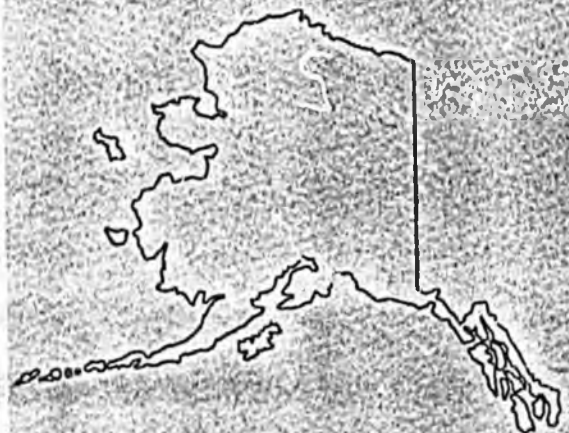
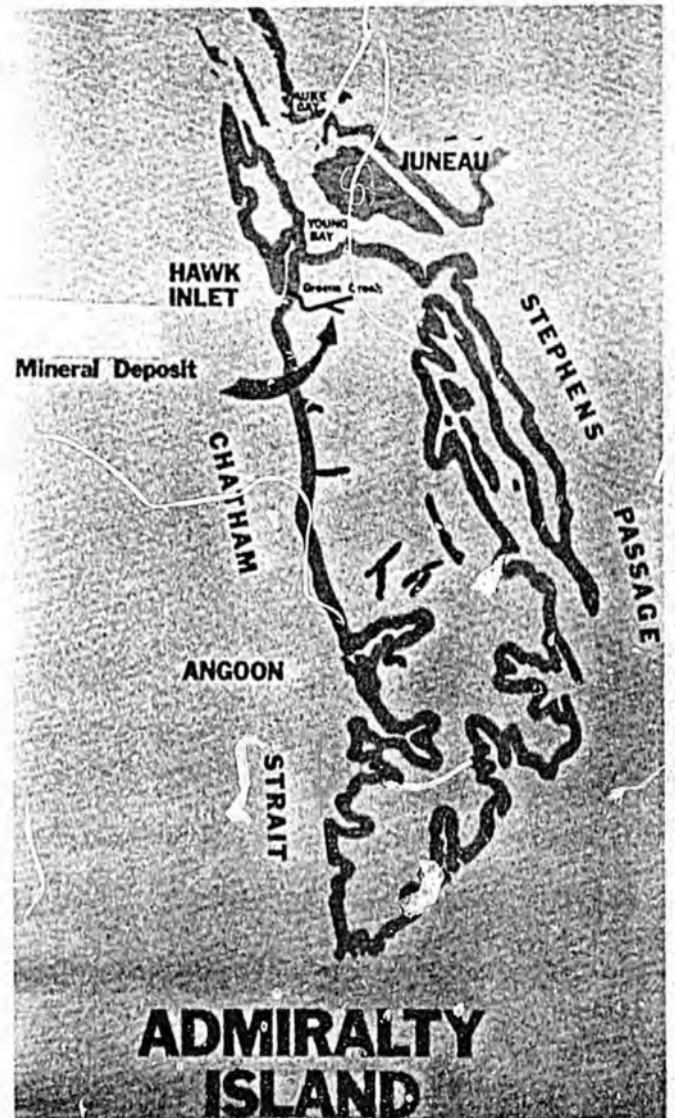


NORANDA -  
GREEN'S  
CREEK  
BRIEFING

GREENS  
CREEK  
JOINT  
VENTURE

Greens Creek Project  
1982 Update





Admiralty Island Vicinity

## THE GREENS CREEK PROJECT

### INTRODUCTION

Welcome to Greens Creek! The purpose of this pamphlet is to provide you with some information about the Greens Creek Project, where it is, what it consists of, its history to date, why it is of special importance, and plans for the future.

We invite you to contact us should you desire more information about the Greens Creek Project.

Our address is:

Mine Manager  
Noranda Mining Inc.  
Post Office Box 1268  
Juneau, Alaska 99802  
Telephone: (907) 789-4171

A small but richly mineralized area on Admiralty Island in Southeast Alaska, eleven square miles, about 1/2 of 1% of the island's total area.

Economically mineable ore deposit of silver, zinc, gold, lead and copper which are now heavily imported by the United States.

Recoverable by underground mining methods with only minimal and temporary disruption to surface vegetation and wildlife. Reclamation of the area following the termination of mineral production.

Accessible by boat, 6 miles from tidewater, 18 air miles from Juneau.



Exploration Base Camp

## A CLOSER LOOK AT GREENS CREEK

The Greens Creek claims are located about 18 air miles southwest of Juneau, within Admiralty Island National Monument but outside the area designated as Wilderness by the Alaska National Interest Lands Conservation Act of 1980 (ANILCA). Parts of this Act provide for the careful development of valid mining claims in the Greens Creek area.

The joint venture which discovered the deposit was formed in early 1973 by Noranda Exploration, Marietta Resources International, Exalas Resources Corporation and Texas Gas Exploration. It's success led to the formation in 1978 of the Greens Creek Joint Venture for the continued development of the project. Its participants are the four companies plus Bristol Bay Native Corporation, which owns land on Hawk Inlet near the mouth of Greens Creek. The Joint Venture Group is very much aware of their responsibilities, and they recognize the many special values that contribute to this National Monument.

To date the Joint Venture has invested more than \$9 million for claimstaking, metallurgical test work, geophysical surveying, excavation of a 4,200-foot adit, 48,000 feet of diamond core drilling, and environmental studies.

Field activities during 1981 included seismic surveys, shallow diamond drilling to further evaluate proposed tailing disposal sites, and the excavation of a cross-cut tunnel from the existing adit to the mineral horizon. Ore samples were obtained and sent to a laboratory for detailed metallurgical testing.

So far, all exploration and pre-development activity at Greens Creek has been helicopter supported with nearly 4,100 flying hours accrued through 1981. Minor surface disturbance has been limited to the preparation of drill sites and the clearing of a campsite and waste rock disposal area.

Noranda, the Forest Service, other agencies and interest groups are going through the planning phases and public participation that shape the management of activities on Admiralty Island. Noranda is in the process of developing environmental, engineering, and socio-economic background data to be supplied to the U. S. Forest Service for the preparation by that agency of an Environmental Impact Statement (EIS) by mid-1982.

### NORANDA'S PREFERRED ALTERNATIVE

Various alternatives will be addressed in the Environmental Impact Statement relating to the proposed mine/mill operations.

Of these options, Noranda's preferred alternative will be to house personnel in Juneau. Transportation would be by boat on a daily basis to Young Bay, followed by busing to the cannery at Hawk Inlet and on up to the mine/mill site.

A portion of the waste rock produced from the milling process will be stored on the island with treated waste water discharged to a marine environment.



Delivering Campsite

## DEPOSIT OF BASE AND PRECIOUS METALS

An area where the mineralized zone is exposed at the surface is called the "Big Sore" because of the reddish-stained natural ground seepage where little vegetation grows. Initial surface drilling at Big Sore indicated several horizons containing pods of variable grade silver, zinc, lead, copper, and gold ore. Continued drilling has now delineated a narrow, steeply dipping ore zone with a minimum horizontal length of 3,500 feet.

Diamond drill core intercepts have indicated geologic reserves above the 1,100-foot elevation estimated at 3 million tons containing:

- copper at 1/4%
- lead at 2 1/2%
- zinc at 7-10%
- silver at 10+ ounces per ton
- gold at 1/10 ounce per ton

Additional exploration, along the vertical and horizontal extent of the orebody could add several million tons to the indicated reserves.

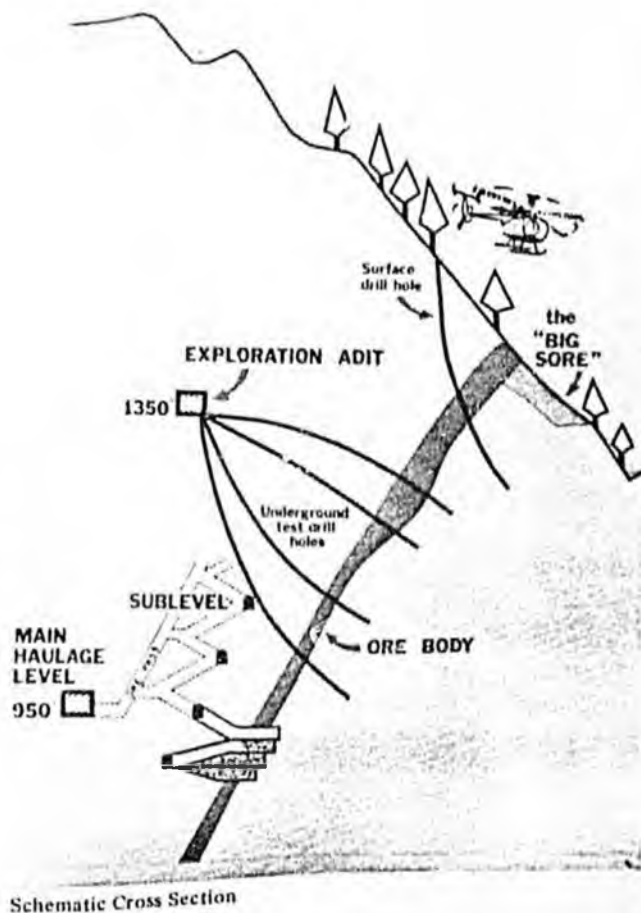
During 1981 Noranda Exploration's management role was transferred to Noranda Mining Inc. as the project moves through conceptual engineering towards actual mining.



"Big Sore"

## UNDERGROUND MINING OF THE OREBODY

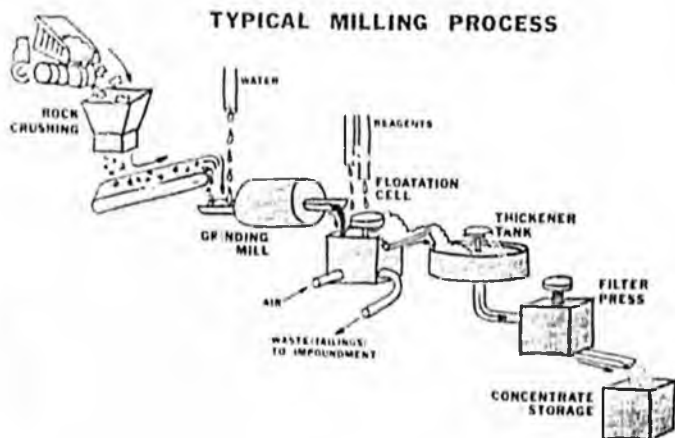
The steeply-dipping, narrow zone requires an underground mining method for ore extraction. The present exploration adit will continue to provide access at the 1,350-foot elevation, while the main haulage will be driven at the 950-foot level and connected to the ore zone by a series of ramps and drifts. The mining process is known as cut and fill. Ore is removed, the waste rock, some tailings, and cement replace the volume of mined-out ore. Production will be about 800 tons per day. The ore will be removed using rubber-tired, load-haul-dump diesel equipment.



## ORE MILLING PROCESS

Generally, the physical and chemical makeup of the ore determines the treatment method. A selective flotation process will be used to produce two concentrates: lead and zinc. Three steps are involved: size reduction, mineral concentration, and concentrate drying. Successive crushing steps will produce  $\frac{1}{2}$  inch material which goes to a grinding mill for further size reduction. The slurry product is piped to flotation cells or tanks where the valuable minerals are separated from waste materials. The addition of air and reagents to the flotation cells selectively separates the sulfides.

Filtering removes most of the water content and the resulting concentrates are ready for shipment to a smelter location outside Alaska.



## OPPORTUNITY FOR A MODEL MINING PROJECT

The opportunity exists at Greens Creek to create a model underground mine with associated facilities which can satisfy the practical need to recover valuable minerals and in so doing support:

- *the economy of the area*
- *its people*
- *the State of Alaska*
- *and the nation*

without disrupting the natural beauty of the Alaskan frontier or its ecology.

## EXPERIENCED AND RESPONSIBLE DEVELOPMENT

The Joint Venture companies are seasoned, responsible organizations that have spent virtually their corporate lifetimes in extractive industries - - both in the United States and worldwide. The companies are familiar with environmental regulations, including revegetation of mine tailings and the control and discharge of waste waters. Their geologists, engineers, and field technicians working on the Greens Creek claims have many years of experience in the field.

## EXISTING FACILITY FOR STAGING AREA

Supply and support from Juneau, with staging at the existing abandoned cannery at Hawk Inlet, are two important factors which have contributed to sound environmental planning for Greens Creek. The site at Hawk Inlet will continue as the staging area for exploration and development of the mine.



Hughes 500

## ECONOMIC STIMULUS FOR JUNEAU AREA

Present planning and permitting at Greens Creek includes the preparation of an Environmental Impact Statement (EIS). If a mine is to go into production at Greens Creek, another two years of development, design, and construction work will be required before the first ton of ore is produced. There will be a continuing need for about 300 employees. This activity and the financial stimulus to the Juneau area will continue for a minimum of 15 years, as now planned.

Most of the money to be expended in development of Greens Creek will benefit the Juneau area directly. Due to its proximity, Juneau could be the primary site for residence of workers and staff and the supply base for air and water transport.

The Greens Creek project can proceed and at the same time:

- ▶ *Preserve scenic, geologic, and wildlife values associated with natural landscapes. Provide careful attention to reclamation following mineral extraction.*
- ▶ *Perpetuate in their natural state significant and diverse ecosystems.*
- ▶ *Protect and preserve cultural values of Native and non-Native peoples and conserve renewable resources related to their subsistence needs.*

Proper development of Greens Creek's mineral resources is not incompatible with any of the desirable objectives of the well-balanced land management policy of the Admiralty Island National Monument.



Preparing Campsite

## ECONOMIC PLANNING AND RECLAMATION

The Greens Creek Project is regulated by State and Federal laws and guidelines for the adequate protection of the natural, human and economic environments. The long and complex permitting process, complete with public involvement, provides a complete checklist for addressing various values important to all of us. The EIS, already mentioned, is part of this process.

When the mining phase of the Project is terminated, the important job of reclamation will be implemented. Mine portals will be sealed. Revegetation of the tailings impoundment site and the returning of disturbed areas to their natural state, where feasible, will be accomplished. Certain monitoring activities will continue to assure compliance with permits and other obligations.



Hoisting Equipment

## GREENS CREEK AND NATIONAL LEGISLATION

The Alaska Native Claims Settlement Act contains a provision "d-2" which provides for selection of National Interest Lands. The Congress of the United States enacted the Alaska National Interest Lands Conservation Act (ANILCA), which was signed into law by the President on December 2, 1980.

Various sections of ANILCA spell out the policy on valid and unperfected mining claims in the Admiralty Island National Monument. Opportunities for access, exploration, and development are discussed in detail.

The purpose of this brochure was to afford the public a brief insight to the Greens Creek Joint Venture Project. It is hoped that some of your questions have been answered. As stated previously, we welcome your comments and inquiries regarding this proposed mining activity on Admiralty Island.



Underground Mining Equipment

OF COUNSEL  
M. E. MONAGLE

## ROBERTSON, MONAGLE, EASTAUGH & BRADLEY

R. E. ROBERTSON (1885-1961)  
F. O. EASTAUGH  
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D. ELIZABETH CUADRA  
HAROLD E. SNOW, JR.  
PAMELA L. FINLEY  
STEVEN W. SILVER

A PROFESSIONAL CORPORATION

ATTORNEYS AT LAW

POST OFFICE BOX 1211  
JUNEAU, ALASKA 99802

ROBERT B. BAKER  
MICHAEL T. THOMAS  
LEROY J. BARKER  
L. G. BERRY  
C. R. RICH  
CARL W. WINNER  
SUSAN L. MENDENHALL  
JILL A. DRIVER

### JUNEAU OFFICE

210 FERRY WAY, 2ND FLOOR  
POST OFFICE BOX 1211  
JUNEAU, ALASKA 99802  
PHONE (907) 586-3340  
CABLE: ROMEA  
TELEX: 099-46-376

### ANCHORAGE OFFICE

601 WEST FIFTH, SUITE 610  
ALASKA MUTUAL BANK BLDG.  
POST OFFICE BOX 679  
ANCHORAGE, ALASKA 99510  
PHONE (907) 277-6693  
CABLE: ROMEA  
TELEX: 090-26-488

March 8, 1983

Mr. Patrick Pourchot  
Administrative Assistant  
Senate Resources Committee  
Alaska State Legislature  
Pouch V  
Juneau, Alaska 99811

Re: Greens Creek


Dear Pat:

This is to confirm that Mr. Peter Richardson, Manager, Noranda Mining Company, will make a presentation on Wednesday, March 9, 1983 at 3:15 p.m. to the Senate Committee on Natural Resources on the subject of the underground mine which Noranda Mining Company is about to develop at Greens Creek on Admiralty Island.

Mr. Richardson expects to show some slides during the course of his presentation. I would appreciate your assistance in ensuring a suitable screen is available at the hearing room if possible.

Transmitted with this letter is a small brochure describing the project which you may wish to provide to members of the committee.

Sincerely,

  
J. P. Tangen

# Greens Creek

Admiralty Island  
National Monument,  
Alaska

Proposed  
Noranda Mining, Inc.  
Project

## PROJECT HISTORY

In early 1973, the Pan Sound Joint Venture was formed to conduct a base metal exploration program in Southeast Alaska. The companies originally involved were Marietta Resources International, Exalas Resources Corporation, Texas Gas Exploration, and Noranda Exploration. From 1974 through 1976, geological studies concentrated on areas where stream sediment sampling indicated high base metal anomalies on Admiralty Island. Claims were staked, and detailed exploration, including surface drilling, began in the Greens Creek area. Lode claims (approximately 21 acres each) were staked in two large blocks: The Tom claims (122 claims) and the Big Sore claims (318 claims). Of these claims, seven have been determined to be valid at this time. Additional claims may be declared valid in the future. In addition, a total of 138 millsite claims of 5 acres each were filed in 1978 on possible mine-related surface activity sites. Figure 1-2 illustrates claim locations.

In 1976, Noranda Exploration assumed responsibility as operator for the field operations phase of the project and managed all initial work at Greens Creek. In early 1978, the Greens Creek claims were put into a development category and the Pan Sound Joint Venture was dissolved. Its legal successor, the Greens Creek Joint Venture, which included the four original companies plus Bristol Bay Resources, Inc., was formed to develop the property.

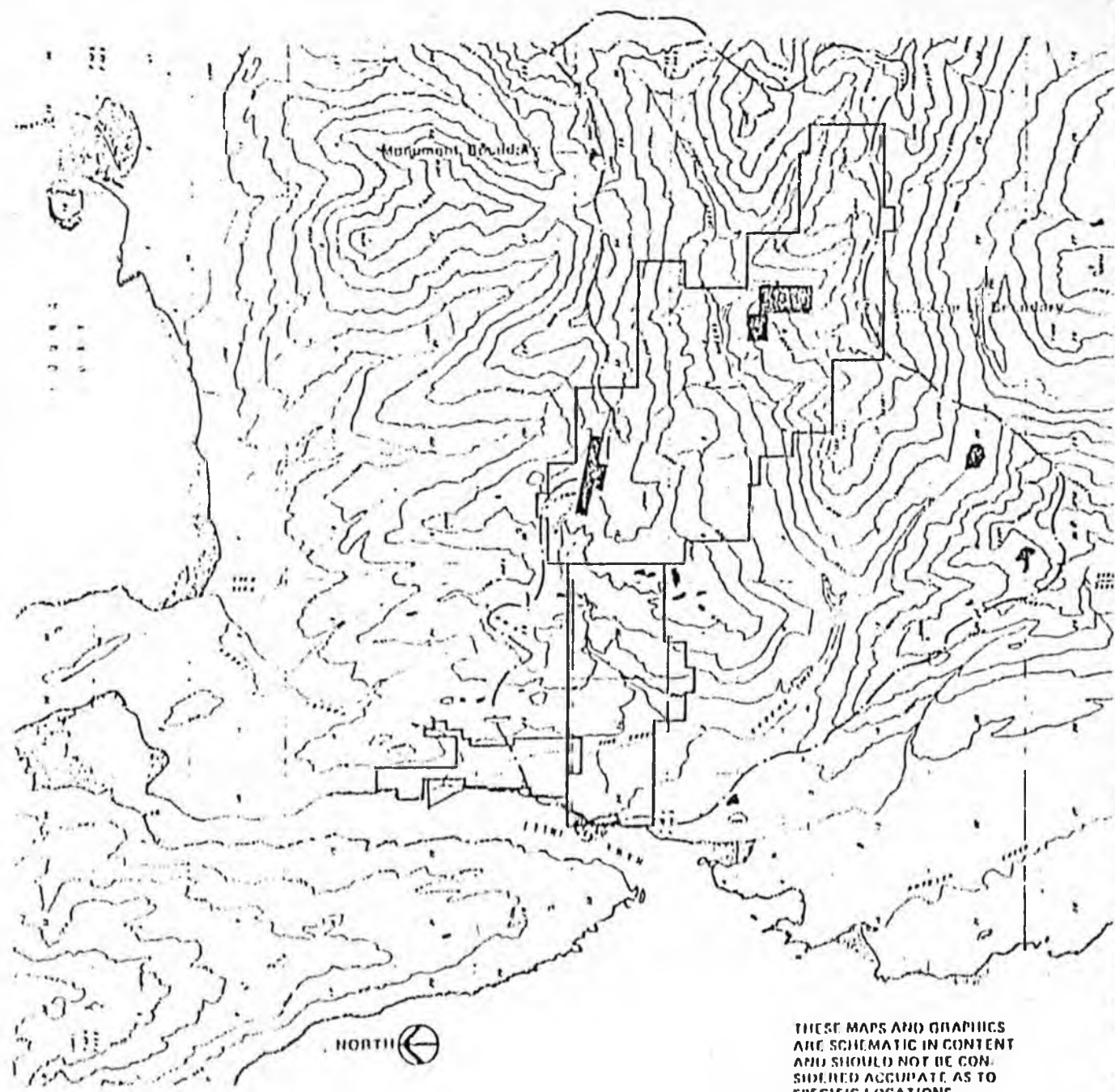
During 1978, extensive underground diamond drilling and environmental baseline studies were begun. To date, the entirely helicopter-supported exploration program has completed a 4,224-foot adit, which has provided the means for delineating the orebody. Additional access to the orebody has been gained by means of a 600-foot cross-cut from the existing adit into the ore zone.







On November 16, 1979, the Forest Service filed a Notice of Intent to prepare an EIS on the proposed Greens Creek Project. Public meetings were held in Juneau and Angoon to determine issues and concerns associated with the project. In February 1980, the agency released a scoping document that described the issues identified at those meetings. The February document was characterized as draft and the comment period was left open, to encourage public input.

On November 20, 1980, the Forest Service determined that Noranda had valid mineral discoveries on seven lode mining claims in the Greens Creek watershed.

In January of 1981, Noranda Mining, Inc. assumed control as operator of the Greens Creek Project. Noranda Mining acts as the manager and representative for the Greens Creek Joint Venture. All permitting activities and the ultimate responsibility for operation of the Greens Creek Project will be held by Noranda Mining, Inc.

GREENS CREEK PROJECT EIS



-  BIG SORE LODGE CLAIMS (UNPERFECTED)
-  BIG SORE MILL SITE CLAIMS (UNPERFECTED)
-  TOM LODGE CLAIMS (UNPERFECTED)
-  BIG SORE LODGE CLAIMS (VALID)
-  EXISTING PATENTED LAND IN GREENS CREEK.
-  PRIVATE LAND AT THE CANNERY, INCLUDING TIDELANDS.

1-5



THESE MAPS AND GRAPHICS ARE SCHEMATIC IN CONTENT AND SHOULD NOT BE CONSIDERED ACCURATE AS TO SPECIFIC LOCATIONS.

Land Tenure

Figure 1-2