

# **APPENDIX G**

## **Oklahoma Smoke Management Plan**



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Executive Director  
Dept. of Environmental Quality

**State of Oklahoma**  
**J. Kevin Stitt**  
Governor

**Blayne Arthur**  
Secretary and Commissioner  
Dept. of Agriculture, Food and Forestry

June 24, 2021

Mr. David Gray, Acting Regional Administrator  
U.S. Environmental Protection Agency, Region 6 (ORA)  
1201 Elm St., Suite 500  
Dallas, TX 75270

RE: 2021 Oklahoma Smoke Management Plan Certification


Dear Acting Administrator Gray:

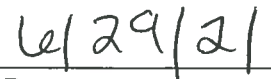
The Oklahoma Department of Agriculture, Food, and Forestry (ODAFF) and the Oklahoma Department of Environmental Quality (DEQ) are pleased to present a revised Oklahoma Smoke Management Plan (SMP) to the U.S. Environmental Protection Agency (EPA). The SMP is being submitted pursuant to the guidelines set forth by EPA in the *Interim Air Quality Policy on Wildland and Prescribed Fires* (April, 1998) and updated by the inclusion of EPA's Exceptional Events Rule 81 Fed. Reg. 68216 (Oct. 3, 2016).

Recognizing the benefits of prescribed and wildland fires to forest management, wildlife management, and agriculture, the 2013 SMP was originally developed by ODAFF and DEQ in cooperation with federal and private stakeholders in an effort to mitigate smoke emissions from prescribed and wildand fires. These measures protect the public, Oklahoma's forest protection areas, Class I areas, and smoke sensitive areas while permitting fire to be utilized as a viable land management tool.


This letter certifies the agencies hereby agree to implement and maintain the 2021 SMP by utilizing the Memorandum of Agreement between ODAFF and DEQ, which was executed on February 28, 2013. In accordance with this Memorandum of Agreement, the 2013 SMP has been updated to reflect changes in various aspects of the plan and program.

If you have any questions or require additional information, please contact Melanie Foster at 405-702-4218.

  
Blayne Arthur  
Secretary and Commissioner of Agriculture  
Department of Agriculture, Food, and Forestry

  
Date

  
Scott A. Thompson  
Executive Director  
Department of Environmental Quality

  
Date

## **MEMORANDUM OF AGREEMENT**

Between  
Oklahoma Department of Agriculture, Food and Forestry  
Forest Services Division  
and  
Oklahoma Department of Environmental Quality  
Air Quality Division

This Memorandum of Agreement (hereinafter referred to as MOA) was made and entered into on the 28<sup>th</sup> day of February, 2013, by and between the Oklahoma Department of Agriculture, Food and Forestry, Forest Services Division (hereinafter referred to as ODAFF) and Oklahoma Department of Environmental Quality, Air Quality Division (hereinafter referred to as DEQ).

This MOA is for the express purpose of developing and implementing the Smoke Management Plan (SMP) to reduce the effects of smoke emissions from prescribed and wildland fire on sensitive and protected areas, Class I areas, and the public.

### **General Provisions**

The agencies, ODAFF and DEQ, in cooperation with federal and private partners, have developed a Smoke Management Plan, dated February 28<sup>th</sup>, 2013.

- Recognizing the critical importance of prescribed fire for resource management and the resulting benefits to forestry, wildlife management and agriculture; and
- Recognizing the importance of minimizing the public health and environmental impacts of smoke intrusion into populated areas from prescribed fires

Therefore, in consideration of the mutual benefits to each party, the signatory parties agree to develop, implement, and maintain the Smoke Management Plan, dated February 28<sup>th</sup>, 2013. This Agreement shall become effective as soon as signed by all parties. Any party has the right to terminate this agreement upon a six (6) month notice.

### **ODAFF Responsibilities**

- 1) ODAFF will continue to implement and enforce the Oklahoma Forestry Code, Title 2-16 as written.
- 2) ODAFF will continue to review Burn Notification Plans, consult with the applicants, and promptly make burn or no-burn decisions for fire managers and landowners.
- 3) ODAFF will notify DEQ of long range plans utilizing prescribed fire.
- 4) ODAFF will work with DEQ providing methods to minimize smoke, discuss the benefits of smoke management, and provide information to assist DEQ's efforts in the development of a brochure for public education and outreach.

### DEQ Responsibilities

- 1) DEQ will continue to enforce Title 252:100-13 of the Oklahoma Administrative Codes as written.
- 2) DEQ will add informational material regarding the SMP to their website.
- 3) DEQ will track data from air quality monitors that may be influenced by prescribed or wildland fires.
- 4) DEQ will issue public health advisories when ambient ozone and particulate matter (PM) concentrations are expected to reach or exceed Air Quality Index (AQI) values level orange or higher.
- 5) DEQ will continue to provide forecasting and monitoring data, AQIs, and health advisories on the agency website.
- 6) DEQ will work with ODAFF to create a brochure, which will provide methods to minimize smoke, discuss the benefits of smoke management, provide contact information, and include helpful forms.

### Signatures

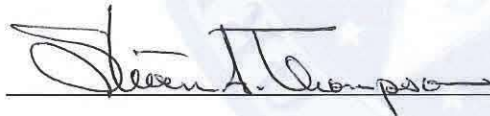


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Jim Reese  
Commissioner of Agriculture  
Department of Agriculture, Food, and Forestry

2/28/2013

Date



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Steve Thompson  
Executive Director  
Department of Environmental Quality

2-28-13

Date



# OKLAHOMA

## Smoke Management Plan



Smoke Management Guidelines and Regulations for Oklahoma



UPDATED JUNE 2021

## **Table of Contents**

<b>TABLE OF CONTENTS .....</b>	<b>1</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>3</b>
<b>I. INTRODUCTION .....</b>	<b>3</b>
<b>a. Purpose and Objectives .....</b>	<b>4</b>
<b>b. Scope and Applicability .....</b>	<b>4</b>
i. Lawful Burning .....	4
ii. Burning Operations Subject to SMP .....	5
<b>c. Oklahoma Forest Service Protection Areas, Class I Areas, and Smoke Sensitive Areas 5</b>	
i. Oklahoma’s Forest Protection Area .....	5
ii. Class I Areas .....	5
iii. Smoke Sensitive Areas .....	6
<b>d. Relationship Between the SMP and the Oklahoma Air Quality Regulations.....</b>	<b>6</b>
i. Open Burning (OAC 252:100-13) .....	6
ii. Prescribed Burning (TITLE 2-16) .....	6
<b>e. Relationship Between the SMP and Federal Air Quality Regulations .....</b>	<b>6</b>
i. Visibility .....	6
ii. National Ambient Air Quality Standards (NAAQS) .....	7
iii. Exceptional Events Rule .....	7
<b>II. OKLAHOMA SMOKE MANAGEMENT PROGRAM.....</b>	<b>9</b>
<b>a. Burn Authorization and Burn Plans.....</b>	<b>9</b>
<b>b. Minimizing Air Pollutant Emissions.....</b>	<b>10</b>
<b>c. Public Education and Awareness .....</b>	<b>11</b>
<b>d. Surveillance and Enforcement .....</b>	<b>11</b>
<b>e. Program Evaluation .....</b>	<b>11</b>
<b>III. REFERENCE MATERIAL .....</b>	<b>12</b>
<b>a. Acronyms and Abbreviations .....</b>	<b>12</b>
<b>b. Online Resources .....</b>	<b>13</b>
<b>c. Contact Information .....</b>	<b>14</b>
<b>Appendix A: Glossary.....</b>	<b>15</b>
<b>Appendix B: O.S. Title 2, Section 16, Oklahoma Forestry Code (Pertinent Sections) .....</b>	<b>18</b>
<b>Appendix C: OAC 252:100-13-7 and OAC 252:100-13-9 .....</b>	<b>18</b>
<b>Appendix D: Oklahoma Forest Protection Areas .....</b>	<b>30</b>
<b>Appendix E: Smoke Sensitive Areas .....</b>	<b>31</b>
i. Class I Areas .....	31
<b>Appendix F: Oklahoma Metropolitan Statistical Areas.....</b>	<b>33</b>

<b>Appendix G: Notification Requirements and Considerations .....</b>	<b>.34</b>
<b>for Safe and Lawful Prescribed Burning in Oklahoma .....</b>	<b>34</b>
i. Prescribed Burn Plan .....	39
ii. Prescribed Fire Complexity Analysis and Review Worksheet.....	43
iii. Assessment Criteria Descriptions .....	45
<b>Appendix H: 2019 Oklahoma DEQ PM and Ozone Air Monitoring Network .....</b>	<b>48</b>
<b>Appendix I: Oklahoma Airsheds .....</b>	<b>49</b>

# **Oklahoma Smoke Management Program**

## **Executive Summary**

Oklahoma Forestry Services (OFS), a division of the Oklahoma Department of Agriculture, Food, and Forestry (ODAFF), is the state regulatory agency responsible for the oversight of forest and rangeland fire management programs. The Department of Environmental Quality (DEQ), is the state air regulatory agency responsible for the oversight of air pollution control, including, but not limited to, the implementation of air quality standards in the state. Both agencies have collaborated on the development of the Oklahoma Voluntary Smoke Management Program (SMP) to protect the health and welfare of Oklahomans from the impacts of smoke emissions from prescribed fire. Prescribed burning is an economical and effective land management tool that can help landowners and land managers accomplish a variety of objectives targeting ecological management. The first section of the SMP provides background on the SMP including applicability, the relationship between the SMP and state and federal regulations, and areas in Oklahoma where special policy applies. The second section describes the programs and processes in the SMP. The third section contains appendices and resources to assist users of the SMP. The Oklahoma SMP does not supersede the provisions of the Oklahoma Forestry Code, 2 O.S. §§ 16-1 to 16-83 or DEQ's open burning rule in Oklahoma Administrative Code (OAC) 252:100-13. OFS and DEQ are committed to the continued use of prescribed burning as a viable land management tool in Oklahoma. Following the Basic Smoke Management Practices (BSMPs) in the SMP can help reduce smoke impacts and help ensure the health and welfare of Oklahomans, air quality, and the environment are not compromised by smoke from prescribed burning. Additionally, following BSMPs helps Oklahoma maintain its voluntary compliance with the Clean Air Act and protect the ability to use prescribed fire.

## **I. Introduction**

Prescribed fire is a cost-effective land management practice essential to the perpetuation, restoration, and management of native plant communities and the native wildlife species that inhabit them. Additionally, prescribed fire serves to lessen the severity of wildfires by reducing the amount of potentially available fuel. This practice helps minimize adverse impacts on human and animal health, the environment, and safety. Encouraging the use of BSMPs by private and public landowners and land managers, who choose prescribed burning as a land management practice is essential to mitigate the impacts of smoke on air quality.

In general, Smoke Management Programs (SMPs) establish procedures and identify requirements for minimizing the impact of emissions and managing smoke dispersion from wildland and prescribed fires. The goals of SMPs are to reduce the smoke impacts and public safety hazards in downwind areas, prevent deterioration of air quality, avoid violations of federal regulations, and to address visibility issues in smoke sensitive areas. SMPs also address the treatment of fire emissions to meet other federal Clean Air Act (CAA) requirements, such as Prevention of Significant Deterioration (PSD) and conformity of federal activities with State Implementation Plans (SIPs).

During the development of the original 2013 SMP, a series of informational meetings were held with state and federal stakeholders to seek input regarding prescribed fire, safety, and air quality concerns. From this collaboration, OFS and DEQ developed the SMP to protect the health and welfare of Oklahomans from the impacts of smoke caused by wildland and prescribed fires. Since OFS regulates prescribed burning and DEQ regulates open burning, implementation of the SMP was facilitated with a Memorandum of Agreement (MOA) between these two agencies. The specific responsibilities set in the MOA demonstrate the commitment and support the agencies have for the success of the program.



Effective implementation and maintenance of the SMP will require cooperation between OFS, DEQ, and the stakeholders in the state of Oklahoma. This update to the SMP was undertaken in 2019 to clarify language and incorporate changes in Oklahoma Title 2-16, the Oklahoma Forestry Code; DEQ's Air Pollution Control rules, OAC 252:100, Subchapter 13, Open Burning; and associated appendices. The program is voluntary in the state of Oklahoma and smoke management practices are recommended to be included as part of a Prescribed Burn Plan. The SMP does not apply to open burning of agricultural waste, crop residue, or land in the United States Department of Agriculture Conservation Reserve Program (CRP).

Terms used in the SMP consist of definitions from the EPA Interim Air Quality Policy on Wildland and Prescribed Fires (1998), the CAA, state statutes, Oklahoma agency rules, and federal agencies regulations and guidance. A glossary is included as Appendix A of this document.

#### **a. Purpose and Objectives**

The purpose and objectives of the SMP are to protect public health, mitigate smoke intrusions, and prevent public safety hazards in Smoke Sensitive Areas (SSAs), such as smoke on roadways, rail tracks, airfields, and cities or towns. The SMP also serves to prevent deterioration of air quality and National Ambient Air Quality Standards (NAAQS) violations, and addresses visibility impacts in mandatory Class I Federal areas. Additionally, the SMP provides the opportunity to use prescribed burning as a land management tool to manage rangeland and forests, and reduce fuels, which can reduce the likelihood of catastrophic wildland fires. The SMP also promotes the reduction of prescribed fire smoke emissions by encouraging the coordination of citizens, state and federal air quality agencies, and fire management organizations.

#### **b. Scope and Applicability**

The SMP applies to all prescribed fires managed on public and privately owned wildlands. The SMP does not apply to certain activities described in the Oklahoma Forestry Code (Appendix B) and OAC 252:100-13-7 (Appendix C) such as: fire training; elimination of hazards; burning at residential, commercial, or industrial sites; recreational and ceremonial burning; waste incineration; or open burning of land clearing waste or construction debris, or other open burning activities. In accordance with EPA's Exceptional Events Rule (EER), the SMP does not presently apply to open burning of agricultural waste, crop residue, or CRP lands.

#### **i. Lawful Burning**

According to 2 O.S. §16-24.1.A.1 to 3, it is lawful for a landowner to set fire to croplands, rangelands, grasslands, forestlands, or other wild lands for the purposes of managing and manipulating plant species present and destroying detrimental or unwanted plants, plant parts, shrubs, trees or cedar tree eradication. 2 O.S. § 16-24.1.B states that the provisions of 2 O.S. §16-24.1.A.1 to 3 shall not be construed to exempt or release a person from civil liability for damages or injury incurred as a result of the burn or for criminal liability as imposed pursuant to the Oklahoma Forestry Code 2 O.S. §16.24.1. Prescribed burning is lawful burning when conducted according to requirements found in 2 O.S. §16-28.1.A and §16-28.2 A to D. Specifically, those requirements are:

- Within sixty (60) days prior to conducting a prescribed burn, the owner of the land to be burned shall orally or in writing notify all landowners whose lands adjoin the owner's land to be burned.
- If any landowner is burning on a large, consolidated tract of land in which there are multiple adjacent landowners, only those landowners with adjoining land within one (1) mile of the proposed burn area must be notified.

- The owner shall include in the written notice or shall orally notify the adjoining landowners of the proposed date and location of the burn and a telephone number where the landowner can be reached for information regarding the prescribed burn.
- In addition to notification of adjoining property owners, the owner of the land to be burned shall complete the prescribed burn notification plan and shall submit such plan to the rural fire department nearest the land to be burned. If the land to be burned is in the OFS Protection Area, the owner shall also submit a copy of the notification to the local office or local representative of the Forestry Division nearest to the land to be burned.

OAC 252:100-13-7(4)(A) allows open burning for land management operations for the purpose of managing forests, crops, or game as long as it is done in accordance with practices recommended by the Oklahoma Department of Wildlife Conservation, the ODAFF, and the United States Forest Service (USFS). However, per OAC 252:100-13-9, open burning for land management purposes cannot create a public nuisance; impair visibility across roadways, rail tracks, or air fields; or affect the ambient air quality of a city or town. If an Ozone or PM /Alert has been declared for the day of the burn for the Metropolitan Statistical Area (MSA) or county in which the burn is to be performed, the prescribed fire should not be conducted. Notification of an Ozone or PM Alert will be on this website: <https://www.deq.ok.gov/air-quality-division/ambient-monitoring/ozone-watch-alert/>.

## **ii. Burning Operations Subject to SMP**

In order to participate in the SMP, burning operations such as those stated in 2 O.S. §16-24.1, which are performed to manage, manipulate, and destroy vegetative material for the purposes of fire hazard elimination and land and resource management, the landowner must create and submit a prescribed burn notification plan for each prescribed fire. While a landowner may choose to use prescribed fire as a land management tool, as stated in Section I (b) of this document, this SMP does not apply to open burning of agricultural waste, crop residue, or land in the CRP program. See Section II.a for more information on burn notification plans and jurisdiction.

### **c. Oklahoma Forest Service Protection Areas, Class I Areas, and Smoke Sensitive Areas**

#### **i. Oklahoma's Forest Protection Area**

Oklahoma has three Forest Protection Areas (FPAs) (Appendix D), which cover 6.2 million acres in the eastern portion of the state. The three areas are portions or all of the following counties:

- **Northeast Area**—Adair, Cherokee, Delaware, Mayes, Muskogee, Ottawa, Sequoyah, Wagoner
- **East Central Area**—Haskell, Latimer, Le Flore, Pittsburg
- **South East Area**—Atoka, Choctaw, McCurtain, Pushmataha

Landowners and managers conducting prescribed burns in FPAs are required to provide a copy of the prescribed burn notification plan to the nearest OFS Division office of the land to be burned, notify the OFS Division office nearest to where the fire will be located at least 4 hours before setting the fire and receive verbal or written approval.

#### **ii. Class I Areas**

Oklahoma has one mandatory Class I area, the Wichita Mountains Wilderness, which is owned by the U.S. Department of Interior and managed by the U.S. Fish and Wildlife Service. The Wichita Mountains Wilderness Area consists of 8,900 acres in Comanche County in southwest Oklahoma. Emissions from fires and resultant air pollutants in Oklahoma also have the potential to affect Class I areas in surrounding states. The states that may potentially be affected include Arkansas (Caney Creek, Upper Buffalo),

Colorado (Spanish Peaks, Great Sand Dunes), Missouri (Hercules Glades), and New Mexico (Bandelier, Pecos, and Wheeler Peak). A map depicting the Wichita Mountains Wilderness is located in Appendix E.

### **iii. Smoke Sensitive Areas**

SSAs are areas in which smoke from outside sources is not acceptable because of health or safety reasons. Reduction in visibility or deterioration of breathable air can have direct impacts on children, pregnant women, older individuals, and people with compromised health issues, and local populations. Therefore, SSAs include any and all:

- Roadways
- Rail tracks
- Air fields
- Cities or towns, regardless of population size

### **d. Relationship Between the SMP and the Oklahoma Air Quality Regulations**

#### **i. Open Burning (OAC 252:100-13)**

All prescribed burns, including land management and land clearing operations and the elimination of hazards when those hazards are in the form of excess vegetative matter, must be carried out in accordance with OAC 252:100-13, the Open Burning Rule.

The Open Burning regulations provide several definitions for the SMP, including “open burning,” which means the burning of combustible materials in such a manner that the products of combustion are emitted directly to the atmosphere and therefore regulated under the Open Burning Rule. Prescribed burning is therefore prohibited unless conducted in accordance with the conditions and requirements contained in OAC 252:100-13-5, -7, and -9.

#### **ii. Prescribed Burning (TITLE 2-16)**

The Oklahoma Forestry Code, 2 O.S. § 16-1 through 16-70, provides several definitions for the SMP, including “prescribed burning,” which is defined as application of fire by a landowner to forestland, cropland, grassland, or rangeland for land management purposes using naturally occurring vegetative fuel 2 O.S. § 16-28.2. It should be noted for the purposes of the SMP that prescribed burning on cropland is not included according to EPA’s Exceptional Event Rule (EER).

The SMP utilizes the system outlined in 2 O.S. § 16-28.2 for notification and approval of applicable prescribed burns. OFS provides guidelines and a Prescribed Burn Plan form in their Notification Requirements and Considerations for Safe and Lawful Prescribed Burning in Oklahoma, which can be found in Appendix G of this document. However, 2 O.S. § 16-26 prohibits any outdoor burning during a gubernatorially-declared extraordinary danger from fire due to emergency drought conditions, unless guidelines and exemptions have been identified in the Executive Proclamation.

### **e. Relationship Between the SMP and Federal Air Quality Regulations**

#### **i. Visibility**

The CAA addresses sources and air pollutants which “...may reasonably be anticipated to cause or contribute significantly to impairment of visibility.” 42 U.S.C. § 7491(b)(2). The CAA also requires states

to prepare a SIP for regional haze, which impacts federal Class I Areas. Utilization of the SMP is expected to reduce smoke emissions contributing to decreased visibility and increased regional haze, thus aiding Oklahoma in meeting the visibility and regional haze requirements of the CAA.

## **ii. National Ambient Air Quality Standards (NAAQS)**

The CAA requires EPA to set NAAQS (40 CFR part 50) for pollutants considered harmful to public health and the environment. Two types of NAAQS are identified for regulation. The first are Primary standards, which provide public health protection, including protecting the health of "sensitive" populations such as older adults, children, and people with heart or lung disease (including asthma), who are more vulnerable to the adverse health effects of air pollution. Next are Secondary standards, which provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and structures.

EPA has set the maximum permissible concentrations for six principal pollutants, which are called "criteria" pollutants. They are carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), and sulfur dioxide (SO<sub>2</sub>). Currently, Oklahoma has no non-attainment areas. However, should an area in Oklahoma violate the NAAQS, certain measures must be implemented to mitigate the air quality issues. These measures can add regulatory burdens that curtail economic development and are costly to citizens, industry, and regulators.

Vegetative burning produces various chemical compounds including nitrogen oxides (NO<sub>x</sub>), volatile organic compounds (VOCs), CO, and PM. Ozone is not directly produced by fires, but is a result of the reaction of components of combustion (NO<sub>x</sub> and VOCs in the presence of sunlight). Since both PM and ozone are "criteria" pollutants and are regulated by the NAAQS, following the SMP will aid in reducing the production and emission of PM and ozone, which will support Oklahoma in meeting the NAAQS and maintaining its attainment status.

As the state's lead agency for air quality planning, DEQ maintains a network of monitors, which routinely measures the concentrations of criteria pollutants in ambient air around the state. The monitor network map is located in Appendix G. DEQ provides daily air quality forecasts to the public called the Air Quality Index (AQI). The AQI is calculated using the previous day's monitoring and weather conditions data and is then color-coded according to the AQI value. When real time air quality data reaches an unhealthy (orange) level for sensitive groups, DEQ issues a health advisory.

Oklahomans can register to receive health advisories by email or text by using the link for Air Quality Health Advisories located in the Online Resources located in section III(b) of this document. In addition, the DEQ Air Quality Division website has links for the Air Quality Index as well as the current air quality status and a link for extended forecast and discussion. These resources give Oklahomans and sensitive groups the ability to plan and take precautions when pollutant levels are at unhealthy levels or are expected to reach unhealthy levels.

EPA published a determination to retain the current ozone standard and PM standard on December 31, 2020 and December 18, 2020, respectively. On June 10, 2021 EPA announced that it will reconsider the December 2020 decision for the PM standard; a reconsideration of the ozone standard by EPA is also possible. A violation of either of these two standards could result in areas of Oklahoma being designated as non-attainment by the EPA, indicating air quality is a public health concern. A non-attainment designation would also be detrimental to business and economic growth in the affected area. In order to avoid these issues, it is important to consider methods that mitigate the impact of smoke emissions produced by prescribed burning.

### **iii. Exceptional Events Rule**

Under certain circumstances, unusual or naturally occurring events, such as prescribed fires or wildfires, can affect air quality, which could be classified as an exceptional event. In 2016, EPA finalized the EER, which establishes criteria used to determine if air quality monitoring data has been influenced by an exceptional event. The rule provides procedures used to identify, evaluate, and interpret monitored air quality data. When exceedances or violations of the NAAQS occur, states may request EPA exclude the data directly related to the event. States provide information to demonstrate these occurrences by flagging the data for the EPA. The documentation is submitted for EPA to review and to determine if there is a clear causal relationship between the affected data and the event.

If an Oklahoma ambient air quality monitor registers an exceedance of ozone or PM that is the result of a prescribed or wildfire, DEQ will notify the EPA by a letter of intent to flag the data that was collected during the time smoke emissions impacted the monitor. After public notice and opportunity for public comment, DEQ will submit documentation to justify exclusion of the data to EPA. This demonstration includes verification of the event, data from the monitor(s), meteorological data, and identification of the spatial area affected by the event. After considering the evidence provided by DEQ, the EPA determines whether or not to concur with each flag on a case by case basis and notifies the state of its decision. EPA has agreed to exclude data influenced by prescribed fire emissions from use in determining exceedances of the NAAQS when a state satisfactorily demonstrates the smoke emissions are an exceptional event.

An exceptional event means an event that:

- Affects air quality;
- Is not reasonably controllable or preventable;
- Is an event caused by human activity that is unlikely to recur at a particular location or a natural event; and
- Is determined by EPA to be an exceptional event.

In exchange for States pro-actively implementing a state certified SMP, EPA will exercise discretion by not designating an area as non-attainment if there is convincing evidence a prescribed fire caused or significantly contributed to a measured exceedance of an applicable standard. The EPA will request the state review the adequacy of the SMP and make appropriate improvements in order to mitigate future air quality impacts. In addition, EPA indicates in the EER that data will be excluded from use in determinations of exceedances if a state successfully demonstrates emissions from a prescribed fire caused the specific exceedance event and the state submitted and implemented a state certified SMP.



## **II. Oklahoma Smoke Management Program**

### **a. Burn Notification, Authorization and Burn Plans**

OFS serves as the implementing authority for the SMP and is granted the authority to regulate prescribed burning in Oklahoma, as cited in the Oklahoma Forestry Code, 2 O.S. §§ 16-1 through 16-83, and has the authority to fulfill all responsibilities required of the SMP implementing authority.

For prescribed burning within FPAs, OFS will review burn notification plans within the requirements specified by 2 O.S. 16-28.2. If necessary, OFS will consult with the applicants and promptly advise on burn or no-burn decisions with landowners who choose to participate in the program. To prevent property right infringement, valid reasons regarding public health and safety will be expressed by OFS if an application to burn is either denied or advised against. When authorizing a prescribed burn within an FPA, OFS shall consider all open burning activities (land clearing, construction wastes, agricultural wastes, etc.) allowed within an airshed so that no single airshed is overburdened by excessive smoke emissions. A map of Oklahoma airsheds with descriptions of each zone is attached as Appendix I.

To obtain authorization to burn within the SMP, a landowner must submit a prescribed burning notification plan as required in 2 O.S. §16-28.2. As previously addressed in this document, the prescribed burn notification plan requirements are summarized as follows:

- Within sixty (60) days prior to conducting a prescribed burn, the owner of the land to be burned shall orally or in writing notify all landowners whose lands adjoin the owner's land to be burned.
- If any landowner is burning on a large, consolidated tract of land in which there are multiple adjacent landowners, only those landowners with adjoining land within one (1) mile of the proposed burn area must be notified.
- The owner shall include in the written notice or shall orally notify the adjoining landowners of the proposed date and location of the burn and a telephone number where the owner can be reached for information regarding the prescribed burn.

Within 48 hours prior to performing the burn, the landowner conducting the prescribed burn must notify the nearest rural fire department to which the notification plan was sent. Owners conducting a prescribed burn in an FPA must also submit a burn notification plan to the local office or local representative of the Forestry Division nearest to the land to be burned. At least four hours prior to the burn, landowners burning land within the FPA must also obtain oral or written approval from the OFS representative to which a copy of the prescribed burning notification plan was sent.

OFS and DEQ expect an expansion of prescribed fire land management programs in Oklahoma as landowners continue to realize the benefits of this land management tool. When federal, state, and local land managers create prescribed burn plans, it would be helpful if landowners voluntarily shared this information with OFS and DEQ.

The OFS Notification Requirements and Considerations for Safe and Lawful Prescribed Burning in Oklahoma (Appendix G) provides guidelines, relevant statute sections, and the elements of a burn notification plan, including smoke management components.

Persons responsible for managing prescribed fires should be adequately trained in fire and BSMPs established by the United States Forestry Service (USFS). In order to comply with the SMP, land managers must follow a prescribed burn notification plan, including the fire prescription and smoke management components, or provide an adequate explanation justifying any deviations from the plan. Prescribed burners are encouraged to keep maps of the planned prescribed burn area as well as weather conditions and fire behavior before, during, and after the burn as recommended by the SMP in order to comply with BSMPs.

## **b. Minimizing Air Pollutant Emissions**

It is recommended the land manager document the steps taken before, during, and after the burn in a burn or smoke journal showing how smoke impacts were minimized and include the BSMPs followed. The six recommended BSMPs include:

1. Evaluate weather conditions before, during, and after the burn.
2. Monitor effects of fire on air quality to ensure proper dispersion.
3. Record BSMPs used and fire activity with a burn plan.
4. Communicate with and notify authorities and affected public before, during, and after the prescribed fire if weather conditions change.
5. Use emission reduction techniques like wood chipping, grazing, hay baling, and patch burning.
6. Collaborate with neighbors, voluntary firefighters, and other land owners in conducting prescribed burns by joining a PBA.

The journal should include smoke management components and weather conditions. OFS and the Oklahoma Prescribed Fire Council (OPFC), of which OFS is a founding member, have many strategies to assist landowners and land managers in minimizing smoke impacts.

Understanding the separate and combined effects of several weather elements on fire behavior is essential in order to successfully execute a prescribed burn plan and minimize smoke impacts. Wind speed, relative humidity, temperature, recent rainfall, inversions, dispersion, weather fronts, drought-related conditions, and air mass stability are important weather elements to consider because of their influence on fuel moisture, fire behavior, smoke production, and smoke dispersion.

An example of an available internet decision support system specific for Oklahoma is a modeling program called OK-FIRE. The model includes both wildfire and prescribed fire applications developed for use by land managers throughout Oklahoma. OK-FIRE uses the Oklahoma Mesonet, the state's automated weather station network, and the National Weather Service's (NWS) 84-hour North American Mesoscale Model in order to analyze and display current or recent conditions, as well as forecast future weather conditions.

The OK-FIRE modeling program gives the land manager the ability to anticipate weather, fire danger, fire behavior, and smoke dispersion conditions out to three days in the future. By establishing specific weather conditions and goals, land managers can plan to burn on appropriate weather days. The predictive component allows assessment of future fire danger, potential guidance for optimal staff levels, and the best suppression strategies, if necessary. Utilizing this tool helps to determine if weather conditions are appropriate to support a valid burn plan. If a computer is not available to utilize the OK-FIRE website, contacting the NWS by telephone (405-325-3816) is another resource tool for acquiring weather information.

In addition, DEQ has produced a brochure providing methods by which smoke intrusions can be minimized and explaining the benefits of BSMPs: [https://www.deq.ok.gov/wp-content/uploads/air-division/Smoke\\_Management\\_Brochure.pdf](https://www.deq.ok.gov/wp-content/uploads/air-division/Smoke_Management_Brochure.pdf). The brochure requests landowners consider using fuel reduction techniques such as grazing, hay baling, mowing, or chipping prior to the prescribed burn and provides contact information in order to direct questions to landowners, burn managers, and public safety officials. Links to the websites of the OFS, the OPFC, the OPBA, OK-FIRE, and the NWS among others are located on the brochure and in section III(b) of this document. Additional information resources and training for prescribed fire and smoke management can be found on the webpage for OSU Extension. See section III(b) for contact information.

**c. Public Education and Awareness**

To help inform the public and land managers with information on how to determine a good prescribed burn day, OFS will provide a county's burn ban status on their website. OFS makes efforts to discourage prescribed burning on PM or ozone alert and burn ban days within guidance established in current legislation. In addition, DEQ issues health advisories when the AQI for PM or ozone reaches level orange (unhealthy for sensitive groups category) or above. The advisories are posted on the DEQ website and advisories are emailed/texted directly to individuals who sign up for them. The email and text sign up for health advisories can be found on the Air Quality Division portion of the DEQ website located in Online Resources section, III(b) of this document.

The DEQ Smoke Management brochure is available for distribution among landowners, land managers, and the public. The brochure details methods by which smoke intrusions can be minimized and explains the benefits of prescribed burning as a land management tool to control vegetative fuel to reduce the potential of catastrophic wildfires. Information describing the necessary steps for implementing a lawful and successful prescribed burn are included. Lastly, information regarding prescribed burns and resource tools is located on the ODAFF and DEQ websites as well as in the DEQ Smoke Management brochure.

**d. Surveillance and Enforcement**

Administration of the SMP requirements will be shared between OFS and DEQ. OFS will continue to enforce the prescribed burning laws set forth in the Oklahoma Forestry Code, 2 O.S. §§ 16-1 through 16-83. Likewise, DEQ will continue to enforce the Open Burning Rule OAC 252:100-13.

**e. Program Evaluation**

A program evaluation will be performed periodically by OFS and DEQ as deemed necessary based on observations such as reports of smoke intrusions, nuisance complaints, monitored air quality impacts, and changes in state or federal requirements. OFS and DEQ will request the participation of all original parties (e.g., land owners and land managers, air quality managers, the public, state and federal agencies, etc.) to review and evaluate the:

- Current and anticipated fire management trends;
- Need to expand the scope of the program to include authorization of other open burning;
- Need for changes in the SMP; and
- Program effectiveness utilizing monitoring data, participation statistics, complaint records, and any other useful information.

If the program evaluation reveals the need for changes to the SMP, DEQ will provide public notice followed by a thirty (30) day comment period and a public hearing, if requested.

### **III. Reference Material**

#### **a. Acronyms and Abbreviations**

AQI—Air Quality Index  
BSMPs—Basic Smoke Management Practices  
CAA—Clean Air Act  
CFR—Code of Federal Regulations  
CO—Carbon Monoxide  
CRP—Conservation Reserve Program  
DEQ—Oklahoma Department of Environmental Quality  
EER – Exceptional Event Rule  
EPA—Environmental Protection Agency  
MOA—Memorandum of Agreement  
MSA—Metropolitan Statistical Area  
NAAQS—National Ambient Air Quality Standards  
NO<sub>x</sub>—Nitrogen Oxides  
NO<sub>2</sub>—Nitrogen Dioxide  
NWS—National Weather Service  
OAC—Oklahoma Administrative Code  
ODAFF—Oklahoma Department of Agriculture, Food, and Forestry  
OFS—Oklahoma Forestry Services  
OPBA—Oklahoma Prescribed Burn Association  
OPFC—Oklahoma Prescribed Fire Council  
O<sub>3</sub>—Ozone  
Pb—Lead  
PM—Particulate Matter  
PM<sub>10</sub>—Particulate matter less than 10 micrometers in diameter  
PM<sub>2.5-10</sub>—Particulate matter less than 10 micrometers in diameter and greater than 2.5 micrometers in diameter  
PM<sub>2.5</sub>—Particulate matter less than 2.5 micrometers in diameter  
PSD—Prevention of Significant Deterioration  
SIP—State Implementation Plan  
SMP—Smoke Management Program  
SO<sub>2</sub>—Sulfur Dioxide  
SSA—Smoke Sensitive Areas  
USDA—United States Department of Agriculture  
USFS—United States Forestry Service  
VOCs—Volatile Organic Compounds

## **b. Online Resources**

Air Quality Health Advisories

<https://www.deq.ok.gov/air-quality-division/sign-up-for-air-quality-notifications/>

Clean Air Act

<https://www.epa.gov/clean-air-act-overview>

Federal Class I Areas

<https://www.epa.gov/visibility/list-areas-protected-regional-haze-program>

Interim Air Quality Policy on Wildland and Prescribed Fires

<https://www.epa.gov/technical-air-pollution-resources>

<https://nepis.epa.gov/Exe/ZyPDF.cgi/9100JSKT.PDF?Dockkey=9100JSKT.PDF>

National Weather Service

<https://www.weather.gov/>

Noble Research Institute

<https://www.noble.org/>

OK-FIRE

<https://okfire.mesonet.org/>

Oklahoma Administrative Code

[http://www.oar.state.ok.us/oar/codedoc02.nsf/frnMain?OpenFrameSet&Frame=Main&Src=\\_75tnm2shfcdnm8pb4dthj0chedppmcby8dtmmak31ctijurgcln50ob7ckj42tbkdt374obdcli00](http://www.oar.state.ok.us/oar/codedoc02.nsf/frnMain?OpenFrameSet&Frame=Main&Src=_75tnm2shfcdnm8pb4dthj0chedppmcby8dtmmak31ctijurgcln50ob7ckj42tbkdt374obdcli00)

Oklahoma Department of Agriculture, Food, and Forestry

<http://www.oda.state.ok.us/>

Oklahoma Department of Environmental Quality

<https://www.deq.ok.gov/>

Oklahoma Department of Environmental Quality, Air Quality Division

<https://www.deq.ok.gov/divisions/aqd/>

Oklahoma Forestry Services

<http://www.forestry.ok.gov/>

Oklahoma Prescribed Burn Association

<http://www.ok-pba.org>

Oklahoma Prescribed Fire Council

<http://www.oklahomaprescribedfirecouncil.okstate.edu/>

Oklahoma State University Extension

<https://extension.okstate.edu/>

Oklahoma Statutes

<http://www.oscn.net/applications/oscn/index.asp?ftdb=STOKST&level=1>

United States Environmental Protection Agency

<https://www.epa.gov/>

Wichita Mountains Wildlife Refuge

[https://www.fws.gov/refuge/wichita\\_mountains/](https://www.fws.gov/refuge/wichita_mountains/)



**c. Contact Information**

Oklahoma Department of Agriculture, Food, and Forestry  
Forestry Services Division  
2800 North Lincoln Boulevard  
Oklahoma City, OK 73105  
Mark Goeller, State Forester  
(405) 521-3864  
[Mark.Goeller@ag.ok.gov](mailto:Mark.Goeller@ag.ok.gov)

Oklahoma Department of Environmental Quality  
Air Quality Division  
707 North Robinson Avenue  
Oklahoma City, OK 73101  
Melanie Foster, Environmental Programs Manager  
(405) 702-4218  
[Melanie.Foster@deq.ok.gov](mailto:Melanie.Foster@deq.ok.gov)

## Appendix A: Glossary

*The following definitions have been crafted through collaboration of DEQ and ODAFF and are based on the provisions of the Oklahoma Forestry Code, 2 O.S. §§ 16-1 to 16-83 and DEQ's open burning rule in Oklahoma Administrative Code (OAC) 252:100-13.*

“Agricultural waste” means wastes associated with the production and processing of food and fiber on farms, feedlots, ranches, ranges, and forests. Examples include animal manure, crop residues, animal mortalities, runoff from feedlots, process wastewater, and agricultural chemicals and their packaging/containers.

“Airshed” means a geographical area within which the air frequently is confined or channeled, with all parts of the area thus being subject to similar conditions of air pollution.

“Air quality” means the characteristics of the ambient air (all locations accessible to the general public) as indicated by concentrations of the six air pollutants for which national standards have been established and by visibility in mandatory Federal Class I areas.

“Ambient air” means the portion of the atmosphere, external to buildings, to which the general public has access

“Class I Area” means an area set aside under the Clean Air Act to receive the most stringent protection from air quality degradation. Mandatory Class I Federal areas are (1) international parks, (2) national wilderness areas which exceed 5,000 acres in size, (3) national memorial parks which exceed 5,000 acres in size, and (4) national parks which exceed 6,000 acres in size and were in existence prior to the 1977 CAA Amendments.

“Combustible materials” means any substance that will readily burn and shall include those substances which, although generally considered as not combustible, are or may be included in the mass of the material burned or to be burned.

“Domestic refuse” means combustible materials or refuse that normally result from the function of life at a residence, such as a kitchen garbage, untreated lumber, cardboard boxes, packaging, clothing, grass, leaves, and branch trimmings. It does not include such things as tires, non-wood construction debris, furniture, carpet, electrical wire, and appliances.

“Exceptional Events” are events in which the normal planning and regulatory process established by the CAA is not appropriate.

“Fire training” means a fire purposely set as a part of an organized program of drills for the training of firefighting personnel or for testing firefighting materials or equipment, which is part of a recognized training program.

“Forest” means a tract of land that is at least ten percent (10%) stocked by trees of any size, whether of commercial or noncommercial species, or formerly having tree cover and not currently developed for non-forest use, including woodlands, woodlots, windbreaks, and shelterbelts.

“Fuel” means combustible vegetative matter such as grass, trees, shrubs, limbs, branches, duff, and stumps.

“Land clearing operation” means the uprooting, cutting, or clearing of vegetation in preparation for the construction of buildings, the development of residential, commercial, agricultural, or industrial properties, and for the construction and maintenance of right-of-ways. It does not include the clearing of vegetation

such as trimmings, fallen limbs, branches, or leaves, or other wastes from routine property maintenance activities, or the removal or destruction of human made structures.

“National Ambient Air Quality Standards” means standards for maximum acceptable concentrations of pollutants in the ambient air to protect public health with an adequate margin of safety and to protect public welfare from any known or anticipated adverse effects of such pollutants in the ambient air.

“Nuisance” means amounts of smoke in the ambient air which interfere with a right or privilege common to members of the public, including the use or enjoyment of public or private resources.

"Open burning" means the burning of combustible materials in such a manner that the products of combustion are emitted directly to the outside atmosphere.

“Owner” means the possessor of a fee interest, a tenant, lessee, occupant, or other person in lawful control of land.

“Particulate matter” means any airborne finely divided material, except uncombined water, which exists as a solid or liquid at standard conditions (e.g., smoke, dust, mist, fumes, or smog).

“Prescribed burning” means the controlled application of fire by a landowner or land manager of croplands, rangelands, grasslands, or forestlands to naturally occurring vegetative fuel under specified environmental conditions, following appropriate precautionary measures, which causes the fire to be confined to a predetermined area and accomplish land management objectives.

“Prevention of Significant Deterioration” means a requirement of the Federal CAA, which establishes the maximum allowable increases in ambient air concentrations of selected air pollutants above baseline concentrations in areas designated as Class I, Class II, or Class III.

“Products of combustion” means all particulate and gaseous air contaminants emitted as a result of the burning of refuse and combustible materials.

“Rangeland” means land on which the indigenous vegetation (climax or natural potential) is predominantly grasses, grass-like plants, forbs, or shrubs and is managed as a natural ecosystem. If plants are introduced, they are managed similarly. Rangeland includes natural grasslands, savannas, shrub lands, many deserts, tundras, alpine communities, marshes and meadows.

“Regional haze” means concentrations of fine particles in the atmosphere extending up to hundreds of miles across a region and promoting noticeably hazy conditions and widespread visibility impairment.

"Refuse" means garbage, rubbish, domestic refuse and all other wastes generated by a trade, business, industry, building operation, or household.

“Smoke Management Program” means a program that establishes a basic framework of procedures and requirements for managing smoke from fires that are managed for resource benefits. The purposes of SMPs are to mitigate the nuisance and public safety hazards posed by smoke intrusions into populated areas, to prevent deterioration of air quality and NAAQS violations, and to address visibility impacts in mandatory Class I Federal areas in accordance with the regional haze rules.

“Smoke Sensitive Area” means an area in which smoke from outside sources is not acceptable because of health or safety reasons. Reduction in visibility or deterioration of breathable air quality can have direct impacts on children, pregnant women, older individuals, people with compromised health issues, and local populations as well as impairing vision on roadways, railways, or airports.

“State Implementation Plan” (SIP) means a plan that is a CAA required document in which states adopt emission reduction measures necessary to attain and maintain NAAQS standards and meet other requirements of the CAA.

“Volatile Organic Compounds” means chemical organic compounds that participate in atmospheric photochemical reactions which are measured by a reference method, an equivalent method, or an alternative method.

“Wildfires” means any fire which is not controlled on forests, grasslands, fields, or croplands.

“Wildland” means an area where development is generally limited to roads, railroads, power lines, and widely scattered structures. The land is not cultivated (i.e., the soil is disturbed less frequently than once in 10 years), is not fallow, and is not in the United States Department of Agriculture (USDA) Conservation Reserve Program (CRP). The land may be neglected altogether or managed for such purposes as wood or forage production, wildlife, recreation, wetlands or protective plant cover.

“Wildland fire” is a general term describing any non-structural fire, which occurs in wildland or rangeland vegetation and/or natural fuels.

“Yard brush” means cut or broken branches, leaves, limbs, shrubbery, or tree trimmings. It does not include refuse, grass clippings, in-ground tree stumps, or any non-vegetative material.

## Appendix B: O.S. Title 2, Section 16, Oklahoma Forestry Code

### **§2-16-1. Short title.**

A. Article 16 of Title 2 of the Oklahoma Statutes shall be known and cited as the Oklahoma Forestry Code.

B. All statutes enacted and codified in Article 16 of Title 2 of the Oklahoma Statutes shall be considered part of the Oklahoma Forestry Code.

Added by Laws 1971, c. 349, § 101, emerg. eff. June 24, 1971. Amended by Laws 1995, c. 238, § 1, eff. Nov. 1, 1995; Laws 2001, c. 113, § 3, emerg. eff. April 18, 2001. Renumbered from § 1301-101 of this title by Laws 2001, c. 113, § 56, emerg. eff. April 18, 2001.

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### **§2-16-21. Organization of protection areas.**

The Division shall organize forest protection areas to prevent, detect, and suppress wildfires most effectively, and may employ forest rangers to have charge of its activities in each area; may subdivide each area into patrol areas; may construct lookout towers, roads, bridges, firelines, office facilities, and communication facilities; may purchase tools for firefighting as well as other necessary supplies and equipment; and may carry on all activities necessary to protect the area effectively from fires.

Added by Laws 1971, c. 349, § 201, emerg. eff. June 24, 1971. Amended by Laws 2001, c. 113, § 16, emerg. eff. April 18, 2001. Renumbered from § 1301-201 of this title by Laws 2001, c. 113, § 56, emerg. eff. April 18, 2001.

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### **§2-16-24.1. Lawful burning.**

A. It shall be lawful for an owner of croplands, rangelands, grasslands, forestlands, or other wild lands to set the croplands, rangelands, grasslands, forestlands, or other wild lands on fire for the purposes of:

1. Managing and manipulating plant species present whether grass, weeds, brush, or trees; and
2. Destroying detrimental or unwanted plants, plant parts, shrubs or trees on the croplands, rangelands, grasslands, forestlands, or other wild lands; and
3. Cedar tree eradication.

B. The provisions of this section shall not be construed to exempt or release a person from civil liability for damages or injury incurred as a result of the burn or for criminal liability as imposed pursuant to the Oklahoma Forestry Code.

Added by Laws 2001, c. 208, § 3, emerg. eff. May 14, 2001. Amended by Laws 2006, c. 268, § 1, eff. Nov. 1, 2006; Laws 2007, c. 195, § 4, emerg. eff. May 31, 2007.

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### **§2-16-25. Unlawful burning.**

A. It is unlawful for any person to carelessly or willfully burn or cause to be burned or to set fire to or cause any fire to be set to any forest, grass, crops, rangeland, or other wild lands not owned by, duly authorized by the owner or manager, or in the lawful possession of, the person setting the fire or burning the lands or causing the fire to be burned.



B. Any person who carelessly violates this section is guilty of a misdemeanor punishable by a fine of not more than Five Hundred Dollars (\$500.00), by imprisonment for not more than one (1) year, or both. Any person who willfully violates this section is guilty of a felony punishable by a fine of not more than Five Thousand Dollars (\$5,000.00), by imprisonment for not more than three (3) years, or by both.

C. Any person who carelessly or willfully burns, causes to be burned, sets fire, or causes fire to be set, any forest, grass, croplands, or woodlands not owned by, duly authorized by the owner or manager, or in lawful possession of, shall be liable in a civil action to any person injured or damaged by a fire to the amount of the injury or damages.

Added by Laws 1971, c. 349, § 205, emerg. eff. June 24, 1971. Amended by Laws 1997, c. 133, § 98, eff. July 1, 1999; Laws 1999, 1st Ex.Sess., c. 5, § 34, eff. July 1, 1999; Laws 2001, c. 113, § 20, emerg. eff. April 18, 2001. Renumbered from § 1301-205 of this title by Laws 2001, c. 113, § 56, emerg. eff. April 18, 2001. Amended by Laws 2007, c. 195, § 5, emerg. eff. May 31, 2007.

NOTE: Laws 1998, 1st Ex.Sess., c. 2, § 23 amended the effective date of Laws 1997, c. 133, § 98 from July 1, 1998, to July 1, 1999. UPDATED 2007

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**§2-16-26. Emergency drought conditions - Extreme fire danger - Burning prohibitions – Penalties - Fireworks.**

A. 1. It is unlawful for any person to set fire to any forest, grass, range, crop, or other wildlands, or to build a campfire or bonfire, or to burn trash or other material that may cause a forest, grass, range, crop or other wildlands fire in any county, counties or area within a county where, because of emergency drought conditions, there is gubernatorially proclaimed extraordinary danger from fire, unless the setting of any backfire during the drought emergency is necessary to afford protection as determined by a representative of the Division of Forestry, or unless it can be established that the setting of the backfire was necessary for the purpose of saving life or property. The burden of proving the necessity shall rest on the person claiming a defense.

2. The Division of Forestry shall advise the Governor when the lands described in paragraph 1 of this subsection in any county, counties or area within a county of this state because of emergency drought conditions are in extraordinary danger from fire. The Governor may by proclamation declare a drought emergency to exist and describe the general boundaries of the area affected.

3. Any proclamation promulgated by the Governor under authority of this subsection shall be effective immediately upon the Governor's signed approval of the emergency proclamation and shall supersede any resolution passed by a board of county commissioners pursuant to subsection B of this section. Notice of the proclamation shall occur through posting on the Oklahoma Department of Agriculture, Food, and Forestry's website and informing local news media. Evidence of publication or posting as herein provided shall be maintained by the Forestry Division.

4. When conditions warrant, due notice of the termination of the emergency shall be promptly made by proclamation, which shall be published or posted in like manner as when officially declared.

5. Any person who violates this subsection is guilty of a misdemeanor punishable by a fine of not more than One Thousand Dollars (\$1,000.00), by imprisonment for not more than one (1) year, or both.

B. 1. It is unlawful for any person to set fire to any forest, grass, range, crop or other wildlands, or to build a campfire or bonfire, or to burn trash or other material that may cause a forest, grass, range, crop or other wildlands fire in any county of this state in which the board of county commissioners of the county has passed a resolution declaring a period of extreme fire danger. As used in this subsection, "extreme fire danger" means:

- a. all three of the following conditions are present:
  - (1) severe, extreme, or exceptional drought conditions exist as determined by the National Oceanic and Atmospheric Administration (NOAA) pursuant to its criteria,
  - (2) no more than one-half (1/2) inch of precipitation is forecast for the next three (3) days, and
  - (3) either of the following:

- (a) fire occurrence is significantly greater than normal for the season and/or initial attack on a significant number of wildland fires has been unsuccessful due to extreme fire behavior, or
    - (b) where data is available, more than twenty percent (20%) of the wildfires in the county have been caused by escaped debris or controlled burning, or
  - b. temperatures for any day over the next three (3) days are forecasted at or over one hundred (100) degrees Fahrenheit.
2. A majority of the board of county commissioners may call an emergency meeting at any time to pass or revoke a resolution declaring a period of extreme fire danger in accordance with this section.
3. A board of county commissioners shall have the documented concurrence of a majority of the chiefs, or their designees, of the municipal and certified rural fire departments located in the county that a period of extreme fire danger exists prior to passage of a resolution declaring a period of extreme fire danger in the county. The resolution shall be effective for a period not to exceed fourteen (14) days from the date of passage by the board of county commissioners, unless the burn ban is removed earlier by the same method by which it was approved. If extreme fire danger conditions persist, subsequent resolutions may be passed by the board of county commissioners in the same manner as provided in this paragraph. The board of county commissioners, in the resolution, may grant exceptions to the fire prohibition based on appropriate precautionary measures.
4. Agricultural producers burning cropland, rangeland, forests or pastures as a preferred method of managing their property shall be exempt from any resolution passed by a board of county commissioners that declares a period of extreme fire danger so long as the agricultural producers have complied with the following procedures:
- a. submit a written prescribed burn plan to the local fire department and, if within a protection area, the local office or local representative of the Forestry Division of the Oklahoma Department of Agriculture, Food, and Forestry nearest the land to be burned that shall include the following information:
    - (1) the name and telephone number of the agricultural producer conducting the burn,
    - (2) the address and legal description of the area to be burned,
    - (3) the objective and purpose of the burn,
    - (4) a list of fire departments and sheriff's offices that are required to be notified pursuant to subparagraph c of this paragraph,
    - (5) a list of adjoining landowners required to be notified pursuant to Section 16-28.2 of this title,
    - (6) a description of any firebreaks used to define the boundary of the prescribed burn,
    - (7) a statement of prescribed weather conditions,
    - (8) a description of any smoke-management considerations, and
    - (9) an ignition plan for the burn,
  - b. keep a copy of the written prescribed burn plan provided for in subparagraph a of this paragraph on site when conducting the prescribed burn,
  - c. notify the county sheriff and the dispatch center of the local fire department prior to conducting the prescribed burn, and
  - d. comply with the notification procedures outlined in Section 16-28.2 of this title.
5. The prescribed burn plan provided for in paragraph 4 of this subsection shall be deemed approved seventy-two (72) hours after submission to the local fire department; provided, that the local fire department may amend the submitted burn plan within seventy-two (72) hours after submission.
6. The prescribed burn plan provided for in paragraph 4 of this subsection shall not include campfires, household trash, debris or pile burning.
7. Nothing in paragraph 4 of this subsection shall supersede requirements set by a proclamation promulgated by the Governor under authority of this section, interfere with the authority of the Oklahoma Department of Agriculture, Food, and Forestry to enforce burning laws or change the burner's liability as prescribed by law.

8. Any resolution passed by a board of county commissioners under authority of this subsection shall be effective immediately upon passage of the resolution. Notice of the resolution shall be submitted to the Forestry Division of the Oklahoma Department of Agriculture, Food, and Forestry, all local news media, local law enforcement officials, and the state headquarters of the Department of Public Safety, the Oklahoma Tourism and Recreation Department and the Department of Wildlife Conservation on the day of passage of the resolution. Evidence of publication or posting as provided in this paragraph shall be maintained by the county.

9. The provisions of this subsection may be enforced by any law enforcement officer of this state.

10. Any person convicted of violating the provisions of this subsection shall be guilty of a misdemeanor and shall be subject to a fine of not more than Five Hundred Dollars (\$500.00), to imprisonment for not more than one (1) year, or to both such fine and imprisonment.

11. The selling of fireworks shall not be considered an act in violation of this subsection.

Added by Laws 1971, c. 349, § 206, emerg. eff. June 24, 1971. Amended by Laws 2001, c. 113, § 21, emerg. eff. April 18, 2001. Renumbered from § 1301-206 of this title by Laws 2001, c. 113, § 56, emerg. eff. April 18, 2001. Amended by Laws 2006, c. 209, § 2, eff. Nov. 1, 2006; Laws 2007, c. 195, § 6, emerg. eff. May 31, 2007; Laws 2008, c. 316, § 1, emerg. eff. June 2, 2008; Laws 2010, c. 86, § 1, emerg. eff. April 12, 2010; Laws 2013, c. 299, § 1, eff. Nov. 1, 2013; Laws 2015, c. 256, § 1, eff. Nov. 1, 2015; Laws 2016, c. 351, § 1, eff. Nov. 1, 2016; Laws 2019, c. 271, § 1, eff. Nov. 1, 2019.

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#### **§2-16-27. Camp fires.**

It is unlawful for any person to willfully, negligently, or carelessly build a warming or camp fire and leave the fire unextinguished or allow the fire to spread. Any person who violates this section is guilty of a misdemeanor punishable by a fine of not more than Five Hundred Dollars (\$500.00), by imprisonment for not more than one (1) year, or both.

Added by Laws 1971, c. 349, § 207, emerg. eff. June 24, 1971. Amended by Laws 2001, c. 113, § 22, emerg. eff. April 18, 2001. Renumbered from § 1301-207 of this title by Laws 2001, c. 113, § 56, emerg. eff. April 18, 2001.

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#### **§2-16-28. Repealed by Laws 2007, c. 195, § 10, emerg. eff. May 31, 2007.**

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#### **§2-16-28.1. Procedures to lawfully burn land - Civil and criminal liability.**

A. It is unlawful for any person either willfully or carelessly to burn, cause to be burned, to set fire to, or cause fire to be set to any forest, grass, croplands, rangeland, or other wild lands, by an owner of such property, except under the following circumstances:

1. In protection areas, notification to burn shall be made by the owner to the local office or local representative of the Forestry Division at least four (4) hours in advance and verbal or written approval obtained. In addition to the notification requirements of this paragraph, any owner conducting a limited liability burn in a protected area shall comply with the provisions of Section 16-28.2 of Title 2 of the Oklahoma Statutes; or

2. Outside protection areas, in order for prescribed or controlled burning to be lawful, an owner shall take reasonable precaution against the spreading of fire to other lands by providing adequate firelines, manpower, and fire fighting equipment for the control of the fire, shall watch over the fire until it is extinguished and shall not permit fire to escape to adjoining land.

B. Nothing in this section shall relieve the person from the obligation to confine the fire to the owner's, agent's, or tenant's land.

C. The Oklahoma Forestry Code shall not apply to trimming or cutting of trees by public or private utilities for the purpose of eliminating interference with utility lines, poles, or other utility equipment.

D. 1. Except as otherwise provided by Section 16-28.2 of this title, any person:

- a. who, whether by accident, neglect or intent, causes or allows damage or injury to occur to any ranch, buildings, improvements, hay, grass, crops, fencings, timber, marsh, or other property of another person by any fire described and conducted pursuant to this section, shall be civilly responsible for such damage or injury so caused pursuant to Section 16-30 of Title 2 of the Oklahoma Statutes, and
- b. who carelessly violates this section is guilty of a misdemeanor punishable by a fine of not more than Five Hundred Dollars (\$500.00), by imprisonment for not more than one (1) year, or both.

2. In addition to civil liability, any person who willfully violates this section is guilty of a felony punishable by a fine of not more than One Thousand Dollars (\$1,000.00), by imprisonment for not more than three (3) years, or by both.

E. Fire set under the provisions of this section shall not be allowed to spread beyond the control of the person setting the fire and shall be subdued and extinguished.

Added by Laws 2007, c. 195, § 7, emerg. eff. May 31, 2007.

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**§2-16-28.2. Prescribed burns.**

A. 1. The provisions of this section apply to a prescribed burn.

2. Any owner wishing to set fire to land in order to conduct a prescribed burn shall comply with the provisions of this section.

B. 1. Within sixty (60) days prior to conducting a prescribed burn, the owner of land to be burned shall orally or in writing notify all landowners whose lands adjoin the owner's land to be burned.

2. If any landowner is burning on a large, consolidated tract of land in which there are multiple adjacent owners, only those owners with adjoining land within one (1) mile of the proposed burn area must be notified.

3. The owner shall include in the written notice or shall orally notify the adjoining landowners of the proposed date and location of the burn and a telephone number where the owner can be reached for information regarding the prescribed burn.

C. In addition to notification of adjoining property owners pursuant to subsection B of this section, the owner of the land to be burned shall complete the prescribed burn notification plan specified in subsection D of this section and shall submit such plan to the rural fire department nearest the land to be burned. If the land to be burned is in a protection area, the owner shall also submit a copy of the notification plan to the local office or local representative of the Forestry Division nearest to the land to be burned.

D. Any person wishing to conduct a prescribed burn shall complete this form, distributed by the Oklahoma Department of Agriculture, Food, and Forestry, which shall be in substantially the following form:

**PRESCRIBED BURN NOTIFICATION PLAN**

Name \_\_\_\_\_ Phone \_\_\_\_\_

Address \_\_\_\_\_ County \_\_\_\_\_

City, State, Zip \_\_\_\_\_

Ranch name, if any \_\_\_\_\_

Area to be burned \_\_\_\_\_

Approximate acres to be burned \_\_\_\_\_

Written distance description of location \_\_\_\_\_

Projected time frame \_\_\_\_\_

Date of previous burn \_\_\_\_\_

Objectives to be accomplished through the prescribed burn: \_\_\_\_\_

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Contact information:

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Rural Fire Department:

Name:

Location:

Phone No.:

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Forestry District Office (for protection areas) \_\_\_\_\_

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Adjoining landowners:

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The original copy of the form must be filed with the rural fire department nearest to the land to be burned. If conducting a prescribed burn within a protection area, a copy of the prescribed burn notification plan must be filed with the local office or local representative of the Forestry Division nearest to the land to be burned. A copy of the plan shall be retained by the owner of the land to be burned.

E. 1. Whether the land is located within or outside a protection area, the owner of land to be burned shall, within forty-eight (48) hours of conducting a prescribed burn, notify the rural fire department receiving a copy of the prescribed burn notification plan that the prescribed burn will be conducted.

2. Within a protection area, the owner of land to be burned shall also, within the time period required by Section 7 of this act, notify the local office or local representative of the Forestry Division receiving a copy of the prescribed burn notification plan.

F. A prescribed burn conducted pursuant to provisions of this section shall:

1. Be considered in the public interest and shall not constitute a public or private nuisance; and
2. Be considered a property right of the property owner if vegetative fuels are used.

G. 1. Any owner conducting a prescribed burn who is found by a court of law to have caused damages or injury as a result of accident or by ordinary negligence shall only be civilly liable for actual damages resulting from the prescribed burn.

2. Any owner conducting a prescribed burn who is found by a court of law to have committed gross negligence in conducting the prescribed burn may be found to be both civilly liable for the amount of damage done by the fire, and criminally liable pursuant to paragraph 3 of this subsection.

3. Any owner setting or causing to be set on fire land as authorized by this section, and as a result of gross negligence permitting the fire to spread beyond the control of the owner or beyond the bounds of the owner's land, shall be deemed guilty of a misdemeanor, and upon conviction thereof, be fined a sum not more than Five Hundred Dollars (\$500.00), or imprisonment in the county jail for a period not more than six (6) months.

Added by Laws 2001, c. 208, § 5, emerg. eff. May 14, 2001. Amended by Laws 2003, c. 410, § 2; Laws 2007, c. 195, § 8, emerg. eff. May 31, 2007.

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**§2-16-28.3. Oklahoma Controlled Burn Indemnity Fund.<sup>1</sup>**

A. There is hereby created within the Oklahoma Conservation Commission, the “Oklahoma Controlled Burn Indemnity Fund”.

B. The Oklahoma Conservation Commission shall administer the Oklahoma Controlled Burn Indemnity Fund. The Indemnity Fund shall be established for the benefit of landowners who perform controlled burns. The Indemnity Fund shall compensate landowners for losses incurred from a fire that spreads beyond the control of the burner, except for losses covered by insurance.

C. In order to participate in the Indemnity Fund, the landowner shall:

1. Work with the local conservation district office and the Natural Resources Conservation Service of the United States Department of Agriculture to develop a controlled burn plan based on the United States Department of Agriculture Natural Resources Conservation Service guidelines; and

2. At the time of filing the completed plan, provide payment of One Hundred Dollars (\$100.00) to the Conservation Commission.

D. The Conservation Commission shall have authority to invest the assessments. All proceeds of the investment shall be placed in the Indemnity Fund. Fifty Thousand Dollars (\$50,000.00) from the interest income for each year on the total proceeds in the Indemnity Fund shall be paid to the Conservation Commission annually for the development of controlled burn plans and for administration of the Indemnity Fund. The balance of the accrued interest each year shall remain a part of the Indemnity Fund.

E. When a loss is incurred, the landowner shall present a claim to the Conservation Commission. To verify the claim, the landowner shall present any evidence required by the Conservation Commission including, but not limited to, evidence that the landowner strictly adhered to the plan provided for in subsection C of this section. All landowner claim payments shall be made by the Conservation Commission from the Indemnity Fund as soon as practicable and not later than one (1) year following the date of claim. The price per acre of land shall be established on the day of the loss and shall be for the full market value on that day.

F. If there is an insufficient amount of funds in the Indemnity Fund to cover all claims for a certain year, payments shall be made on a pro rata basis up to one hundred percent (100%) of the total loss of each landowner. If payment is not received in the amount of one hundred percent (100%) of total loss for a certain year, then additional amounts shall be paid as funds become available in succeeding years until repayment of one hundred percent (100%) of total loss is attained. If, at any time, a landowner receives payment totaling more than one hundred percent (100%) of total loss, the excess payment shall be returned to the Indemnity Fund within thirty (30) days. Upon final payment of a claim to a landowner from the Indemnity Fund, the landowner shall subrogate the interest to the Conservation Commission in a cause of action against any and all parties, to the amount of loss that the producer was reimbursed by the Indemnity Fund.

G. The landowner shall, within sixty (60) days of the date of loss, present the claim to the Conservation Commission. Landowners may submit a written request to the Conservation Commission for a sixty-day extension of the filing period, if the landowner can show that the landowner was not provided notification and reasonable time to file a claim. If the claim of loss is not presented within the time and in the manner required, the claim shall be forever barred and the landowner shall forfeit all rights to remuneration or payment.

H. If state funds are appropriated to the Indemnity Fund, the Conservation Commission shall establish the rules and procedures necessary to ensure that the General Revenue Fund shall be reimbursed from the assessments in an amount equal to the total appropriation made to the Indemnity Fund. The reimbursement shall be made in a timely manner, provided the intents and purposes of this section to compensate landowners for losses incurred shall not be adversely affected.

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<sup>1</sup> No funding is available under the Oklahoma Controlled Burn Indemnity Fund.

I. The monies deposited in the Indemnity Fund shall at no time become part of the general budget of any state board, commission, or agency, except the Conservation Commission.

J. The Executive Director of the Conservation Commission shall investigate all potential civil action claims against persons for recovery of any losses paid by the Indemnity Fund.

K. No provision of this section shall preclude any landowner from conducting a lawful burn without participating in the Oklahoma Controlled Burn Indemnity Fund.

Added by Laws 2007, c. 175, § 1, eff. Nov. 1, 2007.

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**§2-16-29. Repealed by Laws 2001, c. 208, § 6, emerg. eff. May 14, 2001.**

NOTE: Prior to repeal this section was amended by Laws 2001, c. 113, § 1, and renumbered from § 743 of this title by Laws 2001, c. 113, § 56, emerg. eff. April 18, 2001, to read as follows:

If any fire, set as provided in Section 16-28 of this title, should by accident and without any fault or neglect of the person setting the fire, get beyond the person's control, the person shall be liable as provided in Section 16-25 of this title for all damages done by the fire, but not otherwise. If the fire should by negligence, carelessness, or by intention be permitted to spread beyond the bounds of the land mentioned in Section 16-28 of this title, then the person setting the fire shall be liable both civilly and criminally as provided in Section 16-25 of this title.

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**§2-16-30. Civil liability.**

Any person violating any of the provisions of the Oklahoma Forestry Code shall be liable for all damages caused by any violation, damages shall be recoverable in any court of competent jurisdiction.

Added by Laws 1971, c. 349, § 209, emerg. eff. June 24, 1971. Amended by Laws 2001, c. 113, § 24, emerg. eff. April 18, 2001. Renumbered from § 1301-209 of this title by Laws 2001, c. 113, § 56, emerg. eff. April 18, 2001.

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**§2-16-31. Rewards.**

The Forestry Division of the State Department of Agriculture may offer and pay rewards for information leading to the arrest and conviction of any person violating any of the provisions of the Oklahoma Forestry Code.

Added by Laws 1971, c. 349, § 210, emerg. eff. June 24, 1971. Amended by Laws 2001, c. 113, § 25, emerg. eff. April 18, 2001. Renumbered from § 1301-210 of this title by Laws 2001, c. 113, § 56, emerg. eff. April 18, 2001.

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**§2-16-32. Liability for costs of suppressing fires.**

Whoever willfully or carelessly shall cause an unlawful forest, grass, crops, or woods fire shall, in addition to all other penalties provided by law, be liable for payment of all reasonable costs and expenses incurred in suppressing the fire. The costs and expenses shall be payable to the Forestry Division or other governmental units, who shall, in the case of cooperating persons, disburse the funds in proportionate share based on standard suppression costs. When the costs and expenses are not paid within ninety (90) days after written notice of demand, it shall be the duty of the district attorney having jurisdiction to take proper legal proceedings for collection. The liability for costs of suppression shall exist whether there is criminal

prosecution or not and the liability shall extend to the person or persons causing, directing, or permitting the activity as well as to the actual violator.

Added by Laws 1971, c. 349, § 212, emerg. eff. June 24, 1971. Amended by Laws 2001, c. 113, § 26, emerg. eff. April 18, 2001. Renumbered from § 1301-212 of this title by Laws 2001, c. 113, § 56, emerg. eff. April 18, 2001.

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**§2-16-33. Penalty for mutilating or destroying state forestry or fire control signs and posters.**

Whoever intentionally breaks down, mutilates, removes, or destroys any fire control or forestry sign or poster of the Division of Forestry erected in the administration of its lawful duties and authorities shall be guilty of a misdemeanor and shall be subject to imprisonment not exceeding three (3) months, by fine not exceeding Two Hundred Dollars (\$200.00), or by both.

Added by Laws 1971, c. 349, § 213, emerg. eff. June 24, 1971. Amended by Laws 2001, c. 113, § 27, emerg. eff. April 18, 2001. Renumbered from § 1301-213 of this title by Laws 2001, c. 113, § 56, emerg. eff. April 18, 2001.

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**§2-16-34. Illegal possession of incendiary device.**

A. Any person possessing any incendiary device as defined by subsection B of this section with the intent to use the device for the purpose of burning or setting fire to any forest, grass, crops, or woodlands that the person possessing that device is not the owner of nor in possession of lawfully, as under a lease, shall be guilty of a felony punishable by a fine of not more than One Thousand Dollars (\$1,000.00), by imprisonment for not more than three (3) years, or by both.

B. The term “incendiary device” as used in this section includes, but is not limited to, any “slow match” which is any device contrived to accomplish the delayed ignition of a match or matches or other flammable material by the use of a cigarette, rope, or candle to which the match or matches are attached, or a magnifying glass focused to intensify heat on flammable material and cause a fire to start at a subsequent time, or any chemicals, chemically treated paper or material, or other combustible material arranged or designed to make possible its use as a delayed firing device.

Added by Laws 1971, c. 349, § 214, emerg. eff. June 24, 1971. Amended by Laws 1997, c. 133, § 100, eff. July 1, 1999; Laws 1999, 1st Ex.Sess., c. 5, § 36, eff. July 1, 1999; Laws 2001, c. 113, § 28, emerg. eff. April 18, 2001. Renumbered from § 1301-214 of this title by Laws 2001, c. 113, § 56, emerg. eff. April 18, 2001.

NOTE: Laws 1998, 1st Ex.Sess., c. 2, § 23 amended the effective date of Laws 1997, c. 133, § 100 from July 1, 1998, to July 1, 1999. UPDATED 2001

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**§2-16-40. Actions for damages - Pleading and proof of title to realty unnecessary – Railroads' liability for damages by fire.**

In any action instituted in any court to recover damages under the provisions of the Oklahoma Forestry Code, it shall not be necessary for any person, injured by any fire to allege in pleadings or prove on trial title to the real property over which the fire has spread, but it shall be sufficient in any action to allege and prove that the person injured was in the occupancy or possession of any ranch, buildings, improvements, hay, grass, crops, fencing, timber, marsh, or other property, claiming the right to and occupying with cattle any cattle range; it being the purpose and intention of this code to protect the possession of any person whether the person has title to the land claimed or occupied or not. Any railroad

company operating any line in this state shall be liable for all damages sustained by fire originating from operating its road.

R.L.1910, § 114. Amended by Laws 2001, c. 113, § 2, emerg. eff. April 18, 2001. Renumbered from § 748 of this title by Laws 2001, c. 113, § 56, emerg. eff. April 18, 2001.

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## Appendix C: OAC 252:100-13-7. Allowed open burning

When not prohibited by law or ordinance, the following types of burning are allowed, provided the conditions and requirements in 252:100-13-9 have been met:

- (1) **Fire training.** Open burning of human-made structures for the purpose of municipal fire department training is allowed as provided for in the Oklahoma Clean Air Act, 27A O.S., Section 2-5-106.1. For any human-made structure, the entire structure, including, but not limited to, insulation, roofing, flooring, painted surfaces and plumbing, shall be examined for the presence of asphalt, asbestos, and lead-containing materials. All asphalt, asbestos, and lead-containing materials shall be removed from the structure prior to the fire training. Asbestos inspection and removal shall be conducted according to the requirements of federal law. Federal law requires a certified asbestos inspector, and notification of any activity that would breakup or dislodge asbestos, such as stripping or removal work, at least 10 working days prior to activity commencement, as specified in 40 CFR 61.145. Industrial and commercial facilities and fire training schools may conduct on-site live burn fire training.
- (2) **Elimination of hazards.** Provided prior authorization is obtained from the local fire chief, open burning is allowed for the elimination of:
  - (A) A fire hazard that cannot be abated by any other means.
  - (B) A dangerous or hazardous material when there is no other practical or lawful method of abatement or disposal if authorization is also received from the DEQ prior to such burning.
- (3) **Recreational and ceremonial fires.** Open burning is allowed for camp fires and other fires used solely for recreational purposes, ceremonial occasions, or non-commercial preparation of food.
- (4) **Land management and land clearing operations.** Open burning is allowed for the following land management and land clearing operations.
  - (A) Fires purposely set to forest, crop or range lands for a specific reason in the management of forests, crops or game, in accordance with practices recommended by the Oklahoma Department of Wildlife Conservation, the Oklahoma State Department of Agriculture, and the United States Forest Service.
  - (B) Fires purposely set for land clearing operations if conducted at least 500 feet upwind of any occupied residence other than those located on the property on which the burning is conducted, except that such burning must be conducted in open-pit incinerators in counties or areas that are or have been designated nonattainment.
- (5) **Burning of domestic refuse.** Where no collection and disposal service is reasonably available, domestic refuse may be burned on the property where the waste is generated.
- (6) **Hydrocarbon burning.** Open burning of hydrocarbons is allowed for:
  - (A) The disposal of spilled hydrocarbons or the waste products of oil exploration, development, refining or processing operations which cannot be feasibly recovered or otherwise disposed of in a legal manner. Notice must be given to the DEQ prior to such burning.
  - (B) The disposal of waste hydrocarbons through a flare. The owner or operator shall be required to use a smokeless flare if a condition of air pollution is determined to exist by the DEQ.
- (7) **Yard brush.** Yard brush may be burned.
- (8) **Certain medical marijuana plant refuse.** Commercial licensees, medical marijuana research facilities, and medical marijuana educational facilities, as those terms are defined in the Oklahoma Statutes at Section 428 of Title 63 titled, the Oklahoma Medical Marijuana Waste Management Act (Act), are allowed to open burn the parts of the marijuana plant grown to produce medical marijuana (as prescribed in Section 429 of Title 63 of the Act) that are exempted from the term "Medical marijuana waste" as defined in the Oklahoma Statutes at Section 428 of Title 63 of the Act.

### **OAC 252:100-13-9. General conditions and requirements for allowed open burning**

The open burning of refuse and other combustible material may be conducted only if the following conditions and requirements are met:

- (1) No public nuisance is or will be created.
- (2) The burning is controlled so that a visibility hazard is not created on any roadway, rail track or air field as a result of the air contaminants being emitted.
- (3) The burning is conducted so that the contaminants do not adversely affect the ambient air quality of a city or town.
- (4) The initial burning shall begin only between three hours after sunrise and three hours before sunset and additional fuel shall not be intentionally added to the fire at times outside these limits. This requirement does not apply to the open burning allowed under OAC 252:100-13-7(2), (3), (4)(A), (6)(B), and 252:100-13-8.
- (5) An Ozone or PM Alert has not been declared for the day of the burn for the MSA or county in which the burn is to be performed. This requirement does not apply to the open burning allowed under 252:100-13-7(2), (3), and (6)(B).
- (6) Open burning of waste generated from commercial operations shall be conducted at least 500 feet from any occupied structure other than those located on the property on which the burning is conducted.

Appendix D: Oklahoma Forest Protection Areas

OFS Protection Areas



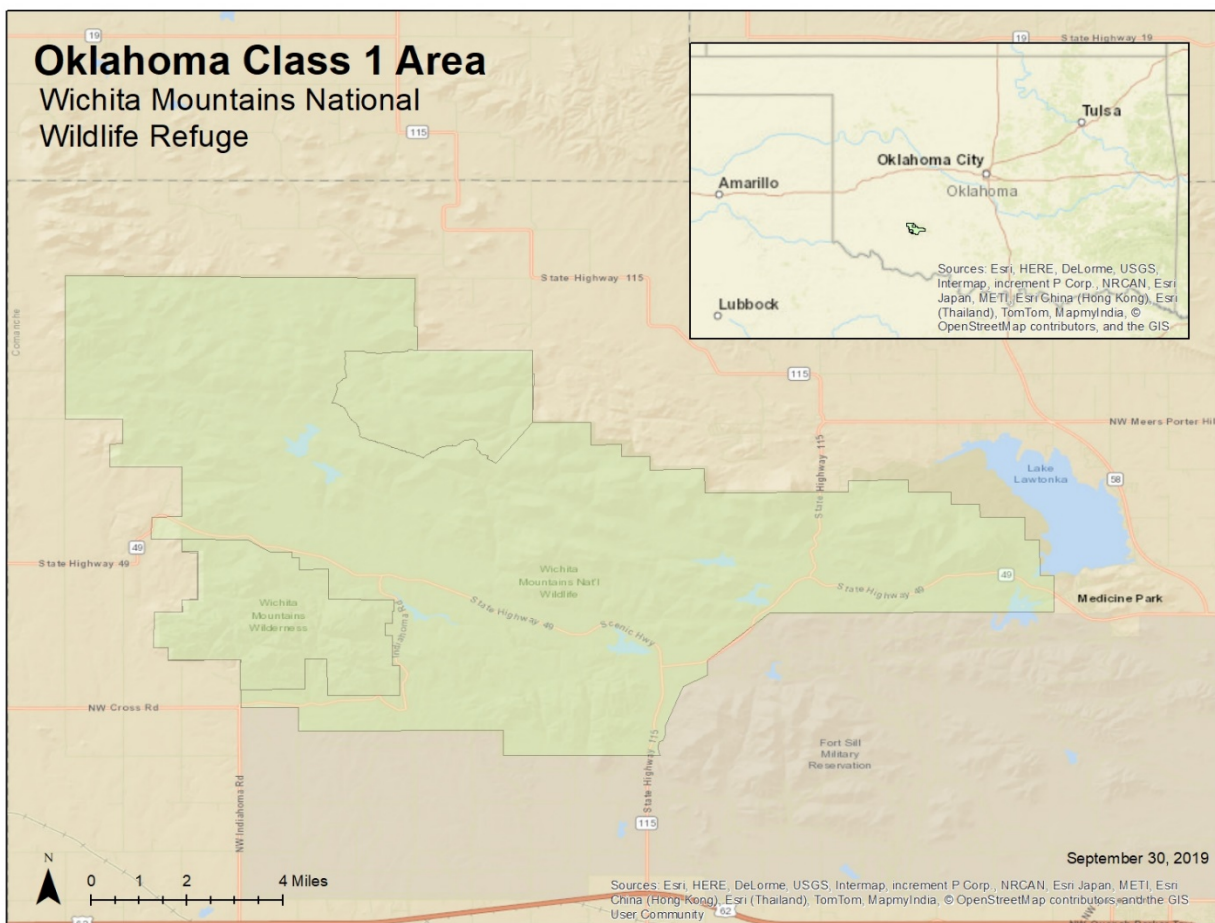
## Appendix E: Smoke Sensitive Areas

According to OAC 252:100-13-9, smoke sensitive areas include any and all:

- Roadways
- Rail tracks
- Air fields
- Cities or towns, regardless of population size

### i. Class I Areas

In accordance with the federal Regional Haze Rule, smoke sensitive areas also include Mandatory Class I areas. Currently the only Mandatory Class I Area in Oklahoma is the Wichita Mountains, a map of which appears below.

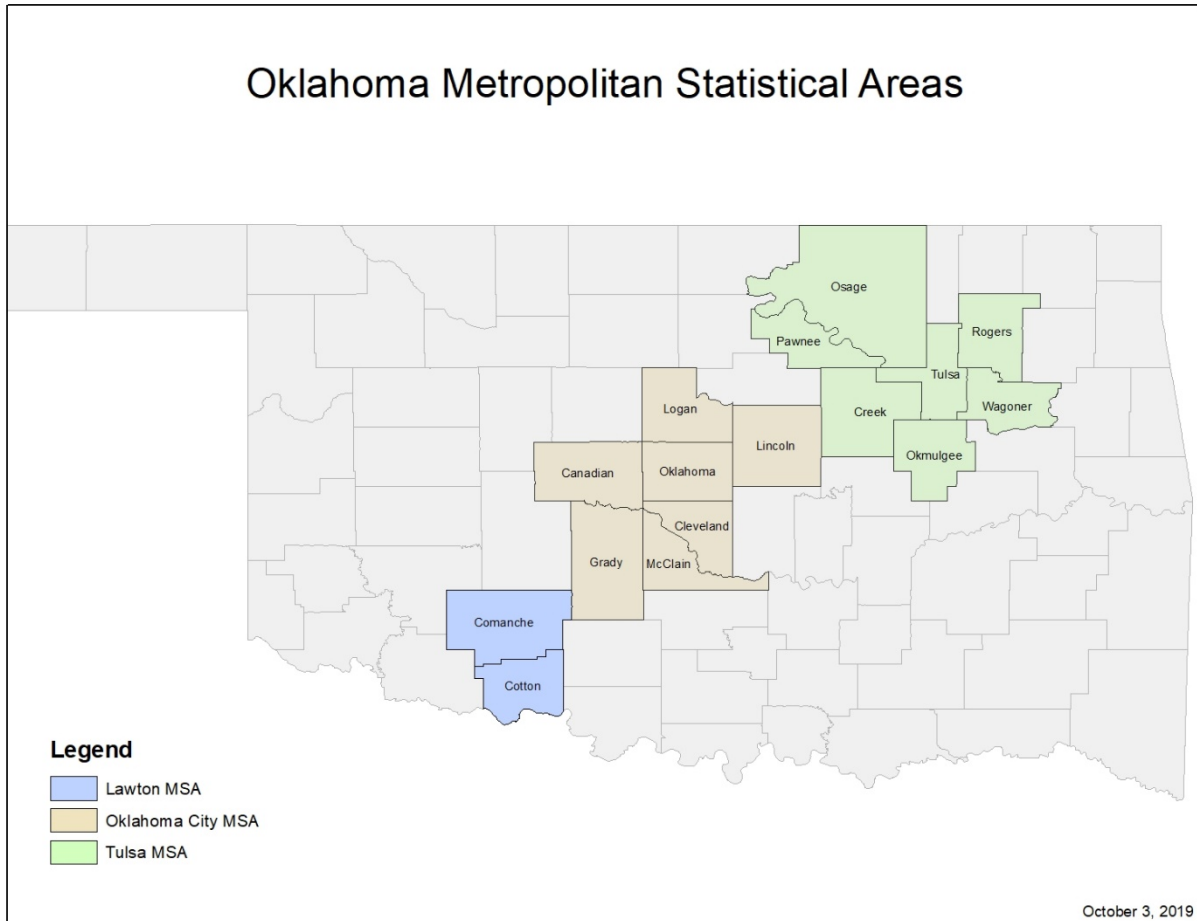




## Mandatory Class I Areas of the United States



## Appendix F: Oklahoma Metropolitan Statistical Areas



**Appendix G: Notification Requirements and Considerations  
for Safe and Lawful Prescribed Burning in Oklahoma**

# OKLAHOMA WILDLAND FIRE NOTES



## BURNING WITHIN THE OKLAHOMA LAW

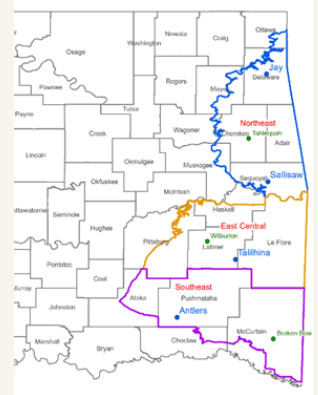
Oklahoma encompasses multiple fire-dependent ecosystems that rely on wildland fire effects to sustain native habitats and ecosystems. Careful application of fire enhances the vigor and resiliency of the varied ecosystems that support wildlife, agricultural grazing, hay production, wood products and water quality. Native Americans utilized fire to manage their environment for many of the same reasons to perpetuate the health of the land that sustained them. A longstanding trend of removing fire from fire-dependent ecosystems has left many areas in Oklahoma with suppressed habitat quality, change in cover type, declining environmental health and heightened risk of catastrophic wildfire.

Utilization of fire can be a powerful, cost effective land management practice when properly implemented. Improperly applied fire can be a devastating force that destroys property and, in the worst case threatens both lives and livelihoods. Oklahoma Forestry Services promotes the responsible use of lawful burning to effectively manage wildlands across Oklahoma.

### ***Lawfully Burning in Oklahoma***

Open burning laws are detailed in Oklahoma Statutes Title 2, Section 16 which is known as the Oklahoma Forestry Code. To begin with, the following must be taken into consideration:

1. You are legally entitled to burn the property as an owner, authorized tenant or agent of the owner/authorized tenant. Statutory Reference: O.S. Title 2 § 16-24.1
2. You shall provide adequate firelines, sufficient manpower and firefighting equipment to contain your fire to the property you are authorized to burn and stay with the fire until it is extinguished. Statutory Reference: O.S. Title 2 § 16-28.1.A.2
3. Within the designated Oklahoma Forestry Services Protection Areas of eastern Oklahoma (generally east of US Highway 69) you must also obtain approval from the Forestry Division at least four hours prior to burning. Statutory Reference: O.S. Title 2 § 16-28.1  
Current OFS Contact Info: <https://forestry.ok.gov/area-contacts>



### ***Lawfully Burning in Oklahoma with Limited Liability***

Oklahoma law distinguishes a difference between a “Controlled Burn” and a “Prescribed Burn”. In Oklahoma, a controlled burn is any legally conducted burning of land cover while a prescribed burn is a legally defined controlled burn conducted within requirements following the process described in O.S. Title 2 § 16-28.1. Legally conducted prescribed burns by law are considered to be in the public interest and shall not constitute a public or private nuisance, and be considered a property right of the property owner if vegetative fuels are used. Limited liability burning includes more specific requirements than lawful controlled burning. Specifically, there is a notification process that needs to be completed outlined below.

# BURNING WITHIN THE OKLAHOMA LAW

A limited liability prescribed burn is a controlled burn conducted according to the process described in O.S. Title 2 § 16-28.2. This process requires that a burner:

- Conduct their burn in a lawful manner, as described in O.S. Title 2 § 16-28.1
- Notify all adjoining landowners within 60 days prior to conducting the burn, either orally or in writing. In the case where the property being burned is part of a large consolidated ownership, only those landowners adjoining the property within one mile of the proposed burn need to be notified.
- Complete a notification plan available from Oklahoma Forestry Services. This plan must be filed with the fire department nearest the land to be burned. If the land is in one of the Oklahoma Forestry Services' Protection Areas, a copy must also be provided to the local Forestry Division office or representative.
- Contact the Fire Department receiving the notification plan (and Forestry Services office, if the property being burned is in the OFS organized protection area) within 48 hours of conducting the prescribed burn.

This section of the law limits liability in the event of an escaped fire to actual damages, except when the burn is found to have been conducted in a grossly negligent manner. Statutory Reference: O.S. Title 2 § 16-28.2

A Prescribed Burning Plan template including the Notification Plan for private property can be accessed at:

[http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-9065/Producer\\_burn\\_plan.pdf](http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-9065/Producer_burn_plan.pdf)

What about liability for the cost of suppressing an escaped fire?

Oklahoma Forestry Services, as well as many fire departments, can charge for the reasonable costs of suppressing an illegal, escaped controlled or prescribed burn. Statutory Reference: O.S. Title 2 § 16-32.

## ***Managing Smoke While Burning Lawfully***

Smoke from burning activities has potential for negative outcomes such as health concerns with air quality and visibility on roadways. Smoke and air quality are regulated by the Oklahoma Department of Environmental Quality through Administrative Rules. The rules for open burning are located in Oklahoma's Administrative Code at OAC 252:100-13.

According to Administrative OAC 52:100-13-7 (4): Open burning is allowed for the following land management and land clearing operations.

(A) Fires purposely set to forest, crop or range lands for a specific reason in the management of forests, crops or game, in accordance with practices recommended by the Oklahoma Department of Wildlife Conservation, the Oklahoma State Department of Agriculture, Food and Forestry and the United States Forest Service.

(B) Fires purposely set for land clearing operations if conducted at least 500 feet upwind of any occupied residence other than those located on the property on which the burning is conducted, except that such burning must be conducted in open pit incinerators in counties or areas that are or have been designated non-attainment.

# BURNING WITHIN THE OKLAHOMA LAW

According to OAC 252:100-13-9:

Open burning for land management and land clearing operations may be conducted only if the following conditions and requirements are met:

- No public nuisance is or will be created.
- The burning is controlled so that a visibility hazard is not created on any roadway, rail track or air field as a result of the air contaminants being emitted.
- The burning is conducted so that the contaminants do not adversely affect the ambient air quality of a city or town.
- The initial burning shall begin only between three hours after sunrise and three hours before sunset and additional fuel shall not be intentionally added to the fire at times outside these limits. This requirement does not apply to the open burning allowed under OAC 252:100-13-7(2), (3), (4)(A) and (6)(B).

For more information on smoke management regulations contact the Oklahoma Department of Environmental Quality at: 1-800-869-1400, or view their rules on-line at: <https://www.deq.ok.gov/air-quality-division/smoke-management/>

Refer to the Oklahoma Forestry Services Burn Ban Map, <https://forestry.ok.gov/burn-ban-info> for restrictions in areas where air quality alerts are in effect.

## ***Burning during a Burn Ban***

In general, open burning is either restricted or prohibited when a burn ban is in effect. There are two types of burn bans in Oklahoma: 1) Governor's Burn Ban, and 2) County Commissioner's Burn Ban. Additionally, local entities may impose stricter requirements on open burning.

*Governor's Burn Ban* – Controlled burning and prescribed fire are prohibited. Statutory Reference: O.S. Title 2 § 16-26.A.1

*County Commissioner's Burn Ban* – Open burning is restricted with exceptions detailed in the specific proclamation. Statutory Reference: O.S. Title 2 § 16-26.B.1

Agricultural producers burning cropland, rangeland, forests or pastures as a management practice can still burn provided that all of the following requirements are met: Statutory Reference: O.S. Title 2 § 16-26.B.4

- A written prescribed burn plan is submitted to the local fire department and, Oklahoma Forestry Services Area Office if within the Protection Area including the following information:
  - 1) Name and telephone number of the agricultural producer conducting the burn,
  - 2) Address and legal description of the area to be burned
  - 3) Objective and purpose of the burn
  - 4) List of fire departments and sheriff's offices that are required to be notified
  - 5) List of adjoining landowners required to be notified pursuant to Section 16-28.2
  - 6) Description of any firebreaks used to define the boundary of the prescribed burn
  - 7) Statement of prescribed weather conditions
  - 8) Description of any smoke-management considerations
  - 9) Ignition plan for the burn



# BURNING WITHIN THE OKLAHOMA LAW

- Additionally, burners are required to:
  - Retain a copy of the written prescribed burn plan on site when conducting the prescribed burn
  - Notify the county sheriff and the dispatch center of the local fire department prior to conducting the prescribed burn
  - Comply with the notification procedures outlined in Section 16-28.2 of this title.

## ***Fire Environment Factors into Successful Burning***

There are some environmental factors that may limit your ability to burn due to overall fire danger, air quality or ongoing wildfire activity. Remember that burning on your land may have negative impact on others as well. Please consider the following before executing a burn:

- Red Flag Warnings - Red Flag Warnings are issued whenever critical fire weather and fuels criteria are met that will support potential for extreme burning conditions. A Red Flag Warning means that a prescribed burn may require additional precautions be taken to prevent the fire from escaping control lines. A Red Flag Warning is not a Burning Ban, although many local jurisdictions will revoke or stop issuing permits under a Red Flag Warning. In addition, any person could be considered willfully or grossly negligent if a controlled burn or prescribed fire escapes control if it is ignited during a Red Flag Warning. Red Flag Warnings are issued by the National Weather Service. <https://www.weather.gov/>
- Air Quality Health Advisory - Particulate matter emitted from open burning in smoke may cause unwanted health outcomes. Monitor air quality through the Oklahoma Department of Environmental Quality at <https://www.deq.ok.gov/air-quality-division/smoke-management/>.
- Ongoing wildfire activity requiring firefighting resources to respond to wildfires may preclude your desire to burn, especially when there is elevated risk for escape. You can monitor ongoing fire activity at <https://forestry.ok.gov/situation-reports>.

## ***Additional resources for burning within the law***

Oklahoma Forestry Services

[www.forestry.ok.gov](http://www.forestry.ok.gov)

Oklahoma State University Extension

[www.extension.okstate.edu/county](http://www.extension.okstate.edu/county)

Natural Resources Conservation  
Services

[www.nrcs.usda.gov/wps/portal/nrcs/site/ok/home](http://www.nrcs.usda.gov/wps/portal/nrcs/site/ok/home)

Oklahoma Prescribed Burn Association

[www.ok-pba.org](http://www.ok-pba.org)

Oklahoma Conservation Commission

[www.ok.gov/conservation/Conservation\\_Districts/index.html](http://www.ok.gov/conservation/Conservation_Districts/index.html)





## OKLAHOMA FORESTRY SERVICES

### Prescribed Burn Plan

Burn Unit Name and Description		
Unit Name:		
Location Reference:		
Location Description (attach map): See Attached Map.		
Acreage:		
Site description:		
Sensitive areas:		
Fuel Model:		
Complexity Analysis Rating (attach Complexity Analysis Worksheet ):		
Landowner Information		
Name:		
Address:		
County:		
Contact Number(s):		
PRESCRIPTION		
Burn objectives:		
Preferred burn window:		
Desired fire behavior:		
Conditions needed:	Range	Ideal



	Temperature		
	Relative humidity		
	1 hr. fuel moisture		
	10 hr. fuel moisture		
	1,000 hr. fuel moisture		
	Mid-flame wind speed		
	Wind direction		

<b>BEHAVE run results:</b>			
Burn area fuel model(s):			Adjacent area fuel model(s):
	Head Fire	Backing Fire	Head Fire
Rate of spread (ch/hr or ft/min)			
Heat/unit area (BTU/ft <sup>2</sup> )			
Fireline intensity (BTU/ft/sec)			
Flame length (ft)			
<p style="text-align: center;">INSERT BEHAVE RUN DOMINANT FUEL</p> <p style="text-align: center;">INSERT BEHAVE RUN SECONDARY FUEL</p> <p>Smoke management* - Category Day desired for day of burn:</p> <p>* Follow guidance found in <i>Oklahoma's Voluntary Smoke Management Guidelines</i> publication.          * Attach Smoke Trajectory map to plan.</p>			
<b>Firebreak Types (include locations on map):</b>			
<b>Adjacent fuels:</b> <p style="text-align: center;">INSERT BEHAVE RUN FOR DOMINANT FUEL</p>			

<b>PROJECT RESOURCES</b>
<b>Prescribed Fire Burn Boss:</b>

<b>Minimum number of personnel required:</b>
<b>Minimum number of Ignition/Holding personnel:</b>
<b>Minimum required Suppression resources (Number, Type &amp; Kind):</b>
<b>Other personnel</b>

<b>LOGISTICS</b>
<b>Weather monitoring:</b> NWS, Mesonet, On-Site w/ Kestrel or other.
<b>Public notifications:</b> Fire Department Name/Number: <b>911 for Emergency</b> Law Enforcement Name/Number: Forestry Services Area Office Name/Number (if applicable):
<b>Ignition plan (attach map):</b> See Attached Operations Map.
<b>Contingency plans:</b> <u>Fire out-of-prescription:</u> Firing operations will be evaluated against objectives and fire will either be completed or suppressed under command of Burn Boss. <u>Minor escapes (slop overs):</u> Holding resources will notify Burn Boss and suppress fire activity outside of the control lines. Firing may be either slowed or halted until spot fires or slop overs are extinguished. <u>Moderate escapes:</u> Holding resources will notify Burn Boss. Holding resources will initiate suppression action and request personnel as needed from Burn Boss. Firing operations will be halted until escape is contained unless firing is required to maintain control line integrity. An evaluation of the prescription parameters and objectives will be completed prior to resuming firing operations. <u>Major escape:</u> Burn Boss will transition command to a suppression organization and direct resources on strategy and tactics for containing escape. Notification of local firefighting resources will be made and requests for additional resources will be coordinated through command as warranted to contain the escape.

<b>BURN PLAN REVIEW AND APPROVAL</b>
Plan Preparer: Drew Daily, Fire Staff Forester



Signature:	Date:
Burn Boss:	
Signature:	Date:
<b>TECHNICAL REVIEW</b>	
Low Complexity Rating (7-11) Reviewer with equal or Higher NCWGG Qualification	
RXB__ Signature:	Date:
Moderate Complexity Rating (12-19) Area Forester	
RXB__ Signature:	Date:
High Complexity Rating 19+ Prescribed Fire Management Task Force	
RXB__ Signature:	Date:
RXB__ Signature:	Date:



# OKLAHOMA DEPT. OF AGRICULTURE, FOOD AND FORESTRY FORESTRY SERVICES PRESCRIBED FIRE COMPLEXITY ANALYSIS AND REVIEW WORKSHEET

Analysis prepared by: \_\_\_\_\_

(Name)

(Date)

for: \_\_\_\_\_

(Landowner / Government Entity)

(Acres to be treated)

ASSESSMENT CRITERIA	VALUE				Score
	1	2	3	4	
<b>FUEL TYPE</b> (Based on BEHAVE fuel models. Select the fuel type with the highest value)	Herbaceous or herbaceous dominated, Models 1-3	Timber litter; branches and leaves, Models 8-10	Old field or shrub dominated, Models 4-7	Slash, Models 11-13	
<b>SIZE OF BURN AREA*</b> (acres)	≤ 80 ac.	81-160 ac.	161-320 ac.	>320 ac.	
<b>ESCAPE POTENTIAL</b>	Adjacent fuels are sparse, absent, or generally unburnable	Adjacent primary fuels are patchy and generally <6 in. vertical arrangement	Adjacent fuels have horizontal continuity and generally 6 – 18 in. vertical arrangement	Adjacent fuels are horizontally continuous, >18 in. vertical arrangement	
<b>PROBABILITY OF IGNITION</b>		50%	60 -70%		
<b>SEASONALITY</b>		April, May, October, November, December	January, February, March		
<b>ADJOINING VALUES / IMPROVEMENTS</b>	No adjoining private land or high value resources	Adjoining private land use primarily agricultural or timber; low density residences/ improvements	Low housing or rural subdivisions within 1/4-1/2 mile.	Moderate to high density housing developments or high value improvements within 1/4 mi.	
<b>TOPOGRAPHY</b>	Topography flat to gently rolling, 0-10% slopes	Topography gentle to moderate, 11-20% slopes	Topography moderate to severe, 21-30% slopes	Topography severe, slopes often >30%	
<b>POTENTIAL IMPACT OF SMOKE ON TRAFFIC</b>	No anticipated impact	1/4-1/2 mi. from secondary roads	<1/2 mile from major highway or <1/4 mile from secondary roads	<1/4 mile from major highway	
<b>IMPACT OF SMOKE ON RESIDENTIAL, INDUSTRIAL OR HIGH PUBLIC USE AREAS</b>	No anticipated impact	Isolated residences; Low public use.	Small rural community or groups of dwellings. Moderate public use	Large residential area or industrial site; High public use.	
<b>CONTROL LINE</b>	Mineral Soil >1.5x anticipated flame length (100% of Control Line) or Natural Fire Break	Mineral Soil >1.5x anticipated flame length (>70% of Control Line) or Natural Fire Break	Combination of Control Lines (Mowed, Wet Line, Scratch Line); <50% of line is 1.5x anticipated flame length	Wet/Mowed Line Only	
<b>PERSONNEL REQUIRED</b>	2-10	11-15	16-20	>20	
					<b>ASSESSMENT CRITERIA SUB-TOTAL</b>
<b>MITIGATION CRITERIA</b>	<b>-1</b>	<b>-2</b>			
<b>Category Day Index</b>	4	5			

<b>Surface Wind Direction with Relation to Smoke Impacts</b>	Smoke not within 45° of sensitive area	Smoke not within 90° of sensitive area		-
<b>Probability of Ignition</b>	30-40%	<30%		-
<b>Seasonality</b>	July thru October	May, June		-
<b>** Mitigation Criteria are to be subtracted from the Assessment Criteria to determine Complexity Value.</b>			<b>MITIGATION CRITERIA SUB-TOTAL</b>	-
<b>Total Complexity Assessment Value</b>				

#### REQUIRED REVIEW AND APPROVAL

**Low Complexity Rating** (Assessment Value 11-18): Equal or Higher NWCG Prescribed Fire Qualification  
**Moderate Complexity Rating** (Assessment Value 19-30): Area Forester  
**High Complexity Rating** (Assessment Value >31): \*\*\* See Below

- Prescribed burn plans written **for lands inside the three Eastern Areas** where OFS conducts the burn or the landowner conducts the burn without OFS assistance shall be reviewed by the appropriate Forester V.
- Prescribed burn plans written **for lands in the Central and Western Area** where OFS conducts the burn or the landowner conducts the burn without OFS assistance shall be reviewed by the Rx Fire Manager.

\*\*\*Prescribed burns with the following characteristics are automatically routed to the Rx Fire Manager for review and potential recommendation to the Prescribed Fire Management Task Force for approval regardless of Complexity Analysis Rating:

#### Rx Fire Manager Review:

- Burns performed by OFS resources **in the Central and Western Areas**

#### Rx Fire Manager Review Review plus either Area Forester or Fire Management Chief Review:

- Burns exceeding 1,000 acres in size
- Burns with a predicted NFDRS Burning Index above 45 and/or Probability of Ignition is >70
- Burns with aerial resources assigned

#### Prescribed Fire Management Task Force:

- Burns with especially high visibility (e.g. within or adjacent to a large metro area)
- Burns with elevated socio/political interest

**ASSESSMENT CRITERIA DESCRIPTIONS:**

**FUEL TYPE:** Fuel type contribution to complexity is based upon relative difficulty of suppression, likelihood for sustained fire activity and mop-up requirements.

**SIZE OF BURN AREA:** Increasing unit size generally translates into an expansion of resource requirements, spatial separation of resources and increased patrol activity.

**ESCAPE POTENTIAL:** Escape potential is somewhat subjective, however is based on the general receptiveness of fuels outside of the burn unit as well as potential fire behavior in those fuels including a heavy weighting for rate of spread.

**PROBABILITY OF IGNITION:** Probability of ignition is identified as both a factor of complexity when elevated and also a mitigating factor when suppressed. PIG is a calculation derived from dry-bulb temperature, fine-dead fuel moisture and shading. Calculated PIG 50% or greater are associated with receptive fine fuels and increased fire behavior. Burning when calculated PIG is greater than 70% may require additional holding/contingency resources or avoided when significant threat to areas outside of the burn unit are present.

**SEASONALITY:** Seasonality is identified as both a factor of complexity during dormant season and mitigating factor during growing season. The dormant season is typified by cured grasses absent or primarily absent of live fuel moisture and deciduous woodlands absent of canopy cover. Growing season grasses are a mix of dead thatch dominated by live fuels serving as a heat sink and deciduous leaf cover providing shading.

**ADJOINING VALUES / IMPROVEMENTS:** Adjoining land uses contribute to complexity when the use and/or value is significant including housing, industry, timber, agriculture, etc. interests are present.

**TOPOGRAPHY:** Topography generally results in increasing complexity as slope increases resulting in equipment limitations and difficulty of resource mobility.

**POTENTIAL IMPACT OF SMOKE ON TRAFFIC:** The impact is based on distance from roadways and traffic volume.

**IMPACT OF SMOKE ON RESIDENTIAL, INDUSTRIAL OR HIGH PUBLIC USE AREAS:** An estimation on the potential impact of smoke related issues including health and visibility where there is a likelihood of people present. As the number of people affected increases it can be expected that the likelihood of health related smoke sensitivity, visibility and smoke related damage will increase.

**CONTROL LINE:** Control lines that are not able to be constructed at a width of 1.5 times the anticipated flame length and to mineral soil offer potential for increased holding requirements.

**PERSONNEL REQUIRED:** Span of control is to be considered when determining the total personnel required to accomplish incident objectives. Prescribed burns requiring significant holding, patrol and/or contingency will require sufficient personnel and associated overhead to accomplish the incident objectives.

**MITIGATION CRITERIA DESCRIPTIONS:**

**CATEGORY DAY INDEX:** Category Day Index is an indicator of smoke dispersal related to ventilation rate. Atmospheric conditions on days rated CAT4 or CAT5 offer significant opportunity for very good to excellent smoke dispersal reducing complexity associated with smoke generation. It is noted that CAT5 is also associated with strong convection and increased fire behavior.

**SURFACE WIND DIRECTION:** Surface winds that will initially move smoke away from sensitive areas including residences and/or roadways reduce complexity by alleviating initial smoke impacts.

**PROBABILITY OF IGNITION:** Probability of ignition is identified as both a factor of complexity when elevated and also a mitigating factor when suppressed. PIG is a calculation derived from dry-bulb temperature, fine-dead fuel moisture and shading. Calculated PIG 50% or greater are associated with receptive fine fuels and increased fire behavior. Burning when calculated PIG is greater than 70% may require additional holding/contingency resources or avoided when significant threat to areas outside of the burn unit are present.

**SEASONALITY:** Seasonality is identified as both a factor of complexity during dormant season and mitigating factor during growing season. The dormant season is typified by cured grasses absent or primarily absent of live fuel moisture and deciduous woodlands absent of canopy cover. Growing season grasses are a mix of dead thatch dominated by live fuels serving as a heat sink and deciduous leaf cover providing shading.

## Burn Day Checklist (Go/No Go):

\_\_\_\_\_ Notifications made

\_\_\_\_\_ All equipment present and in working order

\_\_\_\_\_ Personnel on-site with proper personal protective equipment

\_\_\_\_\_ Personnel briefed on procedures and contingencies

\_\_\_\_\_ Personnel briefed on communications and safety zones

\_\_\_\_\_ Test burn produces desired activity  
(Activity based on prescription)

\_\_\_\_\_ Backup resources available

\_\_\_\_\_ Weather within prescription Time: \_\_\_\_\_

Wind speed: \_\_\_\_\_ Direction: \_\_\_\_\_

Temperature: \_\_\_\_\_ RH: \_\_\_\_\_

\_\_\_\_\_ First aid kits fully stocked

Emergency medical services: \_\_\_\_\_  
Name Phone

I certify that all items on the checklist are "go" for the burn:

\_\_\_\_\_  
Date:  
Prescribed Fire Burn Boss

## POST-BURN EVALUATION

### Weather

Pre-burn	Time: _____
	Temperature: _____
	Relative humidity: _____
	Wind speed: _____
	Direction: _____
Post-burn	Time: _____
	Temperature: _____
	Relative humidity: _____
	Wind speed: _____
	Direction: _____

### Fire behavior

Rate-of-spread: _____
Flame lengths: _____

Circumstances of any erratic fire behavior:

Smoke dispersal during burn:

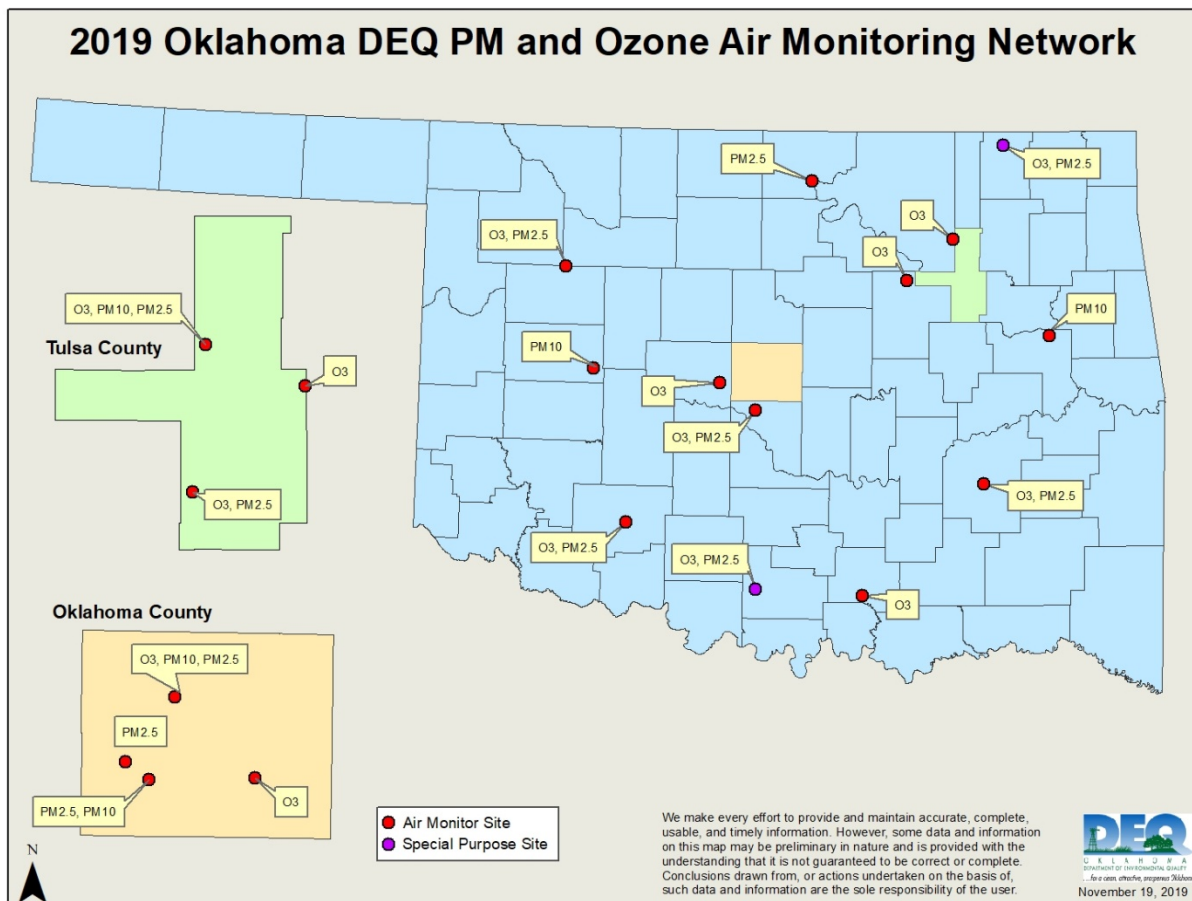
Percent of area burned:

Amount of fuel consumed:

Any public interest during burn – pro or con:

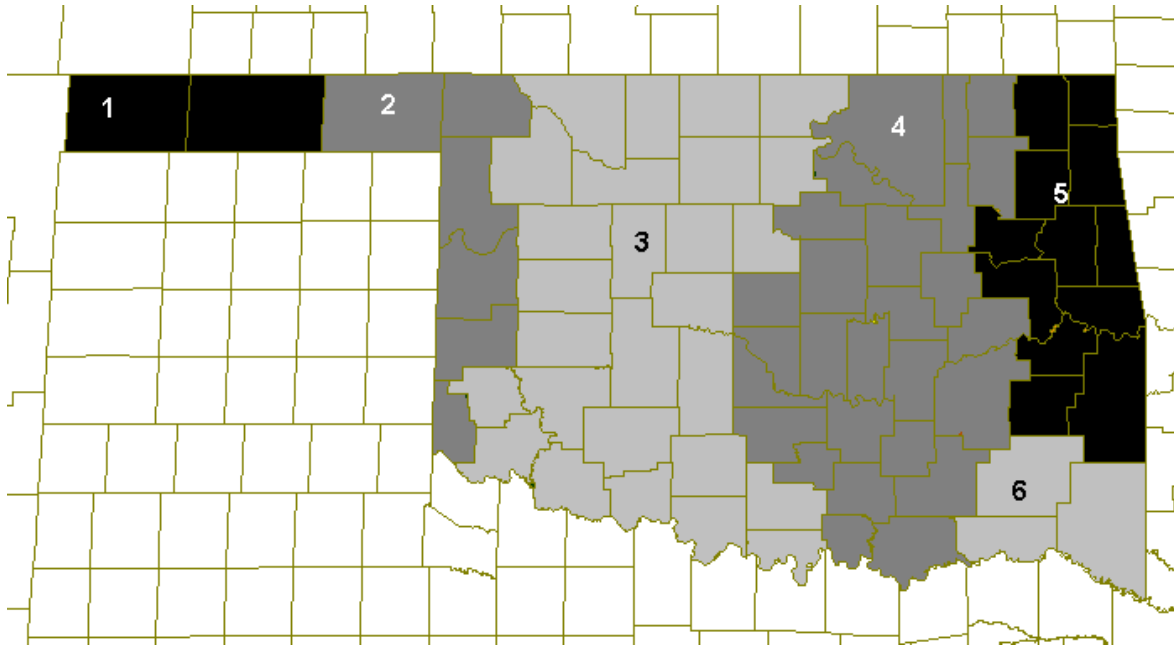


## Appendix H: 2019 Oklahoma DEQ PM and Ozone Air Monitoring Network



## Appendix I: Oklahoma Airsheds

The state of Oklahoma is generally comprised of six (6) airsheds. It is the nature of airsheds to fluctuate over time and have no distinct dividing border between them. For these reasons, the following map is provided as basic guidance only and meteorological conditions should be monitored and analyzed before, during, and after a prescribed fire for proper smoke management. The six airsheds depicted below represent common air movement patterns across the state and geographical features. The airsheds and regions are based on observation and monitoring data. For ease of use, boundaries have been approximated to the nearest county line.



Oklahoma lacks any true airsheds; air mixes readily from zone to zone.

**Zone 1** comprises Cimarron and Texas Counties. This zone consists mostly of High Plains short grass prairie and ranks as the highest and coolest and is based on precipitation. Due to high elevation, this zone receives westerly winds more frequently than other zones. The wet season runs May through August, but the rain falls mostly as high-based thunderstorms, and the humidity is not sufficient to prevent cool nights, even in mid-summer. Winters run September through May; although the conditions are mostly mild and dry, the area of this airshed can have occasional wind-driven snowstorms. Agriculture of this region includes dry-land and irrigated winter wheat, grain sorghum, cattle ranching and hog production. Some areas have stubby Western pines. The foothills of the Rocky Mountains begin just west of this zone. The Southwestern rains typically bring afternoon thunderstorms during the summer however, heavy rainstorms occur only sporadically usually interspersed with lengthy dry periods even during the wet season. This zone receives precipitation during August comparable to that in Zone 6.

**Zone 2** contains mostly counties adjoining the Texas Panhandle. This zone lies at considerably lower elevation than Zone 1 and has correspondingly warmer temperatures. The wind blows mostly from the south, and vigorous turbulence that accompanies high wind occasionally lifts blowing dust and sand. This zone receives less precipitation than Zone 3 with a more pronounced winter dry season. Unlike Zone 1, this zone experiences a midsummer dry season and a secondary wet season during autumn, but these seasons occur less regularly than found in Zone 3. Agricultural production consists primarily of cattle and winter wheat. However, the lack of moisture and sandy soils is more of a challenge to farmers than those in Zone 3. This zone contains numerous buttes and some higher ridges between river valleys, but even these higher areas lie mostly lower than the High Plains of Zone 1. This zone often finds itself behind dry lines in springtime severe-weather situations, and experiences a very hot, dry wind on many afternoons.

**Zone 3** contains wide-open, gently rolling prairie that hosts moderately tall grass and some scrub with trees in river valleys and naturally moister areas although there is not sufficient moisture for commercial forests. Strong southerly winds typically sweep the prairie, however, the winds occasionally reverse to northerly, especially during winters. Dry weather usually prevails, but thunderstorms can produce heavy rain (and hail) during the spring, especially May and June. Summers often feature more intense heat than the other zones experience, searing sun, little rain, and strong southerly breezes. The secondary wet season follows in autumn, and cooler temperatures allow the soils to absorb moisture from any rainfalls. Winter typically features mild, dry weather with strong southerly winds, occasionally shifting to strong northerly winds, yielding intense cold, and infrequent snowfall. This zone contains the Wichita Mountains and some other isolated high points and steep terrain.

**Zone 4** contains most of Oklahoma City and Tulsa and the “Cross Timbers” region of short, scrubby trees between these cities and south of the Flint Hills region near the Kansas border. It represents a transition zone between the subtropical humid climates of the American South and the semiarid climates of the American Southwest. Open areas mostly support cattle grazing and crop cultivation. The Arbuckle and Jack Fork Mountains lack sufficient height or continuity to impede wind flow. This zone generally features lighter winds, more humidity, and less intense daytime heat than does Zone 3. Annual precipitation generally averages double that of Zone 2, near or greater than forty inches annually. Humid air masses from the Gulf of Mexico invade this zone more frequently than the zones farther west and may last longer. Winter features much less precipitation than in Zones 5 and 6. The spring wet season typically starts in March, much earlier than Zone 3. Much of the precipitation in spring occurs as thunderstorms, although mesoscale convective complexes sometimes produce heavy rains that may continue for several hours. Summers feature hot, humid conditions, in comparison to hotter but somewhat drier conditions in Zone 3. Autumn features a secondary wet season with thunderstorms, cold fronts, and tropical moisture plumes. Zone 4 bulges somewhat to the west during summer and features an easterly component south of Oklahoma City but curves slightly to the west as it gains latitude.

**Zone 5** contains the lush forests of the Ozark Mountains. This region features a subtropical humid climate typical of the American South. Although this zone lacks the pronounced winter dry season of the zones farther west, less precipitation falls in the winter than during the other seasons. However, the amount of rain is sufficient for the lower evapotranspiration demand. Winter precipitation can sometimes take the form of heavy snow or ice. The heaviest precipitation occurs during the spring; however, this zone lacks the summer dry season characteristic of all other zones except Zone 1 due to terrain. Summertime heat usually occurs less intensely here than in other zones except Zones 1 and 6. The Ouachita Mountains usually block wind flow from Zone 6 to Zone 5, resulting in the flow of the channels up the Arkansas River from Little Rock through Fort Smith toward Muskogee before turning northward. Wind also mixes between Zone 5 and Zone 4. Mountain winds and other terrain effects locally complicate wind flow in this zone, especially during thunderstorms.

**Zone 6** lies upwind of the Ouachita Mountains and mainly experiences southerly winds. The peaks of the Ouachita Mountains form the northern border of Zone 6 and effectively block most southerly and northerly winds. The mountain blockage creates an area of light winds, especially in the eastern parts of the zone. In spite of the relatively high humidity, nights are generally calm and cool. The Ouachita Mountains also block the advance of cold air from the north, however, the Kiamichi Mountains in the western part of the zone are not as effective at blocking cold air from the west. This zone experiences a subtropical humid climate characteristic of the American South. There are large forests of tall, rapidly growing, straight-trunked trees that are the most valuable agricultural product. The terrain features both flat, swampy areas and steep slopes of rocky soils. The mountains usually prevent ice and snow storms from reaching this zone. Winter lacks the dryness of the other zones and instead features occasional intense rains as a result of robust precipitation systems. August ranks as the driest month of the year in this zone, but still features more moisture than August does in Zones 2, 3, and 4. Although this zone contains the lowest elevations in the state, its ample humidity usually prevents the intense heat characteristic of the other zones.