

Source of summary information:

- [1] Boulder County Health Department Air Quality Program Open Burning Policy and Permit Forms. Effective Date June 1, 1998. Available at <http://www.co.boulder.co.us/health/environ/openburn.htm>.
- [2] Forest Ecosystem Management Plan: Citizens Guide. Available at <http://www.ci.boulder.co.us/openspace/Forest/forest.htm>
- [3] Personal communication between Greg Toll (City of Boulder Fire Department, 303-441-1987) and Barbara Bauer (EC/R Incorporated, 919-933-9501) on June 12, 2000.
- [4] City of Boulder - Fire & Rescue Department: Prescribed Fires: Where and When Available at <http://www.ci.boulder.co.us/fire/index.html>.
- [5] Forest and Fire Ecology - Prescribed Fire. Available at <http://www.ci.boulder.co.us/openspace/Forest/forest.htm>.
- [6] Boulder County Prescribed Fire Guideline, provided by Greg Toll (City of Boulder Fire Department, 303-441-1987).
- [7] Comments received from Bonnie Greenwood (Boulder county Health Department, 303-441-1174) received on June 29, 2000.

Smoke Management Program Component	Boulder
	Colorado
<i>Authorization to Burn</i>	
<p>1. What agency/office has the central authority to make burn/no burn decisions? (Who has the regulatory authority?)</p>	<p>\$ The Boulder County Health Department (BCHD) has final authority for approving or denying an open burning permit. [1] \$ The BCHD, under the authority of the Colorado Dept. of Public Health and Environment, Air Pollution Control Division, regulates the open burning of any material in Boulder County. [1] \$ Under mutual agreement, delegation of authority is extended to BCHD from the Colorado Dept. of Public Health and Environment, Air Pollution Control Division for issuing and enforcing open burning permits and enforcement of state open burning policies. [1] <u>Colorado Air Pollution Prevention and Control Act (Act) § 25-7-109(2)(e) allows BCHD (as a designee of the Colorado Department of Public Health and Environment, Air Pollution Control Division) to issue permits.</u></p>
<p>2. Regional Coordination B With what adjacent State, local, or tribal jurisdiction does the central authority coordinate? Are there formal MOU-s in place or more</p>	<p>\$ The Open Space Department (OSD), the Mountain Parks Division of the Parks and Recreation Dept. and the Wildland Fire Division of the Fire Dept. are responsible for sustainably managing Boulders forests for resource protection, visitor enjoyment and wildfire hazard management. To do so, they are jointly undertaking the preparation of a comprehensive Forest Ecosystem Management Plan. [2] [5]</p>

Smoke Management Program Component	Boulder
	Colorado
voluntary/courtesy coordination? If so, what does the coordination involve?	<p>\$ The City of Boulder Fire Dept. (FD), the OSD and the BCHD have an informal open burning working agreement. [3]</p> <p>\$ The BCHD submits copies of burn permits to the local fire jurisdictions the same day as the permit is issued. [1]</p>
3. Is participation in the smoke management program by land managers mandatory? Are there any requirements for burners not covered under the SMP?	<p>\$ Prescribed fire performed by the Boulder County/City of Boulder (under permit Form BC-02) requires a burn plan that must include a smoke management component that addresses actions: to minimize fire emissions, public notification and exposure reduction procedures, air quality monitoring and surveillance. [1]</p> <p>\$ A SMP is not required for a single burn activity at a single location or for winter open burning for hazardous fuel reduction (under the Open Burning Permit Form BC-01) but certain smoke reduction conditions must be met. [1]</p> <p>\$ Exempt sources (those sources that are exempt from having to obtain authorization and a signed open burning permit) are encouraged to notify the BCHD and their local fire dept. of the burn so that the agencies can respond to public inquiries and keep records. Exempt sources are also asked to fill out the General Information section of the Open Burning Permit (Form BC-01). Exempt sources are strongly encouraged to follow the air pollution alert or advisory restrictions. [1]</p>
4. What types of burning (agricultural, silvicultural, other) are covered by the program?	<p>\$ The BCHD regulates all types of open burning including winter open burning for hazardous fuel reduction, single burn activity at a single location, and burns performed by the Boulder County/City of Boulder. Agricultural open burning is exempt from having to obtain authorization and a signed open burning permit. [1]</p>
5. How do land managers apply for authorization to burn?	<p>\$ An open burning permit is required by any private individual, company, governmental agency, or other entity prior to conducting any open burning activity, except for agricultural, recreational and training fires. [1]</p> <p>\$ Open Burning Permit Form BC-01 should be used for any individual or company that requests an open burning permit for a single activity at a single location (permits are issued between March 1 and October 31 of each year) and for winter open burning for hazardous fuel reduction (permits are issued between October 31 and March 1 of each year). Open Burning Permit Form BC-02 should be completed by a county or city agency that requests a permit pursuant to planned/prescribed open burning of forests and range management projects. [1]</p> <p>\$ The Open Burning Permit Form BC-02 must be submitted with a burn plan and a Simple Approach Smoke Estimation Model (SASEM) output to the BCHD at least 3 days before the burn. [1]</p> <p>\$ BCHD will review the permit forms (and burn plan if required) and approve or disapprove the permit within the 3 days before the burn date. [1]</p> <p>\$ For broadcast burning for ecosystem management (i.e., control of noxious weeds, enhancement of native grasses) on non-agricultural private lands authorization from one of the following agencies is required: Cooperative Extension Service, Colorado State Forest Service or Natural Resource Conservation Service. [1]</p>
6. What are the criteria for getting	<p>\$ The burner must have authorization from BCHD (or other agency in the case of broadcast burning on private</p>

Smoke Management Program Component	Boulder
	Colorado
permission to burn?	lands). [1] \$ Burners must comply with the air quality forecasts of red/blue days (November 1-March 31) and with the burn index (April 1-October 31) for that day. There is no burning allowed on red air quality days during the high pollution season (November 1-March 31). [1] \$ Boulder County Communications and the BCHD must be contacted each day of the burn. If the burn falls on a weekend, the BCHD must be contacted on the following working day. [1] \$ The local fire dept. must be notified prior to burning for fire safety concerns. [1] \$ Burning must be conducted during the time between two hours after sunrise and two hours before sunset. Under no circumstances is single activity at a single location burning allowed to continue overnight. [1]
7. Have operating agreements been established between the central authority and land managers? Are there any requirements for burner qualifications now or in the future stipulated in your SMP? Is Smoke Management training available?	\$ The City of Boulder Fire Dept. (FD), the OSD and the BCHD have an informal open burning working agreement. [3] \$ Boulder County and the City of Boulder must contact BCHD for a burning permit for all planned prescribed and/or broadcast burns. [1]
<i>\$ Minimizing Air Pollutant Emissions</i>	
8. What steps are taken to consider alternatives to fire as a land management tool? What incentives or disincentives are there for the use of alternatives to burning and emission reduction techniques? Are emission reductions tracked?	\$ All permit requests are evaluated by BCHD in accordance with the following policy: A if a practical alternative method of disposal exists for any material being request to be open burned, then an open burning permit may be denied. In making such a determinations, it should be remembered that a practical alternative method of disposal does not have to be as convenient or as cost effective as open burning.@[1] \$ The smoke management component of the burn plan must provide reasoning for not using alternatives to fire. [6]
9. What actions are required to minimize emissions from fires? What actions are required to minimize impacts from fires?	\$ For Boulder County/City of Boulder burn projects, the smoke management component of the burn plan should include actions to minimize fire emissions including actions to reduce residual smoke; mop-ups; reducing areas to be burned and fuel loading; and reducing fuel consumption and emissions. 446 \$ For Boulder County/City of Boulder burn projects, the smoke management component of the burn plan should include actions to reduce exposure to adverse impacts. These actions may include halting ignitions of any new open burning that could impact the same area; analyzing the fire situation and identifying alternative management responses upon becoming aware that a fire is out of air quality prescription; identifying appropriate, short-term fire

Smoke Management Program Component	Boulder
	Colorado
	<p>management responses to abate smoke impacts; and implementing management responses that will mitigate adverse impacts HH[6]</p> <p>\$ For single activity at a single location burns the following actions to minimize emissions are required: materials to be burned should include only clean dry slash (branches 3" or less in diameter); burning must be conducted during the time between two hours after sunrise and two hours before sunset and under no circumstances is open burning allowed to continue overnight. [1]</p> <p>\$ For winter open burning for hazardous fuel reduction the following actions to minimize emissions are required: the project must be at an elevation of 6,400 feet or higher; material to be burned should be clean, dry slash, no stumps, trunks or logs; burning can occur only between 10 AM and 4 PM on ABlue Days@(good air quality days). [1] [7]</p>
10. Must the actions taken to minimize emissions before and during fires be documented? How is this information used?	<p>\$ The actions to minimize fire emissions, including actions to reduce residual smoke; mop-ups; reducing areas to be burned and fuel loading; and reducing fuel consumption and emissions, must be documented in the smoke management component of the burn plan. HH[6]</p> <p>\$ The air quality and visibility impact component of the burn plan should include an estimate of emissions projections based on estimates of acres burned, pre-burn fuel loading by vegetation type and % consumption; actions that will be taken if the receptor is negatively impacted by smoke; a description of the planned measures to reduce smoke impacts; identification of the potential for smoke intrusions into sensitive areas and modeling air quality and visibility impacts via SASEM; and a description of ambient air monitoring plans. [6]</p> <p>\$ The steps taken to mitigate adverse impacts to the public must be reported to the BCHD in the post-burn report. HH[6]</p>
<i>Smoke Management Components of Burn Plans</i>	
11. Are written burn plans required by the SMP? What information must be included?	<p>\$ Prescribed fire burn plans are required for all Boulder County/City prescribed fires. The plan must contain a smoke management component. [1] [6]</p> <p>\$ The burn plan must contain the following components: General Information component, Air Quality and Visibility Impact component, and a Smoke Management component. [6]</p> <p>\$ The General Information component of the burn plan must contain location and description of the area to be burned; personnel responsible for managing the fire; type of vegetation/fuel to be burned (% of total acreage burned); area (acres) to be burned; percent consumption, fuel loading (tones/acres); fire prescription; criteria the fire manager will use for making burn/no burn decisions; safety and contingency plans addressing smoke intrusions. [6]</p> <p>\$ The Air Quality and Visibility Impact component of the burn plan must contain an estimate emission projection based on estimates of acres burned, pre-burn fuel loading by vegetation type and % consumption; identification of</p>

Smoke Management Program Component	Boulder
	Colorado
	<p>smoke-sensitive receptors and what actions will be taken if the receptor is negatively impacted by smoke; description of the planned measures to reduce smoke impacts; identification of potential for smoke intrusion into sensitive areas and modeling air quality and visibility impacts vis SASEM; and a description of ambient air monitoring plans. [6]</p> <p>§ The Smoke Management component of the burn plan must contain actions to minimize fire emissions; evaluation of smoke dispersion; public notification and exposure reduction procedures; air quality monitoring; and surveillance. [6]</p>
<p>12. How must smoke dispersion conditions be evaluated? How are visibility impairments and/or regional haze accounted for in your SMP? Do burn/no burn decisions consider visibility, regional haze, or the ANational Visibility Goal?@</p>	<p>§ The smoke management component of the burn plan must evaluate smoke dispersion and must include information regarding smoke impacts at sensitive receptors; distance and direction from the burn site to local sensitive receptor areas; and requirements for the atmospheric capacity for smoke dispersal (minimum surface and upper level wind speeds, desired wind direction, minimum mixing height, and dispersion index). [6]</p> <p>§ The Air Quality and Visibility Impact component of the burn plan must contain an estimate emission projection based on estimates of acres burned, pre-burn fuel loading by vegetation type and % consumption; identification of smoke-sensitive receptors and what actions will be taken if the receptor is negatively impacted by smoke; description of the planned measures to reduce smoke impacts; identification of potential for smoke intrusion into sensitive areas and modeling air quality and visibility impacts via SASEM; and a description of ambient air monitoring plans. [6]</p> <p>§ In part, the BCHD bases the approval of permits on the potential contribution of the burn to air pollution in the burn area. [1]</p>
<p>13. Must the affected public be notified of planned fires? Please describe.</p>	<p>§ Extensive information on upcoming prescribed burns is available to the public on the Internet. [4]</p> <p>§ Homeowners in close vicinity of prescribed burns receive leaflets with detailed information and open house meetings are offered for the larger burns. Municipal Channel 8 broadcasts information the day of the burns and Boulder/Denver area media are notified. A Boulder FYI phone number is established for burn day information at 303-441-4060, ext. 549. [4]</p> <p>§ Press releases are issued announcing prescribed burns and giving contact names and phone numbers. The press releases are available at http://www.ci.boulder.co.us/fire/wildfire/press.htm.</p> <p>§ The smoke management component of the burn plan requires notification of the affected public (especially sensitive populations) of elevated pollutant concentrations; suggest actions to be taken by sensitive persons to minimize their exposure (e.g., remain indoors, avoid vigorous activity, avoid exposure to tobacco smoke and other respiratory irritants); and provide clean-air facilities, if available, for sensitive persons. [6]</p>
<p>14. Are contingency plans required to reduce exposure to smoke if intrusions</p>	<p>§ The prescribed fire burn plan must contain safety and contingency plans to address smoke intrusions. [1]</p>

Smoke Management Program Component	Boulder
	Colorado
occur? What are the criteria for implementing such plans?	
15. Must the air quality impacts of fires be monitored? Who is responsible for monitoring? What is being monitored? What are the requirements? How are the data used? Are there thresholds or trigger levels established? If so, what are they? What actions are taken if they are exceeded?	<p>\$ The smoke management component of the burn plan must contain information on air quality monitoring. The monitoring actions may include visual monitoring of the direction of the smoke plume; monitoring nuisance complaints by the public; posting personnel on vulnerable roadways to look for visibility impairment and initiate safety measures for motorists; using aircraft to track the progress of smoke plumes; and locating real-time PM monitors. [6]</p> <p>\$ Within the City of Boulder, there are Federal reference monitors (one PM10 and one PM2.5). The Colorado Department of Public Health and Environment checks the data during periods of fire activity. [7]</p>
<i>Public Education and Awareness</i>	
16. Has a public education and awareness program been established? What elements and activities are included in the public awareness and outreach of your program? Does the public know where to find more information about the program and file complaints? What was the process that you went through to involve the public in developing your SMP? What is done on an ongoing basis?	<p>\$ General information on prescribed fire and upcoming prescribed burns is available to the public on the Internet. The public can also learn about the reasons for burning, efforts to mitigate smoke and the benefits and undesirable aspects that a homeowner can expect. [4]</p> <p>\$ The OSD provides information on open space prescribed fires. The information is available at http://www.ci.boulder.co.us/openspace/fire/presburn.htm.</p> <p>\$ The City of Boulder Forest Ecosystem Management Plan: Citizen's Guide is available to the public on the Internet. It describes Boulder's forests (past and present), the goals of the Forest Ecosystem Management Plan, new approaches to land management, a stand prescription example and a forest plan map. [2]</p> <p>\$ The BCHD's "Open Burning and Fire Safety in Boulder County" brochure is available through the Health Department and public forums. [7]</p>
<i>Surveillance and Enforcement</i>	
17. What actions can be taken by the central authority to monitor compliance with the smoke management program?	\$ Open burning without a permit will be documented by the BCHD and, depending on the severity of the problem, either a warning letter or Notice of Violations will be issued. [1]
18. What penalties are authorized for non-compliance?	\$ Violations of the open burning permit requirements are subject to a penalty the size of which is dependent upon whether the burning is commercial or non-commercial. If the violation is found to be non-commercial, a civil penalty of not more than \$100 per day for each day during which the violation occurs may be assessed. If the violation is found to be commercial, a civil penalty of not more than \$10,000 per day for each day which the violation occurs

Smoke Management Program Component	Boulder
	Colorado
	<p>may be assessed. [1]</p> <p>\$ If any person violates a compliance order issued for an open burning violation, then the violation can be addressed with a civil penalty of up to \$15,000/day. [1]</p>
19. Are post-burn reports required? What information is required?	<p>\$ Post-burn reports are required for prescribed fires. The Open Burning Permit Form BC-02 requires the reporting of actual fire activity. The form requests information on acres burned, fuel loading (tones/acres), type of fuel (% of total acreage), percent consumption. [6]</p> <p>\$ Post-burn reports for fires that impact sensitive receptors are required. The report must contain a description of the incident that lead to excessive smoke, description of how the contingency plan was implemented (including all aspects of the plan whether they were implemented or not) and recommendations of actions to prevent future smoke related problems. [6]</p>
<i>Program Evaluation</i>	
20. Does the program include provisions to periodically review its effectiveness?	\$ <u>Annually BCHD evaluates the prescribed fire program, permitting and data collection system and modifies the program as necessary.</u> Information not available.
21. What are the review criteria?	\$ Information not available. <u>Did any significant smoke intrusion incidents occur during the year.</u>
<i>Optional Air Quality Protection</i>	
22. Does the program establish any special protection zones? How are these zones described? What additional smoke management requirements apply in special protection zones?	<p>\$ The Open Burning Permit Form BC-02 defines smoke sensitive areas as: Class I areas as well as other scenic and important views, urban and rural population centers, hospitals, nursing homes, schools, transportation/facilities such as roads, highways, and airports, recreational areas, and other locations that may be sensitive to smoke impacts for health, safety, and/or aesthetic reasons. The form asks the burner to list the smoke sensitive areas, and describe how far the area is from the burn (miles) and the direction of the area from the burn (degrees). [1]</p> <p>\$ Burners must notify sensitive populations of elevated pollutant concentrations. [1]</p> <p>\$ The smoke management component of the burn plan must suggest actions to be taken by sensitive persons to minimize their exposure and provide clean-air facilities (if available) for sensitive persons. 4[6]</p>
23. Does the program establish any performance standards? What are the performance standards? How is performance evaluated?	\$ Information not available. <u>All projects to be completed without significant smoke intrusions. Public complaints are used to evaluate performance.</u>
24. What additional smoke management	\$ Information not available. <u>If a smoke incident occurs, the BCHD and other appropriate stakeholders evaluate the</u>

Smoke Management Program Component	Boulder
	Colorado
requirements apply if the performance standards have been exceeded?	<u>incident to determine whether program changes are warranted.</u>
25. Do State and/or local nuisance regulations apply to smoke from prescribed fires? Do these regulations also apply to prescribed natural fires? What criteria are used to establish a nuisance (e.g., number of complaints, particulate matter concentration, etc.)?	\$ State nuisance laws do apply to smoke from prescribed fires (from Colorado Revised Statutes 16-13-302 & 25-1-506 which give local health departments authority to abate public nuisances and to protect public health). These are the criteria used for determining whether it will be pursued: 1. Is the nuisance occasional or constant? 2. Is the use of the property affected? 3. What are the economic impacts? 4. Is the location of the nuisance residential, industrial or rural? 5. Number of people affected/number of complaints received. 6. Has the nuisance been mitigated to the extent practicable? 7. Is public health threatened? [7]
26. Is the smoke management program, or the regulations authorizing the program, part of the States implementation plan (SIP)?	\$ Information not available. <u>No.</u>
27. How does the State and/or local districts fund operation of the smoke management program (e.g., program budget, permit fees, registration fees, etc.)? What is the basis for any fees assessed (e.g., acres planned, actual acres burned, type of burn, burn objective, etc.)?	\$ The BCHD has an annual air contract with the Colorado Department of Public Health and Environment for funds to issue permits and perform enforcement activities in Boulder county. [7].
28. Does the State and/or local districts maintain daily, seasonal, or annual air pollutant emissions inventory from prescribed fires? If so, are the emissions calculations based on post-burn reports (i.e., actual acres burned, fuel types, estimated fuel consumed, etc.)?	\$ The Open Burning Permit Form BC-02 requires the reporting of actual fire activity (post-burn report). The form requests information on acres burned, fuel loading (tones/acres), type of fuel (% of total acreage), percent consumption. The information contained in the form is used for an emission inventory. [6]
29. When actions are taken to minimize emissions (e.g., fuel thinning, rapid mop-	\$ Information not available. <u>Starting January 1, 2001 actions to minimize emissions will be tracked for City of Boulder Wildland Fire Division projects. A mechanism to calculate air pollutant emission reductions is not in place..</u>

Smoke Management Program Component	Boulder
	Colorado
up, alternative to fire, etc.), is a mechanism in place to calculate and record the air pollutant emission reductions achieved?	
30. Are you planning to certify your SMP to the EPA? If so, what is your time line?	<p>\$ Information not available. <u>No, the Colorado Department of Public Health and Environment plans to certify the State SMP during 2001.</u></p>