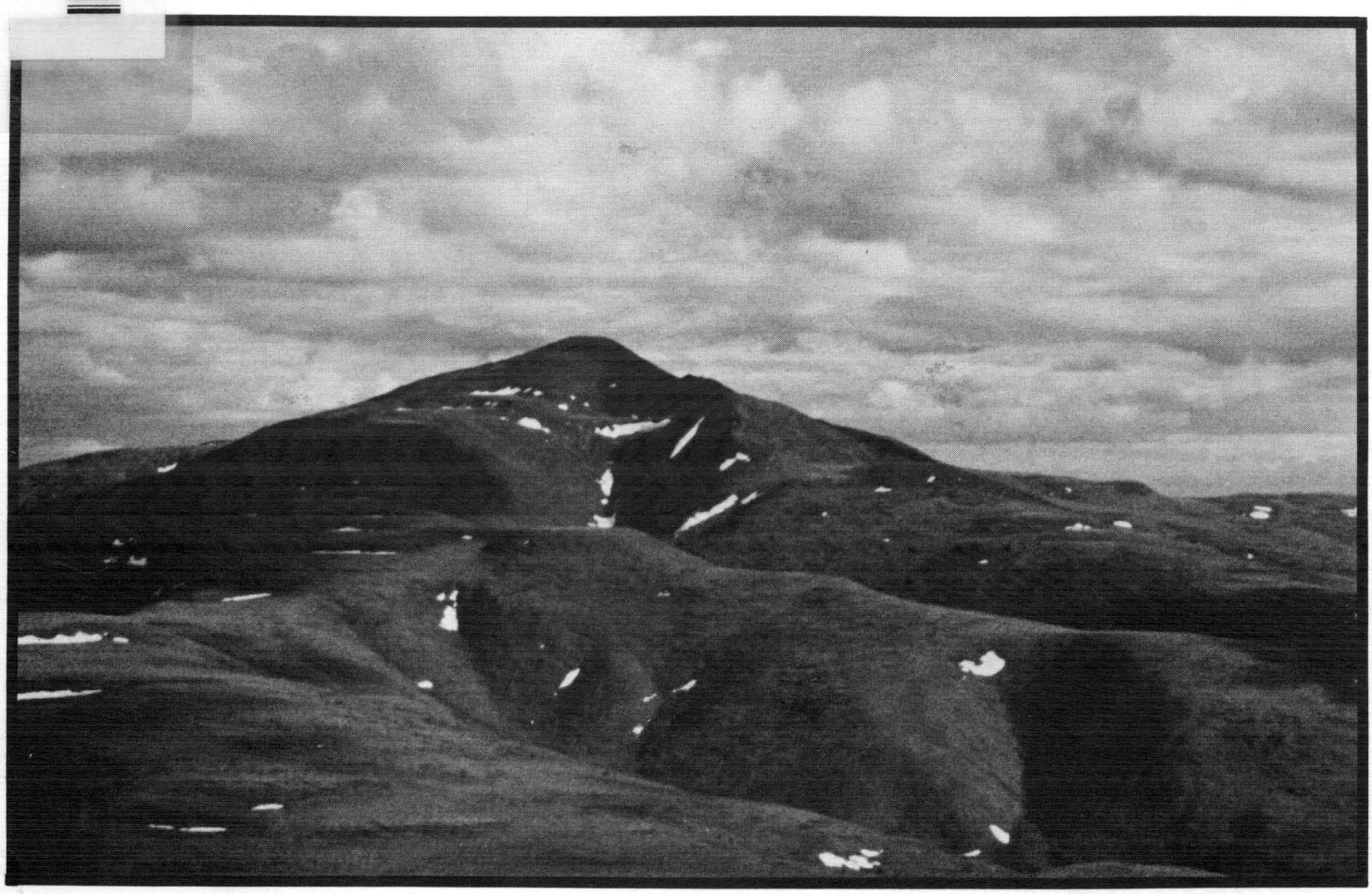
The Fortymile *Interim* Fire Management Plan



Prepared by the FIRE SUBCOMMITTEE
of the
Alaska Land Managers Cooperative Task Force

August 1979

THE FORTYMILE INTERIM FIRE MANAGEMENT PLAN

Prepared by the Fire Subcommittee of the

Alaska Land Managers Cooperative Task Force

APPROVED by the following major land and resource managers:

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Alaska Federation of Natives
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THE FORTYMILE INTERIM FIRE MANAGEMENT PLAN is recommended for approval by the Fire Subcommittee of the Alaska Land Managers Cooperative Task Force:

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Bureau of Land Management — 9/13/79 date

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The following Alaska Native Village Corporations concur with the Fortymile Interim Fire Management Plan:

President
Hungwitchin Corporation (Eagle)

8/27/79
date

President
Dot Lake Native Corporation

8/28/79
date

Vice-*President*
Mendas Cha-ag Native Corporation (Healy Lake)

9/21/79
date

President
Tanacross, Inc.

8/24/79
date

President
Tetlin Native Corporation

8/23/79
date

President
Northway Natives, Inc.

9/10/79
date

The Fairbanks District of the Bureau of Land Management concurs with the Fortymile Interim Fire Management Plan:

District Manager
Fairbanks District
Bureau of Land Management

8/8/79
date

THE FORTYMILE INTERIM FIRE MANAGEMENT PLAN

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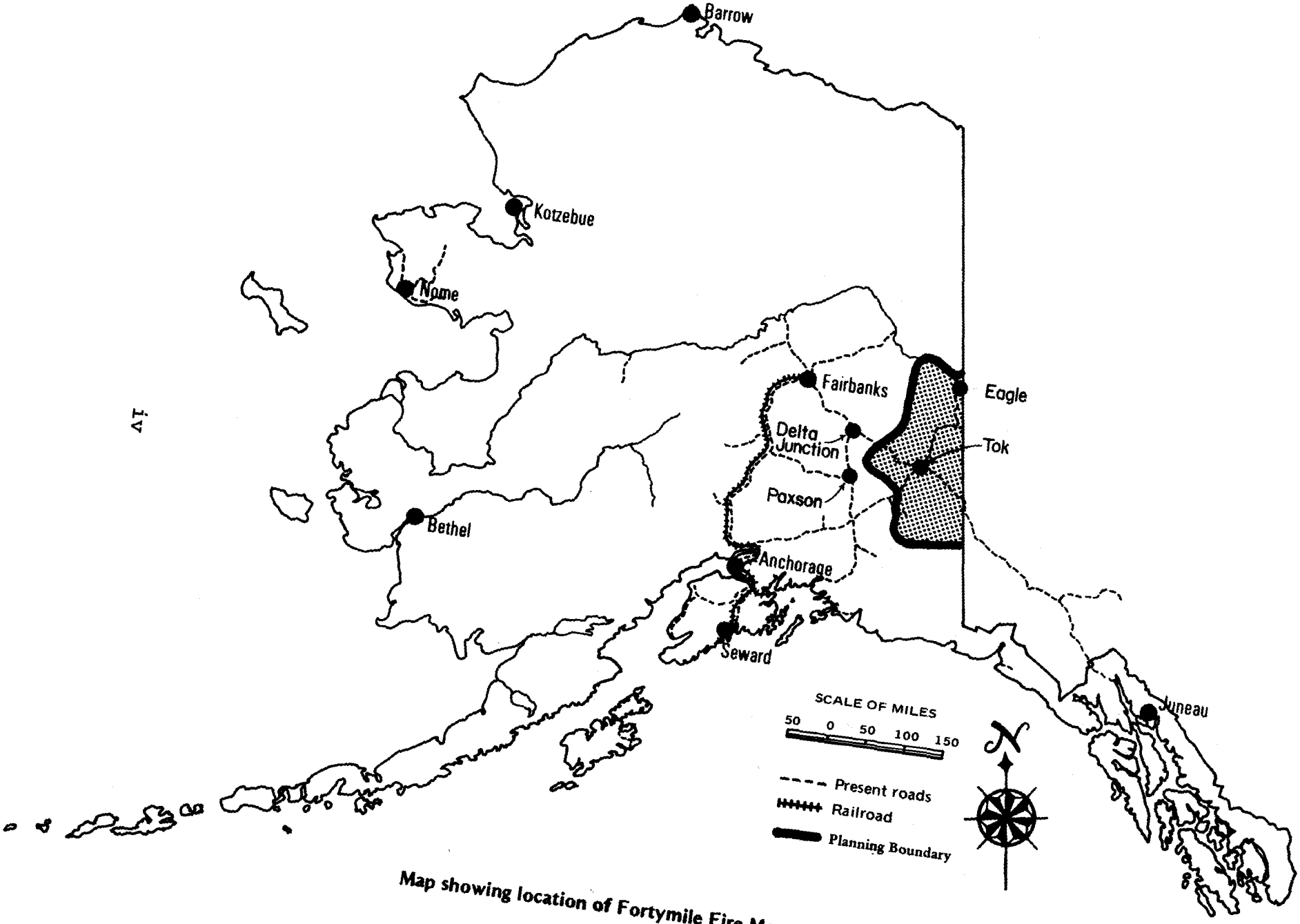
Cover photo is of Mount Fairplay, which rises to an elevation of 5,541 feet and is located 34 miles northeast of Tok, Alaska, in the Yukon-Tanana Uplands. It is a familiar landmark to residents and workers in the Fortymile Fire Management Plan Area.



Map showing location of Fortymile Fire Management Plan area.

I. INTRODUCTION

On October 26, 1978, a group of Alaskan Federal, State, and Native fire and land managers met to identify and seek solutions to common fire management problems on an interagency basis. The Fortymile Interim Fire Management Plan is a direct result of this and subsequent meetings.

The above-mentioned group was designated the Fire Subcommittee of the Alaskan Land Managers Cooperative Task Force (ALMCTF).

The Alaskan Land Managers Cooperative Task Force was formed in June 1978 by cooperative agreement between the Governor of Alaska, the Secretaries of the Interior and Agriculture, and the President of the Alaska Federation of Natives. Its purpose is to promote coordinated land planning and cooperative resource management in Alaska. The Task Force chairman is Jerry Gilliland, special assistant to the Secretary of the Interior.

The ALMCTF designated various subcommittees to explore specific areas of possible interagency cooperation. One of these subcommittees is the Fire Subcommittee, chaired by Clair Whitlock, associate state director of the Bureau of Land Management, Alaska.

Membership in the Fire Subcommittee is composed of representatives of the following agencies: Department of the Interior--National Park Service, Fish and Wildlife Service, Bureau of Land Management, Bureau of Indian Affairs; Department of Agriculture--Forest Service Region 10, Institute of Northern Forestry; State of Alaska--Department of Natural Resources, Division of Forest, Lands, and Water and Department of Fish and Game; and the Alaska Federation of Natives, represented by Doyon, Limited.

The first project undertaken by the Fire Subcommittee was to develop an interagency fire management plan for a specific area with the following specific objectives:

1. Establish procedures for development of interagency fire management plans. The procedures and interim plan will serve as guidance for future fire management plan development.

2. Initiate reduction of fire suppression costs to the degree they are commensurate with potential resource loss and within an acceptable risk level.

3. Design operationally feasible protection standards that are environmentally and ecologically sound and that are responsive to each agency's land management objectives.

As a starting point and to give overall direction to the plan development, the following assumptions and general guidelines were made or established:

1. The boreal forest is a fire-dependent system that has evolved in association with fire, and will lose its character, vigor, and faunal and floral diversity if fire is excluded.

2. The plan will be considered and developed as an interim fire management plan, pending final resolution of the land ownership and the subsequent development of specific land management objectives derived from land use planning.

3. When approved, this plan will be operational for the 1980 fire season. It then will be reviewed, updated, and modified as appropriated before the 1981 fire season. (See Section VIII, Evaluation and Revision Procedures.)

4. A conservative approach will be applied to establishing protection standards and prescription criteria.

5. The plan will initiate the movement away from a policy of total suppression to a comprehensive fire management program for Alaska.

6. The use of prescribed fire for the purpose of obtaining specific resource objectives will not be addressed in this plan because of the lack of land use plans establishing resource objectives by area. This option is to be left open and incorporated into the plan as resource objectives are identified by agency.

The plan also will not address the fire management functions of allocation of forces, detection, and prevention. These functions are currently operationally effective and no immediate changes are anticipated.

7. Current costs of fire suppression have reached a point where increased expenditures will not significantly increase effectiveness and suppression costs are escalating at an alarming rate.

8. Cost-effective fire suppression strategies have not been utilized to an optimum extent.

9. The fire management program in Alaska must be pursued on an interagency basis to prevent costly and inefficient duplication of programs and to assure responsiveness to all land managers' objectives.

NOTE: The boundary of the Fortymile Interagency Planning Area as shown on the maps in Appendixes E, F, and G has been amended to include all of Healy Lake Village selection lands (13d). These lands will be protected at Response Level 1 Protection Standards. The acreages shown on page 9 will be changed to reflect the additional acreage included within the boundary of the planning area when the plan is revised.

--The Fire Subcommittee, ALMCTF
December 1979

II. GENERAL DESCRIPTION

Issues and Concerns

Wildfire suppression costs

In the Fortymile Fire Management Planning Area, the distribution and vigor of natural vegetation and wildlife populations are a result of periodic burning by fires started by man and nature. During the past 10 to 20 years, the technology for rapid detection and suppression of wildfire has increased; the result is that fewer acres burn each year than burned under natural conditions. This reduction of burned acres has been achieved at the price of increased costs for fire protection for both the State and Federal governments. (See Appendix D for cost summary.) This also may lead to long-term shifts in habitats, thereby increasing the possibility of larger fires with increasing difficulty for control.

Although land use plans are not completed for the planning area, there is an opportunity to maintain and improve the overall picture by reducing the level of fire suppression on those areas where life, private property, and high-value resources would not be threatened by fire. This will set the stage to restore a near-natural role of fire in the many remote portions of the planning area. Fires threatening human life, private property, and certain high-value resources will continue to be vigouously suppressed.

Land ownership

In the recent past, BLM was the major landholder in the planning area. State and private land ownerships were minor and generally were concentrated along transportation routes and in and around the few communities in the area.

Major shifts in the land ownership are occurring rapidly and will continue. Portions of two new National Park Service Monuments are included in the area and a new National Wildlife Refuge has been proposed for management by the Fish and Wildlife Service. The State and Native Corporations have selected large blocks of land under the provisions of the Alaska Statehood Act and the Alaska Native Claims Settlement Act (ANCSA), respectively.

Because of the diversity of new land ownerships in the area, a major shift in land and resource management objectives will take place. This plan is the first step in identifying and preparing individualized fire management programs within the Fortymile Planning Area for each ownership. BLM is the only agency with existing fire suppression capabilities. It is likely that BLM will continue to be the prime fire suppression agency. Under these conditions, the land owners, whether Federal, State, or Native, are responsible for identifying land use objectives. The BLM role will be one of technical fire support for all land managers. In addition, BLM will manage a large block of public lands within this area. Coordinated fire management planning is needed to insure efficient operations, both in terms of costs to taxpayers and in implementing land use plans.

Recreation and wilderness

The entire area is moderately high in outdoor recreation potential. Primary uses now concentrate near communities, along the Yukon and Fortymile Rivers, and along the highway network. Outdoor recreation activities often take place where and when fire danger is high. Accordingly, recreation uses could become significant in fire incidences in the planning unit. Fire, itself, poses only short-term adverse impacts on recreation values. The scenic vegetation mosaics now viewed are largely the result of past fires. Early successional plant communities, such as fireweed, that follow a fire add significantly to the overall visual value, while under certain conditions, berry-producing plants are more abundant where fires have removed larger shade-producing plants.

Except for the settled and mined areas, all of the planning area has value for wilderness recreation use. Several proposals for legislative wilderness designation for portions of the Yukon-Charley and Wrangell-St. Elias areas have been made, although none is yet final.

Wildlife

Most wildlife biologists and others concerned with the natural role of fire in northern ecosystems question the continuation of the present Alaska Fire Attack Policy. (See Appendix B.) The extent of some natural fires has been reduced, resulting in a possible loss of habitat diversity and productivity. More will be lost if the present policy is continued. A detailed discussion follows in the Wildlife section of this plan. (See page 26.)

Fireline construction and natural fire breaks

The planning area is underlain with discontinuous permafrost. Although the ecosystems are fire adapted throughout the planning area, localized soil slumpage and stream siltation do occur as a result of fire. Construction of firelines with mechanized equipment, such as that used in the 1966 project fires near Chicken, produced significant and long-term localized impacts on soil stability and water quality.

Since the early 1970's mechanized fireline construction has been stringently controlled and the amount of erosion damage reduced substantially. As private property ownership increases within the planning area, it is possible that increased mechanical fireline construction will be necessary to protect life and private property.

Indirect suppression tactics, such as backfiring from rivers, streams, and other natural barriers, have been more frequently utilized in current years. The use of these practices will be increased under this plan.

Land Use Plans

State

A comprehensive land use plan exists for the lands abutting the Fortymile Fire Management Plan area along the northern portion of the western boundary. State lands within the study area are not yet covered by a land use plan; a plan is needed to assist in determination of State lands that are to be transferred to private ownership and those that are to be retained in State ownership for resource management. Some area residents have expressed particular interest in a land use planning effort to allow for better long-range community development. The Tok area is likely to be involved in a comprehensive land use planning effort within the next five years.

Federal

For the past eight years, a wide variety of studies and recommendations have been made by the National Park Service, the Bureau of Land Management, the Forest Service, and the Heritage Conservation and Recreation Service, at the direction of Congress. The products of these efforts are the President's recommendations to Congress for new units to the

National Parks, Refuges, and Wild and Scenic Rivers within the planning area. Yukon-Charley and Wrangell-St. Elias National Monuments were established on the basis of the studies, and the Fortymile Wild and Scenic River and Tetlin Refuge are additional areas recommended for designation by Congress. An area lying between the Tetlin Refuge proposal and the Wrangell-St. Elias National Monument was withdrawn under authority of Section 204e of the Federal Land Policy and Management Act (FLPMA) and has variously been proposed for addition to the National Park System, Fish and Wildlife Service, or administration by the Bureau of Land Management. The most significant formal documents are the original environmental impact statements accompanying the recommendations. These together with preliminary planning by the Bureau of Land Management have had substantial public review and comment over the past several years.

Management plans will follow the staffing of each area. These plans have several components, including detailed resource management considerations, of which fire management is an important part. This interim fire management plan and future plans for the Fortymile Fire Management Unit will be incorporated in these efforts.

Private

The 5 million acres of private Native/Selection Ownerships in the planning unit do not yet have completed land use plans. Selections in the planning unit appear to have been made on the basis of a full range of potential land uses, including subsistence, residential, development, timber harvest, and mining.

A major private land use planning effort is under way to permit construction of a large-diameter gas pipeline from Prudhoe Bay to the contiguous States.

Air quality

Smoke from wildland fires is natural to Alaska, and all wildlands in Alaska have been influenced to some extent by fire. Fire recycles nutrients more rapidly than do bacterial and fungal systems. The continued existence of many Alaskan ecosystems is dependent on fire.

Emissions of sulfur oxides, nitrous oxides, carbon monoxide, and hydrocarbons are usually not significant when measured short distances from the fire, except when they are concentrated by weather inversions. Particulates and re-

duced visibility from wildland fires are the major causes for concern when population centers, airports, and arterial ground transportation routes are affected. These impacts must be prevented when possible.

The State Air Quality Implementation Plan has not been approved by the Environmental Protection Agency. When that plan is approved, the Fortymile Interim Fire Management Plan will be reviewed carefully and revised if necessary to ensure that air quality requirements are met.

Physical Environment

Location

The 14-million-acre Fortymile Interagency Fire Planning Area is located in the eastern part of the fire-prone interior region of Alaska. The area is bounded on the east by the border between Alaska and the Yukon Territory, on the south by the Wrangell Mountains, and on the north by the Yukon River. The western boundary is comprised of the drainage divides of small tributaries of the Tanana River. The area is 240 miles from north to south and ranges from 75 to 125 miles wide. Its center is about 160 air miles southeast of Fairbanks, Alaska, and 100 air miles southwest of Dawson, Yukon Territory, Canada.

Land ownership

At present most of the planning area is under interim administration of the Bureau of Land Management. This, however, is changing rapidly and the following tabulation shows existing and prospective ownerships:

	Millions of acres	Existing	Prospective
a. National Park Service			
Wrangell-St. Elias Monument	1.0	X	
Yukon-Charley Monument	1.4	X	
Wrangell-St. Elias Preserve	1.1		X
b. Fish and Wildlife Service			
Tetlin Refuge	0.7		X

(Continued on next page.)

		Millions of acres	Existing	Prospective
c.	Bureau of Land Management			
	Fortymile Wild and Scenic River	0.3		X
	Public Lands	3.1	X	
d.	Native (Village and Regional Corporations)			
	Selected	4.6		X
e.	State of Alaska			
	Patented	0.2	X	
	Tentatively approved or patented	0.2	X	
	Selected	2.0		X
	Total indicated ownership	14.6		
	Total acres in Planning Unit	14.0		

(Totals do not agree because of dual selections.)

Physiography

The Fortymile Fire Management Planning Area is comprised of a series of stairstep-type land forms that trend southeasterly-northwesterly across its width. The glaciated Wrangell Mountains along the southern boundary extend to an elevation of more than 13,000 feet. The northern flanks gradually descend into the marshy lowlands in the upper Tanana Valley at an elevation of 1,600 to 2,000 feet. To the north the topography rises in ridges to form the unglaciated Tanana Uplands, which terminate with mountains 4,000 to 6,000 feet high before dropping abruptly to the Yukon River (800 feet elevation).

The area north of the Alaska Highway is sharply dissected by the tributaries of the Fortymile River. These numerous tributary streams prevent cross-country surface movement of fire suppression forces and equipment. Local relief is sharp throughout the planning area but is most pronounced

along the northern flanks of the Wrangells and in the Tanana Uplands.

Climate

The planning area is interior, subpolar continental with severe arctic winters. During the winters, extended periods of -50°F to -75°F are common. Summers are short and warm, with temperatures reaching 90° to 100°F. Daily fluctuations can be extreme, with freezing temperatures possible throughout the summer. During any month, snow can occur where elevations exceed 4,000 feet. The frost-free period is about 90 days in the central portion of the area. Sunlight approaches 22 hours on June 21.

Annual precipitation is approximately 11 inches for the central and northern portions of the planning area, with considerably larger amounts along the Wrangell Mountains. Thunderstorms are most frequent during June and July. Prevailing winds are westerly and tend to be closely associated with the Tanana and Yukon River Valleys.

Watershed and soils

The entire planning area is underlain with discontinuous permafrost. The term "permafrost" describes a condition in which ground temperature remains below freezing for two or more years. Above the permanently frozen soil is an "active layer," which thaws and freezes each year. The active layers found in the Fortymile area may be from two to ten feet deep.

The two characteristics of soils in permafrost areas which cause problems when those soils are disturbed are moisture content and soil particle size. Permafrost containing a large amount of water is referred to as "ice rich," and in extreme cases, the ice may be present in lenses several feet thick. When ice-rich soils thaw, abundant free water is available and can cause runoff, erosion, and sedimentation, even in the absence of rainfall.

Whether or not erosion and sedimentation will occur following disturbance by fire or the construction of firelines depends upon the soil particle size and slope of the surface. Fine-grained soils that are also ice rich are termed "thaw-unstable soils" and are extremely unstable and easily erodable when the protective cover of vegetation is removed. On the other hand, coarse-grained gravelly soils

are much more stable even if they are ice rich. Soils of any grain size that contain little moisture are generally thaw stable.

Many of the soils and substrates in this area are composed of fine-grained materials. North-facing slopes, south-facing toe slopes, valley bottoms, and areas shaded by heavy tree cover are commonly underlain by ice-rich permafrost. If the shading or insulating vegetation mat is removed, the ice-rich, fine-grained soils and substrates melt rapidly. Rain may greatly accelerate melting. If the vegetation mat is removed to the edge of a water body, silt and organic material may wash into the water.

Wildfire usually does not completely consume the vegetation mat, damage soils, or cause significant erosion or water quality degradation. In the past, fire suppression activities, such as fireline construction, both by hand and with equipment, and use of all-terrain vehicles have damaged soils and resulted in erosion and water siltation.

The area can be divided into three soil units. Soil unit one contains a high percentage of poorly drained silt loams with shallow permafrost. The mountain rocklands are included in this unit because the valley bottoms, toe slopes, and rounded ridges contain most of the burnable vegetation. Soils are composed of gravelly silt or sandy loams with shallow permafrost. Even if well-drained, these soils erode easily because of their steep grades.

Soil unit two contains more gravelly, well-drained soils and/or poorly drained silty soils on flatter terrain. Erosion hazard is high. The 1966 Chicken Fire (Fire Number Y-34) where substantial erosion subsequently occurred from firelines, was in this unit.

Both units have areas of relatively low erosion hazard, which are best sites for fireline construction.

In soil unit three, the terrain is mostly low relief, with well-drained, very gravelly silt and sandy loam soils. There is moderate erosion hazard. The communities of Tok and Dot Lake are in this unit.

Unit boundaries are from the Alaska Exploratory Soil Survey. USDA Soil Conservation Service Interpretations are based on personal knowledge, communications with researchers, and a wide variety of printed information.

Historic aspects of fire

Fire is a normal process in the functioning of ecosystems within the planning unit. Vegetation mosaics present a living record of past fires that predates written history.

The early stages of vegetation succession following fire are similar to those in more temperate regions. In later stages, complexities of permafrost/vegetation relationships are introduced, creating conditions somewhat different from those found in more southerly climates (see Fig. 1).

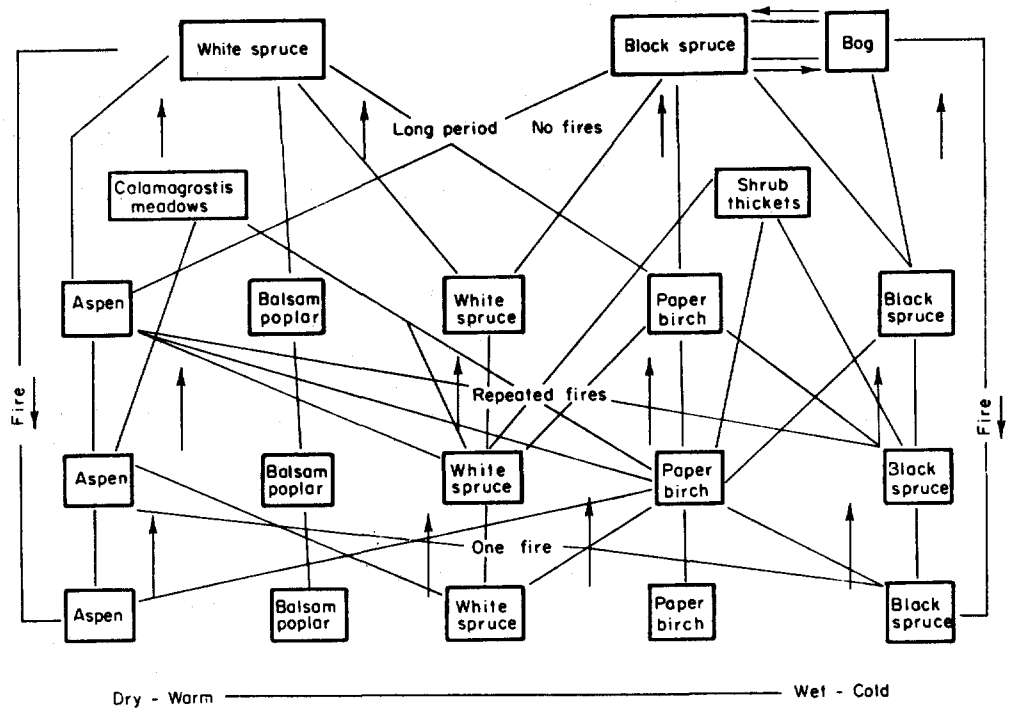


Fig. 1. Patterns of forest succession following fire in Alaska. (Viereck 1973 as modified from Lutz 1956)

Long hours of summer daylight relate directly to fire behavior. Historically, fires have burned uninterrupted for days with high intensities, covering vast acreages. The largest recent fire started in July 1969 and burned through mid-September, covering a total of

525,000 acres. The second largest fire occurred in July 1966 and burned 203,600 acres.

Records for the 22 years studied (1957 through 1978) show that fires exceeding 1,000 acres in size have not occurred in April, May, or September. Occurrence rates for fires larger than 1,000 acres were .86 per year for June and .14 for July. June has the largest number of fire occurrences and acreages burned. Total burned acreage was less than 1,000 acres for 13 of the 22 years studied. Fires exceeding 100,000 acres occurred twice in the 22 years, 1966 and 1969. (See Tables 1, 2,and 3.)

Yearly average fire occurrence in the Fortymile Fire Planning Area is 25.0 fires per year. Lowest occurrence is six fires per year. Only three years had this fire occurrence rate; two years had only eight fires per year. The highest yearly number of fires occurred in 1976 when 61 fires were reported.

Most of the fires (62.5 percent) were caused by man, while lightning accounted for the remainder, 37.5 percent. Lightning fires accounted for the greatest acreage burned, however, mainly because they usually start in remote parts of the country. Suppression costs are also largest for lightning-caused fires, amounting to about $5 million compared with $2 million for man-caused fires for the 22 years. Because lighting fires start in remote areas, suppression action must depend on expensive air transportation. An increase in man-caused fires in remote areas is anticipated as recreational use of these areas increases. Associated suppression costs will also increase.

The seasonal fire cycle consists of four "micro" seasons or phases. These vary with changing weather patterns and the stages of vegetation development for the growing season. The first begins in late April or early May with the loss of snow cover, and ends in late May or early June when greenup begins. During the transition from 100 percent winter-cured fuels to greenup, man-caused fires occur frequently. Fires occurring during this period generally are not difficult to suppress due to high relative humidity recovery at night and cool day and night temperatures. If spring fires are not suppressed, they are likely to break out later in the year when fuels are dry. Fire spread is slow during this period, because of moisture in the air and in the fuels, location of fires near population centers or roadways, and the rapidity with which the fires are detected, reported, and attacked. This period of fire activity is

Table 1. Fire occurrence by month over 22 years (1957-78) in the Fortymile Fire Management Plan Area.

Month	Man-Caused Fires		Lightning-Caused Fires		Fires from All Causes*		False Alarms	
	total number	average number	total number	average number	total number	average number	total number	average number
January	1	0†	__ ††	__	1	0	__	__
February	__	__	__	__	__	__	__	__
March	1	0	__	__	1	0	__	__
April	14	0.6	__	__	14	0.6	3	0.1
May	82	3.8	3	0.1	85	3.9	11	0.5
June	85	3.9	87	4.0	172	7.8	12	0.6
July	66	3.0	86	3.9	152	6.9	16	0.7
August	48	2.2	28	1.3	76	3.5	10	0.5
September	41	1.9	2	0.1	43	2.0	5	0.2
October	6	0.3	__	__	6	0.3	__	__
Totals	344	15.6	206	9.4	550	25.0	57	2.6

*Does not include false alarms.
†0 indicates figure is too small to be meaningful.
††__indicates no activity.

Table 2. Acres burned by month over 22 years (1957-78) in the Fortymile Fire Management Plan Area.

Month	Man-Caused Fires		Lightning-Caused Fires		Fires from All Causes	
	total acres burned	average acres burned	total acres burned	average acres burned	total acres burned	average acres burned
January	0*	0	__†	__	0	0
February	__	__	__	__	__	__
March	0	0	__	__	0	0
April	53	2	__	__	53	2
May	719	33	20	1	739	34
June	626,961	28,498	141,119	6,414	768,080	34,912
July	2,178	99	231,893	10,541	234,071	10,639
August	581	26	488	22	1,069	49
September	47	2	300	14	347	16
October	0	0	__	__	0	0
Totals	630,539	28,660	373,820	16,992	1,004,359	45,652

*0 indicates figure is too small to be meaningful.
†__indicates no activity.

Table 3. Fire occurrences by size, class, and month over 22 years (1957-78) in the Fortymile Fire Management Plan Area.*

	January	February	March	April	May	June	July	August	September	October	Total fires	% of all fires	% man-caused fires	% lightning-caused fires
Size class														
A (0-.25 acres)	1		1	6	31	56	74	40	30	6	245	44.5	81.6	18.4
B (.26-9.9 acres)				5	42	59	40	22	11		179	32.5	57.5	42.5
C (10-99 acres)				3	11	27	26	10	1		78	14.2	25.6	74.4
D (100-299 acres)						3	6	3			12	2.2	33.3	66.7
E (300-999 acres)					1	9	3	1	1		15	2.7	26.7	73.3
F (1,000-4,999 acres)						9	1				10	1.8	30.0	70.0
G (5,000-9,999 acres)						3					3	0.6		100.0
H (10,000-49,000 acres)						4	1				5	0.9		100.0
I (50,000-99,999 acres)						1					1	0.2	100.0	
J (100,000-199,999 acres)														
K (200,000+ acres)							1				1	0.2		100.0
L (300,000+ acres)														
M (400,000+ acres)														
N (500,000+ acres)						1					1	0.2	100.0	
Totals	1		1	14	85	172	152	76	43	6	550			
%of all fires	0.2		0.2	2.5	15.5	31.3	27.6	13.8	7.8	1.1		100		
% man-caused fires	100		100	100	96.5	49.4	43.4	63.2	95.3	100				
% lightning-caused fires					3.5	50.6	56.6	36.8	4.7					

* False alarms not included.

followed by a period when vegetation starts growing and fires are usually small.

The second and third fire-cycle phases are primarily lightning related. These fires are difficult to suppress because they occur in remote areas where they are hard to detect and reach. They are usually larger when they are detected than are man-caused fires, and the time between detection and initial attack generally is longer. Fires that occur in June usually do not develop the intensity of later summer fires, but if the weather is hot, dry, and windy, June fires can cause severe control problems.

The third period of fire activity begins in mid-July and runs through the first part of August. This is the period of maximum fire activity. The usual problems of accessibility and detection are compounded by increased rates of spread and high fire intensities because fuels are dry. Even with prompt initial attack, fires are often beyond immediate control when forces arrive. Indirect attack is often the only option available for suppressing these fires.

The final "micro" season occurs in late August and early September, when fires are usually caused by hunters and fishermen. Control of these fires generally is not a problem unless they occur during a particularly dry fall and fire control manpower has been reduced by termination of the seasonal work force.

Fire occurrence patterns are quite distinct for man-caused fires. Records show that where people have access, whether it is by vehicle, aircraft, boat, or walking, the incidence of man-caused fires is high. The number of fires is limited by difficulty of access. Most fires occur along the major highway route from the Canadian Border toward Delta Junction. Lightning fires have occurred from just south of the Alaska Highway north to the Yukon River. The major area of lightning-caused fires is around Mount Fairplay. For the 22-year study period, 209 fires were recorded, an average of 9.9 fires a year. Statistics show one lightning fire was started in 1961 and 26, the highest number, were started in 1972.

Fuels in the planning area are diverse. They range from riparian forest, around the 500-foot elevation level, to alpine tundra at 2,500-foot levels. Fires have occurred in all zones, and single fires have burned through all zones (see Fig. 2). Large fires have occurred in the past in the

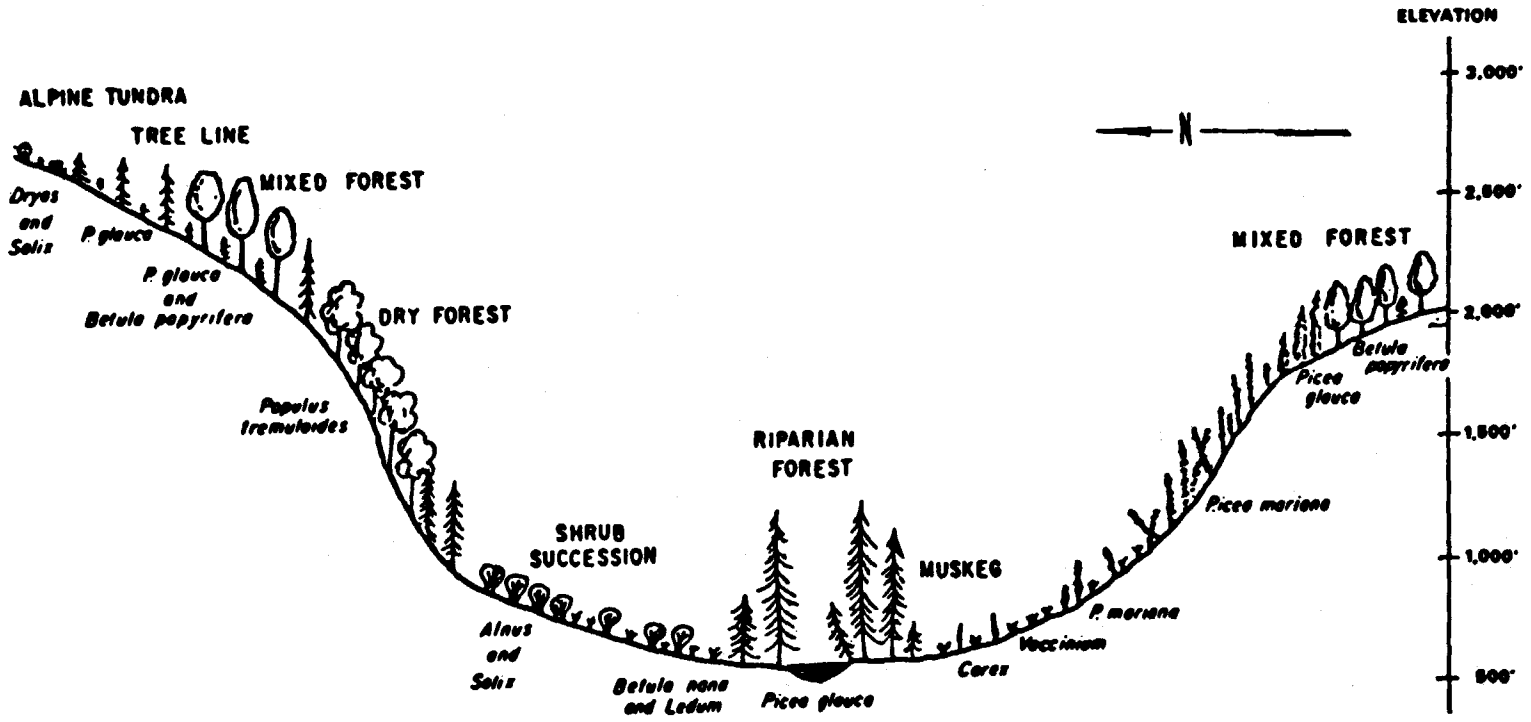


Fig. 2. Diagram of typical vegetation along a topographic gradient.

large continuous forests that are representative of this area and large fires can be expected in the future. Fires have smoldered under the snow through the winter months and broken out the following summer.

Available fuels can be divided into two broad categories, living and dead. The intensity at which living fuels burn varies according to the time of year. During late spring and early summer, moisture content in most living plants is high, but as summer advances the moisture content drops and plants burn much more intensely. The intensity at which the dead fuels burn is affected mostly by weather conditions.

Fuels are characterized by a heavy ground vegetation and organic mantle. Vertical ladders of fuels often allow fires to burn from the surface to the treetops, creating crown fires. Continuous fuels exist over vast areas. All of these factors contribute to large, complex fires, given the right conditions.

There are localized outcrops of coal and oil shale near the Yukon River. Wildfire in the past has not been a major threat to these deposits. An oil shale deposit near the mouth of Tatonduk River has been burning since 1969, however, and an outcrop of coal near Chicken has been burning since August 1978.

The earliest recorded fire suppression activity was local protection of improvements during gold rush days in the early 1900's. The first major efforts to suppress large fires in remote areas were made in 1957, and intensified in the late 1960's. Results of these early suppression efforts were often more devastating to the environment than was the fire. Evidence of these early efforts--catlines and supply trails--can still be seen near Chicken and Mount Fairplay.

Much was learned from early attempts to control large fires in remote areas, and use of environment-damaging machines was restricted. Begun in the early 1970's, the use of Helitack, smokejumpers, and aerial retardant has increased and resulted in significant reduction of fire sizes.

Suppressing large fires in remote areas requires unique personnel arrangements. Firefighters must be trained and their proficiency maintained. Skilled use of aircraft is also needed to maintain suppression forces in a remote, roadless environment. Fire behavior prediction and ground

and aerial firing techniques are needed to manage burnouts and backfires successfully. Indirect fire suppression tactics also are employed, using relatively small numbers of men to control fires that may cover vast acreages.

Another problem that fire suppression forces must deal with is heavy smoke that creates hazardous flying conditions. At times suppression efforts have had to be abandoned because forces could not be maintained in the field. Airports in cities such as Fairbanks have had to close because of heavy smoke, and recreationists in the back country have been stranded because bush pilots were unable to reach them.

Forces for wildfire suppression are stationed at Chicken, Eagle, and Tanacross. Tanacross is the major area for mobilization of wildfire suppression within the Fortymile Fire Planning Area. Backup support is available from Fairbanks and Anchorage. Cooperative agreements are in effect with most Federal and State agencies in Alaska and internationally with Canada.

Fires have started in Canada, burned sometimes for months, and then crossed into Alaska. Alaskan fire units, by cooperative agreement with Canada, attack and suppress fires 10 miles inside Canada as part of their normal operating procedure. The Canadians likewise are authorized to take suppression action 10 miles inside Alaska.

Fire Effects

The effects that fires of different intensities have on various sites are many, complex, and varied. Each site has unique characteristics, values, and possibilities. Although a thorough discussion is not practical here, some generalizations are appropriate.

The ecosystems of the entire Fortymile Fire Planning Area are fire adapted. Periodic fires for thousands of years have served to select plants and animals that are adapted to fire-caused changes. Fire will not destroy these ecosystems; it will only alter them, and then only temporarily. Fire is a normal occurrence and should not be viewed with alarm where life, property, or other special values are not threatened.

When fire occurs, certain technological aids can be used in the specific location to predict the response of the area to the particular fire. The Natural Resource Officer position may be activated on fires where unique or signifi-

cant resource values are involved.

On "no-attack" fires, a resource specialist or Natural Resource Officer may be needed to accompany the Fire Management Officer on early surveillance flights in order to assess fire effects immediately discernible. Guidelines for this work are found in the Natural Resource Officer's Handbook.

Ecosystems

It is a widely shared opinion that unless human life or private property are threatened, no long-term damage results from fire in Alaskan ecosystems. In fact, most ecologists believe fire is essential to the maintenance of the boreal forest. Fire is an important force in the development of many Alaskan ecosystems and has a direct beneficial effect on the diversity and local abundance of many plant and animal populations in the Fortymile Fire Management Planning Area.

Detailed ecosystem and resource information is contained in numerous reports concerning all or portions of the planning area. Primary sources used in this plan are as follows:

Classification and multiple use proposals for Fortymile Resource Area (BLM, Fairbanks District Office, 1967).

Fortymile Resource Area, Unit Resource Analysis (BLM, Fairbanks District Office, 1976).

Environmental Impact Statements for the following proposed systems:

Wrangell-St. Elias National Park (USDI, 1974)
Wrangell National Forest (USDA, 1974)
Fortymile Wild and Scenic River (USDI, 1974)
Yukon-Charley National Rivers (USDI, 1974)

Environmental Impact Statement for the Alaska Highway Gas Pipeline (Federal Power Commission, 1976)

Alaska Regional Profile, Yukon Region (1977)

The Delta Land Management Planning Study (Alaska Division of Lands, 1977)

Report for Alaska Land Withdrawals under Section 204(e) of P.L. 94-579 (USDI, 1978)

Fire Statistics (BLM, 1957-1978)

The Joint Federal-State Land Use Planning Commission for Alaska (1973) divided the State into nine major ecosystems, eight of which occur in the Fortymile area. These can be further divided into three vegetation groups: coniferous forest systems, deciduous brush systems, and tundra systems.

Coniferous forest systems

Bottomland Spruce-Poplar--This tall, relatively dense interior forest cover type is primarily white spruce, locally mixed with cottonwood or balsam poplar. In general, the commercial stands of white spruce are on level to nearly level flood plains and low river terraces. On more favorable sites 100- to 200-year-old spruce are found, with diameters to 24 inches and heights to 110 feet.

Cottonwood and balsam poplar constitute a seral plant community in the lowland white spruce forest. They are replaced at maturity by white spruce. Both cottonwood and poplar invade flood plains and deglaciated valleys and grow rapidly to heights of 80 to 100 feet and diameters to 24 inches.

Undergrowth is generally dense and consists of high and low shrubs including American green alder, thinleaf alder, willow, rose, dogwood, Labrador tea, and berry bushes. The forest floor is usually carpeted with bluejoint, fireweed, horsetails, lichens, herbs, and moss.

Portions of flood plains are barren during periods of low water, and some periodically flooded backwater areas contain meadows of tall grass with clumps of willow.

Upland Spruce Hardwood--This cover type is a fairly dense interior forest composed of white spruce, birch, aspen, and poplar. Black spruce typically grows on north slopes and poorly drained flat areas. Root depths are shallow.

White spruce ranging from 20 to 40 feet in height and about 12 inches in diameter occurs in mixed stands on south-facing slopes and well-drained soils; it forms pure stands near streams. Aspen and birch average 30 feet in height. Poplar averaging 40 feet in height and 18 inches in diameter occurs in scattered stands along streams.

Undergrowth consists of mosses and grasses on drier sites and shrubs on moist slopes. Typical plants are willow, alder, rose, high- and low-bush cranberry, raspberry, currant, and horsetail.

Lowland Spruce-Hardwood--This cover type is a dense to open interior lowland forest of evergreen and deciduous trees, including extensive pure stands of black spruce. Black spruce are slow growing and seldom exceed 8 inches in diameter or 50 feet in height.

Cones of this tree open after fire and spread abundant seed, enabling black spruce to invade burned areas quickly. The slow-growing stunted tamarack is associated with black spruce in the wet lowlands. Like black spruce, it is of little commercial value, seldom reaching a diameter of more than 6 inches.

Rolling basins and knolls in the lowlands have a varied mixture of white spruce, black spruce, paper birch, aspen, and poplar. Small bogs and muskegs are found in the depres sions.

Undergrowth species include willow, dwarf birch, lowbush cranberry, blueberry, Labrador tea, crowberry, bearberry, cottongrass, horsetail, lichens, and thick covers of sphagnum and other mosses. Large areas burned since 1900 are covered by willow shrub and very dense black spruce sapling stands.

Deciduous shrub systems

High Shrub--This cover type is found near timberline in Interior Alaska. It consists of resin birch, American green alder, thinleaf alder, and several willow species. Thickets may be extremely dense, or open and interspersed with reindeer lichens, low heath type shrubs, or patches of alpine tundra. Other associated species are Sitka alder, bearberry, crowberry, Labrador tea, spirea, blueberry, and mountain cranberry.

Low Shrub-Muskeg--Extensive bogs are found where conditions are too wet for tree growth. Bog vegetation consists of various amounts of sedges, sphagnum and other mosses, bog rosemary, resin birch, dwarf arctic birch, Labrador tea, willow, cranberry, and blueberry. Localized saturated flats have large patches of cottongrass tussocks. Areas of tall willow, alder, and widely spaced dwarf spruce and tamarack are found within and around the marginal higher portions. Bog surfaces often have uneven, stringlike ridges. These surfaces are too wet for shrubs.

Tundra systems

Moist Tundra--Moist tundra usually forms a complete ground cover and is extremely productive during the growing season. These communities vary from almost continuous and uniformly developed cottongrass tussocks with sparse growth of other sedges and dwarf shrubs to stands where tussocks are scarce or absent and dwarf shrubs are dominant. Associated species are Arctagrostis, bluejoint, tufted hairgrass, mosses, alpine azalea, wood rush, mountain-avens, bistort, low-growing willows, dwarf birch, Labrador tea, green alder, Lapland rosebay, blueberry, and mountain cranberry.

Wet Tundra--This cover type is usually found in areas with little topographic relief. Standing water is almost always present in summer and numerous shallow lakes are common. In northern areas, permafrost is close to the surface, and microrelief features in the forms of polygons and peat ridges are formed by its action. Dominant vegetation is sedge and cottongrass, usually forming a mat rather than tussocks. A few woody and herbaceous plants occur on the drier sites above the water table. Rooted aquatic plants occur along shorelines and in shallower lake waters.

Associated plants are lichens, mosses, low-growing willows, dwarf birch, Labrador tea, cinquefoil, lowbush cranberry, and occasionally bog cranberry. Characteristic rooted aquatic plants are bur reed, pond weed, pendant grass, and marestail.

Alpine Tundra and Barren Ground--Alpine tundra communities are found on all mountain ranges of Alaska and on exposed ridges in the Arctic and southwestern coastal areas. This cover type consists of barren rocks and rubble interspersed with mats of low plants, both herbaceous and shrubby. White mountain-avens may cover entire ridges and slopes along with many low-growing herbs, such as moss-campion, black oxytrope, arctic sandwort, and several lichens, grasses, and sedges.

Associated species are resin birch, dwarf arctic birch, cassiope, crowberry, alpine-azalea, Labrador tea, mountain heath, rhododendron, arctic willow, dwarf blueberry, bog blueberry, and cranberry.

Sensitive, threatened, and endangered plants

The Endangered Species Act of 1973 requires Federal agencies to prevent deterioration of the habitat of plants listed as threatened or endangered.

Although no Alaskan plants are listed as endangered yet, 19 Alaskan plant species are proposed to be listed as threatened or endangered. Federal policy requires that plants proposed for threatened or endangered status be protected as if they were listed.

Within the fire management area, two sites are identified as known or suspected habitat of plants on the proposed list. These locations are delineated on the Protection Standards Map.

Most of the Fortymile area has not been searched for sensitive, threatened, and endangered (ST&E) plant taxa. Known locations for nine taxa are on Mission Ridge (Eagle Bluff) at Eagle, Calico Bluffs, and Cirque Lakes on the Upper Charley River. Taxa also occur on Kathul Mountain just outside the north boundary of the area. The majority of these plants occur on steep, dry, treeless, south-facing slopes below timberline. One of the plants, Podistera yukonensis, may also be found on alpine areas up to an elevation of 1,500 meters (5,000 feet). Alpine talus and outcrops may support populations of Draba porsildii. Because the vegetation in the known areas has developed under the influence of natural fire, it is reasonable to assume fire will not do irreparable harm to the ST&E plants. Fire suppression activities pose a hazard to ST&E plants and their crucial habitats.

Air Quality

Weather data from 1948 to 1971 for Big Delta, Fort Yukon, Gulkana, and Northway indicate that smoke is not a major problem for developed areas in this part of Alaska. For example, Big Delta reports 71 days of smoke, haze or smoke, and haze in 41 years of records, and Northway reports 29 smoke-days in a 21-year period.

There are, however, incidents of persisting smoke or haze, probably caused by fire either within or outside the planning unit. Big Delta's range of reported smoke days per month extends from 0 to 11 in June; Fort Yukon 0 to 18 days in July; Gulkana 0 to 3 days in July and; Northway 0 to 5 days in July. Data do not indicate that smoke, haze, or smoke and haze persisted continuously at any one station for periods greater than 48 hours.

There are presently no Class I, II, or III units designated within or adjacent to the Fire Management Unit.

Wildlife

Moose--Moose are distributed throughout the area, but are abundant only in the Tok, Little Tok, and upper Tetlin River drainages. Approximately 3,000-5,000 moose inhabit the area, with the majority in the major drainages of the Tanana River. An estimated 1,500 moose occur in the major drainages of the Yukon River to the north. Population estimates are not accurate because most of this large area has not been inventoried for moose. Populations are currently stable in the south, but there are signs of impending decline due to deteriorated winter range conditions. Populations in the north have been declining continuously in recent years due to predation, and perhaps, deteriorated habitat conditions as early seral vegetation has matured. Consequently, annual harvests have declined from a high of approximately 210 moose in the 1960's to the current level of about 90. As a direct result of population declines, moose hunting seasons have been discontinued in ADF&G Game Management Unit 20(E) since fall 1977. Intensive wildlife management, including habitat manipulation and perhaps predator management, will be required to rehabilitate moose populations throughout the area to satisfy human needs.

Habitat conditions for moose and other successional species of wildlife could be improved within large portions of this area as a result of lowered fire suppression standards. Most improvement would likely occur in the Tanana Uplands where moose are not presently abundant. Moose winter range along the Tanana and lower Tok Rivers received high suppression priority because of timber values, human development, or planned State land disposals. Until fire or other disturbance occurs in these key winter ranges, overall carrying capacity for moose using these ranges will not be increased significantly. As land use plans are developed, the use of prescribed fires may allow safe manipulation of key winter ranges for the benefit of moose populations.

Caribou--Portions of at least five and perhaps six caribou herds inhabit this area at various times of the year. The major herd encompassed by this plan is the once-numerous Fortymile herd. While historic reasons for the initial decline of this herd are not well known, loss of winter range due to fire has been largely discounted as a prime causitive factor after investigation by the Alaska Department of Fish and Game. The present population of

3,500-5,000 caribou is well below the estimated carrying capacity of 50,000. Human harvest averages fewer than 50 animals annually. There is some viewing use of the herd when it crosses the Taylor Highway in October. The main herd winters east of the highway between Eagle and the Ladue River.

Based upon recent studies, it appears that caribou may not be adversely affected by fire to the degree once believed. Because under the Interim Fire Management Plan the prescription for late-season fires is conservative, the probability of large conflagrations is greatly reduced. While a large percentage of the winter range of the Fortymile caribou herd lies within this area and received the lowest suppression priority, caribou numbers are presently well below carrying capacity.

Dall sheep--Sheep populations are concentrated in the southern portion of the area in the Wrangell, Nutzotin, and Mentasta Mountains and the eastern Alaska Range. Sheep also occur in marginal habitat throughout the Tanana Uplands and Cirque Lakes area at low population densities.

Studies of reproductive performance and rates of horn growth show that sheep populations are of high quality and moderate density in the southern areas. An estimated 4,000 to 6,000 sheep inhabit this portion of the Fortymile Fire Management Planning area. Hunting success approached 35 percent in the Wrangell-St. Elias area prior to its designation as a National Monument and closure to sport hunting. A substantial portion of this accessible sheep range is now reserved for nonconsumptive users, who currently use the area lightly. The area encompasses the Tok Management Area established by the Alaska Department of Fish and Game to maintain opportunities to take large-horned Dall rams.

Sheep range in the Tanana Uplands is typified by moderately steep, low hills. The range is marginal because of the relatively low proportion of alpine habitat. To move from one area of suitable habitat to another, sheep must move through extensive lowland areas where visibility is limited and escape routes are lacking; consequently predation mortality is high.

The Tanana Uplands population numbers fewer than 500 sheep. Because the area is rather inaccessible and sheep bands are widely scattered, human use of this resource is low. Annual harvest rarely exceeds six rams annually, with no sheep harvest in some years. For the same reasons,

viewing use is low. A special walk-in-only sheep management area was created on Glacier Mountain by the Alaska Department of Fish and Game to prevent overharvest of sheep and to provide high-quality hunting experiences.

Under the Fortymile Interim Fire Management Plan, fire suppression standards will be reduced over a majority of the sheep range within the area, both in the eastern Alaska Range and in the Tanana Uplands. Because of the low fire occurrence in the Alaska Range, effects from a change in present policy will most likely be negligible. The situation in the Tanana Uplands, however, is quite different. With an increase in the extent of grass and forb habitat in close association with escape cover as a result of reduced fire suppression priorities, sheep habitat could be enhanced. Lower elevation marginal sheep range may be dependent upon fire to allow continued habitation by sheep.

Large carnivores--Wolves, black bears, and grizzly bears are well distributed throughout the Fortymile Fire Management Area. Wolves have declined somewhat since 1973, following declines in moose and caribou populations. Trapping pressure on wolves is biologically insignificant but does provide some income for experienced trappers. Even when abundant, wolves are not often observed by nonconsumptive users.

Black bears are relatively abundant throughout the forested portions of the unit, but population numbers are virtually unknown. Harvests range from 20 to 30 bears annually. Most black bears taken are used both as food and for their skins. Because black bears depend heavily upon berries common on old burned areas, they may be considered fire related.

Grizzly populations in the planning area are moderately dense. Bears are commonly observed above timberline in the fall. Grizzlies have been increasing in number on the area during the past few years, but their relationship with fire-induced habitat changes is not well known. Harvests average about 15 bears annually within the Fire Management Area.

Both grizzly and black bears have caused problems for firefighters here in the past. Apparently bears are attracted to fires because of displaced prey, carrion, and garbage.

In general, large carnivores respond to fires in much the same way as do their prey species. Both black bears and

grizzly bears are omnivorous. Fire tends to increase availability of both plant and animal foods. Berries such as blueberry, cranberry, and soapberry increase following fire. Moose calves are important in the diets of both bear species in springtime. Early stages of plant succession tend to increase moose production. Consequently, more calves are available as prey. Small mammals are more readily available and play an important part in bear diets throughout the snow-free months.

Wolves are found throughout the planning area. They feed almost exclusively on caribou and moose. Fires that burn a mosaic pattern and benefit these prey species will benefit wolves. Fires of very large size may alter caribou migrations, thus altering the home range of the predator wolves.

Furbearers and other small mammals--There is a paucity of data on small mammals such as voles, red squirrels, and hares in the planning area. These small mammals are present throughout the area, are locally abundant, and provide sustenance for most predators in the area.

Generally, openings in spruce forests favor microtine rodents and hares if cover is nearby. Red squirrels are adversely affected by fire.

Upland furbearers, such as red fox, wolverine, coyote, lynx, and especially marten, support numerous trappers from Nabesna to Eagle. If fur prices continue to increase, the relative importance of commercial trapping to the local economy will also increase. Fur prices are currently at historic highs.

Implementing this fire plan should increase the abundance of upland furbearers throughout the area. As rodents and hares are benefited by slightly larger fires in many portions of the area as a result of lower suppression standards, predators should also benefit. The greater the habitat diversity and interspersion, the greater will be the benefit to most upland furbearers.

Small animals are the mammals most directly affected by habitat changes resulting from fire. Fires either benefit small mammals or cause only temporary declines in their populations. Because vegetation recovery enormously increases available biomass on burned areas, immediate population declines are more than compensated for in a short time. Red-backed voles tend to inhabit mature spruce

forests but use burn areas that are adjacent to their normal habitat. Meadow voles begin using burned areas about the third year following fire and become very abundant up to 16 years following fire.

Small fires or large fires with numerous unburned inclusions of black spruce or other heavy cover provide optimum habitat for small mammals. Their primary food is small herbaceous plants that are produced in abundance following disturbance. Large, completely burned areas, although having adequate food, are not used because they lack cover.

The implication of the small mammal/fire relationship is that fires which cause an abundance of prey species will greatly increase predator species.

Terrestrial birds--This Interim Fire Management Plan could enhance habitat for many species of birds that require early successional stages of vegetation. One specific example is the sharp-tailed grouse, although many nongame species have similar habitat requirements. While sharp-tails occur within this area, they are largely restricted to sites burned within the last 20 years. The extent of such habitat should increase as a result of this plan.

Birds requiring mid- to late-successional and climax plant communities should not be significantly affected by habitat changes resulting from this plan. Presently, a majority of the area is typified by late successional and climax forests of paper birch, and white and black spruce and those bird species associated with these forests, such as goshawks, spruce grouse, and gray jays. Increases in habitat diversity and interspersion should enrich the total avifauna of the area.

Waterfowl and aquatic mammals--Concentrations of waterfowl and aquatic mammals are located in the Tetlin Flats, Gardiner Creek Flats, and Mosquito Flats. Fire is required for the maintenance of marshes in northern regions. As a result of current suppression policy, the productivity of these areas has decreased, although the significance of the decrease is not known.

Wetland sites within the area support a rich diversity of wildlife species. A notable exception is beaver, except in a few locations. A predominance of mature spruce forest bordering wetland areas is likely the limiting factor for beavers.

Waterfowl hunting draws considerable numbers of hunters to the Northway area.

While beaver trapping is not significant in the area, the Tetlin Flats yielded approximately 20,000 muskrats to trappers in 1977. This harvest was worth approximately $60,000. Muskrat trapping provides considerable income to some residents of the area. Muskrats are trapped in early spring and shot after breakup.

High quality waterfowl and aquatic furbearer habitat in the proposed Tetlin National Wildlife Refuge has received low fire-suppression priority. A yearly burned acreage quota will be set eventually for the proposed Tetlin Refuge, ensuring an adequate annual rate of fire occurrence. As a result of such management, fire/wildlife relationships should be improved in this important wetland area.

Periodic fires maintain marshes by disrupting the establishment of woody vegetation and burning away the dry thatched grass. During dry years, water depth is maintained through the removal of the organic accumulation on the bottoms of ponds. Deep water is critically necessary for the overwintering of muskrats and fish and their predator, the river otter.

Although early season fires could adversely affect brooding waterfowl, such disturbance is necessary for long-term maintenance of suitable shoreline nesting cover, which is also necessary as foraging areas for muskrats.

On warm, well-drained riparian sites, the conversion of white spruce stands to balsam poplar may increase the carrying capacity for beaver.

Threatened and endangered animals--The peregrine falcon is the only endangered species that is known to reside within this area. Several nesting sites are identified and delineated on the Protection Standards Map.

Nesting sites are usually located on bluffs or cliffs overlooking rivers or streams. These sites generally contain sparse vegetation and consequently are not endangered by fire.

The peregrine is easily disturbed by man's presence and activities. When disturbed frequently during the nesting

season, the birds may leave their nests and not return, resulting in the death of the young.

The greatest impact of fire suppression is from aircraft flying too close to nesting sites. This impact can be eliminated by restricting all aircraft from operating within one mile horizontally and 1,500 feet in elevation from the nesting site.

Cultural resources

In assessing the impacts of fire and fire suppression activities on cultural resources, it is advisable to draw a distinction between surface and subsurface resources. Surface resources are primarily historic in nature and tend to be constructed of flammable materials. They further tend to be significantly more visible than subsurface resources, because natural processes of deterioration have not operated long enough to level structures. Subsurface resources are primarily prehistoric and archeological, and tend to consist largely of nonflammable material because natural processes of deterioration have eliminated most organic matter. Furthermore, subsurface resources tend to be much less visible than surface resources, because structures have been leveled and the material covered by vegetation.

Information concerning the effects of fire and fire suppression activities on cultural resources is scanty. Some information has been gathered concerning fire effects in the Lower 48 States, but any attempt to generalize from these data to radically different conditions in Alaska would not be justifiable. Nevertheless, logic and reason would seem to indicate the following:

Surface historic structures are subject to severe effects from fire itself. Organic materials used in construction are likely to be completely destroyed or substantially damaged as a result of burning.

Subsurface resources are much less likely to be significantly affected by fire. In a particularly intense fire, which may burn down to mineral soil, organic material such as bone, ivory, and wood, that is present in the soil matrix will be destroyed. Intense heat from such a fire also is likely to fracture and otherwise damage nonorganic material such as ceramics and chipped stone. Such intense heat from fire is not usual in the Fortymile area. Because of well-developed vegetation mats and generally moist soils, fire in this region does not usually burn extensive areas to

mineral soil. In fact, fire in interior Alaska often burns through an area without severely affecting the vegetation communities. In this more normal situation, it is difficult to imagine severe impacts to subsurface cultural resources. Much of interior Alaska is known to have burned in the past. Evidence of such burning has been observed on several archeological sites that have been excavated, apparently with no evidence of severe impacts from the fires. Furthermore, because fires in the Fortymile area do not usually cause severe impacts to vegetation communities, there is relatively little danger of erosion, a fire-caused phenomenon that has great potential for damaging subsurface resources in other areas.

The possibility of damage to surface cultural resources from fire suppression activities is relatively slight. This is particularly true of standing historic structures, which can be easily observed, even by untrained individuals. Consequently, it is likely that most suppression activities such as fireline and camp construction can be located so as to prevent impacts to surface cultural resources. Surface sites such as lithic scatters will be disturbed by fireline construction and similar ground-disturbing activities.

Subsurface cultural resources are likely to be damaged by suppression activities. Such resources are difficult to observe, particularly in regions such as the Fortymile, where well-developed vegetation mats obscure them, making it likely that such sites will not even be discovered until after they have been disturbed.

Social and Economic

Population

Approximately 2,500 people reside in the Fortymile Fire Management Planning Area. About 300 live along the Taylor Highway and in the villages of Eagle and Chicken. The remainder live principally along the Alaska Highway. The largest community is Tok, with an estimated 1978 population of 850. The combined populations of Tanacross, Tok, Northway, Dot Lake, Healy Lake, Mentasta, and Tetlin comprise about 1,500 people. During the summertime the overall population increases by several hundred as tourist-related businesses open and miners and BLM fire crews move into the area. About 550 Alaskan Natives (principally Athasbascan people) live in the planning area.

As a general rule, population growth has been slow compared to that in other areas of the State. Growth may temporarily increase sharply when construction of the gas pipeline starts. Staffing of the new Refuge and new National Monuments will increase the permanent population as will habitation of lands for homesites planned for disposal by the State.

Transportation

The planning area is crossed by four highways. The Alaska Highway divides the area into northern and southern unit, with about two-thirds of the total area to the north. The northern unit is divided by the Taylor Highway into east-west portions, with about 75 percent of the area to the west. The southern unit is subdivided into two approximately equal parts by the Glenn Highway. The Nabesna Road provides access from the Glenn Highway into the northern flanks of the Wrangell Mountains.

The Alaska Highway provides the only direct highway link between Alaska and the Lower 48 States. It also is the only highway link to and from the end of the Alaska Marine Highway at Haines, Alaska. Consequently, this highway contributes significantly to the surface movement of goods. During the summer, it is an important tourist route.

The Taylor Highway provides the dominant surface link to Chicken and Eagle and is a major tourist route to and from Eagle, the mouth of the Fortymile River, and Yukon Territory, Canada.

Major airstrips for fire suppression are located within the planning area at Tanacross, Northway, Tetlin, Chicken, and Eagle. Smaller strips are at Coal and Woodchopper Creeks and at Joseph. There are numerous but scattered bush strips used by hunters, miners, and trappers, which can serve as focuses for firefighting bases. Major fire suppression forces available for use in the planning area are located at Fairbanks.

The Tanana River Valley and the Alaska Highway are important travel routes for small private and chartered aircraft movement between Alaska and the Lower 48 States. To a lesser extent, the other highways and the Yukon River serve as guides for small aircraft using "visual flight rules." Northway is a customs entry point for aircraft flights entering Alaska from Canada.

Economy

The planning area has a relatively small economy which is geared to some tourism, government, employment by Native Corporations, and natural resource use.

The BLM maintains an office at Tanacross. During the summer, emergency fire-suppression crews are obtained from the villages of Tanacross, Northway, Tetlin, Eagle, and Dot Lake. These and other Native crews are trained and used as firefighters throughout the State. A significant share of the cash income to Native villages locally and statewide is attributed to wages earned by firefighters.

The increased price of gold has stimulated what was becoming a dying mining industry along the Fortymile River and feeder drainages. This trend is expected to continue and could increase the incidence of man-caused fire and the number of structural improvements requiring fire protection. Doyon Native Corporation has been investigating the possibilities of mining asbestos on its lands in the planning area.

Trapping is a major source of income of many families residing in the planning area. This activity depends on both areas to trap in and the numerous cabins scattered throughout the remote portions of the planning area.

Timber production is an important economic factor in the planning area as it relates to the subsistence lifestyle of much of the population. White spruce, birch, aspen, and balsam poplar are used in home construction and heating. Commercial use of the timber resource is limited to four small sawmills located at Tok, Dry Creek, Mentasta, and south of the Gerstle River along the Alaska Highway.

Lifestyles

The residents of the Fortymile Fire Management Planning Area have outdoor oriented lifestyles. People vary in their lifestyles from those who depend heavily upon natural resources to those who are employed by government and industry and supplement their incomes by hunting, trapping and fishing.

Activities of great importance to local lifestyles include gathering firewood, cabin logs, and berries, hunting moose, sheep, small game, waterfowl, and in the recent past, caribou. Fishing for pike, grayling, lake trout, burbot,

rainbow trout, and sheefish is important in the numerous lakes, rivers, and streams in the area. While fishing is extremely important from late May through September, some ice fishing occurs from October through early April. Many residents of all economic levels train and mush dog teams, although the emphasis has changed from working bush teams to racing. A high percentage of residents trap, both for recreation and supplemental income. Other winter activities include snowshoeing, cross-country skiing, and snow machining.

Utilities

A small-diameter aboveground military petroleum products pipeline extends from a pump station-storage tank area at Tanacross to Eielson Air Force Base at Fairbanks. Aboveground utilities are telephone and local electric power transmissions paralleling the Alaska and Glenn Highways. At Tok, a LORAN station provides navigation data for oil tankers using the trans-Alaska oil pipeline terminal at Valdez. Satellite receivers are located at Eagle and Mount Neuberger. An RCA transmission tower is at Cathedral Rapids. Primary communication throughout the remote portions of the planning area is by radio.

Utilities will receive high fire-suppression priority.

Minerals

Fire in the planning area has no major effect on mineral values unless there are aboveground structures such as buildings or dredges. These are treated as private property and will continue to be given aggressive fire suppression.

There are localized outcrops of coal and oil shale near the Yukon River.

III. AREA SELECTION CRITERIA

Criteria for Selecting Fortymile Area

Many factors were considered in selecting the Fortymile area as the first area in Alaska to be administered in accordance with a fire management plan. Consensus was that this area would be best, considering fire incidence, fire management, and diverse land ownerships, while meeting the objectives of reducing fire suppression costs and fulfilling the various landowners' objectives. More detailed criteria included the following:

- Mixed ownership pattern, with intermingled and varied Federal, State, Native, and private holdings.
- Relatively certain land ownership status and short-term resource uses.
- Diverse land uses and resource values.
- Fire-prone area with good mix of small and large fires that will test the plan.
- Relatively homogeneous fuels.
- Existing and potential high mineral values and associated development.
- Mixture of good road access and remote areas without road access.
- Diverse recreation use, ranging from intensive use along roads to wilderness.
- Fish and wildlife considerations:

  - Previous caribou calving ground within the area.

  - Good moose habitat potential.

  - Good waterfowl habitat.

- Important fur trapping area.

- High level of fishing and hunting activity.

- Relatively sparse population overall, with scattered population centers along road network.

- Proposed gas pipeline route within the area.

- Availability of existing resource data adequate to the planning effort without need for additional inventory. Existing data include:

  - Yukon-Charley Environmental Impact Statement.

  - Wrangell-St. Elias Environmental Impact Statement

  - Wrangell National Forest Environmental Impact Statement

  - Fortymile River Environmental Impact Statement

  - BLM Classification and Multiple Use and Unit Resource Area Studies

  - New National Forests for Alaska (Fortymile)

  - Alaska Regional Profile--Yukon Region

  - Low level color and high level U-2 remote sensing data

- Topography ranging from flood plains to rolling mountains, typical of much of Interior Alaska.

Criteria for Establishing Fire Protection Zones

After selecting the area that would be covered by the fire management plan, fire and resource information criteria were established. Map overlays on 1:250,000 scale were prepared showing land ownership, fire occurrence, and adverse fire impacts to resources and uses.

Resources and uses considered were historic sites and structures, wildlife, fisheries, soils and watersheds, minerals, plant cover, recreation, and visual and cultural resources.

The Fire Subcommittee established protection zones for the plan area, considering the potential fire effects on the various resources and uses; land manager statutory requirements, policies, objectives, and management goals; and with the major goal to reduce suppression costs.

Human population areas and standing structures were assigned the highest fire protection standard. Resources and uses which were isolated or too small in area to be operationally practical for separate zones were combined into larger, more operationally feasible zones. A more conservative fire protection standard was applied where conflicting resources and uses were identified.

IV. ALTERNATIVES

In developing this plan, the following six alternatives were identified and evaluated. In all alternatives discussed, fires that threaten human life and/or improvements would receive first priority for initial and continuing attack.

Alternative 1 EXISTING POLICY

Description

Current policy dictates initial attack on all fires, as well as full effort on all fires to minimize acreage loss, unless a massive commitment of resources is necessary and the potential damage is low. In this case, there is an option to modify attack on a fire-by-fire basis. (See Appendix B. for more detailed description of existing policy.)

Analysis

a. Cost--Continuation of current policy would not reduce short-term costs and may involve increased long-range costs. Buildup of fuel resulting from the current vigorous attack policy, increased incidence of man-caused fires as a result of population growth in the area, and the effects of inflation may combine to create significant increases in future costs of continuing the present policy.

b. Responsiveness to management objectives--Current policy allows for no discretion on initial attack and only limited discretion in continual suppression efforts. No Interior agency has the option to not attack fires, unless such action is approved in a fire management plan. Furthermore, current policy dictates that decisions to not continue suppression efforts can be made only if massive commitment of resources is involved. This existing policy is not responsive to change or to management objectives when developed.

Alternative 2 EXISTING POLICY WITH JULY 1 CUTOFF DATE

Description

Continuation of the current policy, but with the addition of a July 1 cutoff date, after which, given appro-

priate weather and fuel moisture conditions, the options to modify attack or to not attack at all would exist.

Analysis

a. Cost--Under Alternative 2, suppression costs should be reduced somewhat, as some fires that occur after the cutoff date would not be attacked or would be attacked at less than full effort. In general, the earlier the cutoff date, the greater would be the reduction in suppression costs.

Conversely, the earlier the cutoff date, the greater is the risk that a small fire may grow to massive proportions because of an initial decision not to attack. This would increase suppression costs.

b. Responsiveness to management objectives--This alternative would increase responsiveness to various management objectives by providing a period of the year during which the option to not attack or to modify attack on certain fires would exist. In general, the earlier the cutoff date, the more the alternative would be responsive to individual agency objectives, due to the fact that options for modified attack would exist for a longer period of time.

Alternative 3 PROPOSED ACTION--ZONES WITH AUGUST 1 CUTOFF DATE

Description

This alternative involves the development of zones within the planning area, based on resource values developed by the various agencies and on the different management objectives of the various land owners and managers. Attack and suppression policy would be specified for the various zones within the area. Fire in certain zones would be vigorously attacked, and every effort would be made to reduce burned acreage, while in other zones the option to modify attack or to not attack certain fires would exist. In addition, a cutoff date of August 1, after which, given appropriate weather and fuel moisture conditions, the option to not attack fires in the majority of the area would exist.

Analysis

a. Cost--Suppression costs in the long run should be reduced more under Alternative 3 than under Alternative 2

because the option to modify attack will exist for certain zones throughout the fire season. In addition, the option for no-attack will be in effect for the majority of the area after the cutoff date.

b. Responsiveness to management objectives--Alternative 3 should be more responsive to individual agencies' objectives than Alternatives 1 or 2, because options to modify attack or to not attack fires exist for a larger portion of the fire season. This increases the chances for any individual land owner or manager to choose, on the basis of management objectives, to let certain fires burn or to modify attack on certain fires.

Alternative 4 ZONES WITH JULY 1 CUTOFF DATE

Description

This alternative is identical to Alternative 3, except that the cutoff date after which modified attack or no attack options exist would be July 1 rather than August 1.

Analysis

a. Cost--In the long run, Alternative 4 should reduce suppression costs even more than Alternatives 1 through 3, by extending the period during which no-attack options exist within the planning area. Conversely, the risk will be increased that costs in any one year will be significantly increased if a small fire grows to large size because of no or reduced initial attack.

b. Responsiveness to management objectives--Alternative 4 should be more responsive to individual agencies' and land owners' objectives than Alternatives 1 through 3, because the period during which options for no attack exist is longer than in other alternatives. This increases the ability of each owner or manager to make decisions regarding attack and suppression for specific fires.

Alternative 5 INDIVIDUAL AGENCY TOTAL FIRE PROGRAM CAPABILITY

Description

Alternative 5 consists of the development of individual fire programs by each entity that owns or manages land within the planning area. Each agency would be responsible for developing and maintaining its own attack and suppression capability.

Analysis

a. Cost--Over the long run, this alternative should be by far the most expensive, due to the duplication involved in each agency maintaining staff and equipment for fire suppression. In addition, short-run costs would be greatly increased because of initial heavy expenditures for equipment by agencies that have had little or no fire suppression capability. This alternative would increase costs over the current policy, and therefore, fails to meet the objective of reducing fire-suppression costs in the planning area.

b. Responsiveness to management objectives--Alternative 5 is probably the most responsive to the management objectives of the various land owners and managers, since it allows each entity to develop its own protection standards and fire suppression capability.

Alternative 6 FIGHT MAN-CAUSED, ALLOW NATURAL BURNS

Description

Alternative 6 consists of an areawide policy which dictates that all man-caused fires will be vigorously attacked and all effort will be made to minimize burned acres from this type of fire. Natural fires will not be attacked except to protect life and property, and no effort will be expended to reduce the number of acres burned by natural fires.

Analysis

a. Cost--Alternative 6, in the long run, is likely to be the least expensive of all alternatives, because it entails a large number of fires that would not be attacked at all. Based on statistics for 22 years of fire occurrence in the area, approximately 37 percent of all fires would not be attacked.

Alternative 6 also maximizes the risk, however, that suppression costs in any one year will increase significantly, because of increased risk that natural fires will grow to massive proportions and will have to be fought in order to protect life and/or property.

b. Responsiveness to management objectives--Alternative 6 is not responsive to most land owners' or managers' objectives, since it does not allow for suppression efforts on natural fires, and also does not provide for the option of modified or no attack on man-caused fires. Such a situation is unlikely to be responsive to the entire range of resource-based objectives of managing agencies. It runs counter to the stated goals of certain land owning or managing entities in the area. Alternative 6, therefore, fails to meet one of the stated goals, that of responsiveness to management objectives.

For a more detailed analysis of the alternatives considered, consult the Environmental Assessment for this plan (AK-020-EA9-153).

V. SELECTED ALTERNATIVE

In the final analysis of the six alternatives, Alternative 3 and 4 best met the stated objectives of this planning effort. Alternative 3 was selected because the risk factor involved is lower than that in Alternative 4, in keeping with the general guideline that the interim plan should be conservative. As fire managers and fire organizations gain experience and confidence in using this interim plan, standards may be liberalized and an earlier no-attack option date designated.

VI. PROTECTION STANDARDS

General Policies

Under the provisions of this plan and the cooperative agreements in effect with the concerned agencies statewide, the highest protection standard that is available to any agency or landowner is that defined by the existing BLM Alaska Attack Policy. (See Appendix B.)

The attack priorities established in this plan apply only to fires within the Fortymile Fire Management Area. All fires within this area will compete equally with other fires throughout the State when suppression forces are limited.

Initial attack will be made on all fires within the fire management area, with the exception of fires meeting the late-season criteria and fires within the National Park Service Monuments that have specific NPS direction for no attack.

Where suppression tactics are constrained (e.g. no tractor line construction in response levels 2 and 3), these constraints may be lifted only by the agency line officer in charge of management for the area involved or his designated representative. This should be documented, indicating scope and extent of authorization. It is expected that such authority would be given only in situations where a fire poses a direct threat to human safety, private property, improvements, or where fire threatens to burn into an area of higher protection standards. Use of equipment in these situations will be restricted to the absolute minimum required to protect the area of immediate concern.

Response Levels (See Protection Standards Map)

The protection standards described below apply to all lands so designated administered by BLM, NPS, F&WS, BIA, and the State of Alaska within the fire management area. Specific deviations or exceptions are discussed by agency.

Response Level 1 (Red)-Lands delineated in this category will receive first priority for suppression action. Burned acres are to be held at the absolute minimum attainable, with no limitations or constraints on suppression tactics, forces, or equipment that may be used as needed. Initial

and continued attack levels are to be maximized.

Response Level 2 (Orange)-Lands delineated in this category are second in priority for suppression action.

The Protection Standards Map has delineated on it narrow strips (approximately 2 miles wide) of land classified Response Level 2. The intent of this classification is to provide a buffer between Response Level 3 and Response Level 1 lands and/or unzoned Native lands in areas where possible fire spread would not be confined by natural barriers.

The portrayed width is not a hard and fast determination. The Area Fire Management Officer is to apply judgment in the area and to expand or contract the dimensions of these buffers in accordance with actual and predicted fire behavior and burning conditions.

The suppression objective is to hold the burned acreage to the minimum attainable within stated suppression constraints.

Suppression Constraints: Tractors will not be used to construct firelines.

Response Level 3 (Yellow)-Lands delineated in this category are third in priority for initial and continued attack. The exception will be in situations where structures, improvements, or private property are threatened; in such cases, response will be at Level 1.

The suppression objective is to attain a reduction in suppression costs by utilizing relatively low levels of manning and indirect suppression tactics.

Initial attack will be made on all fires on lands designated for Response Level 3, but suppression tactics will be governed by the objective of holding suppression costs to a minimum. Such tactics as indirect attack and aerial backfiring using natural barriers will be utilized, especially in escaped fire situations.

Fire in these areas has been determined to have little adverse impact on the natural resources and in fact, may help maintain wildlife habitat, a mosaic of vegetation patterns, and the naturalness of the area. Increased burned acreage is, therefore, an acceptable exchange for reduced suppression costs.

Tractor fireline construction is prohibited.

Response Level 4 (Late Season)--All lands designated as Response Level 3 (yellow) may convert to Response Level 4 or "no-attack" status when the prescription criteria listed below are fully met:

1. Fire location within Response Level 3 (yellow) area.

2. Fire started on August 1 or later.

3. Three-day spot weather forecast for fire area shows that the following critical limits are not exceeded:

a. Maximum temperature does not exceed 70°F.

b. Predicted weather at fire area does not exceed any combination of wind and relative humidity range listed below:

Windspeed	Relative humidity	Fine Fuel moisture (1 hr. time lag)
22 mph	85-90%	17%
15 mph	75-85%	16%
10 mph	40-55%	12%
8 mph	30-35%	10%

(See Appendix C for example and more detailed explanation.)

Monitoring procedures outlined in the Operational Procedures, Section VII, of this plan must be followed on all "no-attack" fires.

The authority to make a "no-attack" decision is delegated to the BLM Fortymile Fire Management Officer. "No-attack" decisions are encouraged when fires are within the appropriate locations and prescription criteria.

The Area Fire Management Officer will make the decision to not attack a fire considering the following:

a. Actual and predicted fire behavior.

b. Weather forecasts.

c. Location of fire in relation to structures and lands having higher protection standards.

d. Other fire activity in area, district, and State.

e. Availability of adequate contingency suppression forces.

f. Analysis of fuels and/or natural barriers in the vicinity of the fire, especially in direction of projected spread.

g. Ability to meet monitoring requirements.

h. No significant smoke problems expected to affect communities, airfields, airways, or highways.

Specific Agency Concerns

1. Alaska Native lands

a. Regional and Village Corporation lands are protected under the provisions of the Alaska Native Claims Settlement Act (ANCSA). The Bureau of Indian Affairs has trust responsibilities for Native allotments acquired by earlier acts.

Native lands have been zoned only to the extent of identifying Response Level 1 areas. This classification was applied to land around villages, improvements, major highways, and areas of high value resources warranting this classification. All other Native lands are shown as unzoned and will be handled on a fire-by-fire basis. Decisions on priorities and manning levels will be made under existing BLM fire attack policy and operating procedures.

b. Agressive initial attack and full continuing attack will be made on all fires to the level of existing capabilities.

c. Fires requiring massive commitment to effect control will be dealt with on a fire-by-fire basis, with Native representatives participating fully in the decision making.

d. The concerned Native entities will be notified as soon as possible of all fires on their lands or that threaten those lands, regardless of ownership status. When Native allotments are involved the Anchorage Agency, Bureau of Indian Affairs, will be notified.

e. Final authority for fire suppression decisions on Native conveyed lands lies with the concerned Native Corporation when corporation lands are involved and with the Bureau of Indian Affairs on Native allotments. All decisions concerning priorities and levels of attack will be limited by existing capabilities.

f. Final authority for fire suppression decisions on Native-selected land lies with BLM Fire Management.

2. Bureau of Land Management lands

Authority to permit fireline construction with tractors in areas where this plan prohibits it lies with the BLM Fairbanks District Manager.

Tractor use in areas designated for Response Level 1 will be cleared through the BLM Fairbanks District Chief of Fire Management.

3. Fish and Wildlife Service lands

The proposed Tetlin Wildlife Refuge was withdrawn by the Secretary of the Interior under the provisions of Section 204(e) of the Federal Land Policy and Management Act of 1976 (FLPMA). Until the status of this refuge is made permanent by legislative or executive action, final authority for fire suppression decisions remains with BLM Fire Management.

As with other land tracts identified for transfer of ownership or management responsibilities, the intent of this plan is to provide fire protection standards and operational procedures that are desired by the potential land managing agency or owner and that are responsive to that agency's or owner's management objectives and concerns.

For fires receiving continued attack, the Area Fire Management Officer will contact the Area Refuge Supervisor or line officer in charge and request that an agency employee serve as agency liaison or Natural Resource Officer. The Area Refuge Supervisor or line officer in charge will likewise be consulted before tractors are used for fireline construction. (See Appendix A for name and telephone number for designated agency contact.)

Except for the above, protection standards designated by the respective Response Levels apply fully. Full authority to execute the plan is delegated to the BLM Fortymile

Fire Management Officer.

4. National Park Service lands

Within the Fortymile Fire Management area are portions of two National Monuments (Yukon-Charley and Wrangell-St. Elias) and the proposed addition to the Wrangell Monument withdrawn under FLPMA Section 204(e). The two Monuments are now under National Park Service administration. On National Monument lands, full administrative authority lies with the National Park Service. Authority for fire suppression decisions on these lands lies with the National Park Service Alaska Area Director or his designated Fire Management Officer. The intent of this plan is to provide fire protection standards and operational procedures that are desired by the National Park Service and that are responsive to its management objectives and concerns on both National Monument and withdrawn lands. The National Park Service's prime responsibility is to maintain a natural ecosystem within areas under its jurisdiction. Because fire is the major force of change and renewal within these ecosystems, the continuation of this process is desired to the extent practical.

The protection standards designated by the respective Response Levels will apply fully with the following exceptions:

a. "No-attack" decisions may be made by authorized NPS personnel regardless of the time of year. This decision will depend on the availability of authorized NPS personnel to conduct on-site analyses prior to initial attack. Initial attack will not be delayed pending this decision.

b. Equipment capable of causing long-lasting adverse impacts on resources will not be used. Specifically, this means off-road vehicles such as tractors and other tracked vehicles.

c. On fires that escape initial attack, indirect attack applying burnout/backfire techniques from natural barriers will be utilized to the extent practicable.

d. On fires requiring continued attack, the Fortymile BLM Area Fire Management Officer will contact the NPS Fire Management Officer for consultation on the level of sustained attack. He should also request a NPS liaison or Natural Resource Officer to furnish advice on such matters as fire camp location, retardant use, and cultural concerns.

e. Final authority to permit actions not authorized by this plan or specifically prohibited herein lies with the NPS Alaska Area Director or his designated representative for National Monument lands and with BLM Chief of Fire Management, Fairbanks District, on withdrawn lands.

f. If bears threaten firefighters' safety, the National Park Service or Alaska Department of Fish and Game will be notified and will authorize appropriate action. If bears are killed, the hides and skulls will be surrendered to the National Park Service with a written incident report.

g. BLM firearm certification procedures will meet regulations for the carrying of firearms within NPS-administered lands.

Full authority to execute the provisions of this plan is delegated to the BLM Fortymile Fire Management Officer.

5. State of Alaska lands

The State of Alaska Division of Lands has fire management and protection responsibilities for State patented and tentatively approved lands as well as for other privately owned lands not otherwise protected by city or borough fire protection organizations.

The State's responsibilities for fire management and protection of lands within the area of this plan have been contracted to the BLM through a cooperative agreement.

Protection responsibilities for State-selected lands remains with BLM Fire Management.

Full authority to execute the protection standards designated by the respective Response Levels on all State responsibility lands is delegated to the BLM Fortymile Fire Management Officer. All provisions of the designated Response Levels are applicable.

Authority for permitting any action not allowed by the provisions in this plan or any action specifically prohibited on State-patented, tentatively approved, or private lands lies with the State Fire Management Officer.

On all matters concerning policy, statewide priorities, or strategies, the State Fire Management Officer is the State of Alaska's focal point.

On continued attack fires on State responsibility lands, the BLM Fire Management Officer will contact the State Fire Management Officer at Northcentral District for assignment of a liaison officer or a Natural Resource Officer.

VII. OPERATIONAL PROCEDURES

General Procedures

Unless specifically changed by provisions of this plan, existing BLM fire management operational procedures, as specified in the Alaska State Fire Plan and Bureau directives, will be followed.

Statewide command of all suppression forces will remain with BLM Fire Management. Normal established fire command channels will be used on all fires regardless of land status. Fire positions may be filled with any individuals who fully meet National Interagency Fire Qualification System (NIFQS) qualifications, regardless of agency affiliation. Selection of overhead for specific fire assignments will be made by BLM Fire Management.

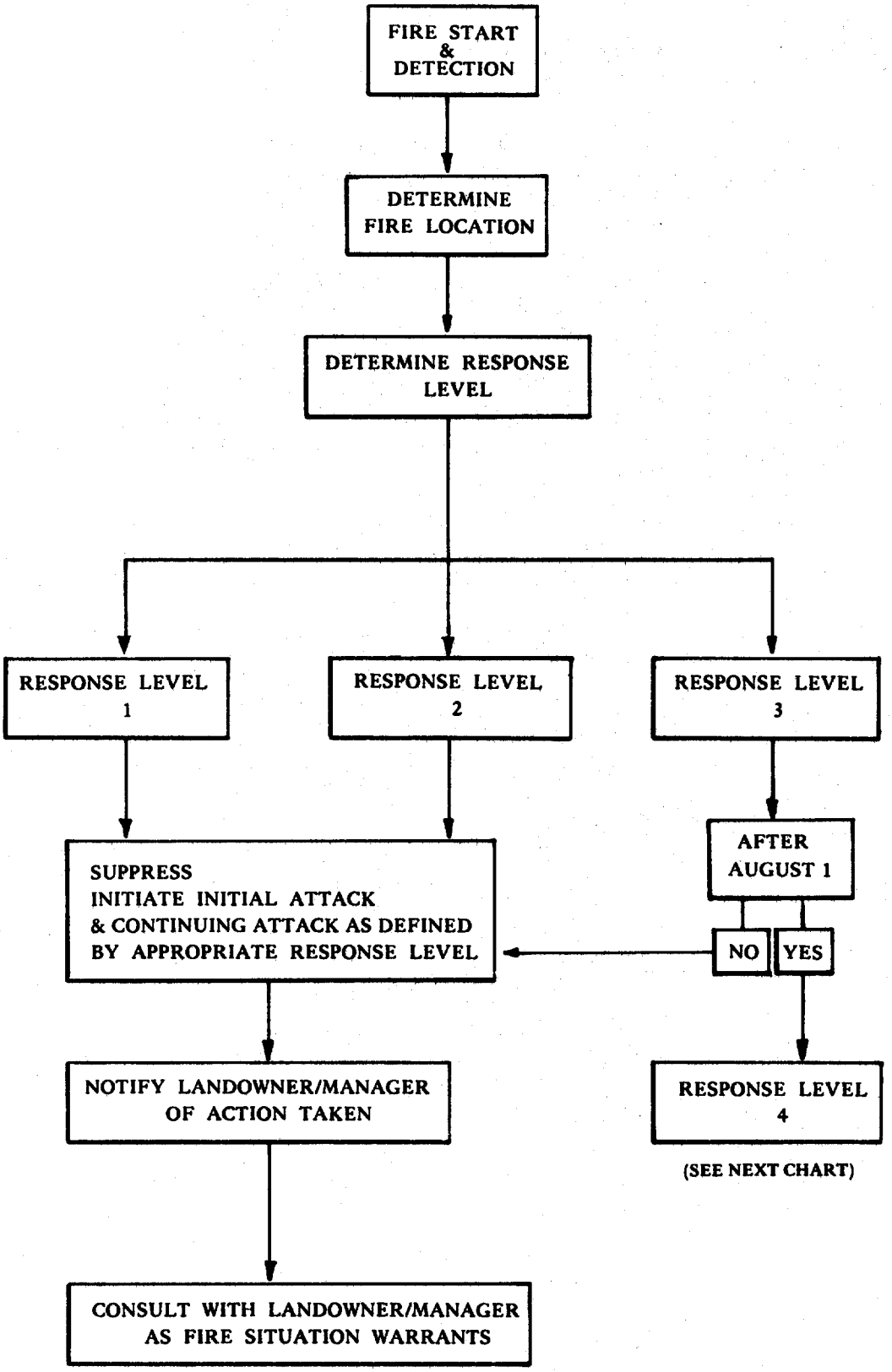
When fires are on lands other than BLM, the concerns from the involved agency or agencies will be handled in the following manner:

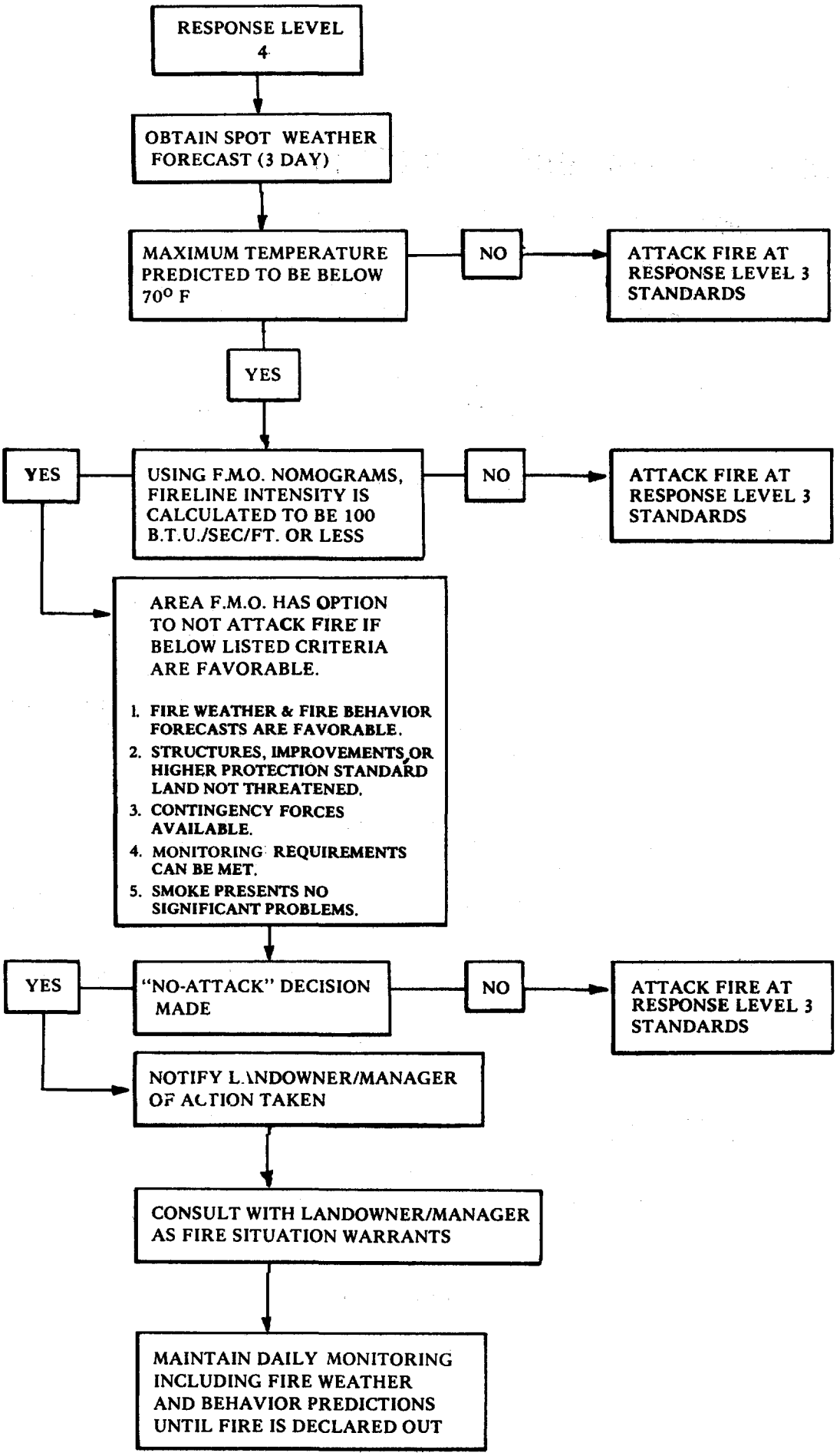
1. On fire--An agency line officer's representative and/or an agency Natural Resource Officer may be assigned to the fire overhead team and will work through the on-fire organization.

2. In absence of an on-fire line officer's representative, agency requests on matters concerning tactics, priorities, and other specific concerns will be made through the Fortymile Area Fire Managment Officer. Their requests will be relayed to field operational forces through him.

3. On all matters concerning policy, statewide priorities, or strategies, the concerned agencies will work with the BLM State Office, Division of Fire Management.

Operational Decision Charts




RESPONSE LEVEL 4
OBTAIN SPOT WEATHER FORECAST (3 DAY)
MAXIMUM TEMPERATURE PREDICTED TO BE BELOW 70° F
NO
ATTACK FIRE AT RESPONSE LEVEL 3 STANDARDS
YES
YES
USING F.M.O. NOMOGRAMS, FIRELINE INTENSITY IS CALCULATED TO BE 100 B.T.U./SEC/FT. OR LESS
NO
ATTACK FIRE AT RESPONSE LEVEL 3 STANDARDS
AREA F.M.O. HAS OPTION TO NOT ATTACK FIRE IF BELOW LISTED CRITERIA ARE FAVORABLE.
1. FIRE WEATHER & FIRE BEHAVIOR FORECASTS ARE FAVORABLE.
2. STRUCTURES, IMPROVEMENTS OR HIGHER PROTECTION STANDARD LAND NOT THREATENED.
3. CONTINGENCY FORCES AVAILABLE.
4. MONITORING REQUIREMENTS CAN BE MET.
5. SMOKE PRESENTS NO SIGNIFICANT PROBLEMS.
YES
"NO-ATTACK" DECISION MADE
NO
ATTACK FIRE AT RESPONSE LEVEL 3 STANDARDS
NOTIFY LANDOWNER/MANAGER OF ACTION TAKEN
CONSULT WITH LANDOWNER/MANAGER AS FIRE SITUATION WARRANTS
MAINTAIN DAILY MONITORING INCLUDING FIRE WEATHER AND BEHAVIOR PREDICTIONS UNTIL FIRE IS DECLARED OUT

Special Operational Procedures

1. Endangered species (plants and animals)

The areas delineated as peregrine falcon nesting sites and threatened and endangered plant species locations should be familiar to fire suppression forces, including air attack bosses.

All fire personnel should observe the following precautions to the extent practicable when operating in the vicinity of these areas:

a. Peregrine nesting sites

1.) Extreme care should be taken not to disturb nests during the critical time period from April 1 to August 15.

2.) All personnel must keep away from nesting sites. Fire camps should not be located within one-half mile of eyries.

3.) To the extent practical, all aircraft, both fixed wing and rotor, will be restricted from operating within one mile horizontal distance and below 1,500 feet over known nesting sites.

b. Known or suspected habitats of plants on the proposed endangered or threatened list

1.) Avoid fireline construction, especially tractor lines in these habitats.

2.) Avoid locating fire base camps or spike camps.

3.) Avoid construction of heliports or helispots.

4.) Avoid the use of long-term retardants.

2. Use of aerial-delivered chemical retardants

The use of long-term retardants is not prohibited anywhere in the Fortymile Fire Management Area, but they should be used with appropriate caution in the areas listed below:

a. Lakes, ponds, sloughs, and other wetlands where water is stagnant or slow moving.

b. Known peregrine falcon nesting sites.

c. Delineated sites of plants proposed for the threatened and endangered list.

3. Reporting procedures for fires on lands other than BLM

a. On fires where initial attack is successful, or the fire is otherwise contained within the first burning period, special agency notification is not required. The BLM Fire Management will notify the agency of these fires through normal briefing sessions or by forwarding a copy of the individual fire report to the designated agency representative*. BLM State Office Fire Management will forward fire reports as they come in and send a follow-up summary to the agency at the end of the year.

b. For fires that escape initial attack and require continuing suppression efforts, the BLM Fairbanks District Fire Management Office will contact the designated agency representative. Time of this notification will vary, depending on the individual agency wishes.

4. Escaped fires

For all fires that escape initial attack and require commitment of high levels of resources, the Fortymile Area Fire Management Officer will make an "Escaped Fire Analysis." This will consist of the "Fire Situation Analysis" and the "Alternative Action Plan" utilized in the BLM Action Modification Procedure. The "Fire Impact Analysis" is not required, because this analysis has been made during the plan development and is reflected by the Response Level the area was assigned. On Native lands not zoned for Response Levels, the BLM complete action "modification procedures," including "Fire Impact Analyses" will be required as specified in current policy.

The basic guidance for attack strategies is spelled out in the Protection Standards section of this plan. The Escaped Fire Analysis will be used primarily to relate the general strategic decisions to site-specific tactics for a given fire and to aid in discussing the alternatives and general situation with the involved agency's representative.

* Designated agency representatives for contact are listed in Appendix A.

5. Late-season procedures

After August 1, general fire weather forecasts for those areas designated Response Level 3 (yellow) will receive special attention. They will be used to estimate and calculate burning conditions. Fire behavior variables, including fire intensity, rate of forward spread, and rate of area growth, will be computed daily, using the fire behavior nomograms. If the calculations show a fire intensity of 100 Btu/sec./ft. or less, the Response Level 3 (yellow) may be designated Response Level 4 and cooperating agencies will be notified that late-season criteria have been met.

When late-season criteria are met and a fire occurs in a Response Level 4 area, "no-attack" decisions are authorized and encouraged. (See Operational Decision charts.) Site-specific spot weather forecasts will be obtained daily for each fire, fuels will be mapped in front of the fire, daily observations of fire area and behavior will be made, and specific fire behavior predictions of rate of spread, direction of spread, rate and location of area growth, and fire intensity will be made daily.

Before August 1, and if late-season criteria are not met, suppression action is required at Response Level 3 standards.

When an ignition occurs and the fire is detected, the first step is to pinpoint its location on a map and then determine who owns the land and what response level it falls in.

Follow the Decision Chart to determine the appropriate operational procedures and courses of action. Take suppression action accordingly.

In the absence of fires, the general fire weather forecasts for the area will be used to estimate and calculate burning conditions in fire (one-hour time lag) fuels at selected key locations. The commonly called "Fire Behavior Officer's" charts (nomographs for calculating fire behavior in wildland fuels) will be used to calculate probable fire behavior in black spruce-feather moss fuels.

After a fire starts, site-specific spot weather forecasts, surface weather observations, and the other normal fire-behavior related calculations will be carried out as is done under existing policy.

VIII. EVALUATION and REVISION PROCEDURES

This plan will receive a full and comprehensive review by the Alaska Land Managers Cooperative Task Force Fire Subcommittee in the fall of 1980. Specific attention will be given to the Protection Standards and Operational Procedures sections. Recommended changes or modifications will be evaluated and incorporated as appropriate and agreed upon.

The revised plan will be submitted to the participating agencies for approval and coordination with specific cooperative agreements. Target date for completion and approval of the revised plan is March 1, 1981.

It is anticipated that this plan, as well as other similar fire management plans, will undergo annual review and updating. The ALMCTF Fire Subcommittee will serve as the interagency review board for these plans.

APPENDIXES

Appendix A. FORTYMILE FIRE MANAGEMENT AREA AGENCY CONTACT LIST

Bureau of Land Management

Fortymile Fire Management Officer
Dick Malchow
Office--883-4181
Home--883-2514

Fairbanks District Chief of Fire Management
Jerry Timmons
Office--356-1925
Home--479-4490

Alaska State Office, Chief of Fire Management
Joe Kastelic
Office--271-5406
Home--344-8365

National Park Service

Fire Management Officer
Bill Paleck
Office--271-4216
Home--337-4052

Alternate
Paul Haertel
Office--271-4196
Home--694-2837

Fish and Wildlife Service

Al Johnson
Office--283-4877
Home--262-5456

Bureau of Indian Affairs

Steve Price
Office--271-4126
Home--349-1119

Alternate
Elgin Filkins
Office--271-4126
Home--344-5615

Alaska State Division of Lands

State Fire Management Officer
Ray Settles
Office--279-5577

Northcentral District
Les Fortune
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Alaska Fish and Game Department
Tok
Dave Kelleyhouse
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Doyon, Ltd.

Dave Williams
Office--452-4755

Alternate
Sam Bacino
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Native Village Corporations

Hungwitchin Corporation (Eagle)
James O. Stevens, President

Dot Lake Native Corporation
Ted Charles, President

Mendas Cha-ag Native Corporation (Healy Lake)
Fred Kirsteatler, President

Tanacross, Inc.
Bob Brean, President

Tetlin Village Corporation
Don Joe, President

Northway Natives, Inc.
Rosemarie Maher, President

Appendix B. EXISTING BLM FIRE ATTACK POLICY

CHAPTER 10
POLICY AND PROTECTION STANDARD
TABLE OF CONTENTS

10.1 OBJECTIVES

The objective of the fire management program is to: 1) Protect public land resources under the Bureau's jurisdiction from wildfire damage in order to preserve their capabilities to contribute toward meeting the Nation's resource need; 2) manage the fire suppression program to achieve protection of public land resource at least cost; 3) use fire by prescription to realize resource management goals; and 4) pursue interagency solutions where compatible with Bureau objectives to achieve coordinated land management.

10.2 DEPARTMENTAL POLICY (see Departmental Manual, Part 910 - old Manual designation Part 590)

10.3 BUREAU POLICY

10.31 Bureau Manual - 1602 - Basic Guidance

12. Bureau Objectives. To plan for and manage or dispose of public lands, in a manner providing the maximum benefit to the general public. To do this, the Bureau will:

    Protect the lands, resources, environment and public values therein from avoidable destruction, abuse and deterioration, and correct past abuses to the extent feasible.

10.32 Bureau Manual - 1603 - Supplemental Guidance

3. Long-term Objectives. These include:

    a. Minimizing losses of public lands and their resources from wildfire damage to preserve their capabilities to contribute to the resource needs of the Nation.

    b. Protecting all rare or unique natural and historical resources and critical environmental values from wildfire to preserve them for the use and enjoyment of present and future generations.

    c. Rehabilitating burned areas in accordance with land use and management plans.

4. Major Principles and Standards. (See 1602.4

- Standards for Programwide Application.)
The standards of protection are contained in the Normal Fire Year Plans. Major principles include:

a. Except to protect or save human life, high priority will be given to controlling fires on or threatening lands, resources, or installations under jurisdiction of the Bureau.

b. Within the framework of management plans, wildfires will be held to the minimum damage possible using the methods of suppression least damaging to resources and the environment.

c. Prescribed fire may be used to achieve land or resource management plans in accordance with management objectives.

d. Where firelines constructed for the control and suppression of wildfires on public lands could lead to erosion, stream damage, flooding, etc., final fireline mop-up operations may include, but are not limited to, any or all of the following actions:

   i. Complete recovering of the fireline with the vegetative cover and other material that was removed (backfilling).

   ii. Partial replacement of previously removed vegetative cover and other material to the fireline in the form of water bars at intervals needed to control erosion.

   iii. The building of water-diversion channels through the burn if the fireline gradient is steep enough to be subject to damaging erosion. This may be accomplished by continuing the use of the necessary equipment and manpower after control of fires.

e. The program will be operated to minimize personal injuries and enforce safety practices.

10.33 Bureau Manual - 9210 - Fire Management Policy

A. The suppression of wildfire, whether caused by lightning or by human-related ignition sources, is given priority over normal Bureau activities, except those involved in safeguarding human life.

B. The highest priority is given to preventing disaster fires by aggressive prevention and suppression actions.

C. Aggressive action is taken on all new fires on or threatening National resource lands with sufficient forces to contain the fire during the first burning period. Suppression action for fires that escape containment during the first burning period is planned to minimize the total resources losses, suppression costs, rehabilitation costs, and environmental damage. When multiple fires are experienced, suppression priority is given to fires threatening areas of highest value.

D. In areas where controlling fires is extremely difficult or where the values threatened do not warrant the expense associated with the usual suppression procedures, managers may prepare advance plans for limited suppression actions for the approval of the State Director. These advance plans must include: Justification for not initiating usual suppression procedures; a map of the boundaries of areas where limited suppression plans apply; fire behavioral and meteorological conditions under which limited suppression plans are used; an environmental analysis record; and an emergency suppression contingency plan including standby equipment and forces during the burning period.

E. For programs that plan to use fire as a management tool, managers prepare a prescribed fire plan in advance of natural or intentional ignition for the approval of the State Director. The burning of timber sale residues may be approved by the District Manager. Actions to be followed in these prescribed fire plans include: Objectives for

burning, which may include the natural role of fire in a fire dependent ecosystem; fire behavioral and meteorological conditions under which the plan will be implemented; a pre-ignition action plan identifying fuels, preliminary preparations, the burning sequence, fire breaks, and control force requirements; an emergency fire suppression contingency plan including standby equipment and control forces during the burning period; anti-pollution criteria for air and water; an environmental analysis record; a public information plan; and a rehabilitation plan. Prescribed fires and their subsequent rehabilitation are funded by the benefiting subactivity.

F. Burned areas are evaluated and analyzed to determine rehabilitation needs.

Corrective measures are taken when feasible and possible to rehabilitate areas damaged by fire and the suppression action. The cost of rehabilitating damages associated with suppression actions is borne by the suppression subactivity (4620) if done in a timely manner; the cost of rehabilitating resource losses is borne by the rehabilitation subactivity (4630).

G. The protection of Bureau structures is normally done by a structural firefighting organization because BLM fire suppression forces are manned, equipped, and trained to fight wildland fires. Assistance in suppressing non-Bureau structure fires using existing Bureau forces and equipment is done only on an emergency basis, to save lives, or to retard the spread of the fire to adjacent wildland.

H. Only trained and qualified personnel are assigned to fire management duties (this relates to the Bureau and Interagency Fire Qualification Systems as applied to fire suppression assignments).

10.4 ALASKA FIRE MANAGEMENT POLICY

10.41 Prevention

Alaska's fire prevention programs, in respect to man-caused fire, will reflect the following guidance:

A. Prevent fires in areas where life, property, and/or irreplaceable resources may be threatened.

B. Reduce fire resource damage to a level where it does not negatively impact realization of an approved land use plan.

C. Increase prevention program to a point where its cost does not exceed resource values lost plus suppression costs.

10.42 Detection

Maintain a detection system which will achieve 90 percent lightning fire detection and 95 percent man-caused fire detection at 10 acres or less. System will insure all fire detection prior to 50 acre size.

10.43 Law Enforcement and Fire Trespass

A. Law Enforcement. Each BLM employee has a duty and responsibility to safeguard National security, agency property, and personnel, and to protect the integrity of BLM's name and operation. By Statute and Departmental directives, each official and employee of the agency is responsible for promptly reporting any actual or suspected offenses, wrong doings, violations, or irregularities in connection with any BLM or Department of the Interior program, operation or activity, or any suspected violation of criminal law or regulation.

All described violations should be reported to the Division of Technical Services, Office of Law Enforcement, as appropriate, for evaluation and referral to other agencies, or for investigation as the facts warrant. Employees should report such information through supervisory channels. Supervisors shall in no case delay or withhold transmittal of an employee's report or of any anonymous complaints received. Employees are not precluded from reporting the matter directly to the Office of Law Enforcement, should they consider such action necessary.

B. Fire Trespass. The initial attack fire boss will investigate the fire for cause. If man-caused is suspected or known, he will gather and preserve information/evidence pertaining to source and cause. The Area Fire Management Officer (AFMO) will be contacted as to findings. The AFMO and the District Chief, Fire Management will determine if the findings will support further investigation. If further investigation is indicated, a District Trespass Officer will be notified to take further action. He/she will consult with the State Office, Office of Law Enforcement, for advice and assistance as necessary. In either case, the investigation and action decision will be documented. One copy shall become part of the fire report and a second copy sent to the Office of Law Enforcement.

10.44 Use of Firearms

The procedures to be used for authorizing personnel to carry and use firearms for protection against dangerous, wild animals are as follows:

The use of firearms is prohibited in camp areas or duing working hours except when a supervisor determines it is necessary for protection from dangerous animals. If requested by the employee, firearms may be allowed on the job or in camps with the expressed written approval of District Managers and State Office Division Chiefs who are responsible for issuing authorizations on Form ASO-1112-4 only to those employees working in areas where a hazard from wild animals exists. Before authorizations are issued, officials should satisfy themselves that the employee is proficient in the use of firearms. Employees must clearly understand that firearms are to be used as a last resort and only when absolutely necessary to protect life or property.

The minimum recommended caliber for pistols will be 357 magnums, rifles 30-06, and shotguns 12 gauge slugs.

Authorizations to carry firearms will be

issued on a calendar year basis. Authorizations will be reviewed each January to determine if work assignments and conditions still warrant the carrying of firearms.

Authorizations will terminate each January, upon transfer of the employee, or when the need to carry firearms for protection ceases to exist. Authorization forms will be prepared in triplicate and distributed as follows:

1. Original to employee.
2. Copy to originating office file.
3. Copy to State Director, Attention: (950).

10.45 Dangerous Animals

When a BLM District encounters a problem with a bear or other dangerous animal which must be removed from a fire area or camp, or be destroyed, the Fire Boss through organizational channels will notify the District Office through their logistics center of the problem and request assistance. In all instances, BLM will request the State of Alaska, Department of Fish & Game, to remove any animal of potential danger or nuisance in order to protect the safety of crews. The Alaska Fish & Game has the option of sending their personnel or giving BLM permission to solve the problem, which may include BLM sending in a hunter or sending the fire camp a firearm with permission to destroy the animal, if necessary, by an authorized BLM employee.

In the case of National Park Service (NPS) lands, the animal may be removed, but the head/hide will be surrendered to NPS for disposal.

10.46 Structures and Improvements

The protection of Bureau structures is normally done by a structural firefighting organization because BLM fire suppression forces are manned, equipped, and trained to fight wildland fires. Assistance in suppressing non-Bureau structure fires using existing Bureau forces and equipment is done only on an emergency basis, to save lives,

or to retard the spread of the fire to adjacent wildland. In remote areas, the Bureau will give high priority to protecting structures from wildfire threat.

10.47 Heavy Equipment

The State Policy shall be that no bulldozers, skidders, or other heavy equipment that may have a significant impact on the ground cover shall be used for fireline work in Alaska without prior approval of the District Managers. Approval is predicated on life, property, irreplaceable values, or high resource values.

ATV's having an average ground pressure of 3.5 psi or less are approved for fire suppression. Avoid continuous travel over the same track; keep speed to a minimum; avoid sharp turns; avoid exposed mineral soils and permafrost when possible.

10.48 Chemical - Fire Retardant

Studies have shown that some retardants can be toxic to cold and warm water fish, and to common fresh water crustacean if they appear in high enough concentrations.

Fire suppression personnel should take precautions to avoid retardant drops in lakes and sloughs which have little circulation. Streams which are valuable as habitat for fisheries should likewise be avoided.

Resource specialists must identify areas which they believe to be particularly sensitive to retardant and identify these on maps.

10.49 Suppression Technique Limitations

Man-caused surface disturbances often result in long-term damage to the environment. Some fire suppression methods can cause longer lasting damage to the Alaskan taiga and tundra than the wildfire itself. The optimal suppression techniques are those which least disturb the surface while providing the most cost effective control and extinguishment of the wildfire. Fire intensity, fuels, time of year and day, topography,

weather, or management prescriptions may limit or dictate the suppression method used to control a fire. Mismanagement of suppression equipment in the past has resulted in the most noticeable damage to the environment. Guidelines for firelines follow:

1. Avoid building firelines in ice-rich permafrost areas such as north slopes or drainage bottoms where the organic mat is more than 12 inches deep. Dry ridge tops and south slopes are preferred over other areas for fireline construction.

2. Avoid building firelines on gradients sufficient for inducing erosion. Generally build firelines on contours and add lateral drainage to side slopes into undisturbed areas.

3. Use natural barriers as lines where possible. If it is necessary to build lines along rivers, locate lines along uphill side of some better drained soils, e.g. where white spruce stands occur.

4. Avoid creating an erosion "chute" into natural drainageways, e.g. the firelines should have a dogleg or be stopped 300 feet from drainages, rivers, or lake shores.

5. Fireline width must be controlled. An adequate fireline is a walked-down portion as wide as the height of the tallest tree and a minimum width cut to mineral soil.

6. Tracked equipment should be operated only on established lines, preferably in the "walked-down" portion.

7. Construct cross-drainage as required to direct water into undisturbed areas. Construction of cross-drainage should be an integral part of the fireline construction.

8. Many fireline scars in Alaska occurred because of poor strategy in determining line location. The fire boss should use the best qualified expertise available in fire behavior, fire spread, and fire weather forecasting in determining fireline location.

9. To minimize the opportunity for erosion from line construction, soil and watershed personnel should be consulted when making tactical decisions on line locations.

10.5 ALASKA PROTECTION STANDARD

BLM's standard reflects Departmental and Bureau policy/directive. It prescribes levels of fire attack under varying conditions. Further it is designed to optimize attack and give priority guidance when suppression and/or support capabilities are limited. An approved Modified Suppression Plan or Fire Management Plan containing site specific protection standards takes precedence over the general BLM Alaska Protection Standard.

Under cooperative agreements and contract, BLM protects lands of the National Park Service (NPS), Fish and Wildlife Service (FWS), Bureau of Indian Affairs (BIA), Native Corporations (Native), Military, and State of Alaska (State). It is necessary to review these documents to identify if and how other landowner's Standards vary from BLM's. BLM is obligated to protect other owner's lands by their Standard.

On Secretarial Withdrawal Areas (204E), BLM retains management responsibility, including fire, until they are formally conveyed to another agency.

Upon conveyance of lands from BLM to another Governmental entity, they become responsible with authority over management actions. Conveyance may be in the forms of patent, tentative approval, executive order, or law. If BLM continues to protect these lands, it is guided by the conveyance document or a cooperative agreement/contract. Examples of this guidance include agency contact points, authority to terminate suppression action, and final authority on action modification fires. Where BLM protects lands of another Government

entity, command of BLM suppression forces will remain with BLM. As previously stated, the cooperative agreement or contract defines how the landowner inputs suppression strategy and tactics.

10.51 Definitions

A. Fire damage potential - relative measure expressing possible resource damage from fire; the measurement unit is a combination of fire impact on in-place resources and fire rate-of-spread.

B. Initial attack - actions constituting the first suppression work on a fire.

C. Sustained attack - continuing suppression action on a fire until control is achieved.

D. Continuing fire - a fire which has not been controlled by initial attack.

E. Delayed attack - suppression forces are not immediately dispatched.

F. No attack - suppression forces are not dispatched as in the case of a prescribed natural fire.

G. Prescribed natural fire - a lightning-caused fire allowed to burn within preapproved prescription criteria. Fully meets the requirements of a prescribed fire.

H. Prescribed fire - an administratively approved fire (natural or man-ignited) burning under approved and coordinated plans in wildland fuels, confined to a specific area with the intent of achieving certain planned and desirable land or resource management objectives.

10.52 Fire Attack Guidance

A. Maximum available attack level - that level identified as the BLM standard. Applicable to cooperators and contracts. This is a function of organization and funding.

B. Attack priority - first priority attack will be on those fires which threaten life, property, and/or unique value. This classification is available from the action modification overlay which is an output of National Fire Planning. Second priority attack will be made on fires having highest fire damage potential. Subsequent priorities will be given to fires having progressively less fire damage potential. This damage classification is available from an overlay which is an output of National Fire Planning. The classification expresses six damage potential levels.

C. Initial attack - All fires will receive aggressive and sustained initial attack. The initial attack organization will be maintained at a readiness level commensurate with the manning action guide and the fire incidence level.

D. Full attack - continuing fire - all fires which require modest suppression commitment will receive increased and sustained attack. All fires threatening life, property, and/or unique value will receive increased and sustained attack irrespective of "required suppression commitment level."

E. Modified attack - continuing fire - fires which do not threaten life, property, and/or unique value; have low fire damage potential; and can be controlled only with "massive suppression commitment;" full attack can be modified. To modify the full attack level, the "Attack Modification procedure" is mandatory. Application of this policy results in more measured control responses, reduced suppression costs, and action consistent with values-at-risk.

F. Delayed attack or no attack - this attack decision may be made in the following situations:

1. Abnormal fire behavior which places safety of line personnel in jeopardy.

2. Limited attack capability due to continuous multiple fire occurrence.

3. Fire control commitment reaching a level where management cannot effectively control and/or logistically support.

4. Fire is within an area where an approved Fire Management Plan or Modified Suppression Plan is in effect. These plans provide for this decision and fire fully meets designated prescription criteria. These plans require State Director approval (BM 9210.06D&E).

With the exception of situation number 4, these attack decisions can be made on an individual fire basis without State Office approval for a 24-hour period. Continuing this decision beyond 24-hours requires State Director approval through the State Office, Chief, Division of Fire Management.

10.53 Action Modification Procedure (See 10.52 E)

A. When this type fire is on land administered/owned by another agency, their designated representative will be contacted immediately. Their active participation in all decision-making processes will be encouraged.

B. District Fire Management develops a "Fire Situation Analysis" (Attachment #1), and a "map" for the fire area. The map will show the area's fire damage potential classifications, significant land features, population concentrations, improved property, fire perimeter noted by ground truth time, fire name, fire number, and scale.

The District Chief, Division/Branch of Fire Management, must approve a modified action decision to proceed with further analysis and subsequent implementation.

In the case of other agency lands, their damage potential evaluation is essential.

C. The Area Fire Management Officer, with technical fire control and resource management specialists, as necessary, will develop "Alternative Action Plans" (Attachment #2).

The alternatives will be developed from a technical fire management assessment of capability to achieve final control using varying suppression levels and associated costs. A maximum of three alternatives should be developed where technically feasible.

D. The Area Manager with technical resource and management specialists, as necessary, will develop the "Fire Impact Analysis" (Attachment #3). In the case of other agency lands, their specialists will be used when available.

E. The District Manager or his designated representative will review the total analysis and recommended Action Plan. He will select and approve a plan for implementation by Fire Management. In the case of other agency lands, their representative will select and approve the implementation plan.

F. Procedure Considerations

1. Normally, development of the "Alternative Action Plans" and the "Fire Impact Analysis" are simultaneous actions.

2. A reassessment of action plans must be made if there is a change in projected fire course as in the case of weather change.

3. The complete Action Modification file becomes part of the official fire report.

4. Once the decision is made to use the Action Modification procedure, the District has 36-hours to develop and approve an action plan for implementation.

5. The responsible land management agency is encouraged to have a public affairs representative present during this

process since any decision less than full attack will have public interest.

G. Final authority for suppression strategy decisions will vary dependent on land status.

National Monument (dependent on designation)	NPS & FWS
National Parks	NPS
National Wildlife Refuges	FWS
Secretarial Withdrawal (204E)	BLM
State of Alaska Patented or T.A.	State
State Selected	BLM
Native Allotments (Conveyed)	BIA
Native Village Corporation (Conveyed)	Village
Native Regional Corporation (Conveyed)	Region
Native Lands Unconveyed	BLM
Military Reservation	Military
Natural Resource Lands	BLM

There are four other types of Native lands not previously discussed. If they have not been conveyed, BLM has final authority for suppression strategy decisions:

1. Native Primary Place of Residence - Up to 160 acres per residence; only 20-25 people qualify; generally, applicants were not in time for allotment program; upon conveyance, individual has authority.

2. Village Group - Up to 7,560 acres per group; less than 25 people per group could qualify; upon conveyance, Native Group Corporation has authority.

3. Four Cities - 23,000 acres per City Corporation; located in areas of Sitka, Juneau, Kenai, and Kodiak; 26,000 acres have been conveyed to the Natives at Kenai and Kodiak; upon conveyance, the specific City Native Corporation will have authority.

4. Native Reserves - Venetie, St. Lawrence, Elim, and Tetlin; not part of Regional Corporation; only St. Lawrence has been conveyed; upon conveyance, the Reserve Corporation has authority.

FIRE SITUATION ANALYSIS

Fire Number _____ Coordinates _____

Fire Name _____ Landmarks _____

Date _____ _____

Fire Size _____ _____

Weather (past including present day)

Buildup Index Today _____ 5 Day Cumulative Precip._____

Fine Fuel Moisture Today _____ General-Past 10 Days _____

_____

_____

Weather (predicted 5 day outlook) _____

_____

_____

Fuels in Fire Area _____

_____

_____

Fire Behavior (past 5 days) _____

_____

_____

Fire Behavior (present day) _____

_____

_____

Topography _____

_____ _____

Natural Barriers _____

_____

Control Action to Date _____

_____

Approved by:_____
(Signature District FMO)

Attachment 1

ALTERNATIVE ACTION PLAN

Fire Number _____ Fire Name _____

Date _____

Alternative 1 (Action Description) _____

_____

_____

Suppression capability needed _____

_____

Size at +24 hrs. _____ Size at +72 hrs. _____ Size at +5 days _____

Est.Control Date _____ Est.Control Size _____ Est.Control Cost_____

Alternative 2 (Action description _____

_____

_____

Suppression capability needed _____

_____

Size at +24 hrs. _____ Size at +72 hrs. _____ Size at +5 days _____

Est.Control Date _____ Est.Control Size _____ Est.Control Cost_____

Alternative 3 (Action description _____

_____

_____

Suppression capability needed _____

_____

Size at +24 hrs. _____ Size at +72 hrs. _____ Size at +5 days _____

Est.Control Date_____ Est.Control Size_____ Est.Control Cost_____

Approved by: _____

(Signature District FMO)

Attachment 2

FIRE IMPACT ANALYSIS

Fire Number _____ Fire Name _____

Date _____

Fire Impact on Resources

Soil _____

_____

_____

Water _____

_____

_____

Grazing _____

_____

_____

Forestry _____

_____

_____

Wildlife _____

_____

_____

Recreation _____

_____

_____

Air _____

_____

_____

Fire Impact on Non-resource Related Items

Life _____

_____

(Continued on next page.)

Property _____

_____

_____

Off Site (such as smoke) _____

_____

_____

Aesthetics _____

_____

_____

Political _____

_____

_____

Social _____

_____

_____

Other _____

_____

_____

Suppression Method Impact on Resources _____

_____

_____

Action Plan Recommended 1 2 3 (circle one)

Summary Statement (Be specific in describing why the particular action plan was recommended) _____

_____

_____

_____

Approved by: _____
(Signature-Responsible Official)

Attachment 3-2

Appendix C. LATE SEASON CRITERIA

Instructions for Fire Behavior Calculations

The following guides are for the use of those trained in calculating and estimating fire behavior with fire spread model nomographs. All fuels models refer to those presented in Estimating Wildfire Behavior (Albini 1976)*, and are the ones used by fire behavior officers.

The only models that have been field proven on Alaskan fuels are:

Model #1. Short grass (1 foot)
Model #5. Brush (short; 2 feet)
Model #9. Hardwood litter

Model #1 works well without adjustment in tussock tundra. Model #9 works well without adjustment for pure hardwoods and mixed hardwood/white spruce stands.

Black spruce/feather moss stands require a special procedure. The rate of spread given by model #9, multiplied by 1.2 gives a good estimate of the rate of spread of surface fires in black spruce. Using model #5 (and the same moisture contents, slopes, and winds) gives a good estimate of the flame length and intensity. So, in black spruce/feather moss fuels, use the following models:

Model #9 - to get rate of spread, multiply by 1.2.
Model #5 - to get flame length and intensity.

In all cases, rates of area and perimeter growth, fire shape, and fire area projections follow the standard procedure.

Selecting the limits of burning conditions when fires may be considered safe enough to warrant limited or no attack is no small task. Basing selection on opinions will not do, because opinions vary too much. Experience often

*Albini, Frank A. 1976. Estimating wildfire behavior and effects. USDA Forest Service General Technical Report INT-30. Intermountain Forest and Range Experiment Station. 92 pp.

suffers from a poor memory. Objective, measurable limits must be found and set.

A reasonable approach to take is to decide what kind of fire is safely manageable. Surely a fire that doesn't spread is safe, but such a fire would not receive much attention anyway. The question becomes one of asking how intense and rapidly moving a fire may be and yet be considered manageable. For the purposes of this plan, "manageable" means that it can be stopped if necessary to protect valued resources and structures. The internationally accepted levels of Byrum's intensity seem to be the best measure of limits of control by specified means. A commonly used value is 100 Btu/sec./ft. Crews working with hand tools can directly attack and suppress a fire of that intensity. This has proved true in Alaskan fuels.

Using fire behavior models, we can calculate measurable conditions that will lead to a fire of 100 Btu/sec./ft. or less. The problem is not simple, nor is the solution, but it is possible to do for our needs.

For the purposes of this plan during the first season, a conservative, worst-case approach has been taken to prevent mistakes. Stated simply, a fire in the most dangerous fuel type must be controllable by direct attack before a no-attack decision is allowed. Other criteria must also be met, such as dates and weather outlook. In the area encompassed by the plan, the black spruce-feather moss forests are the most dangerous fuels. Experience in fires in similar fuels has shown that combinations of fuel models 9 and 5 (Albini 1976) work extremely well for estimating flame length and rate of spread. From these we can calculate the fire intensity and the conditions necessary for limited suppression action.

What information is needed? We need to know how dry the important fuels are. We need to know wind velocity and direction. In steep terrain, we need to know percent slope.

Some conditions in Alaska simplify the matter. The terrain is generally gentle as far as fire behavior is concerned. On much of the Fortymile country, terrain can probably be ignored during the late season. Two important variables remain. They are fuel moisture and wind velocity. Remember that we are dealing only with the black spruce forests because they offer the most potentially dangerous fire behavior. In this fuel type, the fuels that carry the

fire are mosses and lichens, which may be piled deeply upon the forest floor. Because these carrier fuels are finely divided, they become wet and dry extremely rapidly. As the relative humidity goes up, these fuels take up water very quickly. As the relative humidity drops, they dry out quickly and become very flammable. Consequently, relative humidity is a good predictor of the fuel moisture of these fuels. The tables needed to accomplish the prediction follow. From items that a weather forecast gives, you can calculate the critical fuel moistures needed.

Some combinations of fuel moisture (or relative humidity) and windspeed favor fires of an intensity just barely suppressible by crews with hand tools. A black spruce fuel type with closed canopy on the middle third of a north slope was used for the calculations. Using the cited models, the results are as follows:

Windspeed	1-hr fuel moisture	Relative humidity
	(percent)	(percent)
22 mph	17	85-90
15 mph	16	75-85
10 mph	12	40-55
8 mph	10	30-35

For example, where fuel moisture content value is 16 percent, winds must be no greater than 15 mph if the fire is to be considered manageable. A relative humidity range of 75 to 80 percent would produce a 16 percent fuel moisture.

The limiting moisture content chosen is 10 percent. Below that value, fires burn readily and can easily get out of hand if the wind rises above 4 mph. The 10 percent fuel moisture corresponds to a relative humidity of 30 percent. Late season criteria are not applied when humidity levels are below 30 percent.

Additionally, the three-day weather outlook must meet the conditions listed in the table above, and the highest temperatures must not exceed 70 degrees.

When dead fuel moisture is not measurable directly, use the following procedures:

		Next Step
1.	Obtain the following information for the fire behavior projection time period in question. *dry bulb temperature *relative humidity *slope percent *aspect *site exposed to sunlight or shaded *month	2
2.	Daytime (0800-1959)	3
2.	Nighttime (2000-0759)	8
3.	Go to Table 1; determine Reference Fuel Moisture using dry bulb temperature and relative humidity.	4
4.	May, June, July	5
4.	February, March, April/August, September, October	6
4.	November, December, January	7
5.	Go to Table 4; determine Dead Fuel Moisture Content Correction for Aspect and Position on Slope, DAYTIME. Use appropriate portion of table to consider whether fuels ahead of the projection point are shaded or exposed to solar radiation. ADD to Reference Fuel Moisture DAYTIME.	END
6.	Go to Table 5; determine Dead Fuel Moisture Content Correction for Aspect and Position on Slope, DAYTIME. Use appropriate portion of table to consider whether fuels ahead of the projection point are shaded or exposed to solar radiation. ADD number to References Fuel Moisture DAYTIME.	END
7.	Go to Table 6; determine Dead Fuel Moisture Content Correction for Aspect and Position on Slope, DAYTIME. Use appropriate portion of table to consider whether fuels ahead of the projection point are shaded or exposed to solar radiation. ADD to Reference Fuel Moisture DAYTIME.	END

		Next Step
8.	Go to Table 2; determine Reference Fuel Moisture using dry bulb temperature and relative humidity.	9
9.	Temperature and RH predicted for specific location of projection point. No correction necessary. Use Reference Fuel Moisture NIGHTTIME from Table 2.	END
9.	Temperature and RH not predicted for specific location of projection point.	10
10.	Go to Table 3; determine Dead Fuel Moisture Content Correction for Aspect and Portion on Slope, NIGHTTIME at the (1) temperature and RH prediction location and (2) projection point location. Calculate the difference of the two numbers. ADD to the Reference Fuel Moisture NIGHTTIME if the projection point location is a "wetter" site (larger correction number). SUBTRACT the difference if the projection point represents a drier site (smaller correction number).	END
10.	NOTE: Position on slope (L., M., U.) is valid in Table 3 only when a temperature inversion forms at night. When there is no cold air drainage at night, prediction differences are used for aspect alone for the upper (U) position.	END

Table 1. REFERENCE FUEL MOISTURE.

DAYTIME

0800 - 1959

Dry Bulb Temperature (°F)	RELATIVE HUMIDITY (PERCENT)																				
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	
	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89	94	99	
10 - 29	1	2	2	3	4	5	5	6	7	8	8	8	9	9	10	11	12	12	13	13	14
30 - 49	1	2	2	3	4	5	5	6	7	7	7	8	9	9	10	10	11	12	13	13	13
50 - 69	1	2	2	3	4	5	5	6	6	7	7	8	8	9	9	10	11	12	12	12	13
70 - 89	1	1	2	2	3	4	5	5	6	7	7	8	8	8	9	10	10	11	12	12	13
90 - 109	1	1	2	2	3	4	4	5	6	7	7	8	8	8	9	10	10	11	12	12	13
109+	1	1	2	2	3	4	4	5	6	7	7	8	8	8	9	10	10	11	12	12	13

GO TO TABLES 4, 5, OR 6 FOR ASPECT AND POSITION ON SLOPE CORRECTION

TABLE 2. REFERENCE FUEL MOISTURE.

NIGHTTIME

2000 - 0759

Dry Bulb Temperature (°F)	RELATIVE HUMIDITY (PERCENT)																				
	0 ↓ 4	5 ↓ 9	10 ↓ 14	15 ↓ 19	20 ↓ 24	25 ↓ 29	30 ↓ 34	35 ↓ 39	40 ↓ 44	45 ↓ 49	50 ↓ 54	55 ↓ 59	60 ↓ 64	65 ↓ 69	70 ↓ 74	75 ↓ 79	80 ↓ 84	85 ↓ 89	90 ↓ 94	95 ↓ 99	100
10 - 29	1	2	4	5	5	6	7	8	9	10	11	12	12	14	15	17	19	22	25	25+	25+
30 - 49	1	2	3	4	5	6	7	8	9	9	11	11	12	13	14	16	18	21	24	25+	25+
50 - 69	1	2	3	4	5	6	6	8	8	9	10	11	11	12	14	16	17	20	23	25+	25+
70 - 89	1	2	3	4	4	5	6	7	8	9	10	10	11	12	13	15	17	20	23	25+	25+
90 - 109	1	2	3	3	4	5	6	7	8	9	9	10	10	11	13	14	16	19	22	25	25+
109+	1	2	2	3	4	5	6	6	8	8	9	9	10	11	12	14	16	19	21	24	25+

TABLE 3. FUEL MOISTURE CORRECTION FOR ASPECT AND POSITION ON SLOPE.

NIGHTTIME

2000 - 0759

	2000 →			2200 →			0000 →			0200 →			0400 →			0600 →		
	L	M	U	L	M	U	L	M	U	L	M	U	L	M	U	L	M	U
N	9	1	1	13	1	2	16	2	2	17	1	1	18	1	1	16	2	1
S	9	0	1	14	0	1	16	0	2	17	0	1	18	0	0	9	0	1

TABLE 4. DEAD FUEL MOISTURE CONTENT CORRECTIONS FOR ASPECT AND POSITION ON SLOPE.

MAY JUNE JULY

Clear and/or No Canopy

		0800 →			1000 →			1200 →			1400 →			1600 →			1800 →		
		L	M	U	L	M	U	L	M	U	L	M	U	L	M	U	L	M	U
N	0-30%	2	3	4	1	1	1	0	0	1	0	0	1	1	1	1	2	3	4
	31%+	3	4	4	1	2	2	1	1	2	1	1	2	1	2	2	3	4	4
E	0-30%	2	2	3	1	1	1	0	0	1	0	0	1	1	1	2	3	4	4
	31%+	1	2	2	0	0	1	0	0	1	1	1	2	2	3	4	4	5	6
S	0-30%	2	3	3	1	1	1	0	0	1	0	0	1	1	1	1	2	3	3
	31%+	2	3	3	1	1	2	0	1	1	0	1	1	1	1	2	2	3	3
W	0-30%	2	3	4	1	1	2	0	0	1	0	0	1	0	1	1	2	3	3
	31%+	4	5	6	2	3	4	1	1	2	0	0	1	0	0	1	1	2	2
		Cloudy and/or Canopy																	
N	0%+	4	5	5	3	4	5	3	3	4	3	3	4	3	4	5	4	5	5
E	0%+	4	4	5	3	4	5	3	3	4	3	4	4	3	4	5	4	5	6
S	0%+	4	4	5	3	4	5	3	3	4	3	3	4	3	4	5	4	5	5
W	0%+	4	5	6	3	4	5	3	3	4	3	3	4	3	4	5	4	4	5

TABLE 5. DEAD FUEL MOISTURE CONTENT CORRECTIONS FOR ASPECT AND POSITION ON SLOPE.

FEBRUARY MARCH APRIL/AUGUST SEPTEMBER OCTOBER

Clear and/or No Canopy

		0800 →			1000 →			1200 →			1400 →			1600 →			1800 →		
		L	M	U	L	M	U	L	M	U	L	M	U	L	M	U	L	M	U
N	0 - 30%	3	4	5	1	2	3	1	1	2	1	1	2	1	2	3	3	4	5
	31%+	3	4	5	3	3	4	2	3	4	2	3	4	3	3	4	3	4	5
E	0 - 30%	3	4	5	1	2	3	1	1	1	1	1	2	1	2	3	3	4	5
	31%+	3	3	4	1	1	1	1	1	1	1	2	3	3	4	5	4	5	6
S	0 - 30%	3	4	5	1	2	2	1	1	1	1	1	1	1	2	3	3	4	5
	31%+	3	4	5	1	2	2	0	1	1	0	1	1	1	2	2	3	4	5
W	0 - 30%	3	4	5	1	2	3	1	1	1	1	1	1	1	2	3	3	4	5
	31%+	4	5	6	3	4	5	1	2	3	1	1	1	1	1	1	3	3	4
		Cloudy and/or Canopy																	
N	0%+	4	5	6	4	5	5	3	4	5	3	4	5	4	5	5	4	5	6
E	0%+	4	5	6	3	4	5	3	4	5	3	4	5	4	5	6	4	5	6
S	0%+	4	5	6	3	4	5	3	4	5	3	4	5	3	4	5	4	5	6
W	0%+	4	5	6	4	5	6	3	4	5	3	4	5	3	4	5	4	5	6

TABLE 6. DEAD FUEL MOISTURE CONTENT CORRECTIONS FOR ASPECT AND POSITION ON SLOPE.

NOVEMBER DECEMBER JANUARY

Clear and/or No Canopy

		0800 →			1000 →			1200 →			1400 →			1600 →			1800 →		
		L	M	U	L	M	U	L	M	U	L	M	U	L	M	U	L	M	U
N	0 - 30%	4	5	6	3	4	5	2	3	4	2	3	4	3	4	5	4	5	6
	31%+	4	5	6	4	5	6	4	5	6	4	5	6	4	5	6	4	5	6
E	0 - 30%	4	5	6	3	4	4	2	3	3	2	3	3	3	4	5	4	5	6
	31%+	4	5	6	2	3	4	2	2	3	3	4	4	4	5	6	4	5	6
S	0 - 30%	4	5	6	3	4	5	2	3	3	2	2	3	3	4	4	4	5	6
	31%+	4	5	6	2	3	3	1	1	2	1	1	2	2	3	3	4	5	6
W	0 - 30%	4	5	6	3	4	5	2	3	3	2	3	3	3	4	4	4	5	6
	31%+	4	5	6	4	5	6	3	4	4	2	2	3	2	3	4	4	5	6
		Cloudy and/or Canopy																	
N	0%+	4	5	6	4	5	6	4	5	6	4	5	6	4	5	6	4	5	6
E	0%+	4	5	6	4	5	6	4	5	6	4	5	6	4	5	6	4	5	6
S	0%+	4	5	6	4	5	6	4	5	6	4	5	6	4	5	6	4	5	6
W	0%+	4	5	6	4	5	6	4	5	6	4	5	6	4	5	6	4	5	6

GUIDELINES TO COMPENSATE FOR
LIVE FUEL (FOLIAGE) MOISTURE CONTENT (PERCENT)

Live fuel moisture (foliage moisture) is required for fire behavior models 2, 4, 5, 7, and 10. If data are unavailable for estimating live fuel moisture, the following rough estimates can be used.

LIVE FUEL (FOLIAGE) MOISTURE CONTENT (PERCENT)

TABLE 7

MOISTURE CONTENT (PERCENT)	STAGE OF VEGETATION DEVELOPMENT
300	FRESH FOLIAGE, ANNUALS DEVELOPING, EARLY IN GROWING CYCLE
200	MATURING FOLIAGE, STILL DEVELOPING WITH FULL TURGOR
100	MATURE FOLIAGE, NEW GROWTH COMPLETE AND COMPARABLE TO OLDER PERENNIAL FOLIAGE
50	ENTERING DORMANCY, COLORATION STARTING, SOME LEAVES MAY HAVE DROPPED FROM STEM

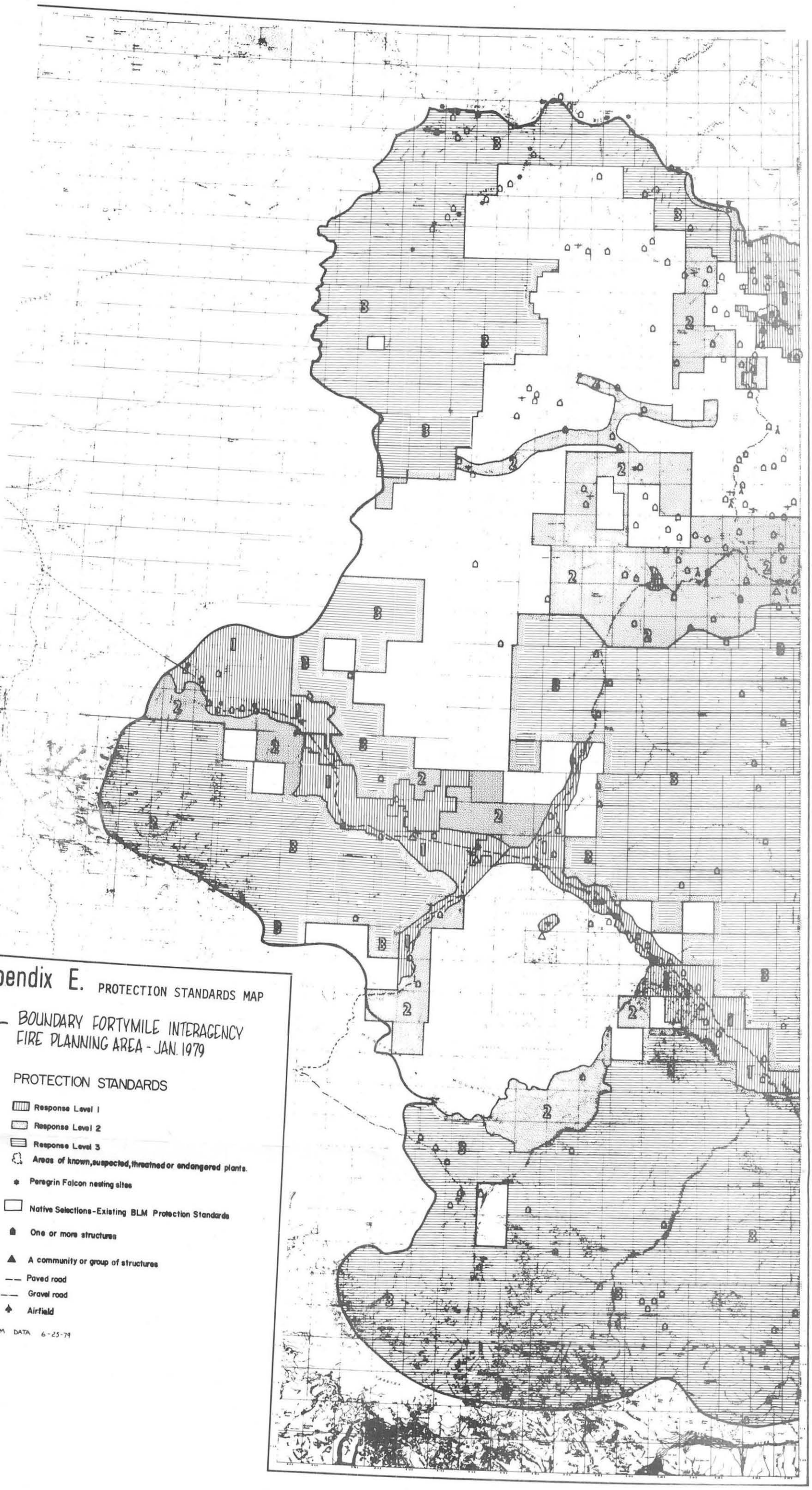
COST SUMMARY DATA SHEET

Year	No. of Fires	Cost	Adjusted Cost Factor*	Adjusted Cost Total+	Acres Burned
1957	38	96,056	84.3	113,945	20,500
58	27	57,398	86.6	66,279	4,601
59	25	35,221	87.3	40,345	3,186
60	19	19,661	88.7	22,166	24
61	6	11,123	89.6	12,414	49
62	8	26,041	90.6	28,742	79
63	19	108,607	91.7	118,437	465
64	19	8,427	92.9	9,071	67
65	8	2,662	94.5	2,817	22
66	30	2,001,490	97.2	2,059,146	229,810
67	32	1,693,945	100.0	1,693,945	43,402
68	8	327,950	104.2	314,731	2,124
69	19	1,189,950	109.8	1,083,743	701,976
70	28	125,240	116.3	107,687	59
71	28	315,100	121.3	259,769	10,460
72	41	292,631	125.3	233,544	2,364
73	17	70,997	133.1	53,341	25
74	23	109,717	147.7	74,284	67
75	25	327,641	161.2	203,251	184
76	61	378,480	170.5	221,982	141
77	38	349,463	181.5	192,542	577
78	36	--------	------	--------	212

*Consumer Price Index for United States

+1967 Dollars

Appendix E. PROTECTION STANDARDS MAP



— BOUNDARY FORTYMILE INTERAGENCY FIRE PLANNING AREA - JAN. 1979

PROTECTION STANDARDS

- Response Level 1
- Response Level 2
- Response Level 3
- Areas of known, suspected, threatned or endangered plants.
- Peregrin Falcon nesting sites
- Native Selections - Existing BLM Protection Standards
- One or more structures
- A community or group of structures
- Paved road
- Gravel road
- Airfield

BLM DATA 6-25-79

Appendix F. LAND STATUS MAP

BOUNDARY FORTYMILE INTERAGENCY FIRE PLANNING AREA - JAN. 1979

LAND STATUS

FEDERAL

National Park System

1 Wrangell-St. Elias - Monument
2 Wrangell-St. Elias - 204E Withdrawl
3 Yukon Charley-Monument

National Wildlife Refuge System

4 Tetlin 204E Withdrawl

Bureau of Land Management

5 National Resource Lands
6 Wild & Scenic Rivers

STATE of ALASKA

State Lands

7 Patented
8 Tenatively Approved
9 Selected

ANCSA (Native)

Native Lands

10 Doyon-Selected
11 Ahtna - Selected
12 Tetlin - Selected
13 Villages - Selected
13a Northway Native Incorporated
13b Tanacross Incorporated
13c Dot Lake Corporation
13d Mendas-Chaag Native Corporation (Healy Lake)
13e Hungwitchin Corporation (Eagle)
○ Allotments

△ One or more structures
△ Community or group of structures
▲ Campground
+ Airfield
— Paved road
- - - Gravel road
▭ Dust selections

BLM DATA 6-12-79

Appendix G. SOILS MAP

— BOUNDARY FORTYMILE INTERAGENCY FIRE PLANNING AREA - JAN. 1979

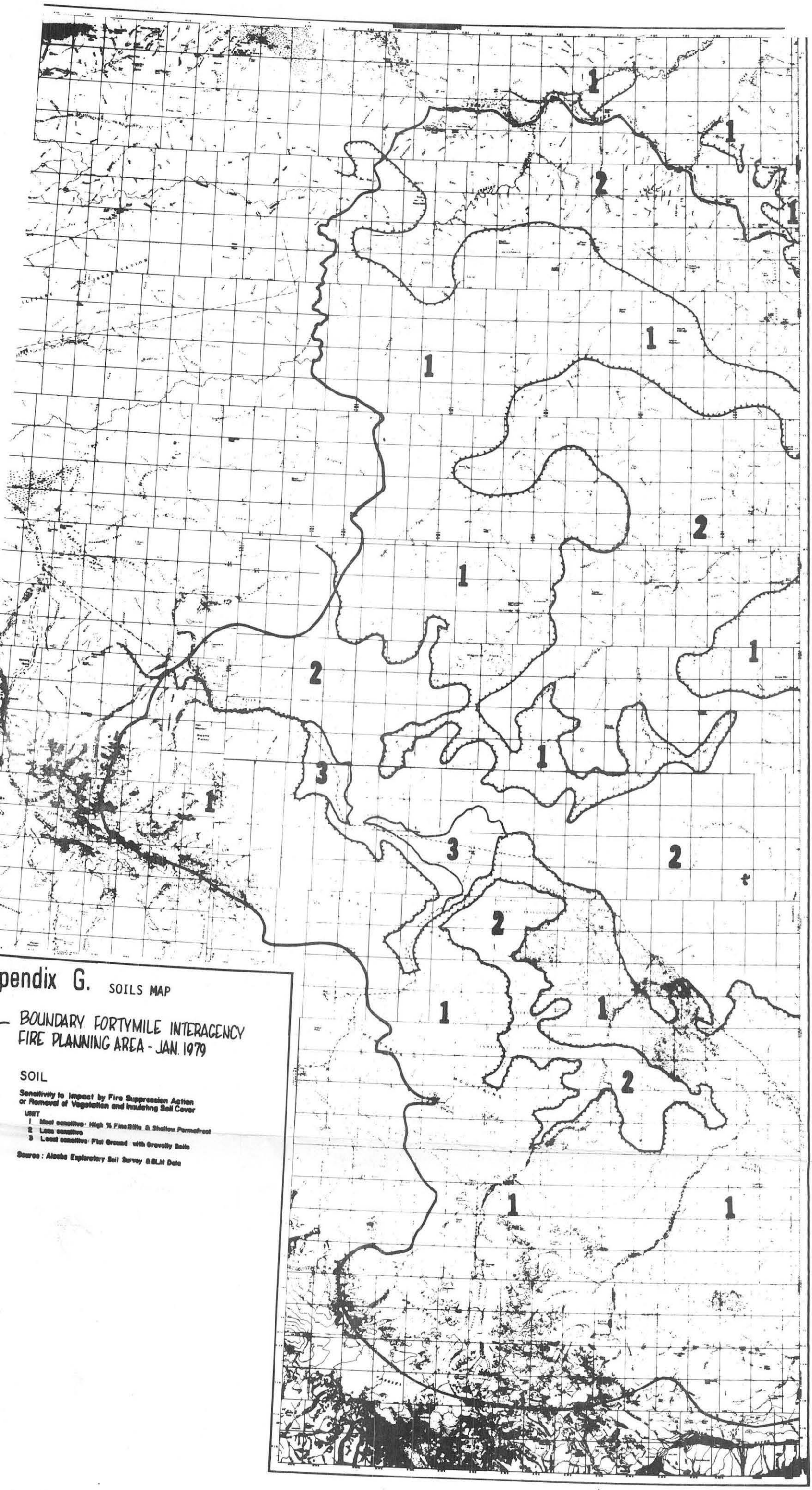
SOIL

Sensitivity to Impact by Fire Suppression Action or Removal of Vegetation and Insulating Soil Cover

UNIT

1 Most sensitive: High % Fine Silts & Shallow Permafrost
2 Less sensitive
3 Least sensitive: Flat Ground with Gravelly Soils

Source: Alaska Exploratory Soil Survey & BLM Data



BOUNDARY FORTYMILE INTERAGENCY FIRE PLANNING AREA - JAN. 1979

SOIL

Sensitivity to Impact by Fire Suppression Action or Removal of Vegetation and Insulating Soil Cover

UNIT
1 Most sensitive: High % FineSilts & Shallow Permafrost
2 Less sensitive
3 Least sensitive: Flat Ground with Gravelly Soils

Source: Alaska Exploratory Soil Survey & BLM Data

BOUNDARY FORTYMILE INTERAGENCY FIRE PLANNING AREA - JAN. 1979

PROTECTION STANDARDS

- Response Level 1
- Response Level 2
- Response Level 3
- Areas of known, suspected, threatned or endangered plants.
- Peregrin Falcon nesting sites
- Native Selections - Existing BLM Protection Standards
- One or more structures
- A community or group of structures
- Paved road
- Gravel road
- Airfield

BLM DATA 6-25-79

BOUNDARY FORTYMILE INTERAGENCY FIRE PLANNING AREA - JAN. 1979

LAND STATUS

FEDERAL

National Park System

1 Wrangell-St. Elias - Monument
2 Wrangell-St. Elias - 204E Withdrawl
3 Yukon Charley-Monument

National Wildlife Refuge System

4 Tetlin 204E Withdrawl

Bureau of Land Management

5 National Resource Lands
6 Wild & Scenic Rivers

STATE of ALASKA

State Lands

7 Patented
8 Tenatively Approved
9 Selected

ANCSA (Native)

Native Lands

10 Doyon-Selected
11 Ahtna - Selected
12 Tetlin - Selected
13 Villages - Selected
- 13a Northway Native Incorporated
- 13b Tanacross Incorporated
- 13c Dot Lake Corporation
- 13d Mendas-Chaag Native Corporation (Healy Lake)
- 13e Hungwitchin Corporation (Eagle)

o Allotments

One or more structures
Community or group of structures
Campground
Airfield
Paved road
Gravel road
Dual selections

BLM DATA 6-15-79