

Burn will be divided into four divisions/groups. Each division will have both ignition and holding personnel assigned. Each division will work an ignition and holding team. MDC will be assigned Division B, C and Group D and will need to provide a Burn Boss, Ignition Crews, Holding Personnel, Holding Bosses and Ignition Bosses. NPS will be assigned Division A and provide a Burn Boss, Ignition Boss, Ignition Crew, Holding Boss and Holding Personnel. NPS will provide two type 6 wildland fire engines with operators that will be utilized in DIV B and C.

There will be one ignition team (Group D) with two persons that will ignite interior portions of the unit.

The structure and terminology of the burn will be under the Incident Command System (I.C.S.). However, personnel will not be required to be NIMS qualified to serve in certain position on this burn. (Example: A person will not be required to be a DIVS in order to supervise activities on a division.)

**Equipment:**

The Following equipment will be on hand the day of the burn:

- |  |   |
|--|---|
| <p><b>NPS</b><br/>         6 Backpack pumps<br/>         2 portable pumps<br/>         500' of 1" hose<br/>         2 chainsaws<br/>         10 fire rakes<br/>         5 pulaskis<br/>         5 shovels<br/>         2 ATV's with water<br/>         2 Type 6 Wildland Fire Engines<br/>         2 Backpack Leaf Blowers<br/>         4 Drip Torches<br/>         30 Gal Drip Torch Fuel<br/>         2 Belt Weather Kits<br/>         Radios: Portable and Mobile</p> | <p><b>MDC</b><br/>         1 Tractor/plow (stand-by in Eminence Area)<br/>         1 Slip-on Pumper<br/>         2 Chainsaws<br/>         10 Fire Rakes<br/>         1 Portable Pump<br/>         2 Backpack Pumps<br/>         2 ATV's w/ water<br/>         4 Drip Torches<br/>         25 Gal Drip Torch Fuel<br/>         2 First Aid Kits<br/>         3 Backpack Leaf Blowers<br/>         2 Belt Weather Kits<br/>         4 Flappers<br/>         Radios: Portable and Mobile</p> |
|--|---|

Three portable pumps will be available with hose. Most holding will take place with crews and water carrying ATV's. A Type 6 NPS Fire engine with foam will be deployed at the top of Stegall Mountain along with an MDC pumper. Another NPS type 6 engine with foam will be positioned along north boundary road. One dozer (MDC) will be staged (location to be determined the day of the burn).

**G. ESTIMATED PROJECT COSTS (non-base, other agency, contract):**

<b><u>FUNCTION</u></b>	<b><u>PROJECTED WORK HOURS/</u></b>	<b><u>PROJECTED COSTS*</u></b>
<b>Planning</b>	26/Rx Fire Plan development, site visit	\$1000.00
<b>Unit Preparation</b>	78/blow line, hazard tree mitigation, brush hog line	\$6500.00
<b>Operations (including burning, holding, mop-up)</b>	208	\$11000.00
<b>Monitoring &amp; Evaluation</b>	52 (collateral assignment) site visit coordination between OZAR staff and	\$1000.00

TOTAL PROJECTED COST \$ 19,500.00 divided by 322 acres = \$ 60.56 PER ACRE

\*Required information in final report: ACTUAL COSTS, COST PER ACRE, WORK HOURS PER ACRE.

## H. SCHEDULING

Proposed Ignition Date:	January 25-April 25, 2006
Projected Burn Duration:	16 hours (8 hrs ignition, 8 hrs burning and 2 days mop-up.)
Actual Ignition Date:	
Date Declared Out:	
Date DI-1202 Submitted:	

## I. PRE-BURN CONSIDERATIONS

### PREPARATION NEEDS ON SITE:

Preparation tasks are assigned by each agency representative. See appendix 3 for maps of burn unit.

NPS – Remove leaf litter from tread of Ozark Trail and logging spur to Division A-B break. Place torch refueling cans in safe place along perimeter near Points 2 and 4. Orange ribbon will be placed along perimeter to mark hazards such as snags, etc. Hang white ribbon at division breaks and points A-J along perimeter.

MDC – Clear debris from around wooden electric line poles on one mile of Tower electrical line. Put in hand lines three feet wide to mineral soil along upper portion of White Oak Hollow (DIV B) and between White Oak Drainage and Shannon County Road #526. Grade Tower Road. Place refueling cans along perimeter near points 6 and 7. Complete radio coordination and radio checks.

### OFF SITE:

1. Coordinate daily weather and burn conditions monitoring with park staff for at least four days prior to ignition date.
2. Ensure notifications are made.
3. Ensure local media is contacted as appropriate.
4. Brief assigned personnel and park staff as appropriate.
5. Burn Bosses will coordinate escape and other wildfire coverage with other NPS Districts, MDC (Eminence 226-3616) and USFS (325-4233).
6. Spot weather forecast will be obtained from NWS in Paducah, KY (502)744-0321
7. Each Burn Boss will ensure agency equipment is prepared 3 days before burn, and personnel are available to fill positions.

### **Special Precautions/Regulations: (Utility lines, historical sites, safety, etc.)**

1. All NPS burn personnel will wear standard fire fighting leather boots, Nomex Pants and Shirt, leather gloves and hard had. NPS personnel will carry a fire shelter at all times. MDC personnel will meet agency specific requirements for PPE.
2. All standard wildland firefighter safety rules (LCES and 10 standard orders) will be strictly enforced (see Fireline Handbook).
3. NEPA compliance. The ONSR Resource Management Plan and Fire Management Plan which has an accompanying E.A. identifies prescribed burning as a permitted activity in the natural zone. No rare or endangered species are known to be in the area, except for state-listed *Viola Cuculatta*, which grows in a wet seep near Rocky Falls that is too wet to burn.
4. Fire Tower – It is bordered by >10 feet of green grass and a large gravel parking area on the north side. Heat from fire is a concern, so area within 100' should be burned out slowly, using water/foam if needed to limit heat production.
5. Electric ROW – Watch for arcing in heavy smoke. Rake around poles to prevent them from catching fire.
6. No foam concentrate or solution will be handled, mixed or sprayed within 50' of any water source, including wet seeps containing *Viola Cuculatta*.
7. Minimize smoke concentrations by burning with a daytime visibility of at least 6 miles and a minimum mixing height of 500 meters (1640 feet); a transport windspeed of at least 9 mph and a following nighttime forecast of no area fog and a minimum nighttime 20' windspeed of 6 mph.
8. The ignition team lighting spot fires on central ridge will have radios and stay in visual contact of each other during ignition. Safety zones will be in rocky areas of glades.
9. The ignition team lighting in Terrapin Hollow will light walking down hollow toward Shannon County Road #525. Safety zones will be downhill, staying in the stream channel, to the road.

### **J. PRESCRIBED FIRE PRESCRIPTION**

NFFL Fuel Models used: 80% FM 9 – 20% FM 3

## PRESCRIPTION

Weather	Range
Temperature F	55-75
Relative Humidity %	22-45%
Wind Direction	SSE-N (Prefer SW)
Mid Flame Wind Speed	2-5
Fuel Moisture (1 hour)	5-10%
(10 hour)	8-12%
(100 hour)	15-21%
Mixing height	1500'
Transport winds	9

## FIRE CHARACTERISTICS

This unit should be burned under moderate conditions that produce a fire severity low enough to retain over-story trees, but high enough to open up the under-story, reduce the dead biomass and minimize smoke. Characteristics are based on a head fire.

Characteristics	Range
Rate of Spread (chains/hour)	1.5-12.5
Flame Length (feet)	1.4-3.6
Fireline Intensity (btu/ft/s)	11-89

## K. IGNITION AND HOLDING ACTIONS

All personnel will attend briefing prior to burn. Tactics and assignments will be covered. Lookouts, Communications, Escape Routes and Safety Zones will be discussed. Individual job assignments and instructions will be given to each crew-member. Maps, firing and contingency plans will be made available to each crew-member.

### Firing and Ignition:

A test fire will be set near the tower at point 1 (see appendix 3). Both ignition teams and all holding resources will be located at the test fire site. After test fire, a two-person ignition team (Group D) will ignite the central ridge starting near Point 11 and light towards the tower (Point 1). At the same time, one ignition team will black-line the top part of the burn near the tower and roads. Coordinated perimeter ignition will then take place down White Oak Hollow and Kelley Hollow. After significant progress has been made, another ignition team (Group D) will ignite Terrapin Hollow. All three-ignition teams should reach the bottom of the unit at the same time then finish by igniting the bottom from Points 3-5 and Points 7-5. Close coordination via radio will be necessary between ignition and holding personnel to ensure that the operation proceeds safely and efficiently.

#### Firing Sequence:

Refer to Appendix 3 for a map illustrating the ignition sequence.

If prescription parameters are exceeded during project execution, the Burn Boss should terminate ignition operations at a safe and appropriate location based on fire behavior, fuels topography and weather conditions. If the project area comes back into prescription based on current and forecasted weather, ignition operations may continue. If not, the project area is put into a mop-up and patrol status. Holding actions shall maintain control of the fire until a decision to continue, postpone or extinguish the prescribed fire is made and the Agency Administrator or their designee is notified. The Burn Boss will document this decision process on a unit log.

#### Holding Actions:

Each division will have ignition and holding personnel. Holding teams will secure the fire line with engines, ATV's and hand-tools. Engines and water carrying ATV's will patrol behind ignition teams lighting from roads and trails. Water sources (drafting sites, etc.) will be identified on the project map.

#### Mop-Up Operations:

Mop-up will occur only for the purpose of maintaining control of the burn. Jackpots, snags, or problem areas will be secured through the use of water or foam. Chainsaw and handtools will only be used when other methods are not practical.

### L. WILDLAND FIRE TRANSITION PLAN

1. Stage an MDC dozer within a ten-minute response time prior to ignition. Coordinate with Eminence District Forester.
2. The secondary lines will be Kelley Creek on the east, The Ozark Trail on the southeast, Rocky Creek on the north and northwest and the woods trail out Mule Mountain south of White Oak Hollow.
3. Minor Escape-Spot fires and slop-overs that fall within the secondary lines and are controllable with hand crews-holding crews will suppress spot fires or slop-overs, and ignition may continue.
4. Major Escape-Spot fires regardless of location that can not be fought with hand crews. On NPS land, the NPS Burn Boss will be IC. On state lands, the MDC Burn Boss will be IC. The Burn Boss will notify **MDC-Eminence (573-226-3616)**, **USFS-Winona (573-325-4143)** and **NPS-Van Buren (573-323-4236 ext.233)** and request for state dozer and crews if needed. An ICT3 will be available through the Forest Service in Winona.
5. If the escape cannot be contained within 1 burning period by on-site personnel, the fire will be converted to a wildland fire and resources will be ordered as needed by the IC.
6. The Burn Boss will coordinate safety considerations with the section leaders (Holding, Ignition, and Monitoring) to provide and ensure the safety of ALL personnel assigned. All personnel will be assigned holding or suppression duties.

### M. PROTECTION OF SENSITIVE FEATURES

The fire tower and adjacent radio building will be protected with a wet line and a black line around their perimeters. The NPS Historian will do an on-site inspection for cultural resources on NPS lands. If any cultural or historical areas are found to be in the unit, burn personnel will be notified and measures will be taken to protect those areas.

### N. PUBLIC AND PERSONNEL SAFETY

1. A safety briefing will be given at the pre-burn briefing and at the start of each operational period. All personnel will be advised of Lookouts, Communications, Escape Routes, and Safety Zones. Any other potential safety hazards will be pointed out and mitigated as soon as possible upon identification of hazard.
2. All NPS burn personnel will wear standard firefighting personal protective equipment (leather boots, leather gloves, Nomex Clothing and hard hat). They will carry a fire shelter and fire tool at all times. MDC personnel will adhere to that agency's requirements for PPE.
3. Only red-carded personnel or cooperators who meet their own agency's qualifications will be utilized during the burn.
4. All standard wildland firefighter safety rules will be strictly enforced (ref: Fireline Handbook).
5. H Highway and NN Highway will be signed to warn motorists of smoke along the road. If necessary, a road guard will be placed on the road to slow traffic. Visibility will be monitored on the highways during the burn and also after dark.
6. The public will be kept at a safe distance from the fire lines.
7. Escape Routes and Safety Zones will be identified prior to the burn.

**8. EMERGENCY MEDICAL PROCEDURES:**

- EMT or First Responder assigned the day of the burn.
- First Aid equipment available and location made known to all burn personnel.
- Burn Boss notified immediately of injury.
- Burn Boss will coordinate with EMT/First Responder.
- Burn Boss will notify Park Dispatch of an injury and will follow up with information as soon as the injury has been assessed.
- EMT/First Responder will assess injury and begin treatment.
- Once injury has been assessed, the Burn Boss or designee will activate the appropriate EMS response for evacuation of injured personnel.
- If personnel need to be evacuated, park dispatch will dispatch/contact EMS resources from the following table:

<b>RESOURCE</b>	<b>CONTACT PHONE NUMBER</b>	<b>LOCATION</b>
Eminence Ambulance/Sheriff	573-226-3615	Eminence, MO
Winona Ambulance	800-262-3477	Winona, MO
St. Francis Hospital	417-934-2246	Mtn. View, MO
Life Flight Dispatch Air Evac 1	800-247-3822	West Plains, MO

**O. SMOKE MANAGEMENT AND AIR QUALITY**

This area is remote with few nearby residences. The nearest towns are Eminence 10 miles NW, Winona 8 miles SW, Ellington 17 miles NE, Bunker 25 miles N, Fremont 10 miles S and Van Buren 12 miles SE. One person will periodically check H and NN highways to ensure at least 1.5 miles visibility is maintained.

**COMPLIANCE:**

In the state of Missouri, prescribed fire is considered to be agricultural burning and there are no burn or smoke permit requirements to ignite a prescribed burn. However, agency standards require meeting minimum requirements for mixing height and transport winds. The minimum mixing height is 1500 feet and a minimum transport wind of 9 mph. A smoke management forecast will be obtained the day of the prescribed burn and attached to the plan.

**MODELING:**

A smoke projection map is attached for all proposed wind directions.

**MITIGATION:**

Smoke production will be light to moderate, but will lift and disperse adequately as long as the burn is conducted within smoke management guidelines.

**P. INTERAGENCY COORDINATION AND PUBLIC NOTIFICATION**

1. The park Fire Education, Prevention and Information Specialist will handle press releases a minimum of two (2) days before the burn. Generally a single media release made prior to the particular burn season (fall or spring) suffices.
2. Fire management staff will notify the following at least one week prior to the proposed ignition date:
  - Park Superintendent
  - Senior Management Staff & District Rangers
3. NPS Fire management staff will notify the following at least two days prior to the proposed ignition date:

Missouri Department of Conservation	573-226-3616
USFS	573-325-4233
MOCC in Rolla, MO	573-341-7484
MWRO (Connie Burns)	402-221-3476
National Weather Service – Paducah, KY	502-744-0321

MDC Burn Boss will contact local landowners, The Nature Conservancy and local volunteer fire departments (Eminence and Winona).

\*\*Notifications are to be made the day of the burn, the day before by either the Burn Boss, Fire Program Clerk, Fire Management Officer or designated person. Notifications will be recorded into dispatcher’s log and on the original burn plan with the time, date and agency/person notified.

AGENCY/PERSON CONTACTED	DATE	TIME	CONTACTED BY

## Q. MONITORING AND EVALUATION PROCEDURES

The monitoring will include fire weather; fuel moisture; fire behavior; burn emissions; post fire effects on vegetation; and a video tape of burn at one hour intervals from Stegall Tower area (unless MDC films the burn from a helicopter).

Fire weather monitoring will include comparison of spot weather forecasts with on-site observations for wind speed and direction, temperature, and relative humidity taken every hour while the burn is in progress.

Fuel moistures for 10 hour fuels will be collected and dried to determine fuel moistures. On-site readings will be compared with fuel stick moistures at the Big Springs Automated Weather Station on at least 3 days prior to the burn.

Several agencies including the NPS, MDC, NBS, University of Missouri and Washington University have extensive monitoring plots located on Stegall Mountain. The following is a list of fire monitoring projects that are occurring:

Alan Rebertus and Richard Guyette-Fire history, Ecotones, landscape patterns, tree mortality and recruitment

Gary Wilson-Same

Dr. Templeton- Collared lizards

Dr. Van Gilder-Turkeys

Lisa Thomas-Herbaceous species response

Before ignition of the burn unit begins, an on-site weather observation will be taken no more than 30 minutes prior to ignition. The burn boss or designated person will be responsible for obtaining a fire weather and smoke management forecast for the day of the burn.

The nearest associated NFDRS/WIMS station is at Van Buren (#031201). Outputs from this station will be tracked, beginning at least one week prior to the proposed ignition date. Spot weather forecasts will be requested prior to the burn and each consecutive day of the burn from the **Paducah, KY NWS** office (502-744-0321). Actual on-site weather information will be reported back to the weather forecaster to help improve the forecasts during the burn.

Burn emissions will be monitored by mapping plume trajectory at least three times during the burn. Background visibility will be estimated directly downwind in miles from Stegall Tower prior to and after ignition is completed.

### POST-BURN:

Post burn monitoring will occur as Resource and Fire Management staff in consultation with Midwest Region and Ozark Ecoregion Fire Ecologists determines the need.

## R. POST FIRE REHABILITATION

"Light Hand on the Land" guidelines will be used to help minimize rehab needs. The following list of standards for the rehabilitation burn units can be adjusted for specific burn unit needs.

1. Flush cut stumps.
2. Remove flagging.
3. Build water bars on fire lines that are located on steep slopes.
4. Cover firelines to blend in with surrounding vegetation **after** the fire has been declared out.
5. Repair or stabilize damage to road shoulders.
6. Snag hazard trees at the discretion of the burn boss and holding specialist.

7. Close all access created by fire personnel and equipment.

8. Any other rehab as directed by appropriate Resource Management personnel.

No special rehab needs are anticipated for this burn unit.

### S. POST FIRE REPORTS

Post fire reports shall be the responsibility of the burn boss and should be submitted within seven (7) days of the completion of the burn to the Ozark National Scenic Riverways Fire Management Office. The Fire Management Officer and Fire Program Assistant (FPA) will incorporate any long-term monitoring data or reports into the burn documentation package as they come available. The FPA will be responsible for entering required prescribed fire reporting information, including the 1202 and employee experience records, into SACS when they become available.

#### Documentation Package:

Documentation	YES	NO	N/A
1. Original Signed Plan			
2. All Reviewer Comments			
3. All Maps			
4. Notification Checklist			
5. Permits			
6. Weather Forecast			
7. Smoke Forecast			
8. Agency Administrator Go/No Go Checklist			
9. Operational Go/No Go Checklist			
10. Daily Validation			
11. Unit Logs			
12. Enter into Prescribed Files by FPA			
13. 1202 Completed and Entered into SACS			

## **T. APPENDICES**

1. Technical Reviewer Checklist and Comments
2. Reviewers' Comments
3. Maps
4. Risk Mitigation and Complexity Worksheets
5. Fire Modeling Outputs
6. Agency Administrator Go/No-Go Pre-ignition Approval
7. Prescribed Fire Operations Go/No-Go Checklist
8. IAP/Briefing Guide
9. Adequate Holding Resources Worksheet
10. Post-Project Analysis
11. Prescribed Fire Monitoring Form

**APPENDIX #1  
PRESCRIBED FIRE PLAN - TECHNICAL REVIEW**

Park: \_\_\_\_\_

Project Name: \_\_\_\_\_

Prescribed Fire Plan Elements	Status	Date	Initial
a. Signature Page			
b. Executive Summary			
c. Description of Prescribed Fire Area			
d. Goals and Objectives			
e. Project Complexity/Risk			
f. Organization			
g. Cost			
h. Scheduling			
i. Preburn Considerations			
j. Prescription			
k. Ignition & Holding Actions			
l. Wildland Fire Transition Plan			
m. Protection of Sensitive Features			
n. Public and Firefighter Safety			
o. Smoke Management			
p. Interagency Coordination and Public Information			
q. Monitoring			
r. Post Fire Rehabilitation			
s. Post Fire Reports			
t. Appendices			

Status Coding:

- + Adequate – Meets NPS Standards
- 0 Adequate with modification. See comments.
- Deficient. See comments.
- NC Unable to evaluate.

Comments:

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Title: \_\_\_\_\_

Office: \_\_\_\_\_