

2004 FIRE MANAGEMENT PLAN

For

CATOCTIN MOUNTAIN PARK



United States Department of the Interior
National Park Service
Catoctin Mountain Park
Thurmont, Maryland

FIRE MANAGEMENT PLAN
for
CATOCTIN MOUNTAIN PARK

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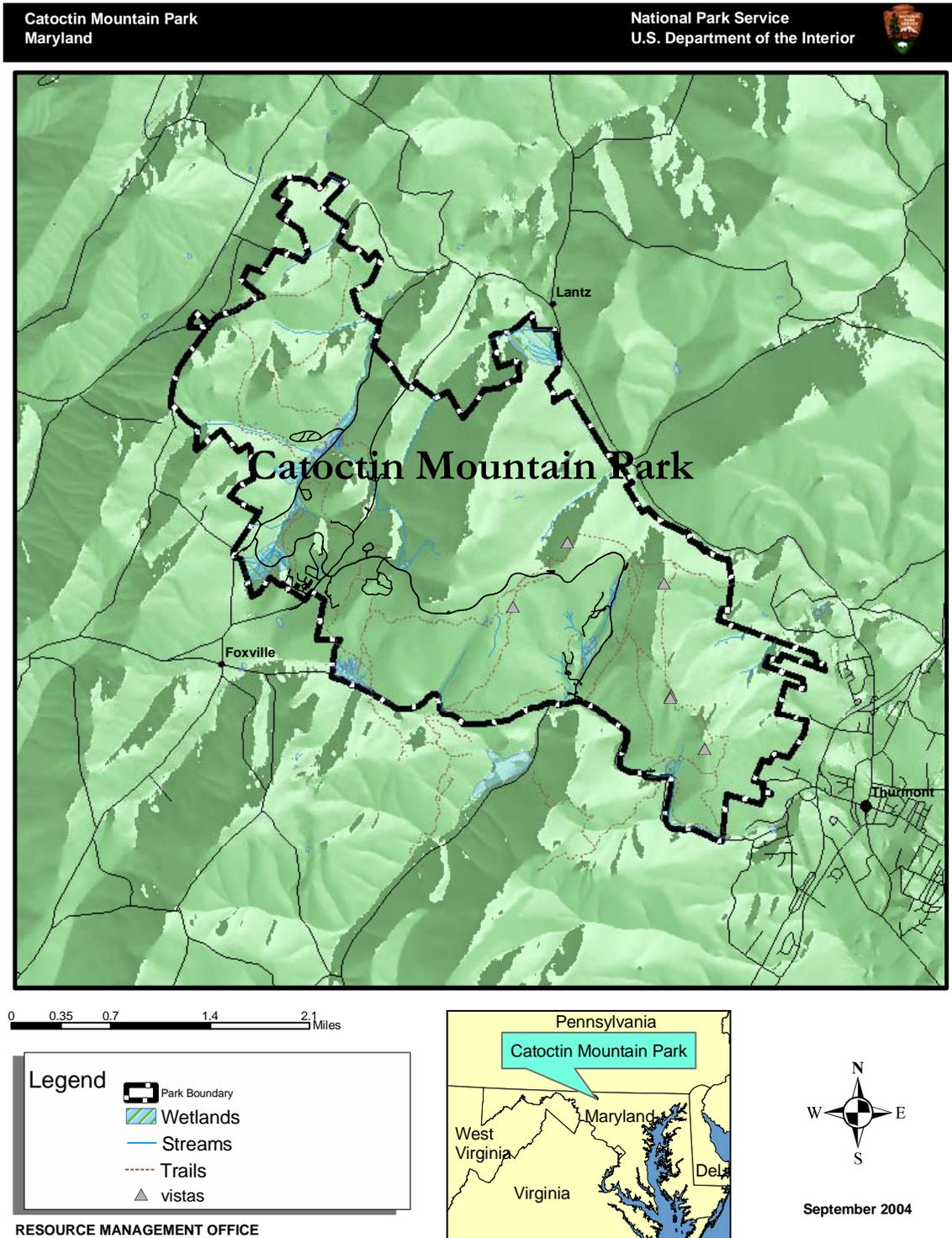


FIGURE 1. Park Map

I. INTRODUCTION

A. Purpose of the Plan

Directors Order-18 and Reference Manual-18 (DO-18/RM-18) Section 5.2.a states: “Every park with burnable vegetation must have a Fire Management Plan (FMP) approved by the Superintendent”. Catoctin Mountain Park is comprised of 5,810 acres. The park’s large composition of mixed hardwood forests could sustain wildland fire. In addition, the use of prescribed fire as a resource management tool could play an important role in the park's vegetation management program, fuel reduction, and regeneration of species such as Table Mountain Pine (*Pinus pungens*).

B. Collaboration

Consultation and partnerships with State of Maryland Department of Natural Resources Forest and Park Service and Natural Heritage Division during the development and implementation of this Fire Management Plan will be utilized. Cooperative fire suppression activities and hazard fuel management by prescribed fire or mechanical fuel reduction, protection of threatened & endangered (T&E) species and cultural resources, will be key elements of these collaborative efforts.

The FMP will implement activities in accordance with the regulations and directions governing the protection of historic and cultural properties as outlined in the Department of Interior Manual, Part 519 (519 DM), and Code of Federal Regulations (36 CFR 800). The National Historic Preservation Act of 1966 (NHPA), as amended, particularly Section 106, sets the requirements for the protection of the historic properties found on the unit. Management and protection will require continued interaction of several local, state and federal agencies.

C. Policy Implementation

Implementation of the FMP will meet the requirements of the most recent Federal Wildland Fire Management Policy and Program Review. The 2001 Federal Fire Management Policy update addresses 17 distinct items, the foremost being safety; all Fire Management Plans and activities must reflect this commitment. The full text of the policy, Secretarial Transmittals, and Appendices may be found at (http://www.nifc.gov/fire_policy/index.htm).

D. Achievement of Resource Management Objectives

Implementation of this Fire Management Plan will help achieve resource management as well as fire management goals as defined in: (1) Federal Wildland Management Policy and Program Review (Jan. 2001); (2) Managing Impacts of Wildfire on Communities and the Environment, and Protecting People and Sustaining Resources in Fire Adapted Ecosystems – A Cohesive strategy (USDA/USDOJ); (3) A Collaborative Approach for Reducing Wildland Fire Risks to Communities and The Environment: 10 Year Comprehensive Strategy Implementation Plan.

This Fire Management Plan documents the fire management objectives, operational programs, and research required to effectively manage wildland and prescribed fire at Catoctin Mountain Park. The implementation of this plan will allow fire to be used as a land management tool while protecting human life, property and natural and cultural resources. The plan incorporates the use of prescribed fire on an experimental basis initially and eventually as an operational tool. The plan also continues to provide for the suppression of all wildfires. Fire is an active and powerful natural force, which has the potential to affect any area of the park and all facets of park management at various times and to varying degrees.

Fire management is a component of the park's Resources Management Plan (RMP) and is designed to facilitate the achievement of the park's cultural and natural resource management objectives. These objectives are documented in Catoctin Mountain Park's RMP (1998), and are derived from legislation beginning with the National Industrial Recovery Act of June 16, 1933 and several subsequent pieces of legislation including Executive Order #7496 of November 12, 1936.

Once established, the park's prescribed fire program may also utilize fire as a vegetation management tool to: control exotic vegetation, reduce hazardous fuels, regenerate fire dependent species, such as Table Mountain Pine (*Pinus pungens*) and research fire effects including smoke management.

Management Objectives from RMP relating to this Fire Management Plan:

The overall management objective of the National Park Service at Catoctin Mountain Park is: "to serve as a public park for education, recreation and conservation". Goals identified in the Statement for Management, Strategic Plan and the Resource Management Plan that can relate to fire are:

- Identify, protect and enhance native species populations, natural features and ecological processes of the park. Strive to maintain natural abundance, biodiversity and ecological integrity of the wildlife and plant populations.
- Provide protection for rare plants that occur within the park, and suffer population reductions as a result of over-browsing by white-tailed deer, or other natural or man caused actions.
- Cooperation with state and local governments and adjacent landowners to insure that lands adjacent to the park are used in a compatible manner to provide preservation and protection to the resources.
- Consistent with National Park Service policy and federal law, Catoctin Mountain Park shall take positive action to perpetuate the cultural and archeological resources of the park to prevent adverse impacts on these resources by development, visitor use or other management activities; and to prohibit vandalism, appropriation or collection of cultural resources.

E. Compliance

This plan includes the appropriate level of National Environmental Policy Act (NEPA) and National Historic Preservation Act (NHPA) review. An Environmental Assessment (EA) is incorporated following the direction set forth in Director's Order-12/Reference Manual-12. The completed EA analyzes environmental impacts of the operations detailed in this plan. A copy of the Finding of No Significant Impact is included in Appendix M and the full EA document is available at the Visitor Center at Catoctin Mountain Park. In compliance with Director's Order-18/Reference Manual-18 (Wildland Fire Management Guideline) this plan will be reviewed annually and revised as necessary.

Buildings in Camp Misty Mount, and Camp Greentop are listed on the National Register of Historic Places. The park also manages two historic districts: Camp Misty Mount and Camp Greentop. The proposed prescribed fire program was reviewed for compliance with Section 106 of the National Historic Preservation Act and Director's Order 28/Reference Manual-28 (Cultural Resources Management). The approved NHPA documents are included in Appendix D. Consultation with the Maryland State Historic Preservation Officer was also completed.

A Section 7 consultation with the U.S. Fish and Wildlife Service regarding endangered species issues is also required and a copy of the USFWS consultation response is included in Appendix D.

Stakeholders and the public will be given the opportunity to review this plan and the supporting environmental and historical assessments. Stakeholders will be provided copies of the plan for input to enhance their knowledge of this National Park Service program.

Reviewers include (1) park staff, 2) NPS regional natural resources, cultural resources, and ranger activities personnel (including the regional Fire Management Officer); (3) four local fire companies; Smithsburg Community Volunteer Fire Company, Wolfsville Volunteer Fire Company, Guardian Hose Company of Thurmont and Blue Ridge Mountain Volunteer Fire and Rescue Squad, Inc.; (4) Maryland Departments of Natural Resources and the Environmental Quality; (5) the Maryland State Historic Preservation Officer; and (5) officials from Frederick and Washington Counties, including health officials. The Superintendent has the final plan approval; however, concurrence of the National Capitol Region (NCR) Regional Director is required based on the delegated authority for EA approval.

F. Authorities for Implementation of the Fire Management Plan

The legal authority for fire management is found in the National Park Service Organic Act (Act of August 25, 1916, 16 USC 1), which states that the agency's purpose is:

“to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.”

This authority was further clarified in the National Parks and Recreation Act of 1978:

“Congress declares that...these areas, though distinct in character, are united...into one National Park System...The authorization of activities shall be construed and the protection, management, and administration of these areas shall be conducted in light of their high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress.”

The legal authority for the operation of the fire management program is found in 16 U.S.C. Chapters 1 and 3 with specific authorities found in 620 DM 1.1. The Organic Act of the National Park Service (August 25, 1916, Section 102) provides the authority for implementation of this plan.

The authority for FIREPRO (Normal Fire Year Programming) funding and all emergency fire accounts is found in the following authorities:

1. Section 102

General Provisions of the Department of the Interior's annual Appropriations Bill provides the authority under which appropriated monies can be expended or transferred to fund expenditures arising from the emergency prevention and suppression of wildland fire.

2. Public Law 101-121

Department of the Interior and Related Agencies Appropriation Act of 1990 established the funding mechanism for normal year expenditures of funds for fire management purposes.

3. 31 USC 665 (E) (1) (B)

Contains the authority to exceed appropriations due to wildland fire management activities involving the safety of human life and protection of property.

4. 16 USC 1b (1)

Rendering of emergency rescue, fire fighting, and cooperative assistance to nearby law enforcement and fire prevention agencies and for related purposes outside of the National Park System.

Authorities for procurement, personnel, and other administrative activities necessary to accomplish wildland fire suppression missions are contained in the Interagency Fire Incident Business Management Handbook.

Authorities to enter into agreements with other Federal bureaus and agencies; with state, county, and municipal governments; and with private companies, corporations, groups and individuals are cited in Director's Order-20/Reference Manual-20 (Federal Assistance and Interagency Agreements).

The National Park Service Wildland Fire Management Guidelines (DO18/RM-18) also summarize the statutes that authorize the funding of suppression, pre-suppression, prevention, prescribed natural fire, and prescribed fire activities as well as rendering assistance outside of parklands.

II. NATIONAL PARK SERVICE POLICY AND RELATION TO OTHER PLANS

A. Fire Management and National Park Service Management Policies

This FMP is prepared to meet the policy requirements of Director's Order 18, Wildland Fire Management, dated November 17, 1998. Preparation of this plan meets the requirements set forth in Department of Interior Manual 620 (620 DM) and the requirements of the Federal Fire Policy update of 2001. National Park Service Management Policies (2001) also provide general guidance to park management relating to fire. The 2001 policies document states the following:

“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. An EA developed in support of the plan will consider the effects on air quality, water quality, health and safety, and natural and cultural resource management objectives. Preparation of the plan and EA will include collaboration with adjacent communities, interest groups, state and federal agencies, and tribal government.

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. Prescribed fires are those fires ignited by park managers to achieve resource management and fuel treatment objectives.”

B. Relationship to the Park's Legislation and Purpose

Catoctin Mountain Park is influenced by numerous pieces of Federal legislation and Executive Orders. Emerging as a Recreational Demonstration Area out of New Deal legislation in the 1930's, Catoctin was transferred to the National Park Service by Executive Order No. 7496 dated November 14, 1936. Catoctin took on added significance with the establishment of the Presidential Retreat in 1942 and "the historical events of national and international interest" that occurred there. In 1945 President Harry S Truman determined that the area would continue to be a part of the National Park Service "in accord with the position expressed by . . . President Roosevelt." Subsequently the portion of the area south of MD Route 77 was transferred to the State of Maryland, becoming Cunningham Falls State Park in 1954. Today, 5,810 acres constitutes Catoctin Mountain Park.

The mission of Catoctin Mountain Park is to administer the area for the "conservation and development of natural resources" and for "public, recreational, and conservation purposes." Initially the use of fire was not a stated component of the establishing documentation except fire suppression was a normal operating procedure in WPA and CCC camps.

C. Goals of the Strategic Plan Related to Fire Management

- I. *Goal Category I* Preserve Catoctin Mountain Park Resources
 - a) Natural and cultural resources and associated values at Catoctin Mountain Park are protected, restored and maintained in good condition and managed within their broader ecosystem and cultural context.
 - b) The National Park Service at Catoctin Mountain Park contributes to knowledge about natural and cultural resources and associated values; management decisions about resources and visitors are based on adequate scholarly and scientific information.
- II. *Goal Category II* Provide for the Public Enjoyment and Visitor Experience of Catoctin Mountain Park
 - a) Visitors to Catoctin Mountain Park safely enjoy and are satisfied with the availability, accessibility, diversity, and quality of park facilities, services, and appropriate recreational opportunities.
 - b) Park visitors and the general public understand and appreciate the preservation of Catoctin Mountain Park and its resources for this and future generations.
- III. *Goal Category III* Strengthen and Preserve Natural and Cultural Resources and Enhance Recreational Opportunities Managed by Partners

This mission goal only refers to the legislated NPS partnership programs and is accomplished by central offices rather than parks.

IV. *Goal Category IV* Ensure Organizational Effectiveness of Catoctin Mountain Park

- a) The National Park Service at Catoctin Mountain Park uses current management practices, systems, and technologies to accomplish its mission.
- b) The National Park Service at Catoctin Mountain Park increases its managerial capabilities through initiatives and support from other agencies, organizations, and individuals.

All of these strategic goals can be related to the use of prescribed fire or suppression of wildfire as described in this Fire Management Plan. Prescribed fire is being introduced initially in an experimental capacity, but if implemented as a regular operational technique, it can be effective as an additional management tool to achieve the strategic plan goals.

D. Objectives of the Statement for Management (SFM)

Catoctin Mountain Park does not presently have a General Management Plan, however, the park has a Statement for Management (SFM) that provides the following objectives:

- Identify, protect and enhance native species populations, natural features and ecological processes of the park. Strive to maintain natural abundance, biodiversity and ecological integrity of the wildlife and plant populations.
- Provide protection for rare plants that occur within the park, and suffer population reductions as a result of over-browsing by white-tailed deer, or other natural or man caused actions.
- Reduce adverse affects of deer browse pressure to insure that a diverse forest structure and species composition is perpetuated.
- Insure that all park developments are aesthetically compatible with the natural and cultural environment, that existing facilities are utilized to the maximum extent possible, and that developments no longer serving useful purposes are removed.
- Maintain a high regard for the best interest of all employees through active personnel management; maintain accurate records of procurement, inventory, fiscal and property accountability; and insure that new and existing park programs are developed and managed effectively and economically.
- Make Catoctin Mountain Park available to individuals, institutions, public agencies and youth organizations as outdoor classrooms encouraging focus on activities compatible with the four interpretive themes of the park and providing assistance through interpretive and educational programs. These themes are Resource Protection/Conservation, Recreation, Natural History and Cultural History.

- Provide accessible facilities, recreational opportunities and programs for physically and mentally challenged visitors. Camp Greentop will continue to support residential camping programs for physically and mentally challenged persons, as it has since 1937 in cooperation with the League for People with Disabilities.
- Cooperate with the Naval Support Facility-Thurmont in matters of security, maintenance and privacy for the Presidential Retreat; and coordinate activities between the two agencies, to maintain the historic value of Camp David and the natural quality within and around the retreat.
- Make available to the public, traditional outdoor recreational activities that are not detrimental to the natural or cultural resources of the park and provide for the protection and safety of the visitor by exercising good judgment in planning, maintenance, administration, law enforcement, interpretation and visitor services, resource management and employee training.
- Maintain and use all roadways, trails, buildings and facilities in a manner such that deterioration will be reduced and safety increased for employees and visitors.
- Cooperation with state and local governments and adjacent landowners to insure that lands adjacent to the park are used in a compatible manner to provide preservation and protection to the resources.
- Consistent with National Park Service policy and Federal Law, Catoctin Mountain Park shall take positive action to perpetuate the cultural and archeological resources of the park to prevent adverse impacts on these resources by development, visitor use or other management activities; and to prohibit vandalism, appropriation or collection of cultural resources. The park's museum collections shall be managed in keeping with these guidelines and policies.

D. Objectives of the Resources Management Plan (RMP)

Implementation of the SFM and RMP is a coordinated effort among the organizational divisions within the park. The objective of the Resource Management Plan relating to fire is to provide for the preservation, restoration, maintenance, and protection of park resources. The objective listed in the Resource Management Plan is:

- 1) To preserve, protect, and manage the park's natural and cultural resources.

Activities described in this plan are part of the effort to protect and enhance natural features and ecological processes within the park. Camp Misty Mount and Camp Greentop are listed on the National Register of Historic Places and maintaining the historic resources of the park is one of management's primary tasks.

The park policy on fire is that all fires not classified as prescribed fires are suppressed. Active participation in ongoing fire prevention programs by local, city, and state fire

suppression agencies will be conducted on and off park property to protect human life, property and to prevent damage to park resources.

E. Fire Management's Relation to SFM and RMP Objectives

The Fire Management Plan is an action plan linked to the Resource Management Plan. It integrates fire management objectives with other resource management programs. Through this Fire Management Plan, the park will be able to safely utilize fire as a tool for resource protection and management. The Fire Management Plan, especially the prescribed fire components, provide a detailed action program that is consistent with National Park Service Management Policies and DO-18/RM-18, and will assist the park in its efforts to preserve, restore, maintain, and protect the natural and cultural resources. Also, with this plan, the park will be able to implement prescribed fire as a vegetation management tool in an effort to control exotic vegetation and reduce hazardous fuel accumulations.

F. Issues

This Fire Management Plan contains a detailed program of action to carry out fire management policies and objectives. Legal policy, environmental, resource, health and safety issues are discussed.

III. SCOPE OF THE WILDLAND FIRE MANAGEMENT PROGRAM

A. General Management Considerations

At Catoctin Mountain Park wildland fire will be managed to best utilize personnel and equipment in a safe, cost efficient manner. Partnerships have been developed and nurtured with local fire resources as well as the Maryland State Forest and Park Service. Projects will incorporate collaboration between agencies and will include priority setting and accountability as outlined in the 10 Year Comprehensive Strategy.

B. Fire Management Goals

The fire management goals for Catoctin Mountain Park are as follows:

- 1) Make human safety the highest priority of every fire management activity.
- 2) Suppress all unwanted and undesirable wildland fires regardless of ignition source to protect the public, private property, and the natural and cultural resources of the park.
- 3) Prevent human caused wildland fires.
- 4) Use suppression techniques that minimize resource damage.
- 5) Use mechanical hazard fuel removal to maintain fire buffers within the park.

- 6) Use prescribed fire to clear and maintain selected forest understory.
- 7) Use burn area rehabilitation techniques to control sedimentation and erosion, and to improve the aesthetics of burned over areas.
- 8) Propose, support, and carryout fire research that evaluate the effectiveness of fire as a control tactic for alien vegetation and evaluate fire for regenerating Table Mountain Pine.
- 9) Use prescribed fire to control alien vegetation if research demonstrates success.
- 10) Address all service-wide fire management goals as stated in DO-18/RM-18.

C. Wildland Fire Management Elements

This Fire Management Plan (FMP) identifies two elements of fire management at Catoctin Mountain Park: Wildland fire and fuels management.

1. Wildland Fire

a. Wildland Fire Suppression

This strategy includes all actions initiated to limit the growth of a wildland fire. A "wildland fire" is defined as a fire requiring suppression action. Three strategic suppression options allow the fire manager to suppress wildfires at minimum cost and minimum impact consistent with the values at risk. The definitions of the suppression options are:

- 1) Confined: A wildland fire that is restricted within predetermined natural boundaries until it burns itself out. Little or no suppression action is taken. Used in areas with extensive natural barriers and negligible values at risk.
- 2) Contained: A wildland fire that is restricted to a defined area, using a combination of natural and constructed barriers. These barriers should stop the spread of fire under prevailing and forecasted weather conditions.
- 3) Controlled: A wildland fire that is aggressively fought with personnel, equipment, and aircraft to halt its spread and to extinguish all hot spots until it is declared out.

Suppression actions may use all available equipment. The use of bulldozers, plows or other earth disturbing equipment, using Minimum Impact Suppression Tactics, may be used only under extreme circumstances and with prior written approval. Vehicles, such as fire engines, may be driven off designated roads only if there is little potential for ground disturbance. Only through the Superintendent's approval or in life

threatening situations will machine produced ground disturbances be allowed. The use of All-Terrain Vehicles (ATVs) will not be allowed off-road or off-trail and ATV use must be approved by the Incident Commander-Catoctin Mountain Park. Some trails and travel corridors may be designated for use by an ATV. All users of ATVs will be required to wear safety equipment, and had prior training on the use and operation of an ATV.

The recommended equipment for fire suppression at Catoctin Mountain Park includes: rakes, leaf blowers, flappers, chain saws, back-pack pumps, shovels, pulaskis, chain saws, drip torches, fusees, pumps, hose lays, Type-6 engine and Type-7 engine with slip-on unit, Type-6 trailer mounted pump, foam.

Direct attack is the preferred approach to all suppression activities at Catoctin Mountain Park. This tactic requires an aggressive attack on the fire (often a direct attack on the burning edge) to effect rapid extinguishment.

b. Wildland Fire Use

A wildland fire use program will not be adopted at Catoctin Mountain Park. Catoctin Mountain Park is a small park that would require assistance from other parks and agencies to implement wildland fire use. Naturally ignited wildland fires rarely occur, as most fires are caused by human carelessness or arson. These factors make it difficult to plan for wildland fire use. As a result, all unplanned fires caused by nature or man will be suppressed. Management may use prescribed fire to accomplish resource management objectives.

2. Fuels Management

a. Prescribed Fire

Fires intentionally ignited by management to accomplish management objectives in selected areas under certain conditions are called prescribed fires. Prescribed fires will be managed to achieve resource management objectives identified in the SFM and RMP. Prescribed fire goals will be to reduce fuel accumulations; manage vegetation to maintain vistas and promote the growth of native grasses, regenerate fire dependent species and control alien vegetation. When necessary, prescribed fire will be used in conjunction with other treatment methods to achieve the desired results. An example would be the integrated use of fire and mechanical removal of hazard trees and fuels. The objective is to reduce the wildfire threat to human life, preserve and to protect the park's cultural and natural resources. Prescribed fires that exceed prescription limits will be declared wildfires and will be immediately suppressed using the appropriate and available suppression option.

The equipment to be used in the prescribed fire program is the same as that identified for the suppression of wildfires.

b. Non-fire applications

Other methods are available to accomplish fuel management objectives when the use of prescribed fire is not possible or practical. The use of hand tools, power or mechanized equipment, or herbicides are a few such methods. Examples of non-fire applications may include:

- Chain saws for the removal of stands of trees killed off by parasites or disease such as Eastern Hemlocks (*Tsuga canadensis*) killed by Hemlock Wooley Adelgid.
- Mowing of road shoulders to reduce the tall grasses along roads to improve firebreaks.
- The use of chippers for the disposal of woody hazardous fuel material 50 feet back from road shoulders, 100 feet back from cultural resources and support facilities.
- Spot treatment with herbicide on exotic vegetation growing in areas where fire may be ineffective and mowing is impossible.
- Reduction of ladder fuels and down material \geq three inches to ground within 50 feet of roadways and 100 feet back from cultural resources and support facilities.
- Removal of dead trees that are uprooted. They will be dropped, lopped and flattened within 50 feet of all roadways.

D. Description of Fire Management Units (FMUs)

1) Park Characteristics

Catoctin Mountain Park is located in Frederick County near Thurmont, Maryland with a western portion of the park located in Washington County. The park consists of 5,810 acres of deciduous forests and mountain streams. The park contains the Presidential Retreat, Camp David. Adjacent properties include orchards, farms, private and public camps, forests, residential areas, Cunningham Falls State Park, and a rail line. Maryland Route 550 borders the park to the north and east and Maryland Route 77 to the south. Quirauk School Road borders a portion of the northwest boundary. A spur of the Appalachian Trail, the Catoctin Trail, enters the park. There are 130 landowners on the boundaries of Catoctin Mountain Park.

Of the 5,810 acres of land within the park boundary approximately 98 percent is deciduous forest, the remainder being roads, small meadows, wetlands and developed areas. Most of the park's area contains a mixture of oaks, hickories, maple, and tulip poplar. Other types of trees that can be found include cherry, ash, sassafras, elm, butternut, locust, walnut, hemlock, white pine, and table mountain pine. Officially, the forest is classified as a Mid-latitude Deciduous Forest. Federal lands include 5,810 acres fee simple ownership. The use of prescribed fire will be limited to lands that are fee simple in ownership.

The park protects the cultural and natural resources found within the natural setting of Catoctin Mountain Park. These resources include pre-historic and historic archaeological sites and roads. Camp Misty Mount, Camp Greentop and the Blacksmith shop are listed on the National Register of Historic Places. Sixty-five park structures have been placed on the List of Classified Structures.

Catoctin Mountain Park will be divided into five fire management units. The FMUs are designated as:

- 1) Hunting Creek Unit.
- 2) Thurmont Vista Unit.
- 3) Greentop Unit.
- 4) Hog Rock Unit.
- 5) Owens Creek Unit.

Actions that are common to all FMUs will be that fires both naturally occurring and human caused other than those intentionally set by NPS staff or park residents under an approved burn plan or permit will be suppressed under strategies (confine, contain, control) commensurate with firefighter and visitor safety and consideration for resource protection from suppression activities.

All roads and trails could and would be used as firebreaks and/or anchor points for firelines. The roads and rock outcrops would also be used as safe zones if necessary.

2) Fire Management Unit Characteristics

a) Hunting Creek Unit.

Features in this unit include several developed areas:

- 1) The Park Headquarters, Camp Peniel (840 feet elevation) and adjacent parking areas.
- 2) The Park Visitor Center (929 feet elevation) and adjacent parking areas.
- 3) Camp Misty Mount, which is a Historic District on the National Register of Historic Structures, has numerous cabin structures, camp office, dining hall, a pool, and adjacent parking areas.
- 4) Two ranger residences.
- 5) The Roads and Trails (R/T) Maintenance Shops and adjacent parking areas.
- 6) The Blue Blazes Whiskey Still Trail and interpretive site.
- 7) Several trails are in this unit.
- 8) Two Verizon wireless telecommunication facilities (WTF) and towers. One WTF is adjacent to the Park Headquarters Building and one is between the R/T Shops and Camp Misty Mount.
- 9) Power lines run along Maryland Route 77 from the park's east boundary to the Visitor Center.
- 10) Crow's Nest, a private campground.

- 11) Several private residences, farms and orchards border the park adjacent to this unit.
- 12) Cunningham Falls State Park is across Maryland Route 77.

The easternmost section of the unit is made up of steep trails in amongst high amounts of explosive type fuels such as rhododendron. Table Mountain Pine (*Pinus pungens*), a fire dependent species, exists within this unit and would benefit from prescribed fire. The section east of Park Central Road including the Visitor Center, Chimney Rock, Wolf Rock and the Charcoal trail contain large, but sparse fuels with some leaf litter on rocky shallow soils. The section on the west side of Park Central Road including Camp Misty Mount contains large accumulations of leaf litter and duff along with pockets of explosive fuels on steep slopes. Eastern Hemlock (*Tsuga canadensis*) grow in this unit, but have been infested with Hemlock Woolly Adelgid (*Adelges tsugae*) and coupled with recent years of drought are dying or in poor condition. These factors make the Hemlocks very susceptible to fire and add a potentially dangerous fuel for fire.

Use of this area consists mainly of day hikers on the trails, fisherman at Big Hunting Creek, visitors at the Visitor Center, park staff at the R/T Shop area, overnight cabin campers at Camp Misty Mount, and park staff at the park owned residences. Due to the large number of park visitor use structures, adjacent private structures, this unit's primary fire management strategies are the safety of visitors, prevention of structural fires, prevention and suppression of wildfires.

b) Thurmont Vista Unit.

Features in this unit:

- 1) Trail to Thurmont Vista and Wolf Rock.
- 2) Charcoal Interpretive Trail.
- 3) Thurmont Vista Parking Lot.
- 4) Wolf Rock Parking Lot.

This unit does not contain any structures or cultural resources. Gypsy Moth has infested trees in this unit. This could weaken the larger trees and make them more susceptible to damage by fire or contribute to wildfire as large slow burning fuels.

The eastern section of the unit is made up of ridge tops with rocky moderate to steep slopes and sparse vegetation. The western section of the unit has steep slopes of 10 % to 40% with large timber, sparse understory with small amounts of explosive fuels and some leaf litter. Rough outcrops of weathered metamorphic rocks, primarily Weverton quartzite and Catoctin Greenstone, typify the geology of Catoctin and can be easily viewed at Wolf Rock (1401 feet elevation), Thurmont Vista (1499 feet elevation) and Chimney Rock (1419 feet elevation).

Mainly day hikers on the trails to Thurmont Vista and Blue Ridge Summit Outlook (1,520 feet elevation) use this area of the park. Because there are no structures or cultural

Catoctin Mountain Park Fire Management Units

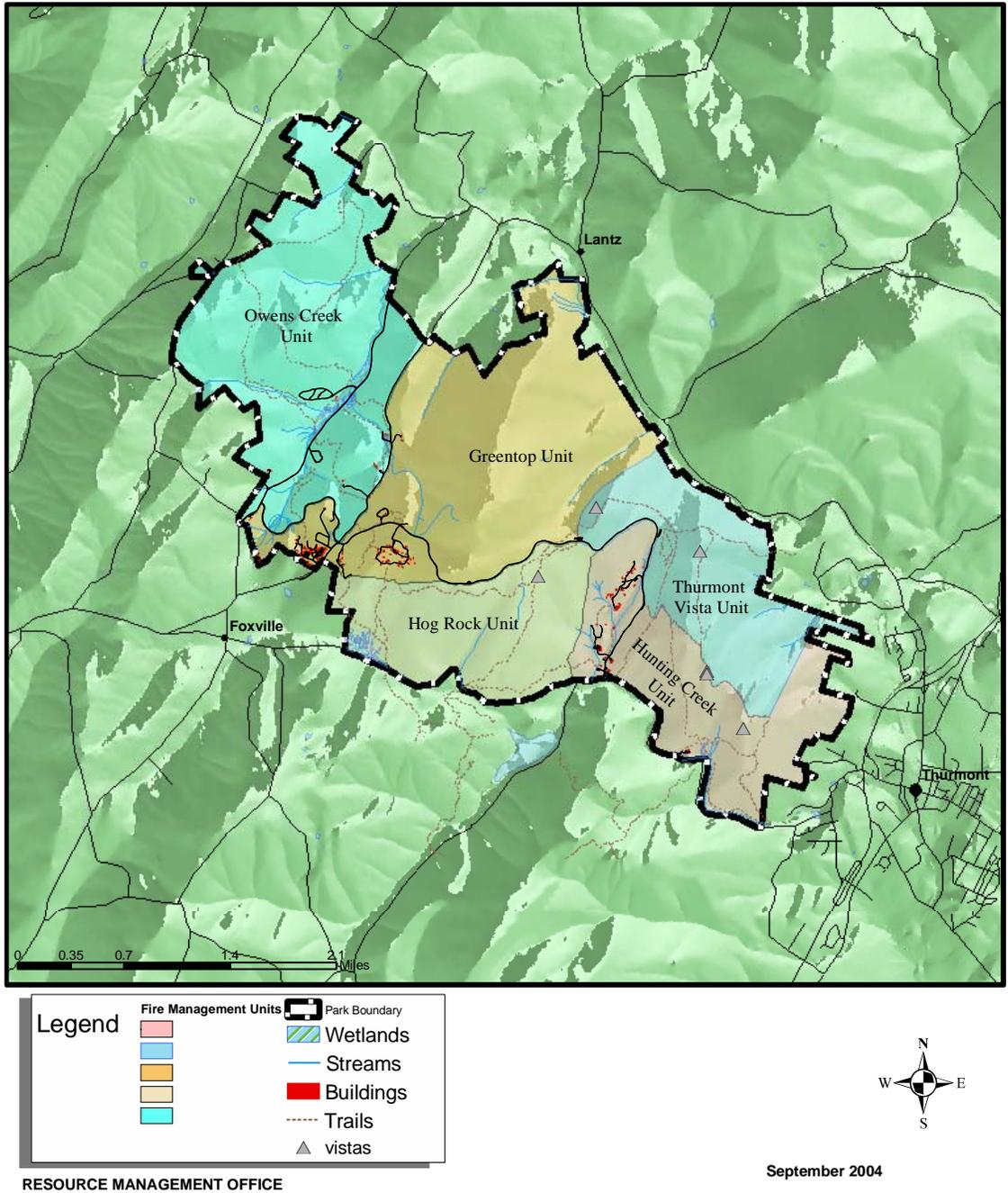


Figure 2. Fire Management Units

resources in this unit, and hiking trails provide access to visitors, this unit's primary fire management strategies are the safety of visitors and prevention and suppression of wildfires. The eastern sections of this unit are in an urban interface area and additional consideration must be given to this area if wildfire does breakout. There are no natural firebreaks other than Camp Airy (privately owned) and steep slopes contribute to additional firefighting difficulties. Due to the use of the area by park visitors, adjacent private structures and urban interface, this unit's primary fire management strategies are the safety of visitors, prevention of structural fires, prevention and suppression of wildfires.

c) Hog Rock Unit

The Hog Rock Unit is bounded on the north by Park Central Road and on the south by Maryland Route 77 that provides natural fire breaks.

Features in this unit:

- 1) The Hog Rock Nature Trail.
- 2) Falls Nature Trail a connector trail between the Hog Rock Nature Trail
- 3) Falls Nature Trail and a segment of the Catoctin Trail (a branch of the Appalachian Trail) run through this unit.
- 4) Hog Rock Parking Lot
- 5) The southern boundary is adjacent to Cunningham Falls State Park.
- 6) Power lines run along Maryland Route 77.

There are no structural or cultural resources in this unit and the natural resources would not be significantly threatened by wildfire. The unit generally has sparse vegetation and light leaf litter on rocky soil, but there are areas of steep slopes and some explosive fuels. While there are no structures within this unit, it is adjacent to the Camp Misty Mount cabin area and the Roads and Trails Maintenance Shops. These structures could be threatened by a wildfire that moves to the east.

Hog Rock (1,610 feet elevation) a metabasalt formation is located in the approximate center of this unit. This area could be used as a safe zone during a fire.

Use of this park area consists mainly of day hikers on the trails. Due to the use by park visitors, this unit's primary fire management strategies are the safety of visitors and prevention and suppression of wildfires. The Hog Rock Unit's eastern boundary has no natural firebreaks such as roads or trails. Due to that fact, consideration must be given to prevention of wildfire spread to Camp Misty Mount and the historic structures in that location as well as protection of the R/T Shop. Due to the park visitor use, this unit's primary fire management strategies are the safety of visitors and the prevention and suppression of wildfires.

d) Greentop Unit

Several areas in this unit are highly developed and have numerous structures. The majority of developed areas are concentrated in the southwest section of the unit.

Features in this unit are:

- 1) Camp Greentop, which is a Historic District on the National Register of Historic Structures, has numerous cabin structures, camp office, infirmary, dining hall and kitchen, a pool, and horse stable with support buildings.
- 2) Round Meadow has three dormitories, a park house used by US Park Police, one Ranger residence, the Visitor Service Office, maintenance shops, a gymnasium, the Resource Management Office, a cafeteria lunchroom, a bunkhouse, a classroom, a blacksmith shop (on the Federal Register) and a wireless telecommunication facility and tower.
- 3) Bessie Darling Home site.
- 4) The park Fire Cache Building at the intersection of Park Central Road and Manahan Road.
- 5) Spicebush Trail and Presidential Horse Trailhead with parking area.
- 6) Poplar Grove camping areas straddle Manahan Road and are in Greentop and Owens Creek Campground Unit.
- 7) Adjacent to Round Meadow within NPS property is a Naval residence facility made up of mobile homes.
- 8) Adjacent to Round Meadow outside of park property are private residences, a cemetery and another Naval residence facility.
- 9) On this unit's north and northeast, are farms, private residences and the community of Lantz outside of the park boundary.

The majority of the unit has sparse understory vegetation over rocky soils with large trees. Several areas have a large accumulation of leaf litter. There are low to moderate slopes in the southern sections of the unit, while in the northern edges of the unit steep slopes can be found. These steep slopes have no natural firebreaks or trails and entry by firefighters and equipment may be difficult.

Use of this park area consists mainly of day hikers on the trails and overnight cabin campers at Camp Greentop and Round Meadow, park staff residences, park staff at the Visitor Services Office, the Maintenance Shops, two Naval residence facilities, numerous private residences and a cemetery. Due to the large number of park visitor use and privately owned structures, this unit's primary fire management strategies are the safety of visitors, prevention of structural fires and prevention and suppression of wildfires.

Of particular concern are the summer campers at Camp Greentop. These campers have physical and mental disabilities, which may severely limit their mobility. Greater consideration must be given to protection of the Camp Greentop and Round Meadow locations during wildfires. Camp Greentop and Round Meadow do have open fields and parking areas that could be used as safe zones. Two Naval residence facilities, several

private residences and a cemetery are also adjacent to the park boundaries. Due to the large number of park visitor use structures, adjacent private structures and urban interface, this unit's primary fire management strategies are the safety of visitors, prevention of structural fires, prevention and suppression of wildfires.

e) Owens Creek Unit

Features in this unit:

- 1) Owens Creek Campground and facilities.
- 2) Owens Creek Picnic Area and parking areas.
- 3) Sawmill Interpretive Exhibit.
- 4) Chief Ranger Residence.
- 5) Appalachian Shelters on the Horse Trail.
- 6) Ike Smith Pumphouse area.
- 7) Browns Farm Trail and structures.
- 8) The Catoctin Trail, a branch of the Appalachian Trail.
- 9) Presidential Horse Trail.
- 10) Deerfield Nature Trail.
- 11) Adjacent privately owned farms and residences.

The eastern and south sections of this unit between Manahan Road, Foxville-Deerfield Road and Park Central Road, have areas with slopes that vary from 0% to 30%. There are moderate levels of leaf litter, large fuels and some areas with moderately thick understory. If wildfire moved south across Park Central Road, the structures in Round Meadow would be threatened.

In the southwest sections of this unit, private residences and farms lie adjacent to the park boundaries. Slopes here are generally slight with a few steep slopes. There are large amounts of large fuels with moderate leaf litter and sparse vegetation on rocky soils.

Private residences, farms and power lines border this unit on the north and northwest boundaries of the park. Steep slopes with large accumulations of leaf litter, duff and some explosive fuels lie within this section of the unit.

Use of this area consists mainly of day hikers and horse riders on the trails, fisherman at Owens Creek, overnight visitors using the Owens Creek Campground, day visitors using the Owens Creek Picnic Area, visitors at the Sawmill Interpretive Site, park staff at the park owned residence and numerous private residences and structures on the park boundary. Due to the use by park visitors, several park structures, adjacent private structures, this unit's primary fire management strategies are the safety of visitors, prevention of structural fires, and the prevention and suppression of wildfires.

3) Strategic Fire Management Objectives

- a) Contain 95% of unwanted wildland fires within the first burning period.

- b) Conduct prescribed burns that are consistent with all Federal, State, and local smoke management requirements.
- c) Determine effectiveness of prescribed fire in achieving resource management and hazard fuel reduction objectives by conducting carefully documented prescribed burns and monitoring and evaluating the results.

4) Management Considerations for Operational Implementation

- a) No unacceptable impact to cultural resources, threatened and endangered (T & E) species, or non-target vegetation.
- b) Ensure socio-political and economic impacts are considered in development of implementation plans.
- c) Ensure that air quality requirements are considered in developing implementation plans.

5) Historic Role of Fire at Catoctin Mountain Park

Catoctin Mountain Park is comprised of a mixed deciduous forest. Records exist of 13 fires from 1936 through 2003. Most of the fires have been caused by human carelessness. Only limited research has been conducted into the historic role of fire after European settlement of the area. The role of fire in pre-settlement eastern hardwood forest is out of the scope of this Fire Management Plan. While it is important to understand the role fire played in pre-settlement forests, this FMP deals with fire in the present forest ecosystem and social contexts.

6) Wildland Fire Management Situation

a) Historical Weather Analysis

The average relative humidity for the park is high averaging 70% annually. During the spring fire season this average is 67.3% and during the fall fire season the average relative humidity is 71.3%. The annual precipitation average is 39.5 inches. A breakdown of average precipitation by season follows: Winter-8.02 inches, Spring-10.7 inches, Summer-10.25 inches, and Fall-10.4 inches. Temperatures can range from extreme lows of about minus 25 degrees in winter to highs that can exceed 100 degrees Fahrenheit in summer. The average annual temperature is 53 degrees. By season the average temperatures are: Winter-32.2 degrees, Spring-52 degrees, Summer-73 degrees, and Fall-54.9 degrees. Wind direction and speed average per year is NW at 9 MPH. Peak bursts associated with thunderstorms have produced winds in excess of 77 MPH.

b) Fire Season

Catoctin Mountain Park experiences two fire seasons: the spring fire season runs from February 15 to May 15, and the fall season runs from October 15 to December 15.

Precipitation and green-up are the controlling factors for the beginning and end of the spring fire season. The beginning of the fall fire season is dependent on when the vegetation begins to go into dormancy, while the end of the fall fire season is dependent on frosts, rain or snowfall.

c) Fuel Characteristics/Fire Behavior (Anderson, 1982)

Fire Behavior Fuel Model 8 (Closed Timber Litter) – Slow-burning ground fires with low flame lengths are generally the case in fuel model 8, as is evidenced by the one foot flame lengths and average rate of spread of 1.6 chains/hour (99 feet/hour). Fire is supported in the compact litter layer. This fuel model is typical for winter, spring, and summer periods where fuel compaction and moisture content are primary influences. Primarily under severe weather conditions involving high temperatures, low humidity, and high winds, and extended periods of dry weather will these fuels pose fire hazards.

Another fuel to consider that is non-native and not usually considered in the Fuel Model 8 is the dense growth of microstegium or Japanese Stiltgrass (*Microstegium vimineum*) in the fall. The ground is covered by a thick layer of the grass like plant and will add significantly to fire spread. When microstegium dries it becomes an excellent fuel similar to summer grasses. Presently, there is not enough research on *Microstegium* as a fuel to determine if the dried grasses will burn long enough to ignite heavier fuels.

Fire Behavior Fuel Model 9 (Hardwood Litter) – In fuel model 9, fires run through the surface litter faster than model 8 at 7.5 chains/hour (495 feet/hour) and have longer flame lengths (averaging 2.6 feet). Fall fires in hardwoods are predictable, but high winds will actually cause higher rates of spread than predicted because of spotting caused by rolling and blowing leaves. Concentrations of dead-down woody material will contribute to possible torching out of trees, spotting, and crowning.

d) Fire Effects

Timber Fuels

Fires within the hardwood forests are generally restricted to surface fuels, and consume leaf litter and branchwood. Under most conditions, such fires are of low intensity and short duration. Flame lengths of 2 feet or less are common. Primarily wind and topography influence fire spread. Fire effects include the removal of surface fuels, occasional scorching of trees, and the reduction of young woody reproduction.

Larger mature trees (greater than 6" diameter at breast height (dbh)) are susceptible to basal fire injury, which generally does not reduce diameter growth unless the crowns are appreciably damaged by fire. Damage to the cambium of larger trees is directly related to season of fire occurrence, intensity, duration of heat, bark thickness, and frequency of burning. Trees are generally less susceptible to fire injury during the

dormant season. Seedlings and saplings of tree species other than oak-hickory are readily killed by fire.

According to studies conducted by Pennsylvania State University (Abrams, 1992), fire plays a significant role in development of oak forests. Relative to other hardwoods, fire should favor oaks because of their thick bark, sprouting ability, resistance to the rotting after scarring, and the suitability of fire-created seedbeds for acorn germination. Periodic fire should also check succession in oak forests because most successional species, such as maple, exhibit low resistance to fire. The clearing of successional species will also benefit the oak forest since oak species generally have low or intermediate tolerance to shade, and therefore their seedlings do not exhibit long-term survival or growth in the condition of a closed understory.

Under extreme conditions, surface fires may torch out and occasionally crown where ladder fuels exist. The extent of such fire behavior is rather limited. Under these conditions, fire intensity may be sufficient enough to consume organic matter of mineral soil. Such conditions occur only during periods of severe and infrequent drought. Monitoring programs will be established to evaluate and document the vegetative response to the wildland and prescribed fires. Fire research has been initiated and will be sought in the future to evaluate fire effects and achievement of objectives.

e) Fire Regime Alteration

The majority of Catoctin Mountain Park is heavily forested with various eastern hardwood forest types. These forest types are considered to be in what is referred to as *Natural Fire Regime 1B*. Natural fire in the context of this FMP, is fire caused by for example, lightning rather than human caused. Natural Fire Regime 1B refers to a forest that has infrequent, low-intensity surface fires with a recurrence interval of up to 35 years. Most fires within this type of regime are small in area. While natural fires once played a variety of roles in the natural ecosystems that existed in the Middle Atlantic States prior to the arrival of Native Americans, historical evidence indicates that since the arrival of Native Americans and later human settlement, humans have caused the vast majority of wildland fires in the Mid-Atlantic region. Human caused fires have in turn had their own profound effect on the various ecosystems in this area.

Table 1 - Fire Regimes

<i>Fire Regime Group</i>	<i>Frequency (Fire Return Interval)</i>	<i>Severity</i>
I	0-35 years	low severity
II	0-35 years	stand replacement severity
III	35-100+ year	mixed severity
IV	35-100+ year	stand replacement severity
V	>200 years	stand replacement severity

Table 2 - Condition Class Descriptions

Condition Class ¹ Descriptions	
<i>Condition Class</i>	<i>Fire Regime</i>
Condition Class 1	Fire regimes are within an historical range and the risk of losing key ecosystem components is low. Vegetation attributes (species composition and structure) are intact and functioning within an historical range.
Condition Class 2	Fire regimes have been moderately altered from their historical range. The risk of losing key ecosystem components is moderate. Fire frequencies have departed from historical frequencies by one or more return intervals (either increased or decreased). This results in moderate changes to one or more of the following: fire size, intensity and severity, and landscape patterns. Vegetation attributes have been moderately altered from their historical range.
Condition Class 3	Fire regimes have been significantly altered from their historical range. The risk of losing key ecosystem components is high. Fire frequencies have departed from historical frequencies by multiple return intervals This results in dramatic changes to one or more of the following: fire size, intensity, severity, and landscape patterns. Vegetation attributes have been significantly altered from their historical range.

¹Current conditions are a function of the degree of departure from historical fire regimes resulting in alterations of key ecosystem components such as species composition, structural stage, stand age, and canopy closure. One or more of the following activities may have caused this departure: fire suppression, timber harvesting, grazing, introduction and establishment of alien plant species, insects or disease (introduced or native), or other past management activities

f) Control Problems

Light flashy fuels, including leaf litter and grass (*Microstegium vimineum*), may create a control problem when flames are driven by wind in the spring or fall of the year. However, such fires are easily controlled by the availability of natural and man made barriers including roads, streams, sidewalks and fuel brakes.

g) Values at Risk

Values at risk include:

- Park Ranger Residences.
- Rural Residences.
- Naval Residence Facilities.
- Camp David, The Presidential Retreat.
- Historic Work Progress Administration (WPA) Cabin Camps and Civilian Conservation Corps (CCC) Improvements in Two Historic Districts.
- Cultural Landscape Features.
- Park Maintenance Support Buildings.
- The Park Headquarters Building.
- Park Visitor Center.
- Dormitories in Round Meadow.
- Campgrounds.
- Other Historic and Administrative Structures.
- Neighboring Orchards and Farms.
- Forested Areas.
- Appalachian Shelters
- The Chesapeake Bay Watershed (Big Hunting Creek and Owens Creek) including Water Quality.
- State Listed Threatened and Endangered Plants and Animals.
- Soil Erosion.
- Highway Corridor Visibility.
- Park Power Grid (Transformers, Power Lines, etc.)

IV. WILDLAND FIRE MANAGEMENT PROGRAM COMPONENTS

A. General Management Considerations

- 1) Catoctin Mountain Park is managed as a natural area of hardwood forests that contains significant cultural resources that include documented archeological sites, historic WPA cabin camps, and the Presidential Retreat, Camp David. The park's legislation, Statement for Management (SFM) and Resource Management Plan (RMP) provide a mandate to preserve the park and provide for resource-based recreation. This direction, in conjunction with the National Park Service Organic Act of 1916 and the 2001 Management Policies, is the basis for the inclusion of fire in resource management at Catoctin Mountain Park. Consequently, all strategies and tactics employed in wildland and prescribed fire management will be sensitive to protection of the cultural and natural resources.
- 2) A Wildland Fire Implementation Plan (WFIP) will be initiated for all wildland fires. The park Fire Management Officer (FMO) will complete the Stage I Initial Fire Assessment that provides the decision framework for selecting the appropriate management response.

B. Wildland Fire Use

There are no plans for a wildland fire use element at Catoctin Mountain Park at this time.

C. Wildland Fire Suppression

1. Range of Potential Fire Behavior

Catoctin Mountain Park is primarily composed of a mixed deciduous forest. Fuel Models 8 and 9 are represented by the mature stands of hardwood trees found throughout the park. Fuel Model 8 consists of slow burning ground fires with one-foot flame lengths and average rate of spread of 1.6 chains/hour (99 feet/hour). An occasional "jackpot" or heavy fuel concentration may cause a flare up. Fire behavior for Fuel Model 9 is largely the same as Fuel Model 8 except that fire may tend to run faster through surface fuels approximately 7.5 chains/hour (495 feet/hour) and have longer flame lengths (averaging 2.6 feet).

High winds may cause higher rates of spread because of spotting from rolling and blowing leaves. Concentrations of dead-down and standing woody material will contribute to torching and crowning in dense stands of mountain laurel (*Kalmia latiflora*) and Eastern Hemlock (*Tsuga canadensis*), which are present on the eastern side of Catoctin Mountain Park.

2. Preparedness Actions

a. Fire Prevention Program/Education/Information

An active fire prevention program is conducted in cooperation with other agencies to protect human life and property, and prevent damage to cultural and natural resources or physical facilities.

A public education program incorporating messages regarding potential fire dangers and fire prevention has been implemented. Visitor contacts, bulletin board materials, handouts and interpretive programs are utilized to increase visitor and park neighbor awareness of fire hazards.

Trained employees need to disseminate to the public the beneficial effects of prescribed fire as opposed to unwanted human-caused fires, with emphasis on information, essential to understanding the potential severity of human-caused wildfires and how to prevent them.

During periods of extreme or prolonged fire danger, fire prevention messages will be included in all interpretive programs. These activities are specifically addressed in the park's Step-up Plan. Emergency restrictions regarding fires or area closures may become necessary. Such restrictions, when imposed, will usually be consistent with those implemented by the State of Maryland. The Chief Ranger/Fire Management Officer (FMO) will recommend to the Superintendent when such restrictions are necessary. The Superintendent will authorize such closures.

When prescribed fires are burning in the park, signs at the Visitor Center, park unit bulletin boards, park web site and press releases in advance of the prescribed fire ignition will be used to supplement visitor contacts. These communications will be used to administratively direct, inform, guide and caution visitors about existing fire conditions and prescribed fire activities.

It is essential that employees be well informed about fire prevention and the objectives of the park's fire management program. Further, employees must be kept informed about changes in existing conditions throughout the fire season.

b. Annual Training Activities

Departmental policy requires that all personnel engaged in suppression and prescribed fire duties meet the standards set by the National Wildfire Coordinating Group (NWCG, 310-1). The Department of Interior (DOI) incident qualification system meets or exceeds all NWCG standards. Catoctin Mountain Park will conform strictly to the requirements of the National Park Service wildland fire management qualification and certification system. Current firefighter qualifications will be mandatory for all personnel engaged in fire suppression or prescribed fire duties.

The park Assistant Fire Management Officer (AFMO) will be responsible for organizing the training required to meet park expectations for red-carded firefighters. The Fire Management Plan (FMP) demands qualified evaluators and decision-makers, especially personnel trained in fire behavior forecasting. Where advanced training is necessary, the AFMO will work through the region's Fire Management Officer and the Division of Fire and Aviation Management to make the necessary arrangements.

At least eight hours of fireline safety refresher training will be given annually for red-carded firefighters. Additional training will be given in pump and engine operation, power saws, firefighter safety, fire weather and fire behavior, helicopter safety and park prescribed fire objectives and activities. Extensive on-the-job training is encouraged and conducted at the field level. Whenever appropriate, the use of fire qualification position task books will be used to document fire experience of trainees. The AFMO will coordinate the park's fire training needs with those of other nearby parks, cooperating agencies, and the region.

In addition, during general seasonal orientation, all seasonal personnel will receive a briefing covering the following:

- 1) Purpose and objectives of the fire management program.
- 2) Prescribed fire actions conducted and planned.
- 3) Use of fire in vegetation management.
- 4) Public, employee, and firefighter safety during suppression and prescribed fire operations.

The park supports the development of individual overhead personnel from among qualified and experienced park staff for assignment to incident management teams at the local, regional, and national level.

Fire suppression is an arduous duty. On prescribed fires, personnel may be required to shift from monitoring activities to suppression. Poor physical conditioning of crewmembers can compromise safety and endanger lives during critical situations. Personnel expected to perform fire management duties will maintain a high level of physical fitness. This requires the firefighter to pass the pack test by hiking 3 miles in 45 minutes or less while carrying a 45-pound backpack. For a more detailed description of physical fitness requirements see DO-18/RM-18.

c. Readiness of Equipment and Supplies

Wildland fire equipment and supplies will be kept in the park's fire cache and maintained by the park's AFMO. The coordinator will inventory and maintain the park's fire truck, slip-on unit, tank trailer, hand tools, ignition devices, portable

pumps, personal protective equipment and chainsaws. Equipment will be serviced prior to fire season with routine maintenance performed as necessary. Equipment that is out of service shall be secured or labeled as such using the lock-out-tag-out system. Individual fire fighters will be responsible for the care and readiness of their own assigned or personal protective equipment at all times. Personal protective equipment that is worn out or damaged can be replaced by contacting the park’s fire coordinator. Standard Operating Procedures (SOP) for the care and operation of the park’s wildland fire truck will be reviewed and updated as necessary.

d. Fire Weather and Fire Danger

Access to the Weather Information Management System (WIMS) can be made through any computer with proper access codes. Catoctin Mountain Park currently does not access WIMS, but will complete the necessary procedures as the prescribed fire program develops. Weather observations and situation reports are entered on a periodic basis throughout the fire season. Outputs of fire weather and fire danger can also be retrieved from WIMS. The fire weather station at the Catoctin Mountain Park collects (NFDRS) identify data.

e. Step-up Staffing Plan

<i>Readiness Level</i>	<i>Burning Index</i>	<i>Fire Danger</i>	<i>Activity</i>
1	0-7	<i>Low</i>	No activity necessary. <ul style="list-style-type: none"> • Normal eight (8) hour tours of duty. • Red-carded employees are available to respond and take necessary action on any fire reported. • Fire equipment and supplies serviced and prepared for use.
2	8-15	<i>Moderate</i>	<ul style="list-style-type: none"> • Normal eight (8) hour tours of duty. • On-duty patrol rangers are observant of wildland fire indicators. • Fire tools and Personal Protective Equipment (PPE) are ready and available for use.
3	16-32	<i>High</i>	<ul style="list-style-type: none"> • Normal eight (8) hour tours of duty. • Park is totally prepared to respond to fire. • Location of red-carded personnel are known to all relevant personnel.

			<ul style="list-style-type: none"> • Red-carded personnel have fire tools and PPE accessible and available for use. • Fire engines are ready to respond.
4	33-41	<i>Very high</i>	<p>All activities in Readiness Level 3 are continued.</p> <ul style="list-style-type: none"> • Approval for expenditure of PWE-381 funds is obtained from the Regional Fire Management Officer. • The Superintendent is notified daily of conditions. • Tours of duty may be extended. • Increased prevention and detection patrols are conducted. • A minimum of two (2) red-carded firefighters are on duty during the burning period (to at least 1800 hours). • Longer hours of coverage are initiated for certain key positions (Chief Ranger, Assistant FMO). Lieu days and leave may be cancelled for red-carded firefighters. • Cooperatives are contacted and activities coordinated in an effort to provide consistent information to the public and park neighbors. • High fire danger notices will be posted in Visitor Center and at site bulletin boards. • More frequent patrols are instituted to detect wildland fire starts.
5	42+	<i>Extreme</i>	<ul style="list-style-type: none"> • All activities in Readiness Class IV are continued. • All fires are prohibited including the use of fire grates, grills, and stoves. • Restrictions and closures of park areas may be deemed necessary. • Interpretive activities will include a fire message. • Preliminary Delegation of Authority is prepared for hand-off to Incident Management Team.

Table 3. Readiness Class levels for Catoctin Mountain Park.

3. Pre-attack Plan

Pre-attack planning is “the process of collecting, evaluating, and recording fire intelligence data in advance of fire occurrence for decision-making purposes to increase the chances of successful fire suppression in initial attack and campaign fire situations consistent with the fire management objectives for a given area” (Merrill and Alexander, 1987).

Pre-attack planning information will be assembled by the park Fire Management Officer and Assistant Fire Management Officer for transmittal to any level of Incident Management Team (IMT). Most of the maps and components of the pre-attack planning checklist are housed in the Visitor Services Office in Camp Round Meadow. GIS Support personnel will be available to provide current fire update maps and other maps necessary to assist the fire effort. This information will also be communicated during the incoming briefing with the IMT.

A pre-attack planning checklist is included in RM-18, chapter 7 and Appendix G.

The park Fire Management Officer and AFMO will brief any incoming fire forces on pertinent pre-attack information.

4. Initial Attack (IA)

Decision Procedures

Suppression by confinement, containment or control will be a normal response. Upon discovery of a fire, all subsequent actions will be based on the following:

- a) **Priorities** -
 - (1) Provide for firefighter & public safety.
 - (2) Protect values at risk.
 - (3) Protect resources.
 - (4) Minimize cost.

- b) **Criteria for IA** - Dispatch red-carded personnel. The first and most qualified fire fighter on scene will assume the role of Incident Commander. The person who assumes the Incident Commander duties must have proper training to assume the IC role. The Incident Commander will locate, size-up, and coordinate suppression actions until relieved by an equally or higher qualified individual. Considering the current and predicted fire conditions, the Incident Commander will assess the need for additional suppression resources and estimate the final size of the fire. The potential for spread of fire outside of the park should be predicted, as well as the total suppression force required to initiate effective containment action at the beginning of each burning period.

- c) **Typical Fire Response** - Typical response during normal working hours will be 5-10 minutes for firefighters and hand tools. The fire truck and slip-on unit will be able to

- respond within 20 minutes of notification of wildfire during the fire season. Off duty hours response will be slightly longer but still within acceptable time frames.
- d) **Restrictions** - Firefighters will employ Minimum Impact Suppression Tactics (MIST) to prevent environmental damage. Hand tools include but are not limited to rakes, pulaskis, shovels etc. The Incident Commander will assess the need for law enforcement personnel for traffic control, investigations, evacuations, etc.
 - e) **Partnerships** - Cooperative Agreements exists between Catoctin Mountain Park and Smithsburg Community Volunteer Fire Company, Wolfsville Volunteer Fire Company, Guardian Hose Company of Thurmont, Blue Ridge Mountain Volunteer Fire and Rescue Squad, Inc., and the Maryland Department of Natural Resources, State Forest and Park Service.
 - f) **Reporting** - Document decisions and complete the fire report (DI-1202) by 10:00 a.m. of the following morning.
 - g) **Responsibility** - The Superintendent will make all final decisions on the fire during the initial attack. However, if a wildfire requires extended attack, a Delegation of Authority would be prepared by the park authorizing the Incident Commander to make all decisions pertaining to the fire. An example of a Delegation of Authority is in RM-18, Ch. 9, ex. 3.

5. Extended Attack and Large Fire Suppression

Personnel and equipment must be efficiently organized to suppress fire effectively and safely. To this end, the Chief Ranger assumes the command function for initial attack on major or multiple fire situations, setting priorities for the use of available resources and establishing a suppression organization.

As the fire moves to extended attack there will be an Incident Commander responsible through the Delegation of Authority from the Superintendent. The Incident Commander will designate all overhead positions on fires that require extended attack. A Delegation of Authority to the Incident Commander will be prepared (RM-18, Ch. 9, ex. 3) and executed in a hand-off briefing to the Incident Management Team.

6. Exceeding Existing Wildland Fire Implementation Plan (WFIP)

When a wildland fire cannot be controlled during the initial response period, or where a prescribed fire is unsuccessful or escapes prescription, a Wildland Fire Situation Analysis (WFSA) is initiated. On NPS-owned lands, when the second burning period will not see control of fire spread, qualified NPS staff should be on site to prepare the WFSA for documentation purposes. At this point a WFSA will be completed each day until the fire is surrounded by firelines or natural or other barriers that will stop fire spread. When a WFSA has been completed for operations during a second burning period, the fire will be considered to be an extended attack fire.

7. Minimum Impact Suppression Tactics (MIST)

Director's Order #18 states that: "Methods used to suppress wildland fires should minimize impacts of the suppression action and the fire, commensurate with effective control and resource values to be protected." All fires occurring on National Park Service lands will be suppressed using minimum impact suppression tactics. These tactics include using hand tools (pulaskis, rakes, shovels etc.) in lieu of bulldozers to construct fire line. Chainsaws may be used in compliance with the park's chainsaw standard operating procedure. The following guidelines apply:

- a) Existing natural and man-made barriers (trails, roads, side walks, streams, etc.) shall be used in lieu of handline when possible. When handlines are utilized they shall be constructed to the top layer of mineral soil.
- b) Firelines constructed on steep slopes will require special tactics such as cross slope or cup trenches.
- c) Portable pumps shall be used in lieu of engines when possible.
- d) No new roads will be created.
- e) Operating vehicles off existing roads will be done in consideration of existing soil conditions and as defined in the Delegation of Authority.

In the event of the threat of life or extensive property damage, the Superintendent or his/her designee may amend these constraints.

8. Burned Area Rehabilitation Guidelines (RM-18, Chapter 9, example 5, page 6)

When any suppression or prescribed fire action is taken, rehabilitation is appropriate. The most effective rehabilitation measure is prevention of impacts through careful planning and the use of minimum impact suppression tactics.

The Incident Commander or the Fire Management Officer will initiate rehabilitation in consultation with the Resource Manager. Rehabilitation will be directed toward minimizing or eliminating the effects of the suppression effort and reducing the potential hazards caused by the fire.

If re-vegetation or seeding is necessary, the natural resource management staff will be consulted for approval of the species chosen.

If emergency rehabilitation measures are needed to reduce the effects of a wildfire, then the park can request appropriate funding through the Burned Area Rehabilitation (BAR) fund. The BAR fund is administered through the National Park Service Branch of Fire and Aviation Management at the National Interagency Fire Center.

Rehabilitation plans for each fire will be jointly formulated by the Incident Commander, Park FMO, Resource Manager and the Chief Ranger and approved by the Superintendent. Rehabilitation Plans will be completed in advance of any prescribed fire. A final plan will be submitted to Region for establishing an account (PWE) number. Rehabilitation should be initiated prior to complete demobilization or early the following season.

9. Recording and Reporting Procedures

A DI-1202 Fire Report will be completed to document all fires occurring in the park. All reports and records associated with wildland and prescribed fires are kept on file in the Fire Management Office. The Fire Management Officer and AFMO are responsible for maintaining the files. Individual assignments for required reports are outlined in this plan.

Table 4 - Checklist - Wildland Fire

Checklist of Wildland Fire Documents and Reports		
Document	Revision Or Preparation Frequency	Responsible Party
DI-1202	Each Incident	Incident Commander/Fire Management Officer
WFSA	As Needed	IC/Chief Ranger
Fire Complexity Analysis	Per Incident As Needed	Incident Commander/Fire Management Officer
Wildland Fire Critique	Each Incident	Chief Ranger

V. FUEL MANAGEMENT

A. Scope and Direction

The scope and direction of the fuels management program as part of the overall fire management plan for Catoctin Mountain Park is stated in Section III, Part C 2.

B. Prescribed Fire

1. Planning and Documentation

a) **Overview** - The objective of the prescribed burning program at Catoctin Mountain Park is to protect and preserve the cultural and natural resources of the park through vegetation management. The purpose of fuels management is to complement the fire management program by decreasing the potential damage to park resources, outside lands, and minimizing risks to employees, residents and visitors.

b) **Objectives** - Prescribed fire objectives are to:

- 6) Manage vegetation to maintain vistas.

- 7) Promote the growth of native vegetation.
- 8) Enhance fire dependent species regeneration.
- 9) Control alien woody vegetation.
- 10) Reduce fuel loading by disposal of debris from brush and downed trees.
During trail maintenance operation, following storms, and other resource management projects when considerable debris accumulates. Often chipping the materials is difficult due to location and quantities. Letting the materials lay would contribute to hazardous fuel loads.

This Fire Management Plan calls for full suppression of all wildland fires, both natural and human-caused, at Catoctin Mountain Park. Any prescribed fire outside prescription will be designated a wildland fire and will be immediately suppressed.

c) **Criteria**

Prescribed fires involve the use of fire as a tool to achieve management objectives as stated in the Resource Management Plan (RMP). Prescribed fire may also be used in conjunction with mechanical hazard tree reduction to burn fuels that accumulate in brush piles from these operations.

Research burning may also be conducted when determined to be necessary for accomplishment of research project objectives. Actions included in the prescribed fire program include: the park's selection and prioritization of prescribed fires to be carried out during the year, prescribed fire plans, fire prescriptions, burn operations, documentation and reporting, fire effects monitoring, and burn critiques.

Measures to ensure the successful implementation of the prescribed fire program are to:

- 1) Conduct multiple small sized experimental prescribed burns to determine fuel characteristics and fire characteristics specific to Catoctin Mountain Park ground fuels prior to implementation of a complete prescribed burn program. No prescription burns have been utilized at Catoctin Mountain Park historically.
- 2) Conduct a vigorous prescribed fire program with the highest professional and technological standards and without escaped fires.
- 3) Identify the type of prescribed fire that is most appropriate to specific situations and areas.
- 4) Efficiently accomplish resource management objectives through the application of prescribed fire.

- 5) Continually evaluate the prescribed fire program to better meet program goals by refining prescribed treatments and monitoring methods, and by integrating applicable technical and scientific advancements.
- 6) Prepare prescribed fire plans with a review by a qualified Prescribed Fire Manager/Prescribed Burn Boss and approval by the park Superintendent.
- 7) Conduct prescribed fire projects with an adequate number of qualified personnel, thus ensuring adequate suppression forces as well as contingency resources in the event of an escape.
- 8) Monitor fire effects to determine resource benefit, environmental response, and research values.

The park may utilize an interagency team approach for complex fires carried out on the boundaries and close to developed areas or burns of large acreage. The most qualified and experienced personnel in the regional interagency community would be requested to serve on this team. The following is an outline of procedures in developing the prescribed burn:

- d) **Planning** - Prescribed burning may be used at Catoctin Mountain Park to achieve resource management objectives as outlined in this plan. The Fire Management Officer (FMO) will prepare the annual prescribed fire program. The program will detail all planned fires to be conducted, specifying objectives to be accomplished. The FMO will review and submit this program plan to the Superintendent for approval.

The Fire Management Officer will recommend a Prescribed Fire Boss for each planned fire. The Prescribed Fire Boss will conduct a field reconnaissance of the proposed burn location with members of the park management team to discuss objectives, special concerns, and gather all necessary information to write the burn plan. After completing the reconnaissance, the Prescribed Fire Boss and the Fire Management Officer, will write the prescribed fire plan.

- e) **Prescribed Fire Burn Plan** – All prescribed fires will have Prescribed Fire Plans. The Prescribed Fire Plan is a site-specific action plan, which describes the purpose, objectives, prescription, and operational procedures needed to prepare and safely conduct the fire. The treatment area, objectives, constraints, and alternatives will be clearly outlined. No fire will be ignited unless all prescriptions of the plan are met. Fires not within those parameters will be suppressed. Prescribed Fire Plans will follow the format contained in RM-18, Chapter 10. All planned prescribed fires will have their own Prescribed Fire Plans. Execution of the prescribed fires will be by qualified personnel. The term “fire management unit” refers to a specific tract of land to which a prescribed fire plan applies.

- f) **Monitoring** – All prescribed fires will be monitored and the data recorded to document weather conditions, fire behavior, and fire effects before, during and after the burn. Observations will become part of the resource management file to be retained by Natural Resource management staff.
- g) **Evaluations** – All prescribed fire projects will be evaluated by Park FMO, a regional representative from the Fire Program Office, Prescribed Burn Boss, and other personnel as deemed necessary by the park to review procedures, costs, goals, objectives and accomplishments. The evaluations will be utilized for planning purposes on future fuel management projects.
- h) **Reporting and Documentation** – All prescribed burn accomplishments and escapes will be documented on form DI-1202.
- i) **Historic Fuel Treatments** – Prescribed fire has not been utilized in the past at Catoctin Mountain Park.

2. Exceeding the Existing Prescribed Fire Plan

Prescribed fires that exceed the parameters of the Prescribed Fire Plans will be considered wildfires and immediately suppressed.

3. Air Quality and Smoke Management

Catoctin Mountain Park is located in a class II air quality area. The Fire Management Plan will be in compliance with the Clean Air Act (42 U.S.C 7401-7661) and Maryland state law.

The objectives for smoke management and compliance with the Clean Air Act is similar to those for fire management: to encourage a natural process so long as it does not endanger public health and safety. Smoke levels become unacceptable when they impair visibility to such a degree that they detract from visitor enjoyment of the primary park resource with emphasis on the vistas of the park. Dense smoke within the park is generally unacceptable; however, it may be tolerated for short periods if the winds assure good mixing.

The park will also evaluate the forecasted impact of smoke on local communities, sensitive areas (schools, hospitals, etc.) and visitor safety. All of these considerations are difficult to quantify, monitor, and evaluate and there will exist considerable room for discretion. Interpretive/Educational information will be available for the public. It may also be necessary to aggressively control fires when smoke affects a sensitive area or creates a significant public response. All fire activities may need to be curtailed when an extended inversion, air pollution, extreme temperatures and/or winds exceed prescription.

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 Chief Ranger and the Superintendent.

The Park FMO will contact the National Weather Service (NWS), in Sterling, VA, to verify the smoke management forecast and consult with the State of Maryland during the initial fire assessment. Thereafter, smoke characteristics will be evaluated daily along with the NWS smoke management forecast during prescribed fires. The Park FMO will provide the Maryland Division of Natural Resources (DNR) with relevant field data for all prescribed fires.

In the fall, when the air stagnates and major burning is conducted around the region (and when there are east winds), smoke management may be a prominent consideration in the actual scheduling of prescribed fires during this time of year.

Prescribed fires will be closely monitored for spread, location, and size to determine visibility impact conditions. The park will coordinate fire specific visibility monitoring. A process will be developed to determine if adverse impacts to air quality and visibility are occurring for management decisions.

To minimize the effects of smoke, the following guidelines will be considered when planning a prescribed fire:

- 1) A detailed smoke vector map will be included in every prescribed fire plan to identify sensitive areas and expected directional flow of smoke.
- 2) Burning will be conducted only when visibility exceeds 5 miles or when the fire weather forecast indicates the presence of an unstable air mass, afternoon mixing heights are 500 meters or greater, and ventilation rates (mixing height in meters multiplied by the transport wind speed in meters per second) is 2000 or greater.
- 3) Prescribed fires will not be ignited during air pollution health advisory, alert, warning or emergency, or during temperature inversions.
- 4) Burning will be conducted only when the 20-foot wind speed exceeds 3 mph and the direction of the wind vector is away from sensitive areas.
- 5) Backing and flanking fires will be used when possible to minimize particulate emissions.
- 6) Stumps, snags, and other hot spots will be quickly mopped-up to reduce residual smoke.
- 7) A fire weather forecast will be obtained for the appropriate zone from the National Weather Service, Sterling, VA, prior to ignition of the prescribed fire.

- 8) Media and other public affairs offices will be kept informed of fire and smoke dispersal conditions throughout the duration of the project.
- 9) The park provides traffic control and park rangers will be used to mitigate traffic hazards from smoke.

4. Non-Fire Fuel Treatment Applications

Other methods are available to accomplish fuel management objectives when the use of prescribed fire is not possible or practical. Hand tools, power or mechanized equipment, and/or herbicides are a few such methods. These programs are ongoing planned projects and reporting and documentation are identified in Catoctin Mountain Park's strategic and annual work plans.

Evaluations of non-fire fuel reduction projects will be similar to prescribed fire evaluations with the exception of project leader in lieu of burn boss.

All non-fire or mechanical hazard fuel reduction projects will be entered into the National Fire Plan Operations Reporting System (NFPORS) prior to work. Accomplishments will be entered as work is completed on a monthly basis.

VI. FIRE MANAGEMENT ORGANIZATION AND RESPONSIBILITIES

This section discusses responsibilities of park personnel toward implementation of the fire management program by specific park position. The purpose of this section is to clearly define areas of responsibility, provide clear direction and accountability, and further the development of a responsive and professional fire management program.

A. Description of Park's Fire Management Organization

1. Park Superintendent

Fire management at Catoctin Mountain Park is the responsibility of the Superintendent, with technical duties and accompanying responsibilities delegated to staff members. The Superintendent will be responsible for management of the program within Departmental and National Park Service policy, Wildland Fire Management Policy and Guidelines (DO-18/RM-18), and all relevant laws and regulations.

The Park Superintendent will be:

- a) Responsible for ensuring that a comprehensive fire management program is adequately planned, staffed, and implemented and that the Fire Management Plan is reviewed annually and revised as necessary.
- b) Responsible to maintain and facilitate public and media relations pertaining to both suppression and prescribed fire.

- c) Responsible to approve the Fire Management and Prescribed Fire Plans.

2. Chief Park Ranger

Fire Management Officer (FMO) responsibilities are a collateral duty of this position within the park organization as designated by the Park Superintendent.

The Chief Park Ranger, Division of IR&RM:

- a) Implement and executes all aspects of the fire management program and the completion and currency of a Fire Management Plan.
- b) Coordinates, directs and supervises wildfire prevention, pre-suppression, and suppression. Coordinates all wildfire emergencies not delegated to Incident Commanders. Oversees training, employee development and currency of qualifications and out-of-park assignments. Approves fire situation and DI-1202, Individual Fire Reports. Develop and administer the annual park allocation of the regional FIREPRO budget including appropriate reporting.
- c) Briefs the Superintendent on current and predicted fire management activity.
- d) Recommend approval of the Fire Management Plan to the Superintendent.
- e) Prepares the Delegation of Authority for incoming Incident Management Teams (IMT) for signature by the Superintendent and briefs incoming IMTs.
- f) Coordinates fire research efforts and serves as the primary resource advisor for wildland fires.
- g) Plans and coordinates prescribed fires.
- h) Prepares, reviews, and revises cooperative agreements with interagency cooperators; maintains liaison with interagency cooperators through annual meetings to review agreements.
- i) Coordinate the availability of park personnel for in-park fire assignments or to support outside resource orders for assistance to other parks and agencies. This includes maintaining contact with the National Capital Region Communications Center to advise the availability of personnel, engines, and supplies. Uses the Resource Ordering and Status System (ROSS) to make park resources available for assignment.

3. Assistant Fire Management Officer

Fire coordination responsibilities are a collateral duty of a position in the IR&RM. The Chief Ranger will appoint a park assistant fire management officer (AFMO) based on interest in the program area, Incident Qualification System (IQS) position, and performance review.

- a) Prepares or revises the Fire Management Plan and assists with developing and obligating the annual FIREPRO budget.
- b) Advises and informs the Chief Ranger of all fire activity information in priority manner.
- c) Responsible for completing the prevention analysis to determine the level and type of prevention effort required by the park. Ensures implementation of the approved fire prevention program.
- d) Prepares and reviews Standard Operating Procedures as needed (e.g., wildfire engine operations).
- e) Responsible for submission of fire situation reports to National Park Service Division of Fire and Aviation Management and the Regional Fire Management Officer.
- f) Responsible for sharing fire-training opportunities with park personnel to maintain predetermined fire qualification skills and advancement. Reviews, updates, and maintains fire training and fire experience records. Submits updated records to the Regional Fire Management Officer/Fire Program Assistant.
- g) Ensures adequate inventory of Personal Protection Equipment (PPE), equipment and supplies to efficiently implement the fire management program. Serves as fire cache manager with first line authority over the accountability of equipment and cache supplies. Therefore, oversees the house keeping and use of cache items by other employees.
- h) Assists Chief Ranger with coordinating the availability of park personnel for in-park fire assignments or to support outside resource orders for assistance to other parks and agencies. This includes maintaining contact with the National Capital Region Communication Center to advise the availability of personnel, Type-6 engine and Type-7 engine with slip-on unit and supplies. Uses ROSS to make park resources available for assignment.
- i) Maintains technical references, maps, and aerial photos for the fire program in conjunction with the park's GIS Specialist.

- j) Responsible for completion of all fire reports (DI-1202s) and coordinates the timely entry of reports into the National Park Service Fire Management Computer System with the Regional Fire Management Officer within 10 days of a fire.
- k) Coordinates initial attack of wildfires in conjunction with the Chief Ranger.
- l) Serves as acting Fire Management Officer as the situation or availability of the Fire Management Officer dictates.

4. Resource Manager

- a) Prepares National Environmental Policy Act (NEPA) compliance documents for all prescribed fire activities.
- b) Supports mapping and aerial photos for the fire program through the Geographic Information System (GIS) Specialist.

B. FIREPRO Funding

FIREPRO is an automated fire management budget planning and program system developed by the National Park Service. It is designed to quantify the Most Efficient Level (MEL) of financial support requirements for fire management activities at all organizational levels through common analysis of workload and program complexity. MEL is defined as the minimum level of staffing and program support that will achieve program performance targets for wildland fire suppression. In addition, FIREPRO identifies the minimum staffing and program support that will achieve program performance targets for wildland fire managed for resource benefits, hazard fuels reduction and prescribed fire use to restore the natural role of fire to achieve resource management objectives.

FIREPRO funding at Catoctin Mountain Park shall be used to accomplish the following:

- a) Annual maintenance of the park's fire truck, water tank trailer and two slip-on units.
- b) Maintenance of saws and other hand tools.
- c) Maintenance of the fire weather station.
- d) PPE for red-carded firefighters.
- e) Training.
- f) Arduous duty physicals for red-carded personnel.

C. Relationship of Fire Management Organization to the National Park Service Unit Organization

Although the Interpretation, Recreation and Resource Management Division (I R & RM) has overall responsibility for the fire management program, successful implementation requires

the cooperative effort of all divisions. The Chief Ranger will make any necessary arrangements to secure the use of other divisions' fire qualified personnel. Additional people may be requested to serve as advisors on suppression fires and prescribed fire applications. The appropriate Division Chief or the Superintendent must approve this request for assistance. Resource Advisors will be assigned to fires within the park during suppression operations and may conduct post-fire research projects, as necessary, to assess fire effects. Specialists may also be requested from other NPS offices by resource order through the NCRCC.

Resource advisors within the division may be called upon to provide support related to archeology, cultural site location, maintenance, equipment availability, park utilities, fire effects, suppression techniques, law enforcement, traffic control, GIS, and closure notification.

Catoctin Mountain Park will use the Incident Command System (ICS) as a guide for fireline organization. Qualification for individuals is per National Park Service Wildland Fire Qualification and Certification System, part of NIIMS and the National Wildfire Coordination Group (NWCG) Prescribed Fire Qualification Guide. Depending on fire complexity, some positions may be filled by the same person.

D. Wildland Fire Use

There are no plans for wildland fire use at Catoctin Mountain Park at this time.

E. Interagency Coordination and Contacts

Firefighters, support personnel, and other resources from other parks and agencies may be used when fire activity or complexity level exceeds a level that can be handled by park personnel and/or resources. A list of interagency contacts is contained in the Appendix K.

G. Fire-Related Agreements

Catoctin Mountain Park currently cooperates with other National Park Service units and the Maryland Department of Natural Resources. The park has agreements with the Smithsburg Community Volunteer Fire Company, Wolfsville Volunteer Fire Company, Guardian Hose Company of Thurmont and Blue Ridge Summit Volunteer Fire and Rescue Squad, Inc. These agencies are coordinating training, prevention, presuppression, detection and suppression activities. These cooperative relationships are fundamental to the success of the fire program and must continue to receive emphasis.

In general, county fire departments usually provide initial attack on park fires. Interagency incident management teams may be called upon to manage or assist the park with fires that escape initial attack, project fires or monitoring prescribed fires. The park subscribes to the "closest forces concept", and all contingency plans are jointly formulated at the regional level.

The Chief Ranger is responsible for ensuring that interagency agreements are reviewed annually and will schedule preseason meetings with cooperators as required.

VII. FIRE RESEARCH AND MONITORING

Research is a necessary element in the fire management program at Catoctin Mountain Park. The primary objective of fire research is to provide information for making future fire management decisions. The Natural Resource Manager will coordinate fire research. Fire effects research will be conducted to determine fire effects on fauna, vegetation, soil, and plant succession. This research will be analyzed and used in the decision-making process regarding fire management.

As the park's Fire Management Plan is implemented and tested, additional research will inevitably be identified for such purposes as refining prescriptions, improving the understanding of fire behavior and fire effects, refining monitoring protocols, defining fire return cycles, describing fuels dynamics, describing the impacts on cultural resources, and other information needed for operational fire and resource management.

Monitoring will be a part of all prescribed fires conducted in the park. Monitoring will help to define the effectiveness of the fire management program by assessing the vegetative effects of fire. The monitoring protocols established in the National Park Service Fire Monitoring Handbook will be used for all monitoring activities in the park. The Regional Fire Ecologist stationed at Shenandoah National Park may provide technical assistance. Monitoring personnel from that park will also be available to assist in the training of park staff in proper techniques and procedures.

Monitoring of prescribed fires at Catoctin Mountain Park is intended to provide information for quantifying and predicting fire behavior and its ecological effects on park resources while building a historical record. Monitoring measures the parameters common to all fires: fuels, topography, weather and fire behavior. In addition, ecological changes such as species composition and structural changes may be monitored for several years after a fire to fine-tune the prescribed fire program.

During prescribed burning, monitoring will include mapping, weather, site and fuel measurements and direct observation of fire characteristics such as flame length, rate of spread and fire intensity. Operational monitoring provides a check to insure that the fire remains in prescription and serves as a basis for evaluation and comparison of management actions in response to measured, changing fire conditions, and changes such as fuel conditions and species composition.

All prescribed fires will be monitored regardless of size. The Chief Ranger will establish specific fire management guidelines for each fire to update information about the fire. Highest priority for monitoring will be assigned to large fires or fires which threaten to leave the park.

The Chief Ranger will assure that qualified personnel are assigned to monitor prescribed fires. The most efficient utilization of personnel for fires of low complexity will be to utilize

individuals with multiple qualifications when possible (ignition, holding, and monitoring). By being able to suppress the fire, assess its potential, characterize and quantify its effects and determine if it is within prescription, an efficient and flexible monitoring program will result.

VIII. RESEARCH OF FIRE USE FOR INVASIVE PLANT CONTROL

Research is needed regarding the interaction of fire and invasive plants within the northeastern and mid-Atlantic United States. Invasive plants are increasingly recognized as serious threats to biodiversity and native ecosystems in our region. No research to use fire to control invasive species is scheduled at this time for Catoctin Mountain Park.

IX. PUBLIC SAFETY

Catoctin Mountain Park is dedicated to ensuring the safety of all visitors, employees, residents and property in and adjacent to the park's boundary. The Superintendent may close all or a portion of the park (including roads and trails) when wildfire or a prescribed fire pose an imminent threat to public safety (36 CFR 1.5). A prescribed fire that exceeds prescription or extends beyond the predetermined area will be immediately suppressed. Any prescribed fire that is determined to pose a threat after ignition will be immediately suppressed.

The park will implement a notification system to inform visitors of all fire activity through various media sources. A fire activity report will be updated, as significant changes occur to inform park personnel of potential fire threat. Areas of fire activity will be clearly signed at visitor centers and park bulletin boards. Residents adjacent to the park will be notified in advance of any prescribed fire and they will be notified if any fire poses a threat to burn outside the park's boundaries.

During prescribed fires at least one firing team member will be currently qualified as an emergency medical technician. A first aid kit will be on-site for prescribed fires as well as wildfires. All fire personnel will be briefed of the "18 Situations That Shout Watch Out" and will be expected to comply with the "10 Standard Fire Orders" prior to commencement of burning. All local police, fire, and emergency medical services will be notified through their communication centers prior to the ignition of any prescribed fire. They will also be notified of the location of any fires requiring their presence.

Catoctin Mountain Park will also remain proactive with regard to fire potential in the Wildland/Urban Interface (WUI). The Federal Register of August 17, 2001 identified communities within the vicinity of Federal lands that were considered to be at risk from wildland fire. No communities in the immediate area of Catoctin Mountain Park were listed as being at risk of Wildland fires.

Even though the communities identified in the Federal Register did not show any at risk from wildfire in the vicinity of Catoctin Mountain Park, the Town of Thurmont, Maryland is adjacent and east of the park and could be at risk if a wildfire or a prescription burn moves out of the park boundary. The Presidential Retreat is also within the park boundaries and could be affected by any wildfire within the park.

Storm damage, gypsy moth kills, Hemlock Wooley Adelgid kills or other natural events would also be taken into consideration for periodic hazardous fire fuel inspections of the park. These areas could provide greater quantities of fuels than might be expected under normal conditions, thus creating greater opportunity for danger to fire fighters.

X. PUBLIC INFORMATION AND EDUCATION

Information and education are important processes in public acceptance of the managed fire program at Catoctin Mountain Park. The Superintendent will coordinate all public information activities with the assistance of the Chief Ranger. The Park or Incident Public Information Officer (PIO) will provide accurate information regarding current fire situations and management activities.

The public information program will be developed as follows:

- 1) The fire management program will be discussed in informal talks with employees of all divisions, contractors, volunteers, residents, and park neighbors.
- 2) Concepts of the prescribed fire program will be incorporated, as appropriate, in park publications, brochures, handouts, and the park web page.
- 3) The fire management program will be incorporated into visitor contacts, interpretive talks, walks, and tour programs. Particular attention will be given when fires are conspicuous from roads or visitor use areas.
- 4) Timely and accurate information will be provided to local media and park visitors regarding the status of fire suppression efforts.
- 5) Adjacent landowners will be notified when wildland fire is a threat to off-unit residential areas.
- 6) The public information outlets of neighboring and cooperating agencies and the regional office will be provided with all fire management information.
- 7) The role of the fire management program at Catoctin Mountain Park will be developed and discussed, as appropriate, in all programs, talks, presentations and briefings.

As outlined in the prevention section, emergency closures or restrictions may become necessary during periods of extreme or extended fire danger.

XI. PROTECTION OF SENSITIVE RESOURCES

A. Cultural & Archeological Resources

Archeological resources have been documented throughout the park. The potential exists for significant resources to be uncovered during activities that disturb mineral soils.

Therefore, every effort will be made to ensure that the minimal soil disruption takes place during fire suppression or prescribed fire activities. Minimum impact suppression tactics will be used on all wildland and prescribed fires.

Catoctin Mountain Park has significant cultural resources consisting of 65 structures on the List of Classified Structures (LCS) and over 150 cultural sites located throughout the park. The cultural sites include charcoal hearth sites, stonewalls, archeological sites, historic roads, building foundations, etc.

Structures should be assessed to determine the level of threat from wildfire. In some cases the buildings are surrounded by mowed grass or by small amounts of burnable material around the structure. Natural areas that do generate burnable materials and other light fuels such as grasses surround many of the cabins in Camp Misty Mount and Camp Greentop. The areas around these cultural resources are kept clear of as much burnable material as possible by fuel reduction projects or park staff. Fuel reduction projects clear areas of 100 feet around structures to create a burn buffer.

Structures are best protected with structural engines from local fire companies. A cooperative agreement is in place with the Smithsburg Community Volunteer Fire Company, Wolfsville Volunteer Fire Company, Guardian Hose Company of Thurmont and Blue Ridge Mountain Volunteer Fire and Rescue Squad, Inc. that establishes relationships for structural and wildland fire fighting.

B. Natural Resources

No Federal plant or animal species of special concern have been identified and are monitored as an indicator of the general ecological condition of the park. The effect of fire on other native species is unknown and requires more research on these species. Natural resources requiring consideration include air, soil, water, wildlife, vegetation, and rock outcroppings. A list of State of Maryland listed species found in Catoctin Mountain Park is provided in Appendix C.

C. Other Resources

Adjacent private property will be protected during prescribed burns. All other park resources will be protected as warranted by conditions.

XII. FIRE CRITIQUES AND ANNUAL PLAN REVIEW

A. Introduction

Fire reviews will be conducted in accordance with DO-18/RM-18 Chapter 13. Each review will be documented and filed with the final fire report. The Park AFMO will retain a copy for the park's files.

1. Scope

All wildland fires and fire-related incidents will be reviewed.

2. Reviews

Reviews are conducted for one or more of the following purposes:

- a. To examine the progress of an on-going fire incident and to confirm effective decisions or correct deficiencies.
- b. To identify new or improved procedures, techniques or tactics.
- c. To compile consistent and complete information to improve or refine cooperator, park, regional or national fire management programs.
- d. To examine anomalous fire-related incidents in order to determine cause(s), contributing factors, and where applicable, recommends corrective actions. If negligence is indicated, the circumstances will be reported and investigated in accordance with applicable regulations, policies or guidelines.
- e. To determine the cost effectiveness of a fire operation.

3. Authority

The authority to convene a fire review rests with the Superintendent, regional director, or the Associate Director, Visitor and Resource Protection. It is the clear responsibility of the Superintendent to call for a review, to insure timely completion, and to implement recommended actions. The regional director has responsibility to ensure with the Superintendent: that reviews are established and completed in a timely manner, and that recommended actions are completed. The Superintendent may request technical support from park, regional, Fire Management Program Center, interagency personnel or the private sector with the appropriate expertise.

4. Incident Types

All wildland fire incidents that result in human entrapment, fatalities, or serious injuries, or result in incidents with potential, will be investigated and reviewed. Boards of Review Inquiry shall be convened and managed consistent with Reference Manual 18, Chapter 3.

5. Associate Director

The Associate Director, Visitor and Resource Protection, will convene an ad-hoc team to review Service-wide fire management programs subsequent to the occurrence of any significant, controversial or unusual wildland fire management activities.

6. Purpose

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 which need improvement. Reviews are intended to resolve operational issues, not impose punitive actions.

B. Fire Reviews

1. "Hotline" Review

The purpose of the hotline review is to examine the progress of an on-going fire incident, regardless of size. The review will provide a confirmation of the decisions being made daily in the Wildland Fire Situation Analysis or determine where the decision process has been faulty and identify corrective actions.

The "hotline" review is normally conducted by the park's Fire Management Officer (or an official who has designated fire program management responsibilities) in conjunction with the incident commander on the fire.

These reviews require no special reporting. Documentation of "hotline" reviews should be included in the normal fire report narrative.

2. Incident Management Team (IMT) Closeout and Review

The Superintendent will conduct a closeout review with the IMT prior to their release and demobilization from the fire incident. The purpose of this review is to ensure complete transition of the incident management back to the unit and to evaluate the status of any incomplete fire business. RM 18, Chapter 13, Exhibit 1 contains a sample Close-Out Review with Incident Management Team.

3. Unit Level Review

The Superintendent or his/her designated representative should conduct the unit level review. The Superintendent will appoint other qualified persons, including the Park Fire Management Officer (or an official who has designated fire program management responsibilities) to be a part of the review. The purpose of this review is to provide the Superintendent with information to recognize commendable actions and/or undertake needed corrective action(s). Costs associated with the review will be charged to the account assigned to the fire with the approval of the NCR Fire Management Officer. A

copy of the complete report will be sent to the NCR Fire Management Officer, who will review it and, if appropriate, forward a copy to the Fire Management Program Center.

4. Regional Level Review

A regional level review may be conducted for any fire that:

- a. Crosses a park's boundary into another jurisdiction without the approval of an interagency agreement.
- b. Results in adverse media attention.
- c. Involves serious injury to less than 3 personnel or significant property damage.
- d. Results in controversy involving another agency.

The regional level review normally will be conducted at the unit where the fire occurred. The regional fire management officer or his/her designated representative will convene the review. Attendees will include the Superintendent, park Fire Management Officer (or the official who has designated fire program management responsibilities), the Incident Commander(s) for the fire, and other individuals agreed upon by the Regional Director and Park Superintendent. If possible, the review team should visit the actual fire site as part of the review. A copy of the review report will be sent to the Fire Management Program Center. Costs associated with the review will be charged to the account assigned to the fire.

5. National Level Review

A national level review may be conducted for any fire that involves Service wide or national issues, including:

- a. Significant adverse media or political interest.
- b. Multi-regional resource response.
- c. A substantial loss of equipment or property.
- d. A fatality, or multiple, serious fire-related injuries (three or more personnel).
- e. Results in controversy involving another agency or jurisdiction.
- f. Any other fires that the Associate Director, Park Operations and Education, wants reviewed.

The national level review normally will be conducted at the unit where the fire occurred. The National Fire Management Officer or his/her designated representative will convene it. It will be attended by the Park Superintendent, the park Fire Management Officer (or an official who has designated fire program management responsibilities), the NCR Fire

Management Officer, the Incident Commander(s) for the fire, and other individuals agreed upon by the National Fire Management Officer, the Regional Director and the Superintendent. If possible, the review team should visit the actual site of the fire as part of the review. All costs associated with the review will be charged to the account assigned to the fire.

An outline for final reports of fire reviews may be found in RM 18, Chapter 12, Exhibit 2. Exhibit 3 provides a checklist of sample questions, which might be asked during a fire review. These two documents should be used for unit, regional and national level reviews.

6. Entrapment and Fire Shelter Deployment Review

Fire shelter deployment is defined as the use of a fire shelter for its intended purpose in any situation other than training. Use of the terms "precautionary deployment", "practice deployment" and "entrapment deployment" are not acceptable or recognized. Entrapments and fire shelter deployments will be reviewed in order to gather complete and accurate information to determine the reasons for the deployment. Corrective recommendations will be developed to minimize future situations which might lead to other shelter deployments. All entrapments and fire shelter deployments will be reported to the regional fire management officer, who will be responsible for developing the review team in cooperation with the Fire Management Program Center. The team leader will contact the Superintendent for reporting information. See RM 18, Chapter 3 for investigation and reporting requirements.

All entrapments and fire shelter deployments will be investigated as soon as possible after the deployment incident. RM 18, Chapter 13, Exhibit 4 provides specific directions for conducting an entrapment or shelter deployment review. RM 18, Chapter 13, Exhibit 5 provides an outline format for final reports on entrapment and fire shelter deployment reviews.

C. Program Reviews

1. Operations Evaluations

Operations evaluations of NPS units and regions may include review of fire management programs to assure compliance with established Service standards.

2. Annual Fire Program Review

The Park FMO will convene an ad-hoc team to review park fire activity during any year in which significant, unusual or controversial fire activity occurs. This review team should analyze the reports from any reviews to determine what, if any, operational changes should be initiated. The review team will develop findings and recommendations and establish priorities for action. The report will contain the number of fires by type, acres burned by fuel type, cost summary (prescribed fires and wildfires), personnel utilized, and fire effects.

3. FIREPRO Review

Annually, the Regional FMO will conduct a FIREPRO audit and review of the park values at risk, research, equipment and project needs. This review will be completed on the schedule set by the Fire Management Program Center.

Fire reviews will be conducted in accordance with DO-18/RM-18. Each review will be documented and filed with the final fire report. The Park AFMO will retain a copy for the park's files.

4. Annual Fire Management Plan Review

The FMO will review the Fire Management Plan annually. Necessary updates or changes will be accomplished prior to the next fire season. Any additions, deletions, or changes will be reviewed by the Superintendent to determine if such alterations warrant a re-approval of the plan.

XIII. CONSULTATION AND COORDINATION

The Chief Ranger and the Park AFMO are responsible for coordination and consultation with cooperators regarding fire management activities. Activities include involvement with county fire departments, Maryland Department of Natural Resources State Forest and Park Service, air quality board, other nearby federal parks and forests, and the National Weather Service. Others that have contributed to the development of this FMP are:

Catoctin Mountain Park

P. Scott Bell

Environmental Protection Specialist, Catoctin Mountain Park

Becky Loncosky

Park Ranger, Catoctin Mountain Park

Jeff Organ

Seasonal GIS Technician, Catoctin Mountain Park

Mel Poole

Superintendent, Catoctin Mountain Park

Don Stanley

Park Ranger, Catoctin Mountain Park

Roger Steintl

Chief Ranger and FMO, Catoctin Mountain Park

Jim Voigt
Resource Manager, Catoctin Mountain Park

National Capital Region

Don Boucher
Fire and Emergency Program Manager, Ranger Services Division, NCR

Tom Kopczyk
Former Acting Assistant Fire Management Officer, Ranger Services Division, NCR

Jeffrey Seabright
Assistant Fire Management Officer, Ranger Services Division, NCR

Todd Stanton
Park Ranger (Protection) and Fire Coordinator, Antietam National Battlefield

Northeast Region

Doug Wallner
Prescribed Fire Specialist, Northeast Regional Office

Southeast Region

Allen Biller
Fire Management Officer, Shenandoah National Park

Melissa Karanosky
Fire Effects Monitoring Unit Leader, Shenandoah National Park

KellyAnn Gorman
Fire Ecologist, Shenandoah National Park

XIV. APPENDICES

- A. References cited
- B. Fire Related Acronyms and Definitions
- C. Park Natural and Cultural Resources, Natural Features and Species List
- D. NEPA and NHPA compliance
- E. Unit-specific supplemental information
 - 1) Preparedness inventory
 - 2) Cooperative agreements
 - 3) Fire Management Calendar
- F. Wildland and Prescribed Fire Monitoring Plan
- G. Pre-attack Plan
- H. Long-term prescribed fire and hazard fuel reduction plan.

1. Multi-year experimental prescribed fire schedule (To be developed)
 2. Hazard fuels reduction areas
- I. Fire Prevention Plan (RM-18, Chapter 8)
 - J. Key Contact List

APPENDIX A --- REFERENCES

A. References Cited

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Internet Reference Sites:

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Clean Air Act (PL 88-206, as amended), (http://www.epa.gov/oar/oaq_caa.html)

Cultural Resource Management references
(<http://archnet.asu.edu/archnet/topical/crm/crmusdoc.html>)

Endangered Species Act of 1973 (<http://endangered.fws.gov/esa.html>)

National Environmental Protection Act
(<http://www4.law.cornell.edu/uscode/42/ch55.html#PC55>)

National Historic Preservation Act (<http://www4.law.cornell.edu/uscode/16/470.html>)

National Park Service DO-18, Wildland Fire Management
(<http://www.nps.gov/fire/fire/policy/do18/do18.htm>)

National Park Service RM-18, Wildland Fire Management
(<http://www.nps.gov/fire/fire/policy/rm18/index.htm>)

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(<http://elips.doi.gov/elips/release/3203.htm>)

APPENDIX B --- FIRE RELATED ACRONYMS AND DEFINITIONS

Acronyms

BAR:	Burned Area Rehabilitation
DBH:	Diameter at Breast Height
DNR:	Department of Natural Resources
DOI:	Department of the Interior
DO/RM-18	Directors Order/Reference Manual-18
EA:	Environmental Assessment
FMO:	Fire Management Officer
FMP:	Fire Management Plan
GIS:	Geographic Information System
GMP:	General Management Plan
IC:	Incident Commander
ICS:	Incident Command System
IMT:	Incident Management Team
IQS:	Incident Qualification System
MEL:	Most Efficient Level
NCR:	National Capital Region
NEPA:	National Environmental Policy Act
NFDRS:	National Fire Danger Rating System
NHPA:	National Historic Preservation Act
NIIMS:	National Interagency Incident Management System
NPS:	National Park Service
NWCG:	National Wildfire Coordination Group
NWS:	National Weather Service
PPE:	Personal Protective Equipment
RMP:	Resource Management Plan
ROSS:	Resource Ordering and Status System
SOP:	Standard Operating Procedure
T&E:	Threatened & Endangered Species
WFIP:	Wildland Fire Implementation Plan
WFSA:	Wildland Fire Situation Analysis
WIMS:	Weather Information Management System
WUI:	Wildland/Urban Interface

Definitions

A consistent list of terms and their definitions has been developed and approved by the NWCG. This list of defined terms includes terms obsolete under the new policy. Additional terms used in this reference guide but not defined by NWCG are from the Fire Effects Information System and other sources. The sources may be found in the References Cited (Appendix A).

Appropriate Management Response – Specific actions taken in response to a wildland fire to implement protection and fire use objectives. This term is a new term that does not replace any previously used term.

Backfire – A fire set along the inner edge of a fireline to consume the fuel in the path of a fire or to change the fire's convection column.

BI – Burning Index. A number related to the contribution that fire behavior makes to the amount or effort needed to contain a fire in a particular fuel type within a rating area. An Index for describing Fire Danger.

Climax – A biotic community that is in equilibrium with existing environmental conditions and represents the terminal stage of an ecological succession (Smith 2000).

Cover – The proportion of ground covered by the aerial parts of individuals of a species, usually expressed as a percentage (Grieg-Smith 1983). Total cover for all species on a site can exceed 100%. However, TOP-COVER, the proportion of ground for which a species provides the uppermost cover, cannot exceed 100% (Grieg-Smith 1983). Mueller-Dombois and Ellenberg (1974) consider basal area a special kind of "cover," but FEIS does not usually use COVER in this way.

Crown Fire – Fire that burns in the crowns of trees and shrubs. Usually ignited by a surface fire. Crown fires are common in coniferous forests and chaparral-type shrublands (Brown 2000).

Direct Effects of Fire – Described in FEIS plant species summaries under FIRE EFFECTS; IMMEDIATE FIRE EFFECT ON PLANT and DISCUSSION AND QUALIFICATION OF PLANT RESPONSE.

Duff – Partially decomposed organic matter lying beneath the litter layer and above the mineral soil. Includes the fermentation and humus layers of the forest floor (02 soil horizon) (Brown 2000).

Ecosystem – An interacting system of interdependent organisms.

Fire Duration – The length of time that combustion occurs at a given point. Fire duration relates closely to downward heating and fire effects below the fuel surface as well as heating of tree boles above the surface.

Fire Exclusion – The policy of suppressing all wildland fires in an area (Smith 2000).

Fire Frequency = Fire Occurrence – Number of fires per unit time in a specified area (McPherson and others 1990).

Fire Interval – Time (in years) between two successive fires in a designated area (i.e., the interval between two successive fire occurrences); the size of the area must be clearly specified (McPherson and others 1990).

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.

Fire Management Unit (FMU) – Any land management area definable by objectives, topographic features, access, values-to-be-protected, political boundaries, fuel types, or major fire regimes, etc., that sets it apart from management characteristics of an adjacent unit. FMU's are delineated in Fire Management Plans (FMP). These units may have dominant management objectives and pre-selected strategies assigned to accomplish these objectives.

Fire Regime – Describes the patterns of fire occurrence, size, and severity - and sometimes, vegetation and fire effects as well - in a given area or ecosystem (Agee 1994, Mutch 1992, Johnson and Van Wagner 1985). A fire regime is a generalization based on fire histories at individual sites. Fire regimes can often be described as cycles because some parts of the histories usually get repeated, and the repetitions can be counted and measured.

Under current Federal policy and planning standards, a fire regime is expected to occur in one of five categories based on fire return interval and severity of burn.

Fire Severity – Degree to which a site has been altered or disrupted by fire; also used to describe the product of fire intensity and residence time (McPherson and others 1990, Agee 1994, Rowe 1983).

Fire Use – The combination of wildland fire use and prescribed fire application to meet resource objectives

Fireline Intensity – The rate of heat release per unit time per unit length of fire front. Numerically, the product of the heat of combustion, quantity of fuel consumed per unit area in the fire front, and the rate of spread of a fire, expressed in kW/m (McPherson and others 1990).

Flame Length – The length of flames in a fire front measured along the slant of the flame, from the midpoint of its base to its tip. Flame length is mathematically related to fireline intensity and tree crown scorch height (Brown 2000).

FMO – Fire Management Officer.

Fire Management Program Center – Located in Boise, Idaho

Fuel – Fuel is comprised of living and dead vegetation that can be ignited. It is often classified as dead or alive and as natural fuels or activity fuels (resulting from human actions, usually from logging operations). Fuel components refer to such items as downed dead woody material by various size classes, litter, duff, herbaceous vegetation, live foliage etc. (Brown 2000).

Fuel Loading – The weight per unit area of fuel, often expressed in tons per acre or tonnes per hectare. Dead woody fuel loadings are commonly described for small material in diameter classes of 0 to

1/4-, 1/4 to 1-, and 1 to 3-inches and for large material in one class greater than 3 inches (Brown 2000).

Fuel Moisture – percent or fraction of oven dry weight of fuel. It is the most important fuel property controlling flammability. In living plants it is physiologically bound. Its daily fluctuations vary considerably by species but are usually above 80 to 100%. As plants mature, moisture content decreases. When herbaceous plants cure, their moisture content responds as dead fuel moisture content, which fluctuates according to changes in temperature, humidity, and precipitation (Brown 2000).

FWS – U.S. Fish and Wildlife Service, Department of the Interior.

GIS – Geographic Information System

GMP – General Management Plan. A park document that describes broad management goals and objectives for NPS units.

Hazard Fuel – A fuel complex that, by nature, presents a hazard to socio-politico-economic interests when ignited. The hazard fuel condition can be mitigated through hazard fuel reduction.

Hazardous fuels – Those vegetative fuels which, when ignited, threaten: public safety, structures and facilities, cultural resources, natural resources, and/or natural processes. Also: fuels that permit the spread of wildland fires across administrative boundaries except as authorized by agreement, and fuel accumulations and arrangement may be within the natural range of variability and still be hazardous because of the proximity to values at risk.

Initial Attack – The first aggressive suppression action taken on a fire, consistent with firefighter and public safety, and values to be protected.

Initial Attack Incident Commander – Leader of first response fire suppression forces.

Litter – The top layer of the forest floor (O1 soil horizon); includes freshly fallen leaves, needles, fine twigs, bark flakes, fruits, matted dead grass and other vegetative parts that are little altered by decomposition. Litter also accumulates beneath rangeland shrubs. Some surface feather moss and lichens are considered to be litter because their moisture response is similar to that of dead fine fuel.

Mean Fire Interval – Arithmetic average of all FIRE INTERVALS determined, in years, for a designated area during a specified time period; the size of the area and the time period must be specified.

Mitigation Actions – Mitigation actions are considered to be those on-the-ground activities that serve to check, direct, or delay the spread of fire; and minimize threats to life, property, and resources. 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 fuel breaks or barriers around critical or sensitive sites or resources, create "blacklines" through controlled burnouts, and to limit fire spread and behavior.

Mixed-Severity Fire Regime – Fire regime in which fires either cause selective mortality in dominant vegetation, depending on different species' susceptibility to fire, or vary between understory and stand replacement (Smith 2000).

MOA – Memorandum of Agreement

MOU – Memorandum of Understanding.

NCR – National Capital Region

National Fire Danger Rating System (NFDRS) – A widely used system to predict several measures of fire probability and resistance to control.

Natural Fire – Fires ignited by natural means (usually lightning).

NFFL Model – One of the thirteen fuel models used to predict fire behavior using the fire spread formulas developed by Rothermel (1972).

NPS – National Park Service, Department of the Interior.

Organic Soils – Deep layers of organic matter that develop in poorly drained areas such as bogs, swamps, and marshes (Brown 2000).

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 replaces presuppression.

Prescribed Fire – Any fire ignited by management actions to meet specific objectives. Prior to ignition, a written, approved prescribed fire plan must exist, and National Environmental Protection Act requirements must be met. This term replaces management ignited prescribed fire.

Presettlement Fire Regime – The time from about 1500 to the mid- to late-1800s, a period when Native American populations had already been heavily impacted by European presence and before extensive settlement by European Americans in most parts of North America, before extensive conversion of wildlands for agricultural and other purposes, and before fires were effectively suppressed in many areas (Smith 2000).

Prescribed Fire Plan – A plan required for each fire application ignited by managers. It must be prepared by qualified personnel and approved by the appropriate Agency Administrator prior to implementation. Each plan will follow specific agency direction and must include critical elements described in agency manuals. Formats for plan development vary among agencies, although the content is identical.

Prescribed Fire Specialist – The staff specialist with primary duties of managing both the prescribed fire and Wildland Fire Used for Resource Benefit (where applicable) programs.

Prescription – Measurable criteria which define conditions under which a prescribed fire may be ignited, guide selection of appropriate management responses, and indicate other required actions. Prescription criteria may include safety, economic, public health, environmental, geographic, administrative, social or legal considerations.

Resource Management Plan (RMP) – Park planning document that describes resource management goals and objectives for NPS units.

Snag – A standing dead tree from which the leaves and some of the branches have fallen (Smith 2000).

Stand-Replacement Fire Regime – Fire regime in which fires kill or top-kill aboveground parts of the dominant vegetation, changing the aboveground structure substantially. Approximately 80 percent or more of the aboveground, dominant vegetation is either consumed or dies as a result of fires. Applies to forests, shrublands, and grasslands (Smith 2000).

Succession – The gradual, somewhat predictable process of community change and replacement leading toward a climax community; the process of continuous colonization and extinction of populations at a particular site (Smith 2000).

Suppression – see Wildland Fire Suppression

Surface Fire – Fire that burns in litter and other live and dead fuels at or near the surface of the ground, mostly by flaming combustion (Brown 2000).

T&E – Threatened and Endangered plants and animals. Also referred to as listed species.

Top-Kill – Kills aboveground tissues of plant without killing underground parts from which the plant can produce new stems and leaves (Smith 2000).

Total Heat Release – The heat released by combustion during burnout of all fuels, expressed in BTU per square foot or kilocalories per square meter (Brown 2000).

Understory Fire Regime – Fire regime in which fires are generally not lethal to the dominant vegetation and do not substantially change the structure of the dominant vegetation. Approximately 80 percent or more of the aboveground dominant vegetation survives fires. Applies to forest and woodland vegetation types (Smith 2000).

Urban Interface – See Wildland-Urban Interface.

Urban Intermix – Locating structures (homes, offices, and other developments) in wildland fuel complexes. Also known as wildland-urban interface.

USFS – United States Forest Service, U.S. Department of Agriculture.

Wildfire – An unwanted wildland fire. *This term was only included to give continuing credence to the historic fire prevention products. This is NOT a separate type of 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 (WFSA) – The 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.

Wildland Fire Use – The management of naturally-ignited wildland fires to accomplish specific, pre-stated, resource management objectives in pre-defined geographic areas outlined in Fire Management Plans. Operational management is described in the Wildland Fire Implementation Plan (WFIP). Wildland fire use is not to be confused with "fire use," a broader term encompassing more than just wildland fires.

Wildland-Urban Interface – Locating structures (homes, offices, and other developments) in wildland fuel complexes. Also known as urban interface.

APPENDIX C – Park Species List and State Listed Species

Maryland State Listed Species of Catoctin Mountain Park

SPECIES	COMMON NAME	STATUS
Coeloglossum viride	Long Bracted Orchid	MD Endangered
Dirca palustris	Leatherwood	MD Threatened
Juglans cinerea	Butternut	MD Rare
Castanea dentate	Chestnut (w/fruit)	MD Watchlist
Corydalis sempervirens	Pale Corydalis	MD Watchlist
Panax quinquefolis	American Ginseng	MD Watchlist
Trichostema brachiatum	False Pennyroyal	MD Watchlist
Trillium cernuum	Nodding Trillium	MD Watchlist

Catoctin Mountain Park Species List

Std. Scientific Name	Common Name(s)
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Animalia – Amphibian

Order: Anura - Family: Bufonidae

Bufo americanus American toad
 Bufo fowleri Fowler's toad

Order: Anura - Family: Hylidae

Hyla chrysoscelis cope's gray frog Cope's gray treefrog
 Hyla crucifer

Order: Anura - Family: Ranidae

Rana catesbeiana Bullfrog
 Rana clamitans green frog
 Rana palustris Pickerel frog
 Rana pipiens Northern leopard frog
 Rana sylvatica Wood frog

Order: Caudata - Family: Ambystomatidae

Ambystoma maculatum Spotted salamander
 Ambystoma opacum Marbled salamander

Order: Caudata - Family: Plethodontidae

Desmognathus fuscus Dusky salamander
 Eurycea bislineata Northern two-lined salamander
 two-lined salamander
 Eurycea longicauda long-tailed salamander
 Gyrinophilus porphyriticus Spring salamander
 Hemidactylium scutatum four-toed salamander
 Plethodon cinereus eastern red-backed salamander
 Red-backed salamander
 Plethodon glutinosus Northern slimy salamander
 Plethodon richmondi Ravine salamander
 Pseudotriton ruber

Order: Caudata - Family: Salamandridae

Notophthalmus viridescens

Eastern newt

Animalia - Bird

Order: Anseriformes - Family: Anatidae

Aix sponsa

wood duck

Anas discors

blue-winged teal

Anas platyrhynchos

mallard

Anas rubripes

american black duck

Aythya valisineria

canvasback

Branta canadensis

canada goose

Bucephala albeola

bufflehead

Cygnus columbianus

tundra swan

Lophodytes cucullatus

hooded merganser

Order: Apodiformes - Family: Apodidae

Chaetura pelagica

chimney swift

Order: Ciconiiformes - Family: Accipitridae

Accipiter cooperii

cooper's hawk

Accipiter striatus

sharp-shinned hawk

Aquila chrysaetos

golden eagle

Buteo jamaicensis

red-tailed hawk

Buteo lineatus

red-shouldered hawk

Buteo platypterus

broad-winged hawk

Circus cyaneus

northern harrier

Haliaeetus leucocephalus

bald eagle

Pandion haliaetus

osprey

Order: Ciconiiformes - Family: Ardeidae

Ardea herodias

great blue heron

Butorides striatus

green-backed heron

Order: Ciconiiformes - Family: Charadriidae

Charadrius vociferus

killdeer

Order: Ciconiiformes - Family: Ciconiidae

Cathartes aura

turkey vulture

Coragyps atratus

black vulture

Order: Ciconiiformes - Family: Falconidae

Falco sparverius

american kestrel

Order: Ciconiiformes - Family: Gaviidae

Gavia immer

common loon

Order: Ciconiiformes - Family: Laridae

Larus atricilla

laughing gull

Larus delawarensis

ring-billed gull

Order: Ciconiiformes - Family: Scolopacidae

Scolopax minor

american woodcock

Order: Columbiformes - Family: Columbidae

Zenaida macroura

mourning dove

Order: Coraciiformes - Family: Cerylidae

Megaceryle alcyon

Belted kingfisher

Order: Cuculiformes - Family: Coccozyidae

Coccyzus americanus

yellow-billed cuckoo

Coccyzus erythrophthalmus

black-billed cuckoo

Order: Galliformes - Family: Odontophoridae

Colinus virginianus

northern bobwhite

Order: Galliformes - Family: Phasianidae

Bonasa umbellus	ruffed grouse
Meleagris gallopavo	wild turkey
Phasianus colchicus	ring-necked pheasant

Order: Passeriformes - Family: Bombycillidae

Bombycilla cedrorum	cedar waxwing
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Order: Passeriformes - Family: Certhiidae

Certhia americana	Brown Creeper
Polioptila caerulea	blue-gray gnatcatcher
Thryothorus ludovicianus	carolina wren
Troglodytes aedon	house wren
Troglodytes troglodytes	winter wren

Order: Passeriformes - Family: Corvidae

Corvus brachyrhynchos	american crow
Corvus corax	common raven
Corvus ossifragus	fish crow
Cyanocitta cristata	blue jay

Order: Passeriformes - Family: Fringillidae

Agelaius phoeniceus	red-winged blackbird
Ammodramus savannarum	grasshopper sparrow
Cardinalis cardinalis	northern cardinal
Carduelis flammea	common redpoll
Carduelis pinus	pine siskin
Carduelis tristis	american goldfinch
Carpodacus mexicanus	house finch
Carpodacus purpureus	purple finch
Dendroica caerulescens	black-throated blue warbler
Dendroica castanea	bay-breasted warbler
Dendroica cerulea	cerulean warbler
Dendroica coronata	yellow-rumped warbler
Dendroica fusca	blackburnian warbler
Dendroica magnolia	magnolia warbler
Dendroica pensylvanica	chestnut-sided warbler
Dendroica petechia	yellow warbler
Dendroica tigrina	cape may warbler
Dendroica virens	black-throated green warbler
Geothlypis trichas	common yellowthroat
Helmitheros vermivorus	worm-eating warbler
Icteria virens	yellow-breasted chat
Icterus galbula	northern oriole
Icterus spurius	orchard oriole
Junco hyemalis	dark-eyed junco
Melospiza georgiana	swamp sparrow
Melospiza melodia	song sparrow
Mniotilta varia	black-and-white warbler
Molothrus ater	brown-headed cowbird
Oporornis formosus	kentucky warbler
Oporornis philadelphia	mourning warbler
Parula americana	northern parula
Passerella iliaca	fox sparrow
Passerina cyanea	indigo bunting
Pheucticus ludovicianus	rose-breasted grosbeak
Pipilo erythrophthalmus	rufous-sided towhee

Piranga olivacea	scarlet tanager
Quiscalus quiscula	common grackle
Seiurus aurocapillus	ovenbird
Seiurus motacilla	louisiana waterthrush
Setophaga ruticilla	american redstart
Spizella arborea	american tree sparrow
Spizella passerina	chipping sparrow
Spizella pusilla	field sparrow
Sturnella magna	eastern meadowlark
Vermivora peregrina	tennessee warbler
Vermivora pinus	blue-winged warbler
Vermivora ruficapilla	nashville warbler
Wilsonia canadensis	canada warbler
Wilsonia citrina	hooded warbler
Zonotrichia albicollis	white-throated sparrow
Order: Passeriformes - Family: Hirundinidae	
Hirundo rustica	barn swallow
Stelgidopteryx serripennis	northern rough-winged swallow
Order: Passeriformes - Family: Muscicapidae	
Catharus fuscescens	veery
Catharus guttatus	hermit thrush
Catharus minimus	gray-cheeked thrush
Catharus ustulatus	swainson's thrush
Hylocichla mustelina	wood thrush
Sialia sialis	eastern bluebird
Turdus migratorius	american robin
Order: Passeriformes - Family: Paridae	
Parus atricapillus	black-capped chickadee
Parus bicolor	tufted titmouse
Parus carolinensis	carolina chickadee
Order: Passeriformes - Family: Passeridae	
Passer domesticus	house sparrow
Order: Passeriformes - Family: Regulidae	
Regulus calendula	ruby-crowned kinglet
Regulus satrapa	golden-crowned kinglet
Order: Passeriformes - Family: Sittidae	
Sitta canadensis	red-breasted nuthatch
Sitta carolinensis	white-breasted nuthatch
Order: Passeriformes - Family: Sturnidae	
Dumetella carolinensis	gray catbird
Mimus polyglottos	northern mockingbird
Sturnus vulgaris	european starling
Toxostoma rufum	brown thrasher
Order: Passeriformes - Family: Tyrannidae	
Contopus virens	eastern wood-pewee
Empidonax minimus	least flycatcher
Empidonax virescens	acadian flycatcher
Myiarchus crinitus	great crested flycatcher
Sayornis phoebe	eastern phoebe
Tyrannus tyrannus	eastern kingbird
Order: Passeriformes - Family: Vireonidae	
Vireo flavifrons	yellow-throated vireo
Vireo olivaceus	red-eyed vireo

Vireo solitarius	solitary vireo
Order: Piciformes - Family: Picidae	
Colaptes auratus	northern flicker
Dryocopus pileatus	pileated woodpecker
Melanerpes carolinus	red-bellied woodpecker
Melanerpes erythrocephalus	red-headed woodpecker
Picoides pubescens	downy woodpecker
Picoides villosus	hairy woodpecker
Sphyrapicus varius	yellow-bellied sapsucker
Order: Strigiformes - Family: Caprimulgidae	
Caprimulgus vociferus	whip-poor-will
Order: Strigiformes - Family: Strigidae	
Bubo virginianus	great horned owl
Otus asio	eastern screech-owl
Strix varia	barred owl
Order: Trochiliformes - Family: Trochilidae	
Archilochus colubris	ruby-throated hummingbird

Animalia - Fish

Order: Anguilliformes - Family: Anguillidae	
Anguilla rostrata	American eel
Order: Cypriniformes - Family: Catostomidae	
Catostomus commersoni	white sucker
Order: Cypriniformes - Family: Cyprinidae	
Clinostomus funduloides	rosyside dace
Exoglossum maxillingua	cutlips minnow
Luxilus cornutus	common shiner
Rhinichthys atratulus	blacknose dace
Rhinichthys cataractae	longnose dace
Semotilus atromaculatus	creek chub
Order: Perciformes - Family: Centrarchidae	
Micropterus dolomieu	smallmouth bass
Micropterus salmoides	largemouth bass
Pomoxis nigromaculatus	black crappie
Order: Perciformes - Family: Percidae	
Etheostoma flabellare	fantail darter
Order: Salmoniformes - Family: Salmonidae	
Salvelinus fontinalis	brook trout
Order: Scorpaeniformes - Family: Cottidae	
Cottus bairdii	mottled sculpin

Animalia - Insect

Order: Lepidoptera - Family: Arctiidae	
Halysidota tessellaris	banded tussock moth pale tiger moth
Haploa clymene	clymene moth
Hyphantria cunea	fall webworm
Lophocampa caryae	hickory tussock moth
Pyrrharctia isabella	banded woollybear black-ended bear
Spilosoma virginica	yellow woollybear

Order: Lepidoptera - Family: Geometridae	
Iridopsis larvaria	
Lytrosis unitaria	common lytrosis
Prochoerodes transversata	large maple spanworm
Tetracis cachexiata	white slant-line moth
Order: Lepidoptera - Family: Hesperiiidae	
Epargyreus clarus	silverspotted skipper
Order: Lepidoptera - Family: Noctuidae	
Abagrotis alternata	greater red dart
Acronicta americana	american dagger moth
Apamea finitima	
Order: Lepidoptera - Family: Notodontidae	
Symmerista albifrons	white-headed prominent
Order: Lepidoptera - Family: Nymphalidae	
Polygonia interrogationis	anglewing
Order: Lepidoptera - Family: Saturniidae	
Actias luna	luna moth
Dryocampa rubicunda	rosy maple moth
Order: Lepidoptera - Family: Sphingidae	
Ceratonia undulosa	waxed sphinx
Paonias excaecatus	blinded sphinx
Sphinx kalmiae	laurel sphinx
Order: Unassigned Animal - Family: Unassigned Animal	
Acronicta interrupta	
Cynthia tenera	
Eusarca confusaria	
Melanolophia canadaria	

II. Animalia - Mammal

Order: Artiodactyla - Family: Cervidae	
Odocoileus virginianus	white-tailed deer
Order: Carnivora - Family: Canidae	
Canis latrans	coyote
Urocyon cinereoargenteus	gray fox
Vulpes vulpes	red fox
Order: Carnivora - Family: Felidae	
Lynx rufus	bobcat
Order: Carnivora - Family: Mephitidae	
Mephitis mephitis	striped skunk
Order: Carnivora - Family: Mustelidae	
Lutra canadensis	river otter
Mustela frenata	long-tailed weasel
Mustela vison	mink
Order: Carnivora - Family: Procyonidae	
Procyon lotor	raccoon
Order: Carnivora - Family: Ursidae	
Ursus americanus	American black bear black bear
Order: Chiroptera - Family: Vespertilionidae	
Lasiurus borealis	red bat
Myotis keenii	Keen's myotis

Myotis leibii	small-footed myotis
Myotis lucifugus	little brown bat
Myotis sodalis	Indiana bat
Order: Didelphimorphia - Family: Didelphidae	
Didelphis marsupialis	
Order: Insectivora - Family: Soricidae	
Blarina brevicauda	northern short-tailed shrew
Cryptotis parva	least shrew
Sorex cinereus	masked shrew
Sorex fumeus	smokey shrew
Order: Insectivora - Family: Talpidae	
Condylura cristata	star-nosed mole
Order: Lagomorpha - Family: Leporidae	
Sylvilagus floridanus	eastern cottontail
Order: Rodentia - Family: Castoridae	
Castor canadensis	beaver
Order: Rodentia - Family: Dipodidae	
Zapus hudsonius	meadow jumping mouse
Order: Rodentia - Family: Muridae	
Clethrionomys gapperi	southern red-backed vole
Clethrionomys rutilus	northern red-backed vole
Microtus pennsylvanicus	meadow vole
Microtus pinetorum	pine vole
Ondatra zibethicus	muskrat
Peromyscus leucopus	white-footed mouse
Peromyscus maniculatus	deer mouse
Order: Rodentia - Family: Sciuridae	
Glaucomys volans	southern flying squirrel
Marmota monax	woodchuck
Sciurus carolinensis	gray squirrel
Tamias striatus	eastern chipmunk
Tamiasciurus hudsonicus	red squirrel
Animalia - Reptile	
Order: Squamata - Family: Colubridae	
Coluber constrictor	racer
Diadophis punctatus	ring-necked snake
Elaphe obsoleta	rat snake
Heterodon platyrhinos	
Lampropeltis triangulum	milk snake
Natrix septemvittata	
Natrix sipedon	
Natrix taxispilota	
Opheodrys	green snakes
Thamnophis sirtalis	common garter snake
Order: Squamata - Family: Phrynosomatidae	
Sceloporus undulatus	northern fence lizard
hyacinthinus	
Order: Squamata - Family: Scincidae	
Eumeces fasciatus	five-lined skink
Order: Squamata - Family: Viperidae	
Agkistrodon contortrix	copperhead
Crotalus horridus	timber rattlesnake

Order: Testudines - Family: Chelydridae

Chelydra serpentina

common snapping turtle
snapping turtle

Order: Testudines - Family: Emydidae

Clemmys guttata

spotted turtle

Clemmys insculpta

ornate box turtle

Terrapene carolina

common box turtle

Fungi - Fungi

Order: Ceratiomyxales - Family: Ceratiomyxaceae

Ceratiomyxa fruticulosa

Order: Physarales - Family: Physaraceae

Fuligo septica

Physarum bivalve

Physarum viride

Order: Stemonitales - Family: Stemonitaceae

Stemonitis fusca

Order: Trichiales - Family: Trichiaceae

Arcyria cinerea

Hemitrichia calyculata

Metatrichia vesparium

Order: Unassigned Fungi - Family: Unassigned Fungi

Arcyria denudata

Didymium serpula

Physarum tenerum

Stemonitis axifera

Trichia decipiens

Plantae - Vascular Plant

Order: Apiales - Family: Araliaceae

Aralia spinosa

angelicatree

devil's walkingstick

devils walkingstick

Order: Caryophyllales - Family: Caryophyllaceae

Silene latifolia ssp. *alba*

bladder campion
bladder-campion
evening lychnis
white campion
white cockle

Order: Cyperales - Family: Cyperaceae

Carex albursina

white bear sedge

Carex amphibola

amphibious sedge
eastern narrowleaf sedge

Carex blanda

bland sedge
eastern woodland sedge
woodland sedge

Carex bromoides

bromelike sedge

Carex bromoides ssp.

bromoides

Carex bushii

Bush's sedge

Carex communis

fibrousroot sedge

Carex communis var.

fibrousroot sedge

communis

Carex comosa

longhair sedge

Carex conjuncta	soft fox sedge
Carex davisii	Davis' sedge
Carex grayi	Gray's sedge
Carex hirsutella	fuzzy wuzzy sedge
Carex hirtifolia	pubescent sedge
Carex hitchcockiana	Hitchcock's sedge
Carex intumescens	greater bladder sedge
Carex jamesii	James' sedge
Carex laxiflora	broad looseflower sedge
Carex laxiflora var. laxiflora	broad looseflower sedge
Carex leavenworthii	Leavenworth's sedge
Carex lurida	shallow sedge
Carex mesochorea	midland sedge
Carex oligocarpa	richwoods sedge
Carex radiata	eastern star sedge
Carex retroflexa	reflexed sedge
Carex rosea	rosy sedge
Carex shortiana	Short's sedge
Carex siccata	
Carex squarrosa	squarrose sedge
Carex stipata	owlfruit sedge
Carex striatula	lined sedge
Carex tonsa	shaved sedge
Carex tonsa var. rugosperma	parachute sedge
Carex typhina	cattail sedge
Carex utriculata	Northwest Territory sedge
Carex vulpinoidea	common fox sedge
Carex vulpinoidea var.	fox sedge
Carex willdenowii	Willdenow's sedge
Order: Euphorbiales - Family: Euphorbiaceae	
Euphorbia dentata	toothed euphorbia
Euphorbia dentata var. dentata	toothed spurge
	toothedleaf poinsettia
Order: Fagales - Family: Fagaceae	
Quercus prinus	chestnut oak
Order: Orchidales - Family: Orchidaceae	
Spiranthes cernua	nodding ladies'-tresses
Order: Polygonales - Family: Polygonaceae	
Polygonum perfoliatum	Asiatic tearthumb mile-a-minute weed
Order: Polypodiales - Family: Dryopteridaceae	
Athyrium filix-femina var.	michauxii
Order: Sapindales - Family: Anacardiaceae	
Toxicodendron radicans	eastern poison ivy
Order: Violales - Family: Violaceae	
Viola sagittata	arrowleaf violet

APPENDIX D -- FIRE MANAGEMENT PROGRAM ANNUAL CALENDAR

Fire Management Program Annual Calendar

The following outline details the proposed calendar year fire management program for Catoctin Mountain Park:

January

- 1) Employees' physical fitness exams and firefighter safety refreshers initiated.
- 2) Permanent employees' physical fitness scores due or scheduled.
- 3) Update fire experience and training records for red-carded personnel.
- 4) Submit updated red-carded personnel records to the Regional Fire Management Officer and initiate physical fitness scoring.

February

- 1) Meetings with cooperators; final review and revision of interagency agreements.
- 2) Submit proposed revisions of Fire Management Plan for review and approval by Superintendent.
- 3) Coordinate emergency dispatch procedures with the Regional Fire Management Officer and the National Capital Region Communication Center.
- 4) Inventory fire cache; all tools, equipment, kits and supplies fire ready, order needed personal protective equipment and tools.
- 5) Semi-annual service of Type-6 and Type-7 wildfire engines, slip-on tanks, Type-6 trailer mounted pump, power saws, Mark III pump and other equipment.
- 6) Preseason planning completed; all cooperative agreements revised and in effect.
- 7) Probable start of fire season

March

- 1) Meeting with Maryland Department of Natural Resources regarding smoke management for prescribed fire projects (once prescribed fire operational program is initiated).
- 2) Meeting or discussion with Regional Fire Management Officer to review plans and current program.
- 3) Meeting with cooperators to review approved Fire Management Plan revisions.
- 4) Distribution of Fire Management Plan to cooperators, if necessary.
- 5) Issue red cards to permanent personnel as received from NCR-FMO.
- 6) Annual firefighter safety refresher course held.
- 7) Coordinate fire weather program notification with nearby parks.
- 8) Implement Step-Up Plan and adjust level of readiness in response to changing fire danger levels.

April

- 1) Maintain fire contacts with Regional Fire Management Officer, nearby park fire coordinators or Fire Management Officers, and cooperators.
- 2) Continue planning for prescribed fire program.

May

- 1) Maintain fire contacts with Regional Fire Management Officer, nearby park fire coordinators or Fire Management Officers, and cooperators.
- 2) Continue planning for prescribed fire program.
- 3) Begin statusing FFTRs in ROSS.

June

- 1) Issue personal protective equipment to seasonal personnel, if necessary.
- 2) Participate in annual seasonal fire training.
- 3) Issue red-cards to seasonal personnel.
- 4) Probable end of spring fire season.
- 5) Draft FIREPRO budget request and submit to Region

July

- 1) Conduct semi-annual service of slip-on pump, power saws, and other fire equipment.
- 2) Annual firefighter safety refresher course held.

September

Meet with finance personnel on status of fire accounts and outstanding fire orders or requisitions, if applicable.

October

- 1) Review Interagency Agreements, draft revisions as necessary, and submit to the Superintendent for approval.
- 2) Inventory fire cache and requisition replacement equipment and supplies to maintain approved levels.
- 3) Submit proposals for annual training.
- 4) Probable start of fall fire season.

December

- 1) Compile Fire Atlas for completed season from fire log; prepare annual summary report.
- 2) Probable end of fall fire season.
- 3) Forward outstanding fire reports to Region.

APPENDIX E -- Wildfire and Prescribed Fire Monitoring Plan

Procedures and protocols specified in the U.S. Department of the Interior, National Park Service 2003 Fire Monitoring Handbook will be followed should monitoring become necessary.

APPENDIX F -- Pre-attack Plan

PRE-ATTACK PLAN

{TC\L2 "PRE-ATTACK PLAN} Upon discovery of a fire, all subsequent actions will be based on the following:

- 1) The Incident Commander (IC) will locate, size-up, and coordinate suppression actions. The IC will complete the pre-attack planning checklist.
- 2) Provide for public safety.
- 3) Considering the current and predicted fire conditions, the Incident Commander will assess the need for additional suppression resources and estimate the final size of the fire. The potential for spread outside of the park should be predicted, as well as the total suppression force required to initiate effective containment action at the beginning of each burning period.
- 4) The Incident Commander will assess the need for law enforcement personnel for traffic control, investigations, evacuations, etc., and make the request to the Fire Management Officer.
- 5) Document decisions and completes the fire report (DI-1202).
- 6) Should a wildland fire move into an extended attack a Delegation of Authority will be prepared. Once a Delegation of Authority has been approved the Incident Commander will make the final decisions pertaining to the fire. A copy of Delegation of Authority is in the Appendix.

PRE-ATTACK PLANNING CHECKLIST

COMMAND

Pre-attack WFSA (if appropriate)
Pre-positioning needs
Draft delegation of authority
Management constraints
Interagency agreements
Evacuation procedures
Structural protection needs
Closure procedures

OPERATIONS

Helispot, helibase locations
Flight routes, restrictions
Water sources
Control line locations
Natural barriers
Safety Zones
Staging area locations

LOGISTICS

ICP, base, camp locations
Road, trails (including limitations)
Utilities
Medical facilities
Stores, restaurants, service stations
Transportation resources location
Rental equipment sources (by type)
Construction contractors
Sanitary facilities
Police and fire departments
Communications (radio, telephone)
Sanitary landfills
Portable water sources
Maintenance facilities

PLANNING

Park base map
Topographic maps
Infrared imagery
Vegetation/fuel maps
Hazard locations (ground and aerial)
Archeological/cultural base map
Endangered species critical habitats
Sensitive plant populations
Special visitor use area
Land status

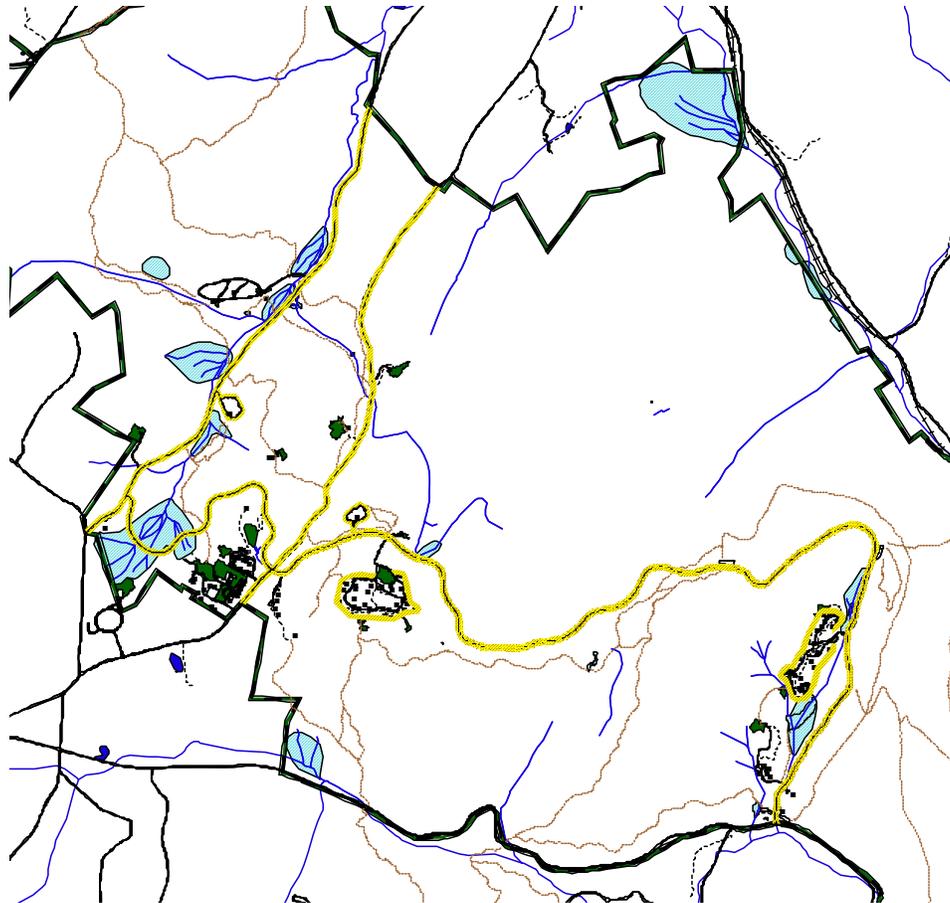
APPENDIX G -- Long-term prescribed fire and hazard fuel reduction plan.

Presently prescribed burns at Catoctin Mountain Park are limited to experimental burns to determine fuel characteristics in the park. No long term prescribed burn plan is planned.

There is no designated long term Fuel Reduction Plan. Fuel reduction is conducted on an as needed basis. In recent years, hazard fuel reduction has been conducted throughout the park. In 2004 hazardous fuels reduction was completed to create a buffer 50 feet off of all roadways and 100 feet buffers around cultural resources and facilities.

Hazardous tree removal is conducted almost yearly to remove trees that create unsafe situations for visitors and employees. Most hazard trees and hazard fuels are created by ice storms, windstorms, heavy rain events, hurricanes and major snow events.

CATO 2004 Fuel Reduction Project



0.6 0 0.6 1.2 1.8 Miles

Legend

- | | |
|-----------------------|---------------|
| Fuel Reduction Buffer | Boundary |
| Roads - 50 ft. | Railroad |
| Picnic Areas - 50 ft. | Streams |
| Campgrounds - 100 ft. | Ponds |
| Roads | Wetlands |
| Dirt Roads | Field habitat |
| Trails | |



Map prepared 20040712 CATO GIS

FIGURE 3. 2004 HAZARD FUEL REDUCTION PROJECT LOCATIONS

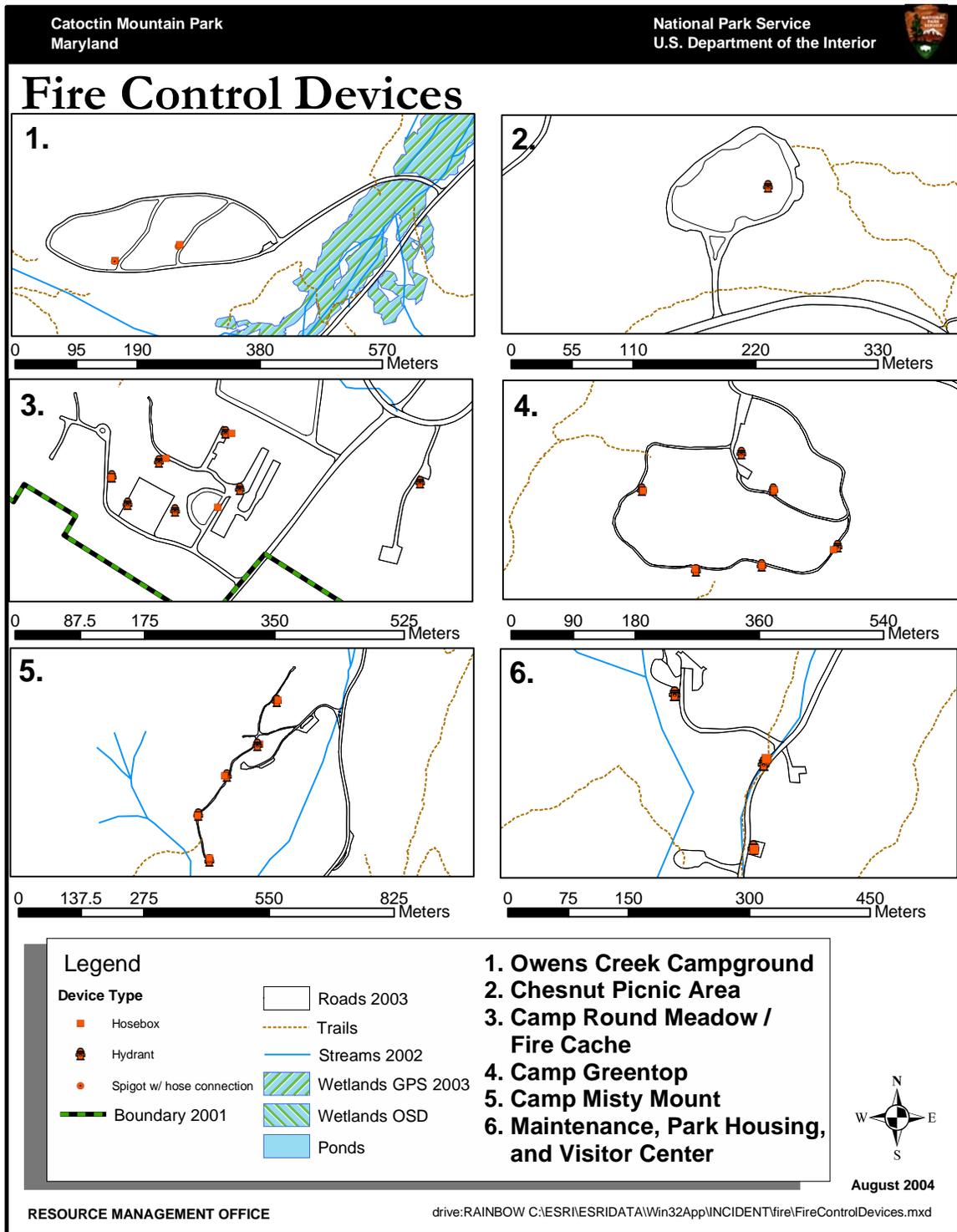
Appendix H -- Fire Prevention Plan (RM-18, Chapter 8)

APPENDIX I -- Cooperative Agreements

APPENDIX J – Key Contact List

Antietam National Battlefield	Ed Wenschhof, Chief Ranger	(301) 432-2243
Blue Ridge Summit Volunteer Fire and Rescue Squad, Inc.	Fire Chief	(717) 794-2323
Cunningham Falls State Park	Cindy Ecker, Park Manager	(301) 271-9178
C&O Canal National Historical Park	Rob Danno, Chief Ranger	(301) 714-2222
Guardian Hose Company	Fire Chief	(301) 271-3413
Harpers Ferry National Historical Park	Ryan Peabody, Supervisory Park Ranger	(304) 535-6746
Maryland Forest Service	Steven Koehn, State Forester	(410) 260-8531
Monocacy National Battlefield	Todd Stanton, Chief Ranger	(301) 662-3515
Smithsburg Community Volunteer Fire Company	Fire Chief	(301) 824-2344
Wolfsville Volunteer Fire Company	Fire Chief	(301) 416-0519

APPENDIX K – PARK FIRE HYDRANT AND FIRE BOX LOCATION MAPS (Figure 4)



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