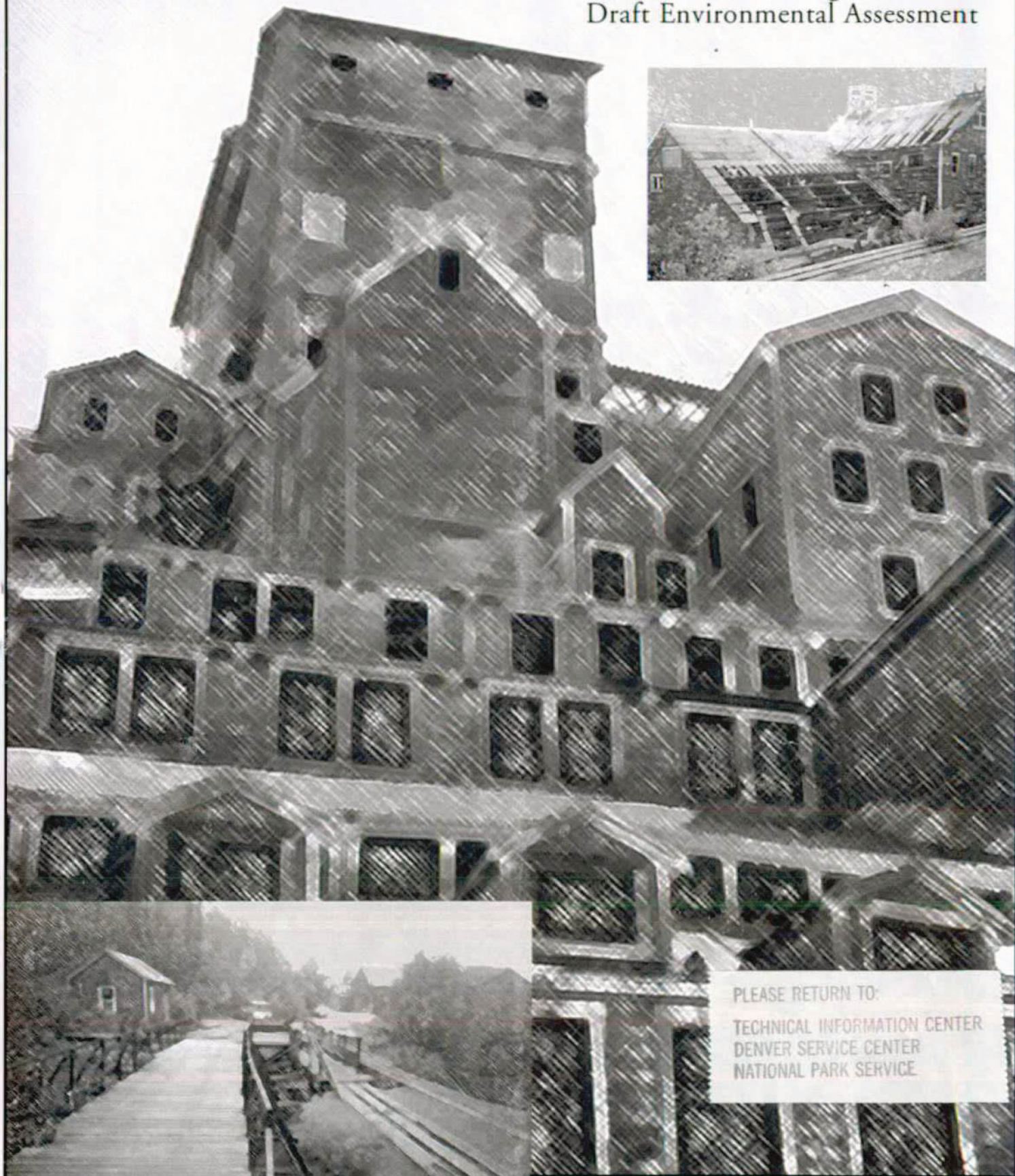


190/D-69

Kennecott Interim Management Plan  
Draft Environmental Assessment



PLEASE RETURN TO:  
TECHNICAL INFORMATION CENTER  
DENVER SERVICE CENTER  
NATIONAL PARK SERVICE



**Wrangell - St. Elias**  
National Park and Preserve • Alaska

SCANNED

2/22/2002



Interim Management Plan  
Environmental Assessment

March 2000

Kennecott National Historic Landmark

---

**WRANGELL-ST. ELIAS**

National Park and Preserve • Alaska

U.S. Department of the Interior • National Park Service



## CONTENTS

### PLAN PURPOSE AND NEED

Plan Purpose and Need	3
Background	10
Public Involvement	11
Issues	11
Issues Considered	11
Issues Considered and Dismissed from Further Analysis	13

### ALTERNATIVES, INCLUDING THE PREFERRED ALTERNATIVE

Actions Common to All Alternatives	17
Alternative 1: Preservation and Enhancement (Preferred Alternative)	19
Management Concept	19
Cultural Resources	19
Cultural Landscape	19
Archeological Resources	21
Museum Collections and Archives	21
Structures	27
Natural Resources	28
Interpretation	29
Administration and Operations	30
Park Management	30
NPS Utilities and Infrastructure	30
Safety and Security	31
Alternative 2: No Action	33
Management Concept	33
Cultural Resources	33
Cultural Landscape	33
Archeological Resources	33
Museum Collections and Archives	34
Structures	34
Natural Resources	37
Interpretation	37
Administration and Operations	37
Park Management	37
NPS Utilities and Infrastructure	38
Safety and Security	37
Alternative 3: Site Stabilization and Interpretation	39
Management Concept	39
Cultural Resources	39
Cultural Landscape	39



Archeological Resources	40
Museum Collections and Archives	40
Structures	43
Natural Resources	43
Interpretation	44
Administration and Operations	45
Park Management	45
NPS Utilities and Infrastructure	45
Safety and Security	46
Alternative 4: Site Restoration and Enhancement	47
Management Concept	47
Cultural Resources	47
Cultural Landscape	47
Archeological Resources	51
Museum Collections and Archives	51
Structures	51
Natural Resources	52
Interpretation	52
Administration and Operations	53
Park Management	53
NPS Utilities and Infrastructure	53
Safety and Security	54
Mitigation	56

## THE AFFECTED ENVIRONMENT

Land Use and Visitation	67
Land Use	67
Subsistence	67
Current Land Use	67
Visitation and Recreation	67
Cultural Resources	68
Cultural Landscape	68
Land Use	68
Circulation and Access	69
Views and Vistas	69
Archeological Resources	69
Museum Collections and Archives	70
Structures	70
Buildings	70
Tram Towers, Bridges, and Historic Boardwalks	71
Natural Resources	72
Air Quality	72
Geology, Topography, and Soils	72
Water Resources	72
Surface Water	72



## CONTENTS

Floodplains and Wetlands	73
Vegetation	73
Vegetation Communities	73
Threatened and Endangered Plants and Species of Special Concern	74
Non-native Plant Species	75
Wildlife	75
Known Animal Species	75
Threatened or Endangered Animal Species	75
The Socioeconomic Environment	76
Administration and Operations	77
Park Management	77
Safety and Security	77
Buildings	77
Mines	77
Other Hazards	78

## ENVIRONMENTAL CONSEQUENCES

### Effects of Alternative 1: The Preferred Alternative 81

Subsistence	81
Visitation and Recreation	81
Cultural Resources	81
Natural Resources	82
Air Quality	82
Surface Water	82
Wetlands	83
Vegetation	83
Wildlife	83
Socioeconomic Environment	83
Administration and Operations	84
Park Management	84
Safety and Security	84
Cumulative Impacts	84

### Effects of Alternative 2: No Action 86

Subsistence	86
Visitation and Recreation	86
Cultural Resources	86
Natural Resources	87
Air Quality	87
Surface Water	87
Wetlands	87
Vegetation	87
Wildlife	87
Socioeconomic Environment	87
Administration and Operations	88
Park Management	88



Safety and Security	88
Cumulative Impacts	88
Effects of Alternative 3: NPS-Stabilized Historic Site	89
Subsistence	89
Visitation and Recreation	89
Cultural Resources	89
Natural Resources	90
Air Quality	90
Surface Water	90
Wetlands	90
Vegetation	91
Wildlife	91
Socioeconomic Environment	91
Administration and Operations	91
Park Management	91
Safety and Security	91
Cumulative Impacts	92
Effects of Alternative 4: Site Restoration and Enhancement	93
Subsistence	93
Visitation and Recreation	93
Cultural Resources	93
Natural Resources	94
Air Quality	94
Surface Water	94
Wetlands	95
Vegetation	95
Wildlife	95
Socioeconomic Environment	95
Administration and Operations	96
Park Management	96
Safety and Security	96
Cumulative Impacts	96

## CONSULTATION AND COORDINATION

Timeline	98
Preparers and Consultants	98
U. S. Fish and Wildlife Service Letter	99



## APPENDIXES AND REFERENCES

Appendix A: Subsistence	103
Appendix B: Vegetation Information	107
Appendix C: Compendium of Sensitive Sites	112
References	113

## MAPS

Region and Vicinity	4
NHL Boundary	5
Property Ownership	7
Preferred Alternative, Preservation and Enhancement	23
Preferred Alternative, Land Protection Plan	25
Alternative 2	35
Alternative 3	41
Alternative 4	49

## TABLES

1: Land Use Designations	20
2: Summary of Alternatives	57
3: Summary of Impacts	61
4: Kennecott Mill Site Vegetation Types	74



## PURPOSE AND NEED





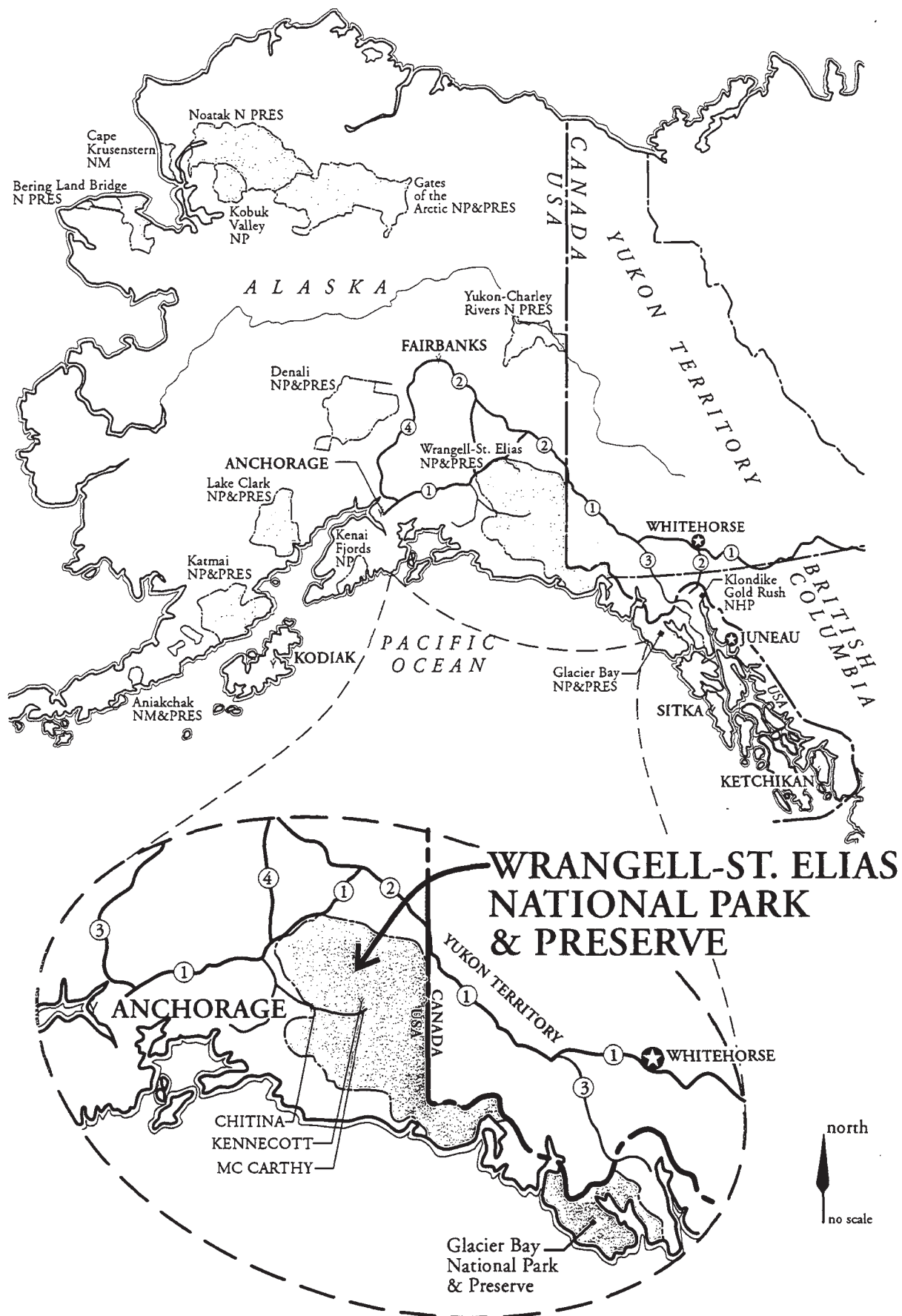
## Plan Purpose and Need

The purpose of this Interim Operations Plan for the Kennecott National Historic Landmark (NHL) is to analyze National Park Service (NPS) management strategies for the Kennecott site in the Wrangell-St. Elias National Park and Preserve. Such a plan became necessary when the National Park Service acquired the privately owned site in June 1998 (see Region and Vicinity map and NHL Boundary map). The Kennecott site, mined for copper in the early 1900s, is in the center of the park, approximately 5 miles from where the McCarthy Road ends at the Kennicott River. Through its acquisition, the National Park Service acquired 2,839 acres, including the historic mill town and the subsurface rights to the mine.

When the historic landmark was in private hands, there was limited opportunity for important elements of the landscape, other than some of the structures, to be preserved. The preservation of some of the key structures was accomplished by Friends of Kennicott, a local nonprofit group that undertook some emergency stabilization work. For the most part, private ownership meant that the bulk of the site had been left to deteriorate since the mining operation ceased. Accordingly, when the landmark transferred into the public realm, the preservation of this historic landscape with all its elements became the responsibility of the NPS. Preserving such a site and providing visitor access to and interpretation of Kennecott requires analysis of the condition of the historic landscape and stabilizing those important elements that are deteriorating, determining where visitor services should be located, and providing visitors with ways to explore the history of the site. Many health and safety problems are on the site, many artifacts have been removed, and remaining ones are at risk. There are few visitor facilities and only a few interpretive services available. This plan, along with the forthcoming associated cultural landscape report, will be an amendment to the park's *General Management Plan*. This operations plan will be for approximately a five-year period, which represents how long it will take for the NPS to get basic operations underway. At the conclusion of this interim, start-up period, there will be an opportunity to re-evaluate the plan and make any needed adjustments.

Kennecott's designation as a national historic landmark reflects its exceptional importance to the history of the United States — only 3% of properties listed on the national register have the status of an NHL. Its significance as an early 20th century mining landscape is multi-dimensional, a fact represented in the many themes of American history that can be discerned through the layers of its material culture. Among others, these themes include the evolution of mining technology at one of the richest copper ore sites in the United States, the physical development and evolution of a company mill town over four important decades of industrial growth, and the history of labor, family life, and environment on one of the last American frontiers.

The site's interpretive potential as a cultural landscape is compelling. As defined by the National Park Service, cultural landscapes are geographic areas, including cultural and natural resources, associated with a historic event, activity, or person. However, a landscape's age and associations do not automatically warrant preservation. As a cultural landscape, Kennecott's preservation is critical because its physical structures, characteristics, and features defining its historical significance remain. Individual buildings and archeological features are important, but when considered within the holistic context of the cultural landscape, they are of an even greater value in communicating that significance. Because this landscape is largely intact, understanding Kennecott as a cultural landscape is a useful approach to preserving and interpreting its historical legacy.

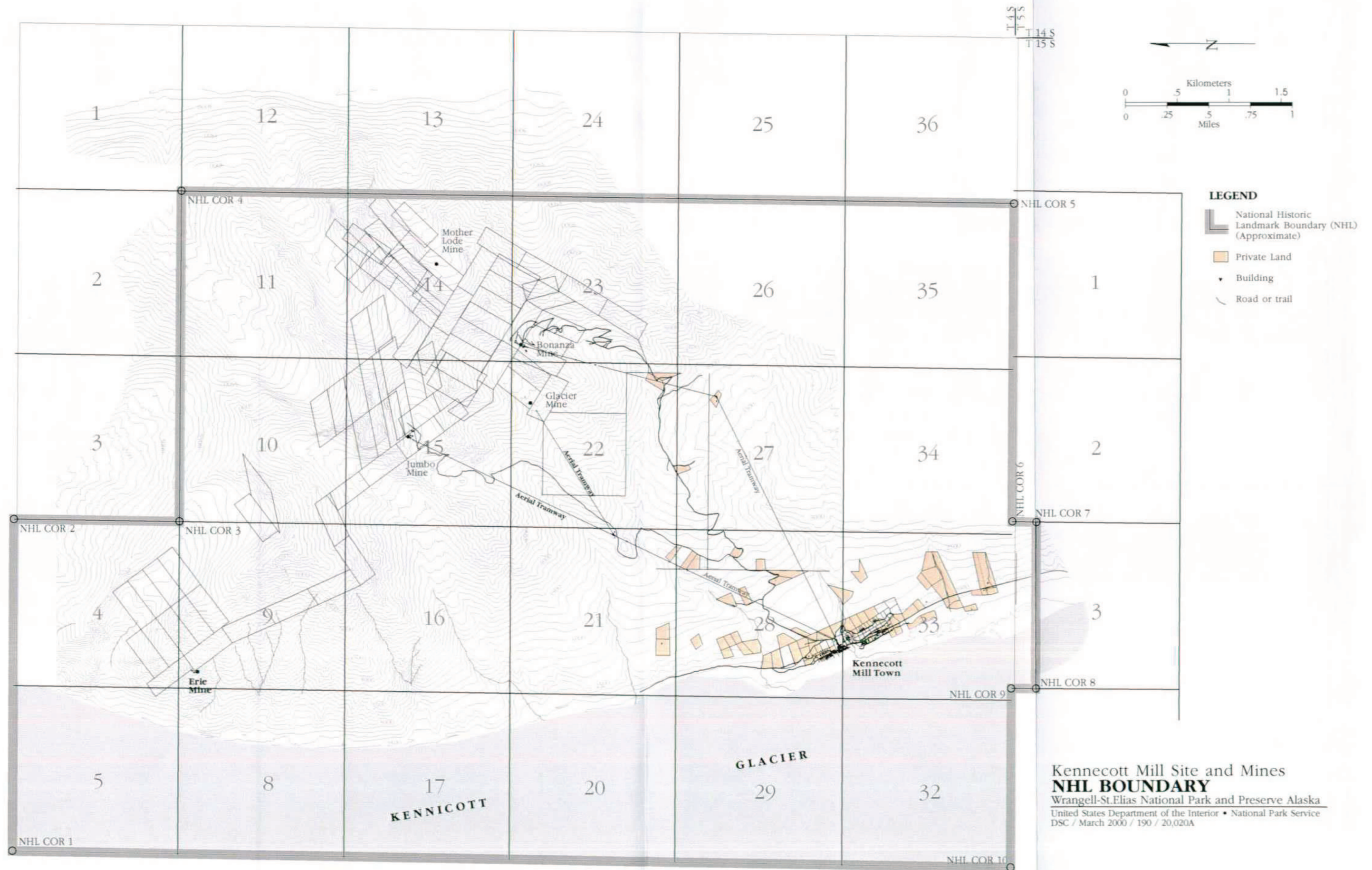


## REGION AND VICINITY

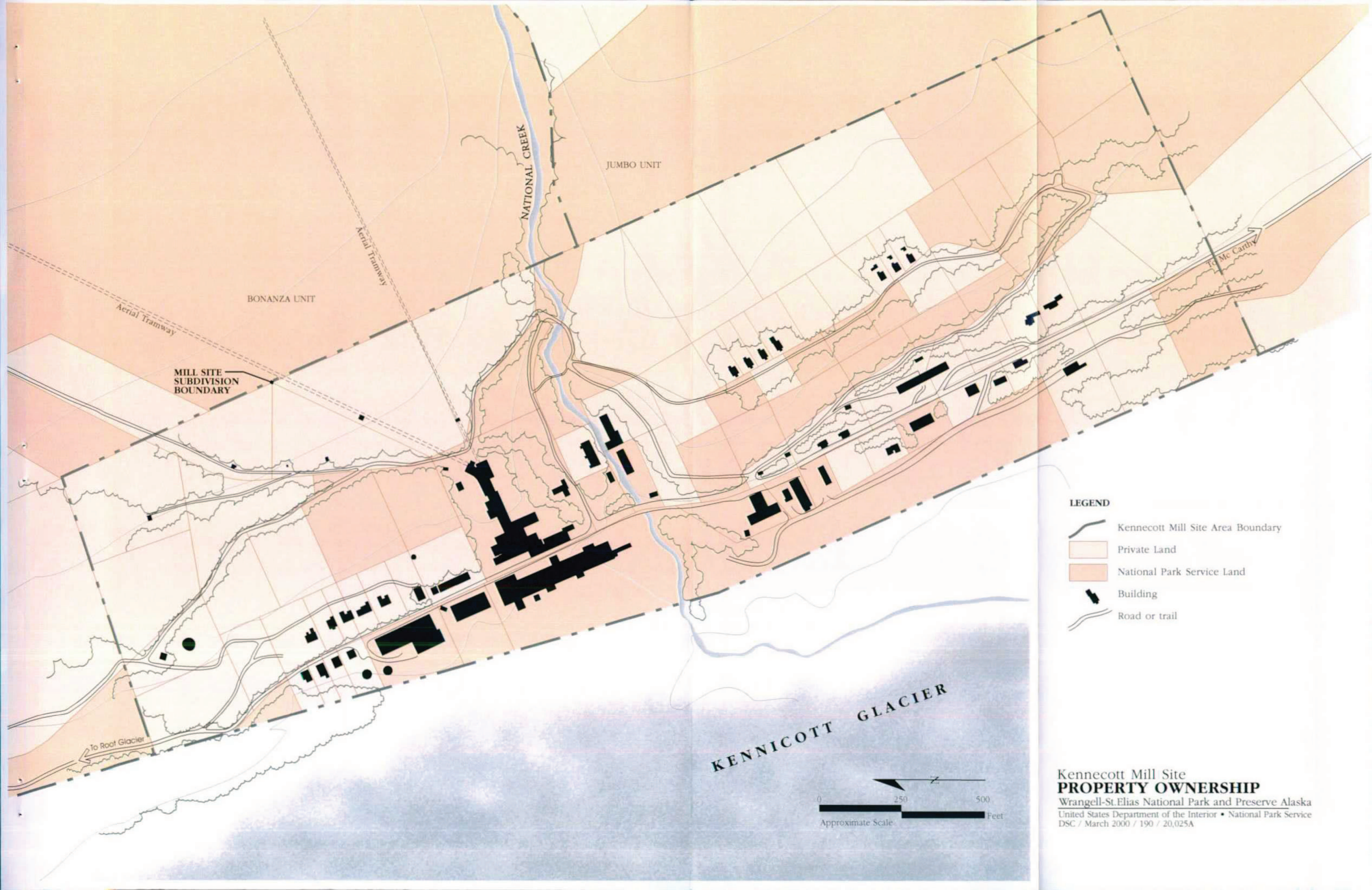
Wrangell-St. Elias National Park & Preserve Alaska

United States Department of the Interior • National Park Service  
DSC/April 1999/190/20,019



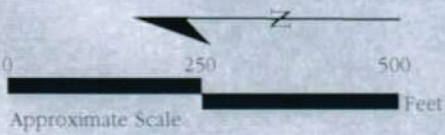






**LEGEND**

- Kennecott Mill Site Area Boundary
- Private Land
- National Park Service Land
- Building
- Road or trail



Kennecott Mill Site  
**PROPERTY OWNERSHIP**  
Wrangell-St. Elias National Park and Preserve Alaska  
United States Department of the Interior • National Park Service  
DSC / March 2000 / 190 / 20,025A



Stewardship of the cultural landscape at Kennecott is addressed through the many aspects of this Interim Management Plan, which covers a wide range of topics including: cultural resources (including landscape features, land use, and design standards, archeological resources, museum collections and archives, buildings, and structures), natural resources (air quality, surface water, wetlands, vegetation, and wildlife), and interpretation. Integral to the Kennecott plan are management issues related to its administration and operations such as building leases, tours and seasonal use, land acquisition and easements, concerns related to utilities and infrastructure, and the paramount needs for safety and security.

This document presents and analyzes four alternatives.

Alternative 1: *Preservation and Enhancement (Preferred Alternative)* provides for both short-term and long-term NPS actions focused on compatible design, incremental change, and the reestablishment of the historic character of the site. Over the next five years the NPS would initiate rehabilitation of the company store for a visitor contact station, offices, and storage. Interpretive programs would be offered by the NPS, concessioners, and other cooperators. Exhibits would be developed in coordination with the McCarthy Museum. Structures would be stabilized on a priority basis. A number of buildings would be opened for visitors to tour independently. Historical pathways would be reestablished and some vegetation clearing would take place. The NPS would work cooperatively with the community to address the rehabilitation of the community building and fire and EMS response.

Alternative 2: *No-Action* would continue the present management philosophy of maintaining structures and landscape features in their current condition, with the exception of measures taken in the event that threats of structural failure, loss of significant resources or safety risks are presented. This alternative reflects the limited operations that the NPS was able to provide during the summer of 1998. Interpretation would be provided by two NPS seasonal employees that also have responsibilities at the end of McCarthy Road and the concessioner who offers tours of the mill building. Stabilization of historic structures would occur on a crisis basis, if funding were available. The only visitor amenity would be a vault toilet across from the company store. Primarily it would be categorized as a bare bones operation.

Alternative 3: *Site Stabilization and Interpretation*, a program of stabilization for structures and landscape features would be set into motion, allowing for some minor expansion interpretation and more limited visitor access. This alternative is quite similar to the preferred alternative. The primary difference between this alternative and the preferred is that under this alternative, only the company store and community building would be accessible to visitors and community members. The Mill building would be open only on a guided concessioner tour. All other buildings would remain unavailable to the public. Accordingly, interpretive activities are more limited in this alternative than in the preferred.

Alternative 4: *Site Restoration and Enhancement* would have the historic site managed cooperatively by the National Park Service and private operators, with a number of buildings being adaptively reused and others stabilized. The primary difference between this alternative and alternatives 1 and 2 is the management style. As in alternative 3, access to the interior of buildings will be limited. In this case it will be due to more structures being adaptively re-used.

Site plans illustrating each of the alternatives are included in the text.

The environmental assessment (EA) analyzes the preferred alternative and discusses alternatives and related impacts. This EA has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) and the regulations of the Council on Environmental Quality (40 CFR 1508.9).

## Background

The National Park Service purchased the Kennecott properties for \$3.4 million on June 16, 1998. The 2,839-acre purchase included some of the historic structures on the site. The Kennecott Corporation donated the subsurface rights. This acquisition was the culmination of years of efforts by many people from McCarthy, Alaska, to Washington, DC.

Kennecott is a complex site with multiple ownerships, historic resources, hazardous materials, established patterns of private and public use, rights-of-way, waterlines, and oversight from multiple agencies. When the NPS purchased the 2,839 acres within the landmark boundaries, it became the largest landowner and thereby became responsible for staffing and operating the architectural control committee (ACC). The ACC was established when the mill site unit of the subdivision was created. There are 16 covenants that dictate which activities may take place within the mill site unit. The ACC applies those covenants. It is the NPS' intention to recruit other landowners to serve on the ACC.

Kennecott is near McCarthy, Alaska, in the central portion of Wrangell-St. Elias National Park and Preserve. The Kennecott Mines in Alaska were developed and operated between 1901-1938. The unusually rich copper deposits, rich by even the standards of Bonanza West, justified monumental efforts to organize and construct the mines and necessary infrastructure to bring copper ore to market from the remote Wrangell Mountains. To exploit this ore deposit, a consortium funded the development of the mines, a railway to transport the ore to market, and a supporting network of processing and residential buildings. Ore was removed and transported to market between 1911, when the first trainload of ore was shipped from Kennecott, and 1938, when the company vacated the camp, leaving it virtually intact. The mill demonstrates the evolution of mineral separation technology in the early years of the 20th century. The gravity separation processes were refined to suit the local ores, ammonia leaching was developed to resolve technical problems unique to the site, and wider advances in mineral processing technology were adopted to ensure maximum efficiency in the recovery of the ore. Because of its significance, Kennecott was designated a national historic landmark in 1986.

An extensive development, Kennecott incorporates approximately 7,700 acres. It contains 45 major residential, commercial, and industrial structures and 25 outbuildings at the mill site, as well as four mine sites with their associated structures. In addition, there are tram lines connecting each of the mine sites with the mill, over 80 miles of underground workings at the mines, and roads within the mill site and leading up to two of the mines. There also are tailings piles and scores of artifacts, such as pieces of equipment scattered across the landscape.

The historic district is situated directly east and adjacent to the Kennicott Glacier, which drains into the Chitina River Valley. The valley where the district is located expands from a relatively narrow corridor to a wide lowland of spruce and birch, cut by the river and its tributaries. The district's location ranges from an elevation of 2,200 feet at the edge of this lowland to 6,500 feet and is framed by a broad valley to the south and mountains to the north and east.

"Kennicott and Kennecott are the correct names for two different but closely associated places. Kennicott with an "i" refers to the Kennicott Glacier and River named in 1899 by the U. S. Geological Survey in honor of Robert Kennicott, a pioneer Alaska explorer. Kennecott with an "e" refers to the



mining company that took its name from the Kennicott Glacier but for some unknown reason misspelled the name. The error occurred early in the history of the mines, perhaps as early as 1901. In any event, the Kennecott Mines Company was in operation in 1906. In 1908, a U. S. Post Office was established at Kennecott. In recent years following upon the transfer of the surface estate to the Great Kennicott Land Company the two spellings have been used casually and interchangeably. This has caused some understandable confusion. Broadly speaking, references to Kennicott with an "i" stress the natural history of the area while Kennecott with an "e" addresses the human history of the area. The NPS adheres to this convention as is reflected in the official designation of the area as the Kennecott Mines National Historic Landmark (Orth 1967).

## **Public Involvement**

Since the spring of 1998, the National Park Service has been meeting with interested community members. Comments were solicited in meetings in June, August, and September 1998. Those comments have been incorporated into this document. The Park Service intends to continue involving the public in the operation of the site and hopes to develop partnerships with organizations for assistance in operating the site. The NPS also instituted a newsletter entitled the "Kennecott Cable" which provided information to those who were not able to attend meetings and solicited their comments. A complete discussion of the public involvement process is documented in the Consultation and Coordination section of this document.

## **Issues**

Potential issues were identified through the site assessment, previous information gathered to support the acquisition, NPS in-house scoping meetings, and through input from local, state and federal agencies. The potential issues helped formulate the alternatives and mitigating measures. The issues discussed below were selected for detailed analysis based on their significance; environmental statutes (particularly the National Environmental Policy Act), regulations, and executive orders; and NPS management policies. A brief rationale for the selection or dismissal of each potential issue is given below.

### **Issues Considered**

**Subsistence.** Section 810(a) of the Alaska National Interest Lands Conservation Act requires that federal agencies evaluate their proposed land use and the effects on "subsistence uses and needs, the availability of other lands for the purposes sought, to be achieved, and other alternatives that would reduce or eliminate the use." Federal agencies are also required to determine the potential for significant restriction of subsistence use. Appendix A contains an ANILCA section 810 evaluation.

**Visitation and Recreation.** One aspect of operating the site would be to determine how visitors access and use trails to visit different areas of the site. Another aspect would be to determine the extent of interpretation and access that would be offered to visitors — how to tell the Kennecott story. Activities would be offered to meet the widest range of visitors' abilities. Visitors who come to Kennecott also may decide to visit adjacent areas of the park. Given Kennecott's location near extensive park backcountry and wilderness, the use of these areas needs to be considered. Accordingly, impacts on visitation and recreation are discussed in this document.

**Air Quality.** The air quality in the Kennecott area is pristine with no large pollution sources within hundreds of miles. Activities such as lead paint abatement and operating generators could result in small, localized emissions into the air. Accordingly, potential impacts to air quality from these potential sources are discussed in the Environmental Consequences section.

**Geology, Topography, and Soils.** Stream channels and slopes within the site were modified during the mining period. Stream damming and channelization occurred. The Environmental Consequences will address the impacts to stream channels and slopes as they are affected by the preservation of cultural resources.

**Water Resources.** The water quality in the streams within the site is very good. The water in the streams are surface drinking water sources for residents of the area. Certain activities proposed in the operating plan, such as withdrawing water for firefighting, could affect water quality. Therefore, impacts to water resources are analyzed in the Environmental Consequences section.

**Wetlands and Floodplains.** Wetlands and floodplains are associated with the streams within the landmark boundary. These resources were altered by both the mining activity and the construction of the mill town. Proposed activities, such as establishing a low-water crossing at National Creek, may impact these resources. Accordingly, the impacts to these resources are analyzed in the Environmental Consequences section.

**Vegetation and Wildlife.** Currently, the vegetation within the mill site and around the mines reflects the re-growth that commenced at the conclusion of mining operations; the vegetation grew back into once-cleared areas. Elsewhere within the landmark boundary vegetation reflects conditions that existed before mining occurred. This operations plan proposes to clear some of the vegetation for a variety of reasons. Such clearing could result in the loss of vegetation and will affect wildlife resources by altering the existing habitat. These changes to these resources are analyzed in the Environmental Consequences section.

**Threatened and Endangered Species.** The Endangered Species Act requires that the potential impacts of federal actions on all federally listed threatened and endangered species be examined. NPS policy also requires examining the impacts on state-listed threatened, endangered, rare, and sensitive species. For these reasons, threatened and endangered plant and animal species are discussed.

**Cultural Resources.** The topic of cultural resources includes prehistoric, historic, and ethnographic resources. The management of historic structures is an important concern: which ones would be left to deteriorate, which ones would be stabilized, which ones would be rehabilitated and adaptively reused. Artifact and museum storage is discussed, as is the national historic landmark as a cultural landscape.

In addition to the National Environmental Policy act, the impacts on cultural resources are evaluated under the National Historic Preservation Act. Regulations covering this process are found in 36 CFR 800. Guidance is also found in the "Director's Orders #28: Cultural Resource Management" and in the NPS *Management Policies* (1988).

The undertakings described in this document are subject to the terms of the 1995 programmatic agreement among the National Park Service, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers.

**Socioeconomic Environment.** Proposed activities described in the operations plan have the potential to impact the economy of the Kennecott/ McCarthy area. These potential impacts are analyzed in the "Environmental Consequences" section.

**Park Management.** The acquisition of this property added additional administration responsibilities to the park staff. This document addresses how these duties are apportioned among competing park needs.

**Safety and Security.** The National Park Service is concerned about the health and safety of visitors when they are touring inside or adjacent to historic structures. Because hazardous conditions may exist within and adjacent to the structures, security and safety are discussed.

**Cumulative Effects.** The regulations of the Council on Environmental Quality (CEQ), which implement NEPA, require the assessment of cumulative impacts in the decision-making process for federal projects. A cumulative impact is defined as an impact on the environment that results from the incremental impact of the action when added to the past, present, and reasonably near future. Reasonably foreseeable actions include increased park visitation and additional development of private inholdings within the national historic landmark. The potential impact of these future actions is considered in the cumulative analysis.

#### **Issues Considered and Dismissed from Further Analysis**

**Transportation.** The boundary of the plan for Kennecott is the boundary for the national historic landmark. Access and transportation are discussed in the alternatives; however, neither the rehabilitation of the McCarthy Road nor the reconstruction of the railroad is considered a topic of analysis. The road reconstruction project is being addressed in a separate planning process that is ongoing between the NPS, the State Department of Transportation and Public Facilities, and other agencies.

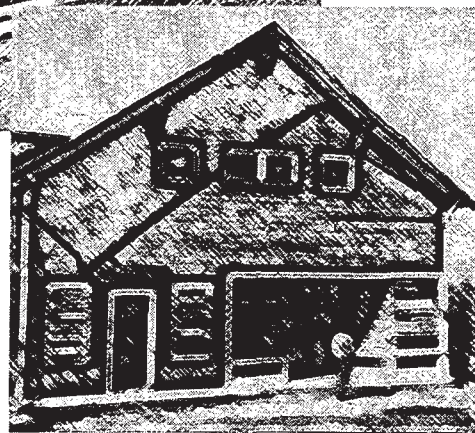
**Utilities and Infrastructure.** The topics of utilities and infrastructure are discussed for National Park Service operations. It is beyond the scope of these first number of years for a community system to be implemented. It is beyond National Park Service responsibilities and funding to establish a public utility. The Park Service will continue to work with the communities of Kennecott and McCarthy to address the issues of water supply, solid waste, sewage, electric power, fire suppression, emergency medical services, and telephone service.

**Executive Order 12892, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations."** Executive Order 12892 requires all federal agencies to incorporate environmental justice into their projects by identifying and addressing disproportionately high and adverse human health or environmental effects on minorities and low-income populations and communities. None of the alternatives presented would be expected to result in significant direct or indirect negative or adverse human health or environmental effects in the area. Therefore, environmental justice was dismissed as an issue considered.





**ALTERNATIVES,  
INCLUDING  
THE PREFERRED ALTERNATIVE**





## **Actions Common to All Alternatives**

### **Hazards**

As part of the acquisition of the Kennecott properties by the National Park Service, a number of stipulations pertaining to hazardous wastes and lead paint were established. The National Park Service has entered agreements with the Alaska Department of Environmental Compliance, the U.S. Environmental Protection Agency, and the Justice Department. Under those agreements, the National Park Service affirmed its obligation pertaining to the abatement of lead paint hazards in accordance with state and OSHA regulations pertaining to worker safety and training. Asbestos will be removed from Jumbo Mine; Erie Mine would be closed to access due to asbestos; and monitoring will be conducted in the dumpsites at the mill town. The historic dumps do not pose an unacceptable risk, but the groundwater will be monitored for hazardous substances. More information is provided in the "Affected Environment" section.

### **Accessibility**

The Department of the Interior has administratively determined that it will follow the Americans with Disabilities Act Accessibility Guidelines, provided by the U.S. Architectural and Transportation Barriers Compliance Board, when such design guidelines are equal to or greater than those of the Uniform Federal Accessibility Standards. Since the Americans with Disabilities Act (ADA) was based on the requirements of section 504, ADA regulations and technical assistance materials, especially title I, provide additional in-depth resources for implementation of a reasonable accommodation process. The National Park Service would invite a panel of people with expertise in issues pertaining to handicap accessibility. The group will work with the NPS in developing a plan that provides long-term guidance on issues of programmatic and physical accessibility for the site.

### **Partnerships**

The National Park Service considers itself a partner with the community in seeking funding to rehabilitate the community building for community functions and for visitor interpretive programs. The NPS would rent a private building as a temporary community center and park office space.

Additionally, the National Park Service will explore partnership proposals from nonprofit organizations that wish to share in the operation and management of Kennecott. Friends of Kennecott have expressed an interest in developing such a relationship. Accordingly, such a strategy will be evaluated under all alternatives. Additionally, the National Park Service will be developing a concessions plan for the NHL. It is hoped that this strategy will be integrated in the overall partnership strategy.

All alternatives are based on the evaluation of cultural landscape resources, NPS management guidelines and legal mandates, discussions with private landowners, and public meetings. The NPS would continue to work in partnership with the local residents to manage the area in a manner that protects natural and cultural resources and serves the long-term interests of the community by ensuring the protection of private property and access for all landowners.

## **Interpretation**

The development of interpretive exhibits, brochures, walking tours, and site-related information for Kennecott would be coordinated with the McCarthy museum so that they would be complementary and not competing. NPS would work with interested groups in the development of walking tour materials, brochures, and other interpretive media that would be available for their own use and for NPS use.

## **Natural Resources**

The resource management division at the park would develop and implement monitoring programs for a variety of resources including vegetation and water quality. These programs will assist the park in identifying any threats to the resource that could occur from implementing the plan.

## **Cultural Resources**

The park's cultural resource specialist would supervise the preparation of a *Scope of Collections* document, which will guide the park's efforts in deciding how to preserve artifacts remaining on the site.

## **Safety**

The NPS would pursue the security of all structures that pose a health and safety concern. (Please see Appendix C)

## **Subsistence**

When the NPS acquired the landmark property, the land became part of the preserve and, therefore, public land. Consequently, under ANILCA, these lands are available for subsistence activities, unless otherwise regulated.

## **Budget**

Only the no-action alternative can be implemented within the current park budget. It would take an increase to the park budget to implement any of the other alternatives. The earliest the park could see such an increase would be in fiscal year 2000, which begins October 1, 1999.

## **Alternative 1: Preservation and Enhancement (Preferred Alternative)**

### **Management Concept**

The primary management goals of the *Preservation and Enhancement (Preferred Alternative)* would be to enhance visitor understanding of Kennecott by preserving and interpreting the remaining structures and landscape features, patterns, and relationships that define the historic character of the national historic landmark. Major actions in this alternative would include implementing a program of stabilization and adaptive use for historic structures; reestablishment of historic circulation routes; restoration of historic views and vistas through selective thinning of nonhistoric vegetation; preservation treatment of significant archeological features; and the addition of interpretive facilities, including trails, waysides, and a visitor contact station. This alternative would also allow development within the historic landmark to the degree that proposed changes would be compatible with the historic character of the site. In this regard, individual actions, such as a change in land use or the addition of new structures within the historic district, would be considered and evaluated within the context of the cultural landscape as a whole.

### **Cultural Resources**

#### **Cultural Landscape**

The National Park Service has a responsibility to abide by regulations governing the management of historic resources. It must comply with the legal and regulatory requirements as outlined in Director's Order-28: *Cultural Resource Management*, the National Historic Preservation Act, and *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*, among others. Those regulatory requirements address NPS policy, federal legal mandates, and acceptable standards for the treatment of the Kennecott historic properties. The National Park Service will also abide by the covenants attached to the mill site town subdivision.

*Land Use.* The preferred alternative would respond to historic land use patterns and uses while providing for contemporary uses within the historic context. Six land use "zones" would be delineated, providing for appropriate contemporary uses within the primary historic use areas that include the industrial core, administrative complex, housing areas, and service-related areas. The following chart outlines the six land use "zones," their historic use, and appropriate uses that would foster sensitive and appropriate contemporary development within the historic fabric and context of the mill site area.

TABLE 1: LAND USE DESIGNATION

Zone	Name	Historic Land Use	Appropriate Adaptive Reuse
1	Administrative Core	Office, manager's residence, depot, hospital, staff housing	NPS Operations, offices, interpretation, visitor center
2	Industrial Core	Concentration Mill, tram deck, power plant, leaching and flotation plant, machine shop, tailings, flume structures, warehouses	Interpretation, storage, equipment repair, workshop, utility infrastructure
3	Residential "A"	Silk stocking row: old lodge, barracks, local access roads	Interpretation, residential, lodging, tent cabins
4	Residential "B"	North end cottages	Private residences, interpretation
5	Residential "C"	Vegetated hillsides, cleared hillsides, historic dumps	Residential, undeveloped, natural resource protection
6	Commercial	Store, post office, storage, resident services, meat house, community facilities, housing, tent cabins	Concession/commercial (outfitters, bike rentals, guided tours, guest services, gift shop, bookstore), offices, community center

*Design Standards.* To guide development in the Kennecott National Historic Landmark — especially in the mill town subdivision — the park would work with the community to establish design standards and guidelines for structures and landscape features consistent with the covenants. These guidelines would address the use of appropriate materials as well as the size, scale, massing, and character of individual structures and landscape features. The architectural control committee has the responsibility for implementing these guidelines as established in the mill town's subdivision covenants. The board would be composed of representatives from the park, other non-NPS Kennecott property owners, and one regional NPS representative.

*Circulation and Access.* Vehicular access would continue on all current routes. All abandoned vehicles would be removed from NPS properties. The park would work with the community to remove all other abandoned vehicles from properties within the national historic landmark, particularly along the historic railroad bed. Ridge tours on a designated route to points along the Bonanza Mine trail would be allowed through an agreement with the NPS. Primary and secondary pedestrian paths would be identified and reestablished within the national historic landmark, particularly in the mill town subdivision. The primary pedestrian corridor would continue along the historic railroad bed and the existing road through the mill town. Existing service access roads will continue to be used.

Foot trails and pedestrian paths would serve a variety of functions, including interpretive, hiking, and local access for residents. All pedestrian routes that are adjacent to or pass through private property will be developed with consultation of the landowners.



An interpretive trail would be established on the west side of the mill town with views to the powerhouse, the machine shop, and the leaching plant. A footbridge across National Creek would be added to the trail to provide access to the company store. Another interpretive trail would be reestablished along National Creek from the company store to the site of the historic crib dam, crossing the creek to the site of the Birch house, manager's house, staff quarters, and manager's office. Other pedestrian trails — including those to both Silk Stocking Row and Bonanza Mine, the historic carriage road to McCarthy, and paths behind the mill building — would be maintained. The primary pedestrian trail to Root Glacier would continue to be maintained north of the mill town.

*Views and Vistas.* In this proposal, historic views and vistas at Kennecott would be addressed. Selective thinning of vegetation on NPS properties would enhance historic viewsheds throughout the cultural landscape, which would help to shape the visitor's understanding. The type and degree of clearing would be based on historical documentation. Vegetative thinning would occur at the manager's residence, Birch residence, staff house annex, assay office north of National Creek, areas adjacent to the mill and around the machine shop, power house and leaching plant. If asked the NPS would assist landowners in planning selective clearing on their properties.

### **Archeological Resources**

Features determined noncontributing to the historic district would be removed if they presented a safety hazard to visitors or residents. All other archeological resources, including historic dumps, would remain.

### **Museum Collections and Archives**

The National Park Service would amend an existing scope of collections statement regarding the collection of artifacts and would follow regulations and NPS *Director's Order #28: Cultural Resource Management* to ensure the preservation and protection of artifacts.

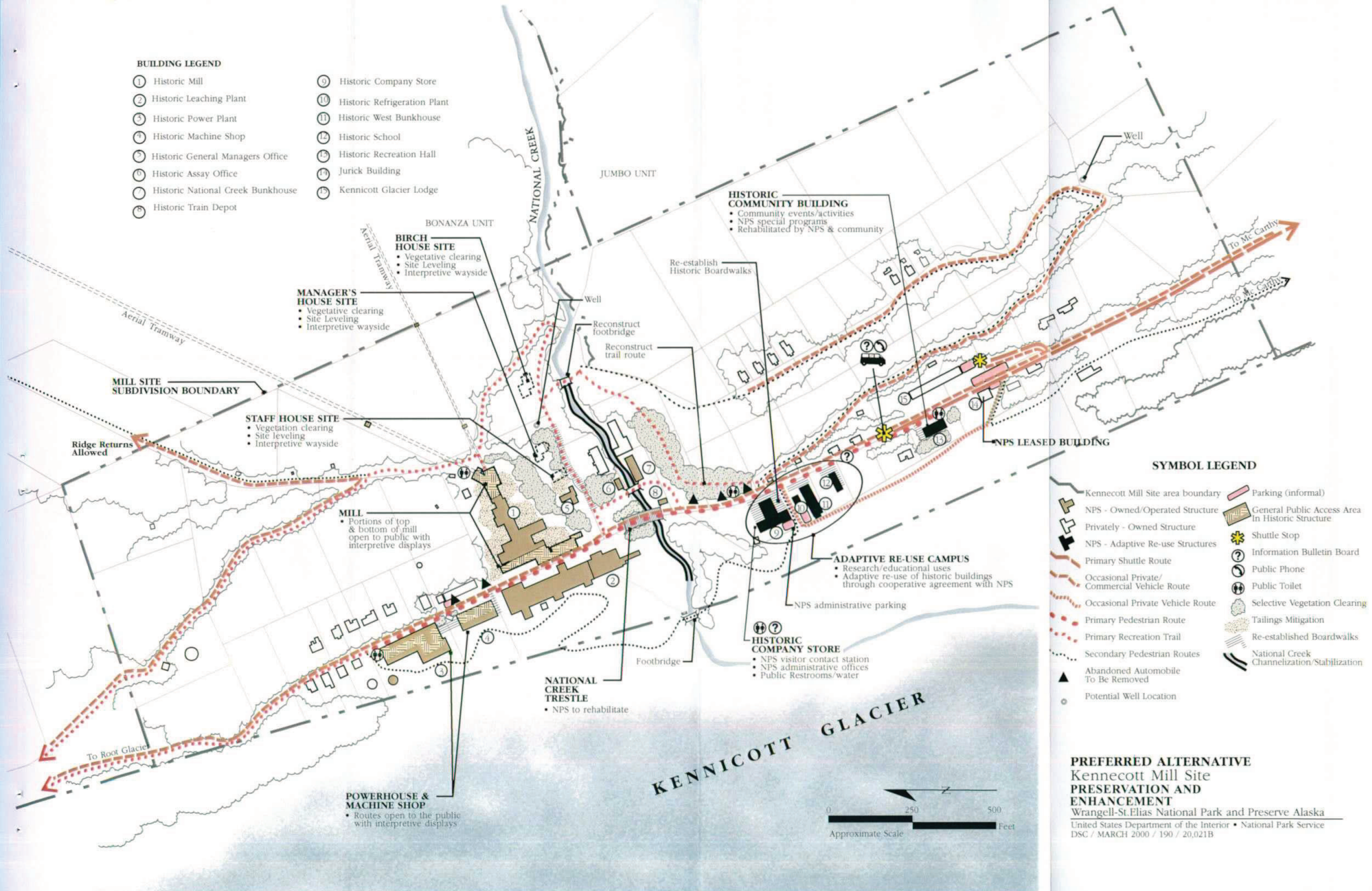
Historically significant, site-related artifacts would be retained in their present locations unless they were at risk or contributed to interpretation. Artifacts determined to be noncontributing and incompatible to the historic district would be removed.

Historic documents, manuscripts, archival material, and associated papers within the scope of collections would be collected from NPS properties and placed in appropriate curatorial storage. Objects not requiring special environmental considerations will be curated in a NPS repository on site. NPS will provide technical assistance to the McCarthy Museum to assist the museum with caring and preserving its collection.

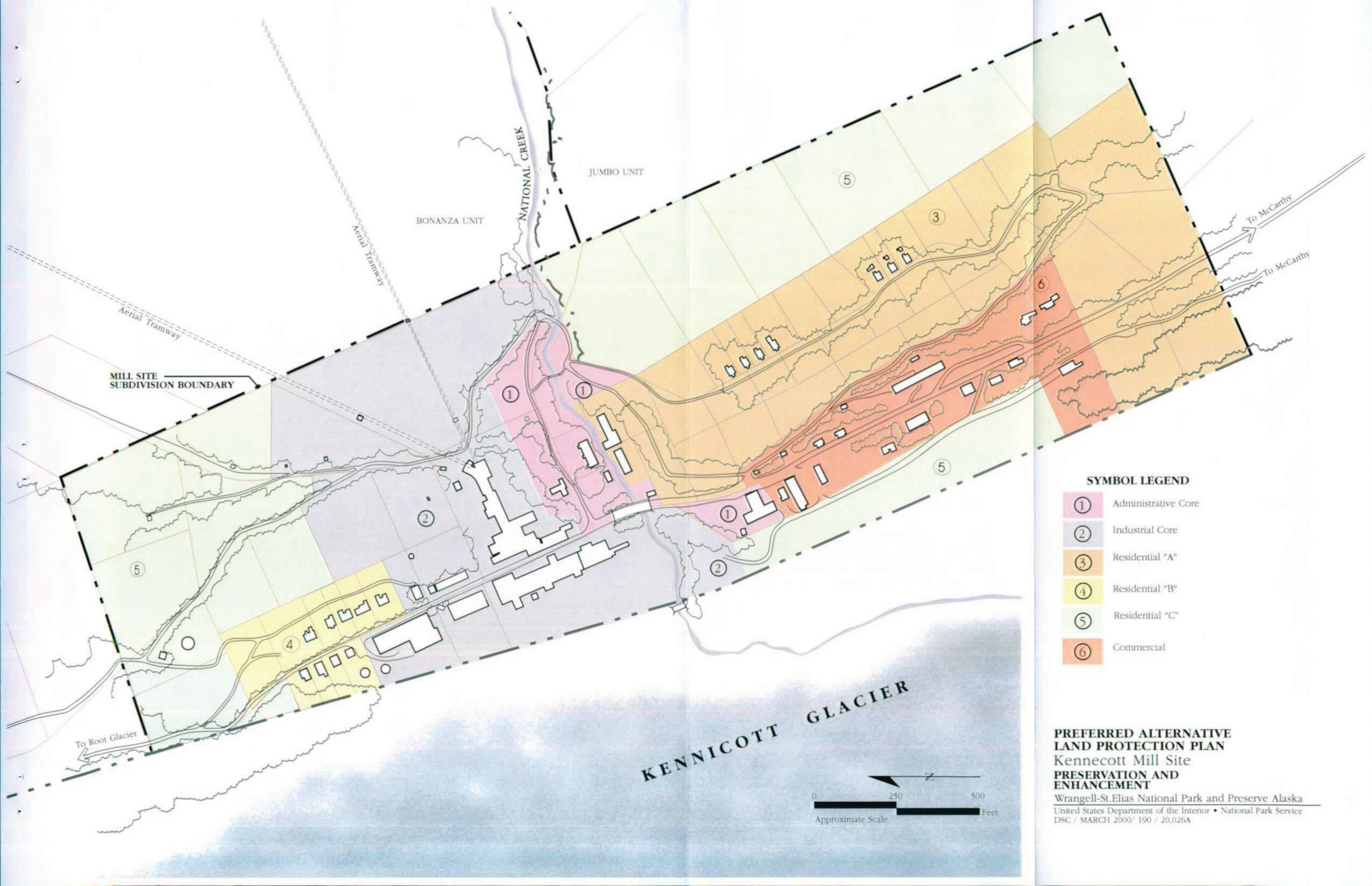


# BUILDING LEGEND

- |                                     |                                |
|-------------------------------------|--------------------------------|
| ① Historic Mill                     | ⑨ Historic Company Store       |
| ② Historic Leaching Plant           | ⑩ Historic Refrigeration Plant |
| ③ Historic Power Plant              | ⑪ Historic West Bunkhouse      |
| ④ Historic Machine Shop             | ⑫ Historic School              |
| ⑤ Historic General Managers Office  | ⑬ Historic Recreation Hall     |
| ⑥ Historic Assay Office             | ⑭ Jurick Building              |
| ⑦ Historic National Creek Bunkhouse | ⑮ Kennicott Glacier Lodge      |
| ⑧ Historic Train Depot              |                                |







**SYMBOL LEGEND**

- ① Administrative Core
- ② Industrial Core
- ③ Residential "A"
- ④ Residential "B"
- ⑤ Residential "C"
- ⑥ Commercial

**PREFERRED ALTERNATIVE  
LAND PROTECTION PLAN  
Kennecott Mill Site  
PRESERVATION AND  
ENHANCEMENT**

Wrangell-St. Elias National Park and Preserve Alaska  
United States Department of the Interior • National Park Service  
DSC / MARCH 2000/ 190 / 20,026A



## Structures

The National Park Service has a responsibility to abide by regulations governing the management of historic resources. It must comply with the legal and regulatory requirements as outlined in Director's Order-28: *Cultural Resource Management*, the National Historic Preservation Act, and *The Secretary of the Interior's Standards for the Treatment of Historic Properties*, among others. Those regulatory requirements address NPS policy, federal legal mandates, and acceptable standards for the treatment of the Kennecott historic properties.

*Buildings.* A structural stabilization program would be developed for NPS-Kennecott properties according to a three-tiered plan: items to be addressed within the next two years (high priority); items to be addressed in the third and fourth years; and long-term needs beyond four years.

Assessments would be made as needed to identify high priority needs such as those created by environmental conditions or because of unforeseen circumstances. The park would continue to work with local residents in ongoing stabilization or contracting efforts. The park would stabilize as appropriate, the upper and lower portions of the mill structure, the powerhouse, and the machine shop to make them safe for unescorted visitor access. The park would work with local interests to rehabilitate the historic community building for community activities and NPS programs. Structures that would be available for adaptive reuse would be the company store, the school, the west bunkhouse, and the meat locker. The company store would be rehabilitated to provide a safe structure for NPS operations, curatorial storage, and limited visitor activities. NPS would seek the involvement and participation of cooperators in the rehabilitation and reuse of the company store. Individuals and groups interested in adaptive reuse would be subject to an agreement with the NPS. Proposed uses would be limited to those of an educational nature.

**PRESERVATION GOAL:** The goal of the National Park Service's Kennecott preservation program is to stop the deterioration of the historic buildings of the Kennecott National Historic Landmark by repairing and replacing deteriorated roofs, walls and foundations while preserving the present qualities of the site so future management options pertaining to the site will be preserved.

Specific tasks include:

- Mitigate all life safety issues in and around the structures
- Stop the imminent collapse and damage to the structures, which has resulted from years of abandonment
- Preserve and protect the historic landscape of the site and retain the industrial artifacts in place as part of the landscape character
- Reestablish a weathering skin by repairing roofs, walls and foundations using materials compatible with the historic period and consistent with the Secretary of Interior's Standards for Rehabilitation
- Repair deteriorated structural connections at floors, walls, and foundations and resolve vertical and lateral loads on the buildings resulting from winds and snow
- Mitigate water problems due to rain, site percolation and periodic flooding of National Creek.

- Establish a day labor crew
- Undertake a site cleanup to remove noncompatible building materials resulting from recent demolition and mining activities.
- Preserve and protect documents and artifacts remaining within the structures.
- Acquire additional parcels deemed critical to protecting the historic integrity of the site and management of the site. A prioritization process for determining the critical parcels will be developed. Parcels would be acquired on a willing seller basis only.

The tailings dumped against the building in the 1950s as part of a demolition effort would be removed.

*Tram Towers.* Mine cables would be lowered from the tram towers as funds become available or as hazardous conditions require. The structural condition of tram towers and cables would be evaluated on an annual basis. Selected tram towers above the timberline would be stabilized to reinforce a sense of scale and extent of the historic district.

*Bridges.* A low-water crossing at National Creek in front of the assay office would be established to allow vehicular access for residents and for NPS administrative needs. The historic railroad trestle across National Creek would be stabilized and rehabilitated to offer safe access for pedestrians, people in wheelchairs, and on ATVs and bicycles. The park would work to reestablish the historic tracks across the National Creek railroad trestle from the company store north to the mill structure as an interpretive component. Pedestrian bridges across National Creek ( one east of the historic railroad trestle) would be reestablished in its historic location as part of the trail system. A new footbridge would be constructed west of the trestle.

*Historic Boardwalks.* To provide access to historic buildings, boardwalks would be rehabilitated or reconstructed based on historical documentation. This would include walkways in areas around the company store, school, meat locker, bunkhouse(s), leaching plant, machine shop, powerhouse, and parts of the manager's house and historic administrative area.

Character-defining architectural features, such as the powerhouse smokestacks, the concentration mill ore chute, and the leaching plant/mill conveyor, would be stabilized and reconstructed as necessary.

## Natural Resources

As part of a comprehensive resource management program, the National Park Service would initiate programs for monitoring natural resources. This would include a program to monitor water quality and quantity on National Creek, an assessment and monitoring of sensitive plant species documented on Bonanza Ridge in 1967, and development of a bear management plan. In addition, the mill site would be monitored for the establishment of invasive non-native plant species.

Selective thinning of vegetation would occur on NPS properties. In order to reestablish historic views and viewsheds, the focus of the thinning would be in the historic administrative area, including the manager's residence, Birch residence, the staff house annex, the assay office area north of National Creek, and areas adjacent to the mill structure. Encroaching vegetation around the historic community

building, the company store, the machine shop, the powerhouse, and the leaching plant would also be thinned.

Vegetation around historic structures would be selectively thinned to mitigate potential damage to the buildings and to enhance the historic character of the mill town. Vegetation removal would be necessary for lead paint abatement, building stabilization, site regrading, and fire management. In all other instances, natural processes would be allowed to continue. The park would work with private property owners who wanted to conduct selective clearing on their properties in a manner consistent with historic district goals and objectives. The park supports the continued functioning of the community garden.

To protect cultural and natural resources from seasonal flooding, National Creek would be channeled through the historic administrative area and west of the historic railroad trestle. This would be consistent with historic channelization structures and methods.

Parts of the national historic landmark were not public land before the National Park Service acquired the property, and it was not open to subsistence uses. Hunting, berry picking, and gathering firewood would have only been permitted with permission of the previous landowners. As it is now public lands, subsistence activities would be permitted. However, if it appeared that such activities would interfere with NPS management of the property, the agency could seek to limit some subsistence uses.

## **Interpretation**

Under the preferred alternative, the National Park Service would enter agreements with others to conduct guided tours. For consistency and accuracy of interpretive content, yearly training would be provided by NPS. Interpretive programs at Kennecott would be expanded from existing levels, enabling visitors to learn about the mines and the mill town, the relationship to McCarthy, and natural resources through a variety of media, interpretive techniques, and programs. The guided tours would be expanded to include a wider variety of tour subject matter and tour lengths.

Evening and special programs conducted by NPS personnel would continue. They would be conducted in various locations, including the historic company store and community building. The park also would offer seasonal interpretive tours through public areas. Interpretive displays would be designed and installed in areas open to the public in the powerhouse, the machine shop, and the concentration mill. In all cases, the park would work with commercial and nonprofit organizations using universal design principles to establish accurate and consistent interpretive information and program content. A bookstore offering educational and informational material, interpretive books, posters, and similar products would be encouraged in the historic company store. Interpretive wayside displays would be established in the historic administrative area north of National Creek in association with the former Birch house and the buildings that were the manager's house, the staff house, and the manager's office.

The safety of potential tours to the mine sites and through the underground tunnels would be assessed, and the National Park Service would evaluate the possibility of offering one or more such tours in the future.

A short, captioned video production of the Kennecott story would be produced and displayed in the company store during visitor hours for a historical overview.



Interpretive wayside exhibits would be established in conjunction with all circulation routes.

The park would work with the McCarthy museum to prepare a self-guiding tour brochure that would accompany the interpretive wayside and pedestrian circulation system.

## **Administration and Operations**

### **Park Management**

The park would pursue a short-term lease in a private building for onsite administrative office space and storage for interpretation and maintenance. These operations eventually would be relocated into the company store as funding became available for the necessary rehabilitation to bring the structure into regulatory compliance as an operations facility.

The National Park Service would enter into agreements for others to conduct building tours, and to adaptively reuse some structures. All park-related management operations eventually would be located in the company store. Preference would be given to hiring local residents for concession agreements and for all rehabilitation and stabilization efforts undertaken and administered by the National Park Service.

The National Park Service would continue to evaluate opportunities to acquire additional properties and/or easements within the National Historic Landmark as those opportunities arose. Acquisition would be limited to willing sellers on a priority basis. Priorities would be determined according to the land use designations outlined in this plan. (See Land Protection Plan map.)

Short-term temporary living space in the historic west bunkhouse would be made available for two or three NPS employees as the rehabilitation of that structure was completed. Offsite NPS housing would be sought for the long term. All other housing for NPS employees and contractors' employees probably could be found locally at market rates and would be the responsibility of the employee and/or the contractor.

Work on historic buildings would be done between May and October of each year. Restroom facilities would be required for work crews.

### **NPS Utilities and Infrastructure**

Administrative and maintenance storage would be accommodated in the lower level of the company store. This would include the storage of minor equipment and materials. Hazardous materials, vehicles, fuel, garbage, and large materials would be stored at remote locations, including the McCarthy airstrip.

Vault toilets would be provided for visitor use along the main road through the site. The toilets would be installed in compliance with applicable Alaska Department of Environmental Compliance (ADEC) regulations. Toilets would be pumped every fall by contract and the sewage hauled to Glennallen. The park would seek long-term strategies for developing a septic system on NPS property or, if feasible, tying into a community sewer system to provide service to NPS facilities south of National Creek.

Bearproof trash containers would be placed at strategic locations along the main road. Trash would be hauled across the pedestrian bridge at McCarthy as needed and taken to a park-owned solid waste

transfer facility at the end of McCarthy Road. A planned transfer facility would feature an incinerator, recycling bins, and dumpsters. Wastes associated with stabilization (lumber, packaging, and construction materials) would be hauled by a contractor from the transfer site to an approved landfill. Lumber coated with lead paint would be stockpiled and annually hauled across the river for incineration at the transfer site.

Generators and solar photovoltaic equipment would supply power for NPS structures when appropriate and feasible. In conjunction with community entities, the park would pursue long-term power supply strategies. Photovoltaic power, hydroelectric generation from National Creek, or a centralized community generator would be considered among other possibilities. Any potential threats to water resources from the construction and use of this type of facility would be addressed in a separate document.

No water would be supplied for visitors until the company store building was rehabilitated. Efforts would be made to arrange for a long-term water supply for visitors and for NPS operational use. This might be achieved by drilling a well or developing a surface water collection and treatment system on National Creek. The system installed would be to ADEC standards and preclude any conflict with other landowners.

Fuel for portable generators and all-terrain vehicles (ATVs) would be hauled in small quantities across the footbridge corresponding to immediate needs. As fuel requirements increase, aboveground bulk storage tanks would be located on NPS-leased property at the McCarthy airstrip. A contractor would deliver diesel fuel by air or ground transportation to a bulk tank. Fuel would be transferred from the bulk tank to Kennecott in a pickup-mounted tank.

## **Safety and Security**

Hazardous materials and debris that could present safety concerns would be removed from NPS properties. This would include items like boards with exposed nails, shards of metal, cable fragments, miscellaneous tools or machinery, and other potentially dangerous articles.

NPS would initiate a program to limit and control access to buildings. Signs restricting or prohibiting access into NPS properties would be placed in appropriate locations. Broken doors and locks would be repaired and replaced as appropriate. Windows would be replaced, and mechanisms to prevent unauthorized and unsafe access would be used such as shutters, wire mesh, or other appropriate devices. Identified visitor access routes into and around buildings would be improved to remove all immediate dangers, and signs would be located appropriately to indicate safe routes.

According to the National Fire Protection Association, the single largest cause of fire in historic buildings is arson. The NPS would undertake a fire assessment and implement a fire prevention program. Fire extinguishers would be placed in all NPS-owned properties. Fire escape routes would be identified for all NPS-owned buildings, and battery lights would be available for emergencies. A local year-round caretaker would be hired to provide site security.

The park would work with the community to improve community firefighting capabilities, including participating in a volunteer fire department for the mill town and the ability to temporarily dam National Creek and pump water for fire suppression. A portable pump and hose would be on hand to draw water from National Creek for firefighting. There are existing water rights, and future requests to withdraw surface water would be analyzed individually.

In the long term, a system would be established to detect fire and security risks on all NPS-owned structures. As a water supply was developed, sprinkler systems would be installed in the visitor center and other occupied NPS buildings south of National Creek. The park would initiate hazardous-fuel reduction measures around NPS-owned properties to reduce the fire hazard from adjacent landscape elements and would work with the community to reduce fire hazards on private properties.

The park would continue to work with the community to develop a strategy for community-wide emergency medical services. Law enforcement would continue to be addressed individually through various jurisdictional entities including the NPS, where appropriate.



## Alternative 2: No Action

### Management Concept

The primary management philosophy in the *No Action Alternative* would be limited to maintaining the structures and landscape features as they exist today, with no additional treatment. Stabilization of historic structures and significant landscape features would be undertaken only when there is a threat of structural failure, loss of significant resources, or safety risk. Tours of the concentration mill would continue, and existing visitor services would also be retained. No NPS structures would be adaptively reused, and no landscape features would be stabilized. Significant artifacts throughout the site would be collected only if they were at risk from theft, vandalism or deterioration from natural causes.

### Cultural Resources

#### Cultural Landscape

The National Park Service has a responsibility to abide by regulations governing the management of historic resources. It must comply with the legal and regulatory requirements as outlined in Director's Order-28: *Cultural Resource Management*, the National Historic Preservation Act, and *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*, among others. Those regulatory requirements address NPS policy, federal legal mandates, and acceptable standards for the treatment of the Kennecott historic properties.

*Land Use.* Historic land use patterns would not be identified.

*Design Standards.* All future land use and development would be required to conform to architectural guidelines addressing the use of appropriate materials, as well as the size, scale, massing, and character of individual structures and landscape features.

- Guidelines enforced by review of an architectural control committee established in the mill town's subdivision conditions, covenants, and restrictions.
- Creation of an architectural control committee consisting of representatives from the park, Kennecott property owners, and one regional NPS representative.
- Proposals for alternative uses reviewed and approved by the architectural control committee.

*Circulation and Access.* Vehicular access would continue on all current routes noted in alternative 1. Occasional ridge tours would be allowed along the Bonanza Mine road/trail. Residents and visitors would continue to use all existing pedestrian routes. No signs would be placed along those routes.

*Views and Vistas.* Successional vegetation obscuring historic structures and landscape features would not be removed.

### Archeological Resources

NPS would write a scope of collections statement regarding the collection of artifacts and would follow regulations and NPS *Management Policies* to ensure the preservation and protection of artifacts.

The following actions would be the same as in alternative 1:

- Keep historically significant site-related artifacts in current locations.
- Remove noncontributing artifacts if hazardous.
- Leave all other archeological resources in place.

### **Museum Collections and Archives**

NPS would not develop any formal facilities to house museum collections or archives. Artifacts would be collected during hazardous waste mitigation or for conservation purposes when necessary and would be housed at the designated NPS repository off-site. Historic documents, manuscripts, archival materials, and associated papers would be collected in accordance with the scope of collections statement.

### **Structures**

The National Park Service has a responsibility to abide by regulations governing the management of historic resources. It must comply with the legal and regulatory requirements as outlined in Director's Order-28: *Cultural Resource Management*, the National Historic Preservation Act, and *The Secretary of the Interior's Standards for the Treatment of Historic Properties*, among others. Those regulatory requirements address NPS policy, federal legal mandates, and acceptable standards for the treatment of the Kennecott historic properties.

*Buildings.* The present building stabilization efforts would be continued. Only the most serious deteriorating conditions would be addressed, and stabilization would respond only to the extreme needs of the buildings and to visitor safety. The preservation of buildings would not progress in the no-action alternative. The area south of the mill building would not be regraded. The tailings dumped against the building in the 1950s as part of a demolition effort would remain in place.

No NPS buildings would be adaptively reused under this alternative; rather, they would be managed as abandoned buildings. Materials painted with lead-based paint would be collected and disposed of as building sections collapsed. Encapsulation of the lead paint would be minimal.

As in alternative 1, the park would work with the community to rehabilitate the historic community building for current local activities and NPS programs.

*Tram Towers.* All tram towers and mine cables would be left undisturbed. Conditions that pose safety hazards to residents and visitors would be addressed as needed.



# BUILDING LEGEND

- |                                     |                                |
|-------------------------------------|--------------------------------|
| ① Historic Mill                     | ⑨ Historic Company Store       |
| ② Historic Leaching Plant           | ⑩ Historic Refrigeration Plant |
| ③ Historic Power Plant              | ⑪ Historic West Bunkhouse      |
| ④ Historic Machine Shop             | ⑫ Historic School              |
| ⑤ Historic General Managers Office  | ⑬ Historic Recreation Hall     |
| ⑥ Historic Assay Office             | ⑭ Jurick Building              |
| ⑦ Historic National Creek Bunkhouse | ⑮ Kennicott Glacier Lodge      |
| ⑧ Historic Train Depot              |                                |



## SYMBOL LEGEND

- |   |                                    |
|---|------------------------------------|
| Kennecott Mill Site area boundary           | Abandoned automobile to be removed |
| NPS - Owned/Operated Structure              | Parking (informal)                 |
| Privately - Owned Structure                 | Residential District               |
| NPS - Adaptive Re-use Structures            | Shuttle Stop                       |
| Primary Shuttle Route                       | Information Bulletin Board         |
| Occasional Private/Commercial Vehicle Route | Public Phone                       |
| Occasional Private Vehicle Route            | Public Toilet                      |
| Primary Pedestrian Route                    |                                    |
| Primary Recreation Trail                    |                                    |
| Secondary Pedestrian Routes                 |                                    |

## ALTERNATIVE 2 Kennecott Mill Site NO ACTION

Wrangell-St. Elias National Park and Preserve Alaska  
United States Department of the Interior • National Park Service  
DSC / March 2000 / 190 / 20,022A



*Bridges.* The historic railroad trestle across National Creek would be stabilized and rehabilitated to offer safe access. As in alternative 1, a low-water crossing at National Creek in front of the assay office would be established to allow vehicular access for residents and for NPS administrative needs. No other bridge improvements or construction would be undertaken.

*Historic Boardwalks.* Under this alternative historic boardwalks would not be rehabilitated or stabilized. Existing boardwalks and remnant boardwalks would remain untreated unless they endangered residents or visitors, in which case they would be removed to eliminate the hazard.

## **Natural Resources**

The following actions would be the same as in alternative 1:

- Initiate program to monitor water quantity and quality.
- Assess and monitor sensitive plant species along Bonanza Ridge.
- Monitor the mill site for establishment of invasive non-native plants.
- Develop bear management plan.
- Allow vegetation succession to continue unless modification is needed for health or safety reasons.

No improvements to National Creek would be made.

## **Interpretation**

Informal interpretation would continue during the summer months. Evening and special programs conducted by NPS personnel would continue in various locations, including the NPS leased building and the Kennicott Glacier Lodge. Maps and other site-specific information would be placed on the NPS bulletin board across from the historic company store. The park would continue to pursue funding for limited rehabilitation of the historic company store, where limited NPS visitor contact services would be provided seasonally. In all cases, the park would work with commercial and nonprofit organizations, using universal design principles to establish accurate and consistent interpretive information and program content.

## **Administration and Operations**

### **Park Management**

The following actions would be the same as in alternative 1:

- Seek short-term lease in the NPS leased building for administrative offices.
- When rehabilitation funds are available, relocate interpretation, maintenance, and lead paint removal to the company store.
- Continue preference for hiring local residents for concessions and rehabilitation.

The National Park Service would continue agreements for local guided tours of several mill town structures.

Housing for NPS employees and contractors would be the responsibility of the employee and/or the contractor and probably could be found locally at market rates.

## **NPS Utilities and Infrastructure**

The following actions would be the same as in alternative 1:

- Contract for pumping of vault toilets in the fall; sewage hauled to Glennallen.
- If the contractor were unable to handle sewage volume in the time available, it would be pumped and hauled to the McCarthy footbridge for transfer to Glennallen by the contractor. Alternatively, the park could establish onsite treatment facility.
- Place bearproof trash and recycling containers along the main road.
- Haul trash across McCarthy pedestrian bridge as needed to a park-owned transfer site with an incinerator, recycling bins, and dumpsters. Initiate contract for hauling solid waste from the transfer site to an approved landfill.
- Stockpile waste lumber coated with lead paint and haul annually to incineration site.

Portable generators would supply power for NPS structures. NPS would not supply any water for visitors. Fuel for portable generators and ATVs would be hauled in small quantities across the footbridge or by park airplane as needed. Fuel and materials would be stored in leased space at the McCarthy airfield.

## **Safety and Security**

The NPS would carry out the following actions found in alternative 1:

- Remove hazardous materials and debris from NPS properties.
- Continue to limit or control building access, with signs placed in appropriate locations.
- Repair broken locks as appropriate.
- Place fire extinguishers in all NPS buildings.
- Make available a portable pump and hose to draw water from National Creek for firefighting.

A local caretaker would be hired to provide site security and coordinate NPS emergency response during the off-season. The park would continue to work with residents to develop a community-based fire response and a strategy for emergency medical services.

Law enforcement would continue to be addressed individually through various jurisdictional entities including the NPS, where appropriate. No NPS personnel would be hired to provide full-time law enforcement or emergency response in Kennecott.

## Alternative 3: Site Stabilization and Interpretation

### Management Concept

The primary management goals of the *Site Stabilization and Interpretation Alternative* would be to ensure that significant historic structures and landscape features are stabilized and visitors are provided greater access to, and understanding of, the physical development and historic significance of the site. Actions in this alternative would focus on implementation of a comprehensive stabilization program for every NPS structure, with rehabilitation of two key NPS structures for administrative use, and treatment of selected components and features of the cultural landscape. Interpretive programs would expand through the development of walking tours, exhibits, waysides, and site brochures, helping visitors understand the larger story of Kennecott and its relationship to McCarthy.

### Cultural Resources

#### Cultural Landscape

The National Park Service has a responsibility to abide by regulations governing the management of historic resources. It must comply with the legal and regulatory requirements as outlined in Director's Order-28: *Cultural Resource Management*, the National Historic Preservation Act, and *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*, among others. Those regulatory requirements address NPS policy, federal legal mandates, and acceptable standards for the treatment of the Kennecott historic properties.

*Land Use.* This proposed alternative would emphasize the four historic land use areas: an industrial core, administrative complex, housing areas, and service-related structures.

*Design Standards.* As found in alternative 1:

- NPS would work with the community to establish guidelines for structures and landscape features.
- An architectural control committee consisting of representatives from the park, Kennecott property owners, and one regional NPS representative would be established.
- Guidelines would be enforced by review of an architectural control committee established in the mill town's subdivision conditions, covenants, and restrictions.
- New site functions and adaptive use of buildings must be sympathetic to historic uses wherever possible.
- Proposals for alternative uses would be reviewed and approved by the architectural control committee

*Circulation and Access.* The following actions would be consistent with alternative 1:

- Continue vehicular access on all current routes.
- Remove abandoned vehicles from NPS properties.
- Reestablish primary pedestrian routes, especially in mill town.



- Main pedestrian corridor would be along railroad route and road in mill town.
- Secondary routes identified behind the powerhouse, machine shop, leaching plant and those across National Creek and behind the company store.

Ridge tours would not be allowed.

The pedestrian route to Root Glacier would continue to be maintained as a recreation trail north of the mill town. Other pedestrian routes would be identified and maintained for limited visitor and resident access, including trails through Silk Stocking Row, to Bonanza Mine, connections to the back of the mill building, and the historic carriage road to McCarthy.

*Views and Vistas.* The following actions for views and vistas would be the same as those in alternative 1:

- Selectively thin vegetation in the historic district based on historical documentation to enhance visitor understanding of the site.
- Vegetation thinning would occur at the manager's residence, Birch residence, east bunkhouse, assay office north of National Creek, areas adjacent to the mill structure, as well as areas where vegetation encroaches historic structures, such as around the community building, company store, machine shop, powerhouse, and leaching plant.
- If they ask NPS would assist landowners in planning selective clearing on their properties.

### **Archeological Resources**

Features determined noncontributing to the historic district would be removed if they presented a safety hazard to visitors or residents. All other archeological resources, including historic dumps, would remain.

### **Museum Collections and Archives**

The National Park Service would amend an existing scope of collections statement regarding the collection of artifacts and would follow regulations and NPS *Director's Order #28: Cultural Resource Management* to ensure the preservation and protection of artifacts.

Historically significant, site-related artifacts would be retained in their present locations unless they were at risk or contributed to interpretation. Artifacts determined to be noncontributing and incompatible to the historic district would be removed.

Historic documents, manuscripts, archival material, and associated papers within the scope of collections would be collected from NPS properties and placed in appropriate curatorial storage. Objects not requiring special environmental considerations will be curated in a NPS repository on site. NPS will provide technical assistance to the McCarthy Museum.



# BUILDING LEGEND

- |                                     |                                |
|-------------------------------------|--------------------------------|
| ① Historic Mill                     | ⑨ Historic Company Store       |
| ② Historic Leaching Plant           | ⑩ Historic Refrigeration Plant |
| ③ Historic Power Plant              | ⑪ Historic West Bunkhouse      |
| ④ Historic Machine Shop             | ⑫ Historic School              |
| ⑤ Historic General Managers Office  | ⑬ Historic Recreation Hall     |
| ⑥ Historic Assay Office             | ⑭ Jurick Building              |
| ⑦ Historic National Creek Bunkhouse | ⑮ Kennicott Glacier Lodge      |
| ⑧ Historic Train Depot              |                                |

# MIXED USE DISTRICT

- Non-residential uses to be approved by ACC
- Non-residential development & improvement proposals to be approved by ACC

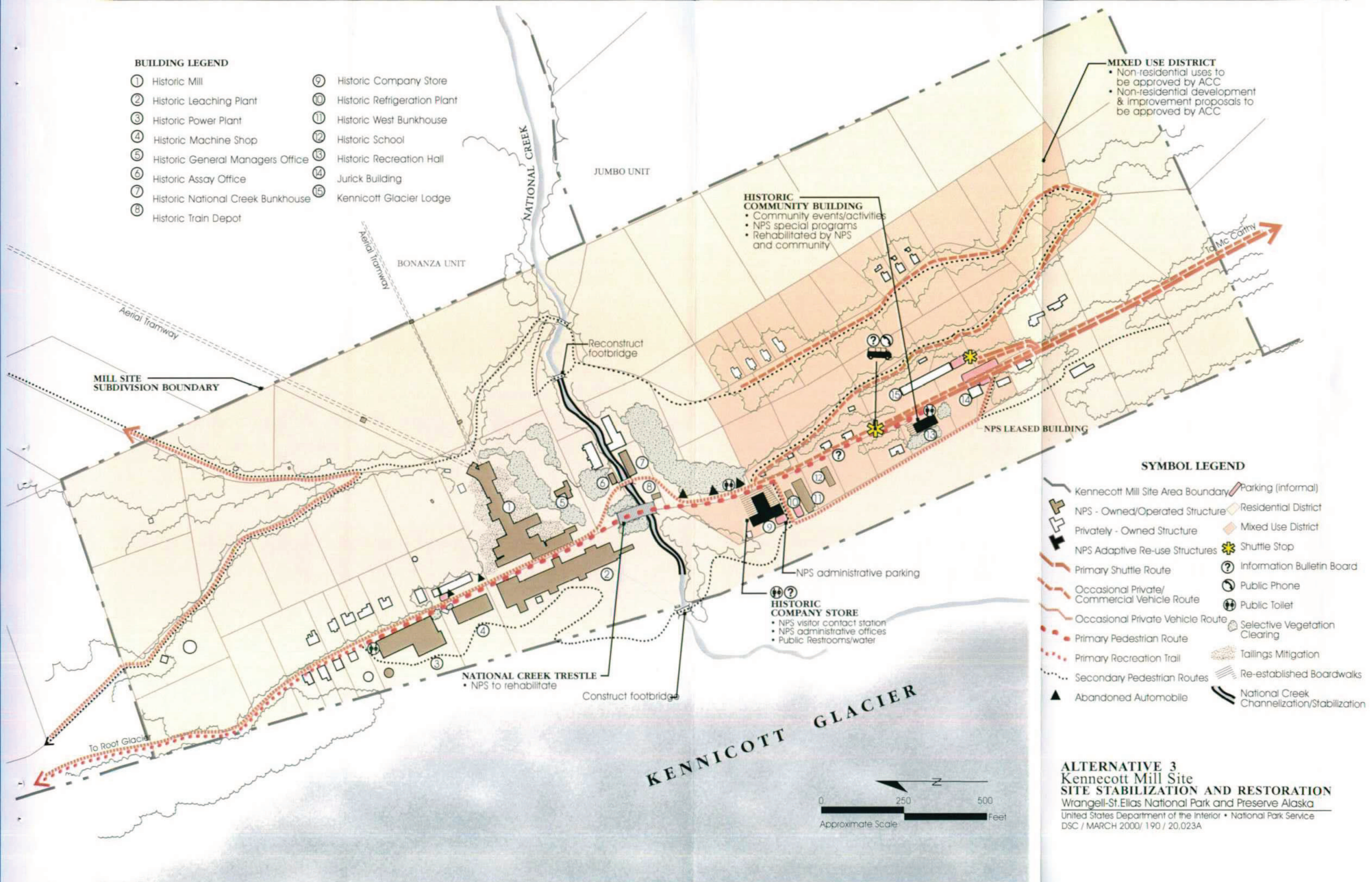
# HISTORIC COMMUNITY BUILDING

- Community events/activities
- NPS special programs
- Rehabilitated by NPS and community

# SYMBOL LEGEND

- |   |   |
|---|---|
| Kennecott Mill Site Area Boundary           | Parking (informal)                          |
| NPS - Owned/Operated Structure              | Residential District                        |
| Privately - Owned Structure                 | Mixed Use District                          |
| NPS Adaptive Re-use Structures              | Shuttle Stop                                |
| Primary Shuttle Route                       | Information Bulletin Board                  |
| Occasional Private/Commercial Vehicle Route | Public Phone                                |
| Occasional Private Vehicle Route            | Public Toilet                               |
| Primary Pedestrian Route                    | Selective Vegetation Clearing               |
| Primary Recreation Trail                    | Tailings Mitigation                         |
| Secondary Pedestrian Routes                 | Re-established Boardwalks                   |
| Abandoned Automobile                        | National Creek Channelization/Stabilization |

**ALTERNATIVE 3**  
**Kennecott Mill Site**  
**SITE STABILIZATION AND RESTORATION**  
 Wrangell-St. Elias National Park and Preserve Alaska  
 United States Department of the Interior • National Park Service  
 DSC / MARCH 2000/ 190 / 20,023A





## Structures

*Buildings.* Under alternative 3, all NPS-owned buildings would be treated to ensure their preservation. Stabilization — in some cases, rehabilitation — would be accomplished under a program of prioritized intervention. It can be assumed that the first level of work would include treatment to arrest the most serious cases of collapse or irreversible damage. This phase would be followed by systematic stabilization to repair roofs, site-grading issues, failing foundations and walls, and to insure visitor safety.

Expanded rehabilitation of the company store/warehouse building would be undertaken. After rehabilitation, the company store would adaptively reused as a visitor contact station, public restrooms, and NPS administrative offices. The park would work with local interests to rehabilitate the historic community building for use as a community center. Services and utilities found in traditional visitor centers and recreational buildings would be provided.

The actions of this alternative would be intended to halt the deterioration of the buildings. Visitor safety issues pertaining to walkways and site and building hazards would be identified and addressed. Of the NPS buildings on the site, only the company store and the community building would be accessible to the public without a tour guide.

Character-defining architectural features such as the powerhouse smokestacks, the concentration mill ore chute, and the leaching plant/mill conveyor would be stabilized and reconstructed as necessary.

*Tram Towers.* The following actions would be the same as in alternative 1:

- As funds become available or when hazardous conditions exist, lower mine cables from tram towers.
- Evaluate tram towers and cables on a yearly basis.
- Stabilize selected tram towers above timberline to maintain a sense of the historic scene.

*Bridges.* The following actions regarding bridges would be the same as in one:

- Establish a low-water crossing in front of assay office.
- Stabilize and rehabilitate the historic railroad trestle for use by pedestrians, people in wheelchairs, and on bicycles and ATVs.
- Reestablish two pedestrian bridges east and west of the railroad trestle in historic locations.

Railings would be reestablished on walkways and boardwalks at steep slopes or grade changes. Safety railings would be added as part of the railroad trestle upgrade.

*Historic Boardwalks.* Boardwalks would be rehabilitated or reconstructed based on historical documentation as in alternative 1. The park would work with the community to reestablish the boardwalks adjacent to the community building. All remaining and remnant boardwalks would be left in place until they present health and safety issues and warrant treatment or removal.

## Natural Resources

The park would manage natural resources as described in alternative 1:



- Initiate a program to monitor water quantity and quality.
- Assess sensitive plant species along Bonanza Ridge.
- Monitor the mill site for invasive nonnative plants.
- Develop a bear management plan.
- Selectively thin vegetation around historic structures to reestablish selected views and overall landscape character.
- Allow vegetation succession to continue unless removal is needed for health or safety reasons.
- Channelize National Creek through historic administrative area and west of railroad trestle.

## Interpretation

The following interpretive actions would be the same as in alternative 1:

- Contract with non-governmental entities to conduct expanded guided tours of different lengths and more subjects.
- Expand programs, enabling visitors to learn about mines, the mill town, natural resources, and their relationship to McCarthy.
- Use varied media and techniques.
- Provide yearly training for tour operators.
- Apply universal design standards.

Informal interpretation would continue during summer. NPS would work with local interests to rehabilitate and make accessible the historic community building for special programs conducted by NPS personnel.

The park would rehabilitate the historic company store and use it as a location where visitors could get general park information, learn about Kennecott through exhibits and hands-on demonstrations, and experience its history through a collection of implements, objects, ore samples, and other media.

Space would be established in the park for the display of the Kennecott model under an agreement with the model maker, and a part-time NPS ranger presence would facilitate active interpretive programs in the building during the primary visitor season.

A short, captioned video production of the Kennecott story would be produced and displayed in the company store during visitor hours for a historical overview.

Interpretive wayside exhibits would be established in conjunction with all circulation routes.

The park would work with the McCarthy museum to prepare a self-guiding tour brochure that would accompany the interpretive wayside and pedestrian circulation system.

## **Administration and Operations**

### **Park Management**

The following actions would be the same as in alternative 1:

- Seek a short-term lease for space in a private building for administrative offices.
- When rehabilitation funds are available, relocate interpretation, and maintenance.
- Continue preferential hiring of local residents for concessions and rehabilitation.
- Continue agreements for locally guided tours of several structures.
- Provide short-term housing for two or three employees in rehabilitated west bunkhouse; seek offsite housing for long term.
- Employees and/or contractors are responsible for all other housing for NPS and contractors' employees.
- Continue support for incorporating universal design in all park programs.
- Evaluate opportunities to acquire additional properties from willing sellers.

### **NPS Utilities and Infrastructure**

The following actions would be the same as in alternative 1:

- Place administrative and maintenance storage, as well as a short-term power supply, in the lower level of the company store.
- Store hazardous materials, vehicles, fuel, garbage, and large materials at remote locations, including McCarthy airfield.
- Contract for vault toilet pumping along the main road every fall; sewage to be hauled to Glennallen.
- If the contractor were unable to handle sewage volume in the time available, pump and could establish an onsite treatment facility.
- Place bearproof trash and recycling containers along main road.
- Haul trash across the McCarthy pedestrian bridge as needed; take trash to a park-owned transfer site with an incinerator, recycling bins, and dumpsters; contract for hauling solid waste from transfer site to an approved landfill.
- Stockpile waste lumber coated with lead paint and haul it annually to an incineration site.
- When feasible, use generators and solar photovoltaic equipment for power for NPS structures.
- With the community, pursue long-term power supply strategies such as photovoltaic or hydroelectric generation; community generator.

The park eventually would construct an onsite septic system on NPS property or, if feasible, tie into a community sewer system to provide service to NPS facilities south of National Creek.



To provide potable water to the comfort station in the company store, NPS would construct either a well or a surface water collection and treatment system on National Creek along with a water storage and distribution system.

A bulk-fuel storage facility featuring aboveground bulk storage tanks would be located on NPS-leased property at the McCarthy airfield. Diesel fuel would be delivered by air to a bulk tank by a fuel contractor. Small quantities of gasoline for portable generators and ATVs would be hauled to a small bulk tank either by NPS airplane or across the McCarthy footbridge. Fuel would be transferred from the bulk tanks to Kennecott in a pickup-mounted tank.

## **Safety and Security**

The following safety and security actions would be the same as in alternative 1:

- Remove hazardous materials and debris from NPS properties.
- Continue to limit or control building access; place signs in appropriate locations.
- Improve visitor access routes by removing hazards; place signs to identify safe routes.
- Repair broken locks and doors as appropriate.
- Assess fire risks and implement a fire prevention program.
- Place fire extinguishers in all NPS buildings.
- Identify fire escape routes for all NPS buildings.
- Provide battery lights for emergencies.
- Work to improve community firefighting capabilities, including participating in a volunteer fire department.
- Make available a portable pump and hose to draw water from National Creek for firefighting.
- When water supply is developed, install a sprinkler systems in NPS buildings.
- In the long term, establish a system to detect fire or security problems on all NPS structures.
- Reduce hazardous fuels around NPS properties.
- Work with the community to reduce fire hazards on private property.
- Work with the community to develop emergency medical services.

A local seasonal caretaker would be hired to provide site security during the visitor off-season.

## Alternative 4: Site Restoration and Enhancement

### Management Concept

The primary management goal in the *Site Restoration and Enhancement Alternative* would be to enhance visitor understanding of the historic district by “restoring” as much as possible the physical elements and visual character of Kennecott as a whole. While no structures would be fully restored, several key historic structures would be rehabilitated and adaptively used for operations, interpretation, and administration. Site functions and land use patterns would follow historic precedent (as defined in the cultural landscape report), with the overall goal of preserving the spatial and structural footprint of the historic mill town. In this regard, land use zones and associated design guidelines would be established to assure developments are appropriate and compatible with the historic character of the site.

Some non-extant structures and landscape features — such as the garden, the tennis court, the Birch house site, the Staff house site, among others — would be identified and marked (or reestablished) for interpretive purposes, significantly expanding visitor understanding of the extent and complexity of the site. In addition, landscape elements and features obscured by encroaching vegetation — such as roads, trails, and viewsheds — would be reclaimed through selective thinning of non-historic vegetation. Artifacts throughout the site would be preserved based on an evaluation of their historical significance in the story of Kennecott.

### Cultural Resources

#### Cultural Landscape

The National Park Service has a responsibility to abide by regulations governing the management of historic resources. It must comply with the legal and regulatory requirements as outlined in Director’s Order-28: *Cultural Resource Management*, the National Historic Preservation Act, and *The Secretary of the Interior’s Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*, among others. Those regulatory requirements address NPS policy, federal legal mandates, and acceptable standards for the treatment of the Kennecott historic properties.

*Land Use.* This alternative would emphasize the four historic land use areas: an industrial core, administrative complex, housing areas, and service-related structures.

*Design Standards.* The following actions would be the same as in alternative 1:

- Establish an architectural control committee consisting of one regional NPS representative, Kennecott property owners, and one regional representative.
- Enforce guidelines by the architectural control committee according to the mill town’s subdivision conditions, covenants, and restrictions.
- Work with the community to establish guidelines for structures and landscape features.
- Ensure that new site functions and adaptive use of buildings are sympathetic to historic uses wherever possible.

- Proposals for alternative uses would be reviewed and approved by the architectural control committee.
- In alternative 4, a third historic character overlay would be applied to certain properties in the mill town subdivision. That overlay would apply more stringent redevelopment standards to private properties in which there were historic structures that contribute to the historic character. If a structure is removed, the criteria for its replacement would follow the *Secretary of the Interior Standards for Treatment of Historic Properties*.

*Circulation and Access.* The following actions would be the same as in alternative 1:

- Continue vehicular access on all current routes.
- Remove abandoned vehicles from NPS properties.
- Work with the community to remove abandoned vehicles from properties, especially along the railroad bed.
- Allow ridge tours on a designated route to a stopping point along Bonanza Mine road/trail.
- Reestablish primary pedestrian trails, especially along the railroad corridor and in the mill town.
- Maintain the route to Root Glacier as a primary pedestrian trail north of mill town.
- Identify secondary routes behind the powerhouse, machine shop, leaching plant, those across National Creek, and behind the company store.
- Identify another secondary route from the main road near the company store along the east side of National Creek to the Birch house, the administrative area, and return to the main road near the mill building.
- Maintain other minor pedestrian trails along Silk Stocking Row, to Bonanza Mine, behind the mill building, and the historic carriage road to McCarthy.
- Pedestrian routes in the mill site would be linked to a new recreation trail located on the fosse between the mill town and the Kennicott Glacier, which would connect with the old carriage road that links McCarthy with Kennecott.

*Views and Vistas.* The following actions for views and vistas would be the same as in alternative 1:

- Selectively thin vegetation in the historic district based on historical documentation to enhance visitor understanding of the site.
- Vegetation thinning would occur at the manager's residence, Birch residence, east bunkhouse, assay office north of National Creek, areas adjacent to the mill structure, as well as areas where vegetation encroaches historic structures, such as the community building, company store, machine shop, powerhouse, and leaching plant.
- NPS would assist landowners in planning selective clearing on their properties.

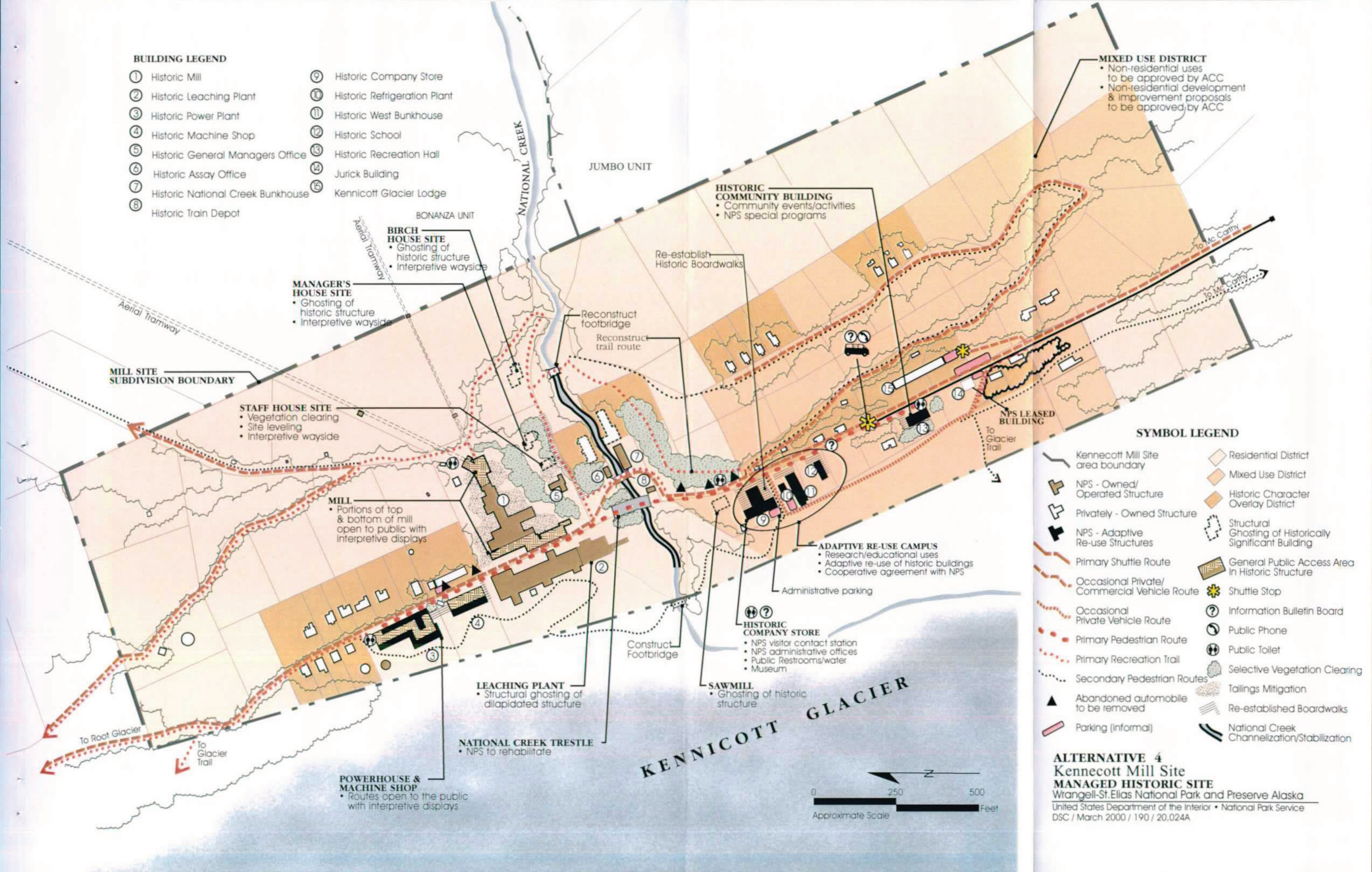


# BUILDING LEGEND

- |                                     |                                |
|-------------------------------------|--------------------------------|
| ① Historic Mill                     | ⑨ Historic Company Store       |
| ② Historic Leaching Plant           | ⑩ Historic Refrigeration Plant |
| ③ Historic Power Plant              | ⑪ Historic West Bunkhouse      |
| ④ Historic Machine Shop             | ⑫ Historic School              |
| ⑤ Historic General Managers Office  | ⑬ Historic Recreation Hall     |
| ⑥ Historic Assay Office             | ⑭ Jurick Building              |
| ⑦ Historic National Creek Bunkhouse | ⑮ Kennicott Glacier Lodge      |
| ⑧ Historic Train Depot              |                                |

# MIXED USE DISTRICT

- Non-residential uses to be approved by ACC
- Non-residential development & improvement proposals to be approved by ACC



# SYMBOL LEGEND

- |   |  |
|---|--|
| Kennecott Mill Site area boundary           | Residential District                                     |
| NPS - Owned/Operated Structure              | Mixed Use District                                       |
| Privately - Owned Structure                 | Historic Character Overlay District                      |
| NPS - Adaptive Re-use Structures            | Structural Ghosting of Historically Significant Building |
| Primary Shuttle Route                       | General Public Access Area In Historic Structure         |
| Occasional Private/Commercial Vehicle Route | Shuttle Stop   |
| Occasional Private Vehicle Route            | Information Bulletin Board                               |
| Primary Pedestrian Route                    | Public Phone   |
| Primary Recreation Trail                    | Public Toilet  |
| Secondary Pedestrian Routes                 | Selective Vegetation Clearing                            |
| Abandoned automobile to be removed          | Tailings Mitigation                                      |
| Parking (Informal)                          | Re-established Boardwalks                                |
|   | National Creek Channelization/Stabilization              |

# ALTERNATIVE 4 Kennecott Mill Site MANAGED HISTORIC SITE

Wrangell-St. Elias National Park and Preserve Alaska  
United States Department of the Interior • National Park Service  
DSC / March 2000 / 190 / 20,024A

0 250 500  
Approximate Scale Feet



## Archeological Resources

Features determined noncontributing to the historic district would be removed if they presented a safety hazard to visitors or residents. All other archeological resources, including historic dumps, would remain.

## Museum Collections and Archives

The National Park Service would amend an existing scope of collections statement regarding the collection of artifacts and would follow regulations and NPS *Director's Order #28: Cultural Resource Management* to ensure the preservation and protection of artifacts.

Historically significant, site-related artifacts would be retained in their present locations unless they were at risk or contributed to interpretation. Artifacts determined to be noncontributing and incompatible to the historic district would be removed.

Historic documents, manuscripts, archival material, and associated papers within the scope of collections would be collected from NPS properties and placed in appropriate curatorial storage. Objects not requiring special environmental considerations will be curated in a NPS repository on site. NPS will provide technical assistance to the McCarthy Museum.

## Structures

*Buildings.* The following actions regarding buildings would be the same as in alternative 1:

- Develop a structural stabilization program for NPS-Kennecott properties according to a three-tiered system.
- Continue frequent assessments of stabilization priorities and needs.
- Work with local residents in ongoing stabilization and contracting efforts.
- Try to stabilize the mill structure, powerhouse, and machine shop for visitor use.
- Continue to limit commercial activity in structures to educational activities.
- Structures available for adaptive reuse would be the machine shop and powerhouse, company store, school, west bunkhouse, and meat locker. Local nonprofit groups are exploring the possibility of participating in the operations of the site. Accordingly, the NPS may be able to turn over those responsibilities to one or a combination of these groups. Under such a scenario, the cooperator would be required to rehabilitate the company store to provide a safe structure for NPS operations, curatorial storage, and limited visitor activities in conjunction with cooperator operations and services. Any adaptive reuse of NPS structures by entities other than the National Park Service would be subject to an agreement with NPS. Such use would be limited to educational activities.

*Tram Towers.* The following actions would be the same as in alternative 1:

- As funds become available or when hazardous conditions exist, lower mine cables from tram towers.
- Evaluate tram towers and cables on a yearly basis.

- Stabilize selected tram towers above timberline to maintain a sense of the historic scene.

*Bridges.* The following actions regarding bridges would be the same as in alternative 1:

- Establish a low-water crossing in front of assay the office.
- Stabilize and rehabilitate the historic railroad trestle for use by pedestrians, people in wheelchairs, and on bicycles and ATVs.
- Reestablish two pedestrian bridges east and west of the railroad trestle in historic locations.
- Work to reestablish railroad tracks across the trestle as an interpretive component of the core area.

*Historic Boardwalks.* To provide access to historic structures, boardwalks would be rehabilitated or reconstructed based on historical documentation in areas around the company store, school, meat locker, bunkhouse(s), leaching plant, machine shop, and powerhouse. In addition, boardwalks throughout the historic administration area would also be rehabilitated or reconstructed.

## Natural Resources

The following natural resource actions would be the same as in alternative 1:

- Initiate a program to monitor water quantity and quality.
- Assess and monitor sensitive plant species along Bonanza Ridge.
- Monitor the mill site for invasive nonnative plants.
- Develop a bear management plan.
- Selectively thin vegetation around historic structures to reestablish selected views and overall landscape character.
- Allow vegetation succession to continue unless modification is needed for health or safety reasons.
- Channel National Creek through the historic administrative area and west of the railroad trestle.

## Interpretation

The following interpretive actions would be the same as in alternative 1:

- Contract with nongovernmental entities to conduct expanded guided tours of different lengths and a wider variety of subjects.
- Expand programs, enabling visitors to learn about mines, mill town, natural resources, and the historic relationship to McCarthy.
- Use varied media and techniques.
- Provide yearly training for tour operators.
- Have NPS personnel conduct evening and special interpretive programs in various locations.
- Offer seasonal interpretive tours through public areas.



- Work with commercial or nonprofit organizations to establish consistent program content.
- Encourage establishment of a bookstore offering educational and informational materials in the company store.
- Establish interpretive wayside displays in the former Birch house and former administrative buildings.
- Assess the potential safety of mine tours and evaluate the possibility of offering one or more tours.
- Apply universal design standards.
- Interpretive exhibits would be designed and installed under contract in areas open to the public in the powerhouse, machine shop, and concentration mill.
- Where significant historic structures have been removed, NPS would reestablish building outlines. This would include efforts at the Birch house site, manager's house site, staff house, southern part of the leaching plant, and the sawmill and carpenter's shop. Interpretive wayside exhibits would be placed at all those locations.

## **Administration and Operations**

### **Park Management**

The following actions would be the same as in alternative 1:

- Seek a short-term lease in a private building for administrative offices.
- Continue preferential hiring of local residents for concessions and rehabilitation.
- Evaluate opportunities to acquire additional properties from willing sellers.
- Employees and/or contractors would be responsible for all other housing for NPS and contractors' employees; housing would probably be available locally at market rates.

The National Park Service would enter agreements for others to conduct building tours and carry out adaptive reuse and seasonal curation and to rehabilitate cultural landscape resources. Such rehabilitation could include roads, stabilizing tailings or ruins, clearing vegetation and maintaining the cleared area on a cyclic basis, reestablishing historic fences, or reestablishing missing features.

After contractors finished rehabilitating the historic company store to bring the structure into regulatory compliance for use as an operations facility, all park-related management operations eventually would be relocated into that building, as would storage for interpretation, maintenance, and lead paint removal.

The cooperator would be required to provide short-term, temporary living space in the historic west bunkhouse for two seasonal or part-time NPS employees as the rehabilitation of that structure was completed.

### **NPS Utilities and Infrastructure**

The following actions would be the same as in alternative 1:

- Place administrative and maintenance storage and short-term power supply in the lower level of the company store.
- Store hazardous materials, vehicles, fuel, garbage, and large materials at remote locations, including McCarthy airfield.
- Contract for pumping of vault toilets along the main road every fall; sewage hauled to Glennallen.
- If the contractor were unable to handle sewage volume in the time available, pump and haul it to the McCarthy footbridge for hauling by a contractor to Glennallen.
- Place bearproof trash and recycling containers along the main road.
- Haul trash across the McCarthy pedestrian bridge as needed; take it to a park-owned transfer site with an incinerator, recycling bins, and dumpsters; contract for hauling solid waste from the transfer site to an approved landfill.
- Stockpile waste lumber coated with lead paint and haul it annually to an incineration site.
- When feasible, use generators and solar photovoltaic equipment for power for NPS structures.
- A bulk-fuel storage facility with aboveground bulk storage tanks would be located on NPS-leased property at the McCarthy airstrip.
- Long-term power supply strategies would be pursued in conjunction with the community. Photovoltaic or hydroelectric generation or a centralized community generator would be considered.
- An onsite septic system would be constructed on NPS property or, if feasible, the Park Service would tie into a community sewer system to provide service to a comfort station facility in the company store and other adaptively reused buildings south of National Creek.
- Either a well would be drilled or surface water from National Creek would be used to make available potable water for the comfort station in the company store and other adaptively reused buildings south of National Creek. If water from the creek were to be used, a collection and treatment system would be constructed on National Creek. Such a system would be installed to ADEC standards and would preclude conflict with adjoining landowners.

## **Safety and Security**

The following actions would be the same as in alternative 1:

- Remove hazardous materials and debris from NPS properties.
- Continue to limit or control building access; place signs in appropriate locations.
- Improve visitor access routes by removing hazards; place signs to identify safe routes.
- Repair broken locks and doors as appropriate.
- Replace windows where needed; prevent unauthorized access with shutters, wire mesh, or other devices.
- Assess risks of fires.
- Employ a year-round caretaker for site security.
- Identify fire escape routes for all NPS buildings.
- Provide battery lights for emergencies.



- Reduce hazardous fuels around NPS properties.
- Work with the community to reduce fire hazards on private property.
- When the water supply is developed, install sprinkler systems in NPS buildings.
- Work with the community to develop emergency medical services.

In addition, the National Park Service would consult with the state to contract for a fire protection program. The contractor would place fire extinguishers in all NPS-owned properties. The park and the fire protection contractor would work with the community to improve community firefighting capabilities, including participating in a volunteer fire department for the townsite and being able to temporarily dam National Creek and pump water for fire suppression. A portable pump and hose would be on hand to draw water from National Creek for firefighting. In the long term, as a water supply was developed, sprinkler systems would be installed in the visitor center and other occupied NPS buildings south of National Creek.

## Mitigation

As part of a comprehensive resource management program, the National Park Service would initiate programs for monitoring natural resources. This would include a program to monitor water quality and quantity on National Creek, and an assessment of sensitive plant species documented on Bonanza Ridge in 1967, and a monitoring plan for all plant populations, as well as developing a bear management plan. In addition, the mill site would be monitored for the establishment of invasive nonnative species.

The National Park Service would carry out the following mitigative actions for hazardous materials:

*Fuel Releases.* Identify where fuel spills and releases were observed in earlier assessments and take appropriate action to mitigate the fuel release.

*Transformers.* Test transformers at the Bonanza Mine for PCBs and dispose of them appropriately.

*Lubricant Oils and Greases.* Locate containers of lubricant oils and grease and recycle or dispose of them.

*Lead-Based Paint.* Remove or encapsulate lead-based paint.

**Table 2: Summary of Alternatives**

Alternative 1 Preferred Alternative	Alternative 2 No Action	Alternative 3 NPS-Stabilized Historic Site	Alternative 4 Managed Historic Site
<b>Management Concept</b>  Enhance visitor understanding of Kennecott by preserving and interpreting the remaining structures and landscape features, patterns, and relationships that define the historic character of the national historic landmark. Allow development to the degree that proposed changes would be compatible with the historic character of the site.	Maintain the structure and landscape features as they are now, with no additional treatment. Stabilization would be undertaken only when there is a threat of structural failure, loss of significant resources, or safety risk. Existing services would be retained.	The primary management goals would be to ensure that significant historic structures and landscape features were stabilized. Visitors would be provided increased services and interpretation that allows opportunity for increased understanding of the physical development and historic significance of the site. Access to the interior of stabilized structures is not provided in this alternative as it is in alternative 1.	The primary management goal would be to enhance visitor understanding of the historic district by restoring as much as possible the physical elements and visual character of Kennecott. Increased numbers of structures would be available for adaptive reuse, making them unavailable for interpretation. Nonprofit organizations would be increasingly involved in site operation as compared to the other alternatives.
<b>Cultural Resources</b>  All legal and regulatory requirements would be met	Same as alternative 1	Same as alternative 1	Same as alternative 1
<b>Cultural Landscape</b>  <i>Land Use.</i> Management conforms to the four historic land use areas, including industrial core, administrative complex, residential areas, and service-related structures.  <i>Design Standards.</i> Park would work with community to implement design standards and guidelines for structures and landscape features.  <i>Circulation and Access:</i> Vehicular access would continue on current routes; abandoned vehicle removed from NPS properties, pedestrian paths, including foot trails, would be identified and reestablished.	<i>Cultural Landscape</i>  <i>Land Use.</i> Historic land use patterns would not be identified.  <i>Design Standards.</i> All future land use and development would be required to conform to the covenants.  <i>Circulation and Access:</i> Vehicular access would continue on current routes. Pedestrians paths would not be reestablished.	<i>Cultural Landscape</i>  <i>Land Use.</i> Same as alternative 1  <i>Design Standards.</i> Same as alternative 1.  <i>Circulation and Access.</i> Same as alternative 1, except trails along National Creek.	<i>Cultural Landscape</i>  <i>Land Use.</i> Same as alternative 1  <i>Design Standards.</i> Same as alternative 1  <i>Circulation and Access.</i> Same as alternative 1, except new trail established along Kennicott Glacier fosse that connects to carriage road.



Alternative 1 Preferred Alternative	Alternative 2 No Action	Alternative 3 NPS-Stabilized Historic Site	Alternative 4 Managed Historic Site
<i>Views and Vistas.</i> Selective thinning of vegetation would be done to enhance historic viewsheds and protect the buildings from fire	<i>Views and Vistas.</i> Successional vegetation obscuring historic structures and landscape features would be not be removed.	<i>Views and Vistas.</i> Same as alternative 1.	<i>Views and Vistas.</i> More extensive thinning of vegetation to replicate entire historic scene.
<b>Archeological Resources</b> All archeological resources, except features determined unsafe for visitor or residents, would remain.	Same as alternative 1.	Same as alternative 1	Features determined noncontributing to the historic district would be removed for safety reasons. All other resources would remain.
<b>Museum Collections and Archives</b> DO28 would be followed to ensure preservation and protection of artifacts  The Park Service would amend an existing scope of collections statement regarding collection of artifacts and follow regulations and NPS DO28.  Historically significant, site-related artifacts would be retained unless they were at risk or contributed to interpretation.. Items within the scope of collections would be placed in appropriate curatorial storage. Objects not requiring special environmental considerations would be curated in an NPS repository on site.	The Park Service would not develop any formal facilities to house collections or archives. Scope of collections statement used for collection purposes.	The Park Service would amend an existing scope of collections statement regarding collection of artifacts and follow regulations and NPS DO28.  Historically significant, site-related artifacts would be retained unless they were at risk or contributed to interpretation. Items within the scope of collections would be placed in appropriate curatorial storage. Objects not requiring special environmental considerations would be curated in an NPS repository on site.	Same as alternative 3 with the following added: noncontributing and incompatible artifacts would be removed
<b>Structures</b> A structural stabilization program would be developed. The park would continue to work with local residents and interests in stabilization and rehabilitation efforts. Expanded rehabilitation for the company store would be undertaken. The park would work with local interests and	Legal and regulatory requirements would be followed. NPS buildings would not be adaptively reused, they would be managed as abandoned buildings. Prioritization would be based on extreme situations and stabilization would respond to extreme needs and visitor safety. As in	Same as Alternative 1.	Same as alternative 1. Additional structures available for adaptive reuse would include the machine shop, powerhouse, company store, school, west bunkhouse, and meat locker.

Alternative 1 Preferred Alternative	Alternative 2 No Action	Alternative 3 NPS-Stabilized Historic Site	Alternative 4 Managed Historic Site
<p>residents to rehabilitate the historic community building.</p> <p>Tram towers, bridges, and historic boardwalks would be evaluated to determine construction/rehabilitation/stabilization needs.</p>	<p>alternative 1, the park would work with local resident and interests in building efforts.</p> <p>Tram towers could be left undisturbed, the historic trestle across National Creek would be stabilized and rehabilitated (no other bridge improvements would be undertaken), and no historic boardwalks would be rehabilitated or stabilized.</p>		<p>Treatment of tram towers and bridges would be same as alternative 1. Boardwalks would be rehabilitated or reconstructed for access to historic structures. They would also be rehabilitated or reconstructed throughout the historic administration area.</p>
<p><b>Natural Resources</b></p> <p>Programs for monitoring natural resources would be initiated. Selective thinning and some removal of vegetation would occur, and cultural and natural resources would be protected from seasonal flooding. Subsistence activities would continue unless it interfered with management of property.</p>	<p>Vegetation removal would not occur, nor would stream channel stabilization.</p>	<p>Same as alternative 1</p>	<p>Same as alternative 1</p>
<p><b>Interpretation</b></p> <p>Interpretive programs would be expanded. NPS evening and special programs would continue. Seasonal interpretive tours would be offered. All tours and programs would be accomplished cooperatively with commercial and nonprofit groups.</p>	<p>Informal interpretation would continue during the summer. Funding for limited rehabilitation of the company store would continue. As in alternative 1, the park would work with commercial and non-profit groups to establish accurate and consistent interpretive information and program content.</p>	<p>Same as alternative 1</p>	<p>Same as alternative 1, but conducted by contractor or cooperator.</p>
<p><b>Administration and Operations</b></p>			
<p><i>Park Management.</i> A short-term lease for onsite administrative office space would be pursued. All park-related management</p>	<p>Same as alternative 1; the Park Service would also continue agreements for local guided tours of several mill town</p>	<p>Same as alternative 1.</p>	<p>Same as alternative 1.</p>

Alternative 1 Preferred Alternative	Alternative 2 No Action	Alternative 3 NPS-Stabilized Historic Site	Alternative 4 Managed Historic Site
operations would eventually be in the company store. Possible acquisition of additional properties and or easements would continue to be evaluated.	structures. Housing for NPS employees and contractors would be employee and/or contractor's responsibility.		
<p><i>NPS Utilities and Infrastructure</i></p> <p>Administrative and maintenance storage would be accommodated in lower level of company store; vault toilets and bearproof trash containers would be placed along the main road for visitor use, no water would be supplied until company store building was rehabilitated.</p>	Same as alternative 1.	Same as alternative 1.	Same as alternative 1.
<p><i>Safety and Security</i></p> <p>Unsafe hazardous materials and debris would be removed. A program to limit and control access to building would be initiated. A fire prevention program would be implemented. The park would continue to work with the community to develop a strategy for community-wide emergency medical services.</p>	Same as alternative 1	Same as alternative 1.	Same as alternative 1.



Table 3: Summary of Impacts

Topic	Alternative 1: Preferred Alternative	Alternative 2: No Action	Alternative 3: NPS-Stabilized Historic Site	Alternative 4: Site Restoration and Enhancement
<b>Subsistence</b>	Subsistence users would not be significantly affected.	Same as alternative 1.	Same as alternative 1.	Same as alternative 1
<b>Visitation and Recreation</b>	Visitation would be expected to increase. Visitors would have a better understanding of history and significance of the site. More facilities and improved access would broaden the range of activities.	Visitation would be expected to increase. The lack of appropriate visitor education, information, and interpretation would diminish visitors' knowledge and opportunities	Same as alternative 1	Same as alternative 1
<b>Cultural Resources</b>				
<i>Cultural Landscape</i>	Stringent development standards and the establishment of scenic easements and/or development rights would perpetuate the historical scale, character, and integrity of the mill town. The cultural landscape would appear similar to that of the historic period.. Historic land uses would be restored and replacing the railroad track between the store and concentration mill would re-create a historic circulation feature and enhance interpretation. Overall the cultural landscape would be enhanced, only items proposed that would not be in keeping with the historic scene would be the solar photovoltaic power generator and vehicular bypass	The historic cultural landscape would be interrupted by continued vegetation growth and historic land use patterns would be obscured.	Same as alternative 1.	Same as alternative 1.
<i>Archeological Resources</i>	Archeological resources that one stabilized and protected would	Archeological resources, particularly those constructed of	Same as alternative 1.	Same as alternative 1.

Topic	Alternative 1: Preferred Alternative	Alternative 2: No Action	Alternative 3: NPS-Stabilized Historic Site	Alternative 4: Site Restoration and Enhancement
	not deteriorate further .	wood, would continue to deteriorate and eventually disappear.		
<i>Museum Collections and Archives</i>	For the most part, condition of artifacts would be stabilized or improved as they were treated. Allowing access to mine sites could increase potential loss of artifacts.	Leaving artifacts on the ground would result in their deterioration and disappearance.	Same as alternative 1.	Same as alternative 1. In addition, increased collection of artifacts for exhibit or interpretive uses would ensure preservation of a greater number of artifacts.
<b>Structures</b>	Rehabilitation of buildings would halt deterioration. Tram cable removal for safety reasons would reduce load on some tram towers; some removal would sever visual and physical link between mill and mine sites.	The condition of historic buildings would eventually diminish. Buildings along National Creek would eventually be destroyed by erosion and flooding.	Same as alternative 1.	Same as alternative 1
<b>Natural Resources</b>				
<i>Air Quality</i>	No significant effect.	Same as alternative 1	Same as alternative 1	Same as alternative 1
<i>Surface Water</i>	Short-term, insignificant effect on water resources from vegetation removal and increased visitation, however, there would be no significant adverse impacts to quality or quantity.	No new effects on the quantity or quality of the water	Same as alternative 1	Same as alternative 1
<i>Wetlands</i>	Streams would be not be returned to naturally functioning wetlands to protect cultural resources. There would be no new impacts to wetlands that would not be minimized or mitigated	Same as alternative 1, except streambanks along National Creek in the mill site would potentially erode along with other streambanks at the site, resulting in a loss of wetland function and area.	Same as alternative 1	Same as alternative 1

Topic	Alternative 1: Preferred Alternative	Alternative 2: No Action	Alternative 3: NPS-Stabilized Historic Site	Alternative 4: Site Restoration and Enhancement
<b>Vegetation</b>	Clearing activities would result in vegetation loss. Establishment of non-native plants could increase. Potential disturbance to rare plant habitat would be minimized and mitigated.	Vegetation would not be cleared.	Same as alternative 1	With more activities, than in alternatives 1 and 3, vegetation loss would be slightly higher. Other impacts would remain the same.
<b>Wildlife</b>	Activities and increased recreational use might cause temporary displacement of subsistence wildlife; however there would not be any significant impact on wildlife populations. <i>Nesting habitat for some avian species would be eliminated</i> and other species would be temporarily displaced because of work on vegetation clearing and building stabilization. These impacts would not be significant	The composition and density of local wildlife populations in or near the site would continue to vary naturally.	Same as alternative 1	With more activities than in alternatives 1 and 3, habitat loss may be slightly higher, but would still would not be significant.
<b>Socioeconomic Environment</b>	Increased opportunities would be provided to commercial activities. More seasonal workers would mean more revenue to businesses serving them. Residents would be affected by increased visitation; however, the Park Service would work to minimize and mitigate adverse impacts.	More business opportunities would be possible, but NPS services would be limited. Impacts from increased visitation would not be managed by the NPS as they would be under the other alternatives.	Same as alternative 1	Opportunities might be slightly higher than in alternatives 1 and 3 due to more activities.
<b>Administration and Operations</b>				
<i>Park Management</i>	Seasonal maintenance and interpretation personnel would increase along with day-to-day	Park staff would be faced with an increased workload and the park budget would have to be	Same as alternative 1.	More infrastructure and more building rehabilitation would require more people. An



Topic	Alternative 1: Preferred Alternative	Alternative 2: No Action	Alternative 3: NPS-Stabilized Historic Site	Alternative 4: Site Restoration and Enhancement
	maintenance	reallocated. Park superintendent would oversee more sites.		increase to the park budget would be needed <i>as would fund raising</i>
<i>Safety Security</i>	Building and visitor safety and fire protection would be improved. Mitigative actions such as removing hazardous materials, installing fire extinguishers, and restricting camping in buildings would be implemented.	As buildings gradually deteriorated so would visitor safety. Visitor safety would be a continuing issue, however, safety would be improved by the removal and proper disposal of hazardous materials.	Same as alternative 1	Mitigative actions used under alternative 1 would be the same for this alternative.



**AFFECTED  
ENVIRONMENT**



## **Land Use and Visitation**

### **Land Use**

#### **Subsistence**

The national historic landmark was not public land before the National Park Service acquired the property, and it was not open to subsistence uses. Hunting, berry picking, and gathering firewood would have been permitted with permission of the landowner. When the Park Service acquired the property, this converted it to public land, where subsistence activities could be allowed.

#### **Current Land Use**

Today, many of the historic cottages and staff quarters are owned and occupied by private residents. The Kennicott Glacier Lodge continues to operate in a reconstructed building near the location of the historic apartment house. Along the west side of the entrance road are private residences and a few businesses supporting tourism and recreation. The majority of the site is available for interpretation and limited visitor services.

### **Visitation and Recreation**

The McCarthy-Kennecott area is the most visited area of Wrangell-St. Elias National Park and Preserve — a visitor study completed in 1995 showed that more than 50% of the park's visitors went to McCarthy-Kennecott. Visiting McCarthy-Kennecott was the third most often mentioned reason for coming to the park. Walking around Kennecott Mine Site was the third most popular visitor activity. The backcountry surrounding McCarthy-Kennecott area is the most popular with the park's backcountry users. Providing visitor services in this area has long been a park priority because of the area's popularity. Most visitors come to Kennecott between June and the first part of September.

The current recreational opportunities for park visitors are primarily self-initiated wilderness-oriented activities along existing roads and in the backcountry. Visitors can reach the area independently for sightseeing, camping, hiking, hunting or fishing, or they can come with of a guide who directs the activity.

Specific opportunities offered for Kennecott visitors are guided or self-guided (with a brochure) walking tours of the mill town, guided tours of the mill building, and the chance to explore independently. Outside the mill town, visitors can hike on old mining roads, or along the Root Glacier, take guided hikes out onto the Root Glacier, and flightsee over the national historic landmark and the Root Glacier to the Stairway Icefall. The guided activities are available through private businesses.

Visitors can interact with NPS rangers either at the kiosk near the end of the McCarthy Road or when the rangers rove through McCarthy and Kennecott. There is a ranger in the area seven days a week in summer.



## Cultural Resources

### Cultural Landscape

As early construction began, virtually all vegetation was cleared from every building site to provide a clear and workable building envelope and storage space for the staging of supplies and materials. Clearing the trees was also considered necessary to control or reduce the risk of fire. After the first wave of construction was over by 1908, about 100 acres of vegetation had been removed, creating a large clearing leading up the valley. Vegetation was also regularly cleared from the tramway corridors and associated terminals. On some private holdings, vegetation has been kept down or replaced with non-historic cover (turf grass); but on the federal land, the characteristics that contribute to the cultural landscape are now either overgrown with vegetation or otherwise significantly altered by vegetation that postdates the historic period.

Typical of mining ventures, the presence and use of natural resources and large-scale landscape systems greatly influenced the development and operation of the mines and mill at Kennecott. From the early exploration and subsequent discovery of ore concentrations on Bonanza Ridge to the siting of processing facilities, infrastructure, and associated services at the edge of the glacial moraine, the character of the natural landscape shaped the extent and functional relationship among several components of the mill town.

The natural system that had perhaps the greatest influence on development of Kennecott was the deposit of copper ore on Bonanza Ridge. A fifth mine, Motherlode, was also staked at this time by a separate company. Kennecott eventually acquired Motherlode and operated it as a separate company and mine supported through Bonanza mine. Four mines — Bonanza, Jumbo, Erie, and Glacier — were staked on the ridge above the moraine between 1900 and 1901. Over the following years these yielded one of the highest grades of surface copper ore ever found. The concentration of ore and associated mining activity also influenced the construction of housing for employees to work the mines and operate the mill. The ore deposit and mining activity influenced the development of the railway from the site to Cordova, the tramways and other circulation systems to move the ore, the construction of water systems to run the machinery, the establishment of a variety of support structures, and utilities to run the town.

The development of the cultural landscape was also influenced by a reliable water source for both domestic use and the mill operation. In 1910 a log crib dam was constructed at the top of a narrow gorge on National Creek next to the camp. The dam supplied water for a small hydroelectric plant at the north end of the site that provided electricity for the developing town and mines. Water for drinking and for mill operation was stored in a reservoir and carried to the lower town in wood and iron pipes, some of which remain today.

### Land Use

The historical, primary land use patterns in Kennecott were industry (the mining and processing of ore); administration (offices, a hospital, an assay office, and a garden); cottages for workers and associated outbuildings, bunkhouses, an apartment building, a washhouse; support services (water and utility systems, store, warehouses, a dairy barn, and shops); recreation (tennis court, recreation hall, and handball court); storage for goods, supplies, and waste; and civic or community-based activities such as a school, churches, and a cemetery. The landscape developed over many years and was

heavily influenced by the natural environment. Structural complexes and support buildings for the mines on a ridge above the town were separate from the processing complex. Individual mine camps were connected to the lower mill town by aerial tramways.

Kennecott was spatially organized into four: historic land use areas, the industrial core, the administrative complex, housing areas, and service-related structures. These areas logically related to land use patterns and circulation systems. Although individual buildings or features may be missing, three of the four areas defining the spatial organization of Kennecott between 1908 and 1938 retain a relatively high degree of integrity. They include the industrial complex and support structures, the housing areas, and the railroad corridor. Because of repeated inundation and seasonal flooding of National Creek and encroaching vegetation, the administrative core of the mill town along National Creek has lost integrity of spatial organization. Further, the reestablishment of vegetation throughout the town has made it difficult to discern and “read” the functional relationships among all the key areas of Kennecott.

### **Circulation and Access**

Existing and remnant historic circulation systems and features remain at Kennecott in variable condition. The railway corridor remains, although it has long been abandoned as an active track. There is a modern stream crossing for vehicles just upstream from the historic railroad trestle. The trestle and some of the terracing supporting the rail grade have been rebuilt or stabilized. The railroad right-of-way serves as the link from the end of the road from McCarthy and remains the primary access to the site today. The old wagon-road alignment entering the town from the south past the cemetery is discernible and currently used by hikers and bicyclists from McCarthy. North of the site, Silk Stocking Loop and the route down the hill also remain. The surviving tramline corridors are represented by cables supported by towers interspersed with collapsed towers. Of the many boardwalks that were present historically, only one segment remains intact in front of the cottages on the east side of the road past the mill.

### **Views and Vistas**

Throughout the historic period, the landscape of Kennecott up the valley past the northeast end of the concentration mill was denuded of virtually all trees and understory vegetation. Thus the views of the landscape were much more open than current views, and most of the structural complex was visible from any location. The dominant views were of the glacial moraine to the west and the natural landforms defining the town.

### **Archeological Resources**

Although buildings are the prominent features in the Kennecott area and specifically in the mill town, archeological features also help to make up the character of Kennecott. For the purposes of this document, archeological resources include collapsed buildings, pipelines, large industrial artifacts such as pieces of mining equipment, remnant cable, machinery, and landscape features such as dumps, and equipment storage piles. Many of these are significant for their association with historic activities at Kennecott (1900–1938). Other features are from later periods, and although they support the industrial character of the site, these later features are not managed as cultural resources.

Approximately 70% of the remaining archeological resources in the mill town are in stable condition. “Stable” refers to artifacts as having reached equilibrium with the processes of deterioration and erosion. Resources that are considered stable are large metal objects and dumps or other features

where most of the deterioration has already occurred. The remaining features that are not in stable condition are most wooden features such as collapsed buildings and wooden artifacts. Floods have affected features located along National Creek in the past. Collectors have removed many portable artifacts and components of features such as dumps or artifact storage piles through the years.

Archeological resources at the mine are in the worst condition. Because of poor accessibility, many portable objects, features, or components of buildings are still present. Although many metal objects may be considered stable, they are affected by catastrophic events such as avalanches, rockslides, and structural collapse.

### **Museum Collections and Archives**

Artifacts at Kennecott can be classified into two main categories: objects and archival materials. Objects are such items as tools, domestic items, remnants of larger features (such as paper documents), wooden pipes, equipment, and machinery parts. These items characteristically are scattered throughout the landscape but may also be found in buildings, dumps, and equipment storage piles. A large percentage of artifacts are metal; although highly portable, they are considered stable. Some objects, particularly those with wooden components, are subject to forces of erosion and will continue to deteriorate rapidly.

Archival materials consist of forms, receipts, and other paper documents. Although they are usually found in buildings, some can be found outside. Archival materials have been collected through the years both by collectors and through the joint efforts of the University of Alaska, the National Park Service, and the McCarthy Museum. The uncollected archival materials that remain in the mill town are in poor condition because of exposure and a lack of preservation. Objects and archival materials at the mine sites have not "walked away" to the extent that has happened in the mill town, but those at the mine sites are exposed to worse environmental conditions; consequently, they are at greater risk.

### **Structures**

Structures include boardwalks, dams, bridges, tram towers, and landscape features such as tailings piles. Most of these structures are constructed of wood and are continually deteriorating as a result of weathering and erosion.

National Creek, which divides the Kennecott mill site, has experienced frequent flooding during the past two decades. The existing flood damage to the National Creek bunkhouse, the railroad trestle, and the assay building is from a failed dam at the historic National Creek Reservoir and later accretion of natural trash materials that accumulated, dammed, and eventually gave way to cause a second flood condition on National Creek. Coupled with the tailing deposit to the south of the mill building, the buildings along National Creek are experiencing unusual and persistent problems from flooding and erosion.

### **Buildings**

There are 45 major residential, commercial, and industrial structures as well as 25 outbuildings at the mill site in the Kennecott National Historic Landmark. The area also contains, at some distance from the mill, four upper mountain mine sites with associated structures. Of the 70 extant buildings, the following 14 major buildings at the mill site have been acquired by the National Park Service:



recreation hall	store and warehouse	depot
schoolhouse	assay building	general manager's office
National Creek bunkhouse	leaching plant	west bunkhouse
mill building	machine shop	
refrigeration building	powerhouse	

The acquired buildings north and south of National Creek define the railroad corridor of the Kennecott mill site. The buildings on the south side of the creek were associated with recreation, education and commerce; those to the north were associated with industry. All of them are built of wood, ranging in size from the one-story school and depot buildings to the 14-story mill building.

The buildings that the Kennecott Corporation left in 1938 have survived more than 60 years of abandonment and neglect, a testament to the quality of their original construction. In the 1950s, an effort to "highgrade" the remaining copper ore in the mill building resulted in significant changes to the site and in an attempt to demolish the building. In the early 1990s, the Friends of Kennicott and the National Park Service attempted an emergency stabilization to reverse the damage from failing roofs and foundations and to forestall further deterioration. The National Park Service also worked in the 1990s to mitigate asbestos contamination in several of the buildings.

The 14 buildings in the central mill area are in poor to fair condition. Years of abandonment, rotting timber foundations, inappropriate backfill around building walls, flooding, one attempted arson, material salvaging, and failed roofing have extracted a toll on the condition of the buildings.

### **Tram Towers, Bridges, and Historic Boardwalks**

Tram towers, bridges, historic boardwalks, and other associated structures remain at the site and are part of the historic landscape. Conditions of the structures range from fair to poor, and preservation efforts will be made to retain them. The structures were identified in the cultural landscape inventory.

## Natural Resources

### Air Quality

Wrangell-St. Elias National Park and Preserve is a designated class II airshed under the Clean Air Act, which provides a legal framework for protecting the park's air quality-related values from pollution sources emanating from within and outside park boundaries. To date the park's air quality has attained the national ambient air quality standards.

### Geology, Topography, and Soils

Bedrock in the national historic landmark includes Chititu Formation (mudstone), Tertiary hypabyssal dacite, Shultze Formation (siliceous shale), Nikolai greenstone (basalt), Chitistone limestone, and Nizina limestone. The Kennecott mines are located at the Nikolai greenstone-Chitistone limestone contact in high alpine basins and cirques. The copper deposits, which are within the lower 300 feet of the Chitistone limestone, consist of copper sulfides and carbonate pods. The extensive outcroppings of carbonate generate well-buffered waters, removing threats posed by acid mine waste.

The Kennicott Basin is a glacially modified valley. Surficial deposits in the basin include alluvium, talus, ground and lateral moraines, and rock glaciers. Kennecott Mill is situated immediately above the current ice margin on Quaternary glacial and fluvioglacial deposits. Most of these glacial deposits are poorly sorted and provide poor drainage.

### Water Resources

#### Surface Water

Streams in the Kennicott Basin, which emerge from the base of talus slopes, rock glaciers and high alpine meadows between 4,000 feet and 5,500 feet elevation, normally contain clear water. National, Bonanza, Jumbo, and Amazon Creeks are the largest creeks in the immediate Kennecott area. Rainfall and snowmelt account for most of the summer discharge, but small remnant ice patches and rock glaciers also contribute flow. During periods of extended or heavy rainfall, turbidity and suspended sediment increase, and during extended dry periods, surface flow is absent or greatly reduced.

The bedrock mountainous highlands in these watersheds have been extensively explored and mined for copper. The creeks have been disturbed by the withdrawal of water for milling and mining operations, by the construction and placement of mining and milling structures, and by the discharge of mine tailings into the creek bed. The dissolved oxygen, alkalinity, hardness, conductivity, and pH in these streams are within an acceptable range for the survival of aquatic life. Suspended solids are low at average flow. Total recoverable metals measured in National and Bonanza Creeks in 1986 were below instrument detectable limits, except for zinc in National Creek, which exceeded the EPA chronic toxicity standard. Lower National Creek was tested for polychlorinated biphenyls (PCBs) in 1986. No contamination was found at the instrument detection limit for PCBs. Algae and aquatic invertebrates can be found in the lower reaches of these streams (NPS, 1991). Geochemical analysis results of water samples collected in 1994 support the 1986 conclusion that the physical parameters and metal levels of the measured stream systems are within an acceptable range for the survival of aquatic life (Eppinger et al, 1999(a & b)).

There are existing water rights other than those federal reserve rights on National, Bonanza, and Jumbo Creeks.

## Floodplains and Wetlands

**Floodplains.** Floodplains are associated with the streams within the boundaries of the national historic landmark. The floodplains were altered along their lower reaches with development of the Root Glacier trail and construction of the Kennecott Mill. Most of these historic activities have had minor effects on the floodplain; however, on the National Creek floodplain near the mill, the stream channel was confined, dammed, and diverted to support milling operations. These alterations caused hydrologic and hydraulic changes in the fluvial system and floodplain.

Effects upstream of the mill site were less significant. Water diversion facilities were constructed on both the Bonanza Creek and National Creek floodplains. Remnants of these facilities still exist, causing blockage and restricting flow during floods. Dams, buildings and mill tailings in the active floodplain are threatened by scour and sediment deposition. Stream gravel has been deposited in the lower levels of at least two buildings in the floodplain near the mill site above the road crossing.

**Wetlands.** In the national historic landmark, there are 10.37 miles of streams, and 1,250 linear feet on National Creek (in the old mill site) that could be classified as upper perennial or intermittent riverine wetlands (USFWS 1979). Past mining activities, road construction, and material stockpiling have adversely affected wetlands in the national historic landmark, particularly the mill site.

## Vegetation

Vegetation in the Kennecott area has been disturbed in the past by glaciation, clearing for mining, infrastructure development beginning in 1900 (particularly in the mill area), and natural and human-caused fires, some of which predated the mining era. In addition, there have been spruce bark beetle infestations, flooding, and logging for firewood and house logs (Loso 1996, 1998).

## Vegetation Communities

The subarctic upland, subalpine, and alpine plant communities in the Kennecott area are transitional between those found in the Pacific Coastal Mountain ecoregion and the Wrangell Mountain ecoregion (Gallant et al, 1995). Approximately 45% of the area is vegetated, the rest is barren (less than 10% plant cover), ice, or water (see table B-1 in appendix B). Low and tall shrub communities dominated by alder (*Alnus* sp.), willow (*Salix* sp.), and birch (*Betula* sp.) make up 46% of the vegetated area, with the remaining vegetated area containing sparse vegetation (27%), dwarf shrub communities (12%), forest (9%), and herbaceous communities (6%). The forest is dominated by the broadleaf species, aspen (*Populus tremuloides*), paper birch (*Betula papyrifera*), and balsam poplar (*Populus balsamifera*). White spruce (*Picea glauca*) forest comprises 2% of the vegetated area.

As table 3 shows, closed and open white spruce communities comprise 33% of the total acreage of the Kennecott mill site. Shrub communities comprise 41% of the acreage; the remaining cover is herbaceous (seral herbs and gardens).



**Table 4: Kennecott Mill Site Vegetation Types**

Vegetation Type	Acres	% of Total Acreage
<b>Trees</b>		
Closed white spruce forest	33	28
Open white spruce forest	6	5
<b>Total</b>	<b>39</b>	<b>33</b>
<b>Shrubs</b>		
Open, tall willow shrub	5	4
Open, tall alder-willow shrub	13	11
Open, tall birch-willow shrub	<1	<1
Closed, tall alder-willow shrub	31	26
<b>Total</b>	<b>50</b>	<b>41</b>
<b>Herbaceous vegetation</b>		
Gardens	<1	<1
Seral herbs	30	25
<b>Total</b>	<b>31</b>	<b>26</b>
<b>Total acreage</b>	<b>120</b>	
SOURCE: Classification and acreage estimates from M. G. Loso, "Kennecott Vegetation Documentation for the Kennecott Landscape Report" (1998)		

### Threatened and Endangered Plants and Species of Special Concern

The national historic landmark has not been surveyed for rare plants. However, in 1976 Olle Nordell and Alf Schmitt collected plants west of Bonanza Peak along Bonanza Ridge in the alpine plant community (Nordell and Schmitt 1978).

Two U.S. Fish and Wildlife Service (USFWS) species of concern that are endemic to Alaska are found in the park: Shacklett's catseye (*Cryptantha shackletteana*) and a dandelion (*Taraxacum carneocoloratum*). The global distribution of Shacklett's catseye is restricted to the upper Yukon River and one locality in the park on a southeast facing scree slope above the Nabesna River. It is unlikely to be found in the Kennecott area. The dandelion is known from 10 locations in the park. Two of these locations are in the Chitina drainage; and the others are in the Crystalline Hills and on Mount Chitina between Logan and Walsh Glaciers. This dandelion, which generally is found on alpine slopes and coarse, well-drained substrates, could occur on the slopes of Bonanza Ridge.

Rare plants are those that have an Alaska Natural Heritage Program (AKNHP) rank of three or less and are known from fewer than 100 occurrences in the state. Nordell and Schmitt found the following six rare plants on Bonanza Ridge in 1976. Table B-2 in appendix B contains more information on these rare plants.

- Aleutian cress (*Aphragmus escholtizianus*) is known to be in 31 locations throughout the park in solifluction soils in the mountains.
- Presl's sedge (*Carex preslii*) is known from only three locations in Alaska besides Bonanza Ridge. It typically occurs in dry grassy alpine meadows, but Nordell and Schmitt reported its growing along the road to Bonanza Ridge. We have requested the specimen from Lund University in Norway to verify the determination.

- Mountain fragile fern ( *Cystopteris montana*) is known from four locations in the park where it occurs in damp woods and moist, rocky slopes with a preference for calcareous soil.
- Creeping savin ( *Juniperus horizontalis*) has been collected from six locations in the park and is restricted to the Chitina Valley in Alaska. It occurs on bluffs, terraces, and sandy places.
- Mountain stitchwort ( *Minuartia biflora*) is known from 20 locations parkwide. It grows on exposed calcareous, grassy slopes and herb mats that have abundant snow cover in the winter.
- Pale poppy ( *Papaver albsroenum*) is known from 19 locations parkwide. These plants grow in the mountains on sandy, gravelly soil or on alpine scree slopes.

A total of 41 rare plant species that are known to occur in the Chitina Valley might also be found in the Kennecott area. Those plants are listed in table B-3 in appendix B.

### Non-Native Plant Species

Ornamental and garden plants were cultivated during the operation of the Kennecott mine. There may still be nonnative species in the Kennecott area; however, Loso (1998) did not report any invasive nonnatives at the mill site. A community garden still exists in that area.

## Wildlife

### Known Animal Species

Predominant large mammals inhabiting the area are the black bear and occasionally brown (grizzly) bear, moose, lynx, and red fox. Smaller mammals found in the area are the snowshoe hare, porcupine, red squirrel, ermine, northern red-backed vole, meadow vole, and, rarely, the little brown bat. Common birds are the great horned owl, northern goshawk, spruce grouse, northern raven, and black-billed magpie. A wide variety of passerine birds can be seen here, including gray jay, dark-eyed junco, yellow-rumped warbler, orange-crowned warbler, black-capped chickadee, American robin, Swainson's thrush, ruby-crowned kinglet, alder flycatcher, and common redpoll. No fish and no aquatic birds, such as waterfowl, and shorebirds are known to inhabit the area.

### Threatened or Endangered Animal Species

No state-listed or federally listed threatened or endangered animal species or species of special concern are known in the area.

## The Socioeconomic Environment

The Kennecott site is approximately 65 miles from the town of Chitina and 5 miles from the town of McCarthy. There are approximately 25 full-time and part-time residents in the national historic landmark and seven operating businesses: a lodge, bed-and-breakfast establishments, and tour guides for the mill building and the glacier. The town of McCarthy has a population of 100 in summer and about a dozen in winter. Tourist related businesses in the town include two air taxis, a bed-and-breakfast establishment, a lodge, restaurants, and a gift shop.

Wrangell-St. Elias National Park and Preserve is in the Copper River region, the northern part of the Valdez-Cordova census subarea. Designated as the Copper River subarea by the U.S. Census Bureau, it contains 24,663 square miles, comparable to the state of West Virginia. However, the area, which has neither political nor community boundaries, is sparsely settled, having approximately 3,134 residents. Fewer than 1,400 residents live in the four main communities of Glennallen, Copper Center, Gulkana, and Gakona.

Throughout the Copper River region, 30% of the of the workforce is employed in the public sector (public schools, the National Park Service, the Alaska Department of Transportation and Public Facilities or other state agencies, and local government). From 1991 to 1995 the private sector employment grew by an average of 6.4% per year. Unemployment was more than 22% in 1990, but self-employment is higher than the statewide average. The intensely seasonal nature of Alaska's tourism economy makes the unemployment numbers difficult to compare to many other areas.

Year-round job opportunities in the region are limited. Tourism-related employment climbs more than 25% from May to September. This regional factor, combined with a pay scale average nearly 20% below the statewide average and food costs that are more than 30% higher than in Anchorage, makes the role of subsistence activities (hunting and fishing) by Copper River residents a valuable traditional lifestyle and an important income supplement.

Annual visitation to the park increased in the past 10 years to 36,000. (Most of the visitors came during summer). Other tourist attractions in the region are activities carried out on private or other public lands and include sport fishing, hunting, dog mushing, snowmobiling, and cross-country skiing. The Copper River region also serves a substantial and growing number of tourists driving on roadways between more established tourism areas, with food, fuel, lodging, and other facilities (Windisch-Cole, 1997).



# **Administration and Operations**

## **Park Management**

The Kennecott National Historic Landmark is administered through the Wrangell-St. Elias National Park and Preserve Headquarters Office in Copper Center. Onsite interpretation and general information are offered by two seasonal NPS employees stationed at a kiosk at the end of the McCarthy Road. Security and visitor safety functions are the responsibility of the Chitina District Ranger and his staff, who are stationed in Gulkana. Seasonal NPS employees rotate to various areas throughout the park in summer to handle maintenance and emergency stabilization.

The park hired a Kennecott manager in January 1999; the manager will supervise the seasonal employees. The manager position will be located in Kennecott in summer and in Copper Center in winter. The Kennecott manager will report to the park and preserve's chief of maintenance. Concessions oversight would be administered at headquarters.

## **Safety and Security**

### **Buildings**

Most of the federally owned structures on the Kennecott site date back to the operating period of the mine and have not been maintained in the intervening 60 years, except for emergency stabilization work conducted in recent years. The wooden structures present hazards for visitors and employees, such as danger of tripping, broken glass, no handrails, poor lighting, and decayed and loose boards in the roofs, walls, and floors. Some buildings are several stories high, and unsound floorboards could be on any floor. Some are in such a state of decay and collapse that entering the building is unwise. Other buildings have retained most of the structural integrity and require minor stabilization and cleanup. The exterior of most of the buildings is packed earth littered with boards, glass, and metal that have exfoliated from the buildings through time. The wood in the structures has dried and has no inherent fire resistance; and there is no effective fire suppression capability.

Access to the structures is available through broken windows and doors. Attempts to board shut access is a temporary deterrent. Within a short period boards are removed and visitors are roaming through the empty buildings. Occasionally people camp overnight in buildings with intact roofs. There is some evidence of vandalism in some of the buildings, including graffiti on the walls, broken glass, and scorch marks from a fire inside one building.

### **Mines**

The four mines in the Kennecott area contain miles of tunnels. The portals and underground workings have not been maintained for more than 60 years, so entering the mines is extremely hazardous. Collapse and rock fall pose serious threats to visitor safety. The tunnels are unlighted, and there are no designated safe routes. Known abandoned explosives on park lands have been located and destroyed; however, there may be some explosives in more remote sections of the mines.

## Other Hazards

The National Park Service conducted a pre-acquisition environmental site assessment of the historic Kennecott area. The assessment team surveyed for the following hazards:

**Tailings.** Tailings samples were collected and analyzed in all of the studies conducted at Kennecott as part of hazardous substance characterization for the site. The samples were evaluated for Resource Conservation and Recovery Act (RCRA) toxicity characteristics by Kay and Miller (1990) and EMCON (1992). The evaluation concluded that the tailings demonstrated no RCRA toxicity characteristics and were not a RCRA hazardous waste. Due to the high buffering capacity of the limestone in the tailings, the heavy metals do not leach out of the tailings, even under acidic conditions.

**Fuel Products.** The fuel of concern at the site is a heavy fuel oil similar or identical to Bunker C type. Heavy fuel oil was used to fuel locomotives and steam-generating boilers. All abandoned aboveground fuel storage tanks have been emptied, and there is no sign or recorded history of abandoned underground fuel storage tanks. There are fuel-stained soils at the mill building and northwest of the powerhouse land and at each of the four mine sites. The Jumbo Mine has two open-top 500-gallon tanks containing Bunker C type fuel.

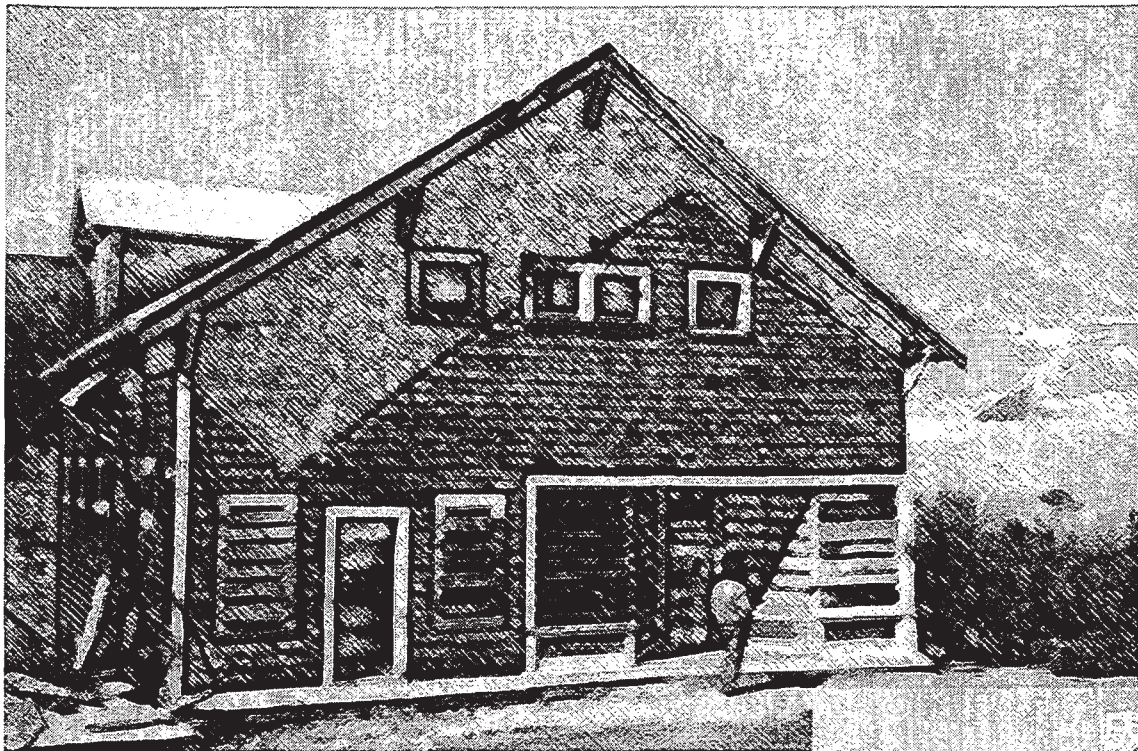
**Other Grease and Oil.** Oils in machinery and cans of oil and grease can be found throughout the buildings in the outer mines. Cans of oil and grease have been removed from the mill town and are not an issue at that site. In some of the machinery in the mill building there is some lubricating oil, which is acting as a rust inhibitor and should be left in place.

**Transformers.** Transformers were located at the outlying mine sites. Several transformers were on the second floor of a decaying two-story building at the Bonanza Mine. Polychlorinated biphenyls (PCBs) have not been detected in tests performed on the oil from the transformers.

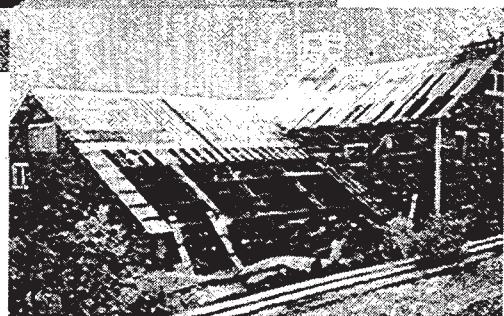
**Lead Paint.** The buildings were originally painted red or white with a lead-based paint. Paint flakes and dust are in the soil around the structures, and flaking and fading paint remains on the surface of most structures. The buildings the National Park Service acquired are red. Soil samples were analyzed using EPA method 1311. Analysis of those samples resulted in three out of four of the samples falling below regulatory levels of toxicity characteristics. The single sample that was above the regulatory level was collected next to the hospital, which is not part of the NPS acquisition. The hospital was painted white, and the white paint contains more lead than the red.

**Asbestos.** The mill site area was treated in 1994 to mitigate for the presence of asbestos. The Erie and Jumbo mine sites also contain asbestos, and no mitigation has been performed.

**Solid Waste Disposal.** Surveys and mitigation work were contracted before NPS acquisition of the sites. No active dumping is taking place on the acquired property. After the mitigation work, the Alaska Department of Environmental Compliance has expressed no concerns about the historic dumps on the site besides an interest in reducing human exposure to potential hazards through reduced access.



## ENVIRONMENTAL CONSEQUENCES





## **Effects of Alternative 1: The Preferred Alternative**

### **Subsistence**

This alternative is not expected to significantly impact subsistence users. The proposed development would occur primarily in areas previously disturbed and already experiencing human intrusions. Proposed activities and increasing recreational use may cause the temporary displacement of subsistence wildlife. However, it is unlikely that there would be any significant impact on wildlife populations.

### **Visitation and Recreation**

Because of the NPS acquisition of the Kennecott site, as well as other factors, visitation to the area would be expected to increase.

Increased interpretation and the addition of exhibits would help visitors to better understand the history and significance of Kennecott. Exhibiting the model of Kennecott, adding interpretive wayside displays at the sites of some ruined structures (such as the Birch house), and replacing some of the railroad track would help visitors to understand the historic mining operation and increase the range of interpretive activities. More facilities for visitor comfort would be available than at present. Improved access around the site and buildings would broaden the range of activities for visitors. The ambiance of the mill town would be less abandoned, with the area taking on a more rehabilitated, organized appearance.

The presence of NPS personnel would make it possible to monitor natural and cultural resources and minimize or mitigate damage that visitors might cause. Interpretation and visitor education might minimize bear-human encounters.

Generators, vehicles, and construction-related activities would increase noise levels in the mill town. Such intrusions would be mitigated to the maximum extent possible, but when rehabilitation was being carried out, some noise would be expected. Increased noise impacts would potentially result from increased flightseeing over the area. If necessary, the National Park Service would work with the air taxi operators to encourage mitigating noise impacts from overflights.

### **Cultural Resources**

#### **Cultural Landscape**

Stringent redevelopment standards and the establishment of scenic easements and/or development rights would perpetuate the historical scale, character, and integrity of the mill town. Clearing vegetation around NPS structures would make the cultural landscape appear similar to that of the historic period and would help visitors understand the mill town. Replacing the railroad track between the store and the concentration mill would recreate a historic circulation feature and enhance interpretation. Restricting nonresidential uses north of National Creek would approximate historic land uses.

If the equipment for solar photovoltaic power generation were visible, it would not fit into the mill town's historic character. Building a vehicular bypass across National Creek would not be in keeping with the historic landscape.

### **Museum Collections and Archives**

Removing noncontributing artifacts and extraneous material would give visitors a better understanding of the material culture associated with this era, but it would be expensive unless conducted as part of other mitigation activities. Allowing access to the mine sites would increase the potential for artifact losses.

### **Structures**

Rehabilitation efforts under this alternative would halt the deterioration of the buildings.

Removing tram cables for safety reasons would reduce the load on some tram towers and remove the stabilizing element in others. Removing tram cables and allowing towers to deteriorate and collapse would sever the visual and physical link between the mill and mine sites.

## **Natural Resources**

### **Air Quality**

Any incineration of wood painted with lead-based paint would take place in an incinerator approved by the U.S. EPA and the ADEC; therefore, no significant effects on air quality would result from lead paint abatement.

Exhaust from generators and vehicles would enter the air, but these emissions would not significantly affect air quality.

### **Surface Water**

There would be a short term insignificant effect on water resources from vegetation removal and increased visitation. Exposed soil caused by vegetation removal and trail construction would be unlikely to increase turbidity and suspended sediment. Trails would be located and constructed in ways that would minimize and mitigate most effects. The slight disturbance that would occur each time a vehicle crossed the stream above the trestle would be a temporary adverse effect and would be mitigated if necessary; however, the potential of sediment runoff from the crossing is small.

Installing toilets according to ADEC regulations would prevent any degradation of the drinking water quality. Existing water intakes are upstream of the preferred alternative area and therefore would not be threatened. NPS baseline water quality data could be used to monitor conditions if water quality threats arose.

The amount of water needed for facilities and firefighting would be small, and the firefighting needs would be temporary. Any unanticipated threats to water resources would be managed to ensure that there would be no significant adverse impacts to water quality or quantity.

In order to minimize the impacts of stream flooding to the adjacent historic resources, the existing dam and other flood prevention devices may be rehabilitated and maintained. As this part of the stream has already been extensively re-aligned, perpetuating the current course of channelization would not result in any significant impacts to water quality. Compliance with Executive Order on Floodplains is anticipated.

## **Wetlands**

Continued activity in the Kennecott area would prevent streams from returning to naturally functioning wetlands; however, NPS actions under this alternative would contribute to preserving the area's historical context.

The plan for constructing the low-water vehicle crossing on National Creek would ensure that there would be no new significant impact and no loss of wetlands. Impacts on wetlands would be reduced by the designation of trails in the mill site, interpretive materials, and the presence of NPS staff.

## **Vegetation**

The expected increase in visitation under all alternatives would likely result in an increase in the establishment of non-native plants, particularly at the mill site. Increased visitation may also increase the potential of disturbance to rare plant habitat in Bonanza Ridge. Proposed monitoring for rare plant populations and for the presence of invasive nonnative species would identify any problems in this regard. Once identified, appropriate action would be devised to minimize and mitigate the problem. In addition, providing interpretive materials might reduce impacts on rare plant habitat on Bonanza Ridge and on mill site vegetation.

## **Wildlife**

Vegetation clearing would eliminate nesting habitat for some avian species such as yellow-rumped warbler, orange-crowned warbler, alder flycatcher, and Swainson's thrush, but would create additional foraging habitat for others like robins, tree swallows, and yellow-shafted flickers. Work on vegetation clearing and building stabilization would temporarily displace some species, such as black bears, some birds, and possibly little brown bats. Increased human presence and changing vegetation patterns might change the frequency or seriousness of bear-human encounters.

If black or brown bears were attracted to the smell of human activities and their potential food sources, such as gardens, their spatial distribution could potentially be altered. This would not negatively affect bears, but it could increase bear-human encounters, which might lead to bear deaths. A few snowshoe hares might be positively affected by the gardens if allowed to forage on vegetables grown there. These impacts would not be significant.

## **Socioeconomic Environment**

With more visitation, there would be opportunities for commercial activities such as providing visitor services on private lands near the national historic landmark. For example, visitors would need to be transported from the end of the McCarthy Road to the national historic landmark. More seasonal workers would be needed for lead paint abatement and structural stabilization; this would bring more revenue to businesses offering housing, food, and entertainment.



More visitation could adversely affect residents if visitors trespassed on private property or invaded their privacy. However, NPS management of the visitor experience could mitigate these effects, meeting the expectations of both visitors and the community. Visitors would be dispersed through the addition of NPS public facilities, alleviating current infringement on private property.

Visitors and seasonal NPS employees would increase commercial activity through their purchases. Employees would be needed to stabilize NPS structures; this would bring added opportunities for employment to the community. NPS-community relations would be improved by rehabilitating the community building and providing for the continuation of the community garden. Fire and emergency services would be improved through cooperation between the state, the National Park Service, and the community.

## **Administration and Operations**

### **Park Management**

With structural rehabilitation and the use of the company store as a visitor center, seasonal maintenance and interpretation personnel would increase. Day-to-day maintenance work would increase with the installation of utilities, infrastructure, and use of some of the buildings.

### **Safety and Security**

Visitor safety issues pertaining to walkways and site and building hazards would be identified and addressed.

Building safety and visitor safety would be improved through closing and repairing building windows and doors to limit unauthorized access to the interiors of the buildings and by eliminating camping in the buildings. Fire protection would be improved by installing fire extinguishers in frequented areas and by supporting local residents in their efforts to start a volunteer firefighting company. Visitor safety would be improved by eliminating camping in the buildings.

Additionally, visitor safety would be improved by the removal and proper disposal of hazardous materials.

## **Cumulative Impacts**

The expected increase in visitation to the Kennecott site, paired with the general trend toward increased visitation to Wrangell-St. Elias National Park and Preserve as a whole, would seem to indicate that visitation also would increase to wilderness and backcountry near the Kennecott site. Hiking within a half day from Kennecott and McCarthy would be more characteristic of a frontcountry experience than a backcountry experience, as would hiking along the McCarthy Road. The park is developing a plan for wilderness/backcountry management in which these issues will be further articulated and monitoring protocols identified.

An increase in visitation in the McCarthy/Kennecott area and the whole McCarthy Road corridor would offer more opportunities for commercial development. Although most business owners would welcome this development, the lack of infrastructure to meet increased visitation is a major concern. The town of McCarthy is starting a gateway community planning effort to address these needs, and

the town of Chitina is receiving planning assistance from the state of Alaska to address the same concerns. The state is working with the National Park Service to try to reconstruct the McCarthy road so that its character will be preserved. Overall, the character of these communities will change.

There would be potential impacts on the natural resources of Wrangell-St. Elias with increases in visitation. Management of visitor use would be necessary, and monitoring programs for both visitor use patterns and their impacts to the resources would need to be established.

## **Effects of Alternative 2: No Action**

### **Subsistence**

Subsistence activities would not be significantly affected by the no-action alternative.

### **Visitation and Recreation**

Visitation would be expected to increase because of NPS acquisition of the Kennecott site. With no increase in NPS presence or facilities, increased visitation could adversely affect natural and cultural resources. Vandalism and fires could occur, negatively affecting cultural resources and thus diminishing the visitor experience. Without facilities, the proliferation of human waste would continue, which would also diminish visitor comfort and aesthetics. The ambience of the mill town would be the abandoned feeling that exists now.

Information and interpretation available to visitors would not increase; therefore, they would not have the opportunity to learn the story of the Kennecott mines. Without appropriate visitor education, increased bear-human conflicts could occur.

### **Cultural Resources**

#### **Cultural Landscape**

The continued uninterrupted growth of vegetation eventually would prevent visitors from seeing the historic cultural landscape, and historic land use patterns would be obscured.

#### **Archeological Resources**

Archeological resources, particularly those constructed of wood, would continue to deteriorate and eventually disappear.

#### **Museum Collections and Archives**

Leaving artifacts on the ground will result in their deterioration and disappearance as a result of weathering, or they might be collected by visitors or residents and transported offsite.

#### **Structures**

With no actions being undertaken to actively preserve the historic buildings and as parts of the buildings collapsed, eventually their general condition would diminish from fair to poor. The tailings that would not be removed under this alternative would accelerate the deterioration of the general manager's quarters, the mill building, and the assay buildings.

Because erosion and flooding would be allowed to continue, the buildings along National Creek would eventually be destroyed.



## **Natural Resources**

### **Air Quality**

Any incineration of wood painted with lead-based paint would take place in an incinerator approved by the U.S. EPA and the ADEC; therefore, no significant effects on air quality would result from lead paint abatement.

Emissions from generators used for stabilization work would enter the air, but these emissions would not significantly affect air quality.

### **Surface Water**

No new effects on the quantity or quality of water in National Creek, Jumbo Creek, and Bonanza Creek would be expected.

### **Wetlands**

As in alternative 1, it is unlikely that streams would return to naturally functioning wetlands. However, with no management of the site, streambanks along National Creek in the mill site would potentially erode, as would other streambanks throughout the national historic landmark. This erosion would contribute to a loss of wetland function and area. The plan for constructing the low-water vehicle crossing on National Creek would not significantly impact wetlands due to its location in a disturbed area of the stream bed. There would be no new significant impact and no loss of wetlands.

### **Vegetation**

As in alternative 1, increased visitation may contribute to the introduction of invasive non-native species and disturbance to rare plant habitat. These effects will be assessed by monitoring and by providing interpretive material on trail use.

### **Wildlife**

The composition and density of local wildlife populations in or near the national historic landmark would continue to vary naturally. Wildlife would continue to adapt to changing conditions, such as increasing brush or falling buildings.

## **Socioeconomic Environment**

With more visitation, there would be new opportunities for visitor services near the national historic landmark, such as transporting visitors to the site from the end of the McCarthy Road. More housing, food, and entertainment would be needed for seasonal employees working on lead paint abatement or structural stabilization.

Because NPS visitor services would be minimal under this alternative, offering amenities for visitors would fall to the private sector. Accordingly, there would be increased opportunities for private enterprise. However, local residents may expect NPS services to be available; those expectations would not be met under this alternative. The perception would be that unmanaged visitation and an increased seasonal workforce would decrease the quality of life for the residents.

## **Administration and Operations**

### **Park Management**

The primary impacts would be an increased workload for park staff to accomplish the minimal operations of this alternative. The park administrative division would have to prepare a request for proposal for guided tours of the mill building. Overseeing the leased office space would add to the workload, and the park budget would have to be reallocated to cover the cost of operation. The park superintendent would have more sites to oversee.

### **Safety and Security**

Visitor safety would decrease as the buildings gradually deteriorated. The rate of deterioration would gradually increase as a result of vandalism. When a fire would occur inside a structure would be only a matter of time. Visitors would explore the abandoned mine shafts with an increasing risk as the tunnels aged. Visitor safety would be a continuing issue. Risks to visitor safety would increase as buildings began to fail and collapse.

Visitor Safety would be improved by the removal and proper disposal of hazardous materials.

### **Cumulative Impacts**

The expected increase in visitation to the Kennecott site, and to Wrangell-St. Elias as a whole, would seem to indicate a parallel increase in visits to wilderness and backcountry near the Kennecott site. The park is developing a wilderness/backcountry management plan, in which these issues will be further articulated and monitoring protocols identified.

Increased visitation in the McCarthy/Kennecott area and the whole McCarthy Road corridor would offer more opportunities for commercial development, which would be welcomed by most local business owners but could raise concerns about the lack of infrastructure. The towns of McCarthy and Chitina are taking steps to address these concerns. The state is working with the National Park Service to try to reconstruct the McCarthy road so that its character will be preserved. Overall, the character of these communities will change.

Increased visitation could result in impacts on the park's natural resources. Management of visitor use would be necessary, and monitoring programs for both visitor use patterns and their impacts to the resources would need to be established.

## **Effects of Alternative 3: NPS-Stabilized Historic Site**

### **Subsistence**

As in alternative 1, this alternative is not expected to significantly impact subsistence users. The proposed development would occur primarily in areas previously disturbed and already experiencing human intrusions. Proposed activities and increasing recreational use may cause the temporary displacement of subsistence wildlife. However, it is unlikely that there would be any significant impact on wildlife populations.

### **Visitation and Recreation**

Visitation would increase because of NPS' acquisition of the Kennecott site. As in alternative 1, increased interpretation, added exhibits, and exhibiting the Kennecott model would enhance visitors' understanding of Kennecott's history and significance and increase the range of interpretive activities. More facilities for visitor comfort would be available, and improved access around the site and buildings would broaden the range of activities for visitors. The vegetation clearing would enhance the historical context of the mill site; however, it would alter the current "abandoned" character of the site. The ambience of the mill town would be less of a feeling abandonment, with the area taking on a more rehabilitated, organized appearance.

NPS onsite personnel could monitor natural and cultural resources and minimize or mitigate damage that visitors might cause. Interpretation and visitor education might minimize bear-human encounters.

Noise levels from construction, generators, and overflights would increase. Rehabilitation noise would be mitigated to the maximum extent possible, but some noise would be expected. If necessary, the National Park Service would work with the air taxi operators to encourage mitigating noise impacts from overflights.

### **Cultural Resources**

#### **Cultural Landscape**

As in alternative 1, establishing stringent redevelopment standards and scenic easements and/or development rights would perpetuate the historical scale, character, and integrity of the mill town. Clearing vegetation around NPS structures would help visitors understand the mill town. Restricting nonresidential uses north of National Creek would approximate historic land uses.

Visible photovoltaic power generation equipment would not fit into the mill town's historic character. Building a vehicular bypass across National Creek would be incongruous with the historical landscape; however, design standards would mitigate any negative impacts.

#### **Museum Collections and Archives**

Removing noncontributing artifacts and extraneous material might give visitors a better understanding of the material culture associated with this era, but it would be expensive unless conducted as part of



other mitigation activities. Allowing access to the mine sites would increase the potential for artifact losses.

## **Structures**

Rehabilitation and stabilization efforts under this alternative would halt the deterioration of the buildings.

Removing tram cables for safety reasons would reduce the load on some tram towers and remove the stabilizing element in others. Removing tram cables and allowing towers to deteriorate and collapse would sever the visual and physical link between the mill and mine sites.

## **Natural Resources**

### **Air Quality**

Any toxic emissions from incinerating wood painted with lead-based paint would be mitigated by using an incinerator approved by the U.S. EPA and the ADEC, so that there would be no significant effects on air quality.

Exhaust from generators and vehicles would enter the air, but these emissions would not significantly affect air quality.

### **Surface Water**

As in alternative 1, a short-term insignificant effect would result from vegetation removal and increased visitation. Vegetation removal and trail construction would be unlikely to increase turbidity and suspended sediment. Trail construction would be done to minimize and mitigate most effects. The slight disturbance from vehicles crossing the stream above the trestle would be temporary and would be mitigated if necessary; however, the potential of sediment runoff from the crossing is small.

Installing toilets according to ADEC regulations would prevent degrading drinking water quality. Existing water intakes are upstream of the preferred alternative area and therefore would not be threatened. NPS baseline water quality data could be used to monitor conditions.

The amount of water needed for facilities and firefighting would be small, and the firefighting needs would be temporary. Any unanticipated threats to water resources would be managed to ensure that there would be no significant adverse impacts on water quality or quantity.

### **Wetlands**

As in alternative 1, it is unlikely that streams would return to naturally functioning wetlands.

The plan for constructing the low-water vehicle crossing on National Creek would avert significant impacts and loss of wetlands. Impacts on wetlands would be reduced by the designation of trails in the mill site, interpretive materials, and the presence of NPS staff.

## **Vegetation**

As in alternative 1, increased visitation may contribute to the introduction of invasive non-native species and disturbance to rare plant habitat. These effects will be assessed by monitoring and by providing interpretive material on trail use.

## **Wildlife**

As in alternative 1, nesting habitat for some avian species would be eliminated by vegetation clearing; but this would create additional foraging habitat for others. Vegetation clearing and building stabilization would temporarily displace some species such as black bears, some birds, and possibly little brown bats. Bear-human encounters might increase through more human presence and changing vegetation patterns.

## **Socioeconomic Environment**

With more visitation, there would be new opportunities for visitor services near the national historic landmark, such as transporting visitors to the site from the end of the McCarthy Road. More housing, food, and entertainment would be needed for seasonal employees working on lead paint abatement or structural stabilization.

As in alternative 1, more visitation could lead to trespassing on private property, but this would be mitigated through NPS management of the visitor experience. Visitors would be dispersed through the addition of NPS public facilities, alleviating current infringement on private property. Vegetation clearing without coordination with other landowners might interfere with their privacy.

More goods and services would be purchased by visitors and seasonal NPS employees. Employment opportunities would increase as workers were needed to stabilize structures. NPS-community relations would be improved by rehabilitating the community building. Fire and emergency services would be improved through cooperation between the state, the National Park Service, and the community.

## **Administration and Operations**

### **Park Management**

The varied actions included in this alternative would result in various impacts. With structural rehabilitation and the use of the company store as a visitor center, the numbers of seasonal maintenance and interpretation personnel would increase. Day-to-day maintenance work would increase with the installation of utilities and infrastructure and the use of some buildings.

### **Safety and Security**

Building safety and visitor safety would be improved through closing and repairing building windows and doors to limit unauthorized access to the interiors of the buildings and by eliminating camping in the buildings. Fire protection would be improved by installing fire extinguishers in frequented areas and by supporting local residents in their efforts to start a volunteer firefighting company. Visitor safety would be improved by eliminating camping in the buildings.

Clearing vegetation would increase the ability to manage fuels around the buildings. The National Park Service would carry out the mitigative actions listed under the effects of alternative 1 for tailings, fuel releases, transformers, lubricant oils and greases, lead-based paint, asbestos, and solid waste. Areas open for public exploration would be defined and signs placed to notify the public about closed areas.

## **Cumulative Impacts**

The expected increase in visitation to the Kennecott site, and to Wrangell-St. Elias as a whole, would seem to indicate a parallel increase in visits to wilderness and backcountry near the Kennecott site. The park is developing a wilderness/backcountry management plan, in which these issues will be further articulated and monitoring protocols identified.

Increased visitation in the McCarthy/Kennecott area and the whole McCarthy Road corridor would offer more opportunities for commercial development, which would be welcomed by most local business owners but could raise concerns about the lack of infrastructure. The towns of McCarthy and Chitina are taking steps to address these concerns. The state is working with the National Park Service to try to reconstruct the McCarthy road so that its character will be preserved. Overall, the character of these communities will change.

Increased visitation could result in impacts on the park's natural resources. Management of visitor use would be necessary, and monitoring programs for both visitor use patterns and their impacts to the resources would need to be established.



## **Effects of Alternative 4: Site Restoration and Enhancement**

### **Subsistence**

As in alternative 1, this alternative is not expected to significantly impact subsistence users. The proposed development would occur primarily in areas previously disturbed and already experiencing human intrusions. Proposed activities and increasing recreational use may cause the temporary displacement of subsistence wildlife. However, it is unlikely that there would be any significant impact on wildlife populations.

### **Visitation and Recreation**

Visitation could increase because of NPS acquisition of the Kennecott site. Increased interpretation and added exhibits would enhance visitors' understanding of Kennecott's history and significance. As in alternatives 1 and 3, more facilities for visitor comfort would be available than at present; and improved access around the site and buildings would broaden the range of activities for visitors. Replacing some of the railroad tracks would help visitors to understand the historic mining operation and increase the range of interpretive activities. Impacts from visitation would increase from allowing vehicular access to mines.

Because guided tours, self-guiding tours, visitor services, and security would be handled by contractors, the NPS presence would seem to be less than under the other alternatives. The NPS personnel onsite still could monitor natural and cultural resources and minimize or mitigate damage that visitors might cause. Interpretation and visitor education might minimize bear-human encounters.

Opportunities for historical interpretation might decrease as structures were rehabilitated for adaptive reuse for other educational or recreational purposes, but the overall range of activities for visitors would increase. The vegetation clearing also would enhance the historical context of the mill site; however, it would alter the current "abandoned" character of the site. The ambience of the mill town would be that of an organized, rehabilitated, inhabited area, rather than an abandoned one.

Noise levels from construction, generators, and overflights would increase. Rehabilitation noise would be mitigated to the maximum extent possible, but some noise would be expected. If necessary, the National Park Service would work with the air taxi operators to encourage mitigating noise impacts from overflights.

### **Cultural Resources**

#### **Cultural Landscape**

Establishing stringent redevelopment standards and scenic easements and/or development rights would perpetuate the historical scale, character, and integrity of the mill town. Clearing vegetation would help visitors understand the mill town. The replanting of historic gardens would enhance the historic character of the National Creek area. Restricting nonresidential uses north of National Creek would approximate historic land uses.

Although repositioning artifacts might convey a more accurate historical appearance (to the period when the mill was operating), it also would yield a more contrived landscape less in character with the management objective of retaining the "abandoned" character of Kennecott.

Visible photovoltaic power generation equipment would not fit into the mill town's historic character. Building a vehicular bypass across National Creek would be incongruous with the historical landscape; however, design standards would mitigate any negative impacts.

## **Structures**

Rehabilitation and stabilization efforts under this alternative would halt the deterioration of the buildings.

Removing tram cables for safety reasons would reduce the load on some tram towers and remove the stabilizing element in others. Removing tram cables and allowing towers to deteriorate and collapse would sever the visual and physical link between the mill and mine sites.

## **Museum Collections and Archives**

Increased collection of artifacts for exhibit or interpretive uses would ensure preservation for a greater number of artifacts, but it might detract from the cluttered sense of abandonment. Storing archival material in the old meat locker would require extensive modification of the structure to ensure proper environmental control for preservation of archives.

Removing noncontributing artifacts and extraneous material might give visitors a better understanding of material culture associated with this era, but it would be expensive unless conducted as part of other mitigation activities. Allowing access to the mine sites would increase the opportunity for personal collection and the risk of loss of artifacts.

## **Natural Resources**

### **Air Quality**

Any toxic emissions from incinerating wood painted with lead-based paint would be mitigated by using an incinerator approved by the U.S. EPA and the ADEC, so that there would be no significant effects on air quality.

### **Surface Water**

A short-term insignificant effect would result from vegetation removal and increased visitation. Vegetation removal and trail construction would be unlikely to increase turbidity and suspended sediment. Trail construction would be done to minimize and mitigate most effects. The slight disturbance from vehicles crossing the stream above the trestle would be temporary and would be mitigated if necessary; however, the potential of sediment runoff from the crossing is small.

Installing toilets according to ADEC regulations would prevent degrading drinking water quality. Existing water intakes are upstream of the preferred alternative area and therefore would not be threatened. NPS baseline water quality data could be used to monitor conditions.

The amount of water needed for facilities and firefighting would be small, and the firefighting needs would be temporary. Any unanticipated threats to water resources would be managed to ensure that there would be no significant adverse impacts on water quality or quantity.

The long-term potential of constructing and implementing a hydroelectric generation facility would pose unknown threats to water resources. These would be addressed in a separate NEPA document.

In order to minimize the impacts of stream flooding to the adjacent historic resources, the existing dam and other flood prevention devices may be rehabilitated and maintained. As this part of the stream has already been extensively re-aligned, perpetuating the current course of channelization would not result in any significant impacts to water quality.

## **Wetlands**

As in alternative 1, it is unlikely that streams would return to naturally functioning wetlands.

The plan for constructing the low-water vehicle crossing on National Creek would avert significant impacts and loss of wetlands. Impacts on wetlands would be reduced by the designation of trails in the mill site, interpretive materials, and the presence of NPS staff.

## **Vegetation**

As in alternative 1, increased visitation may contribute to the introduction of invasive non-native species and disturbance to rare plant habitat. These effects will be assessed by monitoring and by providing interpretive material on trail use.

Reestablishing historic vegetable gardens in the manager's residence area could lead to the establishment of invasive nonnative species.

## **Wildlife**

Nesting habitat for some avian species such as yellow-rumped warbler, orange-crowned warbler, alder flycatcher, and Swainson's thrush would be eliminated by vegetation clearing; but this would create additional foraging habitat for others like robins, tree swallows, and yellow-shafted flickers. Vegetation clearing and building stabilization would temporarily displace some species such as black bears, some birds, and possibly little brown bats. Bear-human encounters might increase through more human presence and changing vegetation patterns.

If black or brown bears were attracted to the smell of human activities and their potential food sources, such as gardens, their distribution could be altered. This would not negatively affect bears, but it could increase bear-human encounters, which might lead to bear deaths. A few snowshoe hares might be positively affected by the gardens if allowed to forage on vegetables grown there.

## **Socioeconomic Environment**

With more visitation, there would be new opportunities for visitor services near the national historic landmark, such as transporting visitors to the site from the end of the McCarthy Road. More housing, food, and entertainment would be needed for seasonal employees working on lead paint abatement or structural stabilization.



Visitor trespassing on private property would be mitigated through management of the visitor experience by NPS or contract employees. Visitors would be dispersed through the addition of public facilities, alleviating current infringement on private property. Vegetation clearing without the coordination with other landowners might interfere with their privacy.

More goods and services would be purchased by visitors and NPS or contract employees. Employment opportunities would increase as workers were needed to stabilize structures. NPS-community relations would be improved by rehabilitating the community building. Fire and emergency services would be improved through cooperation between the state, the National Park Service, and the community.

With even more buildings being rehabilitated and leased for adaptive reuse, commercial opportunities might increase. There would be opportunities to provide a number of contracted services. As this alternative would involve more development than other alternatives, it would have the most potential to change the lifestyle of local residents, which would be welcomed by some and not by others.

## **Administration and Operations**

### **Park Management**

With more activity at the site than under the other alternatives, there would be more impacts. More infrastructure and more building rehabilitation would mean more personnel to do construction and maintenance work. Concessions, contracting, and cooperative agreements with other organizations would increase. An increase to the park budget would be needed to implement this alternative, as would fund raising by the associated organizations.

### **Safety and Security**

Emergency services would be more consistently available because they would be contracted rather than dependent on volunteer response. Building security might increase if the option of adaptive use resulted in more buildings being occupied.

The National Park Service would carry out the mitigative actions listed under effects of alternative 1 for tailings, fuel releases, transformers, lubricant oils and greases, lead-based paint, asbestos, and solid waste. Areas open for public exploration would be defined and signs placed to notify the public about closed areas.

Clearing vegetation would increase the ability to manage fuels around the buildings.

## **Cumulative Impacts**

The expected increase in visitation to the Kennecott site, and to Wrangell-St. Elias as a whole, would seem to indicate a parallel increase in visits to wilderness and backcountry near the Kennecott site. The park is developing a wilderness/backcountry management plan, in which these issues will be further articulated and monitoring protocols identified.

Increased visitation in the McCarthy/Kennecott area and the whole McCarthy Road corridor would offer more opportunities for commercial development, which would be welcomed by most local

business owners but could raise concerns about the lack of infrastructure. The towns of McCarthy and Chitina are taking steps to address these concerns. The state is working with the National Park Service to try to reconstruct the McCarthy road so that its character will be preserved. Overall, the character of these communities will change..

Increased visitation could result in impacts on the park's natural resources. Management of visitor use would be necessary, and monitoring programs for both visitor use patterns and their impacts to the resources would need to be established.

## Consultation and Coordination

### Timeline

#### 1998

- May 11-15: Initial site visit, project orientation by Kevin Percival, Steve Peterson, and Logan Hovis  
June 15-24: First public introduction/meeting at McCarthy Lodge and individual meetings with many community members  
Aug 3-14: Introduction of alternatives concepts to park and community members  
Aug 7: Community meeting at the Jurick Building  
Aug 8: Second community meeting at the Jurick Building  
Sept 1: First issue of the *Kennecott Cable* which discussed alternatives mailed  
Sept 8-14: Alternatives presentation/comments to community/park  
Sept 9: McCarthy meeting on alternatives  
March 30: Second issue of the *Kennecott Cable* which summarized public comments mailed

### Preparers and Consultants

#### **Denver Service Center**

Kevin Percival, Landscape Architect

#### **Wrangell-St. Elias National Park and Preserve**

Anne Worthington, Cultural Resource Specialist

Carl Mitchell, Wildlife Biologist

Danny Rosenkrans, Geologist

Devi Sharp, Chief of Resource Management

Ed Roberts, Chief of Interpretation

Geoff Bleakley, Historian

Hunter Sharp, Chief Ranger

Mary Beth Cook, Botanist

Vicki Snitzler, Planner

#### **Alaska Support Office**

Wendy Davis, Interpretive Specialist

Logan Hovis, Mining Historian

Steve Peterson, Historic Architect

Toni Horton, Historical Landscape Architect

Bill Heubner, Civil Engineer

Betty Knight, Curator

Glen Yankus, NEPA Coordinator

Thetus Smith, Writer-Editor

#### **Columbia Cascades Support Office**

Cathy Gilbert, Cultural Landscape Architect



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

Ecological Services Anchorage  
605 West 4th Avenue, Room 62  
Anchorage, AK 99501

IN REPLY REFER TO:

WAES

Devi Sharp  
Wrangell-St. Elias National Park and Preserve  
P.O. Box 439  
Mile 105.5 Old Richardson Hwy.  
Copper Center, AK 99573

November 6, 1998

Re: Crystalline Hills hiking trail, McCarthy area campground, and Kennecott Mine Management Plan

Dear Ms Sharp:

This responds to your request for a list of endangered and threatened species and critical habitats pursuant to section 7 of the Endangered Species Act of 1973, (16 U.S.C. 1531 et seq; 87 stat 884, as amended) (Act). The following listed, delisted and proposed species occur in the project area:

SPECIES	ESA STATUS
American peregrine falcon ( <i>Falco peregrinus anatum</i> )	Endangered
Arctic peregrine falcon ( <i>Falco peregrinus tundrius</i> )	Delisted

Bald eagles may also occur in the area of proposed activity but are not on the list of endangered or threatened species in Alaska. They are, however, protected by the Bald and Golden Eagle Protection Act.

I have enclosed a copy of the appropriate endangered species fact sheets to aid you in determining whether your proposed project may adversely affect threatened or endangered species. If you would like additional assistance in determining whether this project is likely to adversely impact listed species, please provide us with detailed information regarding project plans.

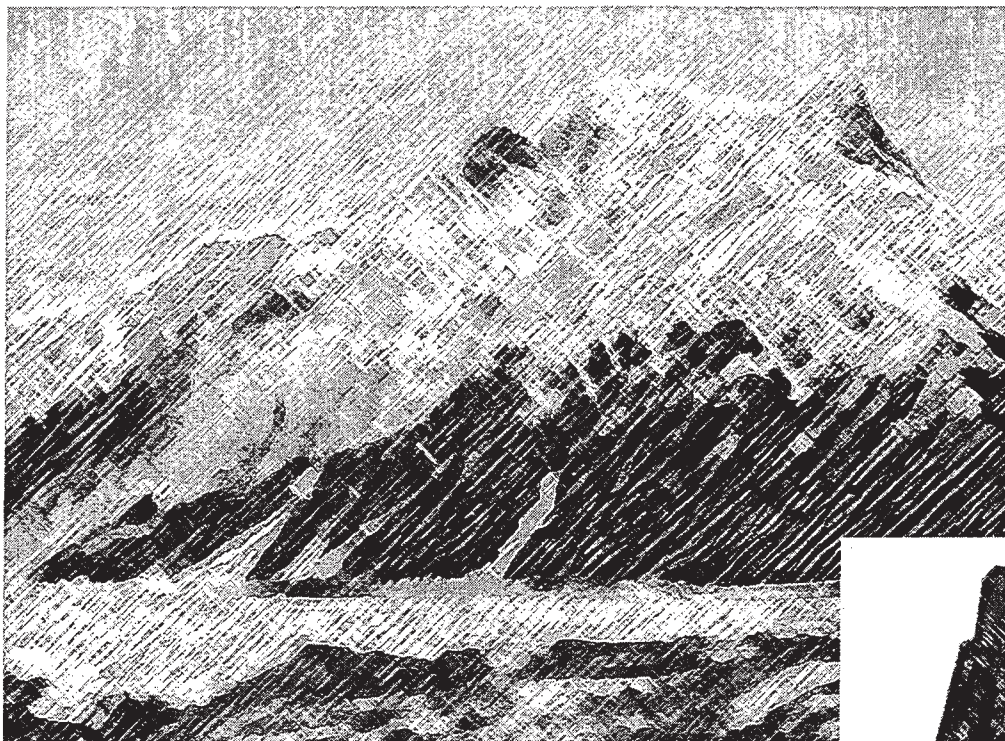
This letter relates only to endangered species under our jurisdiction. It does not address species under the jurisdiction of National Marine Fisheries Service, or other legislation or responsibilities under the Fish and Wildlife Coordination Act, Clean Water Act, or National Environmental Policy Act.

If you have any questions or concerns about section 7 consultation or other endangered species related matters, please feel free to contact me at: Phone: 907/271-2778, Fax: 907/271-2786, or Email [greg\\_balough@fws.gov](mailto:greg_balough@fws.gov).

Sincerely,

Gregory R. Balough  
Endangered Species Biologist

\\A S71MI3\WRANGELS7



## APPENDIXES / REFERENCES



# **Appendix A: Subsistence**

## **ANILCA SECTION 810(a)**

### **SUMMARY EVALUATION AND FINDINGS**

#### **I. INTRODUCTION**

This section was prepared to comply with Title VIII, Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA). It summarizes the evaluations of potential restrictions to subsistence activities that could result from authorizing cultural landscape preservation activities and recreational developments at the Kennecott site in Wrangell-St. Elias National Park and Preserve. The Interim Management Plan Environmental Assessment describes a range of alternatives for consideration.

#### **II. THE EVALUATION PROCESS**

Section 810(a) of ANILCA states:

"In determining whether to withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of public lands . . . the head of the federal agency . . . over such lands . . . shall evaluate the effect of such use, occupancy, or disposition on subsistence uses and needs, the availability of other lands for the purposes sought to be achieved, and other alternatives which would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes. No such withdrawal, reservation, lease, permit, or other use, occupancy or disposition of such lands which would significantly restrict subsistence uses shall be effected until the head of such Federal agency -

(1) gives notice to the appropriate State agency and the appropriate local committees and regional councils established pursuant to section 805;

(2) gives notice of, and holds, a hearing in the vicinity of the area involved; and

(3) determines that (A) such a significant restriction of subsistence uses is necessary, consistent with sound management principles for the utilization of the public lands, (B) the proposed activity will involve the minimal amount of public lands necessary to accomplish the purposes of such use, occupancy, or other disposition, and (C) reasonable steps will be taken to minimize adverse impacts upon subsistence uses and resources resulting from such actions."

ANILCA created new units and additions to existing units of the national park system in Alaska. Wrangell-St. Elias National Park and Preserve, encompassing 13.2 million acres, was created by ANILCA section 201(9) for the following purposes:

"To maintain unimpaired the scenic beauty and quality of high mountain peaks, foothills, glacial systems, lakes, and streams... in their natural state; to protect habitat for, and populations of, fish and wildlife...; and to provide continued opportunities, including reasonable access for... wilderness recreational activities. Subsistence uses by local residents shall be permitted in the park, where such uses are traditional in accordance with the provisions of Title VIII."



The potential for significant restriction must be evaluated for the preferred alternative's effect upon "... subsistence uses and needs, the availability of other lands for the purposes sought to be achieved and other alternatives which would reduce or eliminate the use."

### III. PREFERRED ALTERNATIVE ON FEDERAL LANDS

The National Park Service is considering four alternatives in the Interim Management Plan Environmental Assessment. A full discussion of the preferred alternative and alternatives and their anticipated effects are described in the EA. Developments in the park will emphasize NPS programs such as interpretive displays, environmental education opportunities, and resource protection programs. Outside the park, the private sector would be encouraged to provide accommodations, food service, and other commercial services. Common to all alternatives is the mitigation of lead paint on the historic structures, which was a condition of purchase. Customary and traditional subsistence uses on park and preserve lands would continue as authorized by federal law under each of the alternatives.

Alternative 1 (preferred alternative) would provide new visitor facilities and services to meet a wide range of visitor needs. Selected historic buildings would be stabilized in compliance with federal regulatory requirements. Visitor opportunities and interpretive activities would be increased.

Alternative 2 (no action) would continue to authorize building and structural stabilization repairs to be based on need, condition, and visitor safety.

Alternative 3 establishes a prioritized program for stabilizing and protecting historic buildings. Visitor opportunities and interpretive activities would be increased.

Under alternative 4 the historic site would be managed cooperatively by the National Park Service and private operators, with a number of buildings being adaptively reused and others stabilized. Visitor opportunities and interpretive activities would be increased.

### IV. AFFECTED ENVIRONMENT

A summary of the affected environment pertinent to subsistence use is presented here. The following documents contain additional descriptions of subsistence uses in Wrangell-St. Elias National Park and Preserve:

*General Management Plan/Land Protection Plan, Wrangell -St. Elias National Park and Preserve, NPS Alaska Region, 1986.*

*Final Environmental Impact Statement, Wilderness Recommendation, NPS Alaska Region, 1988.*

*Wrangell-St. Elias Subsistence Management Plan, NPS Alaska Region, 1998.*

Subsistence uses are allowed in Wrangell-St. Elias National Park and Preserve in accordance with Titles II and VIII of ANILCA. The national preserve is open to federal subsistence uses and state authorized general (sport) hunting, trapping, and fishing activities. The 14,100-acre national historic landmark (NHL) is located in Wrangell-St. Elias National Preserve adjacent to the designated subsistence resident zone community of McCarthy. Resident zone status entitles the permanent residents of McCarthy to qualify for subsistence uses in the park. Local rural residents who do not live in one of the 18 designated resident zone communities may engage in subsistence activities in the

park under a subsistence use permit issued by the park superintendent. In recent years subsistence use in the NHL study area has been minimal, primarily by residents of McCarthy.

The NPS recognizes that the patterns of subsistence use vary from time to time and from place to place, depending on the availability of wildlife and other renewable natural resources. A subsistence harvest in a given year may vary considerably from previous years because of weather, migration patterns, and natural population cycles. The region's main subsistence resources are salmon, moose, caribou, Dall Sheep, mountain goats, ptarmigan, grouse, snowshoe hares, fur animals, berries mushrooms, and dead and green logs for construction and firewood.

## V. SUBSISTENCE USES AND NEEDS EVALUATION

To determine the potential impact on existing subsistence activities, NPS analyzed the following three evaluation criteria, relative to existing subsistence resources that could be impacted:

1. the potential to reduce important subsistence fish and wildlife populations by (a) reductions in numbers; (b) redistribution of subsistence resources; or (c) habitat losses;
2. what effect the action might have on subsistence fisherman or hunter access; and
3. the potential for the action to increase fisherman or hunter competition for subsistence resources.

### The potential to reduce important subsistence fish and wildlife populations:

A limited amount of wildlife habitat would be affected by the proposed developments. Since the proposed developments in the NHL would occur primarily in areas previously disturbed and already experiencing human intrusion, there would be little, if any, effective loss of wildlife habitat.. Consequently, The proposed alternatives are not expected to significantly alter wildlife movements or reduce populations of important subsistence wildlife. NPS regulations and provisions of ANILCA provide the tools for adequate protection of fish and wildlife populations on federal public lands while ensuring a subsistence priority for local rural residents.

### The effect on subsistence access:

All rights of access for subsistence use on NPS lands are granted by section 811 of ANILCA. The park and preserve are managed according to legislative mandates, NPS policies and guidelines in the approved 1986 General Management Plan for Wrangell-St. Elias. No action under the alternatives, which are described in detail in the EA, should affect the access of subsistence users to natural resources within the park and preserve.

### The potential to increase competition:

National park lands are not open to non-subsistence hunting. No increase in competition for subsistence hunting is expected on park lands in the study area. NPS regulations and provisions of ANILCA mandate that if and when it is necessary to restrict the taking of fish, subsistence uses are the priority consumptive uses on federal public lands and will be given preference on such lands over other consumptive uses (ANILCA, section 802(2)). Continued implementation of the ANILCA provisions should mitigate any increased competition from resource users besides subsistence users. Therefore, the preferred alternative is not expected to adversely affect resource competition.

## VI. AVAILABILITY OF OTHER LANDS

There are no other lands available for this action because the NHL boundaries were established by Congress to achieve specific purposes. Other federal public lands inside and outside the park/preserve, however, are available for subsistence.

## VII. ALTERNATIVES CONSIDERED

No other alternatives that would reduce or eliminate the use of public lands needed for subsistence purposes were identified. It is possible for subsistence users to utilize other lands inside and outside the park/preserve. Subsistence users extend their activities to other areas as necessary.

## VIII. FINDINGS

This analysis concludes that the preferred alternative will not result in a significant restriction of subsistence uses.



## Appendix B: Vegetation Information

TABLE B-1: KENNECOTT NATIONAL HISTORIC LANDMARK LANDCOVER TYPES

	Landcover Type	Acres	% of Total Acreage	% of Total Cloudless Acreage	% of Total Vegetated Acreage
<u>Vegetated Areas</u>					
Trees	Closed broadleaf	380.29	2.68	3.04	6.75
	Open white spruce	128.54	0.91	1.03	2.28
	Open broadleaf	20.24	0.14	0.16	0.36
	<b>Total acreage</b>	<b>529.07</b>	<b>3.73</b>	<b>4.23</b>	<b>9.39</b>
Low and tall shrubs	Closed tall shrub	1,020.10	7.20	8.15	18.09
	Open low shrub	767.02	5.41	6.13	13.60
	Closed low shrub	462.57	3.26	3.69	8.20
	Open tall shrub	327.58	2.31	2.62	5.81
	<b>Total acreage</b>	<b>2,577.27</b>	<b>18.18</b>	<b>20.59</b>	<b>45.70</b>
Dwarf shrubs		<b>689.63</b>	<b>4.87</b>	<b>5.51</b>	<b>12.23</b>
Herbaceous plants	Graminoid	239.07	1.69	1.91	4.24
	Dry Bryoid	89.85	0.63	0.72	1.59
	Wet Bryoid	12.45	0.09	0.10	0.22
	Forb	1.33	0.01	0.01	0.02
	<b>Total acreage</b>	<b>342.70</b>	<b>2.42</b>	<b>2.74</b>	<b>6.07</b>
Sparse vegetation <sup>1</sup>		<b>1,499.13</b>	<b>10.57</b>	<b>11.970</b>	<b>26.59</b>
<b>Total acreage</b>		<b>5,637.80</b>	<b>39.77</b>	<b>45.04</b>	
<u>Unvegetated Areas</u>					
	Barren <sup>2</sup>	5,077.16	35.82	40.54	
	Glacier/snow	1,799.36	12.70	14.37	
	Water	7.78	0.05	0.06	
<b>Total acreage</b>		<b>6,884.30</b>	<b>48.57</b>	<b>54.97</b>	
<u>Clouds/shadows</u>		<b>1,650.36</b>	<b>11.64</b>		

Classification based on Pacific Meridian Resources, "Wrangell-St. Elias National Park and Preserve Landcover Mapping Project: Final Report" (1997). Map has an overall minimum classification accuracy of 78.7%.

TABLE B-2: RARE PLANT COLLECTIONS FROM BONANZA RIDGE

ABBREVIATIONS:								
G = global rank								
R = state rank								
G1 = critically imperiled globally, (5 occurrences or fewer)								
G2 = imperiled globally (6–20 occurrences)								
G3 = either very rare and local throughout its range or found locally in a restricted range, 21–100 occurrences, threatened throughout its range								
G4 = widespread and apparently secure globally, although it may be quite rare in parts of its range, especially at the periphery								
G5 = demonstrably secure globally, although it may be quite rare in parts of its range								
T# = global rank of the described subspecies or variety								
G#G# = global rank of species uncertain, best described as a range between the two ranks								
G#Q = some uncertainty about taxonomic status that might affect global rank								
S1 = critically imperiled in the state, 5 or fewer occurrences								
S2 = imperiled in the state, 6–20 occurrences								
S3 = rare or uncommon in the state, 21–100 occurrences								
Taxon	Common Name	Family	AKNHP Rank <sup>1</sup>	Collector	Coll. No.	Date	Habitat	Herb <sup>2</sup>
<i>Aphragmus eschscholtzianus</i>	Aleutian cress	Brassicaceae (mustard family)	G3/S3	Nordell & Schmitt	163	1976		LD; ALA
<i>Carex preslii</i>	Presl's sedge	Cyperaceae (sedge family)	G4/S1	Nordell & Schmitt	544	1976	Very common along the old road, up to about 1,200 m., forming dense tussocks up to 40 cm tall	LD
<i>Cystopteris montana</i>	Mountain fragile fern	Dryopteridaceae (wood fern family)	G5/S3	Nordell & Schmitt	580	1976	Solitary specimens in <i>Populus</i> scrub	LD; ALA
<i>Juniperus horizontalis</i>	Creeping savin	Cupressaceae (cypress family)	G5/S1S2	Nordell	s.n.	1976		LD; ALA
<i>Minuartia biflora</i>	Mountain stitchwort	Caryophyllaceae (pink family)	G5/S2	Nordell & Schmitt	95 416b 450	1976		LD; ALA
<i>Papaver alboroseum</i>	Pale poppy	Papaveraceae (poppy family)	G3/S3	Dodge		1993	Rubble and talus slope, 5,800 ft.	WRST
<i>Papaver albsroseum</i>	Pale Poppy	Papaveraceae (Poppy Family)	G3/S3	Nordell & Schmitt	1 101 160 166 171 301 464	1976		LD; ALA
1. AKNHP = Alaska Natural Heritage Program								
2. Herbarium of deposition. ALA = University of Alaska, Fairbanks Museum. LD = Lund University, Norway; WRST = Wrangell-St. Elias National Park and Preserve.								

**TABLE B-3: RARE PLANTS KNOWN TO OCCUR IN THE CHITINA VALLEY**  
(besides those on Bonanza Ridge that are listed in table B-2)

<b>ABBREVIATIONS:</b> G = global rank R = state rank G1 = critically imperiled globally, (5 occurrences or fewer) G2 = imperiled globally (6–20 occurrences) G3 = either very rare and local throughout its range or found locally in a restricted range, 21–100 occurrences, threatened throughout its range G4 = widespread and apparently secure globally, although it may be quite rare in parts of its range, especially at the periphery G5 = demonstrably secure globally, although it may be quite rare in parts of its range T# = global rank of the described subspecies or variety G#G# = global rank of species uncertain, best described as a range between the two ranks G#Q = some uncertainty about taxonomic status that might affect global rank S1 = critically imperiled in the state, 5 or fewer occurrences S2 = imperiled in the state, 6–20 occurrences S3 = rare or uncommon in the state, 21–100 occurrences			
Taxon/Family/Common Name	AKNHP Rank <sup>1</sup>	Number of Occurrences in Park	Habitat
<i>Agoseris glauca</i> Asteraceae (sunflower family) pale agoseris	G4G5 S1	2	Alpine meadows
<i>Agrostis thurberiana</i> Poaceae (grass family) Thurber's bentgrass	G5 S2	2	Mesic alpine meadows
<i>Arabis calderi</i> Brassicaceae (mustard family) Calder's rockcress	G3G4 S1 New to Alaska	1	Alpine and subalpine meadows
<i>Arabis codyi</i> Brassicaceae (mustard family) Cody's rockcress	G1G2 S1 New to Alaska	1	Unstable alpine slopes
<i>Arabis drepanoloba</i> Brassicaceae (mustard family) rockcress	G? S? <sup>2</sup> New to Alaska	1	Alpine talus slopes
<i>Arenaria longipedunculata</i> Caryophyllaceae (pink family) longstem sandwort	G3G4Q S3	1	Calcareous or serpentine gravels and rock crevices
<i>Arnica mollis</i> Asteraceae (sunflower family) hairy arnica	G5 S1	1	Alpine meadows
<i>Astragalus harringtonii</i> Fabaceae (pea family) Harrington milkvetch	G5T2T3 S2S3	3	Meadows, streambanks and scree
<i>Carex crawfordii</i> Cyperaceae (sedge family) Crawford's sedge	G5 S2S3	1	Well-drained lake and river meadows
<i>Carex eburnea</i> Cyperaceae (sedge family) bristleleaf sedge	G5 S2S3	2	Dry sand or rocky places
<i>Carex interior</i> Cyperaceae (sedge family) inland sedge	G5 S1	1	Wet or damp calcareous meadows



(Table B-3 cont.)

Taxon/Family/Common Name	AKNHP Rank <sup>1</sup>	Number of Occurrences in Park	Habitat
<i>Carex lenticularis</i> var. <i>dolia</i> Cyperaceae (sedge family) tufted sedge	G5T3 S3	4	Muddy shores, sheltered ponds, lakes, and river flats
<i>Carex parryana</i> Cyperaceae (sedge family) Parry's sedge	G3G4 S1	1	Wet places, gravel bars
<i>Carex preslii</i> Cyperaceae (sedge family) Presl's sedge	G4 S1	1	Dry grassy alpine meadows
<i>Castilleja miniata</i> Scrophulariaceae (figwort family) scarlet Indian paintbrush	G5 S3	5	Alpine and subalpine meadows
<i>Douglasia alaskana</i> Primulaceae (primrose family) Alaskan Douglasia	G2G3 S1	3	Sandy soil, gravel, scree slopes in the alpine
<i>Draba incerta</i> Brassicaceae (mustard family) Whitlowgrass	G5 S2S3	11	Calcareous scree
<i>Draba kananaskis</i> Brassicaceae (mustard family) longstalk Whitlowgrass	G51Q S1	2	Rocky alpine slopes
<i>Draba oblongata</i> Brassicaceae (mustard family) Whitlowgrass	G3 S?	1	Clay and gravel slopes, silt and sand gravel flats, rocky open areas, exposed hillsides, rocks and swales
<i>Draba porsildii</i> Brassicaceae (mustard family) Porsild's Whitlowgrass	G3 S1S2	7	Alpine scree, gravel and open shale slopes and meadows
<i>Draba praelta</i> Brassicaceae (mustard family) tall Whitlowgrass	G5 S1S3	1	Alpine shale cliffs, moist banks, steep hillsides, limestone talus, subalpine slopes
<i>Draba ruaxes</i> Brassicaceae (Mustard Family) Rainier Whitlowgrass	G3 S2S3	24	Windy ridge, scree slopes and cliffs
<i>Draba stenopetala</i> Brassicaceae (Mustard Family) Anadyr Whitlowgrass	G3 S3	27	Stony ridges and rocky alpine summits
<i>Eriophorum viridi-carinatum</i> Cyperaceae (sedge family)	G5 S2	1	Subalpine and alpine meadows
<i>Erysimum pallasii</i> Brassicaceae (mustard family) Pallas' wallflower	G4 S3	10	Alpine scree, talus, gravel slopes, and meadows; often near animal burrows
<i>Festuca brevissima</i> Poaceae (grass family)	G3 S3	16	Exposed, dry rocky tundra and scree slopes
<i>Festuca lenensis</i> Poaceae (grass family)	G4 S2S3	9	Gravel and scree slopes
<i>Festuca minutiflora</i> Poaceae (grass family)	G? S? <sup>2</sup> New to Alaska	1	Alpine tundra, meadows, and scree slopes
<i>Minuartia dawsonensis</i> Caryophyllaceae (pink family) rock stitchwort	G5 S?	4	Moist, sandy places

(Table B-3 cont.)			
Taxon/Family/Common Name	AKNHP Rank <sup>1</sup>	Number of Occurrences in Park	Habitat
<i>Najas flexilis</i> Najadaceae (naiad family) naiad	G5 S1S2	1	Shallow fresh or brackish water
<i>Oxytropis huddelsonii</i> Fabaceae (pea family) Huddelson's locoweed	G3 S2S3	24	Ridge tops, alpine tundra, heath
<i>Phacelia mollis</i> Hydrophyllaceae (waterleaf family) soft phacelia	G2 S2S3	19	Dry slopes, roadsides, sandy or gravelly soils, rock outcrops, and open woods
<i>Potentilla drummondii</i> Rosaceae (rose family)	G5 S1	6	Meadows to ridges, subalpine to alpine
<i>Rumex beringensis</i> Polygonaceae (buckwheat family) Bering Sea dock	G2G3 S2S3	18	Sandy places on tundra, solifluction lobes, frost boils
<i>Salix setchelliana</i> Salicaceae (willow family) Setchell's willow	G3G4 S3	6	Gravel bars and sandy slopes
<i>Saxifraga adscendens</i> ssp. <i>oregonensis</i> Saxifragaceae (saxifrage family) small saxifrage	G5T4T5 S2S3	8	Moist gravelly and rocky alpine sites
<i>Stellaria alaskana</i> Caryophyllaceae (pink family) Alaska starwort	G3 S3	24	Rock outcrops, talus slopes and moraines in alpine tundra
<i>Swertia perennis</i> Gentianaceae (gentian family) star gentian	G5 S3	2	Mesic subalpine meadows
<i>Taraxacum carneocoloratum</i> Asteraceae (sunflower family)	G3Q S3	10	Alpine slopes and coarse, well-drained substrates
<i>Thlaspi arcticum</i> Brassicaceae (mustard family) Arctic pennycress	G3 S3	1	Scree slopes and turfy places in alpine tundra
<i>Trichophorum pumilum</i> var. <i>rollandii</i> Cyperaceae (sedge family)	G? S? <sup>2</sup> New to Alaska	1	Moist grassy slopes and tundra, willow and alder thickets, meadows and along creeks; alpine and subalpine
<p>NOTE: Plants with an Alaska Natural Heritage Program (AKNHP) state rank of &lt;3 are considered rare.</p> <p>1. AKNHP = Alaska Natural Heritage Program. G = Global Rank. R = State Rank.</p> <p>2. Some taxa new to Alaska have not yet been ranked.</p>			

## Appendix C: Compendium of Sensitive Sites

The National Park Service is required by federal regulations in Title 36 CFR 2.1(5) to protect areas such as Kennecott National Historic Site by designating areas and conditions under which people may visit and use the cultural and archeological sites. The designations and conditions are designed to protect sensitive cultural and archeological sites and to protect the public from hazards in those sites. The Park Service proposes to continue to permit access to the Kennecott Historic Site with many of the same conditions that existed when the area was private property. The National Park Service does not intend these regulations to regulate the actions of people on private property in the National Historic Site.

The Park Service will continue to permit public access to the grounds throughout the historic site.

**CONDITION 1) Entry is prohibited into buildings that are barricaded or signed as closed. Do not pass beyond barricades, climb through windows, or remove boards to enter closed buildings.**

*This closure protects both the historic structures and contents from vandalism and the public from the safety hazards found in these unstable buildings.*

**CONDITION 2) Mine tunnels and other openings in the Kennecott Historic Site are closed to entry.**

*STAY OUT AND STAY ALIVE. These abandoned mines contain hazards that could result in serious injury or death. They have decayed support timbers, unsafe ladders, rotten structures, unstable explosives, deep pools of water, cave-ins, rocks falling from unstable ceilings and walls, deadly gas, lack of oxygen, concealed or thinly covered vertical shafts in tunnel floors. YOU ARE COURTING SERIOUS INJURY OR DEATH BY ENTERING THESE OPENINGS. STAY OUT AND STAY ALIVE.*

**CONDITION 3) Camping is not permitted in, or on, any of the historic structures in the Kennecott National Historic Site. Camping is not permitted in the mill town. The mill town is the collection of buildings clustered around the mill on both sides of National Creek.**

*Part of the attraction of the Kennecott Mill Town is the historic scene presented by the mill buildings. Camping is prohibited to preserve the historic scene and to lower the temptation to use the buildings for shelter. Camping is permitted north of Jumbo Creek.*

**CONDITION 4) Fires are not permitted inside of any building or within 300 feet of any of the historic buildings or structures in the Kennecott National Historic Site.**

*The historic buildings and structures are made of wood. There is no way to put out a structural fire at the site.*



## References

### EMCON

- 1992 "Remediation Recommendations Report, Kennicott Mine Site, Alaska." America North/EMCON, Inc. September.

### Eppinger, R.G.; P.H. Briggs; D. Rosenkrans; and others.

- 1999(a) "Geochemical Data for Environmental Studies of Mineral Deposits at Nabesna, Kennecott, Orange Hill, Bond Creek, Bremner, and Gold Hill, Wrangell-St. Elias NP/P, Alaska." U.S. Geological Survey. Open File Report 99-XXX, manuscript in review.

### Eppinger, R.G.; P.H. Briggs; D. Rosenkrans; and V. Ballestrazze.

- 1999(b) "Environmental geochemical studies of select mineral deposits in Wrangell-St. Elias NP/P, Alaska." U.S. Geological Survey Professional Paper No. XXX, manuscript in review.

### Gallant, A.L.; E.F. Binnian; J.M. Omernik; and M.B. Shasby

- 1995 "Ecoregions of Alaska." Professional paper 1567. U.S. Government Printing Office. Washington, D.C.

### Kay, S., and R.E. Miller

- 1990 "Kennicott - A hazardous waste audit." School of Engineering, University of Alaska Anchorage.

### Loso, M. G.

- 1996 "Productivity, Population Structure and Subsistence Use of a White Spruce Forest in the Kennicott Valley, Alaska." Master's thesis. University of Vermont.
- 1998 "Kennecott Vegetation Documentation for the Kennecott Cultural Landscape Report." Prepared for the National Park Service. Park files.

### Nordell, O., and A. Schmitt

- 1978 "Vascular Plants from the McCarthy Area: Wrangell Mountains, Alaska." *Bot. Notiser* 131:155-158.

### Orth, Donald J.

- 1967 Dictionary of Alaska Place Names, US Geological Survey Professional Paper 567 (Washington: USGPO), p. 510.

### U.S. Department of the Interior

- 1983 *The Secretary of Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings*. Rev. ed. Preservation Assistance Division, Washington, D.C.

#### APPENDIXES AND REFERENCES

##### Fish and Wildlife Service

- 1979 *Classification of Wetlands and Deepwater Habitats of the United States*. Prepared by Biological Services Program. Report # FWS/OBS-79/31. Washington: U.S. Government Printing Office.

##### National Park Service

- 1988a *Management Policies*. Washington, D.C.
- 1991 Final Environmental Impact Statement, Cumulative Impacts of Mining, Wrangell-St. Elias National Park and Preserve, Alaska. U.S.D.I., National Park Service, Alaska Regional Office, Anchorage Alaska. 521 pages.

##### Windisch-Cole, Briggitta

- 1997 "A Showcase of Alaska's Frontier-The Copper River Region." Alaska Economic Trends. February. Pages 8-11.



As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural and cultural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to assure that their development is in the best interests of all. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

Publication services were provided by the graphics and editorial staffs, Resource Planning Group, Denver Service Center and the Anchorage Support Office editor.

NPS D-69, October 1999.