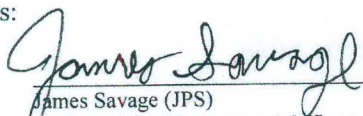


# Appendix J

# Fuels Management Plan

## Chesapeake and Ohio Canal National and Historic Park (CHOH) November 16, 2007

Document Preparers:



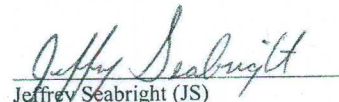
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## Executive Summary

### Purpose and Justification:

The purpose of this proposed work plan is to recommend suggestions for hazard fuel reduction on park boundaries and also includes park-specific Firewise suggestions for park structures. In addition, it also outlines preliminary prescribed burns plans for warm-season grass fields. Please note that this document does not preclude the need for an official Non-Fire Fuels Treatment or Prescribed Fire Plan as outlined in the National Park Service's Reference Manual-18 (Wildland Fire Management).

Justification for these proposed plans are derived from the 2004 CHOH Fire Management Plan (FMP). In compliance with the FMP and direction from Park managers, the following are the suggested fuel and prescribed fire treatments:

1. **Suggested Work:** Create database of structures abutting NPS land and send out mailings to determine need for hazard fuel reduction in specific Wildland Urban Interface (WUI) areas. Perform site visits and hazard fuels reduction of specific homes on WUI.
2. **Suggested Work:** Create inventory database of all structures within park. Inspect prioritized structures in park for Fire Wise compliance at the beginning of every fire season.
3. **Suggested Work:** Small scale experimental prescribed burns in warm-season fields for the purpose of historic scene restoration and maintenance, hazard fuel reduction, and natural resource objectives.

**Note:** See page 12 of document for project timeline table.



# **Non-Fire Fuels Treatment Projects**

## **WUI Fuels Reduction**

### **General Area Description:**

This project should be conducted in WUI areas of CHOH in need of hazard fuels reduction.

### **Goals and Objectives:**

The goals of these hazard fuel reductions are tied to the goals of the 2004 Catoctin FMP and are as follows:

- Make human safety the highest priority to every fire management activity.
- Reduce wildland fire hazard around developed areas and areas adjacent to cultural and historic sites.
- Educate employees and the public about the scope and effects of wildland fire and wildland fire management.

The objectives are as follows:

- Create database of WUI structures (privately-owned) for hazard fuels reduction prioritization.
- Inform WUI homeowners of project importance and relevance.
- Reduce fire intensity to a level at which firefighter(s) can provide direct attack with hand tools and/or water at the WUI.

### **Implementation:**

Suggested plans for privately-owned structure database at the WUI, site visits, and mechanical fuel reductions:

- Generate mailing list of WUI homeowners
  - Mail out pamphlet and include the following in or with the pamphlet:
    - Description and relevance of project
      - Include following statement:

- Although the CHOH is not a high fire danger park, severe weather conditions and a fire start in the park could bring fire across park boundaries onto privately-owned land.
- NPS request for two pictures showing house with fuels accumulation at boundary
  - Provide high quality examples of pictures taken at WUI to instruct homeowner.
    - Request homeowner to send pictures to specific project lead's e-mail.
    - Instructions for standardization of subject line of homeowner's return e-mail so that project lead can readily recognize and file.
- Homeowner request for site visit by NPS personnel to assess hazard fuels and need for mitigation. Request should include at least the following:
  - Pre-paid return envelope
  - Form with checkboxes for accepting or declining site visit.
- Contact information of project lead.
- Fire Wise Web Address ([www.firewise.org](http://www.firewise.org))
- Create database of privately-owned structures at the WUI
  - Include at least the following fields
    - Street address
    - GPS location
    - Datum of GPS location
    - Decline or accept site visit from NPS personnel
    - Site visit date
    - Hazard fuels completion date
    - Pre and post photos of homeowner's WUI.
- Fuel break specifications and other work for WUI areas.
  - Fuel breaks should be 50' wide and the following should be cut and scattered to the interior of the park (see Note 1 and 2):
    - All mountain laurel
    - All dead and down greater than 3" diameter at breast height (DBH).



- All dead standing snags.

**\*Note 1:** Ensure that trees removed to the interior of the park are sufficiently scattered and are not creating hazardous fuel conditions within the park boundaries.

**\*Note 2:** Some of the material could be hauled to a staging area for use by the park or public as firewood.

- Other work
  - Pre and post pictures of hazard fuels work
  - GPS of hazard fuels work area.
    - Create map of hazard fuels to illustrate when and where hazard fuels treatments have been completed.
- Personnel Required for Hazard Fuels Work
  - Qualified saw team (NPS employees) coupled with Youth Conservation Corps swamper and/or other volunteer workers.
    - or
  - Contract Fallers (Fall/Buck/Scatter and Leave)
    - or
  - Contract Loggers (Fall/Buck and Buy From Park)
- Future Planning and Maintenance Visits for WUI sites
  - WUI databases and maps should be updated every five years for newly built houses on boundary and change of ownership.
  - Mailing lists and pamphlets should be re-generated and mailed every five years to determine homeowner's desire for site visit.
  - Boundary areas impacted by large wind events or ice storms should be inspected after the event to assess need for hazard fuel reduction.

#### **Public Notification:**

House and property owners in WUI areas to be affected need to be notified and educated to the nature of the projects.

In addition, displays or signage explaining the projects in WUI areas should be posted at regular intervals within the project areas.

## Fire Wise of Prioritized Park Structures

### General Area Description:

This project should be conducted on prioritized structures within the boundary of CHOH.

### Photo Examples of Structures within Park:

See Photos 1-2.

### Goals and Objectives:

The goals of these hazard fuel reductions are tied to the goals of the 2004 CHOH FMP and are as follows:

- Make human safety the highest priority to every fire management activity.
- Use mechanical hazard fuel removal to maintain fire buffers within the park.

The objectives are as follows:

- Prioritize structures and implement defensible space treatments on these prioritized structures.
- Reduce fire intensity to a level at which firefighter(s) can provide direct attack with hand tools and/or water.

### Implementation:

Suggested Fire Wise plans and database for structure inventory and prioritization:

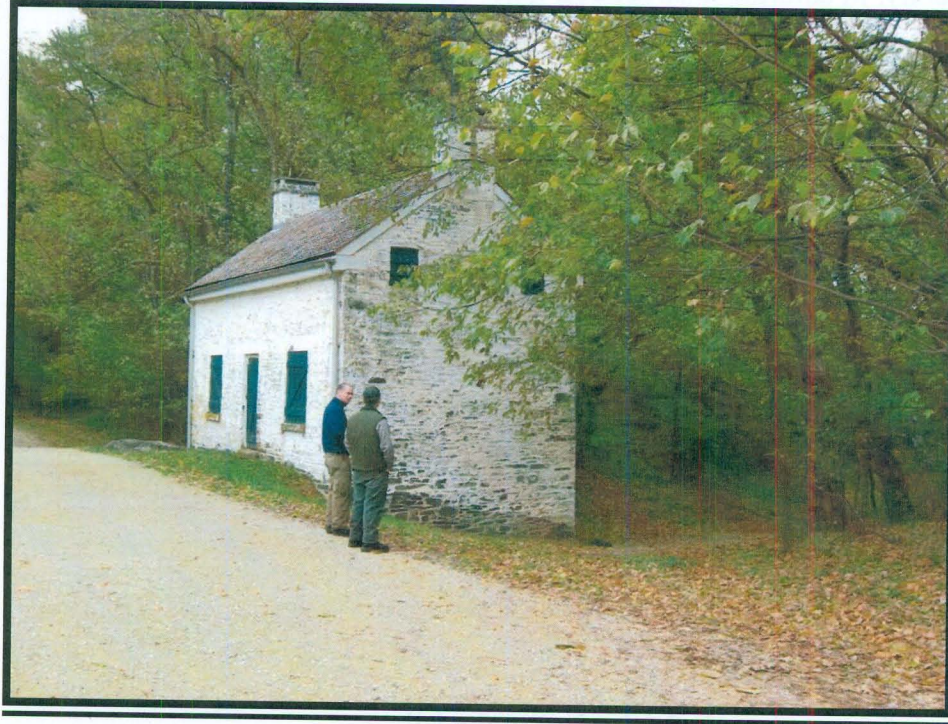
- Structure Database
  - The park, either through staff time or contractor, should create a geo-referenced database of structures within the park. This database should include at least the following fields:
    - Unique structure identifier
    - Common name of structure
    - GPS locations of the structures
    - Digital photos



- Structure priority for Fire Wise
- Fire Wise completion date (both Spring and Fall dates)
- Pre-existing structural databases (such as FMSS or others) could be utilized to implement this project efficiently. In addition to structures, other values at risk should be included in the database such as cultural resource sites, interpretive sites, etc.
- Fire Wise specifications:
  - Clear 5' wide swath of all dead/down vegetation from around the structure and remove leaf litter from roof, gutter, and underneath the house.
  - Stack any firewood 15' away from structure.
  - Dispose of leaf litter away from structure.
- Personnel required for clearing around structures and structure database completion.
  - YCC or SCA Crew
  - Seasonal hires
- Fire Wise maintenance visits for structures:
  - Before every spring fire season and after leaf off in the fall.







## Prescribed Fire Fuel Treatments

### Background and Need Justification

CHOH resource managers are interested in perpetuating the historical vistas in non-agricultural fields and eventually restoring warm-season grasses within select agricultural fields at CHOH. Frequent prescribed burns in these agricultural and non-agricultural fields would help to maintain *Juniperus virginiana*-free sites (*J. virginiana* is a tree-shrub that aggressively invades grass fields during periods of fire-exclusion but does not survive on sites with a high-frequency fire regime [Wade et al 2000]). In addition, high-frequency fires would also help perpetuate warm-season grasses (e.g. big bluestem



(*Andropogon gerardii* var. *gerardii*), little bluestem (*Schizachyrium scoparium*), and switchgrass (*Panicum virgatum*), and Indian grass (*Sorghastrum nutans*). For example, switchgrass has shown linear decreases in abundance with time since burning (Gibson and Hulbert 1987). Also, big bluestem plants in recently burned areas start growth earlier in the spring, develop faster, and produce more herbage than plants in unburned areas. This earlier and increased growth is most often attributed to increased solar radiation reaching the soil following the removal of standing dead material (Hulbert 1969; Hulbert 1988). Similar examples of positive response to burning for little bluestem, Indian grass, and other warm-season grasses can be found on the U.S. Forest Service's Fire Effects Information System (FEIS) website at <http://www.fs.fed.us/database/feis>. Moreover, the regular burning of these fields will help to mitigate thatch buildup which could lead to a more intense wildfire if a start were to occur.

Small experimental prescribed fire projects will be suggested on the following pages in order to facilitate the re-introduction of fire into CHOH for the purposes of warm-season grass restoration/maintenance, perpetuation of historical vistas, and reduction of hazardous grassy fuels.

## Historical Vista and Warm-Season Grass (Agricultural Fields) Prescribed Burns

### Burn Units Description:

This project suggests beginning with the following small prescribed burn (RX) tract within CHOH.

- Fort Duncan RX Area
  - Location: See Map One and Photo One
  - Size: ~ 6 Acres

*Note: As of yet, the park has not specifically designated any agricultural field sites for warm-season grass restoration. However, when these sites are specified, prescribed burning in the fields should be considered a viable means to perpetuate the warm-season grasses.*

### Goals and Objectives:

The goals of these prescribed burn projects are tied to the goals of the 2004 CHOH FMP and are as follows [Note: Though a program of using prescribed fire at CHOH is not considered in the FMP,



*individual burns may be used for protection of cultural resources (especially historic scene restoration and maintenance), hazard fuel reduction, and natural resource objectives.]*

- Make human safety the highest priority to every fire management activity.
- Protect cultural resources, especially historic scene restoration and maintenance; Reduce hazard fuels; Support natural resource objectives.
- Educate employees and the public about the scope and effects of wildland fire and wildland fire management.

The objectives are as follows:

- Inhibit encroachment of *J. virginiana* and other tree and shrub species onto historical grassland sites and agricultural fields.
- Invigorate growth of warm-season grasses and reduce density of cool-season grasses.
- Lower potential wildfire intensity by reducing thatch layer.
- Use prescribed burns as training exercises for red-carded park employees.

#### **Implementation:**

A fully-prepared prescribed burn plan will be necessary to implement these burns but the following suggestions are made:

- Start with small burn blocks (5-10 acres) and increase size of future burn blocks as smaller burns are successfully executed.
- Initially utilize backing fires for the following reasons:
  - Decrease likelihood of fire escaping boundary of proposed burn.
- Utilize burn areas for public education
  - Make simple, informative signs explaining the purpose of the burn.
- Experiment with effects of head fires in future interior burns where contingency lines can be established outside of the proposed RX burn.





Photo Eight  
Table Mountain Pine  
Location: Thurmon



## Literature Cited

Gibson, David J.; Hulbert, Lloyd C. 1987. Effects of fire, topography and year-to-year climatic variation on species composition in tallgrass prairie. *Vegetation*. 72: 175-185.

Hulbert, Lloyd C. 1969. Fire and litter effects in undisturbed bluestem prairie in Kansas. *Ecology*. 50(5): 874-877.

Hulbert, Lloyd C. 1988. Causes of fire effects in tallgrass prairie. *Ecology*. 69(1): 46-58.

Wade, Dale D.; Brock, Brent L.; Brose, Patrick H.; [and others]. 2000. Fire in eastern ecosystems. In: Brown, James K.; Smith, Jane Kapler, eds. *Wildland fire in ecosystems: Effects of fire on flora*. Gen. Tech. Rep. RMRS-GTR-42-vol. 2. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station: 53-96.

<b>Project</b>	<b>Cost</b>	<b>Year Assigned</b>	<b>Planning Fiscal Year</b>	<b>Compliance Fiscal Year</b>	<b>Execution Fiscal Year</b>
WUI Fuels Reduction					
Fire Wise of Park Structures					
Prescribed Burning Projects					

## **Biographical Sketch**

**Andrew Ruth** began his career in fire management with the Natchez Trace Parkway in Mississippi as the Lead Fire Effects Monitor in 2003. He currently works as a Supervisory Forestry Technician (Fire Management) at Yukon-Charley Rivers/Gates of the Arctic National Park and Preserve in Fairbanks, Alaska. He holds an M.S. from the University of Florida's School of Forest Resources and Conservation (specialization: Fire Ecology).

**James Savage** began his career on a Forest Service fire crew in Okanogan, Washington during the 2000 fire season. He later went to Rocky Mountain National Park in Colorado, where he worked as a fuels technician, engine operator, and hotshot crewmember. In January 2002 he worked on the Buffalo Fire Use Module until June 2002 when he transferred to the Whiskeytown Fire Use Module outside of Redding, California. As a lead crewmember on these Fire Use Modules James worked on fuels treatments, prescribed fires, and fire use incidents throughout the United States as far east as Little River Canyon in Alabama, and as far west as Redwoods National Park on the coast in California. This introduced him to a wide variety of fuels types and fire behavior. After his time on the Modules James took a position as a Fuels Technician with Yukon-Charley Rivers National Preserve in Alaska, where he was responsible for all aspects of the fuels program from planning to implementation and monitoring. Since then James has risen to become the Assistant Fire Management Officer for Eastern Area National Parks, Alaska. He continues to be involved with Lower 48 fire management activities with details for prescribed fires in Yosemite, engine crew assignment in the Everglades, and fuels planning in the National Capital Region.