Appendix C

PRESCRIBED FIRE PLAN

ADMINISTRATIVE UNIT(S)	**Austin-Tonopah Ranger District Humboldt-Toiyabe National Forest**		
PRESCRIBED FIRE NAME	**Elkhorn 2/Savory**		
PREPARED BY	/s/	**DATE**	08-24-2007
ADDITIONAL PREPARER	/s/	**DATE**	08-24-2007
TECHNICAL REVIEW		**DATE**	09-17-2007 09-24-2007
FIRE MANAGEMENT OFFICER REVIEW	/s/	**DATE**	09-21-2007
		DATE	
		DATE	

COMPLEXITY RATING	Moderate

EA NAME CE NAME	**ELKHORN 2 SAVORY**	**PROJECT NAME**	**Elkhorn 2 Savory**

APPROVED BY	/s/) Agency Administrator	**DATE**	09-21-2007 10/10/07

Project Name:	Elkhorn 2/Savory	Unit Name:	

ELEMENT 2 - AGENCY ADMINISTRATOR PRE-IGNITION APPROVAL 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? *Hints: amendments, seasonality.*
		Will all compliance requirements be completed? *Hints: cultural, threatened and endangered species, smoke management, NEPA.*
		Is risk management in place and the residual risk acceptable? *Hints: Prescribed Fire Complexity Rating Guide completed with rational and mitigation measures identified and documented?*
		Will all elements of the Prescribed Fire Plan be met? *Hints: Preparation work, mitigation, weather, organization, prescription, contingency resources*
		Will all internal and external notifications and media releases be completed? *Hints: Preparedness level restrictions*
		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/Fuels Specialist/Prescribed Fire Burn Boss

APPROVED BY _____ **DATE** _____

Agency Administrator

Project Name:	Elkhorn 2/Savory	Unit Name:	

APPROVAL EXPIRES (date) _____

ELEMENT 2 - PRESCRIBED FIRE GO-NO-GO CHECKLIST

	YES	NO
A. Has the burn unit experienced unusual drought conditions or contain above normal fuel loadings which were not considered in the prescription development? If NO proceed with checklist, if YES go to item B.		
B. If YES have appropriate changes been made to the Ignition and Holding plan and the Mop Up and Patrol Plans? If YES proceed with checklist below, if NO STOP.		

YES	NO	QUESTIONS
		Are ALL fire prescription elements met?
		Are ALL smoke management specifications met?
		Has ALL required current and projected fire weather forecast 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 answers are YES, proceed with the test fire. Document the conditions, location and results on the Test Fire Provision Worksheet and Unit Log. Concurrence is documented by the signatures below. The Go-No-Go Checklist will be completed each day of active ignition. The separate Agency Administrator Pre-Ignition Approval Checklist is required to document the agency administrator's final approval.

SIGNED _____ **DATE** _____

Project Name:	Elkhorn 2/Savory	Unit Name:	

Prescribed Fire Burn Boss

CONCURRENCE _____ **DATE** _____

Prescribed Firing Boss Function

CONCURRENCE _____ **DATE** _____

Holding Specialist Function

Project Name:	Elkhorn 2/Savory	Unit Name:	

ELEMENT 3 - COMPLEXITY ANALYSIS SUMMARY –ELKHORN 2

ELEMENT	RISK	POTENTIAL CONSEQUENCE	TECHNICAL DIFFICULTY
1. Potential for escape	**M**	**M**	**M**
2. The number and dependence of activities	**M**	**M**	**M**
3. Off-site Values	**L**	**M**	**M**
4. On-Site Values	**M**	**M**	**M**
5. Fire Behavior	**M**	**M**	**M**
6. Management organization	**M**	**M**	**M**
7. Public and political interest	**L**	**L**	**L**
8. Fire Treatment objectives	**M**	**M**	**M**
9. Constraints	**M**	**M**	**M**
10. Safety	**M**	**M**	**M**
11. Ignition procedures/ methods	**M**	**M**	**M**
12. Interagency coordination	**L**	**L**	**L**
13. Project logistics	**M**	**M**	**M**
14. Smoke management	**M**	**M**	**M**

COMPLEXITY RATING SUMMARY	
	OVERALL RATING
RISK	**Moderate**
POTENTIAL CONSEQUENCES	**Moderate**
TECHNICAL DIFFICULTY	**Moderate**
SUMMARY COMPLEXITY DETERMINATION	**Moderate**
Rationale	
The moderate rating for this project was developed: due to location of project, type of burning that will be done, the seasons when the burning will take place, vegetation to be treated, no structures in area, no smoke sensitive areas and experience level required for this type of project. Use of helicopter does increase the complexity but with small numbers of personnel required the numbers of personnel that are exposed to this are less then hand ignition type burn. The skill level on the Humboldt-Toiyabe has increased so fewer outside resources are required to complete the burn project.	

Project Name:	Elkhorn 2/Savory	Unit Name:	

ELEMENT 3 - COMPLEXITY ANALYSIS SUMMARY -SAVORY

ELEMENT	RISK	POTENTIAL CONSEQUENCE	TECHNICAL DIFFICULTY
1. Potential for escape	**M**	**M**	**M**
2. The number and dependence of activities	**M**	**M**	**M**
3. Off-site Values	**L**	**M**	**L**
4. On-Site Values	**M**	**M**	**M**
5. Fire Behavior	**M**	**M**	**M**
6. Management organization	**M**	**M**	**M**
7. Public and political interest	**L**	**L**	**L**
8. Fire Treatment objectives	**M**	**M**	**M**
9. Constraints	**M**	**M**	**M**
10. Safety	**M**	**M**	**M**
11. Ignition procedures/ methods	**M**	**M**	**M**
12. Interagency coordination	**L**	**L**	**L**
13. Project logistics	**L**	**M**	**M**
14. Smoke management	**M**	**M**	**M**

COMPLEXITY RATING SUMMARY	
	OVERALL RATING
RISK	**Moderate**
POTENTIAL CONSEQUENCES	**Moderate**
TECHNICAL DIFFICULTY	**Moderate**
SUMMARY COMPLEXITY DETERMINATION	**Moderate**
Rationale	
The moderate rating for this project was developed: due to location of project, type of burning that will be done, the seasons when the burning will take place, vegetation to be treated, no structures in area, no smoke sensitive areas and experience level required for this type of project. Use of helicopter does increase the complexity but with small numbers of personnel required the numbers of personnel that are exposed to this are less then hand ignition type burn. Hand ignition will be utilized in the research plot but this area is only 50 acres and the ignition pattern will be bush to bush type of ignition due to very little understory. The skill level on the Humboldt-Toiyabe has increased so fewer outside resources are required to complete the burn project.	

ELEMENT 4 - DESCRIPTION OF PRESCRIBED FIRE AREA

A. Physical Description- Elkhorn 2 Unit

Legal description:	T	8N	R	47 E	S	2-11
	T	9 N	R	47 E	S	15,16,21,22, 26-29, 32-36

Latitude	38° 34’	Longitude	115° 42’
Project Acres	10,490	County	Nye
Primary Unit Acres	6,700	Drainage	Wildcat south boundary South fork Barley on the North boundary
Low elevation	7500’	Average aspect	East
High elevation	9200’	Average slope	50 %

Project Boundary
The Elkhorn 2 Unit follows the House Canyon road as the northern boundary, Wildcat Canyon the southern boundary, the western boundary is the main ridge line of the Monitor range and the east boundary is at the 7,200 foot elevation line were there is as a vegetation type (low sage) and slope change. These boundaries were designed with the change in vegetation and topography. The target areas to burn will be the Phase II pinyon/juniper expansion areas, north slopes and designated drainages.

Project Name:	Elkhorn 2/Savory	Unit Name:	

ELEMENT 4 - DESCRIPTION OF PRESCRIBED FIRE AREA

A. Physical Description- Savory Unit

Legal description:	T	13N	R	49E	S	6
	T	13.5N	R	49E	S	19,23-26,30-31,36
	T	14N	R	49E	S	23,25-26,34-36
	T	14N		50E	S	30-31

Latitude	39º 02´ 30	Longitude	116º 25´ 00
Project Acres	5,642	County	Nye
Primary Unit Acres	1,693-3949	Drainage	Savory, Little Savory
Low elevation	7,200	Average aspect	Varying
High elevation	9,400	Average slope	Flat-80%

Project Boundary

The East boundary runs along Savory Creek, the west boundary is Little Savory Creek, the bottom of the project area is at the junction of Savory and Little Savory Creeks and north end boundary is the ridge lines that tie into Savory and Little Savory Creeks. Areas that will be targeted within the project area are the Phase II pinyon/juniper expansion areas, north slopes and designated drainages.

Within the Savory project area there is a research plot. This plot is approximately 50 acres and is located in the bottom part of the project area along the road that runs along Savory Creek. This is a priority area to burn.

An amendment to the burn plan is not required for minor changes in burn unit boundaries to facilitate holding and/or ignition, as long as the area in question has been in the NEPA document, requires no change in holding or ignition resources and is within the project boundaries. Changes to project area boundaries resulting in either an increase or decrease in area requires an amendment to the burn plan

Project Name:	Elkhorn 2/Savory	Unit Name:	

B. Vegetation/Fuels Description

On-Site Fuels Data				Adjacent Fuels Data		
FBPS Fuel Model(s)		**6**		FBPS Fuel Model(s)	6	
NFDRS Fuel Model(s)		**A,G,T**		NFDRS Fuel Model(s)	A,G,T	
Fire Regime(s)		**3**		Fire Regime(s)	3	
Fire Condition Class(es)		**2**		Fire Condition Class(es)	2	
Fuel Loading	1 hour tlf	**.10 tons/acre**		General Description of Adjacent Fuels		
	10 hour tlf	**2 tons/acre**		The fuels outside the unit consist of Pinyon-Juniper woodlands with grass/sage brush understory.		
	100 hour tlf	**.5 tons/acre**				
	1000 hour tlf	**.75 tons/acre**				
	Litter depth	**1 in.**				
	Duff depth	**.23 in.**				
	Live woody	**7.0**				
	Live herbaceous					
	Total fuel loading	**6-10 TPA**				

Comments

The majority of the drainages fall within the pinyon-juniper elevation zone. This is fairly typical of the Great Basin areas where single-leaf pinyon is intermixed with lower densities of Utah juniper. At the lower elevations, Wyoming and low sagebrush dominates the canopy. At the highest elevations, snowberry and other typical mountain brush species occur with mountain big sagebrush. Mountain mahogany is also present at the highest elevations. In some drainages and spring sites there are stands of aspen. These aspen stands range in size and condition.

Utilized Aids to Determining Fuel Models for Estimating Fire Behavior: Hal E. Anderson and Photo Series for Quantifying Natural Fuels Volume IV: Pinyon-Juniper, Chaparral, and Sagebrush types in the Southwestern United States.

C. Description of Unique Features

These projects have cultural sites that the Burn Boss and Firing Boss will have knowledge of. The project archeologist will identify these sites and advice type of preparation that is needed to protect these sites.

Savory- No burning within the 200 acre zone that was identified by the wildlife biologist. This site is a goshawk nest within a small stand of aspen. UTM 550,522-4320578 (NAD83)

ELEMENT 5 - GOALS AND OBJECTIVES

A. Goals:

B. Objectives:

Resource Objectives	Fuels Treatment Objectives
Reduce fuel loading to lower the possibility of large scale fires. Excessive pinyon-juniper fuel loadings have created a moderate-high risk of losing key ecosystem components from fire.	**Elkhorn 2 Unit-**Apply prescribed fire to 30-80% (2,500 – 6,700 acres.) within the 10,490 acres project area. **Savory Unit-**Apply prescribed fire to 30-70% (3,823-1,639 acres) within the 5,642 acre project area.
Reduce tree density to minimize the risk of epidemic insect and disease outbreaks. Competition for water in overcrowded stands of pinyon-juniper increases susceptibility to insects and disease.	Create mosaic openings by applying prescribed fire. Opening sizes can range from 5-500 acre or larger.
Restore mountain shrub and sagebrush habitats to increase wildlife habitat diversity. Improve rangeland health and productivity.	Create mosaic openings by applying prescribed fire. Opening sizes can range from 5-500 acre or larger.

Objectives Are S.M.A.R.T.

Specific
Measurable
Attainable
Reasonable
Time Related

Tolerable deviation from objectives:

A tolerable deviation of + or – 20 percent for each of the above objectives is the acceptable range for treatment over the project area.

If using hand ignition on the pinyon/juniper woodlands, a mosaic burn pattern will be harder to achieve on the sparse and steep slopes, therefore it is acceptable for firing operations to ignite and create a mosaic pattern starting in the drainages burning uphill into the pinyon-juniper stands.

Project Name:	Elkhorn 2/Savory	Unit Name:	

ELEMENT 6 - FUNDING

Funding Source(s)							
Phase	Fuels WFHF17	Wildlife NFWF17	Range	Recreation	Timber	Other	Subtotal
Planning							
Clearances							
Burn Plan Preparation							
Site Preparation							
Ignition & Holding	120,000	16,500					
Mop-up & Patrol	16,500						
Subtotal	136,500	16,500					
Grand Total		* Enter Subactivity code at top of column (i.e. Wildlife-1050). These estimated costs are for the entire burn implementation and could be in one or more subactivities.					**$153,000**

Narrative: WHFH17 and NFWF17 with override of 0417 are the job code for these two projects. The approximately cost per acre runs between 30-45dollars/ac. The cost/ac varies due to the set up cost for helicopter, fuel tender and resources.

Project Name:	Elkhorn 2/Savory	Unit Name:	

ELEMENT 7 - PRESCRIPTION

A. Environmental Prescription	Acceptable Prescription Range			Outside area at critical holding point minimum acceptable moisture
	Low Fire Intensity	Desired Fire Intensity	High Fire Intensity	
Temperature (°F)	45-60	60-75	70-85	
Relative humidity (%)	20-35	12-20	8-14	
Mid-flame wind speed	5	8-15	12-25	
Wind direction (azimuth°)	South East to North East	South East to North East	West	
1-hr fuel moisture (%)	N/A	N/A	N/A	N/A
10-hr fuel moisture (%)	10-14	6-10	3-6	5
100-hr fuel moisture (%)	11-15	8-10	5-8	6
1000-hr fuel moisture (%)	N/A	N/A	N/A	N/A
Live fuel moisture (%)	N/A	N/A	N/A	N/A
Duff moisture (%)	N/A	N/A	N/A	N/A
Soil moisture (%)	N/A	N/A	N/A	N/A

Additional Information
A spot weather forecast will be requested and used prior to burning operations, and twice during the day(s) of burning operations. The forecast will be received from the National Weather Service for this area by Central Nevada Interagency Dispatch Center (CNIDC). Information received from the mixing heights, transport winds, max and min temperatures; Haines index, night time down slope wind speed and the probability of adverse weather conditions including frontal passages, high winds, and thunderstorm activities. CNIDC will use the standard spot weather forecast form to provide appropriate information to NWS-Elko. The closest permanent RAWS station is H-T portable #5 located at the base of Dansville Canyon at 38 45.32 116 29.48 at 7,007 foot elevation. This station is located to represent both project areas.

B. Fire Behavior Prescription	Acceptable Fire Behavior Range			Outside area at critical holding points
	Low Fire Intensity	Desired Fire Intensity	High Fire Intensity	
Fuel Model(s)	6	6	6	6
Rate of Spread (chains/hour)	10-40	33-100	100-246	100-246
Flame Length (in feet)	4-6	6-11	11-16	11-16
Scorch Height (in feet)	N/A	N/A	N/A	
Probability of Ignition (%)	N/A	N/A	N/A	N/A
Spotting Distance (in miles)	N/A	N/A	N/A	N/A

Prescription is defined as the measurable criteria that define a range of conditions during which a prescribed fire may be ignited and held as a prescribed fire. The plan prescription will describe a range of low to high limits for the environmental (weather, topography, fuels, etc.) and fire behavior (flame lengths, rate of spread, spotting distance, etc.) parameters required to meet Prescribed Fire Plan objectives while meeting smoke management and control objectives. Parameters are quantitative variables expressed as a range that result in acceptable fire behavior and smoke management.

Attach BehavePlus Worksheets

Fire Behavior Narrative

Project Name:	Elkhorn 2/Savory	Unit Name:	

Fire Behavior was modeled using BehavePlus 3.0.1. See attached runs.
Past experience has shown that the BehavePlus model over predicts ROS in the Pinyon/Juniper (PJ) fuel type. The Pinyon-Juniper stands do not have sufficient surface fuels to promote the predicted rates of spread. The desired fire behavior is high intensity and torching trees may temporarily produce flame lengths greater than 12.5 feet for short durations.
These burns have the flexibility to mix and match the weather parameters to generate the intensity and fire behavior to achieve the resources and prescribed fire objectives. Burning when all weather elements are at the high intensity level should be done with extreme caution and all holding forces will be on site and contingency forces available

ELEMENT 8 - SCHEDULING

A. Ignition Time Frames/Season(s)	Spring-Summer-Fall.
B. Projected Duration	Estimated time to ignite each project is two days to five days, utilizing 8-14 hours days; Smoke may be visible for several days or up to a week.

C. Constraints

If burning while in fire season then equipment may not be available due to fire activity.

Equipment or personnel not available due to these resources committed to other prescribed fire projects.

ELEMENT 9 - PRE-BURN CONSIDERATIONS

A. Considerations

1. On Site

Elkhorn 2: Fuels that are in this project area are heavy pinyon-juniper (PJ) woodlands. (Phase II pinyon/juniper). At the higher elevations the PJ breaks into low sage and mountain brush types. The east flank turns into Wyoming sage when breaking into the flats of west Stone Cabin Valley. If the Burn Boss feels that road guards are necessary they will be placed on the roads in the project area. A portable RAWS station has been placed north of the project at the base of Dansville Canyon. If necessary it can be moved to the project site to collect data during project implementation.

Savory: Fuels in this project area are pinyon/juniper (PJ) woodlands. (Phase II P/J). At the higher elevations it breaks into low sage, mahogany with some patches of aspens.

Make sure that the Burn Boss, Firing Boss and the helicopter pilot are aware of goshawk nest (UTM 550,522, 4,320,578 NAD83) to avoid and any cultural sites that also need to be avoided.

Program radios to have the required frequencies required.

2. Off Site

Staging areas and helibase's will need to be located before the project can begin.

Elkhorn 2 helispot is located at the same spot that was utilized for the Elkhorn 1 burns.

Prep work to be completed on cultural sites that have been designated to the Burn Boss.

Notify any permittee that is affected by these burns.

Variance from Nevada Division of Environmental Protection, Bureau of Air Quality Planning.

Prior to implementing the prescribed fire, the responsible dispatch office **will** be given a complete copy of the Prescribed Fire Plan.

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

Proximity to nearest RAWS	H-T Portable #5 RAWS			
Need for on-site RAWS		Yes	X	No
Additional Information				

A Spot Weather Forecast from the National Weather Service will be requested prior to ignition, for each day active ignition is occurring on the burn.

A portable RAWS station in place at the base of Dansville Canyon which is located approximately 30 miles north of the Elkhorn 2 project area and approximately 34 miles south of Savory project. Weather data maybe pulled off of the NOAA website. The location of portable station is Lat. 38° 45 32.54 Long 116° 29 47.53 Elevation 7,007'.
On-site weather will be taken before ignition and then throughout the implementation phase. The Burn Boss will set the timeframe for weather observations.

Daily communications with Air Quality Agency.

Project Name:	Elkhorn 2/Savory	Unit Name:	

C. Notifications

Who	When[1]	Phone Number and/or e-mail	Responsibility	Date	Initial
Nye County Commissioner	B,A	XXX-XXX-XXXX	Austin/Tonopah D.R.		
Belmont VFD-Rich Sauer **Elkhorn 2**	B	XXX-XXX-XXXX	Austin/Tonopah D.R ZFMO		
Belmont Residents-**Elkhorn 2**	B	XXX-XXX-XXXX	Austin/Tonopah D.R.		
Battle Mt. BLM office	B,D	XXX-XXX-XXXX	Austin/Tonopah D.R.		
NV Environmental Protection Air Quality-Sig Jaunarajs	B,D,A	XXX-XXX-XXXX	Zone Fuel Specialists		
Nye County Sheriff	B,D	XXX-XXX-XXXX	Austin/Tonopah D.R.		
CNIDC-Dispatch	B,D,A	XXX-XXX-XXXX	Zone Fuels Specialists		
Fallon NAS	B	XXX-XXX-XXXX	CNIDC-Dispatch		
FAA	B	XXX-XXX-XXXX	CNIDC-Dispatch		
Forest Aviation Officer	B,D,A	XXX-XXX-XXXX	Zone Fuels Specialists		
Forest Fire Staff (Duty Officer)	B,D,A	XXX-XXX-XXXX	Zone Fuels Specialists		
Range Specialist	B,D	XXX-XXX-XXXX	Zone Fuels Specialists		
Lander County Sheriff	B	XXX-XXX-XXXX	Austin/Tonopah D.R.		
Eureka County Sheriff	B,D	XXX-XXX-XXXX	Austin/Tonopah D.R.		
Forest Supervisor-Ed Monnig	B,D,A	XXX-XXX-XXXX	Austin/Tonopah D.R.		
Tom Gardner- Segura Ranch-**Savory**	D	XXX-XXX-XXXX	Range Specialists		
Roy Cliffords-**Elkhorn 2**	D	XXX-XXX-XXXX	Range Specialists		

[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.	[2] Contact Type	Phone Contact (PC) Phone Message (PM) Direct Contact (DC) E-mail (EM)

Project Name:	Elkhorn 2/Savory	Unit Name:	

ELEMENT 10 - BRIEFING

Operational Briefing (Responsibility – Prescribed Fire Burn Boss)

- ❑ Introduction of Burn Organization
  - o Make Crew and Equipment Assignments
- ❑ Provide Maps
- ❑ Review Burn Objectives and Constraints
- ❑ Review Spot Weather Forecast
- ❑ Discuss Weather Data Collection Procedures
  - o Make Weather Observer Assignment and Set Collection Schedule
- ❑ Review Predicted Fire Behavior
- ❑ Review Burn Prescription and Critical Weather that Will Terminate Burn
- ❑ Review Ignition Plan and Possible Problems
- ❑ Review Aerial Ignition Plan and appropriate safety procedures (if applicable)
- ❑ Review Holding Plan and Possible Problems
- ❑ Review Contingency and Wildfire Conversion Plan
  - o Identify High Value and Areas of Special Concern
  - o Identify Mitigation Measures, Procedures, Project Boundary, Etc.
- ❑ Review Safety Plan, Risk Assessment/JHA and Medical Evacuation Plan
  - o Identify On-Site Personnel with Medical and Helitack Qualifications
- ❑ Review LCES and Identify Lookout Assignments
- ❑ Discuss Communication Plan

Crew Briefing (Responsibility - Ignition Specialist and Holding Specialist Functions)

- ❑ Make Crew Assignments, Record Names, and Review Chain of Command
- ❑ Make Equipment Assignments and Physically Test Equipment Prior to Ignition
- ❑ Assign Radio Frequencies and Physically Test All Radios Prior to Ignition
- ❑ Review Contingency Plan, Wildfire Conversion, Procedures, and Mitigation
- ❑ Review Everyone's Personal Protective Equipment
- ❑ Discuss Probable Starting and Ending Times
- ❑ Assure Everyone Knows Position, Responsibility, and Procedures

SIGNED _____ **DATE** _____

Prescribed Fire Burn Boss

Project Name:	Elkhorn 2/Savory	Unit Name:	

ELEMENT 11 - ORGANIZATION AND EQUIPMENT

Minimum Workforce & Equipment Needed to Conduct Burn							
A. Positions							
		Low		**Desired**		**High**	
Position	**ICS Code or Unit of Measure**	**Total Amount**	**Line Building Rate**	**Total Amount**	**Line Building Rate**	**Total Amount**	**Line Building Rate**
Prescribed Fire Burn Boss	RXB2	1	0	1		1	
Firing Specialist Function	FIRB	*1		1		1	
Holding Specialist Function	Single Resource Boss	1		1		1	
Fire Effects Monitor	FEMO	0		1		1	
Lookout	Specify Qual.	0		0		0	
Engine Boss, Operator, and Crew	ENGB/ENOP	0		0		0	
Ignition Crew	FFT2	*2	6	*5	15	*5	15
Holding Crew	FFT2	2	0	5	15	5	15
B. Equipment							
Engine (VI)		1	10	2	20	2	20
Engine (IV)		0		1	10	1	10
Helicopter		0		1		1	
Helitorch		0		1		1	
C. Supplies							
Drip Troches		5		5		5	
Chain Saws		2		2		3	
Hand Tools		5		5		5	
Fuel-Hand ignition		25 gals.		50 gals.		50 gals.	
Portable		0		1		1	

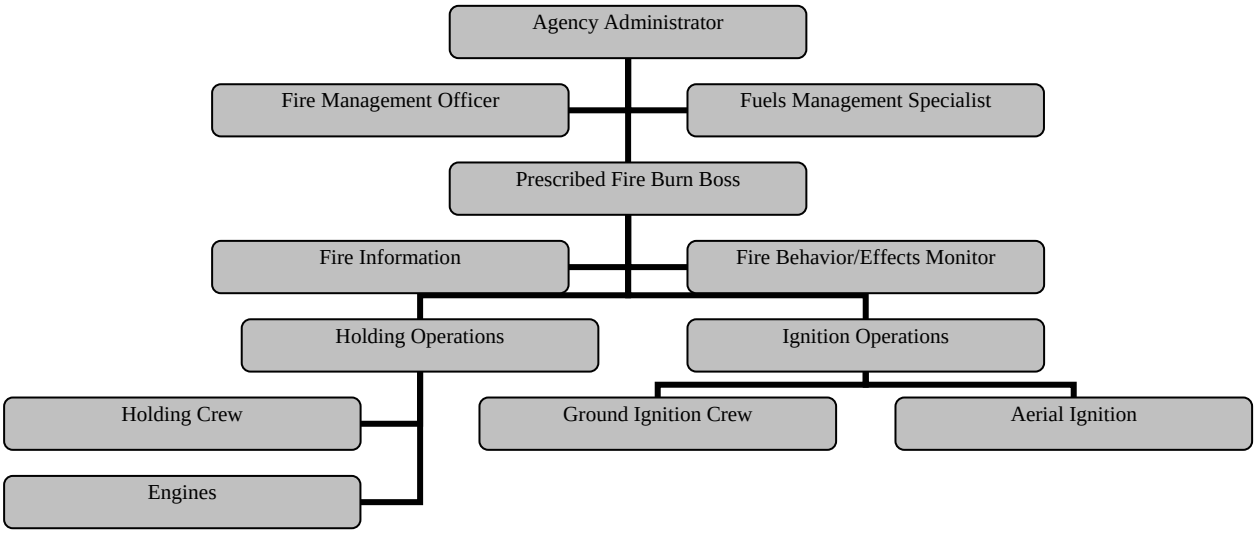
Project Name:	Elkhorn 2/Savory	Unit Name:	

Water Tanks							
Total Line Production Rate			**16**		**60**		**60**

Fuel Model (FM 6), the resources production rates will not be sufficient during the burning phase due to type of fire behavior that is required to achieve objectives in the pinyon/juniper crowns. FM 6 may over predict the Rates of Spread (ROS) due to in most places there is not sufficient surface fuels to promote the predicted ROS. Flame lengths would be averaged; as desired fire behavior is high intensity (crowning and torching) may temporarily produce flame lengths greater than 12 feet for short durations.
Ignition Crew will be utilized as holding crew as needed. Calculations were taken from the Fireline Handbook Appendix A based on Fuel Model 6. Ignition crew will also be holding crew.
*If burning in low end of prescription then Burn Boss can act as Firing Boss also.

Project Name:	Elkhorn 2/Savory	Unit Name:	

Organization Chart



The positions that will be required for implementation of these projects from the Burn Boss and down are TBA.
The organization to be utilized each day will be documented by the Burn Boss.

ELEMENT 12 – COMMUNICATION-Elkhorn 2 Unit

A. Radio Frequencies

Channel	Function	Frequency		Band Width	Assignment	Remarks
COMMAND						
1	TOF	RX: TX: Tone:	169.875 169.875	Narrow	Command	
1	TOF RPT	RX: TX: Tone:	169.875 170.475 167.9	Narrow	Command RPT	
TACTICAL						
	R4 SOA	RX: TX:	168.775 168.775	Narrow	Holding	
	Crew	RX: TX:	168.200 168.200	Narrow	Ignitions	
		TX: RX:				
AIR OPERATIONS						
	Primary A2G	RX: TX:	163.175 163.175	Narrow	Discrete	Burn Boss, Firing Boss and air operations only
	2nd A2G	RX: TX:	170.000 170.000	Narrow		Use if primary is tied up with other incidents.
OTHER						
		RX: TX:				
		RX: TX:				
REMARKS						
If aerial ignition is used, assign a specific radio frequency for use between aircraft and Prescribed Fire Burn Boss and/or Firing Boss. Designated A/G frequency will be utilized only by the helispot crew, Burn Boss, Firing Boss and in case there is an emergency with the aircraft.						

ELEMENT 12 – COMMUNICATION-Savory Unit

B. Radio Frequencies

Channel	Function	Frequency		Band Width	Assignment	Remarks
COMMAND						
1	BLM	RX: TX: Tone:		Narrow	Command	
1	BLM RPT	RX: TX: Tone:	171.725 168.275 203.5	Narrow	Command RPT	Prospect
TACTICAL						
	R4 SOA	RX: TX:	168.775 168.775	Narrow		
	Crew	RX: TX:	168.200 168.200	Narrow		
		TX: RX:				
AIR OPERATIONS						
	Primary A2G	RX: TX:	163.175 163.175	Narrow	Discrete	Burn Boss, Firing Boss and air operations only
	2nd A2G	RX: TX:	170.000 170.000	Narrow		Use if primary is tied up with other incidents.
OTHER						
		RX: TX:				
		RX: TX:				
REMARKS						
If aerial ignition is used, assign a specific radio frequency for use between aircraft and Prescribed Fire Burn Boss and/or Firing Boss. Designated A/G frequency will be utilized only by the helispot crew, Burn Boss, Firing Boss and in case there is an emergency with the aircraft.						

ELEMENT 13 - PUBLIC AND PERSONNEL SAFETY AND MEDICAL

A. Safety Hazards

Firefighter
These projects will meet all Forest Service safety guidelines. The Burn Boss will monitor compliance to safety standards. A Job Hazard Analysis and Project Aviation Safety Plan's for these projects are included in the appendix of this plan and will be reviewed by personnel on site. All personnel in the project area will wear PPE, carry a fire shelter and will be qualified for the position they are holding on the projects.
Public
If it is deemed necessary by the District Ranger and/or Burn Boss, road guards will be placed on the roads that lead into project. The road guards will make contact with any public coming into the area and inform them of the project and where the burning is taking place. They will record all contacts and where these people are planning to go. The public will be informed of the project and the hazards associated with the burn through the local pubic information officer. Prior to ignition the Burn Boss will do a thorough recon of the project area to insure that there are not people within the project and surrounding areas.

B. Measures Taken to Reduce the Hazards

Fire personnel will follow the **Ten Standard Fire Orders and 18 Situations That Shout Watch Out** and will be redcarded for the position that they are working in.
Road guards at roads leading into the project areas.
Public will not be allowed in project areas during the ignition phase or areas that are deemed unsafe for their travel.

C. Emergency Medical Procedures

In the event of serious accidents or injuries, the Burn Boss shall be notified immediately. Individuals with medical qualifications (i.e. First Responder, EMT, and Paramedic) and helitack qualified should be identified at the pre-burn briefing. The Burn Boss will initiate on-site response (if not already in progress) and coordinate additional response needs (listed below) through:

D. Emergency Evacuation Methods

FIELD SITE

MEDICAL EMERGENCY AND EVACUATION PLAN

Project Name: Elkhorn 2/Savory

Work Site Location (*include legal description*) Elkhorn 2; Helispot location on road that runs along the base of the west side of the Monitor range. T9N R47E Section 20 Savory; Junction of Savory and Little Savory Creeks- T13.5 R50E Section 31

To prepare for an emergency which requires first aid, and/or immediate evacuation of personnel due to serious illness or injury, the following information should be predetermined, and available to all crew members:

DESIGNATED FIRST AID PROVIDER(S):
(At least one person on each crew should be designated to provide first aid)
TBA on day of burning

COMMUNICATION PROCEDURES TO FOLLOW IN THE EVENT OF AN EMERGENCY:

MEANS OF COMMUNICATION: Radio, cell phone or Sat. phone.

RADIO CHANNEL: **TBA on day of project** **PHONE NUMBER: 775-623-1555**

HOME BASE: **TBA**

HOME BASE EMERGENCY COORDINATOR: **CNIDC: 775-623-1555**

EMERGENCY SERVICES: **See attached medical contact sheets.**

PHONE NUMBER: 911

Project Name:	Elkhorn 2/Savory	Unit Name:	

HOSPITALS: Determined by project area that implementation is taking place.

PHONE NUMBER: Nye County Sheriffs 775-482-6233

(Air evacuation should be obtained through the SO dispatcher, if needed.)

EMERGENCY EVACUATION TRAVEL ROUTES: Helispots designated- Elkhorn 2: Lat. 38.34.24 Long. 116.41.50
Savory: Lat. 38 56.54 Long. 116 19.50
Travel route will be determined on type of injury and location of facility to treat injury.

CREW MEMBERS SHOULD PROVIDE THE FOLLOWING WHEN CALLING FOR ASSISTANCE:

- nature of injury or accident (do not broadcast victim(s) name(s);
- type of assistance needed;
- number, and (for air transport) estimated weight, of persons to be transported;
- location of injured, using landmarks identifiable on ground and/or map;
- current information about weather and travel hazards/obstacles;
- (Crew should remain in contact with home unit until evacuation team arrives, if possible.)
- Copies of this plan should be provided to crew leader(s) and Home Base Coordinator(s), prior to beginning work;

E. Emergency Facilities

Medical Emergency

This is a life threatening injury or illness. One or more major body systems (Respiratory, Circulatory, and Neurological) are involved. This patient needs advanced life support (ALS). Definitive care for this patient is a Trauma or Burn Center. TIME IS OF THE ESSENCE! Air transportation should be considered early.

ALS Air Transport

Other criteria for air medical transport is: lengthy extrication of the patient from the accident site, terrain or road conditions restrict ground transportation.

Rotor Wing: Rotor wing air ambulances have a 150 mile response area based on one fuel cycle. If injury location is outside of response area helicopter will have to refuel en-route.

Access Air	Elko	775-777-7300	1Patient	Night Capability
REMSA Careflight	Reno, Nv	775-858-6000	1 Patient	Night Capability
LDS Life Flight	Salt Lake City	801-321-1234	2 Patient	Hoist & Night Capability
Med Flight	Las Vegas	800-842-4431	2 Patient	Night Capability
*Military	Nellis, NAS Fallon	800-851-3051	Multiple	Hoist & Night Capability

*Military does not require pre-approval, call Fallon direct.

Fix Wing: Fix wing air ambulances have a large response area and fuel is not normally a factor. Consider ordering a fix wing along with a rotor wing if more than one patient.

▪ University of Utah	Salt Lake City	800-453-0120	Pilatus PC-12	3 patient	Dirt Runway
▪ LDS Life Flight	Salt Lake City	801-321-1234	King Air B200	1patient	Paved Runway Only
▪ American Medflight	Reno, Nv	775-856-2003	Cheyenne	1patient	Paved Runway Only
▪ Med Flight	Las Vegas	800-842-4431	King Air 20, Learjet 35A, 35B	1patient	Paved Runway Only
▪ Life Flight	Boise	800-521-2444	Piper Cheyenne III	1patient	Paved Runway Only

Airports:

Battle Mountain Airport	KBAM	40° 35' 57"N, 116° 52' 27"W	Paved Runway, Fuel
Tonopah Airport	KTPH	38° 03' 37"N, 117° 05' 15"W	Paved Runway, Fuel
Eureka Airport	O5U	39° 36' 15"N, 116° 00' 18"W	Paved Runway, Fuel
Austin Airport	9U3	38° 28' 05"N 117° 11' 43"W	Paved Runway

Definitive Care

Definitive care is the most appropriate place a patient has to go. Medical emergencies need to go to trauma centers and burn patients to burn centers.

Trauma Centers

▪ University Med Center	Las Vegas	702-383-2000	36° 09’ 36”N, 115° 09’ 56”W
▪ University of Utah	Salt Lake City	801-581-2121	40° 46’ 34”N 111° 50’ 24”W
▪ LDS Hospital	Salt Lake City	801-408-1181	40° 46’ 6” N 111° 52’ 70”W
▪ Renown Health Care	Reno	775-982-1181	39° 31' 02"N 119° 47' 25"W

Burn Center

▪ University of Utah Burn Center	Salt Lake City	801-581-2700	40° 46' 34"N, 111° 50' 24"W
▪ University Medical Burn Center	Las Vegas	702-383-2268	36° 09' 66"N, 115° 10' 77"W

Poison Control

▪ University Hospital	Salt Lake	801-581-2151
▪ Washoe Poison Center	Reno	775-982-4129

Non Emergency Medical Transport

This is a non life threatening injury or illness. No major body systems (Respiratory, Circulatory, and Neurological) are involved. This patient can be handled with Basic (BLS), Intermediate (ILS), or Advanced life support (ALS). Definitive care for this patient is a local hospital or clinic. You have the luxury of time. Ground transportation is appropriate. If available and properly equipped, agency helicopters could be utilized for both treatment and transportation.

BLS, ILS, or ALS Ground Transport

Non Emergency Medical Patients can appropriately be transported to definitive care by Basic (BLS), Intermediate (ILS), or Advanced (ALS) life support units listed below.

Battle Mountain Ambulance Service	Battle Mountain	3 units	BLS	775-635-9111
Austin Ambulance	Austin	2 units	BLS	775-964-2870
Eureka County	Eureka	2 units	BLS	775-237-5330
Nye County	Tonopah	2 units	BLS	775-482-3501
Elko County	Elko	4 units	ALS	775-738-4011
Clark County Dispatch	Multiple Locations	Multiple	ALS	702-384-3400

Definitive Care

Definitive care is the most appropriate place a patient has to go. Non Emergency Medical Transports can be treated at local hospitals or clinics.

Renown Health Care	Reno, Nevada	775-982-4100	39° 31'02"N, 119° 47'25"W	Land @ helipad
University of Utah	Salt Lake City, Utah	801-581-2121	40° 46'34"N 111° 50'24"W	Contact SLC Tower 118.3
Battle Mountain General	Battle Mountain	775-635-2550	40° 35'56"N 116° 52'27"W	Land @ airport (BAM)
Nye County Regional	825 South Main Tonopah	775-482-6233	38° 03'37"N 117° 05'14"W	Land @ airport (TPH)
Elko General	2001Errecart BL Elko	775-738-5151	40° 49'47"N, 115° 43'8"W	Land @ helipad
Banner Community Hospital	Fallon, Nevada	775-423-7888	39° 28'03"N, 118°46'00"W	Land @ helipad

Law Enforcement

Highway Patrol

- Elko 775-753-1298
- Las Vegas 702-486-4100

Search and Rescue

- Lander County Sheriffs Office 775-635-5161
- Nye County Sheriffs Office 775-482-8101
- Eureka County Sheriffs Office 775-237-5252
- Elko County Sheriffs Office 435-882-5600
- Military Search and Rescue Langley (Requests can go direct through this number no additional approval needed) 800-851-3051

Project Name:	Elkhorn 2/Savory	Unit Name:	

ELEMENT 14 - TEST FIRE

A. Test Fire Provisions and Planned Location

Central Nevada Interagency Dispatch Center (CNIDC) will be notified of ignition of test fire. Upon dissemination of test fire results the Burn Boss will inform CNIDC as to whether the burn will be implemented or cancelled for the day.
A test fire will be used to verify that the fire behavior will achieve the objectives. The test fire will be located in a place in which the fire behavior can be measured against acceptable results. It will be done in a location which can easily be controlled or extinguished and should be representative of the general type of fuel and other conditions in the burn block under the actual weather conditions on the day of the burn. After ignition of the test fire the Burn Boss will assess the results, if **NOT** within parameters of the prescriptions, the Burn Boss will notify CNIDC, the District Ranger or Acting and Zone FMO of the determination **Not** to proceed with the burn and implement the necessary strategies and tactics for securing and holding the test fire. The Burn Boss will document as part of the project file: location, date, time, fuels at site, weather conditions, results, and whether the test fire meets the prescription parameters.

B. Test Fire Documentation

Location:

Date and Time:

Weather/Fuels Conditions	
Cloud Cover %	
Temperature	
Relative Humidity	
Fine Dead Fuel Moisture	
Wind Speed	
Fuels	

Test Fire Results	
Flame Length	
Rate of Spread	
Smoke Dispersion	
Other	

The test fire meets the prescription parameters	**Yes**		**No**	

Project Name:	Elkhorn 2/Savory	Unit Name:	

SIGNED _____ **DATE** _____

Prescribed Fire Burn Boss

ELEMENT 15 - IGNITION PLAN

A. Firing Methods & Devices

Aerial ignition with helitorch is the first choice of ignition devices. If this method of ignition is not possible or desired, hand ignition can be used. The Burn and Firing Bosses will determine the appropriate method, procedures and patterns prior to ignition, based on the current conditions. The desired burn pattern will be documented and crews will be briefed on the specifics of the firing. Methods and procedures will be updated daily or as otherwise needed.

B. Ignition Techniques

A combination of aerial and hand ignition techniques can be used to meet objectives. This will be determined by the Firing Boss and Burn Boss on the day of the burn.

Savory-Hand ignition will be done in the Research plot. Technique would be to ignite all burnable vegetation within the research plot. Pattern will be determined day of burn due to wind and burning conditions.

C. Patterns & Sequences

Elkhorn 2-The Burn Boss and Firing Boss will determine the best patterns and sequences to meet the objectives of the burn. The upper 2/3 of the slope is the main target areas, the desired patterned will be to start at the ridgelines and carry fire down slope to the east. This will minimize the chance of spots across the ridge to the west. No direct lighting will take place in the sage and mahogany stands.

Savory-The research plot is the first priority to burn. Next area would be bringing fire from the north-northeast and work back to the south.

.

D. Ignition Staffing

For aerial ignition; mixing crew, helicopter manager, Firing Boss, Burn Boss and Holding Boss. If utilizing hand ignition the number of lighters will be identified by the Firing Boss on the day of the burn. Once the Firing Boss has assessed the conditions on the day of the burn then the number of lighters will be identified.
See Air Operations Plan for more information.

ELEMENT 16 - HOLDING PLAN

A. General Procedures for Holding

Holding forces should be placed where they can monitor the fires progression and spots across the line. If fire crosses the project boundary then resources will observe the fire behavior and notify the Holding Boss who will come up with a plan of action. Due to the steep and inaccessible terrain resource will most likely just observe until fire behavior decreases and then an assessment will be made by the Holding and Burn Boss on a course of action.

B. Critical Holding Points and Actions

If spots occur across the line, resources will use an anchor and flanking tactic while keeping one foot in the black.
Elkhorn 2-House Canyon Rd. Crews will observe the fire in these areas and take anchor/flanking actions if needed.
Savory- Little Savory Creek, in meadow areas along creek edge. Crews will observe the fire in these areas and take anchor/flanking actions if needed.

C. Minimum Organization or Capabilities Needed

Minimum capabilities needed for holding are identified under Element 11 - Organization and Equipment. On burn day and subsequent days of the prescribed fire, a mix of the number and kinds of hand crews and engines may be modified as long as stated production capabilities are not compromised.
As the prescribed fire progresses from ignition to holding to mop up and patrol, specified capabilities and/or types of resources may be adjusted.

D. Mop-up and Patrol

This project is a category 3 mop-up (FSM Chapter 5140 – Fire use)
Definition of category 3 mop-up: Category 3 mop-up applies when the potential for an escape is extremely low. Category 3 mop-up standards are: Patrol and monitor until weather conditions eliminate the need or the burn is declared out.

Ultimately, the Burn Boss is responsible for this fire until declared out, however the mop-up responsibility can be delegated to the Holding Boss or other qualified person. The Holding Boss or designee and Burn Boss will evaluate, establish standards and prioritize burned areas for Mop-up, as needed. On an daily basis the Holding Boss or delegated person is responsible for evaluation of the escape potential, mop-up assignments (plan), and patrols until the burn is declared out by the Burn Boss. This information will be relayed to the Burn Boss at the end of shift. Use the daily Mop up shift plan form the documentation of weather, personnel, and equipment and daily events.

Burn units will be patrolled until the Holding Boss or designee and Central Nevada Zone FMO is satisfied that there are no potential for escape from the treated area or the fire is declared out.

The Holding Boss following completion of primary ignition in each area will use engine and or hand crew patrol in conjunction with aerial patrol as deemed necessary.

CONDITIONS FOR LEAVING PRESCRBIED FIRE UNSTAFFED:
1.

- If a wetting rain/snow have been received on site.
- High relative humidity recoveries (40-60%) overnight for 2 days
- No smokes have been seen for 2 days
- Pinyon/Juniper burning at high elevations has little to no smoke showing after day of burning.
- No active flame front, crowning or torching occurring.
- No negative smoke impacts.

Project Name:	Elkhorn 2/Savory	Unit Name:	

2.

- Pull onsite weather from weather stations(s) or sling weather. Continue to talk with NWS for short/long term trends.
- Onsite observation on existing fire behavior and weather for 2 days after burning is complete.

3.

- Pull current weather observations for 3 days after burning is completed and continue to talk with NWS for weather data and trends. If wetting rain/snow has been received, then the amount of days to be left unstaffed can increase until drying or wind events are predicted. At this point the need to re-access staffing will occur.

The burn unit should be checked on a regular basis following active ignition until declared out. Documentation of conditions should be made in a Unit Log with the below filled out following each check of the burn unit.

Date/Time Lines Checked	Who Checked	Method (air/ground)

Project Name:	Elkhorn 2/Savory	Unit Name:	

ELEMENT 17 - CONTINGENCY PLAN

A. Trigger Points

If any of the following situations occur, contingency action will take place:

1. Fire threatens the project boundary.
2. The fire behavior exceeds limits described in the prescribed burn plan.
3. Smoke impacting sensitive areas.
4. Fire effects are unacceptable. Objectives not being met.

B. Actions Needed

If threat to project boundary then a change in the firing pattern or stop ignition. If the fire behavior is exceeding the limits of the plan then change firing patterns and/or stop ignition or wait for different time of day continue ignition. If smoke is impacting sensitive areas then ignition maybe stopped, slowed down or a wait for change in the wind direction. If project objectives are not being met then ignition will cease until conditions are more conducive.

If the contingency actions are successful at bringing the project back within the scope of the Prescribed Burn Plan, the project may continue. If contingency actions are not successful the end of the next burning period, then the prescribed fire will be converted to a wildfire.

C. Additional Resources and Maximum Response Time(s)

Resource	Agency & Location	Maximum Response Time	Conformation of Availability*	
			Yes/No	Date
NDF Hand Crew	**Tonopah**	**1.5 hrs**		
Ely/ Interagency personnel	**Ely**	**3 hrs**		
H-T personnel		**4 hrs**		
Engine	**BLM Austin**	**2 hrs**		
Engine	**BLM Eureka**	**2 hrs**		

*** To be completed within one day of the burn and adjusted during course of extended burning conditions. Burn Boss and Firing Boss will make adjustments to contingency resources during low, moderate, high burning conditions.**

ELEMENT 18 - WILDFIRE CONVERSION

A. Wildfire Declared By

An escape will be declared if on site holding forces cannot contain the fire within the project boundaries in the next burning period. Once an escape is declared, primary ignition will either cease until conditions moderate or ignition may continue as a suppression tactic in an attempt to influence the fire behavior and draw the fire intensity away from areas of concern.

The Burn Boss will make the decision on whether to declare an escape within the next burning period. Any fire moving outside the designated block boundaries will be evaluated by the Burn Boss and Holding Boss to determine the potential for growth outside the project area and determine if suppression actions are necessary. If the fire is moving towards natural barriers or it is felt that it will not threaten the boundary of the project, then it will be allowed to burn itself out. The Burn Boss will advise the Zone Duty Officer and they will make this decision.

B. IC Assignment

Should a wildfire be declared, the Prescribed Fire Burn Boss or Holding Boss will become the Incident Commander depending upon the complexity of the escape until relieved or replaced. The IC will organize all resources on-site for a safe and aggressive response. Personnel within the prescribed fire organization will transition into ICS wildfire positions they are qualified to carry out. The IC will order additional suppression resources identified in the Contingency Plan as well as any other required resources necessary to support the suppression effort.

Upon a wildfire conversion occurring, all overhead personnel will begin to document actions taken on a Unit Log. After the incident is contained, the Prescribed Fire Burn Boss will submit a post fire report documenting weather, resources on site, ignition operations, holding actions, and other pertinent data.

C. Notifications

The Prescribed Fire Burn Boss/IC will notify Central Nevada Interagency Dispatch Center (CNDIC) and the Central Nevada Zone Fire Management Officer (FMO) of the escape and identify himself/herself as the IC. FMO will then notify the District Ranger. Dispatch Center will notify contacts listed on the notification plan of the escape and the current situation.

Burn Boss will notify Forest Duty Officer within 24 hours of an escape, threat of an escape, or activation of contingency resources identified in the plan, or any prescribed fire that requires additional resources.

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

The appropriate management response will be used in order to stop the forward rate of spread. Containment strategy will be to utilize to identify safe anchor points, create direct fire line where feasible, indirect fire line as needed, including burning out, depending upon location of natural barriers, vegetation changes and roads. The FMO and/or IC, Resource Advisor, and Agency Administrator may develop a WFSA which will determine the appropriate management response to the escaped fire. The Wildland Fire Situation Analysis (WFSA) process is required when a wildfire escapes initial attack.

Opportunities to aid in fire suppression include: utilize existing roads in the vicinity of the burn unit, moist drainages, and changes in fuel types.

Project Name:	Elkhorn 2/Savory	Unit Name:	

ELEMENT 19 - SMOKE MANAGEMENT AND AIR QUALITY

A. Compliance

This burn plan complies with the Nevada Smoke Management Plan which is designed to meet the requirements of NRS445B. 100 through 445B.845, inclusive which deal with air pollution, and the requirements of the EPA Interim Air Quality Policy on Wildland and Prescribed Fire (May 1998).

B. Permits to be Obtained

Smoke Management Number:

Nevada State Air Quality Documentation:
Two Weeks Prior – Request for permit.
Two Days Prior Notify Air Quality Division and received final approval before burn can be ignited.

C. Smoke Sensitive Areas

Identify any non-attainment or Class I airsheds within 15 miles:	**Table Mountain Wilderness Area-Class 2 airshed**

Receptor	Direction	Distance	Receptor	Direction	Distance
Elkhorn 2- Belmont	E	7 mi	**Savory-Eureka**	NE	30
Elkhorn 2- Table Mt Wilderness	S	3-4 mi	**Savory-Table Mt. Wilderness**	SE	8-10 mi

D. Impacted Areas

Elkhorn 2- Table Mountain Wilderness is 3-4 miles north of the project boundary. Belmont 9-10 miles west of project area with population of 12 permanent residences.
Savory- Table Mountain Wilderness is 8-10 miles south-southwest of this project. The town of Eureka is approximately 30-35 miles southeast of this project.

E. Mitigation Strategies and Techniques to Reduce Smoke Impacts

Residual smoke from smoldering vegetation may continue into the evening and early morning hours. Residual smoke has the potential to be transported down slope as the air mass cools and when there is little to no mixing height (common at night). Most of the fuel (P/J, sagebrush and grass) will be consumed during the ignition phase. Some residual burning may occur but should be of short duration and should dissipate within approximately 12 hours or less. If residual smoke significantly impacts sensitive receptors the Burn Boss will implement mitigation measures to reduce or eliminate the problem. Mitigation measures may require reducing the number of acres burned per day, adjusting ignition timing/duration, moving ignition to more desirable burn units and/or waiting for more favorable atmospheric conditions.

SASEM smoke dispersion computer model results: The SASEM model was run for a burn of approximately 2,500 acres per day. To accomplish project objectives burning will be conducted over several days to accomplish up to approximately 10,500 acres. At 2,500 acres per day there was no exceedence of the PM-10 standard (150 micrograms per cubic meter) except on stable days. There will be limited or no burning on stable days. Total PM-10 emissions per day would be approximately 193 tons or approximately 811 tons for approximately 10,500 acres. Due to the mosaic type of pattern for this burn, our range is 30-80% or 2,500 to 6,700 acres burned within the 10,500 acre unit. With this type of burn pattern our emissions will be lower then the model shows.

Alternatives to burning were considered for this project. Mechanical treatment using equipment to masticate vegetation was considered as a possible alternative to prescribed burning and has been an accepted treatment method on many fuels reduction projects. For the following reasons prescribed fire was considered a more appropriate method of treatment on the Elkhorn Fuels project.

1.) The project area is within an ecosystem where wildfire has historically played a natural role. The use of prescribed fire is considered a more natural treatment than mechanical treatments.
2.) The cost difference is substantial especially for large acreage projects like the Elkhorn project. Approximately $250.00 or more per acre for mechanical mastication compared to approximately $100.00 per acre for prescribed burning.
3.) Mechanical treatments using tractors or heavy equipment are much more ground disturbing then prescribed fire. Due to the many prehistoric cultural resource sites (lithic scatters, etc.) within the project area prescribed fire was considered more desirable because there would be less impact to these sites.
4.) Much of the project area is mountainous with steep slopes. Tractors and heavy equipment have safety limitations on steep slopes (they roll over). The steeper areas could not be treated mechanically due to safety concerns. Prescribed fire can be effectively and safely used on steeper slopes.

Prescribed fire was considered a good alternative compared to other treatments and with proper implementation and compliance with the requirements of the Clean Air Act this alternative should meet the Forest's goals and objectives and have minimal impact to the States air quality.

Project Name:	Elkhorn 2/Savory	Unit Name:	

ELEMENT 20 - MONITORING

A. Fuels Information (forecast and observed) Required and Procedures

Monitoring of the live fuel moistures, we will utilize the Nevada BLM Fuel Moisture website. During the implementation, observations will be documented on the weather, fire behavior, and smoke dispersion. Fly over and walk through of burned area after implementation to see the effects to the vegetation, cultural sites and soils. The burned area will be monitored by the fuels/vegetation specialists yearly. Throughout the project areas there are heat senor tiles to monitor the effects of heat to the soil.

Savory project there is a research plot that has pre-burn data and it will be monitored post fire for 5-7 yrs. Also within Savory, plot data was taken for the effects of burning to insect/disease infestations. Following the burn the plots will be inventoried.

B. Weather Monitoring Required and Procedures

Weather observations will be taken and recorded on site by a FEMO throughout the implementation of the burn. Weather will be taken hourly or as directed by the Burn Boss. Weather will be monitored after the burn, utilizing onsite and/or portable RAWS located at Dansville Canyon.

C. Fire Behavior Monitoring Required and Procedures

Fire behavior will be monitored and recorded by a FEMO throughout the implementation of the projects. Fire behavior will be recorded every hour or as directed by the Burn Boss.

D. Monitoring Required To Ensure That Prescribed Fire Plan Objectives Are Met

Actual treated areas will be mapped and put into GIS. This may be done using on the ground Global Positioning System (GPS) units or unit within the helicopter.
The thermal measurements will be documented by a designated person and the information gained from these will be shared with all necessary Humboldt-Toiyabe NF affected specialists.
Photo points will be taken in the places that they were taken during the pre-burn and placed in the burn folder for documentation.

E. Smoke Dispersal Monitoring Required and Procedures

Smoke dispersal will be observed and recorded by a FEMO during the implementation phase of the project and for a couple of days after the burn has been completed.

ELEMENT 21 - POST-BURN ACTIVITIES

Post-Burn Activities that Must be Completed

Burned declared out.

Mapping of treated areas and put into GIS layer. Yearly monitoring of effects to the watersheds.

PRESCRIBED BURN DECLARED OUT		DATE TIME	

RXB1, RXB2, RXB3
(circle appropriate Qualification)

APPENDICES

A. **Maps - Vicinity and Project**
B. **Technical Review Checklist**
C. **Complexity Analysis**
D. **Risk Assessment - Job Hazard Analysis**
E. **Fire Behavior Modeling Documentation or Empirical Documentation (unless it is included in the fire behavior narrative in Element 7; Prescription)**
F. **Air Operations Plan (if applicable)**
G. **Prescribed Fire Post Burn Evaluation**
H. **Weather / Fuels / Fire Behavior / Smoke Observations**

Project Name:	Elkhorn 2/Savory	Unit Name:	

APPENDIX A - MAPS

1. Vicinity Map

Project Name:	**Elkhorn 2/Savory**	**Unit Name:**	

2. Project Map

APPENDIX B - TECHNICAL REVIEWER CHECKLIST

Project Name:	**Elkhorn 2/Savory**	**Unit Name:**	

APPENDIX D - RISK ASSESSMENT / JOB HAZARD ANALYSIS

APPENDIX E - FIRE BEHAVIOR MODELING DOCUMENTATION OR EMPIRICAL DOCUMENTATION

DRAFT

APPENDIX F - AIR OPERATIONS PLAN

DRAFT

APPENDIX G - WEATHER / FUELS / FIRE BEHAVIOR / SMOKE OBSERVATIONS

Weather and Fuels									
OBSERVATION TIME (24 HR)									
SLOPE (%)									
ASPECT									
ELEVATION (FEET)									
FUEL MODEL (1-13)									
SHADING (<50% or >50%)									
DRY BULB TEMPERATURE (°F)									
WET BULB TEMPERATURE (°F)									
RELATIVE HUMIDITY (%)									
EYE LEVEL WIND SPEED (MPH)									
WIND DIRECTION									
CLOUD COVER (%)									
1-HR FUEL MOISTURE (%)									
Fire Behavior									
FIRE (HEAD, FLANK, BACKING)									
AVERAGE FLAME LENGTH (FT)									
MAX. FLAME LENGTH (FT)									
RATE OF SPREAD (CH/HR)									
TORCHING/CROWNING (Y or N)									
FIRE WHIRLS (Y or N)									
SPOTTING (Y or N)									
SMOKE DIRECTION									
SMOKE RISE									

Notes:

OBSERVER NAME:		**DATE**	

APPENDIX H - PRESCRIBED FIRE POST BURN EVALUATION			
Burn Unit	**Date(s) Burned**	**Acres Burned**	**Ignition Start Time**
Weather and Fuel Conditions			
	Time of Ignition	**Low**	**High**
Temperature			
Relative Humidity			
1-hr Fuel Moisture			
10-hr Fuel Moisture	**100-hr Fuel Moisture**	**1000-hr Fuel Moisture**	**Days Since Significant Precipitation**
Wind Direction (Average)	**Wind Speed (Average)**	**Percent of Fuel Consumed**	**Ignition Duration (min.)**

Accomplishment of Fuels Treatment Objectives				
Overall Objectives Achieved:		**Yes**		**No**
Short Term Results (include changes in fuel profile and fire regime condition class)				

Cost Evaluation				
Burn Plan Preparation	**Site Preparation**	**Burn Operation**	**Total Burn Costs**	**Cost/Acre**
$	$	$	$	$

Narrative – Prescribed Fire Burn Boss Comments
i.e. operations, safety, fire behavior, personnel & equipment performance, logistics, smoke management

Prescribed Fire Burn Boss		**Date**	

DRAFT