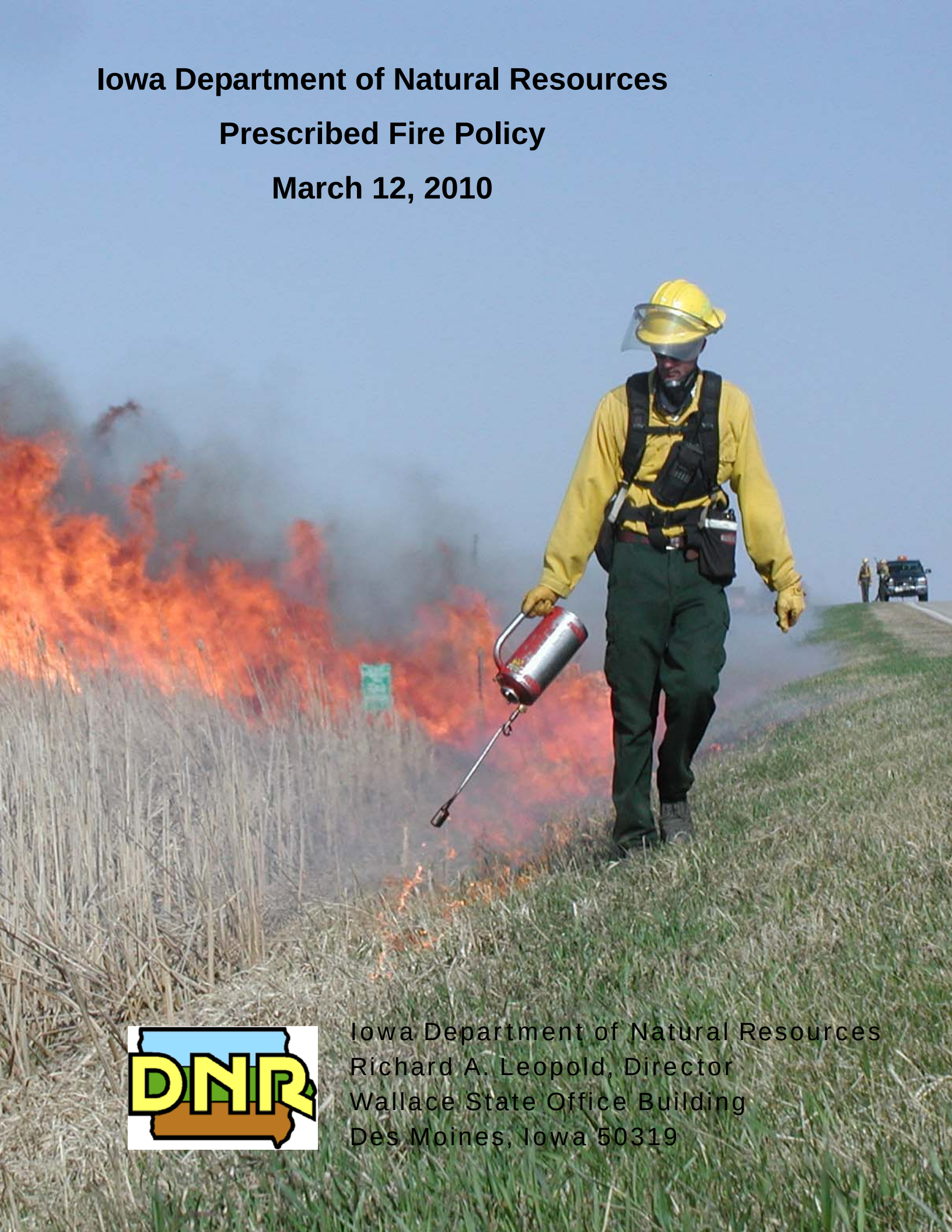
Iowa Department of Natural Resources

Prescribed Fire Policy

March 12, 2010



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Iowa Department of Natural Resources Prescribed Fire Policy
Date: March 12, 2010

The most current version of this Policy will always be the version found on the DNR website.

Section 1: Purpose

The purpose of the Iowa Department of Natural Resources' Prescribed Fire Policy (Policy) is to guide the effective and safe use of fire as a tool for ecological restoration and maintenance of Iowa's natural areas on state owned, leased or managed lands, and private lands for which landowners seek the advice and consult of the DNR and declare their intention to use fire as a management tool. Prescribed fire is any fire ignited by intentional management actions under specific conditions to meet defined objectives and undertaken in accordance with a burn plan developed for that area. The use of prescribed fire contributes to the DNR goals of improving habitat and forest health by implementing fire treatments that approximate the natural ecological role of fire, and conserving resources that DNR holds and manages for the public trust.

Section 2: Scope

This Policy will define the base requirements for both DNR-approved burn plans and the participation of DNR employees in developing and executing the approved burn plans on state-owned and/or managed lands and private lands.

Section 3: Roles and Qualifications

DNR staff, volunteers and contractors participating in prescribed burning activities shall have training and experience commensurate to their involvement in the prescribed burn. Training and experience requirements will vary based on the individual's level of involvement.

Physical fitness requirements will be specified by the individual's condition of employment or determined by their supervisor where no employment condition exists. Individuals working directly on a prescribed fire should be capable of walking two miles in less than 35 minutes. Employees are responsible for informing their supervisor if they are not capable of performing that task or of any condition that may limit them in performing a job on a prescribed burn. In addition, it is the responsibility of the employee's supervisor, lead worker or the Burn Leader to take preventive action in situations where an employee appears physically incapable of performing without risk of injury due to work demands.

Required Training and Experience:

All permanent DNR employees working on prescribed burns shall successfully complete the following National Wildfire Coordinating Group (NWCG)[1] training courses or other equivalent state or federal training; Basic Incident Command System (I-100), Fire Fighter Training (S-130) and Wildland Fire Behavior (S-190). DNR employees participating in prescribed burns must also complete a fire training refresher course at least once every two years. The Burn Leader shall make appropriate assignments to personnel and volunteers who have not completed the above courses. Such assignments shall be based on the individual's observable or known physical condition, stated experience, level of training and observable leadership qualities. Additional training beyond the minimum requirements may be prescribed by the employee's supervisor to build upon and enhance prescribed burning skills and to meet specific DNR needs. All participants are responsible to document their training and must be able to provide proof of such training upon the request of a supervisor or a Burn Leader overseeing the participant.

[1] NWCG training programs and tools are used by a number of governmental and non-governmental organizations, including without limitation US Forest Service, US Fish & Wildlife Service, US Department of the Interior, many states and the Nature Conservancy.

Requirements for writing and Approving Burn Plans:
Supervisors will designate who will write and approve burn plans based on individual training and experience level. Prescribed Burn Plans (Burn Plans) will be written in accordance with the form found in *Attachment A*. Employees' Burn Plans will be reviewed by their supervisors or their supervisors' designees.

Requirements and role of the Burn Leader
The Burn Leader is responsible for all activities relating to the on-site execution of the burn, including review of the burn plan, completion of the Pre-Burn and Go/No-Go Checklist *(Attachment C)*. The Burn Leader shall evaluate the level of burn crew expertise needed for particular burns and will ensure the appropriate crew is in place prior to instigating such a burn. In addition to the minimum training required for all DNR employees participating in prescribed burns (I-100, S-130 and S-190), a Burn Leader must have participated in five (5) prescribed burns and served an apprenticeship under a Burn Leader on two (2) burns prior to a first assignment as a Burn Leader.

Volunteers
Non-DNR personnel may be involved in burning on DNR owned and/or managed lands, or on private lands when DNR personnel are acting in leadership capacities for the burn. Non-DNR personnel may include volunteers, volunteer fire departments or non-profit organizations. In such instances, they will work under the direct oral and visual control and supervision of the Burn Leader and shall be required to sign the appropriate volunteer forms and agree to follow the direction of the burn leader. The Burn Leader shall have the right to exclude any person, including non-DNR personnel, from participating in a burn, if in their sole opinion, the participant is not following this Policy or their participation may otherwise detrimentally impact their own safety, the safety the burn crew, the public's safety or burn plan implementation.

Section 4: Training
DNR shall provide the requisite training and opportunities for experience to its employees as part of their professional development plans when prescribed fire participation is a part of an employee's position description or is otherwise an expected activity for that employee. This Policy encourages the different sections, bureaus and divisions of the DNR to coordinate their interests in and share their respective expertise with regard to prescribed fire.

Section 5: Safety Equipment
The safety of personnel and volunteers is paramount in this Policy. All DNR personnel working on prescribed burns near open flames shall have access to and wear National Fire Protection Agency or NWCG approved fire resistant clothing, leather gloves, leather boots, and appropriate head and eye protection. Volunteers not wearing the protective gear listed above may participate directly on the burn provided they wear 100% cotton clothing and leather boots and gloves and appropriate head and eye protection.

All participants wearing clothing made of synthetic fibers (e.g., nylon, lycra, etc.) or common permanent-press materials shall be **prohibited** from working near open flames from the time the prescribed burn is initiated until the Burn Leader declares that the fire is extinguished. These materials may melt or stick to the skin when exposed to flame or heat.

The Burn Leader shall ensure that all personnel and volunteers working on prescribed burns shall have access to drinking water.

The Burn Leader shall assign radios, cell phones, or any other equipment as necessary.

Section 6: Burn Plans

The Burn Plan is an important document in the fire-use planning process that is completed prior to each specific prescribed burn. It is a field document that sets forth the details for conducting a particular burn treatment on a specified site to ensure the burn will be ecologically and technically feasible given the specific characteristics of the site. The details that are included in this plan are those necessary to conduct a safe and effective burn that will accomplish the specific goals and objectives specified in the Burn Plan.

This Burn Plan may be adapted in the field on the day of the burn under circumstances that require modification to insure safety or the achievement of the stated goals, provided the Go/No Go Checklist is satisfied. The Go/No Go Checklist is discussed more in Section 7 of this Policy.

A Prescribed Burn Plan form is included at the back of this Policy and shall be used for DNR-sponsored prescribed burns (*See Attachment A*). The Burn Plan must be adhered to during the burn to the extent practicable and must include, at a minimum, the following information, which is discussed in detail below:

1. Area background information.
2. Area/site objective of the burn.
3. Site-specific fire operations.
4. Burn Plan execution.

Area Background Information
This portion of the Burn Plan shall include a general description of the area including location, topography, vegetation, conservation targets or species of concern. A Burn Plan may be specific to a burn unit or to a whole property comprised of several burn units.

Area/Site Objectives of the Burn
The Burn Plan shall state an objective or group of objectives that the Burn Plan should achieve. The objectives shall reflect the DNR's conservation interest at the site, which specifically identifies how the prescribed fire will improve area biodiversity, overall ecological health, and/or reduce hazardous fuels. These goals will assist the burn plan writer in defining management actions that will contribute to those goals and will assist the Area Manager in monitoring how successful management has been. Ecological goals should focus on the desired results of fire management.

Site Specific Information for Fire Operations
This section of the Burn Plan shall address how burns will be accomplished. It should outline logistics that pertain to all burn sites and should include both background information about the site and risk analysis taking those site characteristics and objectives outlined above into account. Logistics addressed here should include:

- Target dates for the burn to be conducted.
- Location of the burn, as shown on high-quality maps that will orient the reader and fully illustrate the features of the burn. GIS maps are appropriate. The necessary maps shall include sufficient detail to show the following:
  - Location of site within the county.
  - Property boundaries.
  - Access and Trails.

- Targeted burn sites.
- Smoke sensitive areas (housing, livestock facilities, hospitals, businesses, schools, airports, nursing homes and roads etc.) *(See Attachment B)*
- Species of Concern: plant and animal.
- Alternate local water sources / dry hydrants.
- Firebreaks already present or that will be developed, alternative firebreaks, and who will be responsible to develop them.
- Adjacent land use / fuels
- Proposed ignition pattern and sequence

♦ Minimum number of participants needed.

♦ Equipments necessary to facilitate the burn.

♦ Preferred wind and weather conditions

♦ Radio frequencies to be used.

♦ Communication needs, including:

- Notifications required by law,
- Notifications to local residents,
- Notification to the Environmental Services Division's local field office and
- Notifications to emergency responders who may be upon called to assist.
- Location and phone number of nearest medical emergency facility.

♦ Special safety concerns not otherwise addressed in the Burn Plan.

- Primary constraints to burning operations at the site, including smoke management problems, legal restrictions or requirements, need for permits, hazards, public relations problems, and proximity to neighbors, and how they have been addressed. This section should also consider special requirements for federal lands or lands subject to special agreements.
- Significant hazards and limitations associated with the burn site, including adjacent fuels, topography, size and fire treatment objectives.

♦ Smoke Management Plan.

♦ Contingency Plan (more information is available in Section 9).

♦ Recommendations for post-burn reporting and monitoring.

Burn Plan Execution
This portion of the Burn Plan will describe how the Burn Leader shall execute the approved Burn Plan and shall complete the Pre-Burn Checklist, as described in Section 7 of this Policy, including the Go/No-Go checklist contained therein, prior to the burn.

Section 7: Pre-Burn and Go/No-Go Checklist

The Pre-Burn Checklist is a document to be used prior to initiating a burn for the purpose of insuring that the proper protocol is being followed and as a final checklist to eliminate overlooking any important details. The Pre-Burn Checklist also serve as an educational tool for all burn crew members to fully understand their specific duties, the Burn Plan, procedures, smoke management

issues and safety measures. The Burn Leader shall use the Pre-Burn Checklist provided in this Policy *(See Attachment C)* prior to every burn.

The Burn Leader shall assess factors on the day of the burn that may influence the fire behavior, such as weather, quality of the crew, and allocation of emergency resources. The Burn Leader will assess the fire resources on the day of the burn to determine if the appropriate resources are available to the burn and document those determinations in the Pre-Burn Checklist.

If any element of the Go/No-Go portion of the Pre-Burn Checklist is not satisfied, the Burn Plan shall not be deemed approved by the DNR, and either the Burn Plan must be changed to satisfy the Pre-Burn Checklist or the burn must be postponed.

Section 8: Burn Report

The Burn Report shall include records of each completed prescribed burn. The format for the Burn Report is included at the end of this Policy *(See Attachment D)*. The Burn Leader or the Area Manager shall complete the Burn Report upon completing the burn. (The Area Manager should retain copies of the Prescribed Burn Plans and the Burn Reports.) The Burn Report shall include the following information, which is discussed more thoroughly below:

1. Operational Data.
2. Weather and vegetation conditions.
3. Fire summary.
4. Impacts to the site.

Operational Data

The Burn Leader shall summarize the operational data related to the burn, including the date of burn; time set; time completed; time mop-up completed; acres burned; name of burn plan writer; name of Burn Leader; and the total number of personnel in the crew.

Weather and Vegetation Conditions

The Burn Leader shall summarize the weather and vegetative conditions prior to and just after the burn, including the vegetation stage; wind speed; wind direction; mixing height (if available); temperature; and humidity.

Fire Summary

The Burn Leader shall summarize the conditions and quality of the fire, including type of fire used, fire escape problems, smoke behavior and impacts, immediate observed results of the prescribed burn, and any recommendations for future burning or management.

Impacts to the Site

The Area Manager shall summarize the short and long-term post-burn fire effects in relation to burn objectives on species and community responses as deemed necessary through a period of time identified in the Burn Plan. The summary should be well-documented and may include photographs.

Section 9: Wildfires, Escaped Prescribed Burns, and Reporting Requirements.

Any fire, regardless of ignition source, which is unplanned (other than minor slopovers), has escaped control, or is not authorized under state law or local ordinances, is considered a wildfire. An escaped fire is when there is fire outside the prescribed burn perimeter that requires additional resources beyond those planned to be on-site in the Burn Plan, or which causes significant property damage. Fire that crosses the fire line and is contained with resources on-site is not an escaped fire.

Every DNR Burn Plan must include a *Contingency Plan* (e.g., trigger points, water sources, other firefighting resources available, emergency contact numbers, rendezvous locations, safety zones, etc) that addresses what action must be taken in the case of a wildfire resulting from the DNR's activities. In the event of unplanned or escaped fire, once the emergency is past and the fire is extinguished, the Burn Leader will notify his/her immediate supervisor of the event and will provide the supervisor with copies of the Burn Plan, Pre-Burn Checklist and Go/No-Go Checklist, and the Burn Report, along with any other supporting documentation that may be necessary to investigating the event and providing to legal counsel if necessary.

Prescribed Fire Accomplishment Reporting
Bi-Annually, at the end of June and November, each Burn Leader is responsible for preparing and submitting a seasonal report showing their prescribed burn accomplishments. *Attachment F: Iowa Prescribed Fire Report Form* will be used to report the data for each prescribed fire. This report is to be sent to the Division of Forestry – Fire Supervisor.

Wildfire Reporting
Generally, wildfire reports are submitted by the responding fire departments. However, if any DNR activities result in a wildfire, the Burn Leader shall complete *Attachment G: Iowa Wildfire Report Form* and submit it to the Division of Forestry – Fire Supervisor.

Section 10: Special Considerations for DNR Assistance on Private Lands

DNR supports and encourages the use of prescribed fire on private lands and other public lands when used for habitat or forest management goals which are consistent with the State Wildlife Action Plan or the Forest Resource Assessment and Response Plan. Burning on private lands enhances DNR activities on adjacent lands under its jurisdiction, allows for valuable demonstration of its benefits, and promotes natural and native habitat development, all of which benefit Iowa.

DNR personnel may assist in the planning, permitting, execution and report writing for prescribed burns conducted on private lands. An approved Burn Plan is required for DNR staff to participate in a prescribed burn on private property, the prescribed burn must be lead by a qualified Burn Leader and the execution of the burn most otherwise conforms to the requirements of this Policy. In addition, for DNR to conduct prescribed burns on private lands, DNR must inform the landowner that they are liable for their own acts and should encourage landowners to contact their insurance providers to discuss whether damages arising from or related to prescribed burns are covered within their policies and to make appropriate changes. The state and DNR shall be liable only for their own acts, only as legally allowed under the Iowa Constitution and Iowa Code chapter 669. The DNR in no way waives its sovereign immunity or discretionary function defense by participating in prescribed burns on private lands.

Nothing in this Policy prohibits DNR personnel from participating in prescribed burns on private lands on their own time. However, in doing so, those DNR personnel are not acting in an official capacity and are not, therefore, protected from liability by the Iowa Tort Claims Act.

Section 11: Smoke Management

The DNR shall strive to ensure the goals of the Clean Air Act are satisfied in these small-scale burns.

The U.S. Environmental Protection Agency (EPA) is in the midst of revising federal rules and guidelines for prescribed burning to address current and expected air pollution standards. Concurrently, the DNR Air Quality Bureau is evaluating the need for a state-wide Smoke Management Program (SMP) and is also considering amending state air quality rules to specifically address prescribed natural resource burning. At such time as a state-wide SMP or new air quality rules are final and effective, this Policy may be revised, if appropriate. Until then,

each DNR Burn Plan shall include a smoke management plan that addresses the following elements:

1. Actions to minimize smoke impacts
2. Smoke dispersion map
3. Notifications
4. Smoke monitoring

These elements and other recommendations for basic smoke management practices are described in more detail in *Attachment B*, *Smoke Management Guidelines*. Smoke management planning should also address potential effects of smoke on prescribed fire crew members.

Air Quality & Smoke Management Resources:

- **EPA AIR NOW website:** http://airnow.gov/: Includes interactive maps showing current national, regional, state and local air quality. Includes links to other air quality resources.
- **NWS Fire Weather Planning Forecast website:** http://www.crh.noaa.gov/dmx/firewx.php or www.weather.gov/dmx (click on Fire Weather link): Get fire weather and smoke management information for Iowa, including transport wind, mixing height, relative humidity and smoke dispersion. Request a spot forecast and get other fire weather information.
- **NWCG Smoke Management and Smoke Committee websites:** http://www.nifc.gov/smoke/ and www.myfirecommunity.net (join the Air Quality and Fire Issues group): Sharing information on smoke management issues, air quality regulations, strategies for managing smoke from wildland fires, approaches to technical smoke questions, and fire environment issues that affect smoke generation, transport, impacts and measurement. Links to other smoke management resources.
- **DNR Air Quality Bureau:** Go to www.iowacleanair.com or www.iowadnr.gov/air/ or call 515-242-5100.

Section 12: Legal Requirements

DNR prescribed burns will comply with all applicable federal, state and local laws, ordinances, regulations or emergency declarations. A discussion of relevant legal considerations and a list of relevant laws are available in *Attachment E* of this Policy.

Section 13: Attachments

The documents attached to this Policy shall be used by the burn plan writer, the Burn Leader and the Area Manager in developing and executing DNR-sponsored prescribed burns in the state of Iowa.

A. Prescribed Burn Plan Form
B. Smoke Management Guidelines
C. Pre-Burn Checklist and Go/No-Go Checklist
D. Burn Report Form
E. List of applicable laws
F. Iowa Prescribed Fire Report Form
G. Iowa Wildfire Report Form

(Retain in permanent Unit files)

ATTACHMENT A

PRESCRIBED BURN PLAN

A. Background Information

Photo Record Taken? _____

Area or site name:

Location:

Record of previous burn management:

Topography:

Vegetation description (target species):

Threatened or Endangered Species:

B. Objectives

Objectives of the burn (clearly state):

C. Site Specific Information

Target burn dates (range):

Segment to be burned (attach map or aerial photo):

Attached maps will include the following:

- **Location of site within the county**
- **Property boundaries**
- **Access and Trails**
- **Targeted Burn sites**
- **Smoke Sensitive Area**
- **Species of Concern (plant/animal)**
- **Alternative local water source / dry hydrants**
- **Firebreaks already present or that will be developed, alternative firebreaks, and who will be responsible to develop them**
- **Adjacent land use/fuels**
- **Proposed ignition pattern**

Minimum # of Personnel:

Equipment needed:

Preferred wind and weather conditions:

Communication needs &
Radio Frequencies to be used:

Special Regulations; permits needed; etc:

Safety concerns:

Smoke Management Plan *(refer to Smoke Management Guidelines – Attachment B)***:**

(Retain in permanent Unit files)

Emergency Response Notifications

Contact:	Location	Phone #	Who Will Notify?	By When?
Fire Department:				
Public Safety Com. Center (Dispatch)				
Medical Emergency Facility				
Environmental Services Division – Field Office				
Other				

Additional Notifications:

Adjacent Landowners:	Location	Phone #	Who Will Notify?	By When?

Potential Downwind Smoke Receptors:	Location	Phone #	Who Will Notify?	By When?

*Guidelines for notifying adjacent landowners and other potential downwind receptors are explained in *Attachment B – Smoke Management Guidelines*.

Mop-Up Instructions:

Contingency Plans:

Attachment B
Smoke Management Guidelines
Date: March 5, 2010

Smoke management is becoming a larger concern with respect to public health and environmental quality. The DNR shall strive to ensure the goals of the Clean Air Act as enacted through the DNR's regulatory authority are satisfied in these small-scale natural resource burns.

The following smoke management guidelines are recommendations. The guidelines are not inclusive of all smoke management techniques and are not meant to limit prescribed burning activities. Rather, these guidelines are intended as interim recommendations until such time as the U.S. Environmental Protection Agency (EPA) or the Iowa DNR Air Quality Bureau (AQB) promulgates rules, policies or guidelines to specifically address natural resource burning and smoke management.

Additionally, AQB is currently evaluating the need for a statewide Smoke Management Program (SMP) and is considering amending state air quality rules for open burning to specifically address prescribed natural resource burning. At such time as a statewide SMP or new air quality rules for prescribed burning become final and effective, these guidelines may be revised, if appropriate.

Smoke Management Plan (Basic Smoke Management Practices)

Each DNR prescribed burn plan (Burn Plan) shall include a smoke management plan that describes the basic smoke management practices to be employed for the prescribed burn. The designated Burn Leader shall ensure that all DNR staff, volunteers and contractors participating in the prescribed burn adhere to the smoke management plan.

Each smoke management plan included in a DNR Burn Plan shall address the following elements:

1. Actions to minimize smoke impacts
2. Smoke dispersion map, including:
    - Predicted smoke behavior
    - Expected smoke dispersion area
    - Smoke sensitive sites within the smoke dispersion area
3. Notifications
4. Smoke monitoring

1. Actions to minimize smoke impacts

The DNR will take appropriate and reasonable actions to keep smoke away from smoke sensitive sites. Examples of smoke sensitive sites include: residential dwellings, businesses, schools, airports, nursing homes, childcare facilities, livestock facilities, hospitals, and roads. The Burn Plan should describe how smoke impacts to the public will be minimized or mitigated before, during, and after the burn.

Depending on the objectives of the burn and current weather and fuel conditions, mitigation techniques may include, but are not limited to, the following:

- Reduce the fuel loading in the burn area by mechanical means
- Reduce the size of the burn area
- Use frequent, low-intensity burns to gradually reduce fuels
- Reduce the amount of fuel consumed by the fire by burning when fuel moistures for larger fuels are high

- Rapid and complete mop-up after the burn or mop-up of certain fuels.

In addition to providing notification of the burn (see #3 below), DNR may, as appropriate, include in its notification suggested actions that smoke sensitive individuals may take to minimize their exposure. Suggestions may include, but are not limited to: leaving the area during the burn, remaining indoors, avoiding rigorous activities, and avoiding exposure to other respiratory stressors.

If the National Weather Service (NWS) has issued an air pollution alert, the Burn Leader will be prepared to safely halt the burn at the closest existing fire break and will not ignite any additional burns until the NWS has lifted the air pollution alert.

2. Smoke Dispersion Map

Each Burn Plan should include a smoke dispersion map. The purpose of the smoke dispersion map is to assist the burn plan writer, the Burn Leader and other prescribed burn participants in determining proper smoke mitigation options, estimating smoke dispersion, establishing the public notification area, and selecting appropriate smoke monitoring activities.

In general, the smoke dispersion map should identify adjacent land owners and all downwind smoke sensitive sites that are could experience smoke from the prescribed burn. A description accompanying the map should explain how the burn plan writer estimated the smoke dispersion area for the burn. If the burn plan writer has determined that a smoke dispersion map is not necessary, the Burn Plan shall include an explanation of why a smoke dispersion map is not needed.

Predicted smoke behavior
There are many methods for predicting smoke behavior from prescribed natural resource burning. As of the date of this Policy, the U.S. Environmental Protection Agency (EPA) has not officially recommended or approved specific tools or models for estimating air quality impacts from prescribed natural resource burning. However, the U.S. Forest Service (USFS) and other federal land management agencies have developed several tools for smoke prediction and for estimating the air quality impacts from prescribed burns.

<u>AQB Analysis</u>
Air quality impacts from prescribed burns are affected by numerous factors, including, but not limited to: fuel characteristics, fuel conditions, size of the burn area, meteorological conditions and burning techniques. To assist in estimating possible air quality impacts from prescribed burns in Iowa, AQB staff collaborated with both DNR and non-DNR prescribed burn professionals and USFS smoke prediction experts to develop an air quality analysis.

Because of the numerous variables inherent in prescribed burning, the analysis necessitated making a number of assumptions. Additionally, the analysis was specifically designed to produce results that are conservative. The analysis is best used as a tool in conjunction with actual, on-site fuel bed information and based on the expected meteorological conditions on the day of the burn.

AQB analyzed eight Iowa burn scenarios using USFS software to estimate air pollution concentrations. Based on the air quality analysis, it is recommended that the DNR consider notification of the smoke sensitive sites located downwind and within the distance specified for the following burn scenarios:

- Prairie burn (1 acre or less) = 0.25 miles from the burn area.
- Prairie burn (1.5 acres -10 acres) = 1 mile from the burn area.
- Prairie burn (10.5 acres -50 acres) = 1.5 miles from the burn area.

- Prairie burn (50.5 acres -100 acres) = 2 miles from the burn area.
- Prairie burn (over 100 acres) = 3 miles from the burn area.
- Forest burn (5 acres or less) = 1.5 miles from the burn area.
- Forest burn (5.5 acres -10 acres) = 2.5 miles from the burn area.
- Forest burn (10.5 acres - 50 acres) = 4 miles from the burn area.
- Forest burn (50.5 acres -100 acres) = 5 miles from the burn area.

Note: *With the exception of the 1 acre prairie scenario, the acreages and distances from the air quality analysis are shown here rounded to nearest half acre and half mile. Additionally, the scenario "Prairie Burn (over 100 acres)" was not included in the air quality analysis, but was very generally estimated based on the results from the other, modeled scenarios.*

AQB's complete analysis, including descriptions of the USFS software, the assumptions used for the analysis, and the software inputs and outputs for the analysis, is available from AQB upon request.

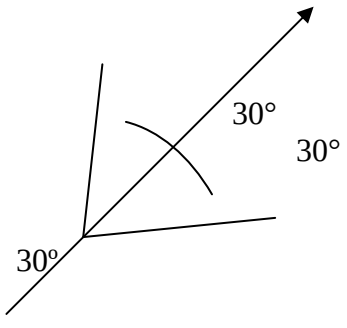
Smoke Dispersion Area
The goal of proper smoke management is to perform the burn when atmospheric conditions will disperse the smoke so that air quality standards to protect public health will not be violated. Unless the burn plan writer has determined that it is unnecessary, the Burn Plan should include a map showing the expected smoke dispersion area. One method that may be used to determine the smoke dispersion area is as follows:

1. Locate on a map the prescribed fire and all potential smoke sensitive sites that could be affected. The distances indicated above from the air quality analysis may be used. However, a site-specific analysis or other factors may indicate that an alternative distance is more appropriate.

2. Determine the optimal transport wind (wind direction) for the burn that will, to the extent practicable, have the least impact on smoke sensitive sites while also achieving the natural resource objectives for the burn.

3. Draw a line representing the centerline of the path of the smoke plume using the optimal transport wind identified in the previous step.

4. To allow for horizontal dispersion of the smoke, as well as shifts in wind direction, draw two other lines from the burn at an angle of 30 degrees from the centerline(s). If a prescribed fire is represented as a spot, draw as in Figure A. If larger, draw as shown in Figure B.



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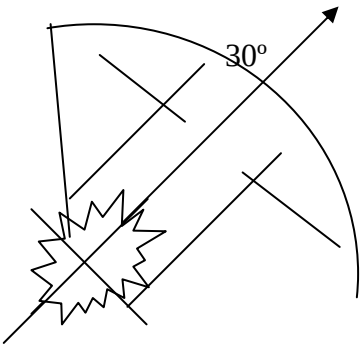

B

Smoke sensitive sites
All smoke sensitive sites within the predicted smoke dispersion area should be identified on the smoke dispersion map.

Other considerations for smoke dispersion and smoke sensitive sites
Each Burn Plan should indicate how the Burn Leader will assess meteorological and air quality conditions prior to the burn and on the day of the burn to ensure that conditions are within prescription and that impacts to smoke sensitive sites will be minimized.

A valuable resource for smoke management planning and meteorological information is the National Weather Service (NWS) Fire Weather Planning program. This easy to access forecast provides specific burn parameters essential for smoke management, such as transport winds, precipitation, temperature, relative humidity and smoke dispersion. Another available resource to check air quality conditions prior to and on the day of the burn is EPA's AIR NOW website.

3. Notifications

As an essential aspect of basic smoke management techniques, DNR shall make a reasonable effort to notify all adjacent land owners and other smoke sensitive sites identified on the smoke dispersion map. A description of the notification strategy shall be included in the Burn Plan.

The DNR shall provide pre-burn season notification to adjacent land owners and smoke sensitive sites in the area. The DNR shall determine the best notification method for the affected area and shall establish how far in advance the pre-burn season notification shall occur. Pre-burn season notification methods may include, but are not limited to: press releases, radio or TV announcements, newsletter articles (electronic or hard-copy), website postings, in-person notification, phone notification, USPS notification, e-mail notification or hand-delivered notification. In some cases, it may be appropriate to provide follow-up notification closer to the anticipated burn date to adjacent land-owners and other smoke sensitive sites. Examples of other smoke sensitive sites that should be considered for follow-up notification closer to the anticipated burn date include sites occupied by citizens who expressed health-related concerns to the DNR in response to the pre-season notification, as well as schools, day cares, hospitals, churches, and retirement or nursing homes..

The DNR shall also coordinate to the extent practicable with the immediate Environmental Services Division (ESD) Field Office to notify the field office prior to the burn. This notification ensures that field office staff is knowledgeable of the burn and can work cooperatively with the burn crew and the public if the field office receives complaints.

4. Smoke Monitoring

The Burn Plan shall include a description of how the burn crew will monitor the smoke plume during the burn to ensure that unanticipated smoke impacts do not occur. Smoke monitoring will help ensure that any needed mitigation activities will be underway as quickly as possible.

Smoke monitoring should match the size of the fire. For small or short duration fires (less than one day), such as most prairie burns or small forest burns, visual monitoring of the smoke plume and monitoring complaints from the public should be sufficient. Other monitoring techniques may include, but are not limited to:

- Posting personnel at vulnerable roadways to look for visibility impacts;
- Posting personnel at other smoke sensitive areas to look for smoke intrusions; and
- Continuous tracking of meteorological conditions (such as spot forecasting) during the fire.

Air Quality & Smoke Management Resources:

- **EPA AIR NOW website -** http://airnow.gov/: Includes interactive maps showing current national, regional, state and local air quality. Includes links to other air quality resources.
- **NWS Fire Weather Planning Forecast website -** http://www.crh.noaa.gov/dmx/firewx.php or www.weather.gov/dmx (click on Fire Weather link): Get fire weather and smoke management information for Iowa, including transport wind, mixing height, relative humidity and smoke dispersion. Request a spot forecast and get other fire weather information.
- **NWCG Smoke Management and Smoke Committee websites -** http://www.nifc.gov/smoke/ and www.myfirecommunity.net (join the Air Quality and Fire Issues group): Sharing information on smoke management issues, air quality regulations, strategies for managing smoke from wildland fire, approaches to technical smoke questions, and fire environment issues that affect smoke generation, transport, impacts and measurement. Links to other smoke management resources.
- **DNR Air Quality Bureau website-** www.iowacleanair.com or www.iowadnr.gov/air/: Or call 515-242-5100
- **DNR ESD Field Services Bureau website-** www.iowadnr.gov/fo/index.html**:** Includes list of ESD field offices and their jurisdictions.
- **USFS Fire and Environmental Research website –** http://www.fs.fed.us/pnw/fera/: Research and development in fuels and combustion science including tools and software for predicting fire behavior and air pollutant emissions from prescribed burning.

ATTACHMENT C

PRE-BURN CHECKLIST, CREW BRIEFING and GO/NO-GO DECISION

Unit Area: _____ Fire Site:_____ Date:_____

Number of people participating in burn:_____

List Names & Agency:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

12. _____

A. PRIOR TO CREW BRIEFING

- ☐ Fire Site is as described in plan.
- ☐ Required firebreaks complete.
- ☐ Permits obtained if required.
- ☐ Communications Center/fire officials notified.
- ☐ Neighbor notifications, as needed.
- ☐ Required equipment is on-site and functioning.
- ☐ Radio frequencies to be used are identified.
- ☐ Planned ignition and containment methods are appropriate.
- ☐ List of emergency phone numbers are available.
- ☐ Planned contingencies and mop-up are appropriate.

B CREW BRIEFING

- ☐ Fire Site size and boundaries discussed.
- ☐ Fire Site hazards discussed.
- ☐ Anticipated fire and smoke behavior.
- ☐ Review of equipment and troubleshooting.
- ☐ Review organization of crew and assignments.
- ☐ Review methods of ignition, holding, mop-up, communications.
- ☐ Radio frequency check.
- ☐ Review public traffic concerns.
- ☐ Location of vehicles, keys and nearest phone or police band radio.
- ☐ Location of back-up equipment, supplies and water.
- ☐ Plan and review all contingencies including safety hazards, escape routes, safety zones.
- ☐ Answer questions from crew.
- ☐ Give crew members the opportunity to decline participation.
- ☐ Location of first aid kit.

C. PRIOR TO IGNITION GO / NO-GO DECISION

- ☐ Weather and fuel conditions are within prescriptions.
- ☐ Weather forecast, obtained prior to ignition indicating suitable burning conditions.
- ☐ Necessary fire lines/breaks are constructed and checked.
- ☐ Crew members have required protective clothing.
- ☐ Crew members have matches.
- ☐ Conduct test burn.
- ☐ **In your opinion, can the burn be carried out according to the plan and will it meet the planned resource management objectives? YES _____ NO _____**

D. BEFORE LEAVING BURN UNIT

- ☐ Mop-up completed as described in prescription.
- ☐ Post burn inspection arranged.
- ☐ Notifications of completed burn (if required).

E. NOTE ANY MODIFICATIONS TO PRESCRIPTION

Burn Leader:_____ Date:_____

(Retain in permanent Unit files)

ATTACHMENT D
BURN REPORT

A. Operational Data

Date of prescribed burn: | **Acres burned:**

Time set: | **Time completed:** | **Time mop-up completed:**

Fire planner name:

Fire leader name:

Total number personnel in fire crew:

B. Weather & Vegetation Conditions

Vegetation stage (cured, transitional, green):

Wind speed at start: | **Wind speed at completion:**

Wind direction at start: | **Wind direction at completion:**

Temperature at start: | **Temperature at completion:**

Humidity at start: | **Humidity at completion:**

C. Fire Summary

Type fire used (head, back, strip back, ring, combination):

Fire escapes or problems of note:

Summarize immediate results (litter reduction, areas of incomplete burn, etc.):

Recommendations for future burning or management:

Burn report completed by: _____ _____

(signature) **(date)**

ATTACHMENT E

Legal Requirements

Authority for Prescribed Burns

Prescribed burns are open burns allowed pursuant to 567 Iowa Administrative Code section 23.2(d). Burns that involved cleared materials may not occur closer than ¼ mile from any building inhabited by other than the landowner or tenant conducting the burn. Additional disaster declarations may allow for additional burning if an emergency condition exists.

The air quality rules for open burning are set forth under 567 Iowa Administrative Code (IAC) Chapter 23 (rule 567-23.2). Copies of the current rule provisions and definitions applicable to open burning are available on the DNR Air Quality Bureau (AQB) website at www.iowacleanair.com (click on "open burning" on the left-side menu). DNR AQB does not issue burn permits.

Currently, prescribed natural resource burning is allowed under the "landscape waste" exemption (paragraph 23.2(3)"d") in most areas of the state, unless prohibited as noted below or unless prohibited under local ordinances or regulations. DNR AQB is considering amending the open burning rules to specifically address prescribed natural resource burning.

General Prohibitions

Locations

Prescribed burns generally may not occur in the cities of: Cedar Rapids, Marion, Hiawatha, Council Bluffs, Carter Lake, Des Moines, West Des Moines, Clive, Windsor Heights, Urbandale, and Pleasant Hill. The Burn Leader must contact the Department's Air Quality Bureau if planning to conduct burns within those cities.

In addition, any local government entity, such as a municipality or a county, may enact local open burning regulations that are more stringent than state open burning rules. Local governments are not required to notify DNR of any such local ordinances. In particular, Linn County and Polk County have their own, state-approved air quality programs and require permits for most open burning activities. DNR is also aware that Council Bluffs has a burn permit program. DNR staff writing and approving burn plans should check with local governments regarding local open burning ordinances and regulations. The Burn Leader is responsible for overseeing compliance with local ordinances and regulations related to prescribed burning.

Materials

Prescribed burns may not include the burning of asbestos, rubber tires or other hazardous materials. If asbestos are found in any structure that is part of a prescribed burn, the Burn Leader must contact the Department's Realty Services Bureau, who will then work with the Department's Air Quality Bureau to safely remove the asbestos prior to the prescribed burn. No prescribed burn shall occur until the asbestos has been removed and properly mitigated.

Deleterious Impacts to Water Quality

Prescribed burning activities are intended to promote a healthy environment and should not create or contribute to water quality defects in the state. While the DNR is not required to obtain NPDES permits for prescribed burns (unless the burning is part of a construction project, in which case the project may require a permit), the DNR is prohibited from undertaking activities that would cause pollutants to enter into waters of the state. Information about pollution prevention and best management plans are available by contacting the Environmental Services Division field office in the area.

Threatened and Endangered Species
During the development of a Burn Plan and prior to the initiation of any prescribed burn, the Burn Leader shall check the Threaten and Endangered species data base and review other local observation data to determine whether T & E species are present in the burn area. If T & E species are present, burn plans require consultation with the Threaten and Endangered species Program Office.

Required Permits

The DNR, the Fish and Wildlife Service and the State Historical Preservation Office (SHPO) have a programmatic agreement that addresses our compliance with Section 106 of the National Historical Preservation Act. Under this agreement prescribed burn activities using accepted prescribed burn techniques do not require SHPO review.

Linn and Polk Counties and the City of Council Bluffs have air quality programs that require air permits for prescribed burns. The Burn Leader must contact those permitting entities and obtain all necessary permits from those local authorities prior to conducting a burn in either Linn or Polk County.

Building Disposal

Building disposal by burning is not considered to be a component of prescribed burning and is not addressed in the DNR Burn Policy. Refer to 567 Chapter 23 (rule 567-23.2), or contact the DNR Air Quality Bureau for more information.

List of Applicable Laws

(As of Date)

City:

- City of Council Bluffs Open Burning Ordinance – Council Bluffs Municipal Code section 4.02.020

County:

- Linn County Open Burning Ordinance – Linn County Ordinances section 10.10
- Polk County Open Burning Rules – Polk County Board of Health Rules and Regulations section 5-7

State:

- Air Quality Duties of Environmental Protection Commission – Iowa Code section 455B.133
- Liability of Landowner Allowing Public Use of Private Property – Iowa Code section 461C.3
- Liability of State Employees under State Tort Claims Act – Iowa Code sections 669.21 and 669.23
- Liability of State Volunteers under State Tort Claims Act – Iowa Code section 669.24
- Open Burning, including building disposal – 567 Iowa Administrative Code section 23.2
- State Threatened and Endangered Species Act – Iowa Code chapter 481B and 571 Iowa Administrative Code chapter 77

Federal:

- Clean Air Act (CAA) – 42 U.S.C. chapter 85
- National Emission Standard for Hazardous Air Pollutants (NESHAP) – 40 C.F.R. part 61
- National Environmental Policy Act (NEPA) – 42 U.S.C. chapter 55
- National Primary and Secondary Ambient Air Quality Standard (NAAQS) – 40 C.F.R. part 50
- Protection of Historic Properties – 16 U.S.C. 470 and 36 C.F.R. Part 800

IOWA PRESCRIBED FIRE REPORT FORM

PLEASE SUBMIT TO Iowa DNR Fire Supervisor Gail Kantak
FAX: 515-233-1131 or
E-MAIL: Gail.Kantak@dnr.iowa.gov

Agency/ Bureau:			**Location of Fire (GPS location if available):**
Unit:			
Contact:			
Phone:			
Cell:			
E-Mail:		**Type of Fire:**	**PRESCRIBED FIRE**
Date of Fire:		**Vegetation Type:**	
Acres Burned:		**NOTES / COMMENTS:**	

NAME OF PEOPLE PARTICIPATING ON BURN (For Incident Qualifications (IQS) Tracking):

IOWA PRESCRIBED FIRE REPORT FORM

PLEASE SUBMIT TO Iowa DNR Fire Supervisor Gail Kantak
FAX: 515-233-1131 or
E-MAIL: Gail.Kantak@dnr.iowa.gov

Agency/ Bureau:			**Location of Fire (GPS location if available):**
Unit:			
Contact:			
Phone:			
Cell:			
E-Mail:		**Type of Fire:**	**PRESCRIBED FIRE**
Date of Fire:		**Vegetation Type:**	
Acres Burned:		**NOTES / COMMENTS:**	

NAME OF PEOPLE PARTICIPATING ON BURN (For Incident Qualifications (IQS) Tracking):

IOWA WILDLAND FIRE REPORT FORM

PLEASE SUBMIT TO Iowa DNR Fire Supervisor Gail Kantak
2404 S Duff Ave, Ames, IA 50010
FAX: 515-233-1131; PHONE: 515-233-8067 or 1161
E-MAIL: Gail.Kantak@dnr.iowa.gov

1. State: **IOWA**	**2.** County:	**3.** Fire Department:
4. Contact:		**5.** Location of Fire:
Phone:		
E-Mail:		
6. Date of Fire:	**7.** # & Type of apparatus used:	

8. FIRE CAUSE	**LINE #**	**TOTAL ACRES BURNED**
a. Lightening	a.	
b. Campfire	b.	
c. Smoking	c.	
d. Debris Burning (Controlled Burn that got out of control)	d.	
e. Arson	e.	
f. Equipment Use	f.	
g. Railroads	g.	
h. Children	h.	
i. Miscellaneous	i.	
j. Controlled Burn that DID NOT get out of control	j.	

9. INJURIES:

10. NOTES: