



Coronado National Memorial Arizona

Fire Management Plan



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I. INTRODUCTION

Purpose

National Park Service (NPS) policy requires that each park area with vegetation capable of sustaining fire prepare a fire management plan to guide its fire management program (Director's Order-18 1998). The Coronado National Memorial Fire Management Plan (FMP) calls for wildland fire suppression and the limited use of prescribed fire and hazardous fuels reduction.

The FMP defines the levels of protection needed to ensure safety for park visitors and employees, protect facilities, and restore and perpetuate natural processes and cultural landscapes. Suppression operations using the Appropriate Management Response will quickly respond to wildland fires and achieve effective control to protect human life and property while limiting unacceptable effects to the park's natural and cultural resources. Recommendations listed in the park's General Management Plan (2004) and Natural and Cultural Resources Management Plan (1998) were used to prepare this FMP.

Coronado National Memorial (the memorial) is located in southeastern Arizona, approximately 75 miles southeast of Tucson and 20 miles south of Sierra Vista in Cochise County (Figure I-1.)

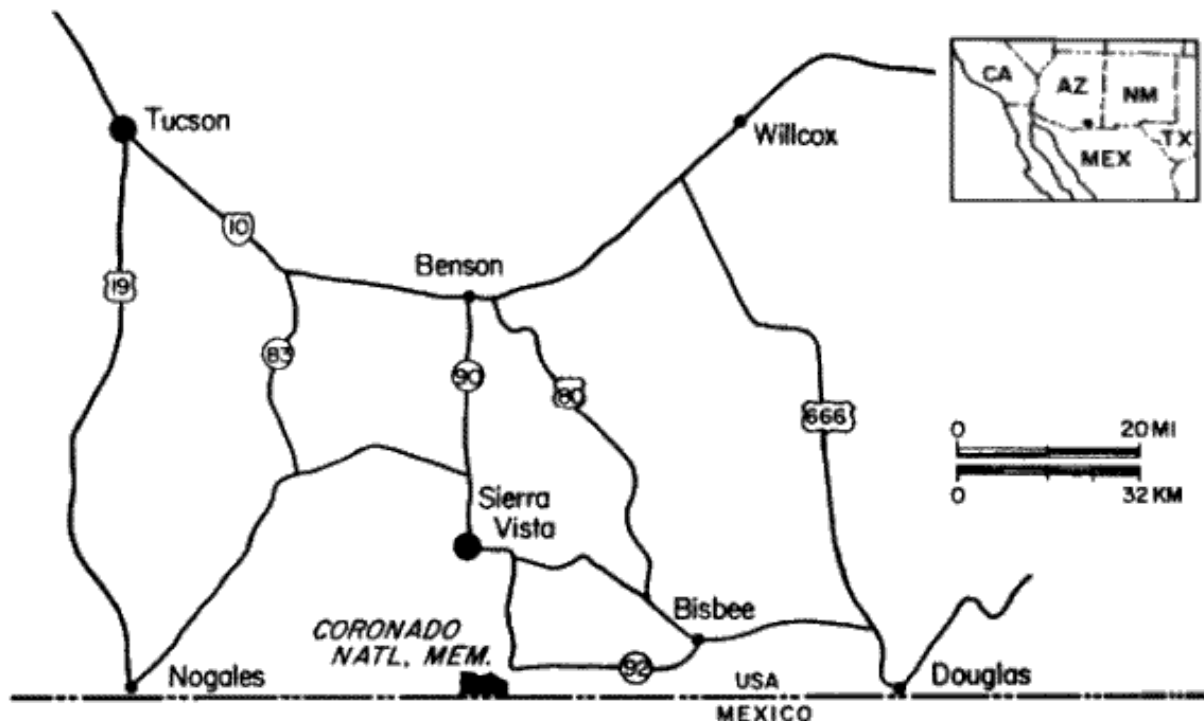


Figure I-1. Coronado National Memorial Location

The southern boundary of the 4,750-acre memorial lies on the international border with Mexico. The area to the west and north of the memorial is administered by the United States Forest Service (USFS), while most of the east boundary abuts Arizona State Trust land. Small amounts of private land are also adjacent to the northeastern and southeastern boundary. East Montezuma Canyon Road leads into the memorial about 3 miles southeast of where Coronado Memorial Road joins Arizona Highway 92. The road is paved for 1 mile west of the visitor center and then continues as a mountainous gravel road to Montezuma Pass (elevation 6,575 ft.). From the memorial boundary just over the Pass, the road continues west across the San Rafael Valley and over the Patagonia Mountains to Nogales.

Collaborative Processes and Opportunities

The memorial is a long-time partner of the Sierra Vista Ranger District of the Coronado National Forest on fire suppression and other fire program activities. In 1996, the NPS and USFS joined other federal, state, and local agencies, organizations, and fire departments to form a fire management group that has recently taken the name Huachuca Area Fire Partners (HAFP). Initially the group met regularly to share experiences and coordinate fire management activities. After a brief period of inactivity, the group restarted work in 2002 to develop a regional fire management plan based on ecological rather than jurisdictional boundaries. The HAFP now brings together public and private partners from the San Pedro River on the east through the Patagonia Mountains on the west to manage fire activities over a 500,000-acre area. The group's projects will cross political boundaries to manage fire using natural features, vegetation changes, and roadways. Mexican cooperators are also being invited to participate. The memorial's FMP contains direction that falls within the framework of the regional fire plan being developed by the HAFP.

The benefits of managing for fire on a broad landscape scale, such as in the greater Huachuca Mountain/San Rafael Valley area are numerous. Foremost are increased public and fire crew safety, widespread improvement in ecosystem function, and economical execution of fire activities. The collaboration also focuses on efficient communication about fire, responsible protection of sensitive resources, and management of international border issues. The regional plan provides background and operational details that are common to the public and private land managers who developed it. The National Fire Plan requires collaboration with partners and neighbors on all fuel reduction projects, even if they are wholly inside memorial boundaries.

Policies

The FMP is a detailed program of action to carry out wildland fire management policies as defined in Director's Order 18 and: (1) Federal Wildland Fire Management Policy and Program Review; (2) Managing Impacts of Wildfires on Communities and the Environment, and Protecting People and Sustaining Resources in Fire Adapted Ecosystems – A Cohesive Strategy (USDOJ/USDA); and (3) A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy Implementation Plan.

NEPA/NHPA Compliance

This FMP meets National Environmental Policy Act (NEPA) and the National Historic Preservation Act (NHPA) requirements. NPS policy now allows the use of the Fuels Categorical Exclusion (CE) for FMPs in parks that are doing suppression, and fuels reductions activities that fit within the limits of the CE. The CE policy does not allow for wildland fire use for resource benefit. This policy is documented in the *Federal Register* (Vol. 68, No. 108, pages 33814-33824) and NPS correspondence (NPS Y14 (IMR-FMO) February 23, 2004). This FMP calls for suppression of wildland fires, and the limited use of prescribed fire and hazardous fuels reduction as allowed under cited direction. The Memorial will develop 5-year prescribed fire and fuels reduction plans (Appendix H) and do separate NEPA and NHPA consultation when those treatments are planned and developed. The Decision Memorandum (Appendix D) on the Categorical Exclusion for Implementation of a Fire Management Program at Coronado National Memorial was signed by the superintendent on June 28, 2005.

Authorities

The authorities for implementing this fire management plan are contained in 16 U.S.C. Sec. 1-4, the *National Parks and Recreation Act of 1978*; DO/RM-18 *Wildland Fire Management* (management policy and cooperative support agreements); the *Department of the Interior and Related Agencies Appropriation Act of 1990*, 31 U.S.C. 665 (E)(1)(B) and Section 102 of the *General Provisions of the Department of Interior Annual Appropriations Bill* (fire program funding); the *Interagency Incident Business Management Handbook* (fire program administration); and DO/RM-20 *Federal Assistance and Interagency Agreements* (agreements with other bureaus, agencies, governments, and private companies).

II. RELATIONSHIP TO LAND MANAGEMENT PLANNING AND FIRE POLICY

NPS Management Policies

NPS Management Policies (NPS, 2001) concerning fire management states:

“Naturally ignited fire is a process that is part of many of the natural systems that are being sustained in parks. Human-ignited fires often cause the unnatural destruction of park natural resources. Wildland fire may contribute to or hinder the achievement of park management objectives. Therefore, park fire management programs will be designed to meet park resource management objectives while ensuring that firefighter and public safety are not compromised.”

“Each park with vegetation capable of burning will prepare a fire management plan and will address the need for adequate funding and staffing to support its fire management program. The plan will be designed to guide a program that responds to the park’s natural and cultural resource objectives; provides for safety considerations for park visitors, employees, neighbors, and developed facilities; and addresses potential impacts to public and private property adjacent to the park.”

“All fires burning in natural or landscaped vegetation in parks will be classified as either wildland fires or prescribed fires. All wildland fires will be effectively managed through application of the appropriate strategic and tactical management options. These options will be selected after comprehensive consideration of the resource values to be protected, firefighter and public safety, and costs.”

To implement NPS policies governing fire management, the NPS will administer its wildland fire program in a manner that will:

- Achieve maximum overall benefits and minimize damages of wildland fire within the framework of land use objectives and resource management plans, while giving primary consideration to firefighter and public safety.
- Educate employees and the public about the scope and effect of wildland fire management, including fuels management, resource protection, prevention, hazard/risk assessment, mitigation and rehabilitation, and fire's role in ecosystem management.
- Stabilize and prevent further degradation of natural and cultural resources lost in and/or damaged by impacts of wildland fires and/or fire management activities.
- Maintain the highest standards of professional and technical expertise in planning and safely implementing an effective wildland fire management program.
- Integrate fire management with all other aspects of memorial management.
- Manage wildland fire incidents in accordance with accepted interagency standards, using appropriate management strategies and tactics, and maximize efficiencies realized through interagency coordination and cooperation.
- Scientifically manage wildland fire using best available technology as an essential ecological process to restore, preserve, or maintain ecosystems and use resource

information gained through inventory and monitoring to evaluate and improve the program.

- Protect life and property and accomplish resource management objectives, including restoration of the natural role of fire in fire-dependent ecosystems.

Enabling Legislation

Coronado National Memorial was established on November 8, 1952 to permanently commemorate and interpret the significance of the Francisco Vasquez de Coronado Expedition of 1540-1542 and the resulting cultural influences of 16th Century Spanish colonial exploration in the Americas. The memorial does not protect any tangible artifacts related to the expedition. It was created to give visitors an opportunity to reflect upon the impact the Coronado Entrada had in shaping the history, culture, and environment of the southwestern United States and its lasting ties to Mexico and Spain.

General Management Plan Mission Goals

The Coronado National Memorial General Management Plan (GMP) (2004) states that the “fire management programs in the memorial will be designed to meet resource management objectives prescribed for various areas of the memorial and to ensure that firefighter and public safety are not compromised.” All fire management activities will take place in accordance with the GMP.

Natural and Cultural Resources Management Plan Objectives

This FMP is an action plan under the approved Natural and Cultural Resources Management Plan (RMP) (NPS 1998) for carrying out the memorial’s fire management program. The objectives pertinent to fire listed in the RMP include:

- Conduct an active fire management program in the memorial.
- Implement a system of efficient record-keeping.
- Maintain and develop the staff’s fire suppression and prescribed fire skills through training opportunities.
- Keep a current interagency Memorandum of Understanding (MOU) in order to fulfill NPS obligations.
- Evaluate fire effects for Madrean oak and grassland species and communities.

Fire Management Plan Objectives

The FMP will help meet the objectives of the general and resources management plans by providing overall fire management program direction. It will follow NPS 1995 and 2001 Fire Policy Updates required of the federal land management agencies to:

- Provide public, employee, and firefighter safety.
- Control all wildland fires using the appropriate management response (AMR) considering the protection of natural and cultural resources and reasonable costs.
- Maintain fire management agreements with adjacent land management agencies, the Huachuca Area Fire Partners, and local fire departments.

III. WILDLAND FIRE MANAGEMENT STRATEGIES

General Management Considerations

The basic goal of the fire management policies at Coronado National Memorial is to meet resource management objectives while safeguarding public safety, cultural resources, and private property. Suppression will be used in all areas of the memorial, but may be limited in some cases by safety concerns such as steep slopes, lack of safety routes, resource concerns, or unreasonable costs. In these cases the Appropriate Management Response may be to confine the fire to specific areas where it is safe to suppress or where natural or manmade boundaries may be utilized. Prescribed fire may be used to restore natural fuel loadings through the reduction of hazardous fuel accumulation, but a site-specific, 5-year fuels treatment plan will be developed and the NEPA process applied before moving forward with treatment work. All projects that include prescribed burning will include specific burning prescriptions that will ensure the fire can be controlled within established boundaries. The memorial will be working closely with the HAFP on all fire related activities.

Climate and Fire Season and History on the Memorial

Weather Analysis

Weather records show that two climatic features, mild annual temperatures and abundant summer precipitation, predominate the area (Sellers and Hill 1974). The mean monthly temperature is 61°F. January is the coldest month with an average daily maximum of 58°F and average minimum of 32°F. June is the warmest month with 91°F as the average daily maximum and 59°F as the average minimum. The record high was 105°F in 1990 and the record low was 1°F in 1978.

Precipitation is bimodal occurring in summer and late winter/early spring. Summer brings monsoon thunderstorms from the Gulf of Mexico often with local violent convective cells and intense rainfall. Summer storms account for half of the precipitation and occur from late June to early September. Winter/spring storms are frontal Pacific systems typified by gentle, widespread rains of long duration. Snow accumulation averages about 4 inches per year. The annual precipitation in the memorial is greater than in the surrounding valleys and ranges by 10 to 30 inches. The record high was 32.88 inches in 1978 and the record low was 9.97 inches in 1989. The average rainfall during the period 1961 through 1996 was 20.47 inches. Humidity is low, except during periods of precipitation.

Fire Season

The Southern Arizona fire season runs from April into October. Two overlapping periods can be identified during the summer season; the “false monsoon” and the “true monsoon.” The false monsoon season is the period of highest fire danger. Hot, dry surface winds create thermals and carry moisture that is beginning to flow aloft from the Gulf of Mexico to form weak storm cells over the mountains (Bock et al., 1976; Pyne 1984). Virga, high surface winds, and lightning are common occurrences, along with occasional ignitions from ground strikes. Prolonged, strong winds occur in the memorial during spring and summer. These weather patterns tend to push

wildfires from Mexico into the memorial, and correspondingly out of the memorial toward Coronado National Forest.

False monsoon fires are the most intense and typically have the highest spread rates. Fire occurrence peaks during a several-week period before the height of the monsoon in late July (Swetnam et al. 1989). In addition to high temperatures, low humidities, high winds, and dry lightning storms, vegetation factors contribute to the intensity of the initial fire season. The spring season in the memorial is not usually green, but rather more typical of fall in areas outside the Southwest. The perennial, mainly warm-season grasses remain dry until July. Spring green-up of cool-season grasses is generally restricted to the valleys and riparian areas, and depends upon winter and early spring precipitation. Abundant dry grass is readily available and significant fuel. In addition, the oak species generally drop (and replace) their leaves during the spring dry period that occurs from late April through early July.

The second fire season begins with the “true monsoon” onset. Storms are usually well developed by the third week in July and occur almost daily throughout the Huachuca Mountains. Green-up begins during the first ten days of the season. Although fuel moisture and burning indices are usually lower than in the first fire season, more fires occur in the area during the second season because there are many more storms and, consequently, more lightning. By August, when thunderstorm activity is often very high, soils and woody fuels in upper elevations are typically saturated with moisture and fire activity declines. When drier conditions return toward the end of September, few thunderstorms are occurring and fire activity remains low (Swetnam et al. 1989).

During the second season, fires typically occur in vegetation types that have minimal grass or herbaceous cover and where litter is the primary carrier of fire—pine, oak, and manzanita monitoring types. The grass-scrub communities are usually very green in late July and August which sharply reduces the probability of a spreading fire.

Historic Role of Fire

The presence and importance of fire within woodland communities have been noted for decades (Leopold 1924; LeSueur 1945; Wallmo 1955; Marshall 1957, 1963; Niering and Lowe 1984). While surveying birds in the Mexican pine-oak woodlands, Marshall (1963) noticed that in Mexico, where fire suppression was minimal, the woodlands were open with a dense grass understory. Across the border in the United States where land managers suppressed fire, Marshall saw stunted woodlands with much accumulated fuel and little grass understory. Fires in this situation were often severe and killed most of the overstory trees and understory plants. Escobedo et al. (2001) documented heavier loadings of downed woody fuels on pine-oak forests sites in southeastern Arizona compared with northeastern Sonora.

Observations such as those made by Marshall led to the reversal of long-standing fire suppression policies within the NPS. Researchers have brought to light adaptations to fire in individual plant species, the role of fire in vegetation communities, and the fire history of particular places. The monument has been the site of several studies that provide information on the role of fire. The work of fire ecologists is the basis for many fire program goals.

Detailed fire history data for the memorial is lacking and only sporadic and incomplete records dating from 1957 are available. While specific fire history research for Coronado National Memorial remains incomplete, records kept by the Sierra Vista Ranger District of the Coronado National Forest, which adjoins the northern and western boundaries of the memorial, may provide a useful reference of normal fire season and occurrence relationships that may apply to the memorial.

Park and USFS records indicate a total of 31 fires (14 human-caused and 17 lightning-caused) within the current boundaries of the memorial for the period 1957 to 2004 (see Appendix G). These fires include some that were on USFS lands, which, after a land transfer between the USFS and the memorial in 1975, were included within the current memorial boundaries. Two of these fires originated in Mexico and burned into the United States while one started in the memorial and spread into Mexico.

Park records, including daily logs, superintendent's Annual Reports, Case Incident Reports, Forms 10-400, 520 and 398, and DI-1202s, dating back to September 1, 1957, were searched. A May 19, 1964 journal entry stated that no human-caused fires occurred since the memorial was staffed December 12, 1954, but no reference was made about lightning-caused fires. USFS records in the Sierra Vista Ranger District dating back to 1977 were also checked. It is unknown how accurately fires were documented in past times.

An additional eight fires were recorded within one mile of the current memorial boundaries (four human-caused and four lightning-caused). One of the most significant recent fire events in the Huachuca Mountains was the Peak Fire of 1988. The human-caused fire started in Mexico on June 10 and burned a total of 12,025 acres, including 3,750 acres within the memorial, before it was contained on June 16. More than 1,400 personnel from various federal and state agencies and municipal and volunteer fire departments assisted in fire suppression efforts at a cost of 2.5 million dollars. Aggressive suppression efforts resulted in the loss of only one structure, a shade ramada on Coronado Peak.

The Montezuma Fire was started on June 2, 2004 by a cooking fire ignited by undocumented immigrants in the memorial near the U.S.-Mexico border one quarter mile east of Boundary Marker 102. The USFS responded with an initial attack consisting primarily of an aerial retardant drop. The fire was contained on June 3 after burning approximately 250 acres. Also on June 2, 2004, a small fire burned less than 100 acres in Mexico just south of the Montezuma Fire. It is believed to have been started by a vehicle at the edge of a dirt road, possibly transporting the same group that caused the Montezuma Fire.

Wildland Fire Management Goals and Objectives

The goal of the fire management program is to effectively manage wildland fire and provide for the protection of life, property, and cultural resources, while meeting resource management objectives prescribed for various areas of the memorial. The interdisciplinary team overseeing the writing of this plan developed the following goals and objectives for the Coronado National Memorial fire program that are compatible with and assist fulfillment of RMP objectives.

- Give primary consideration to firefighter, employee, public safety, and national cost containment objectives.
- Manage fire to minimize threats of unacceptable effects of fire to sensitive cultural and natural resources and properties within and outside the memorial.
- Implement a program in the future to use prescribed burning and hazard fuels reduction to restore natural fuel loadings
- Utilize research and monitoring to improve our understanding of the role of fire in the memorial's vegetative communities.

Wildland Fire Management Options

Wildland Fire Suppression

A wildland fire suppression strategy will be utilized in all areas of the memorial. However, some wildland fires (human and lightning caused) will be suppressed using less aggressive suppression strategies (appropriate management response) when suitable. Natural or manmade barriers may be used in suppression and will help reduce costs and exposure of firefighters to risk. Therefore, minimizing acreage burned might not be a primary consideration depending on the location.

Unplanned wildland fire suppression response will include immediate analysis and determination by staff that the fire is not a threat to human safety or structures and could be contained by natural and artificial barriers. If there are risks to people, structures, or significant resources, then the appropriate management response will be to use aggressive fire suppression tactics. Incident response actions will be determined by the incident commander and fire safety considerations as guided by this plan and the superintendent, or his/her representative. For fire incidents lasting longer than a single burning period, a Wildland Fire Situation Analysis (WFSA) will be completed to help select and document the chosen strategy. Minimizing firefighter exposure to risk, public and facility safety, sensitivity of specific or area resources, and cost of more aggressive action will be the guiding priorities in the WFSA, not acreage considerations. Communication with and consideration of memorial neighbors will be a priority during the decision making process.

Prescribed Fire

Prescribed fire projects for reduction of hazardous fuel conditions will be used in areas that threaten values-to-be-protected, sensitive species, and specific ecosystems after development of an appropriate fuels reduction plan, which will then be added to this plan as Appendix H. Specific NEPA consultation will be conducted at that time. The long range objective of prescribed fire is to minimize aggressive suppression actions within the memorial. The long term goal would be to manage fire with an appropriate management response to protect safety and values at risk from negative impacts of suppression tactics. The short and long term goals include managing fire with minimum impact suppression strategies while recognizing that safety is the primary objective. Each prescribed fire will have an appropriate monitoring plan. Wildland Fire Use for Resource Benefit cannot be authorized under this plan. Each prescribed fire will have an appropriate monitoring plan.

Non-Fire Applications

In the past few years, the Memorial has undertaken a few small-scale efforts to reduce hazardous fuels around the headquarters area. This included removal of dead trees and shrubs, primarily oaks and manzanita, from the area immediately surrounding the Visitor Center, Maintenance Shop, Administrative Building, and the residences. Approximately 12 acres was cleared in 2004 with assistance from staff of the Ajos-Bavispe Reserve in Mexico and a similar treatment was done by the Saguaro Fire Module in the late 1990s. The cleared debris was either cut for firewood or chipped and distributed onto disturbed areas at the Montezuma Ranch.

Each year in the early spring, maintenance workers clear grass and brush around propane fuel tanks, along roadways, and around picnic sites. The main park road is also mowed along the edges from the east entrance to the Visitor Center to prevent brush fires from vehicles and debris carelessly thrown from vehicles. In the future, pile burning may be used to dispose of fuels removed during mechanical treatments. A long-term mechanical fuel reduction program will be implemented on a broader scale throughout the memorial to modify vegetation for fuel and resource management objectives. These activities will be addressed by the development of project specific plans and separate NEPA/NHPA processes. They will be added to Appendix H as they are developed.

Wildland Fire Management Strategies by Fire Management Unit

Identification of fire management units (FMUs) is the cornerstone for planning the management of the wildland fire program. This section ties directly to the decisions made in the land and resource management planning process. Coronado National Memorial includes two FMUs for the purposes of managing fire. FMU 1 is an area dominated by Lehmann lovegrass and includes two one-acre inholdings with private residences and an abandoned ranch. The remainder of the memorial makes up FMU 2, which contains a subunit designed to ensure the protection of developed areas from harm by fire program activities. Information on the physical and biotic environments of the FMUs is available in various sources at the memorial. Specifically, a detailed description of the memorial's environment, including significant natural and cultural resources, may be found in the Affected Environment section of the memorial's GMP as well as in Chapter X of this FMP. A Biological Inventory Report for the Sonoran Desert Network (Powell and Docherty) was completed for the 2000 and 2001 field seasons and contains species lists for the memorial. All species lists are on file at Coronado National Memorial.

Aggressive fire suppression will be used in both FMUs, and will be limited only by safety concerns, such as steep slopes and lack of escape routes. Specific management considerations for both FMUs include the following:

- Impacts to cultural resources will be minimized. The location of these sites will be included in documents such as line officers briefing statements and pre-attack plans. A cultural resource advisor from the memorial will be assigned to the incident management organization.
- Sensitive natural areas or species will be protected from suppression activities. These areas will be included in documents such as line officers briefing statements and pre-attack plans. A natural resource advisor from the memorial will be assigned to the

incident management organization. The resource advisor must be qualified to go on the fireline during incidents.

- Only a small percentage of the memorial is accessible to vehicles. Off-road vehicle use may be permitted on a case-by-case basis and will be pre-approved by a memorial resource advisor.
- International border with Mexico creates management considerations such as fires crossing the border to/from Mexico and undocumented immigrants and drug smuggler traffic.
- Protection of structures is a primary management consideration.
- Use of heavy equipment during suppression activities if the fire threatens lives or property. This will be approved by the superintendent on a case-by-case basis, and a designated red carded resource advisor will accompany the equipment.

Fire Management Unit 1

Description: Lehmann Lovegrass Unit (550 acres)

FMU 1 is located in the southeastern corner of the memorial (Figure III-1) and is predominantly vegetated with the invasive species Lehmann lovegrass (*Eragrostis lehmanniana*). No prescribed fire will occur in this unit because little is known about Lehmann lovegrass' response to fire. Preliminary results from ongoing studies indicate that Lehmann lovegrass is fire tolerant, and disturbances such as fire may increase the population by opening areas up to be reseeded by the nonnative grass. It has shown a strong recovery after fire due to its large seed bank (Erika Geiger pers. comm. 2004). Therefore, aggressive suppression will occur in this unit. Manual and/or mechanical strategies will be used around structures to be protected.

Management Considerations within FMU 1:

- Minimize the unwanted spread of non-native species, primarily Lehmann lovegrass
- The use of heavy equipment during projects to reduce fuels may be authorized, primarily in the wildland urban interface and around structures.

Fuel Characteristics

There are two distinct units of fuel within FMU 1, both of which are Fire Behavior Fuel Model 2. One area consists of mixed native grasses, while the second consists of the exotic Lehmann lovegrass (*Eragrostis lehmanniana*). The native grasses have a more patchy horizontal continuity than does the exotic lovegrass, which consists of a "carpet" in a near monoculture dispersion. Both areas have scattered shrubs and agave, however these plants only minimally affect the fuel character of the area.

Fire Regime Alteration

The plant communities in FMU 1 are considered to be in fire regime condition class III. This class shows a high departure from the natural (historical) regime of vegetation characteristics and a high risk of loss of key ecosystem components.

Potential Fire Behavior

Expected fire behavior in FMU 1 will vary between the native and exotic fuel units (see Table III-1). Fire behavior will consist of a ground fire that will consume most grasses and some agave and may occasionally scorch and torch shrubs, especially in areas with higher fuel loading or

increased slope. Moderate rates of spread will be observed as well as moderate flame lengths that may challenge firefighters and prevent them from using direct attack with hand tools. Of the two fuel units, the Lehmann lovegrass area will burn more intensely and completely, due to its horizontal continuity and fuel loading, than the area with native grasses. Some short range spotting may occur as wind speeds increase.

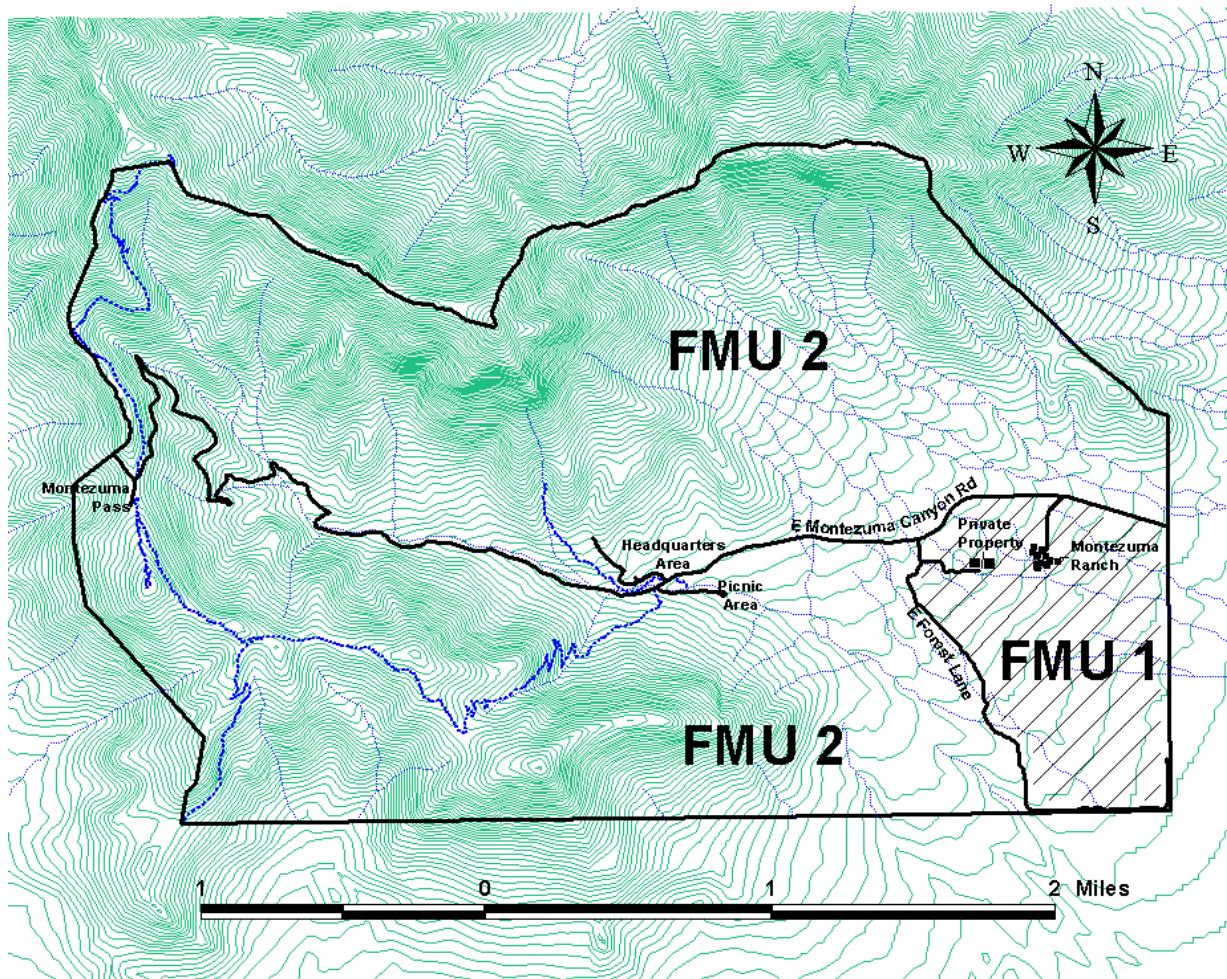


Figure III-1. Fire Management Units in Coronado National Memorial

Fire Effects by Fuel Type

Fire behavior in fuel model 2 is generally of low to moderate intensity and of short duration. Fire intensity is generally sufficient to consume all herbaceous surface fuels, kill shrubs, and scorch trees where present. Once ignited, grasses can readily involve larger fuels such as branches and fallen and standing trees. Backing fires generally kill more brush and trees than head fires due to resident heat exposure. In some areas where the horizontal continuity is broken, surface fires will have lower rates of spread and intensity than in areas with more continuous fuel. Broken fuel beds will have more of a mosaic pattern than continuous fuel beds (such as lovegrass) where consumption will be near 100% of the fine and dead fuels. Low intensity fires will clean up the

dead and down and act to prune lower branches as well as seedlings and regeneration. Higher intensity fires may scorch and top kill brush and trees where present. Succulents may experience some short-term effects, but generally will recover well afterwards. Soil sterilization should not be a problem unless there is significant fuel loading such as large piles.

Table III-1. Summary of Fire Behavior Potential by Fire Behavior Fuel Model In Normal and Extreme Fire Years For FMU 1.

Fire Behavior Fuel Model	Fire Behavior Normal Year	Fire Behavior Extreme Year	Representative Rates of Spread and Flame Length
2 Grass Group	Surface fire spreads rapidly through fine fuels. High rates of spread possibly associated with high winds. Some torching of over-story brush possible.	Fuel loading is higher due to more abundant rainfall. Fire behavior may increase as the moisture content decreases with decreasing moisture later in the season; fire behavior may be more active and burn more cleanly. Control problems may exist.	Rate of spread = 32 chains/hr Flame length = 6 feet

Note: Behave Plus calculations with 1, 10, 100 hour fuel of 8, 9, 10 respectively, live/herbaceous fuel moisture of 100%, and mid flame wind speed of 5 mph with zero slope.

Control Problems and Dominant Topographic Features

East Montezuma Canyon Road, East Forest Lane and the border road, which respectively form the northern, western, and southern boundaries of this FMU, will aid in the control of fires in this area. These administrative roads can be accessed by small vehicles, such as Type 6 engines, and may provide escape routes to the east for fire crews working in the area. However, the vehicle barrier built along the border road is a significant obstruction. The paved East Montezuma Canyon Road along the northern edge of this FMU provides easy access for large and small vehicles, but is also the primary escape route during fire incidents. There are no existing safety zones in this FMU.

Montezuma Wash is a relatively broad, dry, sandy drainage cutting through this FMU that is heavily vegetated, but may serve to slow a fire through the surrounding fine fuels. The continuing development of private property near the memorial's eastern boundary will create a small wildland-urban interface area that will be a control problem due to the surrounding heavy fine fuels. The memorial will consider the feasibility of developing a grass fire fuelbreak along the boundary in the future.

Values to be protected

- Two private residences with associated outbuildings lie on one-acre parcels near the northern boundary of the FMU. Protection of residences adjacent to and near the east boundary of the memorial will also be considered in all fire management activities. The

network of dirt roads being constructed outside the boundary may be developed as fuelbreaks in the future.

- A Remote Video Surveillance (RVS) system, maintained by the U.S. Customs Border Patrol, is located within the former Montezuma Ranch.
- In accordance with the General Management Plan, the memorial intends to remove the ranch structures and has already obtained concurrence from the State Historic Preservation Office for that action. Therefore, those structures would not be protected. An electric well pump in that same area may be developed as a water source for suppression activities and would be protected.
- A historic cemetery with stone grave markers and surrounded by a rock wall is located in this FMU and will be protected from damage by heavy equipment used in fire activities.

Fire Management Unit 2

Description: Oak Woodlands (5,250 acres)

FMU 2 comprises the majority of the memorial, except the southeastern corner, which is in FMU 1 (Figure III-1). FMU 2 is primarily oak woodlands with small open oak savannahs and native grasslands in the northeastern portion. In addition to fire suppression, prescribed fire and mechanical fuel treatments may be used in this unit in the future after additional planning. Prescribed fire may be used to reduce hazardous fuel accumulations and prevent high-intensity, widespread wildland fire. This FMU contains the developed areas of the memorial headquarters, picnic area, and Montezuma Pass. After additional planning, mechanical thinning and prescribed fire may be used around those areas to reduce the potential for loss of structures. Suppression responses in FMU 2 may be limited by safety concerns such as steep slopes and lack of safety zones and escape routes.

Management Considerations within FMU 2:

- Visitor use
- Adjacent federal land management agencies concerns
- Access difficulties
- Limit chemical retardant and/or foam agent use near abandoned mines and caves
- Firefighter safety around abandoned mines

Fuel Characteristics

Fuel characteristics within FMU 2 consist of mixed oak and juniper with some interspersed manzanita overstory and understory grasses and agave. Portions of FMU 2 have had some fire in the past, notably the Peak Fire in 1988. The unit consists of Fuel Model 5, regeneration where fire has occurred, and Fuel Model 6 elsewhere. In some areas, growth is heavy, with ladder fuels that may allow for increased torching. Fuel loading is heavier on north-facing slopes and lighter on south-facing slopes.

Fire Regime Alteration

The plant communities in FMU 2 are considered to be in fire regime condition class II, a moderate departure from the natural (historical) regime.

Potential Fire Behavior

Expected fire behavior in FMU 2 will vary depending on Fuel Model and aspect (see Table III-2). Fire behavior in Fuel Model 5 will consist of surface fire that may consume the entire grass component as well as regeneration from the Peak Fire of 1988. In areas where the fire did not burn, torching and crowning may be observed. Torching and crowning will be more likely on hot and dry days, in periods of drought, on south-facing slopes, and when fire is pushed uphill by wind. Moderate rates of spread and flame lengths may decrease or prevent initial attack ability with hand tools.

Fire behavior in Fuel Model 6 will consist of surface fire that may consume the entire grass component. Fuel Model 6 will be significantly more aggressive than other fuel models on the memorial, especially in areas where manzanita is found. Surface fire with increased chance of torching and crowning will be present.

Table III-2. Summary of Fire Behavior Potential by Fire Behavior Fuel Model In Normal and Extreme Fire Years For FMU 2.

NFDRS and Fire Behavior Fuel Model	Fire Behavior - Normal Year	Fire Behavior – Extreme Year	Representative Rates of Spread and Flame Length
5 Brush Group	Surface fire spreads at moderate rates through the shrubs and grasses.	Increased rates of spread and flame lengths.	Rate of spread = 14 chains/hr Flame length = 4 feet
6 Brush Group	Active burning with torching and isolated crown fire activity. Control is difficult due to flame lengths. Foliage may be volatile adding to the fire behavior.	Aggressive burning in all fuel levels, including wind driven independent crown fire; possible long range spotting; stand replacing fire probable. Control problems very probable.	Rate of spread = 30 chains/hr Flame length = 6 feet

Note: Behave Plus calculations with 1, 10, 100 hour fuel of 8, 9, 10 respectively, live/herbaceous fuel moisture of 100%, and mid flame wind speed of 5 mph with zero slope.

Fire Effects by Fuel Types

Fire behavior in Fuel Models 5 and 6 is generally of moderate intensity and of moderate duration. In drought or wind or steep slope conditions, fire behavior can be intense and hard to control. Fire intensity is generally sufficient to consume all herbaceous and most woody fuels in Fuel Model 5 and, when conditions are extreme (such as drought or high winds), in Fuel Model 6 as well. Once ignited, fire can spread at rapid rates and scorch and torch trees. In extreme

conditions, some wind-driven crown fires may be possible, especially in Fuel Model 6. Terrain will influence fire behavior and increase the likelihood of torching and crowning on up-hill runs.

Low live fuel moistures and frost kill will increase fire behavior as well, thus increasing consumption. Low intensity fires will serve to clean up dead and down, and prune lower branches. They will also consume most grasses, sprouts, and regenerated vegetation. Regeneration should be good regardless of fire intensity given the short resident time of the fire. Succulents may experience some short-term effect but should recover well. Soil erosion may be a problem when the fire consumes all of the ground vegetation and is followed by moderate or heavy rainfall before grasses re-establish themselves on slopes. Soil sterilization should not be a concern unless there are large piles involved.

Control Problems and Dominant Topographic Features

FMU 2 is characterized by rugged and steep terrain with numerous small side canyons branching off the main Montezuma Canyon. Except for the main road leading to Montezuma Pass, which has a 24-foot vehicle length limit, this FMU has no vehicular access points. The parking lot at Montezuma Pass, however, provides ample room for use as a safety zone, helispot, and small staging area for vehicles and firefighters. Montezuma Peak (elev. 7,676 ft) is a steep rock outcropping on the northern boundary of this FMU. Several developed hiking trails in the FMU provide access by foot and can be used as containment features under mild conditions. Water sources for firefighting are limited to those in the headquarters and picnic areas. Most rock outcrops in this FMU are not large enough or are too steep to be used as safety zones.

Values to Be Protected

- The developments in the headquarters area, including the Visitor Center, administrative offices, and staff residences will receive priority consideration in fire control and planning efforts. Similarly, the contact station at Montezuma Pass will also be protected.
- Sensitive species that may be found in this FMU include Mexican spotted owls, lesser long-nosed bats, and barking frogs. Some caves and mines provide habitat the bats and frogs.

IV. WILDLAND FIRE MANAGEMENT PROGRAM COMPONENTS

General Implementation Procedures

The first stage of fire management determines if a wildland fire will be suppressed or allowed to burn. This FMP has determined that all wildland fires will be suppressed using the appropriate management response. If initial attack is not successful in 24 hours following ignition, the memorial will initiate a WFSA.

Wildland Fire Suppression

Range of potential fire behavior

Wildland fires in grasslands can be expected to exhibit rapid rates of spread under the influence of wind and topography. Containment may be a significant problem during wind driven conditions. When fire behavior is low to moderate, existing barriers will be utilized to control the head of the fire. Under those conditions, grass fires can be expected to slow or stop at roadsides and trails. Grassland fires reaching the base of the hills should exhibit greatly increased rates of spread and flame lengths as they progress upslope, unless slowed or stopped by rock outcroppings and/or the lack of fine fuels.

Fires burning in the more heavily vegetated areas will, for the most part, stay on the ground and spread at a low to moderate rate, with occasional torching and intense fire behavior in isolated fuel concentrations. Uncontrollable wildland fire behavior in shrub fuels on level ground can be expected only under severe conditions. Rates of spread and burning intensities may be higher on steeper slopes or during windy conditions.

Precipitation, humidity, and temperature can significantly change fuel characteristics and alter fire behavior throughout the year. Generally, fuels will dry as spring (April–June) temperatures increase and precipitation decreases prior to the beginning of the summer monsoon season. Winter annual plants dry in dense stands to form fine fuels capable of carrying wildfire, and perennial vegetation dries to tinder as well. Lightning from monsoon thunderstorms can ignite these fuels, initiating the summer fire season. Throughout August, storms persist. Eventually, higher elevations usually become saturated with moisture, and fire activity is minimized. Once the monsoon season concludes in mid-September, the vegetation dries out again, and remaining storms may spark a few fall fires. The drying of fuels will again occur in the fall (September–November) before the beginning of the winter rainy season.

Fuel characteristics will vary from one year to the next and may not follow the general pattern listed above. In years of abnormally high winter precipitation, winter annuals, both native and exotic, experience a boost in productivity. This increased biomass may join fragmented fuels, such as trees and shrubs, and increase the chance of a spreading wildfire. Two consecutive wet winters, such as during El Nino years support an even more dramatic rise in fire activity. The first wet winter leads to high production of seed reserves that take advantage of the following season of abundant moisture and produce a denser stand of annuals than a single moist winter.

Preparedness Actions

Preparedness is accomplished prior to the fire season to ensure that the appropriate response and readiness, as directed by the FMP, can be carried out. When periods of high fire danger occur

outside the normal fire season dates, the appropriate action will be taken at that time. Preparedness activities include planning, inspections, fuel reduction, personnel qualifications, training, and equipment inventory, acquisition, and maintenance. The objective of the preparedness effort is to have a well-trained and equipped fire management organization capable of supporting cooperators with fire suppression activities within the memorial. Preparedness activities are outlined in Reference Manual 18 and are covered by normal memorial operating funds and FIREPRO support through Saguaro National Park, the memorial's lead FIREPRO park.

To ensure adequate fire preparedness, the memorial will work in cooperation with Saguaro National Park and the Coronado National Forest. The Fire Management Officer (FMO), located at Saguaro National Park, will advise the memorial on its fire operations per the Interpark Agreement and assist in obtaining FIREPRO funds for the memorial's fire program. The memorial has a long history of working with the Sierra Vista Ranger District of the Coronado National Forest on fire suppression and other fire program activities. In 2004, the memorial entered into an interagency agreement with the USFS to coordinate actions ensuring the memorial's fire program is adequately prepared.

Fire Prevention Activities

An active fire prevention program will be conducted in conjunction with other agencies to protect human life and property and prevent damage to cultural and natural resources and physical facilities. The fire prevention program will consist of public education, regulatory enforcement, equipment and safety inspections, and fuel reduction activities. Since the possibility of a fire spreading onto the memorial from surrounding lands exists, close cooperation with Coronado National Forest will be an integral part of the prevention effort. The memorial will work with state and other federal agencies in efforts to reduce human caused fires by the large number of illegal immigrants passing through the memorial.

The need to involve the public in fire prevention activities extends farther than the park level; it promotes an environmental ethic and an awareness of the potential impacts of wildfire by users of all public lands in the area. Support for the memorial's fire program will be accomplished by public awareness programs and field programs. Prevention activities may include: press releases, attending Coronado National Forest and HAFP meetings, preparing fire awareness displays, and increasing patrols during the fire season. Fire safety and awareness messages will be incorporated into visitor contacts and interpretive programs and posted on bulletin boards.

It is essential that employees be well informed about fire prevention and the objectives of the memorial's fire management program. The resource manager updates call up lists and distributes to all memorial staff annually before fire season begins. Further, employees must be kept informed about changes in existing conditions throughout the fire season. Trained employees need to inform the public of the potential severity of human-caused wildland fires and how to prevent them. Park owned and operated equipment needs to be inspected on an annual basis to insure that they do not cause fires; spark arrestors and other prevention equipment need to be in proper working order. Operational fire extinguishers need to be present on certain equipment during operation, etc.

Fire inspections of all building exteriors and the landscaping immediately surrounding the headquarters area will be made annually prior to the beginning of the fire season. Burnable fuel will be reduced around each building. The defensible space and fence lines around each residence will be kept clear of vegetation, according to the national FIREWISE standards that the NPS has approved.

During periods of high or extreme fire danger, fire prevention messages will be included in all interpretive programs. Emergency restrictions regarding camp stoves, fires in grills, smoking, or area closures may become necessary. Such restrictions, when imposed, will be coordinated with and coincide with restrictions implemented by other state and federal agencies.

Training

Departmental policy requires that all personnel engaged in suppression and planned-ignition fire duties meet the standards set by the National Wildfire Coordinating Group (NWCG). The memorial will work with Saguaro National Park and the Sierra Vista Ranger District on training classes and maintaining qualifications that meet or exceed all NWCG standards, and all personnel involved in wildland fire suppression will meet NWCG standards. The memorial will conform strictly to the requirements of the NPS wildland fire management qualification and certification system, which outlines minimum training, experience, and physical fitness requirements. NPS wildland fire training is based upon criteria specified within the training curriculum approved by NWCG. This curriculum is supportive of positions described within NWCG 310-1, *Wildland Fire Qualification Guide* and NWCG *Prescribed Fire Job Qualification Guide*.

Incident Qualification and Certification System qualifications (“red cards”) will be mandatory for all personnel engaged in fire suppression or prescribed fire duties. All personnel involved in fire management operations will have their qualifications, training, and experience entered into the Incident Qualification and Certification System, (ICQS). The superintendent will attend the Fire Management Leadership course for agency administrators as soon as possible. In addition, the Superintendent will review the Management Performance Requirements for Fire Operations at least once annually to insure compliance with agency administrator responsibilities. The Superintendent should shadow any local agency administrator in a large fire situation, if possible, to develop the knowledge needed to deal with large fire situations. The regional fire and aviation office can provide the Superintendent field mentoring opportunities as requested.

Records will be updated annually. Interested employees may be afforded training as time and funds allow, which includes meeting the NPS physical fitness standards for fire line duty. Efforts will also be made to qualify people for assignment to local fire overhead teams or single resource assignments on interagency fires in order to contribute to the overall mission of the NPS, to demonstrate our commitment to the interagency fire community, and to develop employee experience and skills.

Equipment and Supplies

The memorial will not maintain its own fire cache, instead it will use the fire cache maintained by the Sierra Vista Ranger District and located at their office. The nearest wildland fire engine is normally located in Palominas and has a typical response time of less than 15-30 minutes.

Fire weather and fire danger

There is one National Oceanic and Atmospheric Administration (NOAA) station located near the Visitor Center that records daily maximum and minimum temperatures and precipitation. A fire weather station was operated near the headquarters area from April 1993 through February 1998, but this period was not long enough to determine trends. The USFS Sierra Vista Ranger District tracks the National Fire Danger Rating System (NFDRS) fire danger indices and develops the thresholds used in prevention, initial response, large fire actions, and prescribed fire activities. Based on this NFDRS analysis, the memorial will coordinate its fire activities with the Sierra Vista Ranger District. The nearest permanent Remote Automated Weather Station (RAWS) station is located in Carr Canyon, approximately 8 miles north of the memorial, on the Sierra Vista Ranger District. There is also a temporary RAWS station on the private Lone Mountain Ranch approximately 7 miles west of the memorial.

Step-up Staffing Plan

The step-up plan is a documented procedure designed to direct incremental preparedness actions taken by memorial personnel in cooperation with the USFS in response to increasing fire danger. These actions are delineated by staffing classes. The five staffing classes, or stages, are ranked utilizing the burning index (BI) of the NFDRS and are described below. Because a rapid rate of spread can occur even at a low burning index in grasses, the grass Fuel Model C (Pine Grass Savanna) is used as the basis for staffing classes. Staffing classes are based on historical weather data at the Carr fire weather station (station ID 021411). An analysis was completed using Fire Family Plus to determine BI values that correspond to the various percentile weather classes. This analysis uses the period of March 1st through October 31st and all available years of data (1999 through 2004). The staffing class BI is related to percentile BI as shown below:

Staffing Class	Burning Index	Percentile BI
1	0 - 35	0 to 49 th
2	36 - 42	50 th to 74 th
3	43 - 48	75 th to 89 th
4	49 - 53	90 th to 96 th
5	54 +	97 th and above

Actions in each staffing class level include the activities authorized in the preceding lower level. During holidays and special events, the current staffing class will increase by one.

Staffing Class I, Burning Index 0-4 - No activity necessary. Normal eight-hour tours of duty with no change in routine operations. Red-carded employees are available to respond and take necessary action on any fire reported.

Staffing Class II, Burning Index 5-10 - No activity necessary. Normal eight-hour tours of duty with no change in routine operations. Red-carded employees are available to respond and take necessary action on any fire reported.

Staffing Class III, Burning Index 11-22 - Normal eight-hour tours of duty. Preparedness overtime for red-carded and/or law enforcement personnel may be authorized during special

events and holidays for extended patrols. Overtime will be authorized by the Superintendent in consultation with the Fire Management Officer (FMO) at Saguaro National Park to activate an emergency preparedness account. Red-carded personnel have personal protective equipment immediately available in their work vehicles or at their work site. Interpretive programs may carry fire awareness message. A lightning activity level (LAL) of 4-6 will move this class up to Staffing Class IV. Communications will be established with local interagency dispatch center.

Staffing Class IV, Burning Index 23-27 - Ensure red-carded personnel are available.

Increase patrols of visitor use areas. Firefighters will have fire packs on hand while on duty. Hand tools and bladder bags will be placed in vehicles. Lieu days and leave may be canceled for key management personnel and red-carded firefighters. Preparedness overtime is authorized per above procedures. Saguaro National Park FMO is notified. Activities are coordinated with interagency partners in an effort to provide consistent information to the public and memorial neighbors. When county/state/federal officials prohibit fires and/or smoking, signs will be posted in the visitor center, picnic area, and on bulletin boards. Interpretive programs will carry fire awareness message. An LAL of 4-6 will move this class up to Staffing Class V. Aerial detection flights with interagency partners will be coordinated to ensure memorial overflights.

Staffing Class V, Burning Index 28+- All activities in staffing class IV are continued.

Restrictions and closures of memorial areas may be deemed necessary. Staff is reminded about memorial evacuation procedures.

Note: During holidays and special events, add one staffing class. Also, extended periods of emergency preparedness account activity and long, above seasonal periods of higher staffing class may require the development of a severity request and funding to supplement memorial fire readiness. Severity requests will be coordinated with the Saguaro FMO.

Pre-attack Plan

No written or formal pre-attack plan exists for the memorial. Volunteer fire departments and the USFS Sierra Vista Ranger District have developed their own protocols and procedures for initial attack of fires within the memorial. Developed areas receive the highest priority in regard to any suppression action. The measures currently being taken to prevent the damage or destruction to these areas by fire include keeping the grass mowed around the propane tanks and near the residences. In addition, the residences have smoke detectors. The Visitor Center, maintenance shop, and administration offices have internal structural alarm systems that include smoke detection, and the alarms alert a private security company which then contacts the memorial and/or the Cochise County Sheriff's Office in case of emergency. There are hydrants (no hoses) located throughout the headquarters and picnic area that operate on gravity and without electricity. Both the Palominas Volunteer Fire Department and the Sierra Vista Ranger District are familiar with the hydrant locations.

A pre-attack plan is a comprehensive compilation of essential fire management information. A pre-attack plan is a quick reference guide to be used as incidents occur and contains sensitive resource information on locations of cultural sites and endangered species. The plan also includes evaluations of structures to ensure that their values (and hazards) are taken into consideration during fire suppression activities. Criteria and procedures for evacuations and

closures will also be addressed. The memorial will develop a pre-attack plan by 2007 that will then be reviewed annually prior to the fire season and revised as necessary. It will be added to this plan as an appendix.

Initial Attack Strategy

All fires will be reported to the superintendent, chief ranger, and resource manager and these personnel will maintain a communications log of the fire and begin a fire report. Initial reports to the Saguaro FMO will be made verbally so that staff can facilitate entry into the zone and national daily situation report, and to the NPS fire news daily reporting. All fires will be reported in detail to the Saguaro FMO for later input into the Wildland Fire Management Information computer program (WFMI). Fires will also be reported to the Southern Arizona Office superintendent if assistance from the cultural and/or natural resource specialist is needed for suppression activities.

Initial attack response will be requested from the Southeast Zone Coordination Center located in Tucson (520-670-4832). The superintendent or his/her designee (or Incident Commander) will request outside resources, if needed, through the 24-hour Southeast Zone Coordination Center dispatch. The superintendent will prepare a Delegation of Authority (Appendix F) for all extended attack Incident Commanders. All wildland fires will be managed with an Appropriate Management Response using the Incident Command System (ICS). For any suppression activity, the memorial will provide direction to the suppression organization for resources protection, public safety, and suppression impacts via resource advisors. The NPS agency representative will work closely with the command staff, and NPS resource advisors will be provided by the NPS as necessary. If a fire threatens to exceed the initial attack capabilities of the memorial and local cooperating agencies, the Incident Commander will request additional resources from the Southeast Zone Coordination Center.

The primary strategy on small fires will be a direct attack with hand tools and/or hose lays and water or an aerial attack in areas that cannot be quickly accessed on foot. Fires beyond the capacity of hand tools will be managed utilizing engines where road access is available. Fire lines will be constructed utilizing existing trails and roads wherever possible to minimize resource impacts. Also, fires will be contained using preexisting natural and artificial barriers where possible. Off-road vehicles may be utilized to save lives, buildings, and significant resources as directed by resource advisors. Fresh water sources are not locally abundant. However, portable pumps and complex hose lays ("wetlines") can be used in lieu of, or to supplement, constructed firelines. The use of structural fire fighting trucks and crews may assist in the rapid application of water to small roadside fires; however, the use of crews not trained in wildland firefighting will be avoided. Aerial retardant drops will be used when necessary to save lives, buildings, and significant resources, or to provide containment lines in areas inaccessible to ground crews. They will be avoided in areas where retardant is likely to adversely affect sensitive natural and cultural resources, such as near caves or flowing water courses. These will be identified in advance for all incoming resources by the park resource advisor.

As in any NPS area, the proper selection of suppression techniques is a critical issue. The superintendent reserves the right to deploy mechanized equipment or use site disturbing suppression techniques anywhere in the memorial, since the memorial does not contain

designated wilderness. The authority to use such techniques will be granted to the Incident Commander on a case-by-case basis. Use of these techniques among NPS initial attack personnel at the memorial will be approved through the normal chain of command.

Where wildland fires cross roads, the burned area adjacent to the road should be mopped up before the road reopens to prevent smoke from obscuring traffic. Mop-up will be performed as completely as possible in the burned areas of smaller fires. On large fires, complete mop-up will occur on all perimeters for at least 3 chains (approximately 200 feet) from the edges. The interior will be monitored regularly for new smoke or hot spots to insure no threats develop to the fireline.

If a fire threatens to exceed the initial attack capabilities of the memorial and local cooperating agencies, the Incident Commander will request additional resources from the Southeast Zone Coordination Center dispatch (520-670-4832).

Criteria for Initial Attack Response:

- Safety of the public and firefighters.
- Protection of developed areas and private property.
- Protection of cultural and natural resources.
- Availability of suppression resources and response times.
- Behavior of fire as determined by fuels, weather, and topography.
- Construction of minimal fire-line and use of Minimum Impact Suppression Tactics (MIST).
- Use of aircraft and mechanized equipment only where necessary to support above-listed criteria.

Confinement Strategy

Confinement is an Appropriate Management Response that may be used to minimize resource damage, provide for firefighter safety, and minimize costs. A confinement strategy may be selected as the Appropriate Management Response for initial attack, but cannot be selected solely to meet resource management objectives. Resource benefits may be a by-product, but the strategy must be based upon the criteria listed above. A confinement strategy may also be selected in the WFSA process when initial attack has failed to contain a wildland fire. This strategy may also be used to minimize resource damage, to provide for firefighter safety, and to prevent selection of an alternative that provides for the escalation of unreasonable costs with little additional protection.

Restrictions and special concerns

Retardant and foam will not be used within 300 feet of water sources, caves, and abandoned mines with water. Locations of these features will be given to the Incident Commander immediately upon their assignment to the fire by the park resource advisor. Any fire suppression activity in the vicinity of a known historic site or sensitive natural area will receive guidance from a designated resource advisor from the memorial.

Local Issues

The memorial depends on local (Palominas and Fry) fire departments and the USFS for initial and extended attacks on fires. Therefore, the memorial works closely with these agencies in planning, training, preparedness, and other fire management issues. Response times of these agencies to memorial fires are generally less than one hour depending on resource type, time of year, and fire danger.

Extended Attack Operations

Extended attack needs will be determined by considering threats to life, property, and memorial resources and the availability of suppression forces. When a fire escapes initial attack, a new strategy must be developed to suppress the fire. This selection process is accomplished through the development of a WFSA to document the AMR decision and guide outside resources. The superintendent or his/her representative will complete the WFSA. The Saguaro FMO or the Sierra Vista Ranger District fire staff will usually assist the Superintendent and memorial staff in preparation of a WFSA. An electronic version of a WFSA can be found at the USFS website at <http://www.fs.fed.us/fire/wfsa/>.

Minimum Impact Suppression Tactics

Minimum impact suppression tactics (MIST) will be employed to protect natural and cultural resources on all NPS lands. Natural and artificial barriers will be used as much as possible for containment. If necessary, fire line construction will be conducted in such a way as to minimize resource impacts.

Vehicle access for firefighters to areas of the memorial normally closed to the public will be made using existing administrative roads when possible. When off-road travel is determined to be necessary by firefighters, vehicle access will be made only after documented archeological sites, abandoned mines, and other sensitive resources have been marked for avoidance or park resource advisor accompanies all firefighter vehicles. Areas currently designated as emergency helispots will be used by helicopters with the approval of the superintendent. The map of these helispots will immediately be provided to incoming incident commanders by the park resource advisor. Heavy equipment such as crawlers, tractors, dozers, or graders will not be used in the memorial unless their use is necessary to prevent loss of lives, structures, or significant resources. Any use of such equipment will be specifically approved on a case-by-case basis by the superintendent or his/her designee, and that decision will be documented on the Delegation of Authority valid at that time.

Rehabilitation Guidelines

When a suppression action is taken, rehabilitation may be necessary. The most effective rehabilitation measure is prevention of impacts through careful planning and the use of MIST. The Incident Commander will initiate immediate rehabilitation actions, as soon as the risk of fire escape or threat has passed. Suppression rehabilitation will be directed toward minimizing or eliminating the effects of the suppression effort and reducing hazards (such as snags) caused by the fire immediately adjacent to developed areas. Sites impacted by fire suppression activities will be rehabilitated as necessary, based on approved standards developed by the park and given to the incident commander. If a small fire occurs, best practices through currently available science will be utilized to guide suppression rehabilitation. If trails are used as fire breaks and

fire suppression impacts occurred on those trails, some trail rehabilitation may be done. Short term fire suppression rehabilitation activities are a normal function of fire suppression and taken care of by incident resources and suppression fire accounts.

Long-term rehabilitation, or fire impact recovery, activities depend on the severity of the fire. The general rehabilitation procedure after small fires is to let things come back naturally. For example, no reseeding will be done after a small fire. The exception to this guideline is the rehabilitation in FMU 1. This area may be reseeded if current science shows that reseeding with native grasses will decrease the population of exotic grasses. Any recovery efforts, reseeding, long term rehabilitation, or other non-suppression impact rehabilitation can only be done after a Burned Area Emergency Rehabilitation plan is developed. This plan must be submitted to the regional BAER coordinator (the Regional fire ecologist) for funding approval, based on the current national requirements.

Records and Reports

The resource manager will complete Individual Fire Reports (DI-1202) for all wildland and prescribed fires and provide a printed copy to the Saguaro National Park FMO. Records of all fire reports will be consecutively numbered and entered into the WFMI computer system by the Saguaro National Park FMO. Fire account numbers will be requested from the Saguaro National Park fire program management assistant as soon as fire costs are incurred. Each report will include a brief narrative stating the cause of the fire, the action taken, and fire location. A permanent record of all fires will be kept in the memorial. Reports will be completed for fires within the memorial and for assistance rendered by the memorial to cooperating fire agencies. The Saguaro FMO will prepare an annual fire summary report which will contain the number of fires by type, acres burned by fuel type, costs, personnel utilized, hours of aircraft used, and fire effects. All fire related activity should be reported on the Inside NPS website: <http://data2.itc.nps.gov/fire/admin//index.cfm>; this report should be done as soon as the fire activity or mechanical treatment has started. At completion of the event, an entry to close out the activity is required.

Wildland Fire Use

No wildland fire use is anticipated at this time.

Prescribed Fire

Planning and Documentation

Annual Activities

No annual activities for the memorial are planned at this time; however, prescribed fires and mechanical treatments are being considered to reduce hazardous fuels in the memorial. All planning, priority setting, and implementation will be conducted in coordination with Saguaro National Park and the HAFP. If a determination is made that a specific treatment is required, that action will be subject to the requirements of NEPA, the NHPA, and other applicable regulations. All prescribed fire operations will adhere to NPS prescribed fire policies and procedures found in RM-18. An approved burn plan will identify needed resources, individual responsibilities, and timelines. These activities include scheduling of resources, coordination with neighboring

agencies and communities, and obtaining necessary permits and will be done in conjunction with the HAFP. All aspects of monitoring associated with prescribed fire applications (fire weather, effects, and behavior) and subsequent project critiques also will be done in conjunction with the HAFP.

Long-Term Prescribed Fire Strategy

The main purpose of prescribed burning at the memorial would be to reduce fuel loadings. Once appropriate planning has been done, NEPA consultation completed, and the 5 year treatment plan developed, then park partner and neighbor collaboration must be done. The projects must be entered into the National Fire Plan Operations and Reporting System (NFPORS) by March 15th of each year to be considered for funding the following fiscal year.

In FMU 1 no prescribed fire will be allowed due to the presence of exotic grasses and private inholdings. In FMU 2, prescribed fires may be used in conjunction with mechanical thinning along the main memorial road. This would be done to make the road a more defensible fuelbreak, thereby reducing the risk of fire spread.

Needed Personnel

The memorial does not have sufficient personnel trained to manage a prescribed fire. Personnel needed for a specific burn will be identified in each project burn plan. The memorial will participate in a coordinated approach to mutual prescribed fire programs with Saguaro National Park and the HAFP.

Fire Weather, Effects, and Behavior Monitoring and Prescribed Fire Project Critique

All aspects of monitoring associated with prescribed fire applications and subsequent critiques will be done in conjunction with the HAFP.

Reporting and Documentation Requirements

The forms necessary for documenting prescribed fire activities are outlined in RM-18 and will be completed as outlined by the memorial resource manager. A fire monitor will be assigned to collect all predetermined information and complete all necessary forms prior to, during, and after the fire. The resource manager will prepare a final report on the prescribed fire. Report information will include a narrative of the fire operation, a determination of whether objectives were met, weather and fire behavior data, map of the burn area, photographs of the burn, number of work hours, and final cost of the burn. In addition, the Individual Fire Report, DI-1202, and the Incident Record, are the responsibility of the resource manager and document all personnel and equipment costs involved in the burn. All records will be archived in the memorial's fire files for future use and reference, with copies provided to the Saguaro FMO. The memorial will coordinate with the Saguaro FMO on NFPORS entries, but Saguaro will be responsible for actual memorial data upkeep in NFPORS. When a 5 year fuels treatment plan is developed, it will be added to this plan as Appendix H as part of the FMP annual update procedure.

Historic Fuel Treatment Map

Recent fuel reduction has occurred only on a limited basis in the area immediately surrounding the headquarters area, as described earlier. Prescribed fires have not been used at the memorial in the past.

Local Prescribed Burn Plan Requirements

Memorial prescribed fire burn plans identify preplanned requirements (prescriptions) for initiating and continuing prescribed burn ignitions and operations. These prescriptions include:

- Minimum number of fire crew
- Specific skill certification requirements for the fire crew
- Other fire-related staff requirements
- Range of possible ignition dates
- Pre-ignition site preparation requirements
- Equipment needed on-site
- Fuel model(s) used
- Acceptable temperature, humidity, wind direction, wind speed, and fuel moisture ranges
- Predicted fire behavior
- Specific sensitive memorial resources to protect

Exceeding Prescribed Fire Burn Plan

If the prescribed fire escapes the burn unit and immediate efforts at control are not successful, it will be declared a wildland fire and suppressed. A WFSA will be completed and additional personnel and resources ordered as determined by the Incident Commander. If the fire continues to burn out of control, additional resources will be requested through Southeast Zone Coordination Center. An incident management team or other non-local resources may be requested to assume command of the fire.

Air Quality and Smoke Management

The memorial is located in a Class II airshed and the fire program will be in compliance with the Clean Air Act, as regulated by ADEQ. The objectives for smoke management and compliance with the Clean Air Act are similar to those for fire management: to encourage a natural process so long as it does not endanger public health and safety. The memorial will apply Best Management Practices when possible, and ignition will not occur if all prescriptions are not met. Smoke characteristics will be evaluated regularly by the memorial at the time of ignition. All ADEQ regulations will be followed. The park natural resource staff will work with the HAFP to identify vistas and smoke-sensitive areas (roads, developments, caves, mines) for which smoke management objectives will be created and to conduct outreach to visitors, neighbors, and employees to notify them when prescribed fires are planned. Notification and warning about smoke will be relayed to the public via signs, phone calls, media, and personal contact. Outreach activities will also provide information for public education on the values of both clean air and the natural process of fire and on the goal of the NPS to protect air resources while allowing the natural process of fire to the fullest extent possible.

Dense smoke within the memorial is generally unacceptable, but may be tolerated for short periods if dispersal is expected within a reasonable time frame (such as by late afternoon) or winds assure good mixing. It may be necessary to aggressively suppress fires when smoke affects a sensitive area (such as bat roost sites) or creates a significant public response. All fire activities may have to be curtailed when an extended inversion or air pollution episode is in effect. Traffic control measures will be undertaken in conjunction with local law enforcement

agencies when such episodes occur. Complaints regarding smoke will be documented and communicated to the superintendent.

Non-Fire Fuel Treatment Applications

Mechanical and manual treatments complement prescribed burning to reduce fuels that might sustain large-scale, high-intensity fires. Fuels around buildings, boundaries, roads, trails, picnic areas and other sites occasionally accumulate sufficient fuel density to create a hazard to real property, natural and cultural resources, or human health and safety. These fuels will be removed in coordination with Saguaro National Park, the USFS, and the HAFP.

Annual Activities

Annual activities to prepare for and implement the program will be accomplished in coordination with Saguaro National Park and the HAFP, and will:

- Ensure that approved burn/implementation plans are on file.
- Collaborate with partners on proposed projects. Submit fuels projects to NFPORS by March 15th each year.
- Do annual Fire Management Plan and Appendix H update signed by Superintendent.
- Ensure that all NEPA, NHPA and ESA compliance is completed.
- Obtain smoke permits if fuel piles will be burned.
- Contract mechanical treatment projects with non-government organizations when feasible.
- Monitor mechanical treatment units for ecological effects and program effectiveness.

Required Monitoring

Monitoring will be done to determine if project objectives were met. This monitoring may include photo plots, fuels assessments, and fire behavior type modeling to document desired modification of expected fire behavior as compared to obtained fire behavior following fuel treatment.

Critique Format

Accomplishment of objectives, methodology, cost effectiveness, safety issues, and resource damage are some of the topics to be discussed in a project critique. A written project completion report incorporating the findings of the critique will be forwarded to the Saguaro National Park FMO.

Funding and Cost Accounting

Funding requests will be entered in NFPORS by March 15th for the following fiscal year as coordinated by the memorial for individual treatments. Documentation of individual project costs will be submitted to the Saguaro National Park FMO for review. Expenditures will not exceed the authorized project amount. When projects come in under cost, the excess must be returned to the regional office ASAP so it may be utilized for other projects in the region.

Reporting and Documentation

All project forms will be completed as outlined by the resource manager, and the resource manager is responsible for preparing a final report on each project. Report information will

include a narrative of the project operation, a determination of whether objectives were met, map of the area, photographs of the site, number of work hours, and final cost of the project. A completion report will be forwarded to the Saguaro National Park FMO. All records will be archived with the memorial's fire records for future use and reference. Project closeout in NFPORS will occur within one week of completion of on the ground work, as coordinated through the Saguaro FMO.

Annual Planned Project List

Proposed projects may be submitted to the resource manager, who will compile a list of these projects and submit them to the superintendent for approval and prioritization. They will then be added to the FMP 5 year plan, appendix H, and submitted to the Saguaro FMO for entry into NFPORS by March 15th of each year.

Emergency Rehabilitation and Restoration

On January 19, 2001, the Department of the Interior issued new policy on burned area emergency stabilization and rehabilitation. The specifics of the policy can be found in 620 DM 3 DOI BAER Policy (2001 most current DM is 2004). The resource manager will formulate a rehabilitation plan for each fire suggest “appropriate memorial personnel will formulate a rehabilitation plan when appropriate or a request will be made of the regional BAER Coordinator for an appropriate team to assist the park with emergency rehabilitation planning needs”. The BAER plan will be submitted to the Regional BAER Coordinator through the Saguaro National Park FMO. Page 36, Fire Program Research Needs – since the last three bullets are really monitoring actions, please consider re-naming this section “Fire Program Research and Monitoring Needs”.

V. ORGANIZATIONAL AND BUDGETARY PARAMETERS

Organizational Structure

This section discusses areas of responsibility for implementation of the fire management program by staff position and the budget needed for this operation. The purpose is to clearly define areas of responsibility, provide clear direction and accountability, and further the development of a responsive fire management program.

The memorial's fire management program is coordinated with representatives of the Saguaro National Park Fire Management Office. These parties may meet to organize equipment and personnel needs relating to fire programs at the memorial. Figure V-1 shows the organizational structure of the memorial. The following is a list of the roles and responsibilities of each member of that organization along with the FMO.

Superintendent.

The fire management program is under the overall supervision of the superintendent according to departmental and NPS policy, fire management guidelines (DO-18), and all relevant laws and regulations. The superintendent is responsible for developing the memorial's fire management plan and ensuring that supplies, equipment, and qualified personnel are available to meet the goals of this plan. The superintendent also coordinates fire program activities with other agencies or landowners. Technical duties and accompanying responsibilities are delegated to other staff members.

Integrated Resource Program Manager (resource manager).

The resource manager ensures the coordination of the fire management program with resource management programs and rehabilitation of burned areas. This position will likely be the chief resource advisor on wildfires and should be red carded to enable them to be on the fireline. More specifically, the resource manager performs the following duties:

- Develops 5 year fuels treatment plan for Superintendent's approval, then coordinates with Saguaro to get them entered into NFPORS. Reviews prescribed fire plans to insure park interests are included.
- Prepares FMP annual update for the Superintendent's approval.
- Completes fire reports (DI-1202) and provides copies, along with other associated documents, to the Saguaro National Park FMO in a timely manner.
- Advises project fire overhead and Incident Commanders on potential suppression impacts to natural and cultural resources.
- Maintains specific knowledge regarding the locations of endangered and/or threatened flora and fauna populations and archeological sites.
- Coordinates, directs, and supervises wildland fire prevention, preparedness, suppression, and demobilization.
- Ensures fire equipment readiness during the fire season.
- Oversees initial attack fire operations, and within delegated authority, arranges for additional equipment and support as needed.
- Monitors fire danger conditions.

- Implements step-up plan activities.
- Recommends appropriate use restrictions.
- Provides fire-training opportunities to memorial personnel to maintain predetermined fire qualification skills.
- Prepares, reviews, and revises cooperative agreements with interagency cooperators and maintains liaison with them through annual meetings to review agreements.
- Advises Superintendent in development of Delegation of Authorities and WFSA's for incoming Incident Commanders.

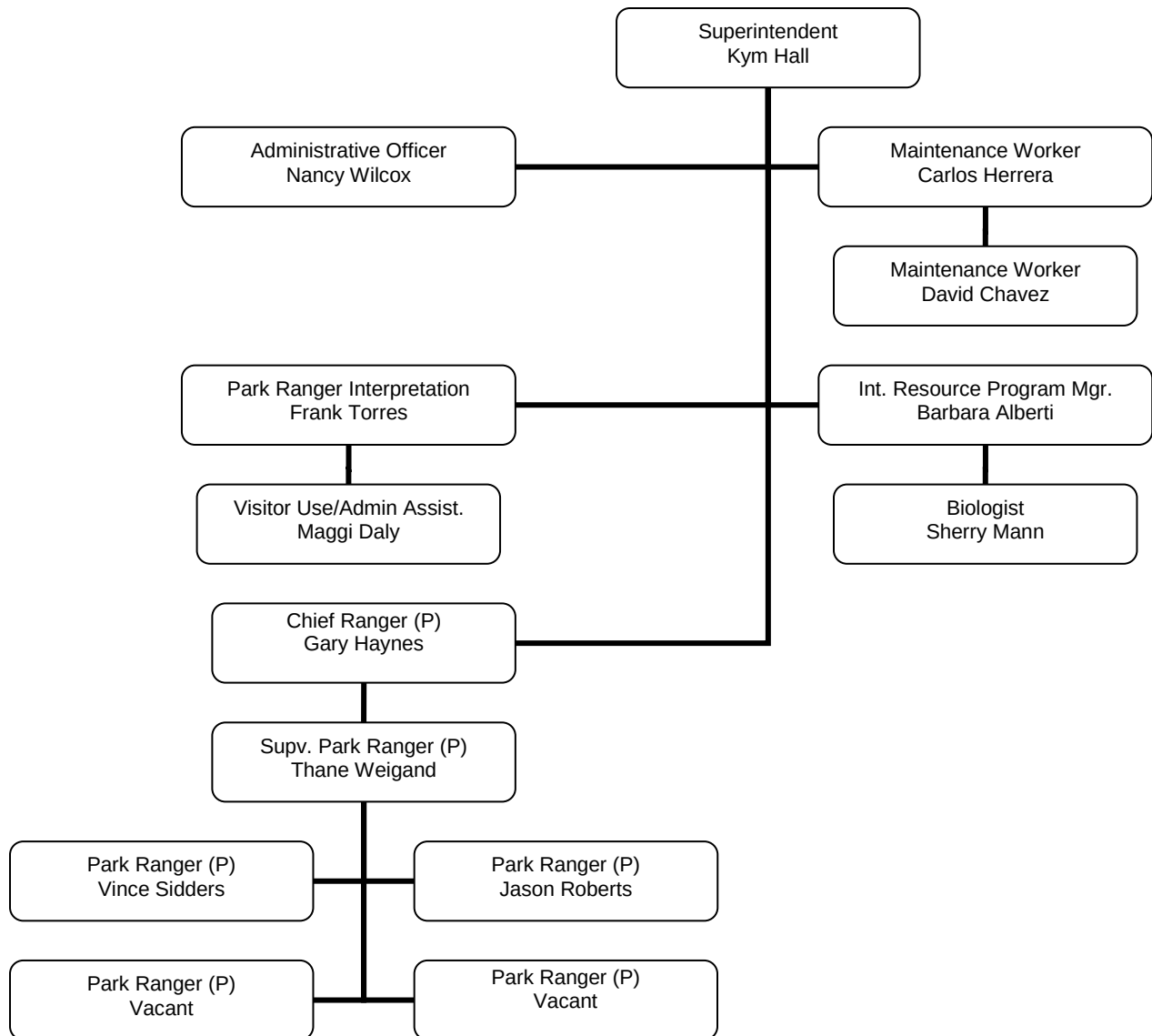


Figure V-1. Organization Chart for Coronado National Memorial

Chief Ranger.

The chief ranger oversees safety and security of the public and firefighters and provides emergency medical services. The chief ranger also enforces fire restrictions and closures, prepares Case Incident Reports, and prepares and updates the evacuation plan.

Park Ranger-Interpretation.

The interpretation ranger serves as the Public Information Officer during on-going fires and works closely with other Information Officers as appropriate. Coordinates fire related restrictions and closures with other agencies and partners. Specifically, the interpretation ranger prepares news releases regarding prescribed burns, special fire danger situations, closures, and other fire activities. The interpretation ranger also provides interpretive services and literature designed to inform the public of the memorial's fire management program, fire's role in the memorial's ecosystem, and the operations of the NPS fire management organization.

Fire Management Officer.

The fire management officer (FMO), located at Saguaro National Park, will advise the memorial in its wildland fire operations per the Interpark agreement. The FMO, in consultation with the resource manager, is responsible for the continual development, refinement, and implementation of the fire management program including funding assistance and hazardous fuel reduction.

Administrative Officer.

The administrative officer provides emergency personnel, procurement, and fiscal assistance during on-going fires.

FIREPRO Funding

No FIREPRO funding is used for the memorial positions listed above. The memorial may request, through the Saguaro National Park FMO, funding for FIREPRO budget support, and funding for implementation of the hazardous fuels reduction program, NFPORS.

Interagency Coordination

The memorial benefits from interagency cooperation with the USFS for fire preparedness, training, and suppression. The memorial also benefits from involvement with the Huachuca Area Fire Partners (HAFP). The HAFP is developing a strategy for the Huachuca Mountains to facilitate more efficient prescribed fire planning, fuels treatments, and suppression.

Key Interagency Contacts

- (Vacant), Fire Management Officer, Saguaro National Park, (520) 733-5130
- Bill Wilcox, Sierra Vista RD, Fire Management Officer, Coronado National Forest, (520) 378-0311 or 803-2815.
- James Leiendecker, Palominas Volunteer Fire Department, (520) 366-5400

Fire-related Agreements

Table V-1 lists the fire-related agreements associated with Coronado National Memorial, their purposes, and current statuses. Appendix E contains a copy of the interagency agreement between the NPS and Coronado National Forest. Copies of the other agreements are in the memorial's central files.

Table V-1. Fire-related Agreements for Coronado National Memorial

Title of Agreement	Agency	Purpose of Agreement	Status of Agreement
Interagency Agreement, April 2005	USFS, Coronado National Forest	Provides for mutually beneficial wildland fire management actions, shared administrative and emergency dispatch services, and shared non-emergency helicopter services	
Interpark Agreement, December 2000	NPS – Southern Arizona parks and Saguaro National Park	Provides professional and technical support for the fire management programs at all Southern Arizona units.	Agreement expires November 30, 2005.
Southeast Zone Coordination Center Charter (Memorandum of Understanding)	Arizona State Land Department (Tucson District), USFS, Bureau of Land Management, Bureau of Indian Affairs – Tohono O'odham and San Carlos Agencies, and U.S. Fish and Wildlife Service.	Establishes an interagency board with overall responsibility of coordinating fire management activities of agencies represented in the Zone.	Revision and signature required.
Interagency Agreement, April 2005	Arizona Department of Environmental Quality (ADEQ)	Maintains current air resource and interagency smoke management programs in Arizona.	Modules 1 & 2 of 1998 original IA remains valid; however, a revision of this IA is under development based on the new ADEQ Guidelines approved in Spring 2004.

VI. MONITORING and EVALUATION

Monitoring will be a part of all wildland fires and prescribed fires occurring in the memorial, if possible. Monitoring wildland fires will be appropriate and potentially valuable in mapping and documenting the growth of fires and their future effects on memorial resources and will help create a record of fire effects for future study, and will provide the memorial with expected fire behavior information. The memorial will implement long-and short-term monitoring to assess the effectiveness and accomplishments of the fire management program and to determine the effects of fire management activities on cultural and natural resources.

The memorial will work closely with the Saguaro National Park FMO and the HAFP in developing and implementing a fire monitoring program. Assistance in conducting fire monitoring activities, including the establishment and sampling of monitoring plots, will be coordinated through the Saguaro National Park FMO. A Fire Monitoring Plan, based upon the protocols found in the NPS Fire Monitoring Handbook will be developed as part of the implementation of this FMP by 2008. This handbook will serve as the source document providing monitoring needs with minor adaptations made for local situations and conditions. An electronic copy can be found at http://www.nps.gov/fire/download/fir_eco_FEMHandbook2003.pdf.

Because of downsizing of the NPS Fire and Fuels staffs, some activities such as long term monitoring will have to be done by the memorial staff. NPS monitoring objectives are being reevaluated nationwide to focus on short term questions related to burn objectives. Long term questions are appropriate for park level and fire research funding.

VII. FIRE RESEARCH

No new fire research is planned at this time. However, as the HAFP completes its fire management plan, the memorial, in coordination with the HAFP, expects to undertake fire research projects.

Past Fire Research

Morino et al. (1999) provided an assessment of the historical role of fire in the oak woodland in the memorial, predominantly Emory oak (*Quercus emoryi*), with lesser densities of Arizona white oak (*Quercus arizonica*) and Mexican blue oak (*Quercus oblongifolia*). The study concludes that it is probable that fires contributed to low tree densities in the area. Drainages, rocky sites, and areas next to topographic breaks most likely experienced less fire due to low amounts of burnable fuels.

Another study by Ffolliott and Bennett (1996) examined oaks after the 1988 Peak Fire, which started in neighboring Sonora, Mexico, and spread into Coronado National Memorial and the Coronado National Forest. While Abbott (1998) cautions against generalizing from single-fire studies, Ffolliott and Bennett's work showed that fire intensity had a significant effect on the post-fire response of individual trees. Fifty percent of oak trees on the low-intensity site showed no visible damage, while over 80% of oaks in the high-intensity area were root-killed.

Mary Gilbert (1997) performed a literature review of the ecology of fire in vegetation types found in the memorial. This review describes four biotic communities for the memorial based on work done by Ruffner and Johnson (1991). The first community type, Oak-Mexican Pinyon Pine-Juniper Woodland, is an open, evergreen woodland association and covers the largest area of the memorial. The literature reflects that there is not much data about this community's response to fire. A few studies show that scattered oaks and oak seedlings and associated shrubs are not largely affected by fire, and that almost all oak species resprout vigorously after a fire. The second community type, Grama Grass-Mixed Grass-Mixed Shrub Grassland, covers the second largest area of the memorial and is dominated by perennial grasses and shrubs. Literature reflects that fire is fairly common in this community type and reduces encroachment by woody plants. Most plant species are relatively flammable but also able to recover quickly in this community. The third community type, Western Honey Mesquite-Mixed Short Tree Woodland, is a riparian forest association found along the drainages of lower Montezuma Canyon and covers a minor area of the memorial. The literature reflects that plant mortality in this community type depends on the intensity of fire. Low-intensity fires have almost no effect, while mortality after moderate and severe burns moves up to 20 percent. The fourth and final community, Arizona Sycamore-Arizona Walnut-Oak Riparian Forest, is a mixed broadleaf forest found along drainages in Montezuma Canyon and comprises the smallest area of the memorial. This literature review found no mention of fire behavior and ecology for this community type.

In 2003, Sam Drake completed a study evaluating vegetation classification techniques for Sonoran Desert Network parks using Coronado National Memorial as a case study. The goals of the study were to evaluate and compare the cost and accuracy of small-scale aerial photography, or digital orthophoto quarter quads (DOQQ), to multispectral IKONOS satellite imagery. The

study included a combination of field reconnaissance and computer processing. Three field reconnaissance trips were conducted between March and June 2002 to familiarize the investigators with the landscape and for map refinement. Using a spotting telescope and DOQQ orthophoto transparencies, information on vegetation stratification, rock outcrops and burned areas was collected. The results of the study were two-fold: 1) a vegetation map to the National Vegetation Classification System Alliance level for the memorial and 2) the conclusion that a combination of the two mapping methods works best. The IKONOS satellite imagery was found to make a better base map, while using qualities from both programs to create a multi-layer supermap was preferred.

Fire Program Research Needs

The memorial intends to pursue or continue pursuing the following investigations in order to refine and properly implement the fire management program:

- Study effects of the non-native Lehmann lovegrass (*Eragostis lehmanniana*) on native plant populations and the natural fire regime. How to restore native grasses needs more work.
- Follow research currently underway at Chiricahua National Monument as it may benefit the fire program at the memorial. (For example, Chiricahua National Monument is conducting a comparative study of fire ecology in the monument with the fire ecology of the Ajos-Bavispe Forest Reserve in Mexico, which does not have an extensive history of fire suppression.)
- Continue to monitor known bat roost sites and survey other mines and caves for bat use, especially where prescribed burns will occur.
- Continue to monitor the memorial PAC and additional areas that contain primary constituent elements of owl habitat for the presence of Mexican spotted owls especially where prescribed burning will occur.
- Continue agave monitoring project and possibly expand sites to include the upper canyon

VIII. PUBLIC SAFETY

Safety Issues and Concerns

Public and employee safety is the first priority in every fire management activity. Topographic relief, limited surface water, limited access routes, proximity to the U.S.-Mexico border, and confined developed areas could combine to create hazardous situations under extreme fire behavior on the memorial. The Memorial will develop an evacuation plan within the next year.

The highest risk area is around the headquarters. The single road for entry and exit of the area presents potential problems from fire, smoke, and other hazards associated with evacuation of people by vehicle. Likewise, only one public road traverses the memorial; however, depending on the location of the fire, the dirt road along the international boundary may be used as an evacuation route. The public road is paved for three miles and then becomes a mountainous dirt and gravel road that leads west to Montezuma Pass and into USFS land. West of the Visitor Center the road has a 24-foot limit on vehicle length due to tight turns and switchbacks. Because the road is narrow and slow-going once it becomes gravel, the quickest way in and out of the memorial and back to the state highway is to return from Montezuma Pass toward the Visitor Center where the road is paved. Therefore, entrapment is possible with no means of vehicular escape, and vehicles could be cut off or exposed to heat while trying to escape to the state highway. Consequently, it is paramount that all visitors and employees are evacuated from the memorial when any potential fire danger threatens. The chief ranger will determine the appropriate evacuation route depending on fire location. Smoke is also a potential hazard to visitors, especially when obscuring roadways. Appropriate warning signs will be placed along roadways where visibility is affected.

Fires that spread from Mexico into the memorial or from the memorial into Mexico, illegal migrants who start fires, and migrants, drug smugglers, law enforcement officials, and helicopters moving through and near fire incidents are all safety concerns due to the memorial's proximity to the U.S.-Mexico border. The memorial is located approximately 15 miles west of the nearest border crossing in Naco, Arizona. The Border Patrol has installed Remote Video Surveillance systems to monitor activity near the border. An ancillary benefit of these cameras will be to survey the area for fires and the presence of illegal migrants and drug smugglers in the area where fires are burning or are scheduled to burn. Through the HAFP, the memorial will have the opportunity to coordinate and communicate fire activities with Mexico, mitigating the risk of fires crossing the border undetected. In addition, fire crews will coordinate with the memorial law enforcement team to sweep for people along the border when engaged in fire activities.

Safety Procedures

The memorial will implement a notification system to inform visitors of all fire activity through normal communication channels. A fire activity report will be updated, as significant changes occur, to inform memorial personnel of potential fire threat. Special precautionary steps will be taken to ensure the safety of memorial visitors during a fire. Memorial visitors will be informed of fire locations and safety precautions to be taken. One or more employees will be assigned the

task of keeping all visitors a safe distance from the fire. The superintendent may close all or a portion of the memorial including roads and trails when wildland fires pose an imminent threat to public safety. Local residents will be personally informed in advance of fire activity taking place in the memorial, including location, rate, and direction of spread.

IX. PUBLIC INFORMATION AND EDUCATION

Educating the public on the value of fire as a natural process is important to increasing public understanding and support for the memorial and the NPS fire management program. The interpretive division, in coordination with resource management staff and the HAFP, has the primary responsibility for providing this education. The memorial will use the most appropriate and effective means to explain the overall fire management program. This may include supplemental handouts, signage, personal contacts, or media releases. When necessary, interpretive presentations will address the fire management program and explain the role of fire in the environment.

The public information program will be developed with the HAFP as follows:

- Concepts of the natural wildland fire program will be incorporated in visitor contacts, publications and exhibits, interpretive talks and walks, and environmental education programs at schools and civic clubs.
- Appropriate interpretive materials will be prepared after fires have burned through an area and distributed to all visitors entering or viewing these areas.
- News releases will be distributed to the media as appropriate when noteworthy fires occur in the memorial and will provide an opportunity to disseminate information about fire program policy and philosophy.
- Fire management information will be provided to the public information outlets of neighboring and cooperating agencies and NPS offices.
- Fire management program discussions will be held with all employees and residents.
- The memorial will develop relationships with Mexico in an attempt to reduce human starts and risks caused by undocumented border traffic.

X. PROTECTION OF SENSITIVE RESOURCES

Natural and cultural resources that may be particularly sensitive to fire program activities are either known to be directly affected by fire, or they are rare, have close ties with the identity of the memorial, or are controversial in nature such that the fire program must address potential impacts on them. The following documents were prepared along with this FMP to address these issues:

- Cultural Resources Component for NHPA/sec 106 compliance (Appendix C).
- Decision Memorandum on the Action (to implement the FMP) and for the Application of Categorical Exclusions 1.12 and 1.13, (Appendix D)

This chapter reviews sensitive species and cultural resources individually. The U.S. Fish and Wildlife Service and Arizona Department of Game and Fish contributed to the species listed discussed below as possibly sensitive to fire management Coronado National Memorial. During discussions with USFWS on March 2 and June 13, 2005, it was decided that the memorial will do emergency consultation on suppression activities when wildland fire incidents occur. When long-term plans for fuel reduction and prescribed burn projects (Appendix H) are developed, the memorial will do programmatic consultation at that time. For any other fire management activities, project-specific consultation would take place prior to implementation and the memorial would design projects and apply conservation measures so that no adverse effects to sensitive species would occur.

If projects are proposed that may adversely affect sensitive species, they would be covered under a separate NEPA process and documentation. The memorial would consult with USFWS during the NEPA process for those projects. Consultation would include, on a project by project basis, identifying if the project is in potential habitat for sensitive species, surveying for those species, and notifying the USFWS of project design, location, and proposed conservation measures to support our determinations.

Cultural Resources

The entire memorial is listed on the National Register of Historic Places. Because archeological sites at the memorial lack significant burnable resources, fire is not a great threat. However, other cultural resources from the historic era do contain wood and other flammable materials. Fire suppression activities that disturb the soil can also be a significant threat. The Cultural Resource Component (Appendix C) was prepared by the Southern Arizona Office archeologist in compliance with NHPA/Section 106 and should be consulted for treatment and mitigation strategies before every planned action and during any unplanned action.

Actions to prevent or mitigate negative impacts by fire to cultural resources:

- A resource advisor will participate in briefings for overhead and crew members and will be available for field advice on the fire line.
- Resource base maps showing cultural resource site locations will be given to incident commanders on the firelines during wildland fires.
- Cultural sites will be marked and monitored during suppression through mop-up and rehabilitation.

- Mechanized equipment, when used, will be monitored through all aspects of fire suppression and rehabilitation and prevented from destroying culturally significant sites.
- Historic structures will receive the highest priority for protection from fire.
- After fires, archeologists will survey burned areas to record any additional cultural sites, features, or artifacts. These surveys cannot be paid by fire suppression funds, except to survey areas damaged by fire suppression activities.

Natural Resources

Geological Features

Caves and Mines

Caves and abandoned mines have significant value in the memorial due to their use by local fauna and their historic use by humans. The memorial has nine caves, the most noted being Coronado Cave, which is a natural limestone cave approximately 600 feet long, 20 feet high, and 70 feet wide. Before it was designated a national memorial, the area was extensively mined and has over 60 shafts, adits, and large prospects documented. Many of these mines and caves are potential roost sites for bats. The memorial has installed bat-friendly gates at two adits to keep out curious visitors while still allowing for movement of bats and other small animals. Many other mines have cable nets across their entrances to prevent human access. Several mines serve as important perennial water sources for wildlife. Chemical components of fire retardant pose potential impacts on animals using those water sources. These impacts are related to direct application to streams and ponds (USGS 2000), although indirect impacts from filtration into water tables and standing water in caves and mines could occur. These indirect impacts are not well documented; however, possible toxic components are buffered during filtration through surrounding soil and parent material.

Fire Considerations: Regular surveys of mines likely to serve as bat habitat will be on-going to gather baseline data on bat use. Surveys of mines known to be used by bats will be conducted in areas to be affected by prescribed burns. Use of fire retardants and suppressants will be avoided within 300 feet of mines and caves.

Sensitive Animals

Accipiter gentiles

The Northern goshawk is known to nest in pine-oak habitat in southeastern Arizona (Arizona Game and Fish Department 1996) and is listed as a rare sighting on the Coronado National Memorial bird list. Loss of nesting habitat—large, mature trees—is a concern of the Arizona Game and Fish Department.

Fire considerations: Prescribed burns and other fuels treatments should prevent high-intensity fires that might threaten large, mature trees. Low- or moderate-intensity fires should renew habitat for prey species.

Canis lupis baileyi

Mexican gray wolves were eliminated from the southwestern U.S. by around 1950 as a result of predator control programs. Historically the subspecies occurred in southeastern Arizona, southwestern New Mexico, southwestern Texas, and throughout the Sierra Madre of Mexico.

Wolves inhabit oak and pine/juniper savannas in the foothills and mixed-conifer woodlands above 4,000 ft (USFWS 2001). The Mexican gray wolf was listed as endangered without critical habitat. An experimental population was introduced into the Blue River Primitive Area, located on the Apache-Sitgreaves and Gila National Forests, in the hopes of re-establishing the species.

Fire considerations: Wolves are not known to occur in the memorial, but should any travel through the area, fire is not likely to directly affect them due to their great mobility. Indirectly, fire could lessen their cover in travel areas or corridors and locally reduce small mammal prey species in the short term.

Falco femoralis septentrionalis

The Northern aplomado falcon was not seen in the U.S. between 1952 and 1997. Aplomado falcon habitat is open grassland between 3,500 and 9,000 ft in elevation, and the species formerly occurred in Cochise County. Conversion of grassland habitat to shrublands, overcollecting, and DDT-induced reproductive failure explain its severe decline. A reintroduction program was initiated in south Texas beginning in 1993. "A small population has been confirmed in northern Chihuahua and Tamaulipas, Mexico, and several confirmed sightings have been made in New Mexico and Texas, but not Arizona, since 1995" (USFWS 2001). In 2002, at least one nesting pair was known to occur on a ranch in New Mexico.

Fire considerations: While Chihuahuan Desert grassland is potentially suitable habitat for this bird, a much larger grassland landscape adjacent to the memorial extending east and south into Mexico provides more likely habitat for this falcon. Fires will be actively suppressed in FMU 1, Lehmann lovegrass-dominated grasslands. Fast moving, less destructive fires should burn through the small patches of native grasslands in FMU 2 quickly and renew habitat for prey species.

Falco peregrinus anatum

The American peregrine falcon was delisted in 1999 after recovering from a precipitous, post-World War II decline. DDT and other persistent organochlorines caused high rates of reproductive failure in the falcon that led to its listing as endangered in 1970. In the years prior to delisting, population target numbers were exceeded two-fold in Arizona (Federal Register 8-25-1999). Peregrines feed on birds and occasionally bats hunted from the air. Ledges on cliffs are traditional nesting habitat, but since the 1980s, birds have nested on equivalent man-made structures in urban areas. Peregrines are rarely sighted in the memorial, although they may use the steep rocky slopes in the northwestern quadrant of the memorial and forage throughout the memorial.

Fire considerations: Prescribed burns and other fuels treatments should prevent high-intensity fires in areas used by peregrines. Possible nesting sites in rocky areas are relatively safe from fire. Low- or moderate-intensity fires should renew habitat for prey species.

Leptonycteris curasoae yerbabuenae

The lesser long-nosed bat is a nectar feeder that migrates between wintering grounds in the drier parts of Mexico and breeding/summering grounds in northern Mexico, including Baja California, southern Arizona, and New Mexico. Lesser long-nosed bat migrations coincide with the

availability of the pollen and fruit of columnar cacti (cardon and saguaros) and the nectar and pollen of blooming agaves. In its summer range the species usually forms large maternity colonies of females where they give birth to their young; these maternity roosts are typically in caves or abandoned mines. The bat was listed by the U.S. Fish and Wildlife Service (USFWS) as federally endangered, primarily due to loss of roosting habitat and vulnerability to disturbance of maternity colonies and other roosting sites. In 1993, a significant post-maternity roost was discovered in an abandoned mine in the memorial. It is generally occupied from July to early October (Petryszyn and Alberti n.d.) with a population of approximately 10,000 to 30,000 adult females and immature bats. Palmer's and Parry's agave (*Agave palmeri* and *A. parryi*) in the memorial are locally important food plants for these bats.

Fire considerations: Fire is not likely to affect any bats in the memorial directly due to their mobility and the memorial's planned aggressive suppression of fire near roost sites when bats are present. In addition, fire retardant will not be used within 300 ft of caves and mines. Fire can indirectly affect the bats by destroying agaves. Where hot-burning, non-native Lehmann lovegrass is the dominant grass surrounding them, fire puts agaves at higher risk for destruction. Less-destructive burning, such as would occur in a grassland of native species, would not necessarily consume the plant. In accordance with USFWS guidelines, the memorial will try to keep agave mortality from prescribed fire at less than 20% of the plants in any given location.

Panthera onca

The jaguar was listed as endangered in the United States in March 1972. Shooting, predator control, and habitat loss are thought to have reduced populations historically in the Southwest (USFWS 2000). Individual jaguars have been seen and photographed infrequently in southern Arizona during the last few decades. Observers have spotted the cats in Sonoran desert scrub up through subalpine conifer forest. In 1996 a sighting occurred in Cochise County, and several sightings have occurred as recently as 2004 in Santa Cruz County. It is possible that jaguars may travel in and through the memorial.

Fire considerations: Fire is not likely to affect jaguars directly due to their mobility. Fire could indirectly hamper their travel and deplete foraging cover, and a localized change in deer patterns on the landscape may occur as forage burns and re-sprouts later in the growing seasons following a fire.

Strix occidentalis lucida

The Mexican spotted owl is distributed from central Mexico through the mountains of Arizona, New Mexico, and west Texas, and into southern Utah and Colorado. Most of the literature portrays preferred habitat as mature montane forest and woodland and steep canyons, but there are areas in the Southwest with owls that have different features—like the more open oak woodlands in the memorial. The Mexican spotted owl, one of three subspecies, is listed as threatened by both the USFWS and the Arizona Game and Fish Department. Coronado National Memorial is included in critical habitat designation.

Records indicate spotted owls were detected in the memorial either by visual sightings or vocalizations each year between 1997 and 2000 but since then they have not been detected. However surveys were incomplete in some years. All sightings occurred within the area

submitted to the USFWS for designation as the Upper Montezuma Canyon protected activity center (PAC).

Fire considerations: Fire is not likely to affect Mexican spotted owls directly due to their mobility. However, smoke, heat, loss of owl prey species (due to loss of prey species habitat), and noise could have indirect effects. Smoke will be managed according to Arizona Department of Environmental Quality's (ADEQ) permit requirements. Fire operations must proceed with helicopter flights over PACs at 500 ft above ground level during the nesting season (March through August). By conducting low-intensity prescribed fire, and managing natural ignitions to meet the low heat objectives in the burn plan, (including fitting appropriate fire prescriptions), the memorial will minimize heat effects to known owls. Resource advisors with knowledge of Mexican spotted owls must be on site during burning operations and will participate in decisions related to escaped prescribed fire and suppression actions. Loss of prey species will likely occur in burned areas for the first growing season post-burn. Monsoon rains will allow grasses and forbs to grow, with small mammals fully expected to return to pre-burn numbers. Canopy closure in the habitat is expected to remain the same percent after burning.

Eleutherodactylus augusti

The barking frog is a nocturnal, terrestrial-breeding amphibian listed as a species of special concern in Arizona (AGFD, in prep.). Its distribution ranges from southern Mexico along the Sierra Madre Oriental into Texas and New Mexico and along the Sierra Madre Occidental into southern Arizona. In southern Arizona, barking frogs have been documented only from a few canyons and primarily inhabit naturally occurring disjunct limestone outcrops in mountain canyons (Schwalbe and Goldberg, in press). They live underground for most of the year and are active above-ground only at night during the summer monsoon season (Goldberg 2002).

Vegetation in areas where barking frogs are found in the memorial is primarily a mixed grass shrub savanna dominated by sotol, agave, ocotillo, and Mearn's sumac at lower elevations and oak woodlands with manzanita and agave at higher elevations.

Fire considerations: Fire is not likely to affect barking frogs directly due to their mobility and short above-ground activity period; however, indirect effects from suppression tactics and habitat changes following a fire may affect this species. Chemical components of fire retardant pose potential impacts on animals using those water sources. These impacts are related to direct application to streams and ponds (USGS 2000), although indirect impacts from filtration into water tables and standing water in caves and mines could occur. These indirect impacts are not well documented; however, possible toxic components are buffered during filtration through surrounding soil and parent material. Use of fire retardant will be avoided within 300 feet of the limestone hills and other areas known to provide habitat for barking frogs. Fire line construction and other ground disturbing activities will also be avoided in those areas. Fire may reduce cover in foraging areas. Due to the patchy nature of vegetation interspersed with open rocky areas on most of the hills used by barking frogs, fire intensity will likely be moderate and consume grasses with occasional scorching of shrubs and trees. New growth should quickly regenerate the habitat. Where manzanita is found, there will be an increased chance of torching with more aggressive fire behavior.

Developments, Infrastructure, Improvements

The developments, infrastructure, and improvements that require special consideration are the visitor center, administrative office, residences, maintenance facility, picnic area, and the Montezuma Pass restrooms and contact station. Because visitors, employees, or both occupy these buildings, it is of utmost importance to protect them. The memorial's visitor center is open every day from 9:00 a.m. to 5:00 p.m. except Thanksgiving Day and December 25th. Within the visitor center is the museum. Fires or efforts made to suppress fires could easily damage objects on exhibit. Most administrative records are stored in office computers, file cabinets, and cupboards. The three residences are potentially occupied year-round depending on staff levels. The number of employees at the maintenance facility and its hours of operation vary with staff levels and season.

Actions to prevent or mitigate negative impacts:

- Base maps showing structure locations will be given to incident commanders on firelines during wildland fires.
- Buildings occupied by the public and employees will receive highest priority for protection from fire.
- All buildings will be evacuated as soon as the situation warrants.
- If possible, power to buildings will be turned off prior to evacuation.
- As time permits, buildings will be protected from wildfire by removing debris around them, constructing firelines, laying wet lines, etc.

More extensive descriptions of the memorial's environment can be found in the following documents:

- Coronado National Memorial General Management Plan (NPS 2004)
- Coronado National Memorial Natural and Cultural Resources Management Plan (NPS 1998)
- Soil survey of Coronado National Memorial, Arizona; Technical Report No. 63 (Denny and Peacock 2000)
- Comparative Analysis of Remote Sensing Techniques For Vegetation Mapping of Sonoran Desert Parks (Drake 2003)
- Fire Regime Assessment for Coronado National Memorial, Arizona (Morino et al. 1999)
- Inventory of the Terrestrial Mammals of Coronado National Memorial, Cochise County, Arizona (Swann et al. 2000)
- Inventory and Recommendations for Long-term Monitoring of Reptiles and Amphibians At Coronado National Memorial, Arizona (Swann and Schwalbe 2002)
- Surface Water Quality Monitoring Overview and Assessment Report (Sprouse et al. 2002)

XI. FIRE CRITIQUES AND ANNUAL PLAN REVIEW

All wildland fires and fire-related incidents will be reviewed within 30 days after a fire has been declared out. All reviews will be conducted as constructive critiques aimed at determining the facts related to the specific fire or fire management program. They will identify commendable actions, techniques and decisions, as well as areas that need improvement. The superintendent or his/her designated representative will conduct the review, and the level of review for serious incidents, accidents or property damage would be coordinated with the regional FMO. The superintendent will appoint other qualified persons, including the resource manager, chief ranger, and Saguaro National Park FMO, to be a part of the review. An interagency investigation team will review all entrapments and fire shelter deployments; serious incidents such as these, property loss, or injuries, etc. will immediately be reported to the Saguaro and Regional Fire Management Officers.

The FMP will be reviewed and updated annually, with the superintendent signing the update and providing a copy to the regional FMO. The compliance documents should be reviewed as part of the process to insure they are still adequate. A major revision may be required in 5 years if the NEPA or NHPA considerations or plan parameters have radically changed. The annual review and update should be completed prior to each year's fire season. If fuels projects, (RX or mechanical), are anticipated, then they should be formulated into a 5 year plan which will be incorporated as Appendix H of this plan. The park will coordinate NEPA/NHP approval for the projects, and the SAGU FMO will be responsible for NFPORS entry.

XII. CONSULTATION AND COORDINATION

NATIONAL PARK SERVICE	
Michele Girard	Ecologist, Southern Arizona Office
Kevin Harper	Archeologist, Southern Arizona Office
Eva Long	NEPA and Section 106 Compliance Specialist, Intermountain Region
Kevin Parrish	Fuels Management Specialist, Saguaro National Park
Chuck Scott	Fire Management Officer, Saguaro National Park

UNIVERSITY OF ARIZONA SONORAN DESERT RESEARCH STATION	
Cori Dolan	Research Specialist
Brooke Gebow	Senior Research Specialist

CORONADO NATIONAL FOREST	
Steve Gunzel	District Ranger, Sierra Vista Ranger District
Bill Wilcox	Fire Management Officer, Sierra Vista Ranger District

U.S. FISH AND WILDLIFE SERVICE	
Brian Wooldridge	Fish and Wildlife Biologist, Arizona Ecological Services

STATE HISTORIC PRESERVATION OFFICE	
James Garrison	State Historic Preservation Officer

Appendix A. References Cited

- Abbott, L. 1998. The ecological role of fire in southeastern Arizona oak woodland ecosystems. Report to The Nature Conservancy from the University of Arizona School of Renewable Natural Resources. 116 p.
- Arizona Game and Fish Department, eds. In prep. Wildlife of Special Concern in Arizona. Nongame and Endangered Wildlife Program. Arizona Game and Fish Department, Phoenix, Arizona.
- Ffolliott, P. F., and D. A. Bennett. 1996. Peak fire of 1988: its effects on Madrean oak trees. P. 235-237 in P. F. Ffolliott, L. F. DeBano, M. B. Baker, Jr., G. J. Gottfried, G. Solis-Garza, C. B. Edminster, D. G. Neary, L. S. Allen, and R. H. Hamre, Technical Coordinators. Effects of Fire on Madrean Province Ecosystems. USDA Forest Service General Technical Report RM-GTR-289. Fort Collins, CO.
- Denny D.W. and C.R. Peacock. 2000. Soil Survey of Coronado National Memorial, Arizona; Technical Report No. 63.
- Drake, S., H. Rodriguez-Gallegos, and S. Skirvin. 2003. Comparative Analysis of Remote Sensing Techniques for Vegetation Mapping of Sonoran Desert Network Parks. Prepared for the National Park Service Sonoran Desert Network Inventory and Monitoring Program by the Arizona Remote Sensing Center Office of Arid Lands Studies at the University of Arizona. 42 p.
- Escobedo, F. J., P. F. Ffolliott, G. J. Gottfried, and F. Garza. 2001. Fire frequency effects on fuel loadings in pine-oak forests of the Madrean Province. USDA Forest Service Research Note RMRS-RN-10. Fort Collins, CO.
- Gilbert, Mary. 1997. Fire Ecology, Effects and History Literature Review for Coronado National Memorial. National Park Service. Coronado National Memorial. 35 p.
- Goldberg, C. S. 2002. Habitat, spatial population structure, and methods for monitoring barking frogs (*Eleutherodactylus augusti*) in southern Arizona. M. S. Thesis, University of Arizona, Tucson, Arizona.
- Leopold, A. 1924. Grass, brush, timber, and fire in southern Arizona. *J. For.* 22(6):1-10.
- LeSueur, H. 1945. The ecology of the vegetation of Chihuahua, Mexico, north of parallel twenty-eight. Publ. 4521, Univ. Texas, Austin.
- Marshall, J. T. 1957. Birds of the pine-oak woodland in southern Arizona and adjacent Mexico. *Cooper Ornithological Soc., Pacific Coast Avifauna* 32:1-25.
- Marshall, J. T. 1963. Fire and birds in the mountains of southern Arizona. *Tall Timbers Fire Ecology Conf.* 2:135-141.

- Morino, K., C. Baisan, and T. Swetnam. 1999. Fire Regime Assessment for Coronado National Memorial, Arizona. Prepared for the National Park Service, Coronado National Memorial by the Laboratory of Tree Ring Research at the University of Arizona.
- National Park Service. 1998. Coronado National Memorial Natural and Cultural Resources Management Plan.
- National Park Service. 1999. Reference Manual 18 – Wildland Fire Management. U.S. Department of the Interior, National Park Service, Washington, DC.
- National Park Service. 2001. Management Policies. U.S. Department of the Interior, National Park Service, Washington Office, Washington, DC.
- National Park Service. 2003. Director’s Order 18 – Wildland Fire Management. U.S. Department of the Interior, National Park Service, Washington, DC.
- National Park Service. 2004. Coronado National Memorial General Management Plan.
- Neiring, W. A. and C. H. Lowe. 1984. Vegetation of the Catalina Mountains: community types and dynamics. *Vegetation* 58:3-28.
- Petryszyn, Y. and B. Alberti. “Bat Survey, Monitoring, and Activity at Coronado National Memorial.” Draft report in preparation for the National Park Service.
- Pyne, S. J. 1984. *Introduction to Wildland Fire: Fire Management in the United States*. John Wiley & Sons, New York. 455 p.
- Ruffner, G.A. and R.A. Johnson. 1991. Plant ecology and vegetation mapping at Coronado National Memorial, Cochise County, Arizona. Technical Report 41, Cooperative Park Studies Unit/National Park Service, Tucson, AZ. 75 p.
- Schwalbe, C. R. and C. S. Goldberg. In press. Barking frog (*Eleutherodactylus augusti*). In M. Lannoo, ed. *Status and Conservation of United States Amphibians, Volume 2*. University of California Press, Berkeley, CA.
- Sellers, W.D. and R.H. Hill. 1974. *Arizona climate 1931-1972*, revised second edition. Editors. University of Arizona Press, Tucson, Arizona.
- Sprouse, T., R. Emanuel, B. Tellman. 2002. Surface Water Quality Monitoring Overview and Assessment Report to the Sonoran Desert Network National Park Service from the Water Resources Research Center of the University of Arizona.
- Swann, D.E., C.R. Schwalbe, A.J. Kuenzi, and B. Alberti. 2000 “An Inventory of the Terrestrial Mammals of Coronado National Memorial, Cochise County, Arizona.” Report prepared for

the National Park Service, Southern Arizona Office, by University of Arizona, Cooperative National Park Resources Studies Unit.

Swann, D.E., and C.R. Schwalbe. 2002. "Inventory and Recommendations for Long-term Monitoring of Reptiles and Amphibians at Coronado National Memorial, Arizona." Report prepared for the National Park Service, Southern Arizona Office, by University of Arizona, Cooperative National Park Resources Studies Unit.

Swetnam, T. W., C. H. Baisan, P. M. Brown, and A. C. Caprio. 1989. Fire history of Rhyolite Canyon, Chiricahua National Monument. Final report to Chiricahua National Monument from Laboratory of Tree-Ring Research, University of Arizona, Tucson, AZ. 38 p.

U.S. Department of the Interior, U.S. Department of Agriculture. December 18, 1995. *Federal Wildland Fire Management Policy and Program Review, Final Report*, Washington D. C.

U.S. Department of the Interior, U.S. Department of Agriculture. May 2002. *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10 Year Comprehensive Implementation Plan*. Washington D. C.

U.S. Fish and Wildlife Service. 2000. Jaguar. Abstract by Arizona Ecological Services Office, Paul Barrett, lead. <http://ArizonaES.fws.gov/Documents/Redbook/Jaguar%20RB.pdf>

U.S. Fish and Wildlife Service. 2001. Northern aplomado falcon. Abstract by Arizona Ecological Services Office, Thetis Gamberg, lead. <http://ArizonaES.fws.gov/Documents/Redbook/Northern%20Aplomado%20Falcon%20RB.pdf>

U.S. General Accounting Office, April 13, 2000. Managing Impacts of Wildfires on Communities and the Environment, and Protecting People and Sustaining Resources in Fire-Adapted Ecosystems: A Comprehensive Strategy. Washington D. C.

U.S. Geological Survey. 2000. The effects of UVB radiation on the toxicity of fire-fighting chemicals. U.S. Geological Survey, Columbia Environmental Research Center. Columbia, Missouri. 43pp.

Wallmo, O. C. 1955. Vegetation of the Huachuca Mountains, Arizona. *Amer. Midl. Nat.* 54:466-480.

Appendix B. Definitions

Appropriate Management Response – Specific actions taken in response to a wildland fire to implement protection and fire use objectives.

Expected Weather Conditions – Those weather conditions indicated as common, likely, or highly probably based on current and expected trends and their comparison to historical weather records. These are the most probably weather conditions for this location and time. These conditions are used in making fire behavior forecasts for different scenarios.

Experienced Severe Weather Conditions – Those weather conditions that occur infrequently, but have been experienced on the fire site area during the period of weather records. For example, rare event weather conditions that significantly influence fires may have occurred only once, but their record can be used to establish a baseline for a worst-case scenario. These are the most severe conditions that can be expected. These conditions are used in making fire behavior forecasts for different scenarios.

Fire Complexity Analysis – A process for assessing wildland fire organizational needs and relative complexity in terms of ICS types.

Fire Management Plan (FMP) – A strategic plan that defines a program to manage wildland and prescribed fires and documents the Fire Management Program in the approved land use plan. The plan is supplemented by operational plans such as preparedness plans, preplanned dispatch plans, prescribed fire plans and prevention plans.

Initial Attack – An aggressive suppression action consistent with firefighter and public safety and values to be protected.

Mitigation Actions – Mitigation actions are considered to be those on-the-ground activities that will check, direct, or delay the spread of fire and minimize threats to life, property, and resources. Mitigation actions may include mechanical and physical non-fire tasks, specific fire applications, and limited suppression actions. These actions will be used to construct firelines, reduce excessive fuel concentrations, reduce vertical fuel continuity, create defensible space or barriers around critical or sensitive sites or resources, create “blacklines” through controlled burnouts, and to limit fire spread and behavior.

Normal Fire Year – The normal fire year for suppressed wildland fires is the year with the third highest number of wildland fires in the past ten years of record.

Preparedness – Activities that lead to a safe, efficient and cost effective fire management program in support of land and resource management objectives through appropriate planning and coordination. This term replaced pre-suppression.

Prescribed Fire – Any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist, and NEPA requirements must be met, prior to ignition. This term replaced management ignited prescribed fire.

Wildland Fire – Any non-structure fire, other than prescribed fire, that occurs in the wildland. This term encompasses fires previously called both wildfires and prescribed natural fires.

Wildland Fire Management Program – The full range of activities and functions necessary for planning, preparedness, emergency suppression operations, and emergency rehabilitation of wildland fires, and prescribed fire operations, including non-activity fuels management to reduce risks to public safety and to restore and sustain ecosystem health.

Wildland Fire Situation Analysis – A decision-making process that evaluates alternative management strategies against selected safety, environmental, social, economic, political, and resource management objectives.

Wildland Fire Suppression – An appropriate management response to wildland fire that results in curtailment of fire spread and eliminates all identified threats from the particular fire. All wildland fire suppression activities provide for firefighter and public safety as the highest consideration, but minimize loss of resource values, economic expenditures, and/or the use of critical firefighting resources.

Appendix C. Cultural Resource Component

The cultural resource component (CRC) for this plan identifies specific values and objectives for preserving and maintaining cultural resources in a desired state with regard to fire management strategies. Values are defined as the unique research and interpretive potential of cultural resources that are at risk from fire program activities. Objectives have been defined by considering possible fire management strategies and how each strategy might be used to benefit, maintain, or limit the loss of core values.

The CRC should be viewed as an active component of the fire management plan and used as a planning and operations guide to prevent resource loss or degradation. This document is especially important given that the memorial is surrounded by the USFS and private landowners on three sides. The USFS is a cooperative partner in the process and will be a partner in ongoing fire management efforts. Once approved, the CRC is a blanket compliance document for the term of this plan. Communication and consultation about key fire program activities continue as needed.

Fire Management Plan Goals and Objectives

Cultural sites, structures, and artifacts are resources requiring actions with varying fire management actions and responses. The following cultural resources goals and summarize appropriate fire management activities for particular cultural resource elements at Coronado National Memorial. These goals and objectives are consistent with the overall goals and objectives for fire management as described in the FMP.

Goal 1: Tailor fire management activities and response to accomplish desired cultural resource management objectives, accounting for the specific cultural resource elements at risk in the cultural resource matrix (see Table C-1).

- Ensure that fire personnel are appropriately qualified and briefed on cultural resource fire management guidelines, or are supervised by a qualified cultural resource advisor.
- Allow wildland fire as a natural process in areas with identified cultural resources, where significant detrimental impacts will not occur.
- Reduce fuels in and around sites and artifacts using prescribed fire and mechanical fuel reduction, when appropriate.
- Manage the movement of fire into an identified sensitive cultural resource area taking safety and natural resource protection into consideration.

Goal 2: Base fire-related cultural resource management activities on sound data obtained through survey, monitoring, and stakeholder involvement.

- Consult Native American tribes regarding sacred sites.
- Ensure survey by qualified resource personnel in conjunction with fire line construction and other suppression activities as necessary.
- Conduct post-fire survey and monitoring, as appropriate.
- Incorporate results into resource management planning and execution.

Goal 3: Implement an appropriate response when previously unidentified cultural resources are discovered or unanticipated, significant detrimental impacts occur.

- Implement the procedures for discoveries of unknown resources when they occur.
- When unanticipated, significant detrimental impacts occur to cultural resources, implement appropriate emergency stabilization and rehabilitation response.

Scope of the Cultural Resource Component

Table C-1 is a matrix of cultural resources, potential fire program effects, and treatments for Coronado National Memorial. Memorial resource management, fire, and interpretive staff began developing the CRC by defining historic contexts and a list of cultural resource types that included elements and values at risk from fire to develop the matrix. This matrix considers historical, archeological, architectural, engineering, and cultural values and has been reviewed by NPS cultural resources professionals at the Western Archeological Conservation Center (WACC) and Southern Arizona Office (SOAR). The cultural resources matrix is a working summary of resources and how the fire program should relate to them. It is a useful guide, both for planning and operations, to all who will be working with fire and cultural resources in the memorial.

The matrix lays out the cultural resource types pertaining to specific historic contexts within the memorial. Historic contexts are defined as patterns, themes, or trends in history by which a specific occurrence, property, or site is understood. These cultural resource types are further defined by elements. Elements for each resource type can be found in the matrices (Tables C-1 through C-6).

Staff looked at risk conditions/activities that might occur in the presence of fire and potential effects on specific resource types given the elements of the resource, surrounding environment, and geographic location. Once the resource types and risk conditions/activities were defined, the resource and fire management personnel used this information to determine what the fire management objectives were and what treatments should be used to preserve identified resource values. Out of this discussion were developed matrices that defined historic contexts and resource types. When using this document to determine what the ultimate treatment should be for a resource type, staff and/or fire management personnel should first look at the historic context and resource type. Once this has been determined staff can refer to the matrices that are provided in this attachment for treatment or prescriptions.

Fire Management Risk Conditions/Activities:

- | | |
|--------------------------------|--------------------------|
| • Fire | • Fuel accumulation |
| • Heat | • Smoke |
| • Soot | • Hazard fuels |
| • Combustible vegetal material | • Vegetation changes |
| • Aerial retardant drops | • Hot fires near timbers |
| • Ground disturbance | • Low fire frequency |
| • Erosion | |

Table C-1. Historical Context: Pre-European (pre-1500)

The Pre-European period includes evidence of the Archaic period Cochise Culture and, later, the San Simon Branch of the Mogollon Culture.

Resource Type	Elements	Elements or Values at Risk	Risk Conditions or Activities	Fire Management Objective	Treatments or Prescriptions
caves	habitation site	date contamination, feature integrity, interpretive value	heat, soot, combustible vegetative material (loss of screening), retardant drop	suppression, fuel reduction	construct line
	lithic scatter	date contamination, spatial arrangement	ground disturbance, erosion, fuel accumulation	allow low- to moderate intensity fire, avoid ground disturbance	thin fuels, restrict suppression activities
	textile fragments	feature integrity	heat, soot, ground disturbance	suppression, avoid disturbance	thin fuels, restrict suppression activities
	pottery	feature integrity	heat, soot, ground disturbance	suppression, avoid disturbance	thin fuels, restrict suppression activities
seasonal camp sites	mano & metate	none	none	allow to burn	none
	lithic scatter	date contamination, spatial arrangement	ground disturbance, erosion, fuel accumulation	allow low- to moderate intensity fire, avoid disturbance	thin fuels, restrict suppression activities
work sites	lithic scatter	date contamination, spatial arrangement	ground disturbance, erosion, fuel accumulation	allow low- to moderate intensity fire, avoid disturbance	thin fuels, restrict suppression activities

Table C-2. Historical Context: Apache (1500-1887)

The Apache period spans the time of the Chiricahua Apache.

Resource Type	Elements	Elements or Values at Risk	Risk Conditions or Activities	Fire Management Objective	Treatments or Prescriptions
caves	baskets and other combustibles	radiocarbon date contamination, feature integrity, interpretive value	smoke and hazard fuels	avoid ground disturbance	restrict suppression activities in caves, mechanically reduce fuels around mouth
	pottery	radiocarbon date contamination, spatial arrangement	heat, soot, ground disturbance	avoid disturbance	restrict hand lines
	middens with perishable contents	radiocarbon date contamination, feature integrity, interpretive value	smoke and hazard fuels	avoid ground disturbance	restrict suppression activities in caves, mechanically reduce fuels around mouth
work sites, limited activity sites	lithic scatter	date contamination, spatial arrangement	ground disturbance, erosion, fuel accumulation	allow low- to moderate intensity fire, avoid disturbance, protect from erosion	thin fuels, restrict suppression activities unless slopes > 15%
springs	vegetation, hydrology	radiocarbon date contamination, spatial arrangement	ground disturbance, vegetation change	regular burning	none

Table C-3. Historical Context: Spanish Colonial-Ranching-Mining (ca.1600s–1770)

Resource Type	Elements	Elements or Values at Risk	Risk Conditions or Activities	Fire Management Objective	Treatments or Prescriptions
mines/ranching	Spanish Colonial Related artifacts	Metal tools	hot fires near timbers, otherwise little risk once mapped	fuel reduction if timbers at risk	thin fuels near entrance

Table C-4. Historical Context: American Mining (ca. 1870s-1985)

Resource Type	Elements	Elements or Values at Risk	Risk Conditions or Activities	Fire Management Objective	Treatments or Prescriptions
mines	adits/shafts	timbers	hot fires near timbers, otherwise little risk once mapped	fuel reduction if timbers at risk	thin fuels near entrance
	tailings	none unless contaminated with volatile elements	ground disturbance	allow fires	restrict ground disturbance
	rock foundations	feature integrity	ground disturbance	avoid disturbance	restrict suppression activities
	trails/roads	feature integrity	erosion	avoid ground disturbance until well-mapped and significant sample saved	restrict suppression activities
	wells	feature integrity	erosion	avoid disturbance	restrict suppression activities
	wood & metal mining tools	dating/information , interpretive value	fuel accumulation, combustible material	suppression	thinning, restrict suppression activities

Table C-5. Historical Context: Ratliff and Montezuma Ranch (ca.1890–1993)

Resource Type	Elements	Resource at Risk	Risk Conditions or Activities	Fire Management Objective	Treatments or Prescriptions
ranch	fences, corral	feature integrity, loss	fuel accumulation, flame, heat	reduce fuels, suppress, avoid ground disturbance throughout site	protect whole area with a buffer and thinning, restrict ground disturbance
	Windmills	feature integrity, loss	fuel accumulation, fire		
	swimming pool	feature integrity	heat, erosion (deposition)		
	foundations	feature integrity	soot, ground disturbance		
	machinery/artifacts	feature integrity	fuel accumulation, heat, flames, ground disturbance		
	structures				
	roads/trails	feature integrity	erosion	avoid ground disturbance	restrict suppression activities
	dump	feature integrity, loss	ground disturbance	avoid ground disturbance	restrict suppression activities
	Irrigation system				
	Stock tanks				
landscape	orchard	loss of trees	fuel accumulation, heat, flames, ground disturbance	reduce fuels, avoid ground disturbance in these areas	protect whole area with a buffer and thinning, restrict ground disturbance; replace plantings as needed
	Agricultural fields				
	garden	loss	fuel accumulation, heat, flames, ground disturbance		
	ornamental plantings	loss	fuel accumulation, heat, flames, ground disturbance		

Table C-6. Historical Context: Federal Period (1902–present)

Resource Type	Elements	Elements or Values at Risk	Risk Conditions or Activities	Fire Management Objective	Treatments or Prescriptions
Forest Service	boundary markers	feature integrity	ground disturbance	suppression	restrict ground disturbance
CCC works	buildings	feature integrity	fuel accumulation, flame, heat	suppression	thin fuels
	road	feature integrity	erosion from ground disturbance	allow low- to moderate intensity fire, avoid ground disturbance	thin fuels, restrict line construction, rehab for erosion
Mission 66	houses	integrity	fuel accumulation, heat, flame	suppression	apply full suppression
	visitor center	integrity	fuel accumulation, heat, flame	suppression	apply full suppression
	Trail system				
	Maintenance shop	feature integrity	erosion	suppression, avoid ground disturbance	thin fuels, restrict ground disturbance

To date a 100% intensive archeological survey has not been completed at the Memorial. However, some of the park has been surveyed during its history by the Western Archeological Conservation Center and volunteer groups.

Desired Conditions For Historic Properties

Desired Conditions for historic properties at Coronado National Memorial have not been identified in previous plans or reports. However, the List of Classified Structures (1995) specifies the condition of historic structures in the memorial (Table C-7). Fire program activities are intended to maintain present condition and minimize impacts to cultural resources. Given sufficient funding, the memorial plans to bring all structures and archeological resources into a standing of good condition. In some cases fire may be beneficial to historic landscapes.

Table C-7. List of Classified Structures for Coronado National Memorial.

IDLCS	Structure Name	Present Condition
60218	International Boundary Monument No. 100	Good
60219	International Boundary Monument No.101	Good
60220	International Boundary Monument No. 102	Good
60222	Wm. R. Grave Marker	Good
60223	MRD Grave Marker	Good
60224	Montezuma Pass Road	Fair
60225	Doredor Mining Claim Ruins	Good

Staffing

Ideally, a complete analysis of the effects of fire projects on cultural resources requires the professional services of an archeologist, ethnographer, landscape architect, architectural historian, and historian, each of whom meets the Secretary of the Interior's Professional Qualifications Standards. It is the responsibility of the Superintendent to identify those professionals when they are needed. The memorial has sought the assistance of the Western Archeological Conservation Center and NPS Southern Arizona Office as well as relied on the expertise of its own staff to prepare this document.

Participation of Indian Tribes, the Public, and Agencies

Currently, the memorial consults with the Chiricahua Apache Tribal Spokesperson at the San Carlos Reservation and the Mescalero Reservation, White Mountain Apache Tribe, Ft. Sill Apache Tribe of Oklahoma, and the Hopi Tribe. Relevant state and federal agencies, local governments, local businesses, non-government organizations, and private residents living next to or near the memorial are also consulted. For this FMP, the memorial sent the public scoping newsletters to the mailing list that includes the parties listed above. Two public scoping meetings took place in May 2003, and the public scoping comment period extended from June 2003 to July 2003.

Informing affected parties is part of the planning for any prescribed burn. In the event of a wildfire that damages cultural resources, the memorial will identify damaged cultural resources and ascertain condition. When formal consultation is required, it can occur through either a written letter or notice and/or a public meeting and will include a minimum 30-day comment period. Comments about fire management activity plans can be sent to the Superintendent, Coronado National Memorial, 4101 E. Montezuma Canyon Road, Hereford, AZ 85615. It is the responsibility of the Superintendent to resolve any objections concerning fire management activity plans in the memorial.

Requirements and Procedures for Fire Management Undertakings

Table C-8 describes components of cultural resources analysis and review for fuels management and suppression actions. Many of these steps have been completed during the preparation of the CRC. Much of the process is the same for fuels management and suppression actions. When the memorial lacks personnel to make up an emergency stabilization and rehabilitation team, the superintendent will contact professional staff at WACC and SOAR to assist with this work. The superintendent can also elect to submit a funding proposal to Burned Area Rehabilitation (BAR) to assist with assessment and rehabilitation work. The BAR contact is Linda Kerr at 303-969-2883.

Table C-8. Cultural Resources and Fire Management Undertakings.

Planning Area	Requirements/Steps	Fuels Management Comments	Suppression Comments
Minimum professional qualifications	Archeologist: MS; Architect: AIA; Historian: BA; all must meet Secretary of Interior's Professional Qualification Standards		
Planning protocols	▪ Determine affected area and resources. ▪ Survey if needed. ▪ Superintendent calls in professionals from outside of park if needed. ▪ Superintendent consults with other agencies if needed.		Superintendent will identify lead resource advisor and ensure coordination between fire and cultural resources staff.
Undertaking information	▪ Discuss proposed action within park (fire and cultural resource managers). ▪ Communicate survey needs in writing. ▪ Use matrix to predict direct (within project boundary) and indirect (outside project boundary) effects.		N/A
Records and literature search	▪ When more information is needed beyond that provided in the CRC, consult park, local, and agency records and experts.		N/A
Consultation with Indian tribes and the public	▪ Identify associated tribes. ▪ Notify tribes and public by letter of action. ▪ Address concerns raised by tribes and public.	Allow at least 30 days for response to letter. Schedule public meeting if necessary.	Keep a draft letter on file and notify neighbors, tribes, city of Sierra Vista, and other interested parties in a timely manner.
Identifying and evaluating cultural resources	▪ Use cultural resources matrix in this document. ▪ Determine area of effect. ▪ Review survey results.		

Planning Area	Requirements/Steps	Fuels Management Comments	Suppression Comments
Determining effects (see matrix, Table C-1)	▪ Determine direct effects prior to initiating project. ▪ Determine indirect effects. ▪ Decide acceptable impacts. ▪ Implement pre-project protection measures. ▪ Assess actual impacts after project completion.		
Treatment measures (see matrix, Table C-1)	▪ Identify treatments that avoid, minimize, and mitigate unacceptable impacts. ▪ Justify treatments relative to the state of the art. ▪ Ensure that the cure is not worse than the disease.	Superintendent identifies proper professionals when outside assistance needed.	Superintendent identifies proper professionals when outside assistance needed..
Monitoring (when needed)	▪ Define resources to monitor. ▪ Determine duration and frequency of monitoring. ▪ Determine appropriate professionals to complete monitoring.	Duration and frequency will vary with resource type, location, and intensity of burn.	Duration and frequency will vary with resource type, location, and intensity of burn.
Experimentation (when feasible)	▪ Determine opportunities to test and compare cultural resource protection methods. ▪ Inform interested professionals. ▪ Review results.	Can compare effectiveness of thinning, fire lines, different burn seasons.	Can compare effectiveness of fire lines, retardant.
Unanticipated effects	▪ Superintendent contact professionals from WACC and SOAR. ▪ Determine impacts. ▪ Minimize continued impacts. ▪ Predict future impacts and recommend minimization measures. ▪ Implement minimization measures.		

Planning Area	Requirements/Steps	Fuels Management Comments	Suppression Comments
Discoveries	▪ Arrange to survey previously unidentified cultural resources ▪ Superintendent report discoveries to WACC and SOAR.	Follow Sections 106 and 110 of NHPA.	Use matrix (Table C-1) to predict impacts and decide treatments.
BAR	▪ Superintendent contact WACC and SOAR if external assistance is needed. ▪ Submit funding proposal to Burned Area Rehabilitation program through IMRO if necessary.		
Agency review process	Agency review (internal and external) is interwoven into all project planning areas and steps.	Consult as early as possible when needed during planning stages.	Consult and update in a timely manner when needed.

Appendix D. Categorical Exclusion Decision Memo

Decision Memorandum on the Action
and for the Application of Categorical Exclusions 1.12 and 1.13

Implementation of a Fire Management Program at Coronado National Memorial

U.S. Department of the Interior
National Park Service
Coronado National Memorial
Cochise County, Arizona

Purpose and Need for the Action

Coronado National Memorial (memorial) is located in southeastern Arizona, approximately 75 miles southeast of Tucson and 20 miles south of Sierra Vista, in Cochise County. Congress established the memorial in 1952 to permanently commemorate and interpret the significance of the Francisco Vasquez de Coronado Expedition of 1540-1542 and the resulting cultural influences of 16th Century Spanish colonial exploration in the Americas. The creation of the memorial does not protect any tangible artifacts related to the expedition. It was created to give visitors an opportunity to reflect upon the impact the Coronado Entrada had in shaping the history, culture, and environment of the southwestern United States and its lasting ties to Mexico and Spain.

Ground surveys of the vegetation in the memorial indicate that there are some areas that show a high departure from the natural regime, while the majority of vegetation at Coronado National Memorial shows a moderate departure from the natural regime. Obtaining new information such as the fire regime condition class and carrying out the objectives of the fire management program in the memorial are desired results from cooperation with other parks and agencies. The goal of the fire management program is to effectively manage wildland fire and provide for the protection of life, property, and cultural resources, while ensuring the perpetuation of memorial ecosystems and natural resources by:

- Giving primary consideration to firefighter, employee, and public safety;
- Managing fire to minimize threats of unacceptable effects of fire to property outside the memorial and sensitive cultural and natural resources;
- Implementing a program to use prescribed burning and hazard fuels reduction to restore natural fuel loadings; and
- Utilizing research and monitoring to improve our understanding of the role of fire in the memorial's vegetative communities.

This plan meets the requirements of the National Park Service (NPS) Director's Order 18, which states that "each park with vegetation capable of burning will prepare a wildland fire management plan to guide a fire management program that is responsible to the Park's natural and cultural resource objectives and to safety considerations for Park visitors, employees, and developed facilities." The completion of this fire management plan will satisfy these requirements. This plan and associated categorical exclusion (CE) will establish future management direction for fire-related activities at the memorial to protect resources and values.

Plan Conformance

The proposed action is consistent with the Coronado National Memorial General Management Plan (2004) and Natural and Cultural Resources Management Plan (1998). The Proposed Action was designed to conform to all NPS standards, and it incorporates the appropriate guides for the required and desired conditions relevant to the project activities.

Compliance with the National Environmental Policy Act

The proposed action is categorically excluded from further documentation under NEPA in accordance with 516 DM 2, Appendix 1, 1.12 and 1.13 because it meets all the specified criteria for the use of these categorical exclusions as described in the *Federal Register* (Vol 68, No. 108, pages 33814-33824). Hazardous fuels reduction activities using prescribed fire will not exceed 4,500 acres and mechanical methods for crushing, piling, thinning, pruning, cutting, chipping, mulching, and mowing will not exceed 1,000 acres. Activities will be identified through a collaborative framework and be conducted consistent with agency and Departmental procedures and applicable land and resource management plans. Coronado National Memorial does not contain wilderness. Additionally, the fire management program will not include the use of herbicides or pesticides or the construction of new permanent roads or any other new permanent infrastructure. There will be no sale of vegetative material. Suppression activities, if needed, would be considered emergency actions and not subject to NEPA requirements.

The application of these categorical exclusions is appropriate in this situation because there are no extraordinary circumstances that potentially have effects that may significantly affect the environment. None of the exceptions to categorical exclusions (Director's Order-12, *Conservation Planning, Environmental Impact Analysis, and Decision-Making Handbook*, §3.5) or other cautions found in §3.6 of the DO-12 Handbook apply.

I considered the level of effects of the proposed action as described in the Methodology of Assessing the Levels of Effects. Based upon the analysis in that document, the potential for significant effects does not exist.

Persons and Agencies Consulted

An Interdisciplinary Team (IDT) made up of NPS staff, the Fire Management Officer and District Ranger from the Coronado National Forest Sierra Vista Ranger District, a U.S. Fish and Wildlife Service (USFWS) biologist, and cooperators from the University of Arizona (UA) School of Natural Resources met on May 7, 2003, to discuss program procedures, potential

impacts, consultations, and implementation strategies. In July 2003, a newsletter announcing our intention to develop a fire management plan, including an environmental assessment, was mailed to park partners including volunteers, neighbors, affiliated tribes, and other land management agencies and organizations. One comment was received in support of the proposed fire program in the memorial.

On April 15, 2004, NPS staff met with UA cooperators to discuss the memorial's ability to use wildland fire safely given the memorial's location, size, and topography, the limited evacuation routes, and the location of private residences and park headquarters structures. The NPS staff decided that the park would suppress all wildland fires and use primarily mechanical methods and prescribed burning to meet the plan's objectives. In addition, the park would continue the planning process using a categorical exclusion rather than environmental assessment for the fire management plan.

During discussions with USFWS on March 2 and June 13, 2005, it was decided that the memorial will do emergency consultation on suppression activities when wildland fire incidents occur. When long-term plans for fuel reduction and prescribed burn projects (Appendix H) are developed, the memorial will do programmatic consultation at that time. For any other fire management activities, project-specific consultation would take place prior to implementation and we would design projects and apply conservation measures so that no adverse effects to sensitive species would occur. If projects are proposed that may adversely affect sensitive species, they would be covered under a separate NEPA process and documentation. The memorial would consult with USFWS during the NEPA process for those projects. Consultation would include, on a project by project basis, identifying if the project is in potential habitat for sensitive species, surveying for those species, and notifying the USFWS of project design, location, and proposed conservation measures to support our determinations.

The cultural resource component of the fire management plan was signed by the State Historic Preservation Officer on June 17, 2005 indicating their concurrence with the NPS staff's identification of cultural resources at risk from fire program activities and the strategies that will be used to fulfill the fire management objectives for preserving, maintaining, or minimizing loss of those resources.

Decision and Rationale on Action

I have decided to implement the fire management program at Coronado National Memorial. The Coronado National Memorial Fire Management Plan contains consideration for the use of suppression, prescribed fire, and manual/mechanical treatments as components for fire management in the memorial. The plan establishes fire management units that are based upon fire danger, unit location, natural barriers to fire spread, safety of suppression forces, and adjacent land ownership. Wildland fire use is not a viable option for fire management at Coronado National Memorial and is not addressed in the fire management plan. Most, if not all, suppression, prescribed fire, and mechanical activities in the memorial will be done in close coordination with the Huachuca Area Fire Partners, Saguaro National Park, and the Sierra Vista Ranger District.

Suppression

All wildland fire suppression activities provide for firefighter and public safety as the highest consideration, but also minimize the loss of resource values, economic expenditures, and/or the use of critical firefighting resources. The appropriate management response would be used to curtail fire spread and eliminate all identified fire threats. Appropriate management response could include: full suppression, aggressive suppression, or confine and contain strategies. For suppression actions, holding actions could be implemented to prohibit the fire from crossing containment boundaries. Holding actions could include the construction of fire lines, reduction of excessive fuel concentrations, and creation of fuel breaks or barriers around critical or sensitive sites or resources.

Full suppression actions would include all available tools and tactics to suppress the fire. This could include the use of fire retardant and any aviation resources that could be used in an appropriate situation. Fire retardant will not be used within 200 feet of mines and natural caves in order to minimize the amount of retardant seeping into those underground resources. In rare situations or events the use of bulldozers, graders, tractors or other heavy equipment could be used, but only after approval on a case-by-case basis by the Superintendent.

To create a fuel break around the fire, a confine/contain strategy could be used. This break could include natural barriers or manually and/or mechanically constructed lines. Active fire suppression actions would probably not be implemented in areas where the fire could be confined or contained. Aircraft could be used for fire management activities including: reconnaissance, fire control, or retardant drops.

Prescribed Fire

Prescribed fires are any fire ignited by management to meet specific objectives. Prescribed fire could be used to reduce hazardous fuels, remove/reduce non-native plant species, or restore vegetative compositions to natural levels. Prescribed fire would use prescriptions that define conditions (wind speed and direction, relative humidity, dew point, temperature, rate of fire spread, and flame length) under which the fire could be ignited. These measurable conditions would be monitored to ensure that prescribed conditions are met.

Prescribed fire units would be established so that treatment boundaries are in logical places where the fire could be contained or controlled. These boundaries would use natural fuel breaks or mechanically treated perimeter lines. Each prescribed fire would be managed and monitored by qualified personnel prior, during, and after the fire. Prescribed fire would be carried out to minimize local effects to visibility and air quality from smoke production.

Prescribed fire could be used to research or investigate the effects of prescribed fire treatments and studied to replicate sustainable ecological conditions. Long-term data collection could be associated with these treatments. Many of the suppression strategies that are described above could be used to manage prescribed fire.

Mechanical Treatment

Mechanical equipment could be used as a stand-alone method to reduce fuels, to allow for prescribed fire, or to construct a fire line during a wildland fire.

Mechanical methods could include:

- non-mechanized handheld tools used in suppression activities (e.g., shovels, saws, axes, Pulaski's),
- mechanized handheld tools (e.g., chainsaws, brush cutters, weed trimmers), or
- mechanized wheeled or track equipment (e.g., bulldozers, tractors, loaders, mowers, or other similar equipment that are designed for large fuel removal) could be used in wildland urban interface areas, and in developed infrastructure areas within the memorial.

Heavy equipment with large tires or tracks designed to have less ground disturbances would be the first choice for use. The use of any heavy ground disturbing equipment would need to be approved by the Superintendent.

I have determined that the proposed action is in conformance with the approved plans. The Coronado National Memorial General Management Plan (GMP) states that the "fire management programs in the memorial will be designed to meet resource management objectives prescribed for various areas of the memorial and to ensure that firefighter and public safety are not compromised." All fire management activities will take place in accordance with the GMP.

Both the GMP and Natural and Cultural Resources Management Plan emphasize the protection and preservation of the memorial's resources. The overriding concerns are to ensure that fire management activities do not threaten those resources, but instead are used to ensure their continued protection. The fire management program will also ensure that ecological processes, including fire, shape vegetative patterns and conditions. The provisions included in the fire management plan and the management considerations that affect operational implementation are consistent with addressing these concerns.

I have determined that no further environmental analysis is required.

Implementation Date

This project will be implemented after the approval of the Fire Management Plan.

/s/ Kym Hall

28 June 2005

Kym Hall, Superintendent

Date

Administrative Review or Appeal Opportunities

This action is not subject to administrative appeal because the NPS does not have a formal appeal process. Concerns about this action should be directed to the Intermountain Regional Director, National Park Service, P.O. Box 25287, Denver, Colorado, 80225-0287.

Contact Person

For additional information concerning this decision, contact the Superintendent at Coronado National Memorial, 4101 East Montezuma Canyon Road, Hereford, Arizona, 85615 or call (520) 366-5515.

Appendix E. Cooperative agreements

FS Agreement No.	<u>05-IA-110305-11-013</u>
NPS Tax ID No.	<u>53-0197094</u>
NPS Agreement No.	<u>F8601050088</u>

INTERAGENCY AGREEMENT BETWEEN

**NATIONAL PARK SERVICE
SAGUARO NATIONAL PARK, CHIRICAHUA NATIONAL MONUMENT,
FORT BOWIE NATIONAL HISTORIC SITE, CORONADO NATIONAL MONUMENT,
TUMACACORI NATIONAL HISTORIC PARK AND
ORGAN PIPE CACTUS NATIONAL MONUMENT**

**AND
UNITED STATES FOREST SERVICE
CORONADO NATIONAL FOREST**

ARTICLE I: Background and Objectives

1. The National Park Service - Saguaro National Park, Chiricahua National Monument, Fort Bowie National Historic Site, Coronado National Monument, Tumacacori National Historic Park and Organ Pipe Cactus National Monument, hereinafter "NPS", and the United States Forest Service, Coronado National Forest, hereinafter "Forest", wish to carry out mutually beneficial wildland fire management actions on those lands near their common boundary, share administrative and emergency dispatch services, and share non-emergency helicopter services.
2. This Agreement is entered into under the authority of the Reciprocal Fire Protection Act, 42 U.S.C. 1856a and the Economy Act of 1932, 31 U.S.C. 1535.

ARTICLE II: Statement of Work

The parties agree as follows:

1. That any fire occurring within one mile of their common boundary will be considered as influencing the lands of the other.
2. That they will cooperate to the fullest extent possible in the management of all fires on both Forest and NPS lands and especially within the confines of the area described in paragraph 1 of Article II. Qualified personnel from either organization will be available for assignment as members of fire suppression crews/teams on Forest or NPS lands.

3. That they will take appropriate suppression action (based on area Fire Management Plans, DO and RM-18 (Wildland Fire Management Guidelines), Section 5100 of the Forest Service Manual, and existing conditions in the area of the fire)) on all fires occurring within their jurisdictions as rapidly as possible. When location is in doubt or when requested by the other agency, the suppression action will be made by the agency with the closest available force.

4. That the Initial Attack Incident Commander will remain in charge of the fire until properly relieved by a fully qualified Incident Commander of the same level or higher, as determined by incident qualification card status.

If the relieving Incident Commander is from a different agency than the fire location, the Agency Administrator with jurisdictional authority will issue a *Delegation of Authority* and appoint an Agency Representative to make agency related decisions/recommendations to the Incident Commander.

5. That a unified command will be established for large fires which cross their common boundaries.

6. That fires originating on the lands of one agency and discovered by personnel from the other agency will be reported immediately to the Southeast Arizona Zone Coordinator Center. The Center will notify appropriate personnel for action.

7. That daily fire weather stations will be maintained by both agencies. These weather stations will be in locations and numbers determined by individual agency needs. Weather data will be available on request from either agency. This data may be provided as general weather forecasts, fire weather forecasts (normally broadcast daily by Zone Coordination Center), spot weather forecasts, and general weather records. Requests will be made through dispatchers, incident commanders, prescribed burn bosses, fire behavior officers or those delegated by the preceding individuals.

8. That they will advise each other when aerial detection patrols are ordered for Forest or NPS lands.

9. That fires managed under a Wildland Fire for Resource Benefit Implementation Plan may be allowed on both Forest and NPS lands as specified in Joint Wildland Fire Implementation Plans (WFIP) for specific areas during single incidents.

10. That fires which originate on one agency's land and meet the conditions of that agency will be allowed to burn on the other's land, provided the conditions outlined in the WFIP of that agency are also met.

11. That when fires are burning on lands managed by both agencies, the agencies will assign monitors, as defined by WFIP or other local guidelines, to monitor the portion of the fire burning on their respective lands. The Agencies may, after review of individual qualifications, allow a monitor from one agency to monitor fire(s) on the other.

12. They will make available personnel and equipment to assist with training and execution of prescribed burning projects on each other's lands in accordance with the National Fire Plan, local agreements, and/or guidelines, provided such resources are available.

13. That the Southeast Arizona Zone Coordinator Center will provide the Southeastern Arizona NPS Areas with services including, but not limited to: initial attack dispatching, extended attack dispatching, processing weather data and providing fire danger rating indices, weather reports (spot, extended, watches and warnings), aircraft flight following, situation reporting, tracking of crew, engine and overhead resources during mobilizations, and other support as identified and agreed to.

14. That the Forest may provide non-fire, non-emergency helicopter support for trail work and other types of projects, as needed.

15. That they will meet on an annual basis to discuss and exchange information, data and plans regarding common management strategies for the contiguous wilderness areas of the Forest and NPS. The NPS and Forest shall develop an annual operating plan outlining specific activities such as pack test administration, issuance of supplies and materials from agency caches, and non-emergency helicopter support, if needed. This annual operating plan will become a part of this agreement, and will be in place no later than March 31st of each year.

16. That the Forest will provide all administrative dispatching services for Saguaro National Park from 8:00 A.M. to 5:00 P.M., excluding law enforcement dispatch services. Law enforcement dispatch support will be provided through the Phoenix Bureau of Land Management Dispatcher.

ARTICLE III: Term of Agreement

1. This Agreement shall remain in full force and effect for **five (5) years** from the date of the last signature below. Annual meetings will be held to discuss and resolve any problems that may have arisen concerning implementation of this Agreement.

2. Any of the parties, in writing, may terminate the instrument in whole, or in part, at any time before the date of expiration. Neither party shall incur any new obligations for the terminated portion of the instrument after the effective date and shall cancel as many obligations as possible. Full credit shall be allowed for each Party's expenses and all non-cancelable obligations properly incurred up to the effective date of termination.

3. Modifications within the scope of the instrument shall be made by mutual consent of the parties, by the issuance of a written modification, signed and dated by all parties, prior to any changes being performed.

The Forest Service is not obligated to fund any changes not properly approved in advance.

ARTICLE IV: Key Officials

The Superintendents of Saguaro National Park, Chiricahua National Monument, Fort Bowie National Historic Site, Coronado National Monument, Tumacacori National Monument and Organ Pipe Cactus National Monument and Coronado National Forest Supervisor shall be the key official for the purposes of this Agreement.

The principal contacts for this instrument are:

Forest Service Project Contact

Dean McAlister
300 W. Congress
Tucson AZ 85701
Phone: 520.388.8460
FAX: 520.388.8476
E-Mail: dmcalister@fs.fed.us

Cooperator Project Contact

Kevin Parrish
3693 S. Old Spanish Trail
Tucson AZ 85730-5699
Phone: 520.733.5130
FAX: 520.722.3216
E-Mail: kevin_parrish@nps.gov

Forest Service Administrative ContactCooperator Administrative Contact

Norene Norris
300 W. Congress
Tucson AZ 85701
Phone: 520.388.8325
FAX: 520.388.8331
E-Mail: nnorris@fs.fed.us

Patricia Wands
3693 S. Old Spanish Trail
Tucson AZ 85730-5699
Phone: 520.733.5131
FAX: 520.722.3216
E-Mail: pat_haddad-wands@nps.gov

ARTICLE V: Award

Each fiscal year, Saguaro National Park shall fund \$8,500 of the contract cost for the Forest Service helicopter (Tucson) for availability for fire management operations. Additionally, Saguaro National Park will fund \$8,500 for management and operations of the Southeast Arizona Zone Coordination Center, Tucson, Arizona. Overhead will be assessed at the current year's rate. The FY05 rate is 17.8%. The Park Service's obligation for performance of this instrument is contingent upon the availability of appropriated funds from which payment can be made. Fund transfer will be initiated by the Forest using form AD 672 USDA (revised 9/86) no later than May 1st of each year during the term of this Agreement. Saguaro National Park will establish a Miscellaneous Transaction Document to transfer the funds from a NPS FIREPRO account via IPAC.

ARTICLE VI: Billing (1)

Transfer of funds to the Forest Service will be through an Intragovernmental Payment and Collection System (IPAC) billing. The IPAC billing document which the Forest Service will prepare shall contain the following information as the first line of the description or the reference section:

FY 2005:

Agency Agreement or Instrument No. – F8601050088

Agency Cost Account Data – 8677-0503-P11 - \$17,000

8677-0500-P11 - \$3,026

Agency Location Code – 14-10-0099

Budget Object Code – 253H

A detailed list of charges incurred will be made available upon request.

ARTICLE VII: Billing (2)

Transfer of funds to the NPS will be through the Intragovernmental Payment and Collection System (IPAC) billing. The IPAC billing document which the NPS prepares shall contain the following information as the first line of the description or the reference section:

FS Agency Location Code	- 12-40-1100
FS Reference Document No. (MO)	- (provided by FS Financial Mgmt)
FS Agreement No.	- 05-IA-110305-11-013

Internal Accounting Information Only

FS Accounting Station	- 0305
Job Code	- WFEXH9 05
Budget Object Code	- 2559
Performing Agency Location Code	- 12-40-1100

Send copy of bill to:	USDA Forest Service
	Coronado National Forest
	Attn: Norene Norris
	300 W. Congress
	Tucson AZ 85601

A detailed list of charges incurred by the cooperator will be made available upon request.

ARTICLE VIII: Authorized Representatives

By signature below, the NPS certifies that the individuals listed in this document as representatives of the NPS are authorized to act in their respective areas for matters related to this agreement.

ARTICLE IX: Signatures

IN WITNESS WHEREOF, the parties hereto have executed this Agreement.

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

/s/ Dixie Buehler
Agreement Officer
National Park Service

13 April 2005
Date

UNITED STATES DEPARTMENT OF AGRICULTURE
UNITED STATES FOREST SERVICE

/s/ Jeanine Derby
Forest Supervisor
Coronado National Forest

08 April 2005
Date

The authority and format of this instrument has been reviewed and approved for signature.

/s/ Noreen Norris
FS Agreements Coordinator

Date

Appendix F. Delegation of Authority

Coronado National Memorial

Hereford, Arizona

DELEGATION OF AUTHORITY

As of _____, I have delegated authority to manage the _____ Fire to Incident Commander _____ and his/her Incident Management Team.

My considerations for management of this fire are:

1. Provide for firefighter, visitor, and employee safety.
2. Manage the fire in such a manner that suppression actions will cause as little environmental damage as possible. A list of minimum impact suppression tactics is attached.
3. Protect key cultural features identified by the resource advisor.
4. Protect key development areas: visitor center, maintenance facility, and residences.
5. Restrictions for suppression actions are: no off-road equipment without prior authorization.
6. Manage the fire cost effectively for the values at risk.
7. Disruption of visitor access to the memorial road will be kept to a minimum unless public safety is threatened.
8. My agency advisors will be Resource Manager or Chief Ranger.
9. My resource advisors are the Resource Manager, Exhibit Specialist, or Park Ranger.
11. Minimum disruption of residential access and visitor use consistent with public safety.

Superintendent

Coronado National Memorial

Appendix G. Coronado National Memorial Recorded Fire History

<i>Date</i>	<i>Number/Name</i>	<i>Class/Cause*</i>	<i>Location</i>
07/13/59	01/Coronado	B/L	Coronado
06/24/61	01/Sonora#1/Coronado #1	E/L**	Out-Mexico
07/16/61	02/Border	A/L**	Out-Mexico
07/16/61	03/Border #2	A/L	Coronado
08/22/62	01/Ridge Number One	A/L	Coronado
07/16/63	01/Lone Pinyon	A/L	Coronado
05/25/66	01/Coronado Peak	E/H**	Coronado/Mexico
07/03/66	02/Coronado Picnic Area	A/H	Coronado
07/07/66	03/Smugglers Ridge #1	A/L	Coronado
06/06/69	01/Mexico #1	?/H**	Out-Mexico
08/20/69	02/Water Tank	B/L	Coronado
07/08/70	01/Joe's Canyon	C/L	Coronado
06/13/71	01/Picnic #1	C/H	Coronado
07/02/73	01/Windmill	A/L	Coronado
07/05/73	02/Montezuma	B/L	Coronado
08/27/73	03/Smuggler's Fire	D/L	Coronado
11/12/73	04/Quarter's #16	A/H	Coronado
12/20/73	05/Residence #1	A/H	Coronado
12/20/73	06/Coronado Peak	B/H	Coronado
06/09/74	01/State of Texas #1	?/H	Coronado
06/13/74	02/State of Texas #2	?/H	Coronado
06/20/78	01/Coronado Peak	A/H	Coronado
07/08/78	02/Rattlesnake	C-D/L	Coronado/Mexico
10/06/78	03/Spring	C/L	Out-USFS
06/10/80	01/Joe	B/L	Coronado
07/06/83	01/Stallion	B/L	Coronado
07/15/84	01/Snag 1	A/L	Coronado
04/20/86	01/Festival	A/H	Coronado
05/10/87	01/Brown	A/L	Coronado
06/10/88	01/Peak	G/H**	Coronado/Multi
06/23/89	01/Cat	B/H	Coronado
03/26/93	01/Montezuma	C/L	Coronado/State
06/24/93	02/Brown-1	D/H	Out-State
07/03/94	01/Lightning-1	A/L	Coronado
08/07/94	02/Boundary-E	A/L	Out-State
05/22/96	01/Newspaper	B/H	Out-State
06/14/03	Lawnmower	B/H	Out-private
06/21/04	Ash	E/H	USFS/CORO
06/02/04	Montezuma	D/H	CORO
06/02/04	Montezuma/Mexico	C/H	Mexico

*Class:

A = 0 - .25 acres

B = .26 - 9.9 acres

C = 10 - 99.9 acres

D = 100 - 299.9 acres

E = 300 - 999.9 acres

F = 1000 - 4999.9 acres

G = 5000 + acres

*Cause:

L = Lightning

H = Human

P = Prescribed Burn

Ln = Wildland Fire Use

**Started in Mexico

Out = fires within 1 mile of current Memorial boundary

Appendix H. Long-Term Prescribed Fire and Hazard Fuel Reduction Plan

The memorial will develop a 5-year plan for prescribed fire and hazard fuel reduction projects in conjunction with the Huachuca Area Fire Partners (HAFP). At that time, those projects will be listed in NFPORS and appropriate other documentation will be added to this plan such as fire callout phone lists, preparedness inventories and checklists, and monitoring plans. NEPA and NHPA consultation will also take place at that time for projects developed as part of the 5-year plan.