

**NATIONAL PARK SERVICE
NEW RIVER GORGE NATIONAL RIVER
PRESCRIBED FIRE PLAN**



**XERIC OAK HABITAT
Restoration Prescribed Burn
GRANDVIEW UNIT**

Complexity Rating: **LOW**
(Minimum RXB2 Required)

PREPARED BY: _____
Peg Ainslie, Fire Operations Specialists (RXB2)

DATE: _____

REVIEW BY: _____
Jeff B. West, Chief, Visitor and Resource Protection

DATE: _____

REVIEW BY: _____
Mark Graham, Chief, Resource Management and Planning

DATE: _____

REVIEW BY: _____
Deborah Darden, Deputy Superintendent

DATE: _____

TECHNICAL REVIEW BY: _____

DATE: _____

APPROVED BY: _____
Patricia Kicklighter, Superintendent

DATE: _____

DOI: The approved Prescribed Fire Plan constitutes the authority to burn. No one has the authority to burn without an approved plan or in a manner not in compliance with the approved plan. Actions taken in compliance with the approved Prescribed Fire Plan will be fully supported. Personnel will be held accountable for actions taken that are not in compliance with elements of the approved plan regarding execution in a safe and cost-effective manner.

NFPORS # 6282166

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Executive Summary:

The New River Gorge National River seeks to reintroduce fire into the xeric oak/mountain laurel/huckleberry forest to maintain their dominance on dry ridges and rimrock outcrops of the gorge. The park's long-term monitoring program has documented the underrepresentation of dry site oaks in the sapling layer and the significant increase in mesic species, predominately red maple, which are expected to replace the oaks and rimrock pines in the future. The xeric oak/hickory forest type is a fire adapted system, meaning occasional fires favor oak and hickory regeneration competing with shade tolerant species like maples, basswood, beach, and white pine. Prescribed burning creates conditions that allow young chestnut oak, black oak, scarlet oak, Virginia pine, pitch pine, hickory, mountain laurel, and huckleberries, to thrive.

The park is recommending the reintroduction of prescribed fire into the xeric oak/mountain laurel/huckleberry forest, which occurs on less than 2,777 acres (<4% of NERI forests), in an effort to maintain species composition and abate their replacement by more shade tolerant trees lacking the hard mast (acorns, pine nuts, and hickories) necessary to sustain many species of wildlife, including the rare Allegheny woodrat.



Grandview Burn Site looking North.

ELEMENT 2: GO/NO-GO CHECKLISTS

Agency Administrator GO/NO GO Checklist

Instructions: The Agency Administrator’s Pre-Ignition Approval is the intermediate planning review process (i.e. between the Prescribed Fire Complexity Rating System Guide and Go/No-Go Checklist) that should be completed before a prescribed fire can be implemented. The Agency Administrator’s Pre-Ignition Approval evaluates whether compliance requirements, Prescribed Fire Plan elements, and internal and external notifications have been or will be completed and expresses the Agency Administrator’s intent to implement the Prescribed Fire Plan. If ignition of the prescribed fire is not initiated prior to expiration date determined by the Agency Administrator, a new approval will be required.

YES	NO	KEY ELEMENT QUESTIONS
		Is the Prescribed Fire Plan up to date? <i>Hints: amendments, seasonality.</i>
		Will all compliance requirements be completed? <i>Hints: cultural, threatened and endangered species, smoke management, NEPA.</i>
		Is risk management in place and the residual risk acceptable? <i>Hints: Prescribed Fire Complexity Rating Guide completed with rationale and mitigation measures identified and documented?</i>
		Will all elements of the Prescribed Fire Plan be met? <i>Hints: Preparation work, mitigation, weather, organization, prescription, contingency resources</i>
		Will all internal and external notifications and media releases be completed? <i>Hints: Preparedness level restrictions</i>
		Will key agency staff be fully briefed and understand prescribed fire implementation?
		Are there any other extenuating circumstances that would preclude the successful implementation of the plan?
		Have you determined if and when you are to be notified that contingency actions are being taken? Will this be communicated to the Burn Boss?
		Other:

Recommended by: _____ Date: _____
FMO/ Burn Boss

Approved by: _____ Date: _____
Agency Administrator

Approval expires (date): _____

XERIC OAK HABITAT GRANDVIEW UNIT PRESCRIBED BURN PLAN

Prescribed Fire GO/NO GO Checklist

A. Has the burn unit experienced unusual drought conditions or does it contain above normal fuel loadings which were not considered in the prescription development? If <u>NO</u> proceed with checklist., if <u>YES</u> go to item B.	YES	NO
B. Has the prescribed burn plan been reviewed and an amendment and technical review been completed; or has it been determined that no amendment is necessary? If <u>Yes to any</u> , proceed with check list below, if <u>NO</u> , STOP.		

YES	NO	QUESTIONS
		Are ALL fire prescription elements met?
		Are ALL smoke management specifications met?
		Have ALL required current and projected fire weather forecasts been obtained and are they favorable?
		Are ALL planned operations personnel and equipment on-site, available, and operational?
		Has the availability of ALL contingency resources been checked, and are they available?
		Have ALL personnel been briefed on the project objectives, their assignment, safety hazards, escape routes, and safety zones?
		Have all the pre-burn considerations identified in the Prescribed Fire Plan been completed or addressed?
		Have ALL the required notifications been made?
		Are ALL permits and clearances obtained?
		In your opinion, can the burn be carried out according to the Prescribed Fire Plan and will it meet the planned objective?

If all the questions were answered "YES" proceed with a test fire. Document the current conditions, location, and results

Burn Boss

Date

ELEMENT 3 COMPLEXITY ANALYSIS SUMMARY

Xeric Oak/Mountain Laurel/Huckleberry Grandview Prescribed Burn			
Element	Risk	Potential Consequence	Technical Difficulty
1. Potential for escape	Low	Low	Low
2. The number and dependence of activities	Low	Low	Low
3. Off-site Values	Low	Low	Low
4. On-Site Values	Low	Low	Low
5. Fire Behavior	Low	Low	Low
6. Management organization	Low	Low	Low
7. Public and political interest	Low	Moderate	Low
8. Fire Treatment objectives	Low	Moderate	Low
9. Constraints	Low	Low	Low
10. Safety	Low	Low	Low
11. Ignition procedures/ methods	Low	Low	Low
12. Interagency coordination	Low	Low	Low
13. Project logistics	Low	Low	Low
14. Smoke management	Moderate	Moderate	Low
Complexity Rating Summary			
			Overall Rating
Risk			Low
Consequences			Low
Technical Difficulty			Low
Summary Complexity Determination			Low
<p>RATIONALE: Risk of escaped fire is low due to planning and resource efforts (on-site resources, availability of water, small acreage unit, short ignition period, adaptation of ignition techniques and contingency planning); and the relative abundance of natural and human-made barriers (e.g. Admin Road and a power line corridor) around and proximal to the burn unit. Consequences of smoke from an escaped fire range from low to moderate because smoke could impact traffic in the Grandview area. An escaped fire may result in interagency cooperation and media exposure consequences that could negatively affect the New River Gorge Fire Management Program. Technical difficulty is low due to a continuous fuel type, NERI fire cache logistical resources, and local experience with weather, fuel type, and prescribed fire. Overall, this prescribed fire project has a low complexity rating. As this is the first time this area has been burned an RXB2 is required for implementation, as per FMO.</p>			

ELEMENT 4: DESCRIPTION OF PRESCRIBED FIRE AREA

A. Physical Description:

- 1. Location:** In northeastern Raleigh County, Grandview Mountain forms part of the southern wall of the New River Gorge. It rises steeply more than 1,500 feet from the banks of the New River. Much of the mountain remains wooded and is a popular destination for day hikers and visitors due to the close proximity of the Main Grandview Overlook.

Administrative Unit:	New River Gorge National River
County:	Northeastern Raleigh County
State:	West Virginia
Prescribed Fire Name:	Grandview
Topo Map:	Meadow Creek Quadrangle - USGS
SW Corner Coordinates:	N 37° 50' 22.31" W 81° 04' 24.83"
Elevation:	2295' to 2412'
Directions:	From I-64 take Route 9 north to Grandview Follow signs to Shelters 3 & 4 in Grandview day use area Burn unit is to the north of maintenance area off Trail #1

- 2. Size:** The overall project size is 17 acres.
- 3. Topography:** Slopes range from 0%-40%, with a southwest aspect. The burn unit contains flat benches and small sections of steeper slope. Elevation ranges from 2295' – 2412'.
- 4. Project Boundaries:** The North side of the unit is bound by Admin. Road, a gravel trail approximately 10' wide. The East side of the unit is bordered by a powerline corridor approximately 20' wide and devoid of any vegetation >5' in height. A leaf-blown holding line approximately 1' wide exists immediately adjacent to the unit. The South side of the unit is bound by Admin. Road and a 1' wide leaf blown line connecting to the east line where the unit diverges from the trail. The West side of the unit is bordered by Admin. Road.

B. Vegetation/Fuels Description:

Vegetation and fuel descriptions are based on field inspection and classified using the 2005 Scott and Burgan standard fire behavior fuel models.

1. Inside Burn Area:

Name	Description	Fuel Model CODE	Acres	% of Unit	1hr, & 10 hr. fuel load in tons/acre
Leaf Litter	0 to 3" depth	TL2	17	100%	1.4 ta

The unit is dominated by a closed overstory of mature oaks and hickories approximately 80 – 100 feet in height. Many deciduous snags are present in the overstory in various stages of decay. These large diameter trees are addressed further in Element 9, On-Site

Considerations. More mesic species such as red maple, eastern hemlock, and white pines are emerging in the midstory 10 – 20 feet in height. Understory fuels in the western half of the unit are dominated by princess pine, which is absent in the eastern half. White pine seedlings are scattered throughout the unit and few understory shrubs are present. Dead and downed logs are common throughout the unit. The primary fire carrier is the leaf and needle litter layer which is approximately 0 – 3” deep.

- 2. Adjacent Fuels Data:** Adjacent fuels are similar to the fuels within the unit and consist of fuel model TL2.

C. Description of Unique Features and Resources:

The burn unit falls within an area of the park with high visitor use. It is relatively flat, located at the top of the ridge just before it starts downslope.

D. Maps (See Appendix A: Maps)

E. NPS Assessment of Effect to federally listed Threatened or Endangered Species

The 17-acre project area is within the range of and may provide suitable habitat for two federally listed bat species: the Indiana bat (*Myotis sodalis*) and the Virginia big-eared bat (*Corynorhinus townsendii virginianus*). The nearest mine portal known to be used by either of these bat species is located approximately 6.6 miles from the project area, and there are no mine portals located within the project area. There are no known Indiana bat maternity roosts within the project area or within 2.5 miles of the project area. Summer capture bat surveys are not conducted within the park, but fall swarm surveys at mine portal entrances are conducted. Prior to the burn, fuels will be raked away from the bases of standing snags that are greater than or equal to 5 inches DBH to limit ignition of trees which could serve as maternity roost habitat for Indiana bats or other bat species. If any trees within the burn unit need to be felled before the burn because they are designated as hazard trees, approval must first be obtained from the park wildlife biologist who will ensure that the trees are not currently being used as maternity roosts by Indiana bats.

To limit effects on eastern red bats (*Lasiurus borealis*) which might be roosting in the ground leaf litter, the burn will be conducted when the ambient temperature is 50°F or warmer.

The project area is also within the range of two federally listed plant species: Virginia spiraea (*Spiraea virginiana*) and running buffalo clover (*Trifolium stoloniferum*). There are no known occurrences of either of these plants species within the project area. The habitat within the project area is not conducive to the presence of Virginia spiraea. Running buffalo clover is not known to occur in the park and its park status is now only historic.

In conclusion, the NPS has determined that the proposed prescribed burns may affect, but are unlikely to adversely affect any federally-listed endangered or threatened species.

ELEMENT 5: GOALS AND OBJECTIVES

- Fire Fighter Safety- Maintain an organized controlled environment where the project can be accomplished with minimal risk to firefighters.
- **GOALS:**
 - 1. Restore and maintain the fire adapted oak/ericad vegetation on site.
 - 2. Reduce hazardous fuel accumulations thus decreasing the threat of catastrophic wildfire impacts to the surrounding communities and park neighbors.
- **OBJECTIVES:**
 - **1. RESOURCE OBJECTIVES:**
 - A. Total percent herbaceous cover will be at least 90% (ninety)
 - B. Reduce duff (decaying ground) layer by 15 to 35% over the next 10 years.
 - C. Limit loss of snags (potential bat habitat) > 13cm or 5” dbh to < 5%
 - D. Limit mortality of mature pitch/Virginia pines and large oaks to 15-30% as measured 2 years post burn.
 - E. No net increase in invasive exotic species cover as measured 1 year post burn.
 - **2. PRESCRIBED FIRE OBJECTIVES:**
 - A. Provide for visitor and fire fighter safety.
 - B. Burn >60% of the surface litter over 75% of the target area
 - C. Reduce mesic pole size (2.5-15cm dbh) trees by 70%
 - D. Limit loss of snags (potential bat habitat) > 13cm or 5” dbh to < 5%
 - E. Prevent the creation of large canopy gaps >.5acres in areas of mature forest
 - F. Limit mortality of mature pitch/Virginia pines and large oaks to 15-30% as measured 2 years post burn.
 - G. Limit smoke impacts to area residents, visitors, and infrastructure.

ELEMENT 6: FUNDING:

A. Cost:

Resources/Supplies	Estimated Cost:
Unit Preparation Personnel	\$400
Prescribed Burn Personnel	\$3,000
Total Personnel	\$3,400
Tool replacement and repair	\$200
Ignition devices, drip torch mix	\$200
Vehicle fuel	\$200
Total Equipment	\$600
Projected Total Cost	\$4,000

B. Funding Source:

The NERI FMO will work with the Northeast Regional Fire Management Office to secure funding levels from a hazardous fuels account.

ELEMENT 7: PRESCRIPTION

A. Environmental Prescription:

ENVIRONMENTAL PARAMETERS		
Element	Acceptable Range	Optimum Range
Temperature	50°F - 85°F	50°F - 70°F
Relative Humidity	25% - 70%	30% - 40%
Wind Direction	Any	South
Mid-flame Wind Speeds	0 mph – 10 mph	4 mph
Wind Mixing Height	500 feet or greater	700 feet or greater
Transport Wind Speed	5 mph or greater	8 mph or greater
1-Hour Fuel Moisture	4-15%	8-12%
Days Since Measurable Rain	1-30	2-6
Keetch Byram Drought Index	<400	200 to 300

B. Fire Behavior Prescription:

FIRE BEHAVIOR ENVIRONMENTAL PARAMETERS	Fuels Within the Project or Burn Unit Boundary	
	Acceptable Range	Optimum Range
Rate of Spread	.5 – 10 chains per hour	2 - 4 chains per hour
Flame Length	0.5ft – 8ft	1ft – 3ft

Fire Behavior Narrative:

The fuels within the unit are classified as fuel model TL2, low load compact hardwood leaf litter. Fire behavior is expected to be low with maximum head fire flame lengths on the steepest slopes predicted at 1.2 feet and a rate of spread of 3.0 chains per hour. Minimum backing flame lengths are predicted at 0.2 feet with a rate of spread of 0.1 chains per hour. Similar fuel conditions exist outside the unit and it is expected that any spot fires or slop overs will exhibit similar fire behavior.

ELEMENT 8: SCHEDULING

A. Ignition Time Frames/Season(s):

- April – May or August - September (depending on ambient temperatures)
- This burn is scheduled for mid-spring, prior to full green-up. Objectives can also be met when burning in late summer, prior to dormancy.
- There will need to be a sufficient quantity of dry, horizontally continuous fuels (e.g. litter or herbaceous material) over the unit to carry fire and achieve objectives.

B. Projected Duration:

The burn will be implemented so that all ignition operations are completed during the burn period and heavy fuels have had a chance to substantially burn out prior to the end of the day to minimize overnight smoldering and smoke production. Smoldering of interior fuels overnight in burn units is allowed.

C. Constraints:

This prescribed burn will not be conducted when the following conditions occur as per Red Book chapter 17 Fuels Management:

- Local county government enacts a burn ban.
- National, Regional, or Local Preparedness Levels preclude prescribed fires.

ELEMENT 9: PRE-BURN CONSIDERATIONS

A. On-Site Considerations:

To be completed by Burn Boss or designee before the day of the burn:

- Assess unit perimeter for hazards that may pose holding concerns or firefighter / public safety issues. Flag hazard trees and avoid the area, but if a hazard tree can't be avoided then seek prior approval from the park's wildlife biologist before felling.
- Verify designated containment lines are leaf blown, easily identifiable, and adequate for forecast conditions.
- Inspect and mitigate as needed the hand lines and infrastructure adjacent to the burn unit for holding concerns in the event of a slop over or escaped fire.
- Reduce fuel around standing snags >5" (dbh) to limit the ignition of trees containing potential habitat for the endangered Indiana bat.

Burn Boss or designee will ensure the following are completed on the day of the burn:

- Post area and/or trail closure signs as required. Place appropriate Prescribed Fire warning signs as required based on forecast wind direction and road impacts.
- Preposition supplies (drip torch fuel, full bladder bags, etc.) as required.
- Final check of control lines to ensure adequate holding capabilities.
- Ensure unit is clear of unauthorized personnel.
- Monitor weather and fuel conditions in the burn area and implement operational changes as necessary.

B. Off-Site Considerations:

To be completed by Burn Boss or designated park staff prior to burn:

- Notify park cooperators of the burn (e.g. town fire departments, county dispatch, NPS employees, cooperators and appropriate state agencies of pending burn (see following Notifications chart)).
- Procure a burn permit from the West Virginia Division of Forestry.
- Obtain Cultural Resources clearance.
- Obtain USFWS Section 7 Consultation clearance.
- Ensure an Agency Administrator Pre-Ignition Approval (Element 2) has been signed by the Burn Boss and confirmed by the Superintendent.
- Post informational burn notice flyers at the Grandview Picnic Area approximately 1 week prior.
- Obtain spot weather forecast or local forecast
- Prepare documentation for the Incident Action Plan:
 - Organizational Assignment
 - Medical Plan
 - Safety Message
 - Division Assignment

- Communication Plan
- Project Map
- Weather Forecast
- Acquire sufficient number of maps to be distributed at briefing

C. Method and Frequency for Obtaining Weather and Smoke Management Forecast(s):

General weather forecasts and site conditions will be monitored to determine when the burn unit will be in prescription. This may be done monthly, weekly, or daily as the conditions become closer to prescription. Specific local weather forecasts will be reviewed prior to ignition to verify that conditions and smoke dispersal are predicted to be within prescription. Spot or local forecasts should also be reviewed by assigned holding forces until the fire has been declared out. On-site fire weather will be taken prior to test fire. On-site fire weather will be recorded and communicated at regular intervals to fire resources until ignition is complete and mop up is started. The Burn Boss or designee will request a Spot Weather Forecast through the National Weather Service for the morning of the proposed burn day and each subsequent day of burning. A spot weather forecast can be obtained through the NWS web site: <http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=rlx> .

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D. Notifications: Notifications will be completed the day of burn by the Burn Boss or designee.

Who:	Phone Number:	When¹:	Responsibility:	Date:	Response: Contact Type²
Beckley Appalachian Regional	(304)255-3825	I			
Cabell Huntington Hospital	(304)526-2000	I			
Raleigh General Hospital	(304)256-4100	I			
Healthnet	(304)256-1700	I			
The River Radio	(304) 461-9286	B	PIO		
Beckley Register Herald	(304)255-4400	B	PIO		
WOAY TV	(304)469-3361	B	PIO		
WVNS 59 Ghent	(304)787-5959	B	PIO		
WVVA 06 TV	(304)253-0006	B	PIO		
EICC	(540) 999-3412	I			
Park Division Chief	(304) 465-6518	B	PIO		
Park Superintendent	(304) 465-6511	A,B,D	PIO		
Raleigh Control E.O.C. (911)	(304) 255-9121	D	PIO		
Fayette Control E.O.C. (911)	(304) 574-3594				
Fayette County Sheriff's Office	(304) 574-4216	D	PIO		
CSX Railroad, select option #1	800-232-0144	B,D	PIO		
Meadow Bridge VFD Station #4	(304) 484-7117	B,D	PIO		
Danese VFD Station #2	(304) 438-5312	B,D	PIO		
WV State Police	(304) 466-2800	D	PIO		
WV Department of Highways	(304) 466-2810 or (800) 642-9292	D	PIO		
WV Division of Air Quality	(304) 926-0499	B	PIO		
WV Division of Forestry	(304) 256-6775	B,D	FMO		
WV Department of Natural Resources	(304) 256-6947	B	FMO		
¹ When To Notify	Before (B): Prior to burn day Day of (D): Prior to ignition on burn day After (A): After burn is completed Informational (I): For your information		Contact Type ²	Phone Contact (PC) Phone Message (PM) Direct Contact (DC) E-mail (EM)	

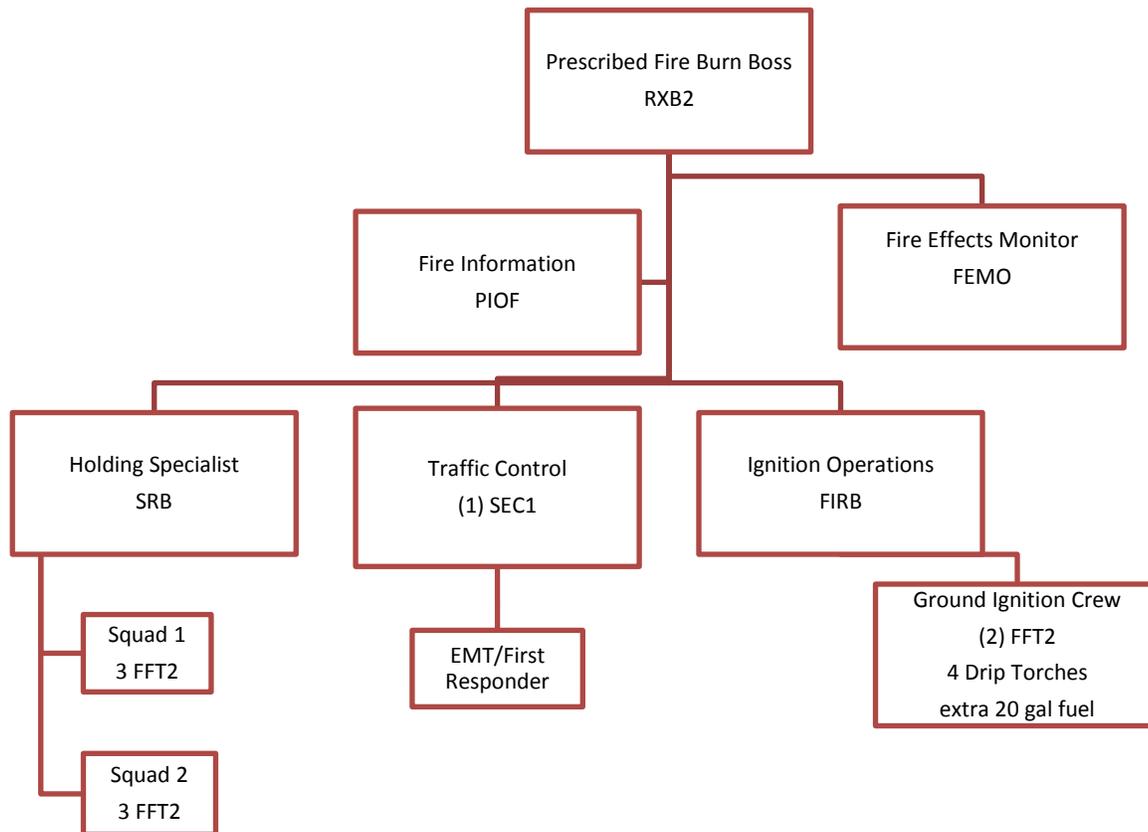
ELEMENT 10: BRIEFING

The Burn Boss, or designee, will ensure that personnel arriving to the prescribed fire receive a briefing prior to assignment. See and include Safety Message as appropriate. The following briefing checklist includes items to discuss in the briefing. Most of this information is included in the Incident Action Plan that will be provided at the briefing.

Briefing Checklist:	Notes
Burn Organization:	
Burn Objectives:	
Description of Burn Area: MAPS: poster, and individual map in IAP	
Expected Weather & Fire Behavior:	
Communications:	
Ignition plan:	
Holding Plan:	
Contingency Plan:	
Wildfire Conversion:	
Safety:	
Medical Plan:	

ELEMENT 11: ORGANIZATION AND EQUIPMENT

A. Positions:



Minimum Personnel Required: 15

CHANGES TO ORGANIZATION DURING IMPLEMENTATION:

Any changes to the organization during implementation must be documented. These are changes that may reflect assignments to other personnel not changes to the capabilities, equipment or supplies, which would require an amendment.

Equipment and Supplies:

The burn boss may adjust the amount and type of equipment needed based on site conditions, resources, expected fire behavior, crew size, and crew experience. The adjustment must be of a type that will not affect the complexity of the burn.

- 4 drip torches
- 4 backpack pumps
- 14 hand tools
- 2 prescribed burn signs
- 1 weather kit
- 1 Type 6 engine
- 2 leaf blowers
- 20 gal drip torch fuel

ELEMENT 12: COMMUNICATION

A. Radio Frequencies:

Frequencies will be identified, verified, and adjusted as needed prior to ignition and will be documented in the Incident Action Plan. Frequencies included in the table below are digital.

Frequency Name:	RX:	Tone:	TX:	Tone:
Command	171.7750	000.0	166.3500	000.0
Tactical	168.3500	000.0	168.3500	000.0
Air Medical	155.4000	N/A	155.4000	110.9

B. Telephone Numbers:

A complete list of telephone number contacts is listed in the Notifications section under Element 9, Pre-burn Considerations.

ELEMENT 13: PUBLIC AND PERSONNEL SAFETY, MEDICAL

A. Safety Message:

The Burn Boss is responsible for safety on the burn, and will ensure all standard wildland fire safety rules are adhered to. Project personnel will wear appropriate personal protective equipment (PPE) during all phases of the project. No person will be allowed within the burn unit without the proper PPE.

An Incident Action Plan (IAP) will be completed by the Burn Boss prior to each operational period. The IAP will address objectives, fire weather/behavior, assignments, communications, safety, and the medical plan. A daily briefing will be conducted prior to beginning every phase of the project. The Burn Boss will ensure that all personnel have received a briefing, including items listed in **Element 10: Briefing**.

B. Safety Hazards: (See Job Hazard Analysis in Appendix E)

- Fire/smoke
- Fire line hazards (e.g. stump holes, footing issues, open flames, working adjacent to roadways, snags, etc.).
- Animal hazards (e.g. wasps, bees, ticks, etc.).
- Fuel storage (e.g. drip torches, drip torch fuel, saw gas, etc.).
- Firing techniques and devices.
- Vehicle operation (e.g. drive with lights on, speed restrictions, traffic conditions, visitors, local residents, smoke, UTV operation, etc.).
- Health hazards (e.g. heat, smoke inhalation, dehydration, injuries, hazardous materials, etc.).
- Equipment hazards such as pumps, engines, chain saws and high noise levels.
- Falling limbs and snags
- Discarded debris
- Inexperienced personnel or unqualified trainers

C. Measures Taken to Reduce Hazards:

The Burn Boss will work with and through appropriate supervisors to institute any corrective safety measures associated with this project. This includes the following measures:

- The burn area will be closed to the public. A sweep may be necessary prior to ignition to insure no visitors are exposed to fire or smoke.

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- A safety briefing will be conducted prior to each operational period. Personnel will be advised of staffing position, ignition pattern, holding actions, lookouts, communications, escape routes & safety zones. The Job Hazard Analysis will be covered in the briefing.
- Law Enforcement personnel will monitor smoke and provide traffic control if needed.
- All line personnel will wear standard Personnel Protective Equipment including a fire shelter.
- Burn personnel will adhere to all standard firefighting safety rules referenced in the IRPG.

If a serious safety issue cannot be resolved prior to burn implementation, ignition will be delayed, postponed or cancelled. If the issue occurs during the course of operations, it will be mitigated with the most reasonable measures possible that will provide for safety of public and employees. If necessary, the project will be shut down until the mitigation efforts are successful.

D. Emergency Medical Procedures:

In the event of an injury, contact will be established with the injured resource’s immediate incident supervisor and the Burn Boss. If the injury requires medical assistance, qualified on-site personnel will provide first aid to the injured party until relieved by a more qualified medical provider. Qualified on-scene medical personnel will be identified in the IAP and briefing.

E. Evacuation Methods:

The Burn Boss, working with identified on-scene medical personnel, will implement the Medical Plan (outlined in the IAP) as required to initiate medical response and transportation to the nearest treatment facility. This will be coordinated with Raleigh Control and on-scene personnel will aid in any in facilitating method of transport (i.e. landing zone construction). The Burn Boss will take measures to secure the prescribed burn and will notify the Superintendent and Chief Ranger of the injury.

F. Emergency Facilities:

EMERGENCY TRANSPORTATION								
NAME	TELEPHONE	LOCATION	PARAMEDICS					
			YES	NO				
Healthnet	800-346-4206	Charleston, WV	X					
Raleigh County EOC	304-256-1700	Beckley, WV						
HOSPITALS								
NAME	ADDRESS AND LATITUDE AND LONGITUDE	TRAVEL TIME (MIN)		PHONE	HELIPAD		BURN CENTER	
		AIR	GROUND		YES	NO	YES	NO
Raleigh General	1710 Harper Rd., Beckley, WV N37°47.268' W81°12.138'	10 min.	30 min.	304-256-4100	X			X
Beckley Appalachian Regional	306 Stanaford Rd., Beckley, WV N37°47.91' W81°10.086'	10 min.	30 min.	304-255-3825	X			X
Cabell Huntington Hospital	1340 Hal Greer Boulevard, Huntington, WV N38° 24.59' W82° 25.64'	10 min.	2 hr.	304-526-2000	X		X	

ELEMENT 14: TEST FIRE

A. Description:

A test fire or test fires will be ignited prior to prescribed burning. The test fire will be ignited in such a way as to demonstrate the expected fire behavior in the unit and smoke direction and dispersion. It is part of the decision to proceed with prescribed fire. Holding crews will stand by and be prepared to extinguish the test fire at the direction of the Burn Boss. In the event that observed fire behavior in the test fire is not acceptable to maintain effective holding and control or achieve minimum desired fire effects, the test fire will be suppressed and the prescribed burn delayed or postponed. The results of the test fire will be documented by the Burn Boss and included in the project folder for each consecutive year. A second test fire may be conducted using the same criteria listed above when environmental conditions are more favorable.

B. Planned location:

The test fire location will be determined on the day of ignition by the Burn Boss and Firing Boss. The test fire should be located on the downwind side of the unit in a location that contains fuels representative of the burn unit. It should be located in an area along the perimeter of the burn unit that may be easily accessible by burn personnel and equipment.

C. Test Fire Documentation:

The Burn Boss will ensure that the project file at the Fire Management Office is up-to-date for each year that this plan is a valid document, including updated Test Fire documentation for each year.

Weather conditions On-Site:		
Date / Time:		
Temperature:		
Relative Humidity:		
Wind:		
Does the observed conditions fall within prescription?	Yes	No
Does weather forecast fall within prescription?	Yes	No
Test Fire Results:		
Does fire behavior fall within prescription?	Yes	No
Does observed fire behavior meet management objectives?	Yes	No
The test fire meets all weather conditions, fire behavior, and management objectives as described in the burn plan. Ignition of the burn unit may begin.		
Burn Boss	Signature	Date / Time

ELEMENT 15: IGNITION PLAN

The Firing Boss will recommend ignition strategies and tactics to the Burn Boss who will be the final decision on which resources and techniques will be used based upon the operational objectives and environmental conditions. The Burn Boss is responsible for ensuring that all personnel receive a pre-burn briefing and understand the ignition plan, holding plan, command structure, incident objectives, priorities, and critical areas.

A. Firing Methods Techniques, Sequences, and Pattern:

The Firing Boss under direction of the Burn Boss may use hand ignition techniques involving a combination of strip head fire, backing fire, flanking fire, and/or dot ignitions. Strip head firing is preferred in this unit to meet ecological objectives. Ignition operations may involve a two-phased approach of first black-lining the unit's perimeter or a portion of the perimeter, and then igniting the interior of the unit. The black-lining operation is intended to secure the perimeter prior to ignition of the remainder of the unit. Fire behavior and effects will be observed by the Burn Boss or designee to ensure that objectives are being met. Firing techniques may be adapted or modified to meet objectives and produce desired fire behavior.

B. Devices:

Ignition devices that may be employed include: drip torches and fusees. Firing operations may employ a combination of these tools to achieve burn objectives. Established safety practices for the use of these ignition devices will be observed at all times (refer to attached JHA).

C. Ignition Staffing:

The staffing chart lists one Firing Boss and two igniters. The Firing Boss and Igniter may be the same resource. Additional personnel may be utilized as needed so long as communication and span of control can be maintained for safe operations. The Firing Boss is responsible for briefing personnel, conducting operations in a safe manner in coordination with holding resources, and identifying ignition impacts on desired fire effects.

ELEMENT 16: HOLDING PLAN

A. General Procedures for Holding:

The Holding Specialist will recommend holding strategies to the Burn Boss who will make the final decision on which resources will be used based on needs of the burn.

Holding actions include all standard fire suppression actions approved within the current Fire Management Plan. In general, the emphasis on managing holding actions will be the use of Minimum Impact Suppression Tactics (MIST). Holding resources may include engines, hand crews (squads) and specialized equipment. Holding resources will work to ensure that the prescribed burn is contained within the specified area and to protect infrastructure, private property, cultural sites, monuments, research equipment, and other values at risk. Known values at risk and water sources will be identified and communicated at briefings. Holding resource assignments will be made on the IAP under the direction of the Burn Boss and Holding Specialist.

B. Critical Holding Points and Actions:

Actions will be taken to prevent ignition of dead trees greater than 5" dbh. These trees are potential habitat for wildlife. A reconnaissance will be done prior to ignition by burn personnel to verify that adequate unit prep has taken place and familiarize personnel with location and access to these areas.

C. Minimum Organization or Capabilities Needed:

Element 11 describes the minimum number and type of resources necessary to conduct this prescribed burn. Additional personnel may be utilized as needed as long as communications and span of control can maintain safe operations.

D. Mop-Up Operations:

Depending on soil and fuel moisture, mop-up may be necessary along unit boundaries though it is preferred fuels be allowed to burn out without disturbance. In those instances where smoldering fuels pose safety hazards either directly (i.e. burning stump holes near trails), or indirectly (smoke on roadways), mop-up may take place following MIST.

E. Patrol and Monitoring:

The Burn Boss is responsible for the scheduling of patrols of the fire perimeter and is responsible for the project until the fire is officially declared out.

XERIC OAK HABITAT GRANDVIEW UNIT PRESCRIBED BURN PLAN

**ADEQUATE HOLDING RESOURCES WORKSHEET
(For High End of Prescription)**

Project Name: GRANDVIEW UNIT Prescribed Burn Fuel Model(s)/Type(s) Inside Project Area: TL2
 Prepared By: Peggy Ainslie Fuel Model(s)/Type(s) Outside Project Area: TL2

	Output Type	Modeling Predictions Inside Project Area	Modeling Predictions Outside Project Area	Unit of Measure
CRITICAL FIRE INPUTS	1 hr Fuel Moisture	4	4	%
	Wind Speed	10	10	mph
	Slope	50	50	%
KEY FIRE BEHAVIOR OUTPUTS	Rate of spread	3	3	ch/hr
	Fire behavior	Head	Head	---
	Flame Length	1.5	1.5	ft
FIRE SIZE	Projection time		.5	hours
	Forward spread		1.5	chains
	Backing spread		.1	chains
FIRE CONTAIN- MENT	Method of attack		rear	---
	Max escape target		.1	ac
	Max containment time		.1	hours
	Total line building rate		8	ch/hr
1. Choose greater of (inside/outside) total line building rate:			8	ch/hr
2. Estimate potential # of spot fires/slopovers at one time:			3	---
3. TOTAL LINE BUILDING RATE NEEDED			24	ch/hr

Ease of Access (Poor/Fair/Good/Excellent): **GOOD**

On Site Organization	Total # Planned on Burn	Total # Dedicated to Rx Fire	Total # Available for Spot/Slopover Control	Line Building Rates	Spot/Slopover Line Building Capacity
Overhead	3	2	1	8 ch/hr	8
Firing Crew (#)	3	3	1	8 ch/hr	8
Holding - hand tools (#)	7	4	3	8 ch/hr	24
Holding – leaf blowers (#)	2	2	2	18** ch/hr	36**
Other				0 ch/hr	
3. TOTAL LINE BUILDING CAPACITY					76 c/hr
4. TOTAL LINE BUILDING RATE NEEDED (from table above)					24 ch/hr
5. ADEQUATE HOLDING RESOURCES (Line 3 – Line 4)?					52 ch/hr

If number on line 5 is positive then adequate holding resources will be available. If number is negative, more holding resources are needed.

Note: Production rates and adequate holding forces calculated on worst case scenarios extreme high end of prescription). Line production rates required under more moderate conditions will be lower.

Production rates are derived from Fireline Handbook, March, 2004 for Fuel Model 9.

**** Leaf blower production rate was calculated during tests at Kings Mountain National Military Park in open hardwood understory over varied terrain.**

ELEMENT 17: CONTINGENCY PLAN

A. Trigger Points and Actions Needed:

The following conditions or triggers warrant the activation of the contingency plan.

- **Objectives not met:** The fire effects observer is responsible for observing fire behavior and documenting first order fire effects as the burn progresses while relaying these observations to the Firing Specialist or Burn Boss. The Firing Specialist may attempt to modify firing methods in order to achieve objectives. Should it become apparent that despite modification of firing techniques, objectives are not being met, the Burn Boss will relay to the Firing Specialist / ignition personnel to terminate ignition operations. Termination of ignition operations will take place at a location where holding actions can stop the unwanted spread of fire, preferably using natural barriers and/or water support. Operations will concentrate on holding and / or mop-up until such time as conditions become more favorable to continue ignition operations.
- **Prescription Elements Exceeded:** Should prescription elements be exceeded during the course of ignition operations, the Burn Boss shall notify the Firing Specialist / ignition personnel to terminate ignition at the first available opportunity as described above. Operations will concentrate on holding and / or mop-up until such time as conditions return to acceptable levels. If it is anticipated that conditions will improve, operations may hold in place until weather / fire behavior observations indicate it is acceptable to continue. If conditions are unfavorable to continue ignition operations, efforts shall be directed towards improving holding lines and mopping up fire as needed to prevent escape.
- **Spotting and/or Escaped Fire:** In the event of spot fires or slop-overs, holding forces shall immediately notify the Firing Specialist and Burn Boss with a size-up and assessment as to additional resource needs at the scene. The nearest resource(s) to the spot shall be responsible for suppression efforts until relieved by either the Holding Boss or more qualified personnel. The Burn Boss and / or Firing Specialist shall evaluate spotting activity to determine whether ignition techniques can be adjusted or if environmental conditions are becoming unfavorable to proceed. If mitigation efforts are less than effective and spotting and or slop-overs begin to become problematic, ignition operations shall be modified or terminated and operations will concentrate on holding and improving lines and mopping up perimeters as needed.

If the spot fire rate of spread exceeds the capabilities of the available resources, or if the spot fire is not expected to be confined before reaching any critical holding areas, the Burn Boss shall consider converting the prescribed fire to wildfire status per Element 18 below. The NPS Regional Office will be notified within 24 hours of a prescribed fire escape.

- **Report of Smoke Effects in Critical Smoke Sensitive Area:** The Firing Specialist and/or Burn Boss will modify ignition techniques in an attempt to mitigate smoke impacts. If smoke hazards cannot be mitigated the Burn Boss will cease ignitions and proceed to mop-up. Law enforcement personnel and signs on nearby roadways should aid in smoke mitigation.

B. Additional Resources and Maximum Response Time(s):

Staffing levels on the burn should be adequate in the event of an escape. Equipment will be present to put in a hose lay and assist with fire suppression. Contingency resources include additional NPS firefighters and West Virginia Division of Forestry assistance through local Volunteer Fire Departments. These resources have response times of approximately 30 minutes. If contingency resources not available, actions will be taken to secure operations until identified contingency resources are replaced. Contingency resources shall be identified prior to initiation of operations.

ELEMENT 18: WILDFIRE CONVERSION

A. Wildfire Declared By:

If the fire burns out of the burn unit the Burn Boss will evaluate risks associated with this event. The Burn Boss will continue to manage the fire as a prescribed burn as long as the fire remains on Park Service property and the potential for escape has not exceeded the capacity of on-site and contingency resources. For example, if the burn spots into adjacent fuels of the same forest type, operations may continue if other elements of the plan are met. If these conditions cannot be met, the Burn Boss may convert the prescribed fire to a wildfire.

If spot fires or slop-overs occur in an unwanted area, the Burn Boss or designee with appropriate qualifications will supervise suppression actions. If spot fires exceed the capabilities of on-site resources, the Burn Boss may convert the prescribed burn to a wildfire. Suppression actions will be conducted in accordance with the park Fire Management Plan to protect identified values at risk.

B. IC Assignment:

The Burn Boss or a qualified, pre-identified individual will assume the role of Incident Commander and proceed with suppression. If an additional IC or Burn Boss is needed, an order will be made through EICC/Shenandoah Dispatch.

C. Notifications:

All decisions and notifications will be made and documented by the Burn Boss. The Fire Management Officer, Chief Ranger, Park Superintendent, Raleigh Control, WV Division of Forestry, and Shenandoah Dispatch will be notified of the declaration. The NPS Regional Fire Office will be notified within 24 hours of a prescribed fire escape.

D. Extended Attack Actions and Opportunities to Aid in Fire Suppression:

Extended attack contingency lines exist in all directions of the prescribed burn unit.

- North: A creek drainage lies 0.1 miles to the north of the burn unit. Admin. Road is 0.2 miles north of the unit.
- South: The Big Buck Trail leaving from Shelters 3 & 4 in the Grandview area lies 0.2 miles south of the burn unit
- East: The Grandview Rim Trail borders the unit 0.2 miles to the east. The New River lies 0.6 miles east.
- West: Direct attack should be considered, as the park boundary lies 0.35 miles to the west. A, small, creek drainage is 0.1 miles to the west and another creek drainage is 0.25 miles away.

All suppression actions will be taken in accordance with DOI 18 and park policy to protect identified values at risk. Additional resources can be ordered through the EICC. In addition, the NERI FMO will complete a WFDSS to define the future appropriate management response.

ELEMENT 19: SMOKE MANAGEMENT AND AIR QUALITY

A. Compliance:

The burn will comply with all State and Federal regulations on air quality. As of spring 2012 there were no West Virginia statutes pertaining to smoke. For informational purposes, the West Virginia Department of Air Quality will be notified of an approaching burn window and prior to ignition on burn day.

B. Permits to be obtained:

The NERI FMO will obtain an Open Burning Permit from the West Virginia Division of Forestry prior to ignition.

C. Smoke Sensitive Areas/Receptors:

Name of Receptor	Distance	Direction
Grandview Road	0.7 miles	Southeast
Grandview Picnic Area	0.6 miles	Southeast
CSX Railroad	0.7 miles	East
Private Dwellings	1.1 miles	Southwest - Southeast
WV 41	0.7 miles	North, Northwest
I - 64	4.5 miles	South

D. Mitigation Strategies and Techniques to Reduce Smoke Impacts:

The prescription parameters established for this plan should minimize most smoke impacts. Burning during daytime hours will allow for most combustion to occur during the burning period when smoke can be diluted and dispersed on transport winds. The unit should produce short duration smoke production due to the fuel type, fuel size and unit size.

The following mitigation measures may be implemented to minimize smoke impacts to roadways:

- The Burn Boss shall evaluate smoke impacts to roads, and if impacts are likely, establish mop-up standards as appropriate to reduce smoldering.
- The Burn Boss will direct posting of prescribed fire or smoke signs along specified roadways.
- As deemed necessary, the Burn Boss, through the District or Chief Ranger, shall request law enforcement for traffic control duties to slow down road traffic, implement one-way traffic or close the road. The Superintendent will be notified of any road closure that may generate negative public reaction. The Burn Boss may use on-site resources in lieu of law enforcement rangers for traffic control duties.
- If smoke-induced fog is anticipated, the Burn Boss may assign personnel to a late shift or early morning shift in order to monitor and mitigate potential smoke impacts on nearby roads.

ELEMENT 20: MONITORING

A. Weather Monitoring Required and Procedures:

On the day of a burn the Burn Boss will designate an observer to record on-site weather every hour (as practical) beginning before ignition of the test fire and continuing until ignition has been completed. At a minimum the observer will record the time, location, dry/wet bulb temperatures, relative humidity, and eye-level wind speed and direction. As possible the observer will document and record: fire behavior characteristics, smoke characteristics and fine dead (1-hour) fuel moisture. The recorded observations will be reported in the post-burn monitoring report and included in the project file for each consecutive year.

B. Fire Behavior Monitoring Required and Procedures:

Fire behavior observations (flame length and rate of spread) will be taken for backing, heading, or flanking fires. The fire behavior data will be recorded along with photographs by the Fire Effects Monitor (FEMO).. The observations, including photographs, will be reported in the post-burn monitoring report and included in the project file for each consecutive year.

C. Monitoring Required Ensuring That Prescribed Fire Plan Objectives Are Met:

Fire Effects Monitoring plots were established in 2012 and all vegetation data recorded. These same plots will be read immediately post-burn, and then 1 year, 2 years, and 5 years post burn. The Resource Management staff in conjunction with the NER Fire Ecology staff will make the determination if objectives are being met.

D. Smoke Dispersal Monitoring Required and Procedures:

The FEMO will observe smoke and record degree of visibility, column height, and direction of travel. These observations will be documented in a weather and fire behavior log.

ELEMENT 21: POST-BURN ACTIVITIES

Post-burn Activities and Reporting:

An After Action Review (AAR) with prescribed burn personnel will occur at the end of the operational period. The Burn Boss, or designee, will initiate a fire file for records of the prescribed fire. The fire file shall be maintained in the NERI Fire Management Office.

Items to be included in the fire file:

- An copy of the NPS Wildland Fire Report Form (The Wildland Fire Report will be completed and entered into the WFMI within 10 days of the fire being declared out WFMI accessed at: <https://www.nifc.blm.gov/cgi/nsdu/FireReporting.cgi>).
- A copy of the NFPORS project accomplishment, if applicable. (Project accomplishments will be entered into the NFPORS web site within 10 days of the fire being declared out. This web site can be accessed at: <http://www.nfpors.gov/>).
- Copies of Go / No-Go Checklist and Administrator Approval Documents
- The Burn Boss, FMO, and selected Rx burn staff will complete a post-project analysis and brief report for input into EACC records.
- The Burn Boss will prepare a post fire evaluation report as defined in Chapter 11, RM-18.

- The fire file may include:
 - ICS-214 Unit Log
 - Fire Name
 - Resources Assigned (Number and Type)
 - Acres Burned
 - Burn Objectives
 - Ignition Type and Pattern
 - Holding Strategy
 - Fuel Moisture Information
 - Drought Index Information
 - Fire Behavior Indices
 - Prescription Information
 - Test Burn Description
 - Chronology of Events
 - Temperature (range, min/max)
 - Relative Humidity (range, min/max)
 - RAWS data
 - Accuracy of Spot Forecast
 - Initial Qualitative Assessment of results
 - Future monitoring plan for area (plots, photo points)
 - Additional Comments

APPENDICES:

- A. Maps: Vicinity, Project, Smoke Vector**
- B. Technical Reviewer Checklist**
- C. Complexity Analysis**
- D. Job Hazard Analysis**
- E. Fire Behavior Modeling**

Appendix A: MAPS

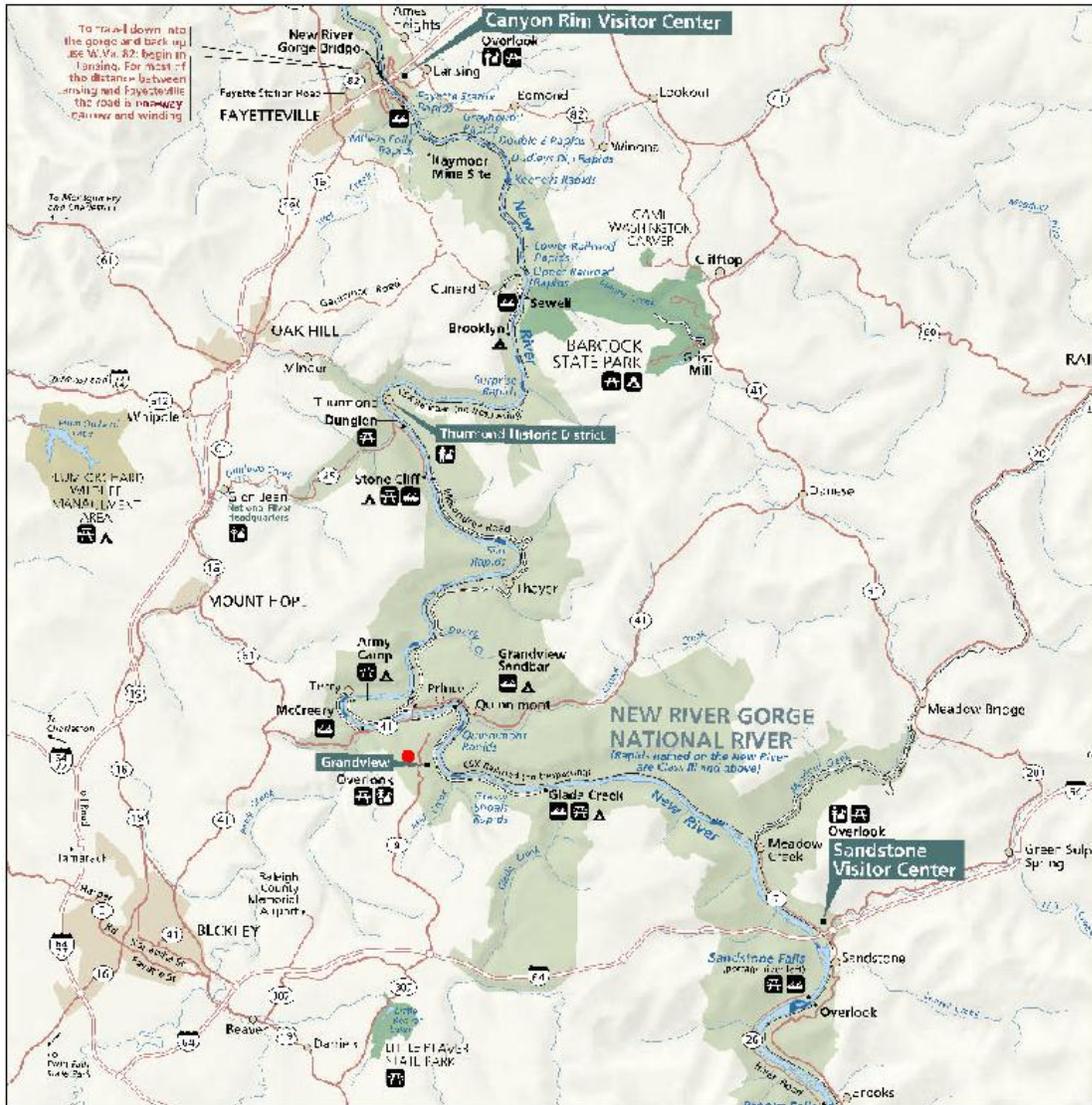
Vicinity Map

New River Gorge National River
West Virginia

National Park Service
U.S. Department of the Interior

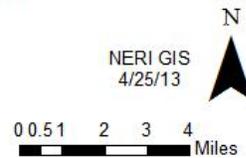


Grandview Prescribed Burn Unit



Legend

 Burn Unit Boundary



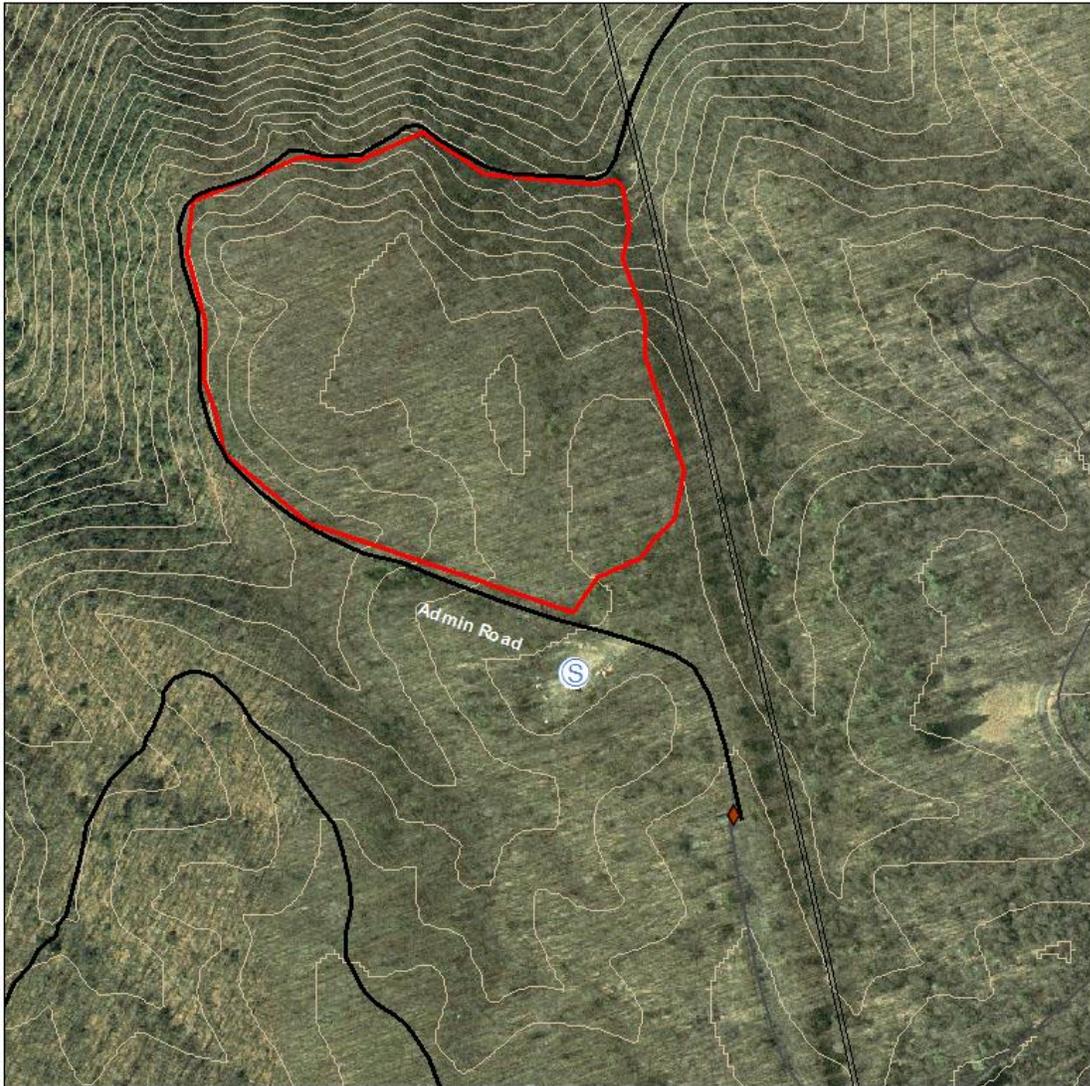
Project Area Map

New River Gorge National River
West Virginia

National Park Service
U.S. Department of the Interior

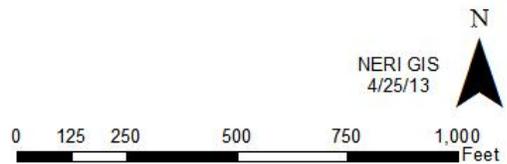


Grandview Prescribed Burn Unit



Legend

- | | |
|--------------------|---------------|
| Burn Unit Boundary | Roads |
| Staging | Powerlines |
| Gate | NERI Boundary |
| Trails | 20' Contours |



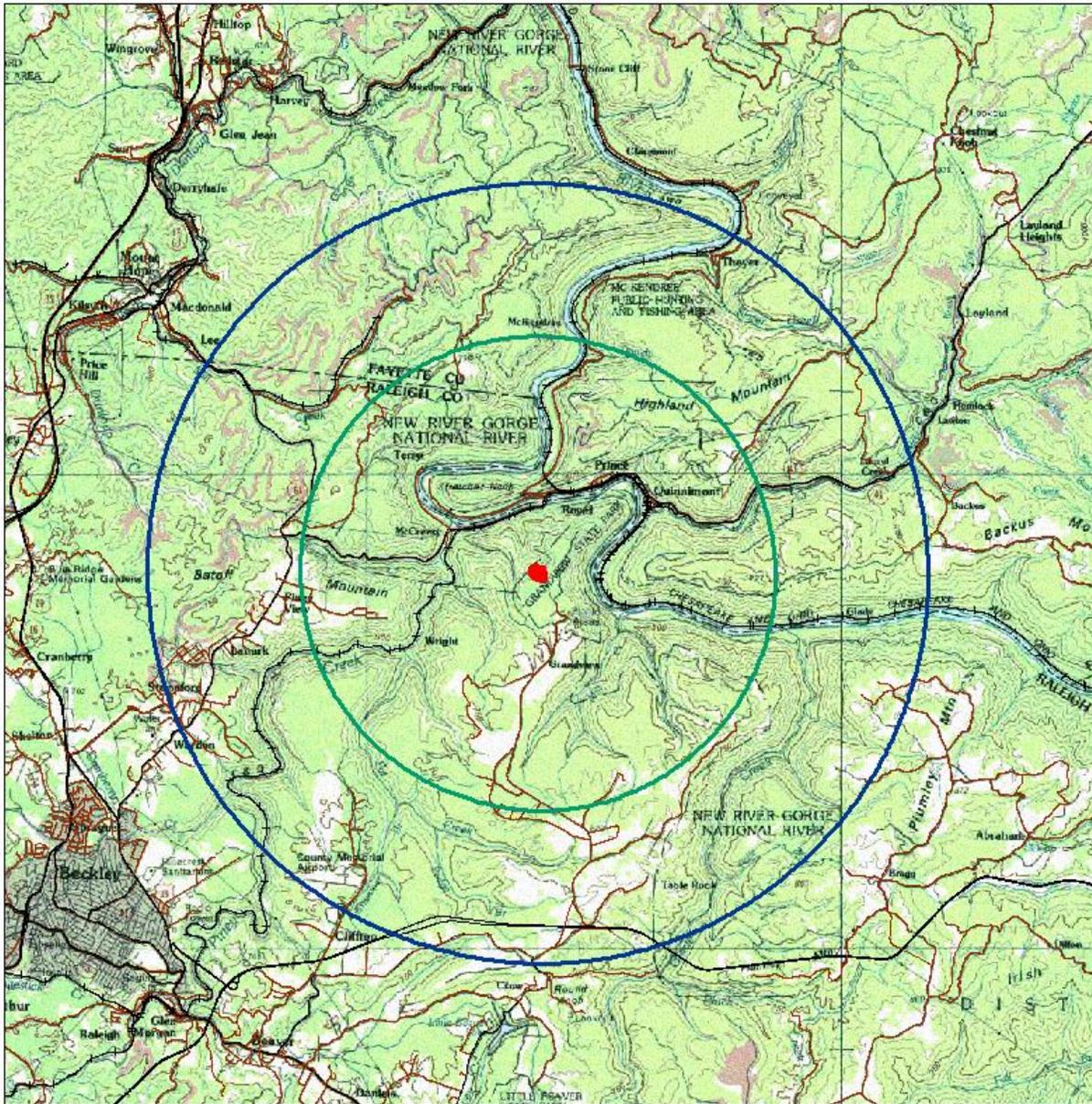
Smoke Vector Map

New River Gorge National River
West Virginia

National Park Service
U.S. Department of the Interior



Grandview Prescribed Burn Unit Smoke Impacts



Legend

- Burn Unit Boundary
- 3 mile smoke impact buffer
- 5 mile smoke impact buffer
- Railroads
- Roads



Appendix B: TECHNICAL REVIEWER CHECKLIST

TECHNICAL REVIEWER CHECKLIST	Grandview Prescribed Burn Unit	
PRESCRIBED FIRE PLAN ELEMENTS:	S / U	COMMENTS
1. Signature page		
2. GO/NO-GO Checklists		
3. Complexity Analysis Summary		
4. Description of the Prescribed Fire Area		
5. Goals and Objectives		
6. Funding		
7. Prescription		
8. Scheduling		
9. Pre-burn Considerations		
10. Briefing		
11. Organization and Equipment		
12. Communication		
13. Public, Personnel Safety and Medical Procedures		
14. Test Fire		
15. Ignition Plan		
16. Holding Plan		
17. Contingency Plan		
18. Wildfire Conversion		
19. Smoke Management and Air Quality		
20. Monitoring		
21. Post-burn Activities		
22. Maps		
23. Complexity Analysis		
24. JHA		
25. Fire Prediction Modeling Runs		
26. Other		

S = Satisfactory U = Unsatisfactory

Recommended for Approval:

Not Recommended for Approval:

TECHNICAL REVIEW BY:

_____ DATE: _____

Printed Name: _____

Agency: _____

Qualification: _____

Approval is recommended subject to the completion of all requirements listed in the comments or on the Prescribed Fire Plan.

Appendix C: PRESCRIBED FIRE COMPLEXITY ANALYSIS

1. Potential for Escape

Risk	Rationale
Preliminary Rating: LOW	There is a potential for spot fires, however, they will be easily detected and suppressed. There are no concentrations or dangerous ladder fuels near critical holding points. There is no residual fire expected beyond the day of ignition.
Final Rating: LOW	No change.
Potential Consequences	Rationale
Preliminary Rating: LOW	An escape could result in little damage to natural resource values or to improvements. No structures are expected to be involved. There will be minimal impact to the public or users. The fire could burn onto private or other agency lands.
Final Rating: LOW	No change.
Technical Difficulty	Rationale
Preliminary Rating: LOW	A single resource boss is all that is required for the on-site holding resources.
Final Rating: LOW	No change.

2. The Number and Dependency of Activities

Risk	Rationale
Preliminary Rating: LOW	Minimal coordination is necessary, simple burn with minimal activities dependent on each other.
Final Rating: LOW	No change.
Potential Consequences	Rationale
Preliminary Rating: LOW	Coordination issues do not result in an increased risk of escape, threaten the completion of the project, failure to meet project objectives, or create a safety issue.
Final Rating: LOW	No change.
Technical Difficulty	Rationale
Preliminary Rating: LOW	Coordination will be minimally difficult due to control lines such as a gravel trail or leaf blown lines in place. Coordination activities require a basic skill level.
Final Rating: LOW	No change.

3. Off-Site Values

Risk	Rationale
Preliminary Rating: MODERATE	There is moderate risk of visitor use during the project due to the close proximity to the Grandview area.
Final Rating: LOW	Informational posters will be placed in public areas and there will be personnel on-site to assist with security and safety.
Potential Consequences	Rationale
Preliminary Rating: LOW	Potentially affected vegetation generally has rapid recovery rates and expected fire behavior would cause minimal damage to off-site values, improvements, private or other agency lands. All values and areas of concern have been identified in a thorough size up of the unit. In the event of an escape we have enough resources on-scene to catch slop/spots.

XERIC OAK HABITAT GRANDVIEW UNIT PRESCRIBED BURN PLAN

Final Rating: LOW	No change.
Technical Difficulty	Rationale
Preliminary Rating: LOW	Appropriate firing techniques will protect perimeter and minimize holding efforts. It is at the Burn Bosses discretion to utilize handline/hoseline as necessary in these areas.
Final Rating: LOW	No change.

4. On-Site Values

Risk	Rationale
Preliminary Rating: LOW	There is no infrastructure or identified cultural features within the burn unit.
Final Rating: LOW	No change.
Potential Consequences	Rationale
Preliminary Rating: LOW	Implementation problems will not damage special features or adversely affect on-site resource values.
Final Rating: LOW	No change.
Technical Difficulty	Rationale
Preliminary Rating: LOW	No Special skills or operating procedures are required. Resource values within the unit are easy to protect.
Final Rating: LOW	No change.

5. Fire Behavior

Risk	Rationale
Preliminary Rating: LOW	Fuels are uniform and can be characterized using a single fuel model. Winds, microclimate, and other fire conditions are relatively uniform. Predicted fire behavior is low.
Final Rating: LOW	No change.
Potential Consequences	Rationale
Preliminary Rating: LOW	Fire behavior outside the unit boundary will be similar to that within the burn unit as it is the same fuel model.
Final Rating: LOW	No change.
Technical Difficulty	Rationale
Preliminary Rating: LOW	Standard safety precautions are adequate to ensure personnel safety. The number or size of spot fires and slopovers would not require additional suppression resources. Fire behavior is such that holding forces should be able to control all spot fires and slopovers using direct attack tactics.
Final Rating: LOW	No change.

6. Management Organization

Risk	Rationale
Preliminary Rating: LOW	A small number of qualified people are required to implement the prescribed fire. A single person may fill different positions. A double level of supervision is utilized to ensure firefighter safety.
Final Rating: LOW	No change.
Potential Consequences	Rationale

XERIC OAK HABITAT GRANDVIEW UNIT PRESCRIBED BURN PLAN

Preliminary Rating: LOW	Problems related to supervision or communications are expected to be minimal.
Final Rating: LOW	No change.
Technical Difficulty	Rationale
Preliminary Rating: LOW	All crewmembers are familiar with local factors affecting project implementation. Several qualified personnel are available.
Final Rating: LOW	No change.

7. Public and Political Interest

Risk	Rationale
Preliminary Rating: LOW	The prescribed fire is small in size, but adjacent to a high-use area. The media has shown interest during implementation in years past.
Final Rating: LOW	No change.
Potential Consequences	Rationale
Preliminary Rating: MODERATE	Unexpected or adverse events would attract some public, political, or media attention and may delay implementation of other projects. News releases and local news briefings would be required.
Final Rating: MODERATE	No change.
Technical Difficulty	Rationale
Preliminary Rating: LOW	A public information officer is written into this plan. Routine media releases are needed, but no special notifications of the public are needed.
Final Rating: LOW	No change.

8. Fire Treatment Objectives

Risk	Rationale
Preliminary Rating: LOW	Objectives are limited to easily achieved fuel reduction and ecosystem maintenance. The necessary fire behavior is easily created, managed, and be monitored.
Final Rating: LOW	No change.
Potential Consequences	Rationale
Preliminary Rating: MODERATE	Other management activities are dependent on the completion of the project. Failure to meet objectives would require reassessment on oak/hickory management.
Final Rating: MODERATE	No change.
Technical Difficulty	Rationale
Preliminary Rating: LOW	Measures to achieve objectives are easy to complete. There are few restrictions on techniques. Limited pre-burn monitoring is needed to determine when the unit is in prescription.
Final Rating: LOW	No change.

9. Constraints

Risk	Rationale
Preliminary Rating: LOW	There may be a slight chance of scheduling public access restrictions.
Final Rating: LOW	No change.
Potential Consequences	Rationale

XERIC OAK HABITAT GRANDVIEW UNIT PRESCRIBED BURN PLAN

Preliminary Rating: LOW	Project can be completed any time prescription parameters are met, tactics and burn activities are not limited.
Final Rating: LOW	No change.
Technical Difficulty	Rationale
Preliminary Rating: LOW	Constraints do not increase the difficulty of completing the project.
Final Rating: LOW	No change.

10. Safety

Risk	Rationale
Preliminary Rating: LOW	Safety zones are present and directly adjacent to the burn. Public exposure is limited to smoke drift but will be mitigated by warnings, signs, and closures.
Final Rating: LOW	No change.
Potential Consequences	Rationale
Preliminary Rating: LOW	There is minimal potential for serious accidents/injuries to firefighters or the public.
Final Rating: LOW	No change.
Technical Difficulty	Rationale
Preliminary Rating: LOW	Safety concerns can be easily mitigated through LCES. A standard mandatory safety briefing as part of the project briefing should be sufficient to cover any safety concerns. Special mitigation to protect public health and safety are needed.
Final Rating: LOW	No change.

11. Ignition Procedures/Methods

Risk	Rationale
Preliminary Rating: LOW	Firing sequences and timing are critical to holding resources to allow easy control of fire. The entire project area is readily accessible to the Firing Boss/Burn Boss. Communication between the Firing Boss and Holding Boss will ensure ignitions proceed dependent on holding.
Final Rating: LOW	No change.
Potential Consequences	Rationale
Preliminary Rating: LOW	Firing patterns are basic and all ignitions are by hand.
Final Rating: LOW	No change.
Technical Difficulty	Rationale
Preliminary Rating: LOW	There is no need for special firing equipment, all firing will be done by hand methods. Ignition patterns require minimal supervision of the igniters.
Final Rating: LOW	No change.

12. Interagency Coordination

Risk	Rationale
Preliminary Rating: LOW	The project does not involve another land management agency but does require verbal notification on burn day to several NPS partners. The PIO will handle most notifications

XERIC OAK HABITAT GRANDVIEW UNIT PRESCRIBED BURN PLAN

Final Rating: LOW	No change.
Potential Consequences	Rationale
Preliminary Rating: LOW	Project can be completed as planned.
Final Rating: LOW	No change.
Technical Difficulty	Rationale
Preliminary Rating: LOW	No interagency issues, special agreements, or communication or coordination are needed. Interagency resources are readily available with few or no restrictions on their use.
Final Rating: LOW	No change.

13. Project Logistics

Risk	Rationale
Preliminary Rating: LOW	No complex logistical operations are necessary prior to ignition. Obtaining some personnel may require additional contacts and advanced scheduling.
Final Rating: LOW	No change.
Potential Consequences	Rationale
Preliminary Rating: LOW	Logistics need would not increase with risk of escape.
Final Rating: LOW	No change.
Technical Difficulty	Rationale
Preliminary Rating: LOW	No special logistical support issues.
Final Rating: LOW	No change.

14. Smoke Management

Risk	Rationale
Preliminary Rating: MODERATE	Some sensitive smoke receptors are located near the burn unit. Smoke observers/LE Rangers listed in the staffing chart will assist in traffic control. The Burn Boss/Firing Boss will adjust tactics as necessary to mitigate smoke impacts.
Final Rating: MODERATE	No change.
Potential Consequences	Rationale
Preliminary Rating: MODERATE	Smoke impacting nearby roadways can have potentially serious consequences but personnel will be on site to assist with smoke effect mitigation.
Final Rating: MODERATE	No change.
Technical Difficulty	Rationale
Preliminary Rating: LOW	Signs will be posted on adjacent roadways prior to ignition, advising the public of the burn. LE Rangers are assigned to assist with traffic if necessary. Smoke production is expected to be limited due to the small unit size and light fuels.
Final Rating: LOW	No change.

XERIC OAK HABITAT GRANDVIEW UNIT PRESCRIBED BURN PLAN

COMPLEXITY RATING SUMMARY

RISK	OVERALL RATING	<u>LOW</u>
POTENTIAL CONSEQUENCES	OVERALL RATING	<u>LOW</u>
TECHNICAL DIFFICULTY	OVERALL RATING	<u>LOW</u>
SUMMARY COMPLEXITY RATING		<u>LOW</u>

RATIONALE:

Risk of escaped fire is low due to planning and resource efforts (on-site resources, availability of water, small acreage unit, short ignition period, adaptation of ignition techniques and contingency planning); and the relative abundance of natural and human-made barriers (e.g. Admin Road and a power line corridor) around and proximal to the burn unit. Consequences of smoke from an escaped fire range from low to moderate because smoke could impact traffic in the Grandview area. An escaped fire may result in interagency cooperation and media exposure consequences that could negatively affect the New River Gorge Fire Management Program. Technical difficulty is low due to a continuous fuel type, NERI fire cache logistical resources, and local experience with weather, fuel type, and prescribed fire. Overall, this prescribed fire project has a low complexity rating. As this is the first time this area has been burned an RXB2 is required for implementation, as per FMO.

Prepared by: Peggy Ainslie Date: 4/26/2013

Approved by: _____ Date: _____
(Agency Administrator)

XERIC OAK HABITAT GRANDVIEW UNIT PRESCRIBED BURN PLAN

Appendix D: JOB HAZARD ANALYSIS

United States Department of Interior National Park Service	1. WORK PROJECT/ACTIVITY <p align="center">Prescribed Fire</p>	2. LOCATION <p align="center">GRANDVIEW UNIT</p>	3. UNIT <p align="center">NERI</p>
<p align="center">JOB HAZARD ANALYSIS (JHA)</p>	4. NAME OF ANALYST <p align="center">P. Ainslie</p>	5. JOB TITLE <p align="center">Fire Operations Specialist</p>	6. DATE PREPARED <p align="center">04/20/2013</p>
7. TASKS/PROCEDURES	8. HAZARDS	9. ABATEMENT ACTIONS Engineering Controls * Substitution * Administrative Controls * PPE	
<p>*Travel to, from and on Project.</p>	<p>Motor vehicle accidents Slippery road surfaces, soft shoulders, unimproved and narrow roadways. Weather darkness, smoke.</p>	<p>Driving Defensively. Use seat belts. Identify road conditions during briefings. Post Road Guards. Mark hazards. Use Headlights. Perform pre-use inspections on equipment. Scout roads and identify turnouts before ignition of project. Maintain communications. Use Backers and chock vehicle tires. Have vehicles facing out. Do not leave vehicles parked unattended on consumable fuel.</p>	
<p>*Qualifications For assigned Position</p>	<p>Lack of Experience Injuries</p>	<p>Workers recruited for burn assignments shall be qualified for regular firefighting duties and meet Prescribed Burn qualifications.</p>	
<p>*Briefing</p>	<p>Lack of communications</p>	<p>Provide project briefing before burning clarify firing order, organization responsibilities, communications, hazards, weather, and expected fire behavior.</p>	
<p>*Protective Clothing and equipment</p>	<p>Injuries, burns and death</p>	<p>Wear hard hat with chin strap, safety glasses, gloves, Nomex Fire resistant pants and shirts NFPA 1977 compliant. Keep sleeves rolled down. Wear leather, lace type, boots with skid resistant soles, and tops at least 8 inches high. Carry drinking water and fire shelter. Wear hearing protection when working around equipment where noise level exceeds 90 dba. Wear additional protective equipment as dictated by local conditions and exposure to special equipment.</p>	
<p>*Lighters</p>	<p>Injuries and death falls, smoke, burns, rolling material.</p>	<p>Always have an escape route. Maintain LCES. Follow the Standard Fire Orders and Watch Out Situations. Maintain communications with other Lighters and RX Firing Boss. Do not fill drip torches near ignition sources. Do not spill burn mix on clothing. Shall be trained in 1) the proper techniques for ignition and, and 2) firing equipment included to, but not limited to fusees, drip torches.</p>	
<p>*Fuel Mixing</p>	<p>Burns, spills, fuel saturated clothing and boots.</p>	<p>No smoking within 25 feet of mixing and filling area. Do not fill or mix in pick up beds with bed liners. Avoid the use of cellular telephones in and around fill or mixing area. Avoid fuel contact with bare hands, clothing and boots. Provide pour spouts. Use only approved fuel containers. Use 3:2 or 4:1 mix ratio</p>	

XERIC OAK HABITAT GRANDVIEW UNIT PRESCRIBED BURN PLAN

A Instructions	Emergency Evacuation Instructions																																				
<p>The JHA shall identify the location of the work project or activity, the name of employee(s) writing the JHA, the date(s) of development, and the name of the appropriate line officer approving it. The supervisor acknowledges that employees have read and understand the contents, have received the required training, and are qualified to perform the work project or activity.</p> <p>Blocks 1, 2, 3, 4, 5, and 6: Self-explanatory.</p> <p>Block 7: Identify all tasks and procedures associated with the work project or activity that have potential to cause injury or illness to personnel and damage to property or material. Include emergency evacuation procedures (EEP).</p> <p>Block 8: Identify all known or suspect hazards associated with each respective task/procedure listed in block 7. For example:</p> <ol style="list-style-type: none"> a. Research past accidents/incidents b. Research the Health and Safety Code, FSH 6709.11 or other appropriate literature. c. Discuss the work project/activity with participants d. Observe the work project/activity e. A combination of the above <p>Block 9: Identify appropriate actions to reduce or eliminate the hazards identified in block 8. Abatement measures listed below are in the order of the preferred abatement method:</p> <ol style="list-style-type: none"> a. Engineering Controls (the most desirable method of abatement). For example, ergonomically designed tools, equipment, and furniture. b. Substitution. For example, switching to high flash point, non-toxic solvents. c. Administrative Controls. For example, limiting exposure by reducing the work schedule; establishing appropriate procedures and practices. d. PPE (least desirable method of abatement). For example, using hearing protection when working with or close to portable machines (chain saws, rock drills portable water pumps) e. A combination of the above. <p>Block 10: The JHA must be reviewed and approved by a line officer. Attach a copy of the JHA as justification for purchase orders when procuring PPE.</p> <p>Blocks 11 and 12: Self-explanatory.</p>	<p>Work supervisors and crew members are responsible for developing and discussing field emergency evacuation procedures (EEP) and alternatives in the event a person(s) becomes seriously ill or injured at the worksite.</p> <p>Be prepared to provide the following information:</p> <ol style="list-style-type: none"> a. Nature of the accident or injury (avoid using victim's name). b. Type of assistance needed, if any (ground, air, or water evacuation) c. Location of accident or injury, best access route into the worksite (road name/number), identifiable ground/air landmarks. d. Radio frequency(s). e. Contact person. f. Local hazards to ground vehicles or aviation. g. Weather conditions (wind speed & direction, visibility, temp). h. Topography. i. Number of person(s) to be transported j. Estimated weight of passengers for air/water evacuation. <p>The items listed above serve only as guidelines for the development of emergency evacuation procedures.</p> <p style="text-align: center;">JHA and Emergency Evacuation Procedures Acknowledgment</p> <p>We, the undersigned work leader and crew members, acknowledge participation in the development of this JHA (as applicable) and accompanying emergency evacuation procedures. We have thoroughly discussed and understand the provisions of each of these documents:</p> <table style="width: 100%; margin-top: 20px;"> <thead> <tr> <th style="width: 25%; text-align: center;">SIGNATURE</th> <th style="width: 25%; text-align: center;">DATE</th> <th style="width: 25%; text-align: center;">SIGNATURE</th> <th style="width: 25%; text-align: center;">DATE</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	SIGNATURE	DATE	SIGNATURE	DATE																																
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Appendix E: FIRE BEHAVIOR MODELING

XERIC OAK (TL2) HEAD FIRE, BehavePlus 5.0.5
Input Worksheet Inputs: SURFACE, SIZE, CONTAIN, IGNITE

Input Variables	Units	Input Value(s)
Fuel/Vegetation, Surface/Understory		
Fuel Model		tl2
Fuel Moisture		
Moisture Scenario		D112
Weather		
Midflame Wind Speed (upslope)	mi/h	0, 2, 4, 6, 8, 10
Air Temperature	oF	85
Fuel Shading from the Sun	%	50
Terrain D2L2 –		
Slope Steepness	%	50
Fire		
Elapsed Time	h	0.1
Suppression		
Suppression Tactic		Rear
Line Construction Offset	ch	0
Resource Line Production Rate	ch/h	16
Resource Arrival Time	h	.1
Resource Duration	h	8

Notes; BEHAVE runs for Head Fire, Hot End of Prescription at 85' temps and Dead Fuel Moistures at 6%, max slope at 50%... Description of Fuel Model: The primary carrier of fire in TL2 is broadleaf (hardwood) litter. Low load, compact broadleaf litter. Spread rate is very low; flame length very low. Live fuel, if present, has little effect on fire behavior.

RESULTS											
Midflame Wind Speed	ROS (max)	Flame Length	Spread Distance	Residence Time	Fire Area	Fire Perimeter	Contain Status	Time from Report	Contain Area	Fireline Constructed	Firebrand Ignition
mi/h	ch/h	ft	ch	min	ac	ch		h	ac	ch	%
0	1.0	0.8	0.1	0.21	0.0	0	Contained	0.3	0.0	1.0	85
2	1.5	0.9	0.1	0.21	0.0	0	Contained	0.3	0.0	1.4	85
4	2.2	1.1	0.2	0.21	0.0	1	Contained	0.3	0.0	2.3	85
6	3.2	1.3	0.3	0.21	0.0	1	Contained	0.4	0.1	3.7	85
8	3.7	1.4	0.4	0.21	0.0	1	Contained	0.5	0.1	4.8	85
10	3.7	1.4	0.4	0.21	0.0	1	Contained	0.5	0.1	4.8	85

XERIC OAK HABITAT GRANDVIEW UNIT PRESCRIBED BURN PLAN

Inputs: SURFACE, IGNITE

Input Variables	Units	Input Value(s)
Fuel/Vegetation, Surface/Understory		
Fuel Model		tl2
Fuel Moisture		
1-h Moisture	%	4, 6, 8, 10, 12
10-h Moisture	%	5
100-h Moisture	%	7
Live Herbaceous Moisture	%	60
Live Woody Moisture	%	90
Weather		
Midflame Wind Speed (upslope)	mi/h	0, 2, 4, 6, 8, 10, 15
Air Temperature	oF	85
Fuel Shading from the Sun	%	40
Terrain		
Slope Steepness	%	50
Fire		
Elapsed Time	h	0.1

Notes

BEHAVE runs for Head Fire, Range of Fuel Moistures and wind Speeds. Still at the hot end of prescription at 85' temps and max slope at 50%...

Description of Fuel Model: The primary carrier of fire in TL2 is broadleaf (hardwood) litter. Low load, compact broadleaf litter. Spread rate is very low; flame length very low. Live fuel, if present, has little effect on fire behavior.

Results for: Surface Rate of Spread (maximum) (ch/h)							
1-h	Midflame Wind Speed (upslope)						
Moisture	mi/h						
%	0	2	4	6	8	10	15
4	0.9	1.3	2.0	2.8	3.0	3.0	3.0
6	0.8	1.1	1.7	2.2	2.2	2.2	2.2
8	0.7	1.0	1.5	1.7	1.7	1.7	1.7
10	0.6	0.9	1.3	1.5	1.5	1.5	1.5
12	0.6	0.8	1.2	1.3	1.3	1.3	1.3

Results for: Flame Length (ft)							
1-h	Midflame Wind Speed (upslope)						
Moisture	mi/h						
%	0	2	4	6	8	10	15
4	0.7	0.8	1.0	1.2	1.2	1.2	1.2
6	0.6	0.7	0.9	1.0	1.0	1.0	1.0
8	0.6	0.7	0.8	0.9	0.9	0.9	0.9
10	0.5	0.6	0.8	0.8	0.8	0.8	0.8
12	0.5	0.6	0.7	0.8	0.8	0.8	0.8