

General

no-date
LIBRARY COPY

Cerro Grande Fire
5-1-2000

Amendment to
Bandelier National Monument
Management Ignited Prescribed Fire
Burn Plan
Burn Unit - Upper Frijoles 1 and 5

Reason for Amendment:

The original burn plan states that an agreement with the Baca Location Number 1 land owner will be received before ignition to allow for 32 acres of land to be burned on Baca Ranch property and allow for up to 20 acres to be managed for spot-fires and slopovers. This agreement has not been received. This amendment will detail the actions necessary to conduct the burn to keep the fire on Bandelier National Monument and minimize possible escapes onto the Baca Ranch.

Implementation Actions:

General Scope of Amendment:

Black-lining along project control lines will be accomplished prior to burning during cooler and moister conditions which will help enhance control efforts along control lines.

Ignition plan:

Ignition will proceed with a test burn near the Cerro Grande summit on monument lands. Ignition will continue if the test burn is controllable by holding forces. Ignition will continue down the east and west lines, mainly using strip backing firing with hand held ignition devices. If ignitions not meeting resource objectives, ignition will be limited to just black-lining operations. Ignition will only proceed as fast as control resources can keep up with ignition operations. Black lining may be continued into the timbered areas as long as holding forces can easily keep the fire within the unit boundaries.

Holding Plan:

Backpack pumps will be staged along the monument boundary. Holding will be accomplished using fire personnel with backpack pumps and swatters. Holding forces will limit fire spread to the monument property. Any spread off monument property will be suppressed as quickly as possible. Ignition resources may halt ignition and assist holding forces as directed by the holding boss and burn boss.

Contingency Plan: The following resources will need to be available within the following time periods:

2 Type 1 or 2 Crews	within 4 hours
2 Type 6 Engines	within 4 hours

If the fire leaves the monument property the holding supervisor will act as ICT4. If the escape is not containable within one burning period by resources on the project the escape will be declared a wildland fire and a WFSA will be developed and appropriate action will be implemented.

Organization:

Position	Minimum Qualifications
Burn Boss	RXB2
Ignition Specialist	RXI2
Ignition Crew	2 FFT2
Holding Boss	CREW and ICT4
Holding Crew	1 FFT1 and 4 FFT2
Fire Monitor	1 FEMO
Traffic Control	2 FFT2, (in place as seen by burn boss, will probably be part of ignition or holding crews)



13362

Other Changes to the burn plan:

The Maximum Manageable Area on the Baca Ranch and the area of the burn on Baca Ranch property will be excluded from the project area.

Prepared By:

Reviewed By:

Reviewed By:

Approved By:

**Bandelier National Monument
Management Ignited Prescribed Fire
Burn Plan
Burn Unit – Upper Frijoles 1 and 5**

Prepared By: _____

Date: _____

Reviewed By: _____

Date: _____

Reviewed By: _____

Date: _____

Approved By: _____

Date: _____

Executive Summary

Upper Frijoles Units 1 and 5 are in the northwest corner of Bandelier National Monument. They encompass 1,000 acres in the headwaters of Frijoles creek above US highway 4 to the park boundary at the Cerro Grande summit. The vegetation in the area consists mostly of ponderosa pine/mixed conifer with some mixed conifer areas and montaine grasslands at the higher elevations. Included in the 1,000 acres is approximately 32 acres of the Baca Ranch (per attached written agreement).

The area within Unit 1 was burned in 1993. The burn was not as successful as planned, as much of the area within the burn unit is inherently moist and did not burn very well. Dead fuel loadings, pre 1993 burn and current, from averaged plot information are as follows:

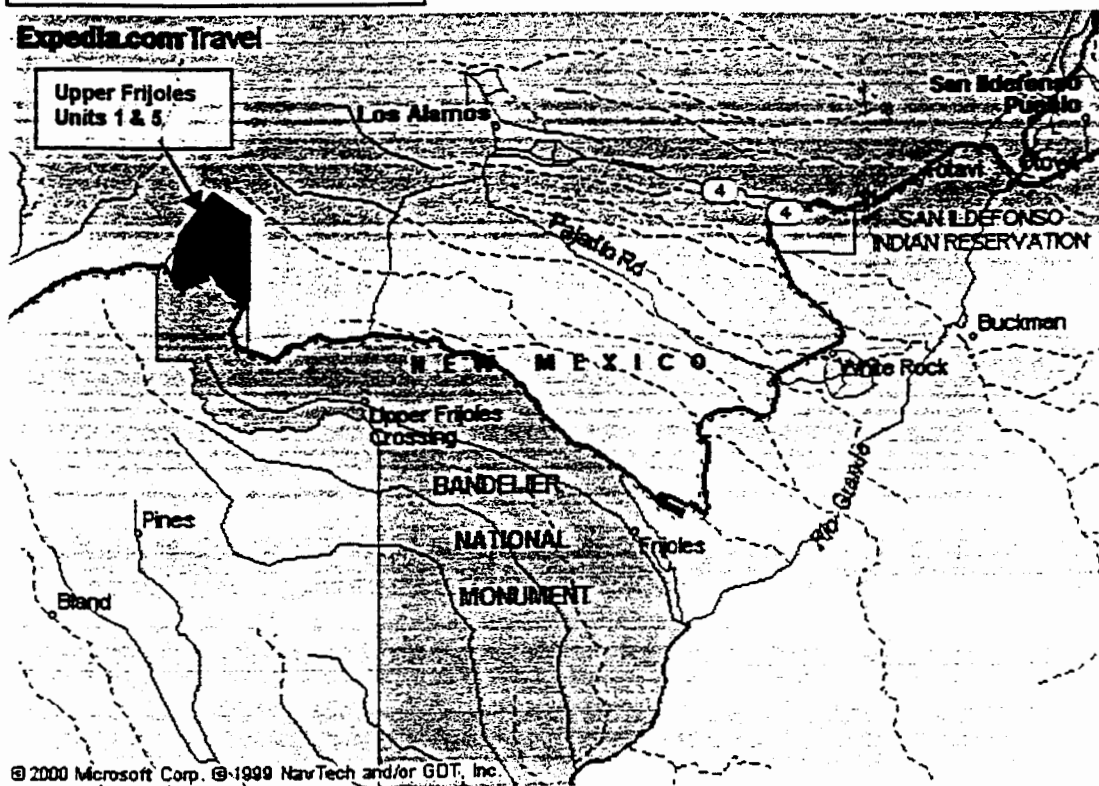
Pre 1993 Burn Total Fuel Loading	34.4 Tons/Acre
Current Total Fuel Loading	29.0 Tons/Acre (84% of original)

The primary purpose of the project is to reduce hazard fuels in the burn unit while allowing fire to be restored as a keystone natural process. Removal of cured herbaceous material; dead fuels and mid-story canopy are some objectives of the burn. This will reduce the threat of unwanted fires moving onto non-park lands, and allow the processes associated with fire to occur within the burn area.

With the exception of the grasslands, dry conditions will be needed to accomplish burn objectives. The burn will be accomplished in three phases. The first phase will be to burn the upper part of the burn that consists of grasslands. The second phase will burn the timbered areas along the burn perimeter and drier aspects (generally south facing slopes) within the project area. This phase will occur shortly after or concurrently with the first phase. The third phase will be delayed until extremely dry conditions develop that will allow for burning of the wetter areas. The third phase will most likely occur several weeks or even months after the initial burning. The third phase of the burn should require minimal resources, as containment will be accomplished by the previous burning.

The burn is moderately complex. There are issues associated with private lands within and adjacent to the burn perimeter and Forest Service lands that bound the burn unit, cultural and natural resources within the burn unit, and a reasonable chance of air quality impacts in the Los Alamos area. Coordination with neighboring landowners, resource managers within the park and following the smoke management plan for the burn should mitigate these issues.

Figure 1: Vicinity Map



1. Burn Unit Description:

Vicinity Map: See Figure 1: Vicinity Map

Project Map: See Figure 2: Project Map

Location:

Township 19 North, Range 5 East, Sections 21 and 22

Latitude North 35° 52'

Longitude West 106° 25'

UTM Zone Easting 325.50

Northing 3969.70

Size: Phase I – 200 to 300 acres (includes 32 acres of the Baca Ranch)

Phase II – 300 to 600 acres

Phase III – 100 to 500 acres

Total acreage – 1,000 acres

Slope: 2 to 20 %

Aspect: SW, S, and E
Primarily South

Vegetation/Fuel Models: See Figure 3: Fuel Model Map

Vegetation Type	Acres	% of Burn Unit	NFFL Fuel Model	NFDRS Fuel Model
Ponderosa Pine/Mixed Conifer	163	14%	9	C
Ponderosa Pine	243	21%	2	C
Montane Grassland	78	6%	1*	L
Mixed Conifer	672	58%	8	G

*Fuel Model 3 converted to Fuel Model 1. May vary depending on time of season and growing conditions.

Description of Boundaries:

South Boundary: State Route 4 from BM 9070 to an area approximately 200 yards north of the dome road.

West Boundary: Starting at State Route 4 the boundary goes up to the saddle along the park boundary. The burn generally follows the west side of the ridgeline (where the slope abruptly drops off) to peak 9626. The burn then follows the edge of the montain grasslands to the Cerro Grande Summit.

East Boundary: Starting at State Route 4 the boundary will cross the flats and head up a minor ridgeline to peak 9743. The burn will then follow some rock outcroppings and the eastern edge of the montain grasslands to the Cerro Grande Summit.

Maximum Manageable Area: See Figure 2: Project Map

The maximum manageable area includes areas within the burn project boundaries, but outside the established control lines. It also includes up to 20 acres of the Baca Ranch on the north and northwest sides of the unit.

Figure 2: Project Map

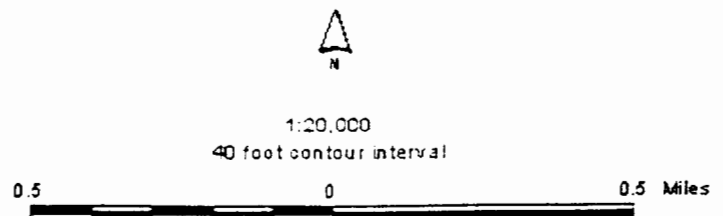
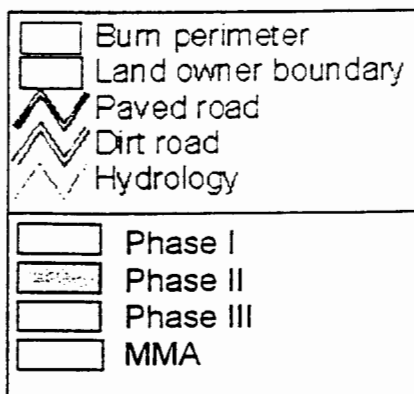
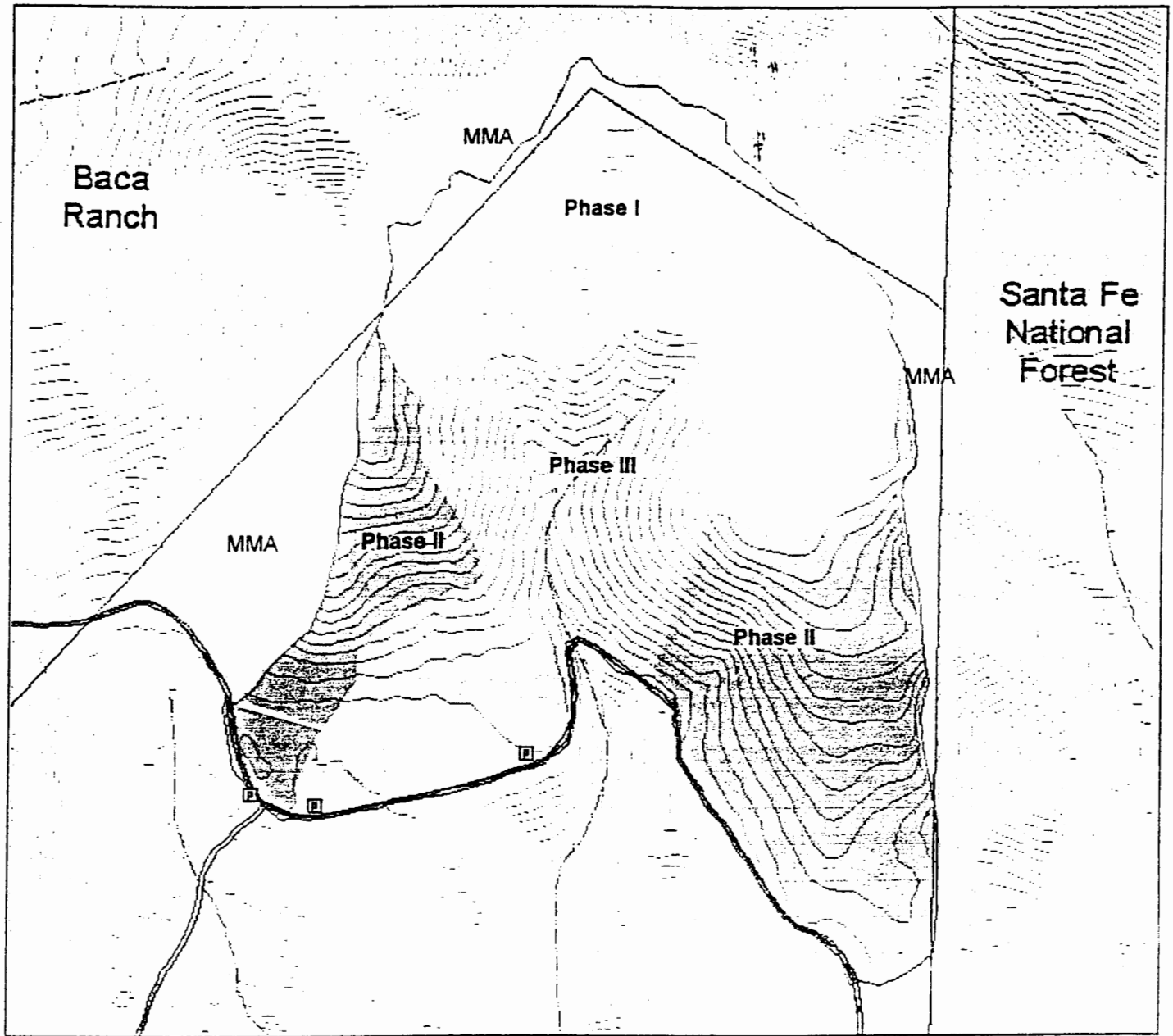
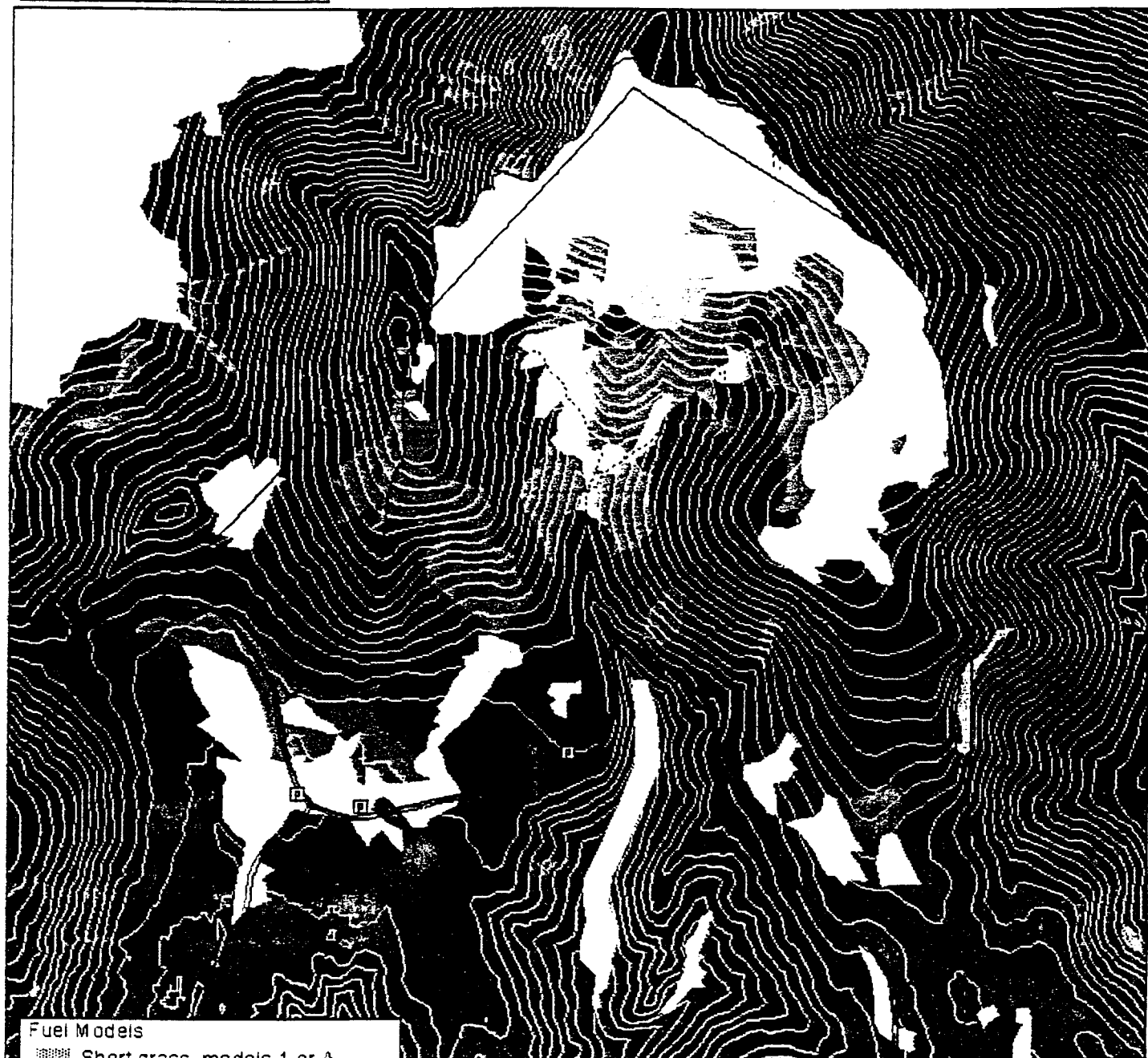


Figure 3: Fuel Model Map



Fuel Models

- Short grass, models 1 or A
- Grass understory, models 2 or C
- Tall grass, models 3 or L
- Brush, models 4 or B
- Brush, models 5 or F
- Short needles, models 8 or G
- Long needles, models 9 or C
- Heavier fuels, models 10 or U
- Water
- Bare ground or developed area
- Old logging road
- Paved road
- Dirt road
- Burn unit perimeter
- Bandelier boundary



1:20,000

40 foot contour interval

0.5 0 0.5 Miles



2. Goals and Objectives:

Goal 1: Provide for the safety of fire personnel and the public.

Objective:

- Insure the public receive no injuries
- Insure no loss time injuries to fire personnel

Goal 2: Restore fire as a keystone natural process.

Objectives: Cerro Grande Monitoring Type

- Reduce pole tree density by 30-70% within 5 years post-burn.
- Reduce over-story trees with a diameter breast height (dbh) of 15.1-49.9 ^{cm} by no more than 25% within 5 years post-burn.
- Maintain at least 80% of all over-story trees with a dbh >49.9 cm within 5 years post-burn.

Objectives: Aspen Monitoring Type

- Reduce density of non aspen over-story trees with a dbh , 50 cm by at least 30% within 5 years post-burn
- Reduce the density of all non-aspen pole trees by at least 30% within 5 years post-burn.
- Reduce density of all non-aspen seedling trees by at least 30% within 2 years post-burn.

Objectives: Mixed Conifer Monitoring Type

- Reduce live over-story tree (dbh = 15.1-49.9 cm) density by 10-30% within 5 years post-burn.
- Reduce live pole tree (dbh = 2.5 – 15.0 cm) density by 30-70% within 5 years post-burn

Goal 3: Reduce hazard fuel accumulations in the burn unit

Objectives:

- Reduce total fuel load by 40-80% immediate post-burn.

Goal 4: Ensure the burn does not violate state air quality standards

Objectives:

- Ensure smoke does not violate 90 % of the National Ambient Air Quality Standards in smoke sensitive areas (Los Alamos and White Rock)
- Limit severe visibility impacts to Class 1 airsheds to no more than 5 days
- Provide a contact to address smoke complaints and educate the public on the need to use prescribed fires

Goal 5: Minimize damage to sensitive cultural and natural resources, and to neighboring lands.

Objectives: *cultural resources in accordance with the agreement with SHPO.*

- Protect ~~all significant cultural sites from damage~~
- Keep mechanized equipment out of spotted owl habitat
- Contain all spot fires and slopovers at less than 5 acres in size

Goal 6: Contain the burn within the established perimeter

Objectives:

- Contain slopovers and spots with burn personnel at less than 5 acres in size within one burning period
- Reduce long range spotting to less than ¼ mile by altering ignition sequence and timing

3. Range of Acceptable Results

If two thirds of the objectives for all goals are met the project will be considered acceptable. If less than two thirds of the objectives for each goal are achieved, the results will be reviewed and recommendations for future projects will be developed.

4. Project Assessment:

Complexity: (See attached complexity rating criteria)

The complexity of this burn is 87 or Low to Moderate Complexity

WILDLAND AND PRESCRIBED FIRE COMPLEXITY RATING WORKSHEET

Complexity element	Weighting factor	Complexity value	Total points
Safety	5	2	10
Threats to boundaries	5	2	10
Fuels and fire behavior	5	2	10
Objectives	4	2	8
Management organization	4	2	8
Improvements	3	2	6
Natural, cultural, social values	3	2	6
Air quality values	3	3	9
Logistics	3	2	6
Political concerns	2	3	6
Tactical operations	2	3	6
Interagency coordination	1	2	2
Total Complexity Points:			87

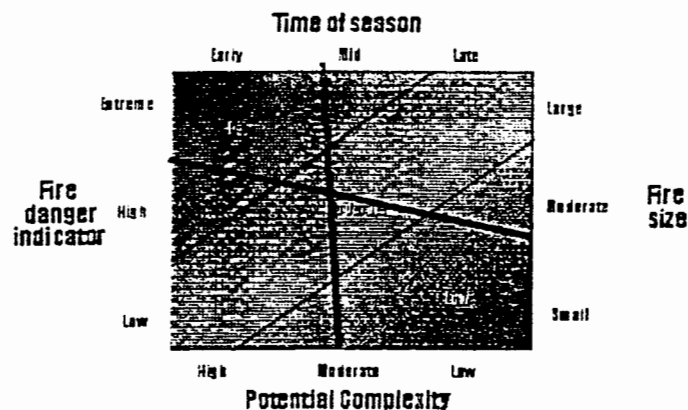
Complexity Value Breakpoints: Low 40-90, Moderate 91-140, High 141-200

Risk Assessment:

Relative Risk – Moderate

Relative risk may need to be adjusted due to timing of the burn phases and actual fire danger indices at the time of ignition. Most foreseeable changes will still result in moderate relative risk.

Wildland Fire Relative Risk Rating



Probability of Success – Moderate

Success of meeting objectives is moderate, as it requires relatively high fire behavior over an extended area of the burn. Escapes from the burn area are somewhat likely, but fuel and terrain features should minimize fire growth outside the burn unit. Safety will be accomplished by communications of hazards and

mitigation measures. Air quality issues will be addressed before unhealthy conditions develop.

Success of meeting control objectives for the burn is high as natural features, changes in aspects and control resources will be adequate for anticipated conditions.

Consequences of Failure – Moderate

Timber and private land values are the primary threats. No structures are in the immediate area. Smoke impacts to sensitive areas could produce political problems that may impact future prescribed fire operations. These will be mitigated by providing public information about the burn and possible smoke impacts, burning under optimal dispersal conditions and halting ignition operations if impacts approach smoke management threshold limits.

5. Implementation Actions

A. Pre-burn Considerations

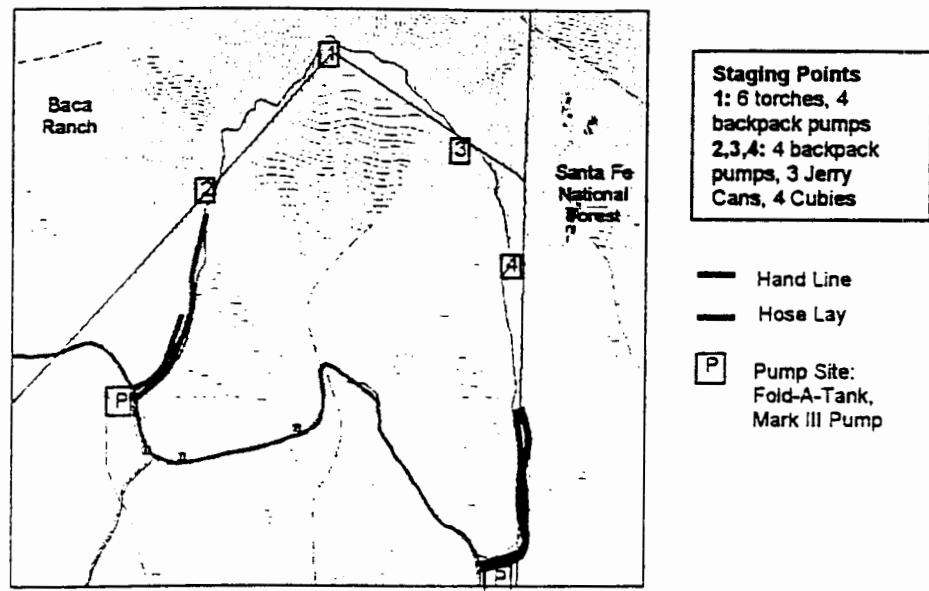
On site: See Figure 4: Preparation Needs

- Construct hand line along designated areas
- Fall or line snags that may fall across control lines
- Set up hose lays in designated areas
- Stage equipment in designated areas
- Complete cultural resource protection mitigation measures
- Collect live, 10 and 100 hour fuel moisture samples in wet and dry areas weekly at least 3 weeks prior to the burn
- Collect weather and fire behavior data hourly during ignition operations

Off site

- Obtain written permission to burn approximately 32 acres of the Baca # 1 property and allow up to 20 acres of escape onto Baca #1 property
- Post "Prescribed Burn Ahead" and "Management Fire, Do Not Report" signs at both ends of the burn unit along Route 4.
- Obtain Air Quality Permit from the New Mexico Environmental Department
- Coordinate logistics (lodging, food) for out of park resources
- Provide a smoke monitor for the Los Alamos/White Rock area
- Notify all agencies and individuals on the Bandelier Prescribed Fire Notification List starting three days prior to burning
- Provide a Public Information/Smoke Management telephone number and contact person at Bandelier National Monument
- Issue a press release one week prior to ignition

Figure 4: Preparation Needs



B. Briefing

A pre-burn briefing will identify all anticipated safety hazards associated with the prescribed fire. Specific topics to include are:

- Lookouts, Communications, Escape Routes and Safety Zones
- Snags
- Coordination of firing and holding events
- Contingency actions
- Medical Plan
- Fire weather and fire behavior
- Unit assignments
- Strategies and tactics to employ
- Minimum Impact Operations

C. Test Fire

A test fire will be conducted every day prior to any burning in a representative location within the burn area to test for fire behavior characteristics prescribed to meet objectives and control of the burn. The test fire will be initiated in an easily containable area. Results of the test fire will be documented and results communicated to the burn boss who will make the decision to continue burning or not.

Public access to the burn area will be restricted to traffic along State Route 4. Limited picture taking and watching of the fire will be permitted only if the safety of the public is not jeopardized and burn operations are not impaired by the actions. The public will not be allowed to enter the burn area.

Other considerations

A fire weather station is located in the south east corner of the unit. This station will be protected with a wet line with support of an engine.

Dendrobanded trees are included in the burn unit. The firing pattern may be modified in these areas and jackpots of fuels may be removed to ensure that there is no mortality of these trees.

A Forest Service representative will be present on the burn site to assess possible conversion of escapes to wildland fires on Forest Service lands during phase II of the project.

An agreement with the Baca #1 Ranch is established to allow for burning approximately 32 acres of the Baca property, and allow for the management of up to 20 acres of slopovers and spot fires.

Mexican Spotted Owl nesting and roosting areas may occur within the project area. If these owls are found, minimal disturbance of the area will occur and firing will be altered to minimize impacts to these areas.

The State Historic Preservation Office concurrence with applicable laws will be followed for cultural resources.

Smoke may impact State Route 4. Traffic control will be enforced on this road if smoke causes visibility problems day and night as long as there is a foreseeable problem.

Use of vehicles on old roads within the burn will not be allowed unless ~~there is an~~ an emergency evacuation is needed.

D. Prescription:

Because of the complex interactions between weather, fuel moisture and fire behavior, **prescription perimeters for fire behavior will be used to determine if the burn is in prescription or not.** All elements of weather and fuel moisture that result in fire behavior sufficient to meet management objectives will be used. Weather and fuel moisture data within the prescriptions listed below are likely to result in the fire behavior needed. Fuel moisture guidelines will be used to assess the conditions needed to execute the burn. Additional constraints on the prescription will be included to meet smoke management objectives.

All values are for head fires. Flanking and or backing fires will be used if fire behavior from these types of firing result in fire behavior within the prescribed conditions listed below.

Weather	FM 9	Fm 8	FM 2	FM 1
Temperature (°F)	40-90			
Relative Humidity (%)	15-50			
Wind Direction	Any			
Wind Speed (Eye Level, MPH)	0-8			
Fuel Moisture	FM 9	FM 8	FM 2	FM 1
1 Hour (%)	3-8			
10 Hour (%)	4-10			
100 Hour (%)	7-12			
1000 Hour (%)	8-12			
Live Herbaceous (%)	50-150			
Live Woody (%)	50-150			
Fire Behavior	FM 9	FM 8	FM 2	FM 1
Rate of Spread (Chains/Hour)	<10	<10	<60	<160
Flame Length	1" to 6'	1" to 6'	1" to 9'	1" to 9'

Smoke Management Prescription:

The Smoke management prescription is based on dispersal conditions that will allow for optimal dispersion of smoke. SASM runs have defined the following criteria as having no violations of National Ambient Air Quality Standards.

Smoke Management Prescription Parameters

Dispersal Fair to Excellent
Transport Wind Speed (Min) 2 mph.

E. Special Considerations

Public and Personnel Safety

All burn personnel will wear standard fire fighting leather boots, Nomex pants and shirt, leather gloves and hard hat. They will carry a fire shelter and a fire tool at all times. Supervisory personnel and sufficient numbers of other personnel will carry programmable radios.

All standard wildland firefighter safety rules and guidelines will be strictly enforced (see Fireline handbook).

All assigned personnel will be certified and current. Exceptions are support drivers and non-certified observers who will be accompanied by supervisory line personnel at the discretion of the Burn Boss. Trainees will be allowed as long as they are supervised by a certified and current Trainer for that position.

F. Burn Organization

The burn organization for each phase of the burn will be different due to the special needs of each phase. The following is a list of the minimum number and qualifications needed to conduct each phase:

Phase 1

Position	Minimum Qualification	Proposed Name or Source
Command		
Burn Boss	RXB2	
<i>Resource Advisor</i>	<i>Resource Advisor</i>	
<i>Control</i> Resource Advisor	Resource Advisor	
Operations		
Ignition Specialist	RX12	
2 Igniters	FFT2	Fire Use Module
Holding Specialist	CRWB and ICT4	Band Provided
4 Firefighters	FFT2	BIA Provided
Planning		
Fire Monitor	FEMO	Fire Use Module
Smoke Monitor	FEMO	Fire Use Module
Logistics/Finance		
L/F Lead	Knowledge of Band and Fire	Band Provided (may be accomplished by the Burn Boss)

Phase II

Position	Minimum Qualification	Proposed Name or Source
Command		
Burn Boss	RXB2	
<i>Resource Advisor</i>	<i>Resource Advisor</i>	
USFS Representative	USFS Employee	Espanola RD Provided
Resource Advisor	Resource Advisor	Band Provided
Operations		
Division A	Both CRWB and ICT4	Band Provided
6 Firefighters	1 FFT1 and 5 FFT2	BIA Provided
Ignition Specialist	RX12	
3 Igniters	FFT2	Fire Use Module
Division B	Both CRWB and ICT4	USFS Provided
6 Firefighters	1 FFT1 and 5 FFT2	USFS Provided
Ignition Specialist	RX12	Fire Use Module
3 Igniters	FFT2	Fire Use Module
Division C	ENGB	USFS Provided
2 Type 6 Engines	ENGB and FFT2	USFS and Band Provided
Water Tender	600 Gal.	LANL Provided
Planning		
Div. A Monitor	FEMO	Fire Use Module
Div. B Monitor	FEMO	Fire Use Module
Smoke Monitor	FEMO	Fire Use Module
Logistics		
2 Traffic Control	2 Flag-persons	Band Provided
Finance		
Finance Lead	Time and Procurement Knowledge	Band Provided (may be provided by Burn Boss)

Phase III

Position	Minimum Qualification	Proposed Name or Source
Command		
Burn Boss	RXB2	
Resource Advisor	Resource Advisor	Band Provided
Operations		
Holding	ICT4	Band Provided
Ignition Specialist	RXI2	Fire Use Module
2 Igniters	FFT2	Fire Use Module
Planning		
Fire Monitor	FEMO	Fire Use Module
Smoke Monitor	FEMO	Fire Use Module

G. Ignition Plan: See Figure 5: Ignition and Holding Map

The burn will be accomplished in three phases. Phase I of the project will burn the grasslands and upper elevations of the burn area. Phase II will burn the timbered areas along the unit boundaries and the aspects that will burn (generally south facing slopes). Phase III of the burn will target much of the wetter areas within the burn unit and will require substantial drying after Phases I and II are completed. Phase I and II may occur within a few days of each other or concurrently. Phase III will require substantial drying and will likely occur several weeks or even months after the first two phases.

All ignition plans may be altered depending on wind direction and fire behavior during ignition operations.

Phase I

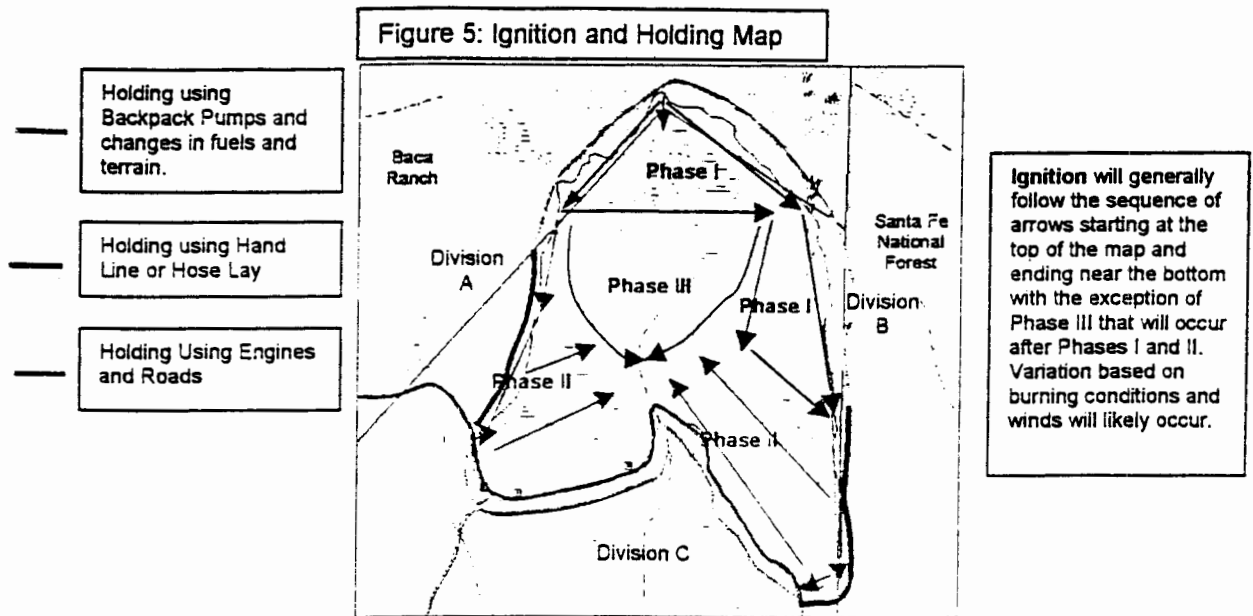
A backing fire will be lit using hand ignition devices in the grasslands near the Cerro Grande summit to develop a sufficient safety zone for firing operations to commence. Holding boundaries will be lit by hand allowing backing and flanking fires to develop a safety buffer. Head fires will be ignited in the grasslands near the Cerro Grande summit and upper elevations of the burn.

Phase II

Ignition using strip and spot head, flanking and backing ignition in the timbered areas depending on fire behavior needed to meet control and resource objectives. Interior firing will be advanced as line firing develops a sufficient barrier to stop runs in areas that will support fire. Interior firing will likely use strip head firing, although flanking and backing fires will be used if these methods meet burn objectives.

Phase III

Areas not burned during Phase I or II will be targeted for Phase III. Ignition will begin at areas near the burn perimeter that seem insufficient to hold interior ignitions. Ignition will continue in pockets of unburned areas within the interior of the unit using strip head fires, flanking fires or backing fires depending on fire behavior that will meet burn objectives.



H. Holding Plan: See Figure 5: Ignition and Holding Map

Holding of the burn will require a reasonable number of resources during Phase I and II of the burn. Minimal holding resources will be needed for Phase III of the burn.

Phase I and II

Hand line will be constructed and hose lays installed as shown in Figure 4: Preparation Map. Control lines will be accomplished in all other areas by using changes in terrain and fuels that should limit fire spread. Hand Crews with hand tools and backpack pumps will follow the firing operations down hill patrolling for spot fires and slopovers. Fires creeping into non-lined areas will be contained with check lines. Engines will patrol State Route 4 as fire approaches the road. Lookouts will be posted along ridgetops to assess potential problems and watch for long range spotting. Holding bosses will coordinate with the appropriate ignition specialist if ignition is proceeding beyond the capability of the holding forces.

Phase II

Phase I and II operations should produce sufficient black lining to contain Phase III ignitions. In areas that are suspect, holding will be accomplished by a few firefighters with hand tools and backpack pumps. A lookout will be posted to observe for possible long range spotting or rebum of previously burned areas. An engine may be used to patrol along State Route 4 if the Burn Boss identifies a need for this resource.

6. Cooperation and Public Information

The burn will require cooperation from neighboring cooperators and landowners. Resources will be needed from outside the Bandelier NM staff to conduct this burn. The Espanola Ranger District of the Santa Fe national forest has requested that District resources be assigned to divisions that border their lands. The Baca ranch has been informed and agreed to allow 32 acres of their land to be burned within the project boundary and up to 20 acres to be managed if slopovers or spotfires occur. A press release will be issued prior to ignition of either phase of the burn to inform the public. A contact at Bandelier NM will be available to answer questions and address

complaints about smoke. The Fire Program Assistant will use the Bandelier Contact List to contact other parties that may have concerns at least one day prior to any ignition.

7. Contingency Plan

Prior to ignition of the burn the following resources should be available within the allotted time frames:

Retardant Aircraft	within 2 hours
Type III Helicopter w/bucket	within 4 hours
2 Type I or Type II Crews	within 4 hours

The Burn Boss has the discretion to call the burn a wildfire at any time if the burn exceeds the scope of this plan in order to enhance suppression efforts needed to control the fire. The appearance of spot fires or slopovers does not necessarily constitute the conversion of the burn to a wildland fire. If spot fires or slopovers are beyond the capabilities of burn resources to contain within the current burn period, the escapes will be converted to a wildland fire. A Forest Service representative has the authority to convert any escape onto Forest Service lands to a wildland fire. Escapes onto the private lands on the Baca ranch will be allowed as long as they do not exceed the intent of the agreement between the park and the ranch. The holding boss on the appropriate division will assume the duties of IAIC for all escapes. Further ignitions on the effected division may be halted with the decision of the holding supervisor. Ignition resources may assist holding personnel during escapes, as directed by the holding supervisor. If escapes are converted to wildfire status a WFSA will be developed and appropriate action taken to respond to the fire. The burn may not be included in the suppression action if the Burn Boss and IAIC conclude that the burn is still within prescription and the burn poses no other threats to suppression actions.

8. Funding

Base hours for personnel will not be charged to the project account. An estimated cost breakdown for all costs associated with the project follows:

Project Phase	Planning			Preparation			Execution			Evaluation		
	Base Hrs	Prem Hrs	Cost	Base Hrs	Prem Hrs	Cost	Base Hrs	Prem Hrs	Cost	Base Hrs	Prem Hrs	Cost
Personnel	40	0	700	400	0	4,800	700	600	23,700	80	0	960
Supplies			40			200			1,000			0
Aircraft			0			0			0			0
Miscellaneous			0			0			1,000			0
Totals			740			5,000			25,700			960
Total Project Cost	\$32,400											
Cost/Acre	\$324/Acre											

9. Smoke Management and Air Quality: See Figure 6: Smoke Vector Map

Smoke from the burn has the greatest possibility to impact the city of Los Alamos and State Route 4. The general southwest flow of air during the day will send the smoke towards the Los Alamos Area. Nighttime smoke should flow across State Route 4 down Frijoles Canyon. The attached Smoke Vector map shows likely areas where the smoke will move. Impacts to Los Alamos should be minimal as the elevation of the burn and burning under good dispersal conditions should keep smoke above the town. A qualified Fire Effects Monitor will be in the Los Alamos area to assess smoke impacts and communicate smoke conditions to the Burn Boss. Impacts on state Route 4 will be mitigated by using traffic control and pilot cars through smokey areas and will be continued during the nighttime as long as there is a foreseeable problem.

Smoke from this prescribed fire may impact the following sensitive receptor sites:

Towns:

Los Alamos, 5 miles NE

White Rock, 10 miles E

Class 1 Airsheds:

Bandelier National Monument, burn lies within the monument. Most of the monument is SE of the burn.

Roads:

State Highway 4, borders the burn on the south

Sensitive Areas:

Bandelier National Monument Visitor Center, 7 miles east.

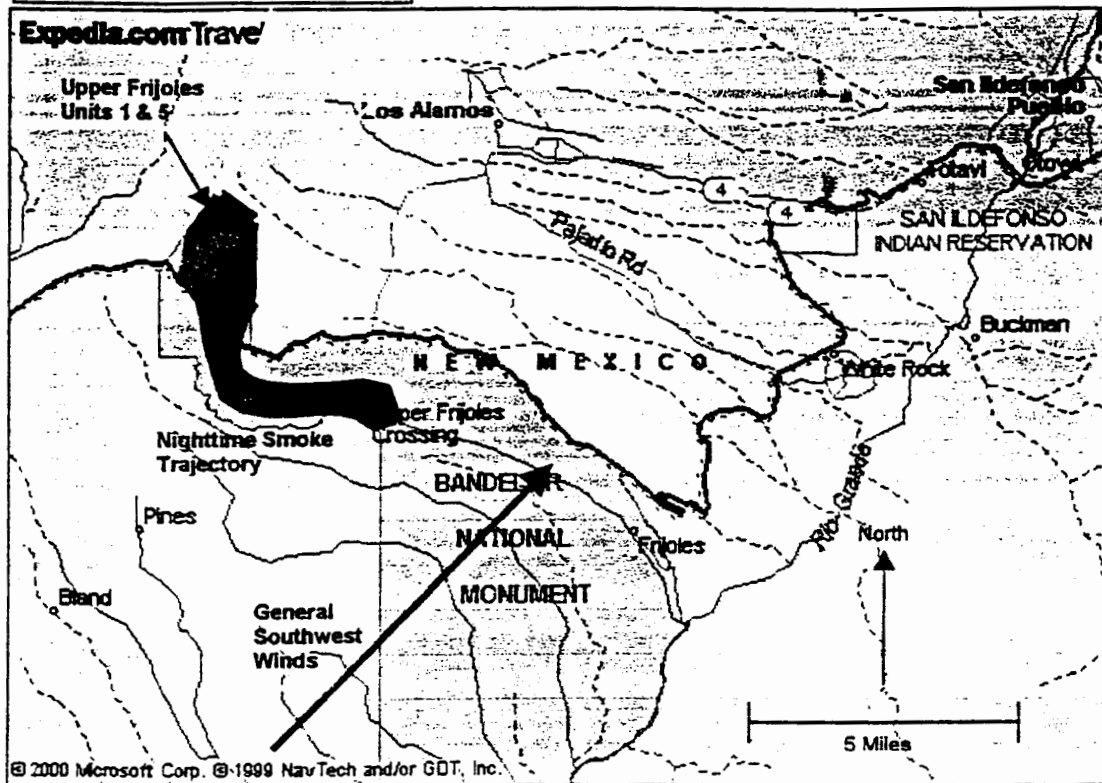
The following guidelines will be followed to meet the air quality objectives of the burn plan.

	Threshold Parameter	Implementation Action
Visibility in Los Alamos or White Rock	<6 miles	Discontinue Ignitions
	<5 miles	Contain Fire Spread
	<4 miles	Initiate Mop-Up
Severe visibility impacts in Bandelier National Monument	3 days	Discontinue Ignitions
	4 days	Contain Fire Spread
	5 days	Initiate Mop-Up
Visibility along State Route 4	<300 ft	Slow to 25 mph (Using Pilot Cars)
	<200 ft	Slow to 15 mph
	<100 ft	Implement one way traffic
	< 50 ft	Close road to traffic
Visibility in the Visitor Center Area	<4 miles	Discontinue Ignitions
	<3 miles	Contain Fire Spread
	<2 miles	Initiate Mop-Up

Smoke Complaints

To minimize smoke complaints the park will use a public information and education program to educate the public on the uses of prescribed fire and the possible smoke impacts that may develop. Included information within this program are: Press Releases, Information Bulletins for park visitors and the public, notification per the parks Prescribed Fire Notification List, and providing a public information/Smoke complaint contact. If complaints numbers are significant and verified, the Burn Boss may discontinue ignitions, contain the fire spread and initiate mop-up of the burn to resolve the problem.

Figure 6: Smoke Vector Map



10. Monitoring

Monitoring data will be collected according to the guidelines established in the Western Region Fire Monitoring Handbook. Short and long-term changes will be monitored through photo points, downed fuel inventory transects and established forest inventory plots.

Weather and fire behavior observations will be monitored by qualified fire effects monitors. Pertinent information will be communicated to the burn Boss and effected line personnel.

Smoke monitoring will be accomplished in the Los Alamos or White Rock areas by a qualified Fire Effects Monitor. Visibility and smoke dispersal information will be communicated to the burn boss.

11. Post Burn Activities

The following is a checklist of post burn activities

- ☐ Review burn operations and safety and make recommendations for future burns
- ☐ Complete individual performance evaluations
- ☐ Notify Dispatch of daily accomplishment and project completion
- ☐ Release resources assigned to the burn
- ☐ Notify DEQ of burn completion and acreage
- ☐ Remove and rehab burn supplies and equipment
- ☐ Rehab burn area including control lines
- ☐ Place orders for used up or damaged equipment
- ☐ Compile cost tracking information
- ☐ Collect and analyze all execution monitoring data
- ☐ Collect documentation for fire folder
- ☐ Complete fire report for the burn

- ☐ Complete accomplishment report in SACS
- ☐ Perform post burn fire effects monitoring
- ☐ Review fire effects monitoring information and make recommendations for future burns
- ☐ Perform long term Fire effects monitoring
- ☐ Review long term fire effects monitoring information and make recommendations for future burns

WILDLAND AND PRESCRIBED FIRE COMPLEXITY RATING WORKSHEET

Complexity element	Weighting factor	Complexity value	Total points
Safety	5	2	10
Threats to boundaries	5	2	10
Fuels and fire behavior	5	2	10
Objectives	4	2	8
Management organization	4	2	8
Improvements	3	2	6
Natural, cultural, social values	3	2	6
Air quality values	3	2 3	6 9
Logistics	3	2	6
Political concerns	2	3	6
Tactical operations	2	3	6
Interagency coordination	1	2	2
Total Complexity Points:			84 87

The Wildland and Prescribed Fire Complexity Analysis provides a method to assess the complexity of both wildland and prescribed fires. The analysis incorporates an assigned numeric rating complexity value for specific complexity elements that are weighted in their contribution to overall complexity. The weighted value is multiplied times the numeric rating value to provide a value for that item. Then all values are added to generate the total complexity value. Breakpoint values are provided for low, moderate, and high complexity values.

The complexity analysis worksheet is accompanied by a guide to numeric values for each complexity element shown, provided on the following pages.

Wildland and Prescribed Fire Complexity Rating Worksheet Numeric Rating Guide

COMPLEXITY	GUIDE TO NUMERIC RATING _A		
ELEMENT	1	2	3
Safety	<ul style="list-style-type: none"> Safety issues are easily identifiable and mitigated 	<ul style="list-style-type: none"> Number of significant issues have been identified All safety hazards have been identified on the LCES worksheet and mitigated 	<ul style="list-style-type: none"> SOF1 or SOF2 required Complex safety issues exist
Threats to Boundaries	<ul style="list-style-type: none"> Low threat to boundaries POI<50% Boundaries naturally defensible 	<ul style="list-style-type: none"> Moderate threat to boundaries 50<POI<70% Moderate risk of slopover or spot fires Boundaries need mitigation actions for support to strengthen fuel breaks, lines, etc. 	<ul style="list-style-type: none"> High threat to boundaries POI>70% High risk of slopover or spot fires Mitigation actions necessary to compensate for continuous fuels
Fuels/Fire Behavior	<ul style="list-style-type: none"> Low variability in slope & aspect Weather uniform and predictable Surface fuels (grass, needles) only Grass/shrub, or early seral forest communities Short duration fire No drought indicated 	<ul style="list-style-type: none"> Moderate variability in slope & aspect Weather variable but predictable Ladder fuels and torching Fuel types/loads variable Dense, tall shrub or mid-seral forest communities Moderate duration fire Drought index indicates normal conditions to moderate drought; expected to worsen 	<ul style="list-style-type: none"> High variability in slope & aspect Weather variable and difficult to predict Extreme fire behavior Fuel types/loads highly variable Late seral forest communities or long-return interval fire regimes Altered fire regime, hazardous fuel/stand density conditions Potentially long duration fire Drought index indicates severe drought; expected to continue
Objectives	<ul style="list-style-type: none"> Maintenance objectives Prescriptions broad Easily achieved objectives 	<ul style="list-style-type: none"> Restoration objectives Reduction of both live and dead fuels Moderate to substantial changes in two or more strata of vegetation Objectives judged to be moderately hard to achieve Objectives may require moderately intense fire behavior 	<ul style="list-style-type: none"> Restoration objectives in altered fuel situations Precise treatment of fuels and multiple ecological objectives Major change in the structure of 2 or more vegetative strata Conflicts between objectives and constraints Requires a high intensity fire or a combination of fire intensities that is difficult to achieve
Management Organization	<ul style="list-style-type: none"> Span of control held to 3 Single resource incident or project 	<ul style="list-style-type: none"> Span of control held to 4 Multiple resource incident or project Short-term commitment of specialized resources 	<ul style="list-style-type: none"> Span of control greater than 4 Multiple branch, divisions or groups Specialized resources needed to accomplish objectives Organized management team (FUMT, IMT)
Improvements to be Protected	<ul style="list-style-type: none"> No risk to people or property within or adjacent to fire 	<ul style="list-style-type: none"> Several values to be protected Mitigation through planning and/or preparations is adequate May require some commitment of specialized resources 	<ul style="list-style-type: none"> Numerous values and/or high values to be protected Severe damage likely without significant commitment of specialized resources with appropriate skill levels
Natural, Cultural, and Social Values to be Protected	<ul style="list-style-type: none"> No risk to natural, cultural, and/or social resources within or adjacent to fire 	<ul style="list-style-type: none"> Several values to be protected Mitigation through planning and/or preparations is adequate May require some commitment of specialized resources 	<ul style="list-style-type: none"> Numerous values and/or high values to be protected Severe damage likely without significant commitment of specialized resources with appropriate skill levels

Air Quality Values to be Protected	<ul style="list-style-type: none"> • Few smoke sensitive areas near fire • Smoke produced for less than 1 burning period • Air quality agencies generally require only initial notification and/or permitting • No potential for scheduling conflicts with cooperators 	<ul style="list-style-type: none"> • Multiple smoke sensitive areas, but smoke impact mitigated in plan • Smoke produced for 2-4 burning periods • Daily burning bans are sometimes enacted during the burn season • Infrequent consultation with air quality agencies is needed • Low potential for scheduling conflicts with cooperators 	<ul style="list-style-type: none"> • Multiple smoke sensitive areas with complex mitigation actions required • Health or visibility complaints likely • Smoke produced for greater than 4 burning periods • Multi-day burning bans are often enacted during the burn season • Smoke sensitive class 1 airsheds • Violation of state and federal health standards possible • Frequent consultation with air quality agencies is needed • High potential for scheduling conflicts with cooperators
Logistics	<ul style="list-style-type: none"> • Easy access • Duration of fire support is less than 4 days 	<ul style="list-style-type: none"> • Difficult access • Duration of fire support between 4 and 10 days • Logistical position assigned • Anticipated difficulty in obtaining resources 	<ul style="list-style-type: none"> • No vehicle access • Duration of support is greater than 10 days • Multiple logistical positions assigned • Remote camps and support necessary
Political Concerns	<ul style="list-style-type: none"> • No impact on neighbors or visitors • No controversy • No media interest 	<ul style="list-style-type: none"> • Some impact on neighbors or visitors • Some controversy, but mitigated • Press release issued, but no media activity during operations 	<ul style="list-style-type: none"> • High impact on neighbors or visitors • High internal or external interest and concern • Media present during operations
Tactical Operations	<ul style="list-style-type: none"> • No ignition or simple ignition patterns • Single ignition method used • Holding requirements minimal 	<ul style="list-style-type: none"> • Multiple firing methods and/or sequences • Use of specialized ignition methods (i.e. terra-torch, Premo Mark III) • Resources required for up to one week • Holding actions to check, direct, or delay fire spread 	<ul style="list-style-type: none"> • Complex firing patterns highly dependent upon local conditions • Simultaneous use of multiple firing methods and/or sequences • Simultaneous ground and aerial ignition Use of hell-torch • Resources required for over 1 week • Multiple mitigation actions at variable temporal and spatial points identified. • Success of actions critical to accomplishment of objectives • Aerial support for mitigation actions desirable/necessary
Interagency Coordination	<ul style="list-style-type: none"> • Cooperators not involved in operations • No concerns 	<ul style="list-style-type: none"> • Simple joint-jurisdiction fires • Some competition for resources • Some concerns 	<ul style="list-style-type: none"> • Complex multi-jurisdictional fires • High competition for resources • High concerns

Prescribed Fire Go-No-Go Checklist

(A "NO" response to any item means stop!)

1. Is burn plan complete and approved?
2. Are all fire prescription specifications met?
3. Are all smoke management prescription specifications and requirements met? (are NWS predictions on mixing heights and dispersal included?)
4. Is the current and projected fire weather forecast favorable?
5. Are all personnel, required in the prescribed burn plan, on site and qualified for assigned positions?
6. Have all personnel been briefed on the prescribed burn plan requirements?
7. Have all personnel been briefed on safety hazards and LCES?
8. Is all the required equipment in place and in working order?
9. Are available, including backup, resources adequate for containment of escapes under worst-case conditions? Standing resource order to zone complete?
10. Is the test burn adequate for assessing the burn's potential?
11. In your opinion, can the burn be carried out according to plan and will it meet the planning objectives?
12. Is there an adequate contingency plan developed? Has it been communicated to assigned overhead?
13. Have notifications been completed?

If all 13 questions have been answered "YES", you may proceed with ignition.

Thirteen Prescribed Fire Situations That Shout "Watch Out"

1. You are burning with a plan that has not been approved by the appropriate agency administrator.
2. You are not a qualified Burn Boss but have been told to go ahead with the burn.
3. Objectives of the burn are not clear.
4. There are areas of special concern within the burn unit that cannot be burned.
5. Private land and/or structures adjoin the burn unit
6. You are uncomfortable with the prescription.
7. You have not requested a Spot Weather Forecast.
8. You decide a test fire is not necessary.
9. You decide your personnel are old hands and a briefing is not necessary.
10. Escape probability is small so you do not bother with a contingency plan.
11. You or the Ignition Specialist is beginning to lose control of the ignition pattern after starting.
12. Mop-up and/or patrol instructions are not specified or understood by the holding personnel.
13. You have not lost one in a long time and are starting to feel a little smug.

Project Name:

Date:

Agency	Contact name	Telephone Number	E-Mail	Notified
USFS dispatch, Santa Fe N. F.		438-7800		
USFS Española Ranger District		(505)753-7331		
USFS Jemez Ranger District (will inform Carro Pelado lookout)		(505)829-3535		
Los Alamos Emergency Coordination Center		667-6211		
NPS Systems Support Office		988-6114		
Southwest Coordination Center		(505) 342-3473		
State Police Department		827-9126		
Los Alamos Police Department		662-3222		
Los Alamos Fire Department (Station 7)		667-7080		
Santa Fe County Fire Dept.		992-3076		
NM State Forestry, Bernalillo		(505) 867-2334		
BLA 3 Northern Pueblos		(505)753-1455		
San Ildefonso, Governor's Office		455-2273		
Cochiti Pueblo, Governor's Office		(505)4652244		
New Mexico Air Quality Division		827-0091		
LANL Air Quality		665-3858		
Albuquerque Chamber of Commerce		(505)764-3700		
Albuquerque Convention and Visitors Bureau		(505) 243-3696		
County Commissioners				
Corp of Engineers, Cochiti		465-0307		
Fish and Wildlife service		(505) 346-2525 x110		
Los Alamos Monitor		662-4135		
Santa Fe New Mexican		988-2035		
Albuquerque Journal		988-3861		
Los Alamos employees news bulletin				
KRSN - radio		661-2490		
LA Airport - Ross Aviation		667-4521		
Carl White - UNM		(505) 277-3689		
Terry Roxx - Lab Biologist		667-3024		
Bandelier n park				
Visitors Center		667-1004		
Entrance Station				
e-mail to "all employees"				
Additional Contacts for large		div to be visible for great distances		
Trads Zone Dispatch		(505) 756-6352		
Albuquerque Zone Dispatch		(505)346-2660		
		(505) 271-9026		
Linda Jangula		Cell (505) 238-1010		

DELEGATION OF AUTHORITY

As Superintendent of Bandelier National Monument, I am delegating to the authority to manage the suppression of the _____ fire in accordance with the attached guidelines, priorities, and constraints.

The briefing paper will also provide you with an outline of monument resources available for assignment to your operation under specified conditions.

Upon arrival of you and your team, myself or an appointed staff member, along with the local incident commander being relieved (if applicable) will deliver a briefing for your team.

My goals and constraints for managing this incident are as follows:

1. Insure the safety of firefighters and the public.
2. Protect life and property.
3. Minimize impacts of suppression on Natural and Cultural resources.
4. No Dozers are allowed within the monument boundaries.
5. A resource advisor will clear all proposed fireline and to assist in developing strategies.
6. No retardant within the monument boundaries without approval.
7. Cost efficiency.

_____/_____
Date Hour

Superintendent
Bandelier National

Monument

Superintendent's Agency Representative to Incident Commander

This monument representative assigned to your team is _____ and will have line authority for the monument Superintendent. The representative will be expected to attend all briefings and strategy sessions, and assist with any problems that require the Superintendent's output.

Representative Office Phone: _____
Home Phone: _____
Title: _____
Red Card Qualifications: _____

**FMP AMENDMENT - NEW FIRE POLICY
BANDELIER NATIONAL MONUMENT
JUNE 9, 1998**

In accordance with the Federal Wildland Fire Management Policy and terminology, the following changes in Bandelier's Fire Management Plan are effective immediately:

TERMINOLOGY

1. All references to "prescribed natural fire (PNF)" are now changed to "appropriate management response for wildland fire use".
2. All references to "management ignited prescribed fire (MIPF)" are now changed to "prescribed fire".
3. All references to "presuppression" are now changed to "preparedness".
4. All references to "Escaped Fire Situation Analysis (EFSA)" are now changed to "Wildland Fire Situation Analysis (WFSA)".
5. All references to "Fire Situation Analysis (FSA)" and "Interagency Prescribed Natural Fire Burn Plan" are now changed to "Wildland Fire Implementation Plan (WFIP)".
6. All references to the three suppression strategies of confine contain and control are hereby deleted.

PROCEDURES

1. **WILDFIRE PROGRAM** - In the event that initial attack action is unsuccessful, the Wildland Fire Situation Analysis (WFSA) will be utilized as the fire management strategy assessment and decision document. The WFSA outline is included as an attachment to this amendment.
2. **PRESCRIBED FIRE PROGRAM** - No changes in implementation procedures are necessary.
3. **APPROPRIATE MANAGEMENT RESPONSE FOR WILDLAND FIRE USE** - The following steps will be taken to assess, implement and document wildland fire use activities:

Stage 1. WFIP. Initial Fire Assessment:

Fire Situation: The attached Fire Situation outline will be used to conduct the initial assessment of a candidate fire.

Go-No/Go Decision: The decision for wildland fire use implementation should be made within 2 hours of the initial fire assessment and will utilize the attached Decision Criteria Checklist.

- a. The prescription criteria for wildland fire use is contained in Appendix I of FMP and is included in the attachment.
- b. Southwest Area Preparedness Level
 - Preparedness Levels I to III requires no upper level approval.
 - Preparedness Level IV requires regional approval for wildland fire use.
 - Preparedness Level V requires regional recommendation and national level approval.
- c. The initial assessment of relative risk will be made through the use of the attached Wildland Fire Relative Risk Rating chart and the seasoned judgment and experience of fire staff.
- d. The decision criteria will be reviewed and approved by the Park Superintendent (or acting).

Stage II. WFIP. Short - Term Implementation Actions: Should be completed within 24 hours of the initial fire assessment.

- a. The attached Short - Term Implementation Action outline will be utilized. When identifying initial actions, it is important to remember that "appropriate management response" includes the full spectrum of responses depending upon the fire use objectives, safety concerns and other considerations.
- b. The attached Wildland and Prescribed Fire Complexity Rating Worksheet will be prepared to identify the overall complexity of the wildland fire.
- c. The attached Stage III Need Assessment Chart will be used to determine when Stage III of the WFIP needs to be completed.

Stage III. WFIP. Long - Term Implementation Actions: Should be completed within 24 hours of a determination of need.

- a. The attached Stage III outline will be completed when indicated by the Needs Assessment Chart.
- b. The Stage III plan will be prepared by the FMO/AFMO/FUMA, concurred by the Chief, Resources Management or designated Resource Advisor and approved by the Park Superintendent.

Periodic Fire Assessment: Evaluates the capability to continue managing the fire for the next assessment period and will be completed for all wildland fires for resource benefits.

- a. The attachment contains instructions, checklists, charts and signature page for conducting periodic assessments.
- b. The assessment frequency will be determined by the fire size, fire behavior; fire complexity and relative risk.
- c. If one or more items on the Revalidation Checklist are answered with a "yes", management of this fire cannot continue within defined limits and a Wildland Fire Situation Analysis (WFSA) is necessary to develop a new strategic alternative.

Wildland Fire Situation Analysis (WFSA):

- a. The WFSA is used to compare alternatives reflecting the full spectrum of appropriate management responses and will be prepared whenever it is determined that the current fire management response is inadequate to accomplish fire use objectives.
- b. The attachment contains the WFSA format and instructions for completion. Please note that the WFSA contains it's own Fire Complexity Analysis.
- c. Once a WFSA is prepared, there will be a daily review and revalidation by the Park Superintendent. A Daily Review form is included in the attachment.

Prepared by: _____ Date _____
Fire Management Officer

Reviewed by: _____ Date _____
Chief, Resources Management

Approved by: _____ Date _____
Superintendent