Road - The uses allowed on a sixty (60) foot wide road easement are: travel by foot, dogsleds, animals, snowmobiles, two-and three-wheel vehicles, small and large all-terrain vehicles (ATVs), track vehicles, four-wheel drive vehicles, automobiles, and trucks.

One Acre Site - The uses allowed for a site easement are: vehicle parking (e.g., aircraft, boats, all-terrain vehicles (ATVs), snowmobiles, cars, trucks), temporary camping, and loading or unloading. Temporary camping, loading, or unloading shall be limited to 24 hours.

a. (EIN 1 C5) An easement one hundred (100) feet in width for an existing road, known as the Hydaburg Highway, from the north boundary of Sec. 1, T. 76 S., R. 82 E., Copper River Meridian, southeasterly, to public land in Sec. 17, T. 76 S., R. 83 E. The uses allowed are those listed above for a sixty (60) foot wide road easement.

b. (EIN 2 C5) A one (1) acre site easement in Sec. 18, T. 76 S., R. 83 E., Copper River Meridian, located at the junction of existing road easement (EIN 4 G) and proposed trail easement (EIN 5 G). The uses allowed are those listed above for a one (1) acre site.

c. (EIN 3 G) An easement sixty (60) feet in width for an existing/proposed road from the junction of (EIN 1 C5) located in Sec. 6, T. 76 S., R. 83 E., Copper River Meridian, southwesterly, to public lands located in Sec. 13, T. 76 S., R. 82 E., Copper River Meridian. The uses allowed are those listed above for a sixty (60) foot wide road easement.

Interim Conveyance No. 1590

Date AUGUST 19 1994

AA-14015

d. (EIN 4 G) An easement sixty (60) feet in width for an existing road from the junction of (EIN 3 G) located in Sec. 7, T. 76 S., R. 83 S., Copper River Meridian, southerly to site easement (EIN 2 C5) located in Sec.18, T. 76 S., R. 83 E., Copper River Meridian. The uses allowed are those listed above for a sixty (60) foot wide road easement.

e. (EIN 5 G) An easement twenty-five (25) feet in width for a proposed access trail from site easement (EIN 2 C5) located in Sec. 18, T. 76 S., R. 83 E., Copper River Meridian, southeasterly to public lands in Sec. 18, T. 76 S., R. 83 E., Copper River Meridian. The uses allowed are those listed above for a twenty-five (25) foot wide trail easement.

f. (EIN 48 G) An easement sixty (60) feet in width for a proposed road from the west boundary of Sec. 27, T. 76 S., R. 84 E., Copper River Meridian, southeasterly to a group of private holdings, located in Sec. 34, T. 76 S., R. 84 E., Copper River Meridian. The uses allowed are those listed above for a sixty (60) foot wide road easement.

g. (EIN 10 G) An easement twenty-five (25) feet in width for an existing trail, known as Soda Lake Trail, from site easement (EIN 11 G) in Sec. 1, T. 76 S., R. 82 E., Copper River Meridian, southwesterly to public lands located in Sec. 1, T. 76 S., R. 82 E., Copper River Meridian. The uses allowed are those listed above for a twenty-five (25) foot wide trail easement.

h. (EIN 11 G) A one (1) acre site easement located at the junction of trail easement (EIN 10 G) and road easement (EIN 1 C5), in Sec. 1, T. 76 S., R. 82 E., Copper River Meridian. The uses allowed are those listed above for a one (1) acre site.

THE GRANT OF THE ABOVE-DESCRIBED LANDS IS SUBJECT TO:

1. Issuance of a patent after approval and filing by the Bureau of Land Management of the official plat of survey confirming the boundary description and acreage of the lands hereinabove granted; and

Interim Conveyance No. 1590

Date AUGUST 9 1994

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Sitka

AA-14015

BOOK 0045 PAGE 85
Petersburg

2. Valid existing rights therein, if any, including but not limited to those created by any lease, contract, permit, right-of-way, or easement, and the right of the lessee, contractee, permittee, or grantee to the complete enjoyment of all rights, privileges, and benefits thereby granted to him. Further, pursuant to Sec. 17(b)(2) of the Alaska Native Claims Settlement Act of December 18, 1971 (ANCSA), 43 U.S.C. 1601, 1616(b)(2), any valid existing right recognized by ANCSA shall continue to have whatever right of access as is now provided for under existing law.

IN WITNESS WHEREOF, the undersigned authorized officer of the Bureau of Land Management has, in the name of the United States, set her hand and caused the seal of the Bureau to be hereunto affixed on this 18th day of August, 1994, at Anchorage, Alaska.

UNITED STATES OF AMERICA

Nancy L. Larsen

Nancy L. Larsen
Acting Chief, Branch of Gulf Rim Adjudication

94-1091

RECORDED - ~~FILED~~ 30
Petersburg REC. DIST.
DATE August 29 1994
TIME 2:48 P M
Requested by Sealaska
Address

94-4258
30
RECORDED ~~FILED~~
RE REC
Dis
AUG 29 2 3: PM '94
Sealaska
ADDRESS

Interim Conveyance No. 1590

Date AUGUST 9 1994

94-3117
30.00
Sitka REC. DIST.
DATE 10-10, 1994
TIME 9:24 A M
Requested By Sealaska
Address

Record in the Ketchikan Recording District

Return to:
Stephen F. Sorensen
Simpson, Tillinghast & Sorensen, P.C.
One Sealaska Plaza, Suite 300
Juneau, Alaska 99801

NATZUHINI BAY MITIGATION BANK RESTRICTIVE COVENANTS

This NATZUHINI BAY MITIGATION BANK RESTRICTIVE COVENANTS is made this _____ day of January, 2006, by Sealaska Corporation, an Alaska corporation, organized pursuant to the Alaska Native Claims Settlement Act, having an address at One Sealaska Plaza, Suite 400, Juneau, Alaska ("Sealaska").

WITNESSETH:

WHEREAS, Sealaska has entered into a Memorandum of Understanding with the U.S. Army Corps of Engineers/Mitigation Bank Review Team ("Corps/MBRT"), dated _____, 2006 ("MOA"), wherein Sealaska and the Corps/MBRT have established a mitigation banking system that includes the establishment, maintenance, restoration, enhancement, preservation, and protection of riparian and estuarine areas, including special aquatic sites of two major stream systems within the Natzuhini Bay watershed; and

WHEREAS, Sealaska is the sole owner in fee simple of certain real property located within the Natzuhini Bay watershed located on Prince of Wales Island, Southeast Alaska, consisting of the riparian zone areas and stream beds of Flat Creek, Natzuhini Creek and a tributary of Natzuhini Creek; and the estuarine zone areas of Natzuhini Bay; totaling approximately 148.01 acres, and more particularly described in Exhibit A attached hereto and incorporated by this reference (the "Property"); and

WHEREAS, the Property is offered by Sealaska as part of the Mitigation Bank established by the MOA and requires certain deed restrictions in order for the Property to qualify for Corps/MBRT's Mitigation Banking program; and

WHEREAS, the Corps/MBRT and Sealaska have agreed that certain activities regarding the maintenance, restoration, enhancement, preservation, and protection of riparian and estuarine areas of the Property maybe conducted by Sealaska pursuant to the MOA; and

WHEREAS, Sealaska, as owner of the Property, agrees that these Covenants shall be placed upon the Property for the purpose of satisfying Sealaska's obligations under the MOA.

NOW, THEREFORE, in consideration of the above and the mutual covenants, terms, conditions, and restrictions contained herein, Sealaska hereby voluntarily imposes, places, and restricts the use and occupancy of the Property in accordance with the terms and conditions set forth below.

1. **Purpose**. The purpose of the Natzuhini Bay Restrictive Covenants is to preserve and protect the Property, subject to the uses or activities described in the MOA, to manage the trees and shrubs in the riparian zones, and to provide the streamside environment within the defined riparian zone the opportunity to achieve desirable natural characteristics (as described in the Regional Banking Instrument), sooner than if the existing second growth is left to compete for space under current conditions. Sealaska intends that these Covenants will confine the uses and activities on the Property to those uses and activities described in the MOA, as well as, without limitation, those involving subsistence, sport fishing, protection of historical and/or archaeological sites, education, or any other uses or activities that are consistent with the purpose of these Covenants.

2. **Permitted Mitigation Bank Activities**. Sealaska and its employees, agents, and contractors are permitted to engage in all activities and uses of the Property as specified in the MOA, which includes but is not limited to: precommercial thinning of trees, cutting of trees and shrubs, other accepted methods of brush control, fertilizing trees and the planting of native and nursery stock trees, surveying and flagging, and monitoring,

3. **Prohibited Activities**. Any activity on or use of the Property inconsistent with the purpose of these Covenants is prohibited. Without limiting the generality of the foregoing, the following activities and uses are expressly prohibited:

(a) Subdivision for purposes of residential or industrial development;

(b) Industrial or residential uses;

(c) Parking lots, storage areas, or waste dumps of any kind;

(d) Coverage of land by asphalt, concrete, or other material that does not constitute a natural cover for the land;

(e) Buildings, structures, or other improvements;

(f) Alteration of the land surface through grading or soil dumping or trenching, except as may be necessary for activities related to the purpose of these Covenants;

(g) Mineral development or mining and/or any underground mineral activity that result in the alteration or disturbance of the surface of the Property;

(h) Advertising signs or billboards;

(i) Cutting or removal of trees, shrubs, or other vegetation, except as may be necessary for activities related to the purpose of these Covenants; or except as necessary for emergency response to forest fires and cultural activities as set forth in Section 4(f);

(j) Introduction of nonnative plants and animal species within riparian, streambed, and estuarine areas that may compete with and result in the decline or elimination of natural species;

(k) Any use or activity that would cause an increase, or substantially add to, the risk of erosion;

(l) Dumping of any kind, including trash, concrete, toxic materials, or hazardous materials; and

(m) Commercial timber harvesting of any kind, except as authorized by the MOA and/or by the Corps/MRBT.

4. **Reserved Rights**. Sealaska reserves to itself, and to its officers, directors, employees, shareholders, and family members of shareholders, as well as contractors and successors and assigns, all rights accruing from its ownership of the Property, including the right to engage in or permit or invite others to engage in all uses of the Property that are not expressly prohibited herein and are not inconsistent with the purpose of these Covenants. Without limiting the generality of the foregoing, the following rights are expressly reserved:

(a) Normal and acceptable silvicultural practices necessary for emergency response to forest fires;

(b) The right to continued use of foot and road access for ingress and egress;

(c) All water rights within the Property;

(d) The right to permit subsistence, sport fishing, and other nonintrusive uses or activities consistent with these Covenants;

(e) The right to protect historical and/or archaeological sites, including, without limitation, the right to survey the site, excavate the site, and remove artifacts and other items of historical and archaeological interest, subject to obtaining any required Corps and/or other applicable permits; and

(f) The cutting and removal of individual trees for cultural uses, which include but are not limited to totem poles or canoes, if suitable trees do not exist on nearby lands are not restricted by these Covenants or on other lands readily accessible to Sealaska.

5. **Change in Use or Activity**. Before Sealaska changes any use or activity on the Property from that allowed under these Covenants, Sealaska shall notify the Corps/MBRT of the use or activity. The Corps/MBRT shall concur in the use or activity if it finds the use or activity is consistent with the stated purposes of these Covenants. The use or activity proposed by Sealaska shall not be implemented without the Corps/MBRT's concurrence.

6. **Acts Beyond Sealaska's Control.** Nothing contained in these Covenants shall be construed as a violation of these Covenants for any injury to or change in the Property resulting from causes beyond Sealaska's control, including, without limitation, unforeseeable and unauthorized actions of third parties, fire, flood, storm, and earth movement, or from any prudent action taken by Sealaska under emergency conditions to prevent, abate, or mitigate significant injury to the Property resulting from such causes, as long as such actions are consistent with the stated purpose of these Covenants.

7. **Access.** No right of access by the general public to any portion of the Property is conveyed by these Covenants without specific written authority from Sealaska describing places, trails, and other conditions. Upon seven (7) days advance written notice to Sealaska, access shall be granted to representatives of the Corps/MBRT and other resource agency personnel as appropriate for the purpose of inspecting and monitoring the Property for compliance with the terms and purpose of these Covenants and the MOA.

8. **Costs and Liabilities.** Sealaska retains all responsibility and shall bear all costs and liabilities of any kind related to the ownership, operation, upkeep, and maintenance of the Property. Sealaska shall keep the Property free of any liens arising out of any work performed for, materials furnished to, or obligations incurred by Sealaska.

9. **Extinguishment.** These Covenants shall remain in place for as long as the Property remains subject to the MOA and is part of the Corps/MBRT Mitigation Bank. In the event that the Property is no longer part of the Mitigation Bank and not subject to the MOA, Sealaska may remove these Covenants by recording a Notice of Removal of Restrictive Covenants in the recording district where the Property is located. A conformed copy of Notice shall be sent to the Corps/MRBT.

10. **Recordation.** Sealaska shall record, at its cost, this instrument, within thirty (30) days of the Corps/MRBT's approval of the MOA, in the official records of the Ketchikan Recording District, First Judicial District, State of Alaska. Upon recording, a conformed copy of the recorded Covenants shall be sent to Corps/MRBT.

11. **General Provisions.**

(a) Controlling Law. The interpretation and performance of these Covenants shall be governed by the laws of the State of Alaska.

(b) Liberal Construction. Any general rule of construction to the contrary notwithstanding, these Covenants shall be liberally construed in favor of the grant to effect the purpose of these Covenants. If any provision in this instrument is found to be ambiguous, an interpretation consistent with the purpose of these Covenants that would render the provision valid shall be favored over any interpretation that would render it invalid.

(c) Severability. If any provision of these Covenants, or the application thereof to any person or circumstance, is found to be invalid, the remainder of the provisions of these

Covenants, or the application of such provision to persons or circumstances other than those as to which it is found to be invalid, as the case may be, shall not be affected thereby.

(d) No Forfeiture. Nothing contained herein will result in a forfeiture or reversion of Sealaska's title in any respect.

(e) Successors. The covenants, terms, conditions, and restrictions of these Covenants shall be binding upon, and inure to the benefit of, the parties hereto and their respective personal representatives, heirs, successors, and assigns and shall continue as a servitude running with the Property.

(f) Captions. The captions in this instrument have been inserted solely for convenience of reference and are not a part of this instrument and shall have no effect upon construction or interpretation.

(g) No Precedent. The parties agree that the terms and conditions set forth in these Covenants shall not act as a precedent, nor be binding upon either party, in regards to any future dealings between the parties.

IN WITNESS WHEREOF Sealaska has set its hand on the day and year first written above.

SEALASKA CORPORATION

By_____
Chris E. McNeil, Jr.
President and Chief Executive Officer

STATE OF ALASKA)
)ss:
FIRST JUDICIAL DISTRICT)

Before me, the undersigned Notary Public, personally appeared Chris E. McNeil, Jr., to me known to be the President and Chief Executive Officer of Sealaska Corporation, and acknowledged to me that he executed the above instrument on behalf of Sealaska Corporation as his free and voluntary act and with knowledge of its contents for the purposes therein expressed.

WITNESS my hand and official seal this ___ day of January, 2006.

_____
Notary Public, State of Alaska
My commission expires _____

EXHIBIT A

1. **FLAT CREEK RIPARIAN ZONE**: The riparian zone of Flat Creek is a strip of land sixty-six (66) feet wide as measured landward from the ordinary high water (OHW) for the stream reaches, and the stream bed, which is defined as the area with each defined reach as measured between each stream bank at OHW; all of which is located in Sections 1, 12, and 13 of Township 76 South, Range 82 East, and in Sections 7 and 18 of Township 76 South, Range 83 East, Copper River Meridian, First Judicial District, State of Alaska; and having the four corners of this zone marked by State Plane Coordinates of: X Coordinate: 2852040; Y Coordinate: 1270420 and X Coordinate: 2852140; Y Coordinate: 1270250 for the upper reach of the Zone, located in Section 1; and X Coordinate: 2852620; Y Coordinate: 1257660 and X Coordinate: 2852460; Y Coordinate: 1257550 for the lower reach of the Zone, located in Section 13.

2. **NATZUHINI CREEK AND TRIBUTARY OF NATZUHINI CREEK ZONE**: The riparian zone of Natzuhini Creek and the Tributary of Natzuhini Creek is a strip of land sixty-six (66) feet wide as measured landward from the ordinary high water (OHW) for the stream reaches, and the stream bed, which is defined as the area within each defined reach as measured between each stream bank at OHW; all of which is located in Section 17 of Township 76 South, Range 83 East, Copper River Meridian, First Judicial District, State of Alaska; and having the four corners of each riparian zone for each stream marked by State Plane Coordinates as follows:

A. **Natzuhini Creek**: X Coordinate: 2862910; Y Coordinate: 1262520 and X Coordinate: 2863050; Y Coordinate: 1262360 for the upper reach of Natzuhini Creek, located in Section 17; and X Coordinate: 2860480; Y Coordinate: 1260870 and X Coordinate: 2860710; Y Coordinate: 1260830 for the lower reach of Natzuhini Creek, located in Section 17; and

B. **Tributary of Natzuhini Creek**: X Coordinate: 2860710; Y Coordinate: 1262470 and X Coordinate: 2860780; Y Coordinate: 1262340 for the upper reach of the Tributary of Natzuhini Creek, located in Section 17; and X Coordinate: 2860480; Y Coordinate: 1261410 and X Coordinate: 2860350; Y Coordinate: 1261340 for the lower reach of the Tributary of Natzuhini Creek, located in Section 17.

3. **NATZUHINI BAY ESTUARY ZONE**: This estuarine zone is adjacent to and including the tidal estuarine wetlands and a sixty-six (66) foot riparian zone (including 18,498 lineal feet of shoreline at the High Tide Line (HTL)) extending landward from the Mean High Water (MHW) to sixty-six (66) feet above the HTL around the salt chuck at the mouth of Natzuhini Creek, all of which is located in Sections 17 and 20 of Township 76 South, Range 83 East, Copper River Meridian, First Judicial District, State of Alaska; and having the four corners of this zone marked by State Plane Coordinates of: X Coordinate: 2860480; Y Coordinate: 1260870 and X Coordinate: 2860710; Y Coordinate: 1260830 for the upper end of the Zone, located in Section 17; and X Coordinate: 2858940; Y Coordinate: 1256360 and X Coordinate: 2859440; Y Coordinate: 1255100 for the mouth of the Zone, located in Section 20.