State of Alaska

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Prescribed Burn Plan

East Fork of the Dennison Fork of the Fortymile River

A Cooperative Forest Wildlife Enhancement Project by the Department of Fish and Game, Division of Wildlife Conservation and the Department of Natural Resources, Division of Forestry

Prepared by:

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dnr northern reg FAX No. 9078835135 Ø 002 P. 2

Agency Approval

EAST FORK PRESCRIBED BURN PLAN June 1, 1998

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I. Introduction

A. Location and General Description

The East Fork Prescribed Burn site is located in the Fortymile River drainage of Interior Alaska (Appendix G). Specifically, the burn area lies within the Dennison Fork and its tributary, the East Fork. The nearest communities are Chicken, about 25 miles to the north, and Tok, about 45 miles to the southwest. The villages of Tetlin and Northway are about 50 miles to the south.

The burn site is centered around a unique geological feature called Prindle Volcano. This 4,580 foot mountain peak is part of a high elevation, rock ridge system oriented roughly in a northeasterly direction from the confluence of the East Fork and the Dennison Fork rivers. Terrain varies from rolling hills to rather steep ravines. Elevations range from a low of about 2,000 foot near the Dennison Fork to a high of about 4,900 foot north of Prindle Volcano.

Vegetation in the burn area is typical of the boreal forest or taiga¹. It consists of extensive zones of black (*Picea mariana*) and white (*P. glauca*) spruce and hardwoods. Within these zones are extensive mosaics of shrub and herbaceous types classed as sedge, moss-bog meadows, willow, sweetgale and graminoid bog. Wet areas within the forest are mainly associated with the myriad network of small streams. Tree line occurs at about 3,500 feet. Expansive areas of shrubs such as alder (*Alnus crispa*), bog birch (*B. glandulosa*), dwarf birch (*B. nana*) and willow (*Salix* spp.) often occur in the transition zone from forest to alpine tundra.

Tree species include aspen (*Populus tremuloides*), paper birch (*Betula papyrifera*), Larch (*Larix laricina*), balsam poplar (*Populus balsamifera*), black spruce and white spruce. Shrubs species include alder, bog birch, dwarf birch, blueberry (*Vaccinium uliginosum*), buffaloberry (*Shepherdia canadensis*), cinquefoil (*Potentilla fruticosa*), highbush cranberry (*Viburum edule*), mountain cranberry (*V. vitis-idaea*), dogwood (*Cornus stolonifera*), kinnikinnik (*Arctostaphylos uva-ursi*), labrador tea (*Ledum groenlandicum*), raspberry (*Rubus idaeus*), prickly rose (*Rosa acicularis*), sweetgale (*Myrica gale*), several species of willow and others. A wide variety of herbaceous plants, too numerous to list here, also occur in the boreal forest.

¹ Viereck, L.A., C.T. Dyrness, A.R. Batten and K.J. Wenzlick. 1992. The Alaska Vegetation Classification. USDA Forest Service, Pacific Northwest Research Station, General Technical Report PW-GTR-286. 278 pp.

Vegetative diversity varies greatly with elevation, aspect and drainage. Relatively minor changes in relief often greatly affect the local hydrology and subsequent vegetative patterns. Generally, soils on north-facing slopes are cooler, more poorly drained and often underlain by permafrost. Soils on southfacing slopes are warmer, better drained, and usually permafrost free. Below tree line, the prominent vegetation on north-facing slopes is usually black spruce underlain by a deep moss mat. The prominent vegetation on south-facing slopes is usually either shrubs, hardwood trees, a mixture of white spruce and hardwoods, or white spruce. Slopes with an easterly or westerly aspect have soil conditions and vegetative patterns that transition between those described for north-facing and south-facing aspects. Valley floors are characterized by sedges, willows, bogs and water.

All the wildlife typically found in the boreal forest habitats of Interior Alaska are common in the prescribed burn area. Their abundance depends on a variety of factors such as habitat and predation, but most are adapted to and thrive in the diverse and productive habitats that result from recurring disturbance by fire. Moose (*Alces alces*) are year-round residents of the area. Caribou (*Rangifer tarandus*) occur seasonally. Their major predators, wolves (*Canis lupus*), grizzly bear (*Ursus arctos*) and black bear (*U. americanus*) are also present.

B. Background

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A long history of use exists in the Fortymile River drainage. Some of the first travelers through this area were Indians exchanging goods between coastal and interior tribes. Much later (late 1900s), gold was discovered and non-Native miners descended on the area in large numbers. Eventually, overland routes were established to supply these early mining operations and the communities of Chicken, Eagle and Dawson.

Today, the East Fork Prescribed Burn area is uninhabited and developed access is minimal. The old travel routes through the burn area are unused and overgrown, having been replaced by the Taylor Highway and other roads to the west and north. One cabin ruin exists along an old trail on the very northeast portion of the burn area. Remains of another dilapidated cabin are located in the Twin Creek drainage.

Game management in the burn area is focused largely on moose. Moose are an important game species for residents of nearby communities as well as nonlocal residents who come to the Fortymile River drainage to hunt. Post-burn regrowth of willow, aspen and birch is expected to greatly improve browse conditions for moose for many years. Hunters usually either drive All Terrain Vehicles (ATVs) over the 21 Mile Trail to the East Fork River or fly small aircraft to unimproved landing sites in the drainage.

Timber within the prescribed burn area is considered non-commercial due to limited amount and difficulty of access. Except for some white spruce stringers in ravines bottoms or upland pockets, most of the forest cover does not contain sawlog quality trees.

In summer, lush green patches of deciduous trees and shrubs of various ages are readily visible in previously burned areas among the vast expanses of older spruce dominated forest in the Fortymile River drainage. These are a graphic reminder of the important role wildland fires have historically played in shaping the vegetative mosaic of the landscape. A maize of streams and ponds is also present, especially in the East Fork and Dennison Fork rivers, providing additional vegetative diversity. These burned areas and riparian areas are extremely important habitat for wildlife in the boreal forest. However, fire control since the 1950's has allowed the habitat to age, reducing its ability to support wildlife species needing early to mid-succession vegetative types and reducing people's hunting effectiveness.

Lightning-caused wildland fires are an intrinsic part of the environment in this area. However, in most years an extensive amount of rain accompanies the thunderstorms that produce the lightning. Thus, the frequency of larger fires is low. This situation allowed early suppression efforts to be extremely effective except during the occasional years with extremely dry burning conditions. Suppression of smaller fires during wetter years left larger expanses of continuous volatile fuels (spruce dominated mature forest) for fires that escaped initial attack during years with unusually dry conditions. This resulted in some very large, intense fires such as the 203,000 acre Chicken (West Fork) Fire of 1966. These fires were difficult, expensive and dangerous to fight and did not produce the most desirable habitat conditions for wildlife.

Wildland fires of this nature are becoming increasingly less acceptable as the area becomes more populated with people. The 1984 Alaska Interagency Fire Management Plan for the Fortymile Planning Area (now incorporated into the statewide Alaska Wildland Fire Management Plan) recognized that one solution for this dilemma was to not attempt to suppress all fires during years with less extreme burning conditions. It provided a framework for land managers to tailor the amount of suppression to the values needing protection. However, effective implementation was slow and nature provided relatively few fire opportunites. As a consequence, with the exception of the 15,000 acre East Fork Fire in 1997, little acreage has burned in this area since 1966. In the interim, prescribed fires can reduce the danger of another large wildland fire like the Chicken Burn and quicken the restoration of diverse, productive habitat conditions for wildlife.

The East Fork Prescribed Burn area and other lands within the Maximum Allowable Perimeter (see Section III, Burn Unit Description) are located entirely within a large block of land classed for "Limited Management" under the Alaska Wildland Fire Management Plan. Surveillance is normally the appropriate initial response to fires occurring on lands afforded Limited Management status. Generally, no additional suppression action is taken unless the fire begins to threaten features or lands classed for a higher level of protection. The nearest lands requiring a higher level of protection (Modified Management) are eight miles to the west.

II. Goals And Objectives

A. Overview: The desired result is to achieve a mix of burn intensities, while avoiding the extremes: minimal or maximum duff removal over most of the burn area. This result probably will occur naturally under most mid-summer burning conditions due to localized differences in weather, topography, hydrology and fuel types (vegetative differences). The advantage of a prescription that produces a range of burning conditions is that it creates opportunities for <u>both</u> seeding and vegetative reproduction by sprouting.

A low severity burn will often only top-kill shrubs and deciduous trees capable of root or crown sprouting. These species can quickly put up new growth from their root systems. However, since little duff is consumed by a low severity burn, seed establishment is poor in these areas. Post-burn vegetation is often limited to the deciduous shrub and tree species capable of root or crown sprouting that were present before the burn and their pre-burn distribution governs subsequent abundance.

A higher severity burn will remove a larger portion of the duff creating good conditions for seed establishment. While this may kill most of the plants capable of root or crown sprouting under less severe burn conditions, this loss can be offset by the establishment of a wide variety of new plants from seeds. Vegetative recovery often is slower from seeding than from root or crown sprouting. However, reproduction resulting from a more severe burn is more likely to produce a vegetative type change. This can be an added benefit if the wildlife species being managed prefer the new plant cover.

- B. Goals: (1) Restore age diversity among aging vegetative types and thereby maintain or enhance wildlife habitat values for species needing early to mid-succession stages through a combination of severe and moderate burn intensities.
 - (2) Maintain or enhance wildlife use opportunities in a semiremote area.
 - (3) Reduce the risk of unmanageable, expensive and potentially dangerous wildland fires that will threaten adjacent land owners and respective resources.

- (4) Allow shrub understory component to proliferate by sprouting and seeding.
- C. Objectives: (1) Burn 50 70% of each unit under weather and fuel moisture conditions where duff removal will range from moderate to maximum.
 - (2) Kill at least 50% of the black spruce occurring in the final burned area with a burn of varying intensities where duff removal is close to mineral soil to allow shrub understory component to proliferate by seeding.
 - (3) Kill at least 50% of the above ground stems of black spruce, aspen, poplar and willow occurring in the final burn with less fire intensity to promote root or basal sprouting.

III. Burn Unit Description

A. Maximum Allowable Perimeter

The Maximum Allowable Perimeter (MAP) delineates the outermost boundary within which prescribed fires may spread without need for suppression action. Prescribed fires within this MAP will generally be allowed to spread naturally as determined by local weather, topography, hydrology and fuel types except as necessary to protect private property and prevent escape from the MAP. If a prescribed fire threatens to spread outside the established MAP and cannot be readily contained by assigned holding forces at the MAP, the contingency plan for an Escaped Fire will be implemented (see Section X and Appendix C, Firing and Holding Plan).

The MAP for the East Fork Prescribed Burn Plan encompasses approximately 390,000 acres. It is bounded on the north by Cement Creek running east-west through the lower portion of the old Chicken burn tying into the Taylor highway on the west and into 4,000 foot high rock ridges on the east, then bounded on the west by the Mt. Fairplay ridge system, then turning east by following a drainage south of Mt. Fairplay tying into the 9 Mile Trail and using that ridge system for the south and east boundary, then north using the 9 Mile Trail ridge system tying back into the rock ridge system on the north completing the bounds (See map, Appendix G). The MAP includes portions of: Township 23 North, Ranges 16 - 21 East; Township 22 North, Ranges 16 - 21 East; Township 21 North, Ranges 16 - 20 East; Township 20 North, Ranges 17 - 20 East; and Township 19 North, Ranges 17 - 20 East. All portions are in the Copper River Meridian.

B. Total Burn Area

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The intended burn area is centered around Prindle Volcano, a 4,580 foot mountain peak located approximately 45 miles northeast of Tok and 25 miles south of Chicken (See maps, Appendix G). It encompasses about 84,700 acres. The burn area is bounded to the north by the old Chicken burn, Big Timber creek and rock ridges; on the east by the East Fork of the Dennison Fork and 4,000 foot high rock ridges; on the south by the lower East Fork, and on the west by the Dennison Fork.

Only about 50 - 70 percent of the burn area is expected to burn under the conditions prescribed in this plan because of localized differences in weather, topography, hydrology and fuel types (vegetative differences). The resulting mixture of burned and unburned areas should enhance the natural mosaic of vegetative types and seral stages, and improve habitat conditions for many species of wildlife. Actual burned acreage would vary from 42,350 - 59,290 acres if all four units are ignited and meet desired burn objectives.

The burn area has been divided into four burn units to facilitate burning. These have been identified as Burn Units 1, 2, 3 and 4 (Table 1). However, numbering is only for unit identification and <u>is not</u> intended to indicate either priority among units or a burn sequence. Additional units will be described in future supplements to the plan when funding becomes available to continue fire management actions in the MAP.

Unit No.	Total Acres	50 - 70% Burn Objective
1	26,000 Acres	13,000 - 18,200 acres
2	19,200 Acres	9,600 - 13,440 acres
3	19,500 Acres	9,750 - 13,650 acres
4	20,000 Acres	10,000 - 14,000 acres
Total all units	84,700 Acres	42,350 - 59,290 acres

Table 1. Burn unit numbers, sizes and 50 - 70% burn objectives.

Firing activities will be conducted in ways that are likely to result in fire activity roughly confined to the delineated boundaries of the unit or units chosen for ignition (see Appendix c, Firing and Holding Plan). It will be acceptable for a fire to move from one unit to another. The amount of firing ultimately will depend on available funds, cost efficacy of firing operations and weather conditions. Fires will be allowed to burn freely. Some slop-overs (spot fires or fire extensions beyond the unit boundary) are expected. No action will be taken on slop-overs with low potential for a large escape across the MAP. Potential for large escape will be based on location of the slop-over fire, the adjacent fuel types, and existing and predicted fire behavior.

C. Individual Burn Units

Unit 1 is bounded on the north by the old Chicken Burn, on the west by the Dennison Fork and on the east by a rock ridge running southwest to northeast. Burn-out is planned for an area extending about six miles along the Dennison Fork. The area along Big Timber Creek may or may not be burned out depending on weather conditions. The southern boundary is the Twin Lakes Creek. A dilapidated cabin exists approximately three miles up the Twin Lakes Creek. This site was abandoned many years ago and no protection will be afforded this cabin. However, firing efforts will be kept at least 100 yards from the cabin.

Unit 2 is bounded by Twin Lakes Creek on the north, ridge 3060 on the east and the Dennison Fork on the south. Burn-out is planned for an area extending about eight miles north of the southern boundary to where the 1997 East Fork Fire burned approximately 3,000 acres in this unit. Vegetation in this unit is primarily black spruce. White spruce stringers are found along the drainages. Large pockets of hardwoods occur along the East Fork River. Firing efforts will capitalize on the presence of prevailing westerly winds to help direct the burn uphill into the rock ridges above.

Unit 3 is bounded on the south and east by the East Fork River, on the north by ridge 3600 and a rocky ridge system, and on the west by ridge 3060. Burnout is planned for an area extending about nine miles north along the East Fork River. Unlike Units 1 and 2, this unit has a one to two mile wide strip of lowland vegetation between the East Fork River and the base of the hills that is different from the vegetation on the hillsides. Firing will be done either tight long the river or at the base of the hills, depending on weather and moisture conditions at the time of firing. The vegetation on the lower slopes of the hills is primarily black spruce.

Unit 4 is located in the western portion of the headwaters of the East Fork River. It is bounded on the north by a high elevation rock outcrop, on the west by ridge 3620, on the south by the upper end of the East Fork drainage. Like Unit 3, the lower four miles of the East Fork in Unit 4 has a one to two mile wide strip of lowland vegetation between the river and the base of the hills that is different from the vegetation on the hillsides. Burnout is planned for this four mile stretch along the north side of the East Fork river.

C. Land Ownership

The burn units contain only state-owned land. Lands outside the burn units but within the MAP are also state-owned except for one Native allotment. Ownership was determined from State of Alaska land status maps and a map provided by the Tanana Chiefs Conference showing the location and identification numbers for all known Native allotments in the area.

IV. Scheduling

A. Ignition Window	June 1 through September 30
B. Anticipated Ignition Duration	2 - 3 days in each unit
C. Anticipated Burn Duration	30 days
D. Time of Ignition	1000 - 2000 <u>hours daily</u>
B. L.B. M. C.	

V. Public Notice

Adjacent landowners or managers, affected individuals and the general public will be notified prior to ignition. Preliminary contacts and notification will be made well in advance of ignition to increase public awareness and provide an opportunity for concerns to be addressed. More extensive notification will be made immediately prior to ignition (burn day) to increase awareness, promote understanding of burn objectives, and ensure public safety. Public notice will take two forms:

A. Individual Contacts (see Appendix A for specific names)

- Allotment owners within the MAP.
- Governmental enforcement entities (e.g., state troopers, ports-of-entry, air quality, aviation).
- Local government or village heads.
- Local air taxi businesses.
- Local managers of large tracts of adjacent private or public land.
- Members of the Interior legislative delegation.
- Mining operations near the burn area.
- Owners of cabins within the MAP.
- Trappers with lines in the burn area.

B. Public Announcements

- Agency news releases.
- Pilot information via Northway Flight Service.
- Posting notices in local communities.
- Public interest announcements on radio stations serving the Tok area.

VI.	Preburn Considerations	Responsibility*
	 Obtain Approval for Open Burning from the Alaska Department of Environmental Conservation. 	DWC
	 Place a mobile weather data monitor on a representative site near the burn area. 	DOF
	 Complete a Smoke Plume Transport Estimate to plot the anticipated direction of the smoke plume. 	DOF
	 Send out courtesy letters and make personal contacts prior to burn day (Appendix A, part 1) 	DWC
	 Burn day phone contacts (Appendix A, part 2). 	DWC and DOF
	 Check statewide fire resources to insure that burn organization personal are available. 	DOF
	 Certify that sufficient forces are available for ignition and post-ignition activities prior to ignition and daily until each burn is declared contained. 	DOF Tok Area Fire Mgmt. Officer
	 Certify that appropriate personnel and equipment are present for ignition. 	DOF (Burn Boss)
	*Note: DWC = Division of Wildlife Conservation; DOF = Division of	of Forestry.

VII. Ignition Methods

The preferred method is via aerial ignition devices (AID). Under most conditions, the most cost-effective AID would be to use ping pong ignition canisters. However, if the burn is conducted during low end prescription parameters, the most cost-effective method would be to use a heli-torch to create a series of flanking fires by flying patterns into the wind. Pre-established patterns may be altered by the Burn Boss as the burn progresses based on observed fire behavior and direction of fire movement. Hand firing is anticipated for burnout and cleanup purposes. Refer also to Appendix C, Firing and Holding Plan.

VIII. Smoke Management Considerations

Smoke sensitive areas are primarily the communities of Tok, Chicken and Northway. Potential smoke related problems include effects on individuals with respiratory problems and reduced visibility for aircraft (especially when landing or taking off at airports). Smoke related problems are considered minimal due to the distances between these communities and the burn. The burn area is located approximately 25 miles south of Chicken, 45 miles northeast of Tok and 50 miles north of Northway.

The Taylor highway system is situated six miles to the west of the burn area. The Alaska and Glenn Highways are located 45 miles to the southwest at the closest point. Minimal effects are expected along the Alaska and Glenn Highways due to their distance from the burn area. Travelers along the Taylor Highway are more likely to be affected due to its proximity to the burn area. Potential problems include effects on individuals with respiratory problems and reduced visibility.

The following measures will be taken to reduce the potential for smoke related problems:

- 1) Firing will not be conducted when fog or inversion potential exists.
- 2) Prior to firing, notification will be given to the Alaska Department of Environmental Conservation (Division of Air and Water Quality), the Alaska State Troopers in Tok, the FAA Flight Services in Northway, the Boundary and Alcan Ports of Entry, and various media contacts (see appendix A).

Median value estimates for particulate matter released from Units 1 - 4 are based on the assumption that 62.5% of each unit will be burned (Tables 2 and 3).

Table 2. Fuel loading and consumption for various timber size classes based on pre- and post-burn data from the US Fish and Wildlife Service's Chisana Prescribed Burn at Northway in 1993, the fuel loading photo series developed for Northern Ontario, Canada, and the photo series under development for Alaska.

size class (inches Dia.)	surface fuel tons\acre	% _consumption	duff fuel tons\acre	consumption tons\acre
0 - 0.25	0.2	40.0		0.08
0.25 - 1.00	0.3	12.5		0.04
1.00 - 3.00	0.5	7.5		0.04
> 3	3.0	2.5		0.07
duff loading	(estimate)	30.0	10	3.0
TOTAL				3.23

Area	Total acreage per area	Tons fuel per area	Tons consumed per area	Particulate (lbs/ton of fuel)	Total particulate per area (tons)
Unit 1	26,000	3.23	83,980	27	1133
Unit 2	19,200	3.23	62,016	27	837
Unit 3	19,500	3.23	62,985	27	850
Unit 4	20,000	3.23	64,600	27	872

Table 3. Total particulate matter released per area.

IX. Firing and Holding Plan (see appendix C)

X. Contingency Plan For Fire Escape (see appendix C)

If the prescribed fire spreads outside the MAP or if fire movement threatens to move past identified critical holding points and on-site holding forces can't contain the fire, <u>that portion</u> of the fire area will be declared a wildland fire and appropriate action will be taken. Any suppression actions taken will be managed by the Tok Area Forestry office and the assigned line officer. An Wildland Fire Situation Analysis (WFSA) will be completed by the Tok Area Forester. The protection standard for this area in the Alaska Wildland Fire Management Plan is "Limited Management."

XI. Communications And Coordination

All fixed wing and rotor wing aircraft assigned to the burn will have air to air capabilities on 127.45 MHz. Command radio frequency for the burn will be via the Tok Area Channel 1 Repeater on Rx 151.265 MHz/Tx 159.270 MHz with code guard 141.3 MHz. Simplex 151.270 MHz/Tx 151.270 MHz will be used for operations communications. Flight flowing will utilize DOF channel 4 or 8, simplex.

XII. Monitoring And Evaluation Procedures

Weather data will be gathered preceding ignition from a remote weather station located on a representative site. As the burn is initialized, on-site weather conditions will be measured every two hours until ignition phase is completed. Smoke dispersion, rate of spread, and flame length will also be documented. Spot weather forecasts will be requested twice daily or more frequently when needed (see appendix F).

XIII. Burning Prescription, predicted and measured

The burn prescription for this plan was prepared using the Canadian Forest Fire Danger Rating System (CFFDRS) and the 1993 Canadian Fire Behavior Prediction System (FBP93) as tools to track forest fuel moistures, predict spread rates and estimate burning intensities (rank). Refer also to the attached charts for

Fine Fuel Moisture Code (FFMC), preferred Initial Spread Index (ISI) and Rate of Spread (ROS) conditions, and the Buildup Index (BUI) matrix.

This burn prescription is intended to accommodate a mid-range of burning conditions. The intent is to allow ignition under a wide range of burning conditions while avoiding the extremes: conditions so marginal that only a light surface burn is obtained and conditions so flammable that a very severe burn is obtained over most of the area. Burn conditions will be considered too severe when the Drought Code (DC) value exceeds 650.

The desired result is to achieve a mix of burn intensities over the burn area. Under most mid-summer burning conditions, this result probably will occur naturally due to localized differences in weather, topography, hydrology and fuel types (vegetative differences).

A. WEATHER CONDITIONS

Temperature	40 - 90 degrees
Relative Humidity	25 - 45%
20 ft. Windspeed	0 - 15 mph
Wind Direction	Any
No thunderstorms predicted in area du	ring daily ignition

B. FUEL MOISTURE CONDITIONS

1 hour fuel moisture	5 - 10%
10 hour fuel moisture	5 - 12%
Fine Fuel Moisture Code (FFMC)	88 - 93
Buildup Index (BUI)	40 - 110
Drought Code (DC)	< 650

C. FIRE BEHAVIOR CHARACTERISTICS

Canadian FBP Model C-2 (Boreal Spruce)

Fireline Intensity	Rank 4, 5 and low 6 (2,000 to ~10,000 kW/m). Short up-slope runs may exceed the projected rates of spread. See attached fire weather indices preferred burning matrixes.
Rate of spread	3 - 15 meters/minute = 8 - 40 chains/ hour
Crown fraction burned	50 - 100%
Spotting potential	500 - 1,000 feet, depending on winds aloft

Canadian FBP Model C-1 (Spruce Lichen Woodland)

	Fireline Intensity	Rank 3, 4, and	5
	Rate of Spread	3 - 12 meters/n	ninute = 8 - 32 chains/hour
	Crown Fraction Burned	50%	
	Spotting potential	500 - 1,000 fee	et, depending on winds aloft
	Canadian FBP Model O-1b (Sta	nding Grass)	
	Fireline Intensity	Rank 3, 4, and	5
	Rate of Spread	5-20 meters/mi	inute = 13 - 55 chains/hour
D.	SCHEDULING		
	Ignition Window		June 1 through September 30
	Anticipated Ignition Duration		2-3 days in each unit
	Anticipated Burn Duration		30 days
	Time of Ignition		1000-2000 <u>hours daily</u>

XIV. Financial Considerations

Major funding for this project comes from a legislatively approved Capital Improvement Project (CIP) to the Department of Fish and Game to enhance wildlife habitat. Funding for the CIP comes from the state Fish and Game Fund and the federal Wildlife Restoration Fund.

The Work Force and Equipment Estimate (Appendix E) shows the types of expenditures that are anticipated. Expenditures will be paid by the Division of Wildlife Conservation either directly or indirectly through a Reimbursable Services Agreement (#1185170) with the Division of Forestry.

In most cases, regular wages for state employees will be covered by their normal projects. However, regular wages for Division of Forestry Tok Area Office employees assigned to the burn for more than three days, out-of-area state and federal employees, and Emergency Fire Fighters (EFF) may need to be reimbursed by the Division of Wildlife Conservation. The Division of Wildlife Conservation will be consulted for approval when these actions become necessary. Overtime for eligible employees will be paid by the Division of Wildlife Conservation.

Supplies will be ordered through the Division of Forestry warehouse system and coded to this burn. Unused supplies can be returned through the warehouse system or can be retained by the Division of Wildlife Conservation.

XV. Other Considerations

- A. The Division of Forestry will update and finalize the following reports when ignition is imminent:
 - Organizational Chart (Appendix B)
 - Firing and Holding Plan (Appendix C)
 - Final Go/No Go Chart (Appendix D)
- B. The Division of Forestry will complete the following reports when the burn has been completed:
 - Work Force and Equipment Estimate (Appendix E)
 - Fire Monitoring Summary (Appendix F)
 - Fire Behavior Observations (during burn)

Appendix A. Contact Listing

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1.	Cc (cc	ontacts prior to ourtesy letter of	burn day r personal contact):		Check off (✓) when done
	•	40-Mile Air (air	taxi bussiness in Tok)		
	•	Larry Simmons	(known to have erected a cabin with	hin the MAP)	
	•	Leonard Sanfor	rd (owns a Native allotment within th	e MAP)	
	•	Local trappers	of the burn area		
	•	McCord Creek	mining operation		
	•	Members of the	e Interior legislative delegation.		
	•	Northway Villag	e Corporation		
	•	Post Offices at	Northway, Chicken, and Tok (to pos	t public notices)	
	•	Tok Chamber of	of Commerce		
IJ.	Вι	ırn day contact	s:	Phone <u>Number</u>	Check off (✓) when done
	•	Division of Fore	estry Northern Zone Logistics	451-2680	
	•	Division of Wild	llife Conservation: Danny Grangaard, Tok Dale Haggstrom, Fairbanks	883-2971 459-7259	
	•	Alaska Departn Division of A	nent of Environmental Conservation Air and Water Quality:	,	
		Northway Eligh	t Service	1 200 472 661	
	•	Northway Flight	l Service	or 778-2219	
	•	Ports of Entry:	Alcan station Boundary station (call Alcan, they v	774-2252 will relay)	
		Alaska Fire Sei	rvice	356-5670	
	•	Bureau of Land	I Management, Tok	883-5121	
	•	Department of	Transportation, Tok	883-5128	
	•	Alaska State Tr	roopers, Tok	883-5111	
	•	Chicken Gener	al Store, Chicken		
	•	McCord creek	mining operation, camp manager: Tom Morgan, Whitehorse	867-668-336	7
	•	40-Mile Air		883-5191	
	•	North Pole Rac	lio Station (KJNP)	488-2216	
		National Weath	ner Service, Fairbanks	456-0375	

Appendix B. Organization Plan

. . .

Burn Boss:	Primary: Ray KraemerDOF, Tok Alternate: Tom Kurth DOF, Fairbanks		
Firing Boss:	Will be filled by Burn Boss or a qualified person if deemed necessary.		
Ignition Specialist:	Peter Butteri (USF&W), Robert Schmoll, Fred Kutzgar or a qualified State or AFS person if needed		
Holding Crew Leader:	Clinton Northway, Bruce Miller or Mike Bobo.		
Fire Behavior Specialist:	Ray Kraemer; fuels specialist may include Frank Cole for burn day duff sampling, weather recording, and fire behavior documentation.		
Helitorch Module Leader or Sphere Dispenser:	Qualified State, AFS or USF&W person.		
Heli-base/Staging Operations:	Bob Jonathan or Jim Folan or Mike Bobo.		
Communications:	Mark Rutherford or Paul Keech, Tok Area		
Logistics:	Mark Rutherford or Sue Mossgrove, Tok Area		
Public Information:	Tok Area Forestry dispatch office Danny Grangaard, ADF&G/DWC, Tok Dale Haggstrom, ADF&G/DWC, Fairbanks		
Comments:	Danny Grangaard will be on site to assist with monitoring and identifying key habitat firing locations.		
	5-10 local Tok EFF may be hired if conditions warrant.		

Appendix C. Firing and Holding Plan

Firing Plan: Aerial firing will be used due to the large extent of the proposed burn area. A Ping Pong sphere dispenser will be used unless weather and fuel conditions require more heat to produce an effective burn. If more heat is required, a heli-torch will be used. Hand firing with drip torches will be used to clean up smaller unburned portions along the burn perimeter.

The burn area is large enough that almost any part could be fired when conditions in the overall area fall within prescription. However, because it is a large area with varied terrain, localized differences are expected on any given day. Thus, four burn units were delineated to assist in the development of burn strategies that incorporate these local differences and produce a more effective burn. The north part of the burn along Big Timber creek is a north aspect and will need to burn under heat of the day conditions or later in the burn session. The south and easterly aspects will come into prescription earlier in the day, and most likely will be burned in the cooler part of the afternoon.

The sequence for burning the four units and the burn strategies within the units will be completely dependent on weather conditions on the day selected for ignition. In particular, success of burning will be very dependent on wind conditions. Test fires will be ignited in the units scheduled for firing. Burn area perimeters will be burned out to create black line buffers. Firing will then proceed to the interior of the unit incorporating strips, concentric or line firing schemes to draw heat away from perimeters.

- Potential Holding Problems: A conservative prescription, natural barriers to the spread of fire, and the choice of firing sequence will be the primary methods of confining the burn to the units. Minimal holding problems are expected. However, two narrow stretches of vegetation cross saddles on the northeast side of the burn area where an active mine is located. If necessary, action will be taken to keep the fire from burning across these saddles. Slop-overs are expected and, depending on their location and the adjacent fuel type, will only be extinguished if potential exists for a large escape across the MAP. No action will be taken on spot fires with low potential for a large escape across the MAP.
- Critical Holding Points: The vegetated saddles along the northeast side of the burn area.
- Holding Force Location and instructions: The holding force will be located at the Fairplay Helibase Staging Area which will be established north of Mt. Fairplay. Use of natural barriers and firing sequence are the primary holding methods. Hand firing will be used to burn out fuels in specified areas. Holding action may be in conjunction with the helicopter and bucket.

(continued next page)

Firing and Holding Plan (continued)

- Safety Hazards: Other aircraft in the area, smoky conditions and personnel deployed on the ground for burn out operations.
- Fire Escape Contingency Plan: If the prescribed fire spreads outside the Maximum Allowable Perimeter or if fire movement threatens to move past identified critical holding points and on-site holding forces can't contain the fire, <u>that portion</u> of the fire area will be declared a wildland fire and appropriate action will be taken. Any suppression actions taken will be managed by the Tok area office and the assigned line officer. An Wildland Fire Situation Analysis will be completed by the Tok Area Forester. The protection standard for this area in the Alaska Wildland Fire Management Plan is "Limited Management."
- Key Briefing Points: Location of the nearest health clinic and hospital, possible onsite user groups, objectives of the burn, finalized firing sequence understood by pilots and team members, communication channels and frequencies, aircraft aerial firing, escape route for ground personnel, weather observers identified and fire behavior documentation.
- Water Source Locations: Portions of the Dennison Fork, numerous small lakes on the south side of the burn in the East Fork drainage.
- Mop-up: Minimal anticipated.
- **Prescribe Burn Monitoring:** Monitoring will be conducted during the burn and daily afterward until fire behavior conditions are minimal. This task will be jointly handled by ADF&G/DWC and ADNR/DOF, with DWC performing this function on a more regular basis than DOF as fire behavior conditions allow.
- **Excessive Workload:** The East Fork Prescribed Burn will become a lower priority in the event of a large wildland fire occurrence in the Tok area. Prescribed fire operations may have to be curtailed or postponed.

Appendix D. Final Checklists

Initial Checks (1 month prior to burn)

Helicopter fueling logistics complete
Firing supplies; petro-jell, ping-pong balls, torch ordered and received
Other supplies and equipment received and checked
Burn plan submitted for signatory approvals
Pre-burn meeting held for coordination with other agencies
Open burning permit applied for with ADEC
Open burning permit received
Helicopter availability; platform and firing aircraft identified
Onsite weather equipment ordered and received
Onsite fuel sampling initiated
Letters sent to appropriate agencies and interested public
Availability of firing equipment for estimated burn dates
Meeting with key people over burn plan
Plans distributed to key individuals and agencies
News release drafted and released
CFFDRS indices have been started for burn site

Go/No-Go Checklist

- Logistics matters of fuel and food are in place
- Firing equipment is functional and on site
- _____ Helicopter(s) available
- _____ ADEC permit in hand
- _____ Weather forecast favorable, spot weather forecast received
- Identified contacts have been notified
- Personnel identified in the organization chart on site
- Airspace closure in effect, flight service notified
- Communications systems functional
- Weather indices calculated and Fire behavior predictions are within prescription
- _____ Final burn prescription checks
- _____ Test burn completed and evaluated
- _____ Final briefing conducted, safety aspects are covered

Remarks/Comments: _____

Appendix E. Work Force and Equipment Estimate

Note: The low cost estimate assumes the burn will be completed in one attempt, involving a burn duration of 3-4 days. The high cost estimate anticipates worse case conditions where several attempts may be needed to complete the burn.

	Activity or item	Low Est.	High Est.	Actual
1. F U d	Regular fire personnel Jp to 10 people for 4 days @ \$200/day. Partly lepends on whether firing is done with ping pong anisters or helitorch.	\$2,000	\$8,000	
2. ⊩ 1	elicopter support, medium and light 0 - 25 hours @ \$400/hour	4,000	10,000	
3. ⊢ \$	lelicopter fuel, 38 gallons/hour @ 32.25/gal	900	2,100	
4. F h	Fixed wing, Super Cub or Robinson nelicopter, 3 - 10 hours @ \$200/hour	600	2,000	
5. A 3 N if	Aerial ignition device materials, 30 boxes @ \$140 per 1,000 lote: cost estimates in items 1 - 5 will also be used firing is done with aerial torch.	1400	2,800	
6. F	Food, MRE's, 20 cases @ \$50/case	460	920	
7. F	Food, fresh	150	300	
8. E b	Expendable items: cubies, rope, canteens, patteries, etc.	500	750	
9. C	Drip torch fuel, 50 gal @ \$1.50/gal	50	75	
10. F	Pre-mix fuel for pumps, 50 gal @ \$1.75/gal	50	90	
11. V	/ehicle gas, 200 gal @ \$1.50/gal	150	300	
12. F e	Refurbish/maintain pumps, saws and other equipment	250	500	
13. L L p m	odging and Food odging costs are figured as incidental as most personnel would camp on site if needed, but pilots nay need accommodations.	700	1000	
	SUB TOTAL	\$11,210	\$28,835	
14. A E a	Additional Support and Field Supply Costs Estimated here by adding 15%. Actual costs will be amount needed to recover incurred expenses.	1,680	4,325	
Othe	r possible costs not included above:			
15. A 5 b	Additional fire fighters 5-10 local Tok Emergency Fire Fighters (EFF) may be hired if conditions warrant.			
16. C \$	Call-when-needed helicopter, \$4,000 - 66,000/day.			
	TOTAL COST	\$12,890	\$33,160	

Burning Unit:		Burn [Date:	
Time of Observations:		Size o	f Burn:	
On site Conditions: 1 hour fuels	Temp 10 hour		R.H	
FFMC	DMC.		DC	BUI
Wind Speed	Wind Direction		Column Height	
Short Term Objective				
Containment Status				
Escape Potential				
Fire Behavior Record (Sp	ootting, ROS, Charac	cteristics	s, %Crowns Consu	med, Ranking)
Weather Outlook				
Safety Remarks				
Smoke Drift				
Remarks-Anticipation's-Re Duff Moisture Samples	ecommendations			

Appendix F. Fire Monitoring Summary, East Fork Prescribed Burn



East Fork Prescribe Burn



BUI Matrix

								DRO	JGHT	CODE								
	100	120	140	160	180	200	225	250	275	300	330	360	400	440	490	540	600	Burning
DMC	119	139	159	179	199	224	249	274	299	329	359	399	439	489	539	599	659	condition
21-22														39	39	39	40	Low
23-24									39	40	40	41	4 9)	业	42	43	43	
25-27					39	40	41	42	AR	43	44	44	45	-116	48	47	47	
28-30			39	43	42	43	44	45	40	47	HB	-40	49	, inde	81	BX .	62	Moderate
31-33		40	42	433	46	446	44	48	80	51	612	53	54	55	83	546	87	
34-36	39	42	44	46		50	E.	62	54	685 I	58	87	58	1	80	61	61	
37-39	XI.	44	横在	49	51	82	54		57	56	64	61	62	63	64	65	66	
40-43	43	46	49	. 61	調構	- 66	58	59	61	62	64	65	67	68	69	70	71	
44-47	45	48	82	54	87	58	61	63	65	67	68	70	72	73	75	76	77	
48-51	4	51	84	87	BQ.	63	65	67	69	71	73	74	76	78	80	81	83	Preferred
52-55	53	5 3	影曲	60	63	66	68	71	73	75	77	79	81	83	85	87	88	
56-60	68	38	89	63	66	69	72	75	77	79	82	84	86	88	90	92	94	
61-65	63	63	63	65	69	72	76	79	81	84	86	89	92	94	96	99	101	
66-70	68	68	68	68	72	75	79	82	85	88	91	94	97	100	102	105	107	
71-75	73	73	73	73	74	78	82	86	89	92	95	98	102	105	108	111	113	High
76-81	78	78	78	78	78	82	86	90	93	97	100	103	107	110	114	117	120	
82-87	84	84	84	84	84	85	89	94	97	101	105	108	112	116	120	123	127	
88-93	90	90	90	90	90	90	93	97	101	105	109	113	118	122	126	130	133	
94-100	96	96	97	97	97	97	97	101	105	110	114	118	123	127	132	136	140	
101-107	103	103	103	104	104	104	104	104	109	114	119	123	128	133	138	143	147	Extreme
BUI data tal DMC = Duff	ken from f Moisture	the CFF e Code	DRS tab	les.														
BUI = Build	Up Index	(

FINE FUEL MOISTURE CONTENT

			todays Temperature						todays	Tempera	ature
yesterdays FFMC	todays RH	todays Wind	60-68	69-77	78-86	yesterdays FFMC	todays RH	todays Wind	60-68	69-77	78-86
86	11-18	0-3	91	93	94	88	11-18	0-3	92	93	94
		4-13	92	93	94			4-13	93	94	95
		14-28	93	94	95			14-28	93	94	95
		>28	93	94	95			>28	93	94	95
86	19-28	0-3	90	91	92	88	19-28	0-3	90	91	92
		4-13	90	91	92			4-13	91	92	93
		14-28	91	92	93			14-28	91	92	93
		>28	91	92	93			>28	91	92	93
86	29-38	0-3	88	89	90	88	29-38	0-3	89	90	91
		4-13	89	90	90			4-13	89	90	91
		14-28	89	90	91			14-28	89	90	91
		>28	89	90	91			>28	89	90	91
86	39-49	0-3	87	88	88	88	39-49	0-3	88	88	89
		4-13	87	88	89			4-13	88	88	89
		14-28	87	88	89			14-28	88	88	89
		>28	87	88	89			>28	88	88	89
	and a second	CONTROL OF THE STATE	The second			on an				5 EN 2 12	
87	11-18	0-3	92	93	94	89	19-28	0-3	91	92	92
		4-13	92	93	94			4-13	91	92	93
		14-28	93	94	95			14-28	91	92	93
		>28	93	94	95			>28	91	92	93
87	19-28	0-3	90	91	92	89	29-38	0-3	89	90	91
		4-13	91	92	93			4-13	89	90	91
		14-28	91	92	93			14-28	89	90	91
		>28	91	92	93			>28	89	90	91
87	29-38	0-3	89	89	90	89	39-49	0-3	89	89	89
		4-13	89	90	91			4-13	89	89	89
		14-28	89	90	91			14-28	89	89	89
		>28	89	90	91			>28	89	89	89
87	39-49	0-3	87	88	89	89	50-61	0-3	88	88	89
		4-13	87	88	89			4-13	87	88	89
		14-28	87	88	89			14-28	87	88	89
		>28	87	88	89			>28	87	88	89

		todays Temperature			todays	Tempera	ature				
yesterdays FFMC	todays RH	todays Wind	60-68	69-77	78-86	yesterdays FFMC	todays RH	todays Wind	60-68	69-77	78-86
90	11-18	0-3	93	94	94	91	11-18	0-3	93	94	95
		4-13	93	94	95			4-13	93	94	95
		14-28	93	94	95			14-28	93	94	95
		>28	93	94	95			>28	94	94	95
90	19-28	0-3	91	92	93	91	19-28	0-3	91	92	93
		4-13	91	92	93			4-13	91	92	93
		14-28	91	92	93			14-28	91	92	93
		>28	91	92	93			>28	92	92	93
	V			1.000							
90	29-38	0-3	90	90	91	91	29-38	0-3	91	91	91
		4-13	90	90	91			4-13	91	91	91
		14-28	90	90	91			14-28	91	91	91
		>28	90	90	91			>28	91	91	91
						Concept on the second party	1		57.14 C		
90	39-49	0-3	89	90	90	91	39-49	0-3	90	90	91
		4-13	89	90	90			4-13	90	90	91
		14-28	89	90	90			14-28	89	90	91
		>28	89	90	90			>28	89	90	91
90	50-61	0-3	88	88	89	91	50-61	0-3	88	89	89
		4-13	88	88	89			4-13	88	88	89
		14-28	88	88	89			14-28	88	88	89
		>28	87	88	89			>28	88	88	89
•											
Use yesterday	s FFMC an	d todays curre	nt or predicte	d burn time	Relative Hurr	idity, Wind and T	emperature	to calculate	the current FF	MC value.	
This FFMC da	ita is taken i	from the CFFD	RS tables.								

FINE FUEL MOISTURE CONTENT

		todays Temperature						todays	Tempera	ature	
yesterdays FFMC	todays RH	todays Wind	60-68	69-77	78-86	yesterdays FFMC	todays RH	todays Wind	60-68	69-77	78-86
92	11-18	0-3	93	94	95	93	11-18	0-3	94	94	95
		4-13	93	94	95			4-13	94	94	95
		14-28	94	94	95			14-28	94	94	95
		>28	94	94	95			>28	94	95	95
02	10.28	0-3	02	02	02	03	10-28	0.3	03	03	93
52	13-20	4-13	92	92	93		13-20	4-13	93	93	93
		14-28	92	92	93			14-28	93	93	93
		>28	92	92	93			>28	93	93	93
Value -			Even 23								
92	29-38	0-3	91	92	92	93	29-38	0-3	92	92	93
		4-13	91	92	92			4-13	92	92	93
		14-28	91	92	92			14-28	91	92	93
		>28	91	92	92			>28	91	92	93
92	39-49	0-3	90	90	91	93	39-49	0.3	90	91	91
	00 10	4-13	90	90	91		00 10	4-13	90	91	91
		14-28	90	90	91			14-28	90	90	91
-		>28	90	90	91			>28	90	90	91
92	50-61	0-3	89	89	89	93	50-61	0-3	89	89	90
		4-13	88	89	89			4-13	89	89	89
		14-28	88	88	89			14-28	88	89	89
		>28	88	88	89			>28	88	88	89
	10.00		-								
94	19-28	0-3	93	94	94	94	39-49	0-3	91	91	92
		4-13	93	94	94			4-13	90	91	91
		14-28	93	94	94			14-28	90	91	91
		>28	93	94	94			>28	90	30	91
94	29-38	0-3	92	93	93	94	50-61	0-3	89	90	90
		4-13	92	92	93			4-13	89	89	89
		14-28	92	92	93			14-28	88	89	89
		>28	92	92	93			>28	88	89	89

ISI and ROS preferred conditions

	1			ISI (init	ial spread	d index)			
			effective	e wind sp	ed - mph				
FFMC	0	3	6	9	12	15	18	21	24
85	2	3	3	4	6	7	10	12	16
86	2	3	4	5	7	9	11	14	18
87	3	4	5	6	8	10	13	16	21
88	3	4	5	7	9	11	15	19	24
89	4	5	6	8	10	13	17	22	28
90	4	6	7	9	12	15	19	25	32
91	5	6	8	11	14	17	22	29	37
92	6	7	9	12	16	20	26	33	43
93	7	8	11	14	18	23	30	38	49
94	8	10	12	16	21	27	34	44	57
			Red						*

	SIC	ope equiva	lient wind	speed - m	ph
slope %	10	20	30	40	50
C-2	2	4	7	10	14

C-2 Boreal Spruce equilibrium rate of spread in METERS per MINUTE

		BL	JI			
ICI	01.00	01.40	41.00	C1 00	01 100	Burning
151	21-30	31-40	41-60	01-80	81-120	Conditions
1	0.3	0.4	0.5	0.5	0.6	
2	0.9	1	1	1	2*	
3	2	2	2*	3*	3*	
4	3	3*	4*	4*	4*	
5	3*	4*	5*	5*	6*	
6	4*	5*	6*	7*	7*	Preferred
7	5*	7*	8*	9*	9*	Conditions
8	7*	8*	9*	10*	11	
9	8*	9*	11*	12	13	
10	9*	11*	12	14	15	
11	10*	12	14	16	17	
12	11*	14	16	17	19	
13	12	15	17	19	21	
14	13	16	19	21	23	
15	15	18	21	23	25	
16	16	19	22	25	27	
17	17	21	24	27	29	
18	18	22	26	28	31	
19	19	23	27	30	33	
20	20	25	29	32	34	
* indicate	es intermit	tent crown			-	

Addendum to Prescribed Burn Plan for the East Fork of the Dennison Fork of the Fortymile River Chapter III: Burn Unit Description, Paragraph C: Land Ownership

C. Land Ownership

The burn units contain state-owned land and one privately-owned trapping cabin on state-owned land. Lands outside the burn units, but within the MAP area, are also state-owned except for one Native allotment. Ownership was determined from State of Alaska land status maps and a map provided by the Tanana Chiefs Conference showing the location and identification numbers for all know Native allotments in the area.

The trapping cabin is owned by Michael E. Simmons whose mailing address is P.O. Box 674, Tok, Alaska 99780. The cabin is located at SW1/4SW1/4 of Section 27, Township 22N, Range 20E, Copper River Meridian.

The Trapping Cabin Permit, Standard Stipulation #17 reads, "The cabins shall not hinder or obstruct the prescribed burn planned for the area. The East Fork Dennison Fork Prescribed Burn is planned throughout the area where the cabin and trapline are located. Minimal protective action will be taken during the burn."

Minimal protective action may include the following methods: saw line, hand line, burning out and/or sprinkler system.

ATTA. TO DALE Haggstrom ATTN. TO Dave Maxi From DANNY GRANGAAVE 883-5386

Post-it* Fax Note	7671	Date 6/24/98 pages 1
To Nancy Welch; L	eigh Carl	From Dale Hagastron
FYI-in	ease 40	ando not abreader
have th	is.	Phone # 455-7259
(Excel)		Fax# 452-6410