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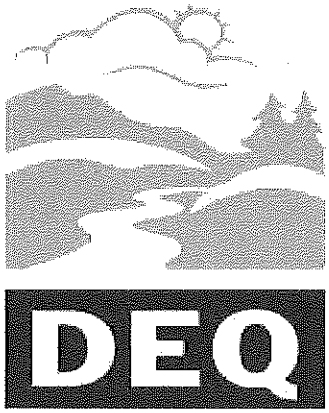
Part 1 of 2

OREGON

ENVIRONMENTAL QUALITY

COMMISSION MEETING

MATERIALS 01/31/1991



State of Oregon
Department of Environmental Quality

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State of Oregon

ENVIRONMENTAL QUALITY COMMISSION

A G E N D A

REGULAR MEETING -- January 31, 1991

DEQ Conference Room 3a
811 S. W. 6th Avenue
Portland, Oregon
8:30 a.m.

Consent Items

NOTE: *These are routine items that may be acted upon without public discussion. If any item is of special interest to the Commission or sufficient need for public comment is indicated, the Chairman may hold any item over for discussion. When a rulemaking hearing is authorized, a public hearing will be scheduled and held to receive public comments. Following the hearing, the item will be returned to the Commission for consideration and final adoption of rules. When rules are proposed for final adoption as Consent Items, a hearing has been held, no significant issues were raised, and no changes are proposed to the original draft that was authorized for hearing.*

A. Approval of Minutes of the December 13-14, 1990 EQC Meeting

B. Approval of Tax Credit Applications

C. Authorization for Rulemaking Hearing on Rules for Solid Waste Planning/Recycling Grants

D. Proposed Adoption of Rules for PM_{10} Control Strategy for Eugene-Springfield (LRAPA Plan), Medford-Ashland, and Klamath Falls

E. Proposed Adoption of Rules on a Method and Criteria to Establish Maximum Measurable Levels (MMLs) of Contaminants in Groundwater

Information Items

F. Review of Report to the Legislature on Conditionally Exempt Small Quantity Generators of Hazardous Waste

G. Review of Report to the Legislature on Recycling

H. Review of Report to the Legislature on Toxic Use Reduction and Hazardous Waste Reduction

I. Review of Report to the Legislature on the Wastewater Systems (Sewerage Treatment Works) Operator Certification Program

J. Review of Report to the Legislature on the Environmental Cleanup Program

K. Review of Report to the Legislature on Field Burning

L. Commission Member Reports: (Oral Reports)
   - Governor's Watershed Enhancement Board

M. Director's Report (Oral Report)

N. Legislative Update (Oral Report)

Public Forum

This is an opportunity for citizens to speak to the Commission on environmental issues and concerns not a part of the agenda for this meeting. Individual presentations will be limited to 5 minutes. The Commission may discontinue this forum after a reasonable time if an exceptionally large number of speakers wish to appear.

Work Session

NOTE: The purpose of the work session is to provide an opportunity for informal discussion of the listed topics.

1. Discussion of Phosphorous Ban

2. Water Quality Program Status Report

3. Status Report on Draft Rules/Guidelines for Gold Recovery Operations

Because of the uncertain length of time needed, the Commission may deal with any item at any time in the meeting except those set for a specific time. Anyone wishing to be heard on any item not having a set time should arrive at the beginning of the meeting to avoid missing any item of interest.

The next Commission meeting will be Friday, March 8, 1991, at DEQ offices in Portland, Oregon. There will be a brief work session at the same location on Thursday, March 7, 1991.

Copies of the staff reports on the agenda items are available by contacting the Director's Office of the Department of Environmental Quality, 811 S. W. Sixth Avenue, Portland, Oregon 97204, telephone 229-5395, or toll-free 1-800-452-4011. Please specify the agenda item letter when requesting.

January 15, 1991

Approved ____
Approved with corrections ____
Corrections made ____

MINUTES ARE NOT FINAL UNTIL APPROVED BY THE EQC

ENVIRONMENTAL QUALITY COMMISSION

Minutes of the Two Hundred and Ninth Meeting
December 13-14, 1990

Work Session

The Environmental Quality Commission (Commission or EQC) Work Session was convened on Thursday, December 13, 1990, at about 1:10 p.m. in Conference Room 3a of the offices of the Department of Environmental Quality, 811 S. W. 6th Avenue, in Portland, Oregon. Commission members present were: Chairman Bill Hutchison and Commissioners Bill Wessinger, Carol Whipple and Henry Lorenzen. Vice Chairman Emery Castle was ill and unable to attend. Also present were Michael Huston of the Attorney General's office, Director Fred Hansen of the Department of Environmental Quality (Department or DEQ) and Department staff.

Item 1: Gold Mining: Discussion of Options for Environmental Regulation

This item was intended to provide an interchange of information between the staff and the Commission and provide a common basis for the development of a regulatory approach for large scale gold mining operations in Oregon. Commissioner Lorenzen expressed his desire that the Commission give the staff clear guidance on the approach to be developed. Commissioner Wessinger noted the need to listen to staff recommendations.

Jerry Turnbaugh, of the Water Quality Division, presented background information to the Commission on mining operation, and the particular issues where decisions will have to be made in the development of the regulatory approach. Commissioner Lorenzen asked about the Department's authority on federal lands and the Department's hazardous waste authority. Michael Huston stated that the State has clear environmental authority on federal lands. Brett McKnight, of the Hazardous and Solid Waste Division, cited the hazardous waste cleanup project at the Umatilla Army Depot as an example of the Department's authority. He also noted that under the federal Resource Conservation and Recovery Act (RCRA), the owner of a facility and the operator are both subject to regulation.

In response to Commission questions on regulatory framework, Director Hansen noted that design and performance standards can be incorporated either in rule or as conditions in permits. Chairman Hutchison asked about preferences for rules as opposed to leaving requirements to be determined by professional judgement of the staff. Dave Barrows,

representing the mining industry, indicated that his organization was split on that issue. Jean Cameron, representing Oregon Environmental Council, stated that they always preferred standards in rules along with flexibility for the permit writers to incorporate more stringent requirements where needed. Director Hansen stated that the approaches can be combined -- rules that incorporate design and performance standards, and permits that contain conditions based on the rules, guidelines, and best professional judgement. He also noted that mining wastes are not hazardous waste under the federal definitions, but rules adopted by the Commission change that and regulate processing operations as hazardous waste generators. Brett McKnight indicated that mine tailings may or may not be hazardous wastes. If they are, then the Department would have to site a hazardous waste storage facility at the site.

John Beaulieu and Gary Lynch, representing the Department of Geology and Mineral Industries, discussed the interagency approach to review of mining proposals, and indicated that their legislative package seeks to require applicants to present both an environmental analysis and a socio-economic analysis as part of their applications.

Chairman Hutchison then asked the Commission for an expression of their thinking. Commissioners Lorenzen and Wessinger expressed a preference for moving forward with something as rapidly as possible so that industry knows what is expected. They expressed a preference for rules that are general and not too lengthy or specific. Dave Barrows suggested that something be drafted by the Department and taken to public hearing as soon as possible rather than trying to use an advisory committee to develop a proposal. Jean Cameron urged the Commission to not rush too fast because the issue is too important to do it wrong. Representative Bob Pickard encouraged the Commission to move with purpose. He stated that an advisory committee with a long schedule won't serve the Department well in the budget process.

The Commission discussed concepts of regulating to do away with environmental risk, of requiring use of the best technology being employed on a commercial scale anywhere, and of using a combination of rules and guidelines. The Commission indicated it would provide guidance to the Department during the regular agenda at the Friday meeting.

Item O: Status Report on the Establishment of Total Maximum Daily Loads (TMDLs)
(Note: Moved from the Friday Agenda.)

This item presented information on the status of Department efforts to establish TMDLs, on the future TMDL workload, strategy for continuing the TMDL program, and the proposed decision package to support TMDL activity for the next biennium. The TMDL actions and approach for the Pudding River were also discussed. Commission guidance was also requested on specific policy issues associated with the TMDL for Columbia Slough.

The Department proposed a streamlined process for development of future TMDLs that would reduce Commission involvement and staff workload. It was also noted that about three positions were being requested in a budget decision package. The combination of existing resources, the streamlined process, and the added resource of the budget decision package will allow the Department to stay on the schedule of two TMDLs per year required in the Federal District Court Consent Decree. Chairman Hutchison asked how much difference the streamlined process would make. Neil Mullane responded that the streamlined process would save the equivalent of one position. Commissioner Wessinger asked what the fall back plan was if the decision package was not approved. Director Hansen noted that the alternative would be to turn the program back to EPA.

Bill Gaffee, representing the Association of Oregon Sewerage Agencies, stated that the streamlined process is needed. He also stated that the Department needed to develop additional data and take advantage of new knowledge in the TMDL process. There is also a need to have a process that legally has the flexibility for studies. Mary Nolan, representing the City of Portland, also endorsed the notion of a streamlined TMDL process.

Neil Mullane then discussed the Department's conclusion that additional data is needed to properly develop the TMDL for Columbia Slough. The Department has developed a preliminary TMDL, but is not comfortable with the result. Portland has done modeling to assist the Department and is now developing additional data to support the needed dynamic modeling. The Department also believes it is desirable to complete the process for revision of the bacterial standard before completing the Columbia Slough TMDL. Mary Nolan noted that the City of Portland is committed to clean rivers and has a $3 million contract studying the problem, but the answers are not in yet. Neil Mullane also indicated that the Department wants to use permittees to assist in gathering the needed data for development of a TMDL for toxins.

With respect to the Pudding River, Neil Mullane advised that potential revisions to the Dissolved Oxygen (DO) standard can affect the outcome of the TMDL. The Department proposed to proceed in dealing with permitted sources, to use the streamlined process, and delay the process until the standards revision process is complete.

Following discussion, the Commission concurred with Department proposals to use a streamlined TMDL process, to use permittees to gather data to support the TMDL process, and delay the Pudding River TMDL pending revision of the DO standard.

Item 2: Discussion of Ballot Measure 5 and DEQ

Director Hansen provided the Commission with general information on the budget problem facing state government with the passage of Ballot Measure 5. He also indicated that in responding to requests to identify general fund budget cuts, the Department believed that people should be paid fairly for what they do, and therefore proposed to cut activities. Director Hansen also advised that the specifics of the Governor-Elect's budged decisions were confidential until the budget was released. As a result, he indicated his intent to confer with Commission members individually on the matter.

Pete Dalke, Administrator of the Management Services Division, advised that three fees had been identified as directly affected by Ballot Measure 5: the underground storage tank permit fee, the motor vehicle emission testing fee, and the hazardous substance possession fee.

The Work Session was adjourned at about 4:40 p.m.

Regular Meeting

The Environmental Quality Commission regular meeting was convened at about 8:40 a.m. on Friday, December 14, 1990, in Conference Room 3a of the Department of Environmental Quality Offices at 811 S. W. 6th Avenue in Portland, Oregon. Commission members present were: Chairman Bill Hutchison, and Commissioners Bill Wessinger, Carol Whipple, and Henry Lorenzen. Vice Chairman Emery Castle was ill and unable to attend. Also present were Michael Huston of the Attorney General's Office, Director Fred Hansen of the Department of Environmental Quality and Department staff.

NOTE: *Staff reports presented at this meeting, which contain the Department's recommendations, are on file in the Office of the Director, Department of Environmental Quality, 811 S.W. Sixth Avenue, Portland, Oregon 97204. Written material submitted at this meeting is made a part of this record and is on file at the above address. These written materials are incorporated into the minutes of the meeting by reference.*

Consent Items

The following items were listed on the agenda as Consent Items:

A. Approval of Minutes of the October 11, 1990 Special Work Session and the November 1-2, 1990 Regular Work Session and Meeting

A draft of the minutes of both meetings was circulated to the Commission prior to the meeting.

B. Approval of Tax Credit Applications

The Department recommended that approval be granted on Pollution Control Facility Tax Credit applications as follows:

TC-2283	Weyerhaeuser Co.	Clarke's Sheet Metal 60-20 Bag Filters.
TC-2300	Merritt Truax	Installation of leak detection and overfill prevention on five underground storage tanks in the form of automatic tank gauges with alarms.
TC-2673	Michael & Bobbie Rainey	Installation of three fiberglass tanks and piping, spill containment basins, line leak detectors, monitoring wells, overfill vent valves and underground preparation for a tank monitor system to be installed at a later date.
TC-2698	Pendleton Grain Growers Inc.	Installation of one 12,000 gallon fiberglass underground storage tank and piping, fiberglass piping replacement on three existing tank systems, spill containment basins, tank monitor and line leak detectors.
TC-2708	Star Oilco	Installation of epoxy lining in two underground storage tanks, sacrificial anode cathodic protection around tanks and piping, spill containment basins and monitoring wells.
TC-2814	Weyerhaeuser Co.	Dynatron 1100 m Opacity Monitor.
TC-2829	Priestley Oil	Installation of an oil/water separator & Chemical Co., Inc. and spill containment for 18 above- ground tanks.
TC-2867	James & Bernice Voelz	Installation of two STI-P3 tanks and fiberglass piping, spill containment basins, tank monitor and float vent valves.
TC-2892	Western Stations Co., Inc.	Installation of one double wall, (fiberglass outer wall, steel inner wall) underground storage tank and fiberglass piping, impress current cathodic protection on three existing steel tanks, tank monitor, spill containment basins, overfill alarm, automatic shutoff break-

		away devices, monitoring wells, Stage I vapor recovery equipment and piping for Stage II.
TC-2893	Columbia Helicopters	Installation of fiberglass interior lining in two 70,00 gallon underground storage tanks, cathodic protection anodes, fiberglass piping, spill containment basins, float vent valves and tank monitor system.
TC-2933	Ellingson Lumber Co.	Sweco Vibro Energy Separator, Mac Style III Filter Receiver, Rotary Valve, and Conveying Equipment.
TC-3070	Metrofueling, Inc.	Installation of leak detection devices on three underground storage tanks in the form of automatic tank gauges with overfill alarms.
TC-3072	Metrofueling, Inc.	Installation of a tank monitoring system and overfill alarm.
TC-3181	G & P Farms	Used International 1566 Wheel Tractor.
TC-3197	Metrofueling, Inc.	Installation of an automatic tank gauge system, overfill alarm and oil/water separator.
TC-3199	Metrofueling, Inc.	Installation of leak detection and overfill prevention on three underground storage tanks in the form of automatic tank gauges with overfill alarm.
TC-3200	Merritt Truax, Inc.	Installation of leak detection and overfill prevention on four underground storage tanks in the form of automatic tank gauges with an overfill alarm.
TC-3201	Merritt Truax, Inc.	Installation of leak detection and overfill prevention on three underground storage tanks in the form of automatic tank gauges with an overfill alarm.
TC-3202	Merritt Truax, Inc.	Installation of an automatic tank gauge system and an overfill alarm.
TC-3203	Merritt Truax, Inc.	Installation of leak detection and overfill prevention on five underground storage tanks in the form of automatic tank gauges with alarm.
TC-3204	Merritt Truax, Inc.	Installation of leak detection and overfill prevention on five underground storage tanks in the form of automatic tank gauges with alarms.
TC-3208	Merritt Truax, Inc.	Installation of leak detection on four underground storage tanks in the form of automatic tank gauges with alarms.

TC-3210	Merritt Truax, Inc.	Installation of leak detection and overfill prevention in the form of automatic tank gauges with alarm.
TC-3216	G & R Seeds	Air Infiltration System.
TC-3219	Merritt Truax, Inc.	Installation of leak detection on four underground storage tanks in the form of automatic tank gauges with alarms.
TC-3240	Priestley Oil & Chemical Co., Inc.	Installation of epoxy lining in ten aboveground storage tanks, spill containment, bottom loading and an oil/water separator.
TC-3246	Star Oilco	Installation of epoxy lining in five steel underground storage tanks, sacrificial anode cathodic protection on tanks and piping, spill containment basins and line leak detectors.
TC-3248	Russell Oil Company, Inc.	Installation of three fiberglass underground storage tanks and piping, spill containment basins, tank monitor, the replacement of a pressure pump system with a suction system, and monitoring wells.
TC-3251	S. J. Stinebaugh	Installation of four STI-P3 underground storage tanks and fiberglass piping, tank monitor, spill containment basins,line leak detectors, float vent valves,impact shear valves, and monitoring wells.
TC-3256	Marion L. Knox	Case 1370 Tractor.
TC-3257	Langmack Seed Co., Inc.	John Deere 4440 Tractor.
TC-3258	Roger F. Neuschwander	John Deere 8630 Tractor.
TC-3259	Cersovski Farms	Allis Chalmers 8070 Tractor.
TC-3260	Oak Creek Farms, Inc.	Big Bud Tractor.
TC-3261	Berger Brothers	John Deere 4850 Tractor.
TC-3263	Bi-Mor Stations, Inc.	Installation of four fiberglass underground storage tanks and piping, spill containment basins, tank monitor, line leak detectors, overfill alarm and sump.
TC-3264	Bi-Mor Stations, Inc.	Installation of three fiberglass underground storage tanks and piping, spill containment basins, tank monitor, overfill alarm, observation wells, float vent valves, a sump and Stage I vapor recovery equipment.

TC-3265	Hays-Moran Joint Venture	Installation of fiberglass lining in five steel underground storage tanks, spill containment basins, tank monitor, line leak detectors, fiberglass piping and monitoring wells.
TC-3266	Hays-Moran Joint Venture	Installation of one STI-P3 underground storage tank, fiberglass lining on three existing tanks,fiberglass piping, spill containment basins, emergency shutoff valves, tank monitor, float vent valves, monitoring wells and Stage I vapor recovery equipment.
TC-3267	Hays-Moran Joint Venture	Installation of four fiberglass tanks and piping, spill containment basins, tank monitor, line leak detectors, monitoring wells, sump, breakaways and Stage I vapor recovery equipment.
TC-3268	Hays-Moran Joint Venture	Installation of three STI-P3 tanks, fiberglass pipe, spill containment basins, tank monitor, line leak detectors, overfill alarm, sump, monitoring well, float vent valves and breakaway devices.
TC-3269	Bi-Mor Stations, Inc.	Installation of three fiberglass tanks and piping, spill containment basins, tank monitor, line leak detector, overfill alarm, sump, monitoring wells, float vent valves and Stage I vapor recovery equipment.
TC-3270	Troutman Enterprises, Inc.	Installation of three spill containment basins and two monitoring wells.
TC-3271	E. D. Dirksen & Sons, Inc.	Installation of four STI-P3 tanks and fiberglass piping, spill containment basins, tank monitor and float vent valves.
TC-3272	Jackson Oil, Inc.	Installation of a tank monitor system, spill containment basins and line leak detectors.
TC-3273	Jackson Oil, Inc.	Installation of a tank monitor system and spill containment basins.
TC-3274	Johnson Oil Company, Inc.	Installation of epoxy lining in two bare steel underground storage tanks, cathodic protection around tanks and steel piping for four tank systems, spill containment basins, float vent valves and underground preparation of the site for a tank monitor system.
TC-3275	Johnson Oil Company, Inc.	Installation of epoxy lining in six underground storage tanks, cathodic protection on tanks and piping, spill containment basins, float vent valves and underground preparation of the site for a tank monitor system.

TC-3276	Johnson Oil of Manzanita, Inc.	Installation of one STI-P3 underground storage tank replacing three bare steel tanks, epoxy lining and cathodic protection in one existing steel tank, fiberglass piping, spill containment basins, monitoring wells, and turbine leak detectors on these and a third existing fiberglass tank.
TC-3277	Tansy Point Fuel Company	Installation of epoxy lining in two aboveground storage tanks.
TC-3278	Jackson Oil, Inc.	Installation of a tank monitor system, spill containment basins and line leak detectors.
TC-3279	Hood River Supply Association	Installation of six fiberglass underground storage tanks and double wall fiberglass piping, spill containment basins, tank monitor, line leak detectors, monitoring well, overfill alarm, piping for Stage II vapor recovery.
TC-3280	Deschutes Country Store, Inc.	Installation of sacrificial anode cathodic protection on four steel tanks and double wall fiberglass piping, spill containment basins, tank monitor, line leak detectors, float vent valves, sumps, shear valves and piping for Stage II vapor recovery.
TC-3285	L & D of Oregon, Inc.	Installation of two baffled STI-P3 double wall tanks and double wall fiberglass piping, spill containment basins, overfill vent valves, breakaway automatic shutoff devices, tank monitor, turbine leak detectors, monitoring wells and Stage I and Stage II vapor recovery.

C. Authorization for Rulemaking Hearing on Amendments and Corrections to the Hazardous Waste Rules

This item requested approval to proceed to a rulemaking hearing on proposed amendments to OAR Chapter 340, Divisions 100, 101, 102, 104, 105, 106, and 110 to incorporate corrections, amendments, and new regulations promulgated by the federal Environmental Protection Agency (EPA) pursuant to the Resource Conservation and Recovery Act (RCRA), the Hazardous and Solid Waste Amendments of 1984 (HSWA), and the Toxic Substance Control Act (TSCA).

This was the latest in a series of rulemakings to adopt by reference federal regulations in order for the Department to retain authorization from EPA to implement the base RCRA program and HWSA regulations in Oregon. Also included was proposed updating of

rules governing the management of polychlorinated biphenyls (PCBs) to maintain equivalency with the federal program. The proposed rule amendments were contained in Attachment A of the staff report. Attachment D presented a summary of the proposed amendments and corrections.

D. Authorization for Rulemaking Hearing on Requirements for Stage II Vapor Recovery at Gasoline Stations

This item requested approval to proceed to a rulemaking hearing on proposed rules to require Stage II vapor recovery (control of motor vehicle refueling vapors) to be installed over the next one to three years at gasoline stations with an annual throughput of 600,000 gallons or more in Clackamas, Multnomah, and Washington counties. The Commission had previously authorized a public hearing on a different proposal. As a result of hearing testimony, ozone violations during August and September 1990, and clarifications on airshed growth cushions contained in the new federal Clean Air Act, and further discussions with the Stage II Advisory Committee, the Department returned to the Commission with this new recommendation. The proposed rules were presented in Attachment A of the staff report.

E. Authorization for Rulemaking Hearing on Minimum Design and Performance Standards for Environmental Control of Gold Mining Operations

This item was included on the agenda to provide the opportunity for the Commission to give direction to the Department following the Thursday Work Session discussion of regulation of gold recovery operations.

F. Proposed Adoption of Portland Central Business District Parking Offset Rule

This item requested Commission adoption of the proposed Portland Central Business District (CBD) Parking Offset Rule as an amendment to the Portland Carbon Monoxide (CO) State Implementation Plan (SIP). The proposed rule was set forth in Attachments A and B of the staff report. The Commission previously authorized a public hearing on the proposal at the September 21, 1990 meeting. No changes were proposed as a result of the hearing.

The new rule would allow the City of Portland to exceed the CO SIP parking lid to meet new parking growth needs projected for the next ten years in the CBD without any increase in CO emissions. The rule contains a provision for a net air quality benefit by requiring emission offsets ranging from 1.2 to 2.0 of the potential emissions increase

from new parking. The rule also contains a Monitoring and Contingency Plan to guarantee that increases in parking will not produce corresponding increases in CO emissions should offset measures not produce expected results. The 1982 CO SIP parking lid would also be revised from 40,855 to 43,914 spaces to reflect the actual number of existing and approved spaces in 1982 based on more accurate data. Under the proposed rule, the revised parking ceiling of 43,914 spaces could be increased by up to 1,370 spaces, providing emission offset measures are implemented.

G. Proposed Adoption of Amendments to Rules on Numeric Soil Cleanup Levels for Motor Fuel and Heating Oil

This item proposed adoption of rule amendments to the Numeric Soil Cleanup Levels for Motor Fuel and Heating Oil: OAR 340-122-305 through 340-122-360 (Soil Matrix Rules) as presented in Attachment A of the staff report. The proposed amendments make necessary changes in analytical methods and reporting requirements, but do not change the actual numeric cleanup standards.

H. Proposed Adoption of Drug Lab Cleanup Rules

This item proposed adoption of permanent rules relating to drug lab cleanups to replace temporary rules adopted earlier by the Commission. The proposed rules as presented in Attachment A of the staff report were substantially similar to the temporary rules, but were amended based on testimony received in the public review process. The proposed rules contain the basic operating procedures for the drug lab cleanup program as well as the requirement for a 50% cost share from law enforcement agencies and provisions for exemption from the cost share requirement, as directed by the Legislative Emergency Board on May 18, 1990 and November 16, 1990.

I. Proposed Adoption of Rule Amendments to the Pollution Control Bond Fund Rules

This item proposed adoption of amendments to the Pollution Control Bond Fund Rules as presented in Attachment A of the staff report. The proposed rules allow the Department to recover its actual costs of issuing general obligation bonds and using the proceeds to purchase pollution control bonds from local governments. The amendments make permanent temporary rules that were adopted on August 10, 1990.

The Commission removed items B, E, and H from the consent agenda by consensus to allow for public testimony and discussion.

Action on Consent Items A, C, D, F, G, and I:

It was MOVED by Commissioner Wessinger that the Department recommendations on Agenda Items A, C, D, F, G, and I be approved. The motion was seconded by Commissioner Lorenzen and unanimously approved.

Consideration of Consent Item B: (Approval of Tax Credit Applications)

Herbert E. Kluth and Bruce Vickers, representing Columbia Helicopters, requested that costs related to soil borings be reinstated in their request for tax credit associated with upgrade of an underground tank installation (TC-2893). They noted that the Department had denied approval for the costs of the soil borings ($8,500) that were conducted prior to undertaking the underground tank upgrade project ($157,399). Director Hansen stated that the soil boring tests were necessary and desirable, but the Department concluded that this work did not meet the definition of a pollution control facility and was not eligible for inclusion in the certification. Chairman Hutchison and Commissioner Lorenzen advised that the Commission must follow the law even though it may appear to be imperfect.

Richard Vial, attorney, and Charles Langmack, representing Langmack Seed, urged the Commission to increase the percent of cost allocable to pollution control on Application TC-3257 to 100% (Department recommended 54%) because the only purpose for the claimed tractor was to power a flail chopper used to implement an alternative to open field burning. Mr. Vial noted that the average annual tractor usage of 450 hours used by the Department is an erroneous number, and that 276 hours (a national average figure) would be more appropriate. Mr. Vial also noted that the Department of Agriculture agreed with the applicant's claim for 100% eligibility.

Pete Dalke, Management Services Division Administrator, noted that the Department had reviewed the data cited by Mr. Vial, and concluded that it was based on a very small sample that included very few from the Willamette Valley. He also noted that Willamette Valley farm equipment dealers contacted by the Department cited average use figures of 400 to 550 hours. The Department thus was comfortable with the 450 hour figure, and the resulting calculation of 54% allocable to pollution control in this case.

The Commission indicated that it did not find any basis for deviating from the established procedure for determining eligibility based on the annual average of 450 hours of use.

It was MOVED by Commissioner Lorenzen that the Department recommendation on all tax credits except TC-2698 be approved. The motion was seconded by Commissioner Wessinger and unanimously approved.

It was MOVED by Commissioner Wessinger that the Department recommendation on application TC-2698 be approved. The motion was seconded by Commissioner Whipple and approved with three yes votes and Commissioner Lorenzen abstaining.

Consideration of Consent Item E: (Authorization for Rulemaking Hearing on Minimum Design and Performance Standards for Environmental Control of Gold Mining Operations)

The Commission reflected on the Work Session discussion of the previous day and expressed the following views:

- Proceed to rulemaking hearings as soon as possible on rules to address open pit large scale mining in which chemicals are used for ore processing. (Placer mining will be treated separately.)

- Use an open process including public information meetings in the development of proposed rules (in place of an advisory committee process).

- Develop draft rules sufficient to proceed to hearing by the end of February. Proceed to a rulemaking hearing and complete the rulemaking process within six months.

- Report on progress at the February 1, 1991, meeting and provide an outline of proposed rules.

- Circulate drafts to the Commission for their information as they are developed in order to provide an opportunity for input.

- Use a blended approach involving both rules and guidelines. The rules should not be too detailed, and the guidelines ought to be dynamic but sufficiently precise to send a reasonable and sufficiently predictable message about the regulatory expectations of Oregon.

- Direct the rules toward eliminating risk to the environment.

- Make the rules a combination of performance-based and technology-based requirements.

- Require the best technology available anywhere as the starting point. If technology is being used anywhere else commercially, that technology will be the starting point for requirements. Make the rules technology forcing.

- Clearly place the burden on the applicant to show why specific technology or performance standards shouldn't apply or why alternative approaches should be considered equivalent and acceptable.

- Evaluate and consider the relationship to RCRA requirements.

- Assure that the regulatory approach is preventative and that the need for future superfund cleanup is eliminated.

- Consider interagency coordination to the maximum extent practicable to minimize duplication of efforts by applicants and the public.

It was MOVED by Commissioner Wessinger that the Department proceed with development of rules based on the above guidance. The Motion was seconded by Commissioner Lorenzen and unanimously approved.

Consideration of Consent Item H: (Proposed Adoption of Drug Lab Rules)

Commissioner Lorenzen asked a question regarding retention of material from a drug lab cleanup for evidence in criminal proceedings, particularly with respect to the right of the defendant to obtain samples. Director Hansen noted that law enforcement agencies take their samples prior to any cleanup activity by the Department's contractors. He also noted his understanding that the legislature had addressed that issue so that cleanup materials did not have to be held.

It was MOVED by Commissioner Whipple that the Department recommendation be approved. The motion was seconded by Commissioner Wessinger and unanimously approved.

Rule Adoptions

J. Proposed Reconsideration of November 2, 1990 Action to Adopt Rules to Implement Required Out-of-State Surcharge for Solid Waste

The Department proposed that the Commission reconsider the administrative rule on the surcharge on out-of-state waste adopted by the Commission at its last meeting on November 2, 1990. The Legislative Emergency Board (E-Board) had reviewed the Commission approved rate as required by law and approved a fee of $2.25 per ton, rather than the $2.75 per ton previously adopted by the Commission. Since the rule had not been filed with the Secretary of State, the rulemaking process was not completed, and the Department

recommended the Commission reconsider the matter, and adopt the $2.25 fee as reflected in the proposed rules in Attachment A of the staff report.

Steve Greenwood of the Hazardous and Solid Waste Division described the action taken by the E-Board, which was to eliminate "Lost Tourism and Business Development Revenues" from the list of costs considered. Also, the E-Board instructed the Ways and Means Committee to target the $.72 per ton for "Environmental Liability" to a special fund to cover that liability, and to target the $.66 per ton from tax credits as an offset to General Fund revenues.

Chairman Hutchison asked about written comments provided by the attorney for Tidewater Barge Lines, the operator of the Finley Buttes regional landfill. The comment was that the $.05 per ton for "Solid Waste Reduction Activities" was an overcharge, because the costs were based upon the first four years, but would be charged for the full 20 years of the contract. Steve Greenwood answered that the Commission could review this specific charge and eliminate or reduce it within four years.

It was MOVED by Commissioner Wessinger that the Department recommendation for reconsideration and adoption of a surcharge of $2.25 per ton be approved. The motion was seconded by Commissioner Lorenzen and approved with three yes votes and Chairman Hutchison voting no. Chairman Hutchison stated his reason for voting no as a belief that the costs of lost tourism and business development revenues should not have been eliminated, and that the Emergency Board should have deferred to the Commission's initially adopted surcharge.

Commissioner Lorenzen noted that Senator Thorne had complimented the staff for excellent work in developing and defending the surcharge.

K. Proposed Adoption of Rules Modifying OAR 340-41-270 Special Policies and Guidelines for the Mid Coast Basin and OAR 340-71-460(7) Moratorium Areas for On-Site Sewage Disposal Systems for the Clear Lake Area Near Florence

This item proposed adoption of rules to establish new loading limitations and other requirements for protecting water quality in Clear and Collard Lakes near Florence, Oregon. The proposed rules were included as Attachment A of the staff report. The proposed rules would establish a revised annual loading limitation for Clear Lake and establish a limitation for Collard Lake. The proposed rules would also prohibit new on-site sewage disposal systems and connections to other sewerage facilities in the Clear Lake watershed until Lane County develops a lake watershed management plan consistent with the lake loading limitations in the proposed rule. The proposed rules were substantially revised from the version taken to public hearing based on information received in the public participation process.

Fred Hansen began the discussion by pointing out that the proposed rules were revised to focus on environmental issues as opposed to land use issues.

Dick Nichols, Andy Schaedel and Lydia Taylor of the Water Quality Division showed a graphic representing existing and proposed phosphorus loadings on Clear and Collard Lakes as compared to two other lakes along the coast. Mr. Nichols described the significant changes to the proposed rules from those that went to hearing.

Walter H. Drew stated that the proposed rules were better than those that went to hearing. He felt that Lane County would be opposed to the rules as currently proposed and that he hoped the Environmental Quality Commission would not be persuaded by Lane County to change the current proposal.

Elli Dumdi and Bill Van Vactor, representing Lane County, stated that the rules were premature and that action by the Commission should be delayed until the local Advisory committee (CRMP) had finished its work. They stated that further degradation of Clear and Collard Lakes as contemplated by the proposed rules should not be allowed. In addition, the rule should impose a deadline for sewers to be installed in the Collard Lake subdivisions to assure that Collard Lake residents did not attempt to stall the process of developing a watershed management plan. Finally, they stated that the Department should continue to provide technical assistance to the county and the CRMP.

Commissioner Whipple asked Ms. Dumdi if the CRMP was committed to finishing its work. Ms. Dumdi stated that she hoped that it was.

Bill Finley, representing Heceta Water District, told the Commission that the District was held responsible for providing clean water to its customers, but was not in a position to control development within the watershed of its water source. The district has an approach to resolving the development problems in the watershed and is moving toward a buy-out of almost all undeveloped properties. He asked that the adoption of the proposed rules not be delayed and that if sewers were required in the rules as a means to push the CRMP along, Lane County would be sure that the CRMP failed so that sewers would result.

Glenn Nickell, an owner of Collard Lake property, stated that he supported the rules as proposed. He felt that a buy-out was the best way to address water quality protection and deal with the inability of people to use their undeveloped property.

Muriel Hilliard, representing West Lane County Planning Commission, stated that she did not think consensus by the CRMP was possible.

William Gates, representing the Siuslaw Soil and Water Conservation District, stated that he supported the Department's work and felt the proposed rule was appropriate. He felt that consensus by the CRMP was unlikely and that reliance on the CRMP would be a fatal flaw.

Chairman Hutchison asked Department staff if the testimony offered lead them to any other conclusion from that offered in the staff report. Dick Nichols said no. Lydia Taylor indicated that there was no objection to the delay suggested by Lane County, but that she did not believe the delay would lead to any significant changes in the proposed rule. Fred Hansen summarized the possible policies options the Commission could consider. Commissioner Whipple asked whether or not the proposed rule would prevent a particular watershed management plan alternative. Dick Nichols stated that it would not.

It was MOVED by Commissioner Wessinger that the Department recommendation be approved. The motion was seconded by Commissioner Lorenzen and unanimously approved.

Action Item

Special Item: Clarification of Authority of Third Parties to Request Hearings on Pulp and Paper Mill NPDES Permits

This item was added to the agenda to secure clarification of the Commission's position on whether third parties may request a contested case hearing on pulp and paper mill NPDES permits recently issued by the Department. By order issued February 12, 1990, the Commission authorized third parties to request a contested case hearing on permit modifications imposing additional limitations on the discharge of dioxin and related toxic pollutants by three pulp and paper mills (Pope & Talbot, No. 100313, James River II, No. 3745-J, and City of St. Helens/Boise Cascade, No. 3855-J). Several third parties, as well as the permittees, requested a contested case hearing and that proceeding has been pending before Hearings Officer Arno Denecke. In November 1990, DEQ took additional action on the three permits. The permits for James River II and the City of St. Helens/Boise Cascade were issued permit renewals, and the Pope & Talbot permit was further modified. James River and the City of St. Helens/Boise Cascade have again requested contested case hearings on their permits. Pope & Talbot has not challenged the new permit modification. The issue has arisen as to whether the Commission intended its prior order on third parties to extend to the more recent permits. The Hearings Officer and Department legal counsel recommended that the Commission resolve the issue by clarification of its intent. They further recommended that if the Commission wishes to extend the authority of third parties to the more recent permits, a revised order to this effect should be issued. The Commission was provided with written legal arguments on the issue from the affected parties.

Jay Waldron, attorney representing Pope & Talbot, appeared to urge the Commission to not allow third party appeal of the Pope & Talbot permit. He stated that the permit contains limitations equal to the most stringent standards anywhere in the United States and that the Company has not appealed. He also stated that the Hearings Officer had stated that the new permits are a new proceeding. Mr. Waldron stated six reasons why it would be inappropriate to allow third parties to appeal the permit:

1. If the Commission is interested in developing a record on pulp mill dioxin permit limits, such a record will be developed in the case of the other two mills which have appealed their permits. Allowing third party appeal of the Pope & Talbot permit would not facilitate development of a complete record on the issue.

2. Pope & Talbot has committed to a compliance schedule to 1997 in a consent order. Pope & Talbot is required to comply with the provisions of the consent order even if the Commission were to relax the standards or basis for the permit limits as a result of the contested case proceeding for the other two mills.

3. Pope & Talbot wants to abide by the consent order and the permit it has been issued.

4. Pope & Talbot intends to dismiss its case in Marion County Circuit Court challenging the listing process once it is assured that it's permit is not challenged.

5. Under the criteria in the draft rules the Commission will be discussing on third party appeals, it would be inappropriate to allow a third party appeal because the third parties want to change Commission policies rather than question Department interpretation of those policies.

6. If the Commission allows third parties to appeal the Pope & Talbot permit, the provisions of the permit will be stayed until the contested case is decided. The result will be that the first compliance steps will be stalled and environmental improvement will be delayed.

Mr. Waldron summarized by saying that a decision by the Commission to allow third parties to appeal the Pope & Talbot permit would seriously prejudice the interests of Pope & Talbot and the environment.

Chairman Hutchison questioned how Pope & Talbot would be benefitted if the permit was challenged in Circuit Court. Mr. Waldron stated that the permit would be valid and in effect unless the court enjoined the permit. If a contested case proceeding were initiated, the permit would not go into effect until the proceeding was completed. He also stated that the Circuit Court proceeding would be rapid, based on his experience. Chairman Hutchison

noted that he was reluctant to have the issues involved being considered in both a contested case proceeding and a circuit court proceeding.

Commissioner Wessinger asked Michael Huston to summarize the options available to the Commission. Mr. Huston stated that the Commission had three options as follows:

1. Confirm that the earlier order is intended to be applicable to the newly issued or modified pulp mill NPDES permits (by issuance of an amended order).

2. Confirm that the earlier order is not intended to be applicable to the newly issued or modified pulp mill NPDES permits (by issuance of an amended order).

3. Do nothing and leave the issue to the Hearings Officer to resolve.

In response to a question, Director Hansen noted that the Department entered into the stipulated compliance order and issued the modified permit because it was the proper environmental control action to take.

Michael Huston indicated that Mr. Waldron had given grounds for the Commission to distinguish between the prior situation and the current situation. Commissioner Lorenzen stated that in the earlier proceeding, he was certain the industries would appeal their permits and wanted to guarantee that third parties had the right to intervene and have their positions heard. He viewed the present issue as being different. He commended Pope & Talbot for their action, noted their willingness to risk a Circuit Court challenge, and stated that the Commission should assist them in moving forward.

Chairman Hutchison asked how it would work and what we would be doing to third parties if the Department were in Marion County Circuit Court with one decision and before a hearings officer on a different decision. Director Hansen noted that the issues to be argued with regard to Pope & Talbot are likely to be different from the issues on the other two mills. Further, the issues raised to date by third parties in the pulp mill cases are not the conditions of the permits, but rather the policy choices related to the standards. Larry Edleman, legal counsel for the Department, stated that he was not concerned about defending the Department's action in two different forums because the issues would be different. He further noted that they have not opposed third party appeals and view that as a policy choice for the Commission. Mr. Edleman further indicated that he would prefer not to have to go through a contested case process with Pope & Talbot and would be comfortable defending the Department's position in a Circuit Court challenge.

Commissioner Whipple questioned why Pope & Talbot should be lumped into a contested case with the other two mills when they have asked not to be, and have agreed to meet

requirements and proceed with compliance. She expressed some question about the validity of third party status and noted that all who have concerns still have rights.

In response to a question from Commissioner Wessinger, Michael Huston stated that the sense that was evolving from the Commission discussion could be captured in an order which would announce the contested case requested by the other two mills and clarify that there would be no opportunity for third parties to request a contested case on the Pope & Talbot permit.

It was MOVED by Commissioner Wessinger that an order be entered announcing the contested case requested by the other two mills and clarifying that there would be no opportunity for third parties to request a contested case on the Pope & Talbot permit. The motion was seconded by Commissioner Whipple and approved with three yes votes and Chairman Hutchison abstaining.

Informational Items

L. Status Report on Proposed PM_{10} Control Strategy for Medford

This item presented a report on the progress in adoption of a PM_{10} control strategy for Medford. The Department had intended to present the strategy for Commission adoption, however, one of the local ordinances that was critical to the success of the strategy was repealed by the voters of Central Point on November 6, 1990. Medford, Central Point, and Jackson County had previously adopted woodburning curtailment ordinances. Initiative measures to repeal the Central Point and Jackson County ordinances were on the ballot. The Jackson County ordinance was retained by a solid margin; the Central Point ordinance was repealed by a narrow margin. The repeal of the Central Point ordinance causes a shortfall in the PM_{10} strategy, and violations are expected to continue in Central Point, and possibly in Medford.

The Department identified three options: (1) proceed with adoption of the strategy and, in parallel, pursue development of additional control measures that are necessary to fully meet air quality standards at all locations; (2) delay adoption and submittal of the strategy and ask EPA to extend the submittal schedule and attainment date until additional control measures are identified and adopted; or (3) do not submit a State Implementation Plan and allow EPA to impose sanctions or develop and implement a Federal Implementation Plan for the Medford-Ashland area. The Department recommended that the partial strategy be adopted as soon as possible (option 1) and that all identified options to address the shortfall be pursued with major emphasis on development of a replacement local woodsmoke control program.

Merlyn Hough, of the Air Quality Division staff, responded to questions from the Commission. Director Hansen noted that changes in the Federal Clean Air Act makes it desirable to move forward with the partial strategy. Tom Bispham, Acting Air Quality Division Administrator, noted that the Department expected others to press the legislature for state authority to conduct local curtailment programs. In response to a question from Chairman Hutchison, Director Hansen noted that the Department's legislative proposal for a woodstove tax credit program was rejected by the Governor's office and would not be introduced.

By consensus, the Commission urged the Department to proceed in accordance with the recommendation. In addition, the Commission asked the Department to send a letter to Jackson County supporting their actions.

M. Information Report on the Requirement that Soil Contaminated with Hazardous Substances be Disposed of Only in Landfills Employing Best Management Practices

The Department prepared an informational report on the status of disposal and treatment of cleanup materials contaminated with hazardous substances. The Commission had adopted a rule in March which required disposal of cleanup materials contaminated with hazardous substances (largely oil-contaminated soils from UST cleanups) after January 1, 1991 at landfills with double-liners and leachate collection.

In March, there was only one landfill in the state meeting the design standard. The rule was intended to encourage development of treatment and disposal options prior to January. The Commission had asked for a report prior to the rule going into effect, to ensure that adequate management options exist.

Steve Greenwood, from the Hazardous and Solid Waste Division, informed the Commission on the following developments since the March meeting:

- One new landfill and two new treatment options had been developed since March.
- On-site treatment and one-time off-site treatment had been facilitated through changes in the UST permit program.
- Disposal and treatment options are still limited in many parts of the state.
- The Department intends to authorize, under the rule passed in March, eight landfills in Oregon which do not currently have double-liners and leachate collection to accept oil-contaminated soils. This exemption would be revoked once reasonable treatment options become available.

Three persons spoke in favor of the Department's report and recommendation: John Spencer from RMAC, a company that intends to operate a treatment facility; and Lynn Frank and Ron Goodman from the Oil Heat Institute.

The Commission accepted the report and took no further action. This means that the existing rules will remain unaltered.

N. Columbia River Water Quality Study Workplan: Update

This item was a status report on the Bi-State Lower Columbia River Water Quality Program which was created at the direction of the Oregon and Washington legislatures. The two states entered into an Interstate Agreement that directs a four-year water quality program, ending in March 1994, to characterize water quality in the lower Columbia River, identify water quality problems, determine whether beneficial uses are impaired and develop solutions to problems found in the Columbia River below Bonneville Dam. The total project funding for the program is $2.4 million, based on annual contributions of $200,000 from each state, $100,000 from the public ports and $100,000 from the pulp and paper industry.

Cordy Shea, Oregon staff coordinator for the project, stated that the Steering Committee had been appointed and had met frequently. A Scientific Advisory Committee had been appointed. A Draft program plan had been developed and revised, and the plan is to be adopted by the Steering Committee in January. Finally, the agencies will report to the Legislature in February.

Steering Committee Co-Chair Nina Bell reported that the current program is better than nothing but is not a substitute for the Federal National Estuary Program. Committee Co-Chair Jerold Heller noted that he was not a supporter of the National Estuary Program and stated his belief that the current process can work. Both Co-Chairs expressed support for securing additional federal funding for the program.

P. Discussion of Draft Rules Establishing a Third Party Appeal Process

This agenda item presented a discussion draft of potential rules to define procedures for third party requests for Commission review of permit decisions. The rules were drafted by Michael Huston as a result of discussions at the September 20, 1990, work session. Chairman Hutchison distributed a partial revision of the draft rules. Michael Huston reviewed the draft noting that the rules provided for a review process that was limited in scope, was completely discretionary on the part of the Commission, provided short timelines to stay within the 20 days allowed in current rule for the applicant to appeal, articulated factors that could be considered by the Commission in determining whether to initiate a

contested case hearing, and provided that at least three Commission members must concur in order to initiate a hearing. He noted that the partial revisions were drafted after discussions with the Chairman and would lengthen the timelines for a third party to request a review and for the Commission to make a determination on the request, would allow the Chairman to authorize a contested case on a third party request, articulates a policy to expedite the contested case, and clarifies notice provisions.

Commissioner Lorenzen stated his view that it would be most unusual for an appeal to be authorized. He stated that the procedure needed to be clarified, and that he did not favor lengthening the period of time for requesting and acting on a request for review. He also stated that the procedure should allow time for Commission members to ask for response from the Department. Finally, he stated that the rules should provide that a request is denied if the Commission takes no action. Chairman Hutchison generally agreed with Commissioner Lorenzen except that he felt that 14 days for a third party to request review and 6 days for the Commission to make a decision was too short a period of time. Commissioner Whipple expressed concern about lengthening the process.

Karl Anuta and David Moskowitz, representing Northwest Environmental Defense Center, urged the Commission to make the same appeal process applicable to the permittee. Michael Huston noted that the law specifies the permittee's right of appeal.

Commissioner Lorenzen asked about the standards for review in circuit court. Michael Huston responded that circuit court review is based on procedural requirements and substantial evidence in the record to support the permit decision. The Commission has more latitude in a Contested Case and can substitute its judgment for that of the Department.

Director Hansen noted that if the Commission wanted a response from the Department before a determination was made on a third party request, it would be necessary to allow more time. He also expressed concern about the added workload associated with additional notice requirements, particularly in light of Ballot Measure 5 budget cuts.

It was MOVED by Commissioner Lorenzen that conceptual approval be given to proceed to public hearing based on the Attorney General and the Department revising the draft rules based on the discussion, completing the necessary supporting documents, and proceeding to hearing. The motion was seconded by Commissioner Wessinger and unanimously approved.

Q. Commission Member Reports

Chairman Hutchison reported that the Governor's Watershed Enhancement Board will meet in January in Salem to consider the next round of grants. He noted that board members representing the Board of Forestry and Water Resources Commission are needed.

R. Director's Report (Oral Report)

Director Hansen reported on the following items:

1. The Land Conservation and Development Commission (LCDC) recently considered the Department's State Agency Coordination program and Agreement. LCDC raised an issue about Health Hazard Annexations. They expressed support for preference being given to health hazard abatement plans with annexation requirements. The EQC has previously expressed a strong policy position for abatement plans which address the health hazard or environmental problem in the most cost effective way and that are neutral with regard to annexation. LCDC would like the Commission to reconsider the current policy position.

2. The Department has again delayed a final determination on the 401 Certification decision on the proposed Salt Caves Hydroelectric Project based upon a request from the applicants that they be allowed additional time to respond to comments submitted by the Department of Fish and Wildlife.

S. Legislative Update (Oral Report)

Director Hansen noted that the Department's legislative proposals have been considered by the Governor-elect, and that the results are confidential until the Governor-elect releases her budget. He stated that he would contact each Commission member individually to discuss the currently available information.

Public Forum

No one appeared at the Public Forum.

There was no further business and the meeting was adjourned at about 1:10 p.m.

Oregon

ENVIRONMENTAL
QUALITY
COMMISSION

REQUEST FOR EQC ACTION

Meeting Date: January 31, 1991
Agenda Item: B
Division: MSD
Section: Administration

SUBJECT:

Approval and Denial of Tax Credit Applications.

ACTION REQUESTED:

__ Work Session Discussion
- __ General Program Background
- __ Potential Strategy, Policy, or Rules
- __ Agenda Item __ for Current Meeting
- __ Other: (specify)

__ Authorize Rulemaking Hearing
__ Adopt Rules
- Proposed Rules — Attachment ___
- Rulemaking Statements — Attachment ___
- Fiscal and Economic Impact Statement — Attachment ___
- Public Notice — Attachment ___

__ Issue a Contested Case Order
__ Approve a Stipulated Order
__ Enter an Order
- Proposed Order — Attachment ___

_X_ Approve Department Recommendation
- __ Variance Request — Attachment ___
- __ Exception to Rule — Attachment ___
- __ Informational Report — Attachment ___
- _X_ Other: (specify) — Attachment ___

811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696

Tax Credit Application Review Reports:

TC-2653 O. C. Webb-Bowen, Inc.	Installation of four fiberglass tanks and piping, spill containment basins, float vent valves, line leak detectors, impact valves, oil/water separator, piping for Stage II vapor recovery and monitoring wells.
TC-2654 J & E Enterprises	Installation of three STI-P3 tanks, fiberglass piping, spill containment basins, turbine leak detectors, monitoring wells and underground preparation of the site for a tank monitor.
TC-2671 Oak Park Farms, Inc.	Straw Storage Shed.
TC-2774 William C. Smith	Straw Storage Shed.
TC-2800 Don Wilson Enterprises, Inc.	New installation of three fiberglass/steel double wall tanks, double wall fiberglass piping, spill containment basins, sumps, tank monitor and an oil/water separator.
TC-3058 Merritt Truax, Inc.	Installation of leak detection and overfill prevention on four underground storage tanks in the form of automatic tank gauges with alarms.
TC-3207 Metrofueling, Inc.	Installation of leak detection on four underground storage tanks in the form of automatic tank gauges with overfill alarm.
TC-3230 Arnold E. Knox	12' Dandl Row Chop Shredder.
TC-3241 Mill Waste Recycling Co.	Mobile Log Yard Debris Separation System.
TC-3249 K. Farms, Inc.	Rear's 30' Propane Flamer.
TC-3253 Monte J. Lewis	Hesston 60B Stackhand.

TC-3254 Monte J. Lewis	Straw Storage Shed.
TC-3255 Environmental Rubber Bonding Co.	Pole Barn & Forklift.
TC-3287 Burns Bros., Inc.	Installation of Spill containment basins, turbine leak detectors and a tank monitor system for six tanks.
TC-3290 Howard Schwanke	Three Straw Storage Sheds.
TC-3293 Clifford Jenkins	Installation of two fiberglass tanks and piping, spill containment basins, tank monitor, overfill alarm, float vent valves, Stage I vapor recovery and piping for Stage II and monitoring wells.
TC-3294 Barry Desbiens	Installation of three fiberglass tanks and piping, spill containment basins, float vent valves, tank monitor, turbine leak detectors and underground preparation for a tank monitor.
TC-3295 Sheldon Oil Company, Inc.	Installation of four fiberglass tanks and piping, spill containment basins, monitoring wells and float vent valves.
TC-3301 Pendleton Grain Growers, Inc.	Installation of fiberglass piping, spill containment basins, tank monitor and line leak detectors.
TC-3302 Russell Oil Co.	Installation of spill containment basins and line leak detectors for seven tank and piping systems.
TC-3304 Laurel Valley Store	Installation of one 5,000 gallon STI-P3 tank, fiberglass piping, spill containment basins, check valves and a float vent valve.

DESCRIPTION OF REQUESTED ACTION:

Issue Tax Credit Certificates for Pollution Control Facilities; deny tax credit certification for Paul Parker, TC 3241.

AUTHORITY/NEED FOR ACTION:

X	Required by Statute: ORS 468.150-468.190	Attachment ___
	Enactment Date: _____	
___	Statutory Authority: _____	Attachment ___
___	Pursuant to Rule: OAR 340 Division 16	Attachment ___
___	Pursuant to Federal Law/Rule: _____	Attachment ___
___	Other:	Attachment ___
___	Time Constraints: (explain)	

DEVELOPMENTAL BACKGROUND:

___	Advisory Committee Report/Recommendation	Attachment ___
___	Hearing Officer's Report/Recommendations	Attachment ___
___	Response to Testimony/Comments	Attachment ___
___	Prior EQC Agenda Items: (list)	Attachment ___
___	Other Related Reports/Rules/Statutes:	Attachment ___
X	Supplemental Background Information	Attachment A

Letter from applicant No. 3241, Mr. Dave Parker, which explains reasons for late application submittal.

REGULATED/AFFECTED COMMUNITY CONSTRAINTS/CONSIDERATIONS:

Paul Parker of Mill Waste Recycler Company plans to testify on TC-3241.

PROGRAM CONSIDERATIONS:

None.

ALTERNATIVES CONSIDERED BY THE DEPARTMENT:

None.

DEPARTMENT RECOMMENDATION FOR ACTION, WITH RATIONALE:

The Department recommends the Environmental Quality Commission approve certification for tax credit applications identified above with exception of TC-3241. The Department recommends that TC-3241 be denied because the application was submitted more than two years after substantial completion. The statute provides the Commission with authority to grant one year extension of time to file an application. Department administrative rule requires that the extension be considered only if applied for within two years of substantial completion. It is the Department's position that it lacks authority to waive a late application submittal, or authority to recommend Commission approval.

CONSISTENCY WITH STRATEGIC PLAN, AGENCY POLICY, LEGISLATIVE POLICY:

Yes.

Note - Pollution Tax Credit Totals:

Proposed January 31, 1991 Totals

Air Quality	$ 218,341
Hazardous/Solid Waste	266,617
Noise	0
Plastics	0
Underground Storage Tanks	365,560
Water Quality	0
	$ 850,518

1990 Calendar Year Totals through December 31, 1990

Air Quality	$ 4,135,463
Hazardous/Solid Waste	270,427
Noise	0
Plastics	166,101
Underground Storage Tanks	4,556,216
Water Quality	1,853,210
	$10,981,417

INTENDED FOLLOWUP ACTIONS:

Notify applicants of Environmental Quality Commission actions.

Approved:

Section: _____

Division: _____

Director: _____

Report Prepared By: Roberta Young

Phone: 229-6408

Date Prepared: January 2, 1991

RY:y
MY100998
January 2, 1991

ATTACHMENT A

MILL WASTE RECYCLING COMPANY
4993 OSAGE
SWEET HOME, OREGON 97386
ph(503) 367-8380

OCT 19 1990

State of Oregon
Department of Environmental Quality
811 S.W. Sixth Ave.
Portland, OR 97204-1390

ATTN: Lissa Wienholt

October 15, 1990

RE: Tax Credit Application No. T-3241

Dear Lissa,

I am writing this letter persuant to our phone conversation last week. We would like you to take our application to committee regardless of the fact that it seems it was filed a week late.

The following information lists why application was not filed in a timely matter.

#1--Your Regional office told us when we were purchasing the machine that we could not apply for credit because we were purchasing machine to work for profit.

#2--We feel the application is extremely hard to figure out and is very time consuming and confusing for small business.

#3--When we finally found out that we could take a credit, thanks to your efforts, it was December 11, 1989. You put the credit application in mail to that day.

*****Attachment A**copy of envelope credit app. came in postmarked 12-11-89

*****Attachment B**copy of notes from phone conversation with you the day you mailed the tax credit app.

#4--The machine is used only for the purpose of recycling waste products and therefore should be elgible for credit.

#5--It was a year and almost 4 months later when we found out your regional office had gave us bad information regarding credit eligibility therefore not leaving us much time to gather info together for your tax credit app.

Lissa, we would appreciate it if you would take our app to committee and submit it along with this letter of explanation on why it was a week late in arriving to you.

Thankyou for you time and effort

Dave Parker
General Partner

M:
OF OREGON
OF ENVIRONMENTAL QUALITY
SIXTH AVENUE
AND, OR 97204-1390

TO:

Dave Parker
Mill Waste Recovery
4993 Osage
Sweet Home, OR 97306

LISSA WIENHOLT
Recycling Specialist
HAZARDOUS AND SOLID WASTE DIVISION
Waste Reduction Section

Department of Environmental Quality
811 SW Sixth Avenue Portland 97204 Phone 229-6823
Or call, Toll Free 1-800-452-4011

LISSA - DEQ 12-11-89 3:45

SAID WAS DOING FINAL WORK BUT LOOKED LIKE ALL OUR EQUIPMENT WOULD BE ELIGIBLE for CREDIT up to 50% TO be used in next 10 years

Application No. TC-2653

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

O. C. Webb-Bowen, Inc.
865 Spring Street
Klamath Falls, OR 97601

The applicant owns and operates a gasoline station at 2135 S. 6th St., Klamath Falls, OR, facility no. 8337.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of four fiberglass tanks and piping, spill containment basins, float vent valves, line leak detectors, impact valves, oil/water separator, piping for Stage II vapor recovery and monitoring wells.

Claimed facility cost (Accountant's certification was provided)	$ 62,318
Percent allocable to pollution control	100%

3. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16.

The facility met all statutory deadlines in that installation of the facility was substantially completed on January 1, 1989 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on January 2, 1989.

4. Evaluation of Application

a. The facility is eligible because the principal purpose of the facility is to comply with underground storage tank requirements imposed by the federal Environmental Protection Agency to prevent pollution of soil and water. This is accomplished by preventing releases into soil or water. The facility qualifies as a "pollution control facility", defined in OAR 340-16-025(2)(g): "Installation or construction of facilities which will be used to detect, deter or prevent spills or unauthorized releases."

Prior to the installation of pollution control, the facility consisted of four bare steel tanks and piping with no corrosion protection and no spill and overfill prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

1) For corrosion protection - Fiberglass tanks and piping.

2) For spill and overfill prevention - Spill containment basins, float vent valves and impact valves.

3) For leak detection - Line leak detectors and monitoring wells.

The applicant also installed piping for Stage II vapor recovery and an oil/water separator.

The applicant reported that soil testing was performed at the time of tank removal and no contamination was found.

Based on information currently available, the applicant is in compliance with all applicable DEQ regulations in that these tanks are permitted and fee payments are current.

The Department concludes that all of the costs claimed by the applicant ($62,318) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

b. Eligible Cost Findings

In determining the percent of the eligible pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

1) The extent to which the facility is used to recover and convert waste products into a salable or usable commodity.

The equipment does not recover or convert waste products into a salable or usable commodity.

2) The estimated annual percent return on the investment in the facility.

There is no annual percent return on investment as the applicant claims no gross annual income from the facility.

3) The alternative methods, equipment and costs for achieving the same pollution control objective.

The applicant indicated that no alternative methods were considered. The methods chosen are acceptable for meeting the requirements of federal regulations.

4) Any related savings or increase in costs which occur or may occur as a result of the installation of the facility.

The applicant claims no savings or increase in costs as a result of the installation.

5) Any other factors which are relevant in establishing the portion of the actual cost of the facility properly allocable to pollution control.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	Eligible Facility Cost	Percent Allocable	Amount Allocable
Corrosion Protection:			
Fiberglass tanks	$15,233	19%(1)	$ 2,894
Fiberglass pipe and fittings (includes pipe for vapor recovery)	7,572	100	7,572
Spill & Overfill Prevention:			
Spill containment basins	868	100	868
Float vent valves	371	100	371
Impact valves	480	100	480
Leak Detection:			
Line leak detectors	680	100	680
Labor & materials (includes oil/water separator and monitoring wells)	37,114	100 (2)	37,114
Total	$62,318	80%	$49,979

(1) The Department has determined the percent allocable on the cost of a corrosion protected tank system by using a formula based on the difference in cost between the protected tank system and a bare steel tank system as a percent of the protected system. Applying this formula to the costs presented by the applicant, where the protected tank system cost is $15,233 and the bare steel system is $12,353, the resulting portion of the eligible tank cost allocable to pollution control is 19%.

(2) Labor costs for the project were high due to the need to pump water from the excavation continuously during construction.

5. Summation

a. The facility was constructed in accordance with all regulatory requirements.

b. The facility is eligible for tax credit certification in that the principal purpose of the claimed facility is to comply with requirements imposed by the federal Environmental Protection Agency to prevent pollution of soil and water. This is accomplished by preventing releases in soil or water. The facility qualifies as a "pollution control facility" defined in OAR 340-16-025(2)(g): "Installation or construction of facilities which will be used to detect, deter or prevent spills or unauthorized releases."

c. The facility complies with DEQ statutes and rules.

d. The portion of the facility cost that is properly allocable to pollution control is 80%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $62,318 with 80% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-2653.

Barbara J. Anderson:ew
(503) 229-5870
December 31, 1990

Application No. TC-2654

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

J and E Enterprises
John and Edward Stafford
PO Box 450
Molalla, OR 97038

The applicant owns and operates a service station at 204 E. Main, Molalla, OR, facility no. 7282.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of three STI-P3 tanks, fiberglass piping, spill containment basins, turbine leak detectors, monitoring wells and underground preparation of the site for a tank monitor.

Claimed facility cost (Accountant's certification was provided)	$ 50,520
Percent allocable to pollution control	100%

3. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16.

The facility met all statutory deadlines in that installation of the facility was substantially completed on January 15, 1990 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation January 15, 1990.

4. Evaluation of Application

a. The facility is eligible because the principal purpose of the facility is to comply with underground storage tank requirements imposed by the federal Environmental Protection Agency to prevent pollution of soil and water. This is accomplished by preventing releases into soil or water. The facility qualifies as a "pollution control facility", defined in OAR 340-16-025(2)(g): "Installation or construction of facilities which will be used to detect, deter or prevent spills or unauthorized releases."

Prior to the installation of pollution control, the facility consisted of three bare steel tanks and piping with no corrosion protection and no spill and overfill prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

1) For corrosion protection - STI-P3 tanks and fiberglass piping.

2) For spill and overfill prevention - Spill containment basins.

3) For leak detection - Turbine leak detectors, monitoring wells and underground preparation of the site for a tank monitor.

The applicant reported that soil testing was performed at the time of tank removal and some contaminated soil was found and removed per DEQ instructions.

Based on information currently available, the applicant is in compliance with all applicable DEQ regulations in that these tanks are permitted and fee payments are current.

The Department concludes that all of the costs claimed by the applicant ($50,520) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

b. Eligible Cost Findings

In determining the percent of the eligible pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

1) The extent to which the facility is used to recover and convert waste products into a salable or usable commodity.

   The equipment does not recover or convert waste products into a salable or usable commodity.

2) The estimated annual percent return on the investment in the facility.

   There is no annual percent return on investment as the applicant claims no gross annual income from the facility.

3) The alternative methods, equipment and costs for achieving the same pollution control objective.

   The applicant indicated that no alternative methods were known to exist other than shutting down. The methods chosen are acceptable for meeting the requirements of federal regulations.

4) Any related savings or increase in costs which occur or may occur as a result of the installation of the facility.

   The applicant claims no savings or increase in costs as a result of the installation.

5) Any other factors which are relevant in establishing the portion of the actual cost of the facility properly allocable to pollution control.

   The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	Eligible Facility Cost	Percent Allocable	Amount Allocable
Corrosion Protection:			
STI-P3 tanks	$13,151	52%(1)	$ 6,839
Fiberglass piping	3,139	100	3,139
Spill & Overfill Prevention:			
Spill containment basins	587	100	587
Leak Detection:			
Turbine leak detectors	397	100	397
Labor and materials (includes monitoring wells and prep site for tank monitor)	33,246	100	33,246
Total	$50,520	88%	$44,208

(1) The Department has determined the percent allocable on the cost of a corrosion protected tank system by using a formula based on the difference in cost between the protected tank system and a bare steel tank system as a percent of the protected system. Applying this formula to the costs presented by the applicant, where the protected tank system cost is $13,151 and the bare steel system is $6,300, the resulting portion of the eligible tank cost allocable to pollution control is 52%.

5. Summation

a. The facility was constructed in accordance with all regulatory requirements.

b. The facility is eligible for tax credit certification in that the principal purpose of the claimed facility is to comply with requirements imposed by the federal Environmental Protection Agency to prevent pollution of soil and water. This is accomplished by preventing releases in soil or water. The facility qualifies as a "pollution control facility" defined in OAR 340-16-025(2)(g): "Installation or construction of facilities which will be used to detect, deter or prevent spills or unauthorized releases."

c. The facility complies with DEQ statutes and rules.

d. The portion of the facility cost that is properly allocable to pollution control is 88%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $50,520 with 88% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-2654.

Barbara J. Anderson:ew
(503) 229-5870
November 28, 1990

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Oak Park Farms, Inc.
Norman Coon, President
31310 Peoria Road
Shedd, Oregon 97377

The applicant owns and operates a grass seed farm operation in Halsey, Oregon.

Application was made for tax credit for an air pollution control facility.

2. Description of Claimed Facility

The facility described in this application is a 106' x 180' x 22' three sided, metal covered, pole construction straw storage shed, located at Oak Plain Drive off Highway 99E, Halsey, Oregon. The facility is owned by the applicant.

Claimed facility cost: $64,678
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

Prior to construction of straw storage sheds and purchase of straw gathering equipment applicant claims that his farm plan was to open field burn as many acres of his 2,200 perennial and 600 annual grass seed acres as the weather and smoke management program permitted.

The applicant claims a reduction in open field burning of perennial fields by approximately 1,800 acres. Perennial fields are baled off with the straw stored in sheds for future sale or use. The baled fields are then mechanically vacuumed with stak-paks. The applicant estimates that the shed in this application will accommodate straw from 750 acres.

4. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16. The facility has met all statutory deadlines in that:

Construction of the facility was substantially completed on November 15, 1989, and the application for final certification was found to be complete on November 14, 1990, within two years of substantial

completion of construction. The request for preliminary certification was approved on November 7, 1988.

5. Evaluation of Application

a. The facility is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; by reducing the maximum acreage to be open burned in the Willamette Valley as required in OAR 340-26-013; and, the facility's qualification as a "pollution control facility", defined in OAR 340-16-025(2)(f)(A): "Facility, facilities, and land for gathering, densifying, processing, handling, storing, transporting and incorporating grass straw or straw based products which will result in reduction of open field burning."

b. Eligible Cost Findings

In determining the percent of the pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

1. The extent to which the facility is used to recover and convert waste products into a salable or usable commodity.

The facility promotes the conversion of a waste product (straw) into a salable commodity by providing protection during inclement weather thus prolonging the life of the product.

2. The estimated annual percent return on the investment in the facility.

The applicant claims an average annual cash flow of $3,192 and a useful life of 15 years. Using the return on investment formula, there is an annual percent return on investment of 0% which provides a percent allocable of 100%

3. The alternative methods, facility and costs for achieving the same pollution control objective.

The method chosen is an accepted method for reduction of air pollution. The method is one of the least costly, most effective methods of reducing air pollution.

4. Any related savings or increase in costs which occur or may occur as a result of the construction of the facility.

There is an increase in operating costs of $1,808 to annually maintain and operate the facility. These costs were considered in the return on investment calculation.

5. Any other factors which are relevant in establishing the portion of the actual cost of the facility properly allocable to the prevention, control or reduction of air pollution.

   There are no other factors to consider in establishing the actual cost of the facility properly allocable to prevention, control or reduction of air pollution.

   The actual cost of the facility properly allocable to pollution control as determined by using these factors is 100%.

6. Summation

   a. The facility was constructed in accordance with all regulatory deadlines.

   b. The facility is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.

   c. The facility complies with DEQ statutes and rules.

   d. The portion of the facility that is properly allocable to pollution control is 100%.

7. Director's Recommendation

   Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $64,678, with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application Number TC-2671.

Jim Britton, Manager
Smoke Management Program
Natural Resources Division
Oregon Department of Agriculture
(503) 378-6792

JB:bmTC2671
November 14, 1990

Application No. TC-2774

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

William C. Smith
6968 Champoeg Road
St. Paul, Oregon 97137

The applicant owns and operates a grass seed farm operation in St. Paul, Oregon.

Application was made for tax credit for an air pollution control facility.

2. Description of Claimed Facility

The facility described in this application is a 104' x 100' x 21' metal clad, pole construction straw storage shed located at 6968 Champoeg Road, St. Paul, Oregon. The facility is owned by the applicant.

Claimed facility cost: $34,471.18
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

Before the straw storage shed was constructed and a propaner, tractor, and water equipment was purchased, the applicant states that he open field burned as much of his 260 perennial grass seed acres as the weather and smoke management program permitted.

The applicant states that in 1990 he baled off all his perennial grass seed fields and propaned 200 acres. The applicant trades the straw for the baling services. The baling contractor requires the availability of a storage shed. On the remaining 60 acre field the round bales are stacked burned.

4. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16. The facility has met all statutory deadlines in that:

Construction of the facility was substantially completed on June 30, 1989, and the application for final certification was found to be complete on November 19, 1990, within two years of substantial

complete on November 19, 1990, within two years of substantial construction of the facility. The request for preliminary certification was approved on March 20, 1989.

5. Evaluation of Application

a. The facility is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; by reducing the maximum acreage to be open burned in the Willamette Valley as required in OAR 340-26-013; and, the facility's qualification as a "pollution control facility", defined in OAR 340-16-025(2)(f)(A): "Equipment, facilities, and land for gathering, densifying, processing, handling, storing, transporting and incorporating grass straw or straw based products which will result in reduction of open field burning."

b. Eligible Cost Findings

In determining the percent of the pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

1. The extent to which the facility is used to recover and convert waste products into a salable or usable commodity.

The equipment promotes the conversion of a waste product (straw) into a salable commodity by providing protection from the elements.

2. The estimated annual percent return on the investment in the facility.

There is no annual percent return on the investment due to the negative average annual cash flow.

3. The alternative methods, facilities and costs for achieving the same pollution control objective.

The method chosen is an accepted method for reduction of air pollution. The method is one of the least costly, most effective methods of reducing air pollution.

4. Any related savings or increase in costs which occur or may occur as a result of the construction of the facility.

Applicant claims a gross annual income of $12,000 and annual operating expenses of $15,600.

5. Any other factors which are relevant in establishing the portion of the actual cost of the facility properly allocable to the prevention, control or reduction of air pollution.

   There are no other factors to consider in establishing the actual cost of the facility properly allocable to prevention, control or reduction of air pollution.

The actual cost of the facility properly allocable to pollution control as determined by using these factors is 100%.

6. Summation

   a. The facility was constructed in accordance with all regulatory deadlines.

   b. The facility is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.

   c. The facility complies with DEQ statutes and rules.

   d. The portion of the facility that is properly allocable to pollution control is 100%.

7. Director's Recommendation

   Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $34,471.18, with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application Number TC-2774.

Jim Britton, Manager
Smoke Management Program
Natural Resources Division
Oregon Department of Agriculture
(503) 378-6792

JB:bmTC2774
January 3, 1991

Application No. TC-2800

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Don Wilson Enterprises, Inc.
PO Box 1689
Albany, OR 97321

The applicant owns and operates a cardlock facility at 7th and Applegate, Philomath, OR, facility no. 9018.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the new (not replacement) installation of three fiberglass/steel double wall tanks, double wall fiberglass piping, spill containment basins, sumps, tank monitor and an oil/water separator.

Claimed facility cost (Accountant's certification was provided)	$ 63,030
Percent allocable to pollution control	100%

3. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16.

The facility met all statutory deadlines in that installation of the facility was substantially completed in July, 1989 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation in July, 1989.

4. Evaluation of Application

a. The facility is eligible because the principal purpose of the facility is to comply with underground storage tank requirements imposed by the federal Environmental Protection Agency to prevent pollution of soil and water. This is accomplished by preventing releases into soil or water. The facility qualifies as a "pollution control facility", defined in OAR 340-16-025(2)(g): "Installation or construction of facilities which will be used to detect, deter or prevent spills or unauthorized releases."

To respond to requirements established 12-22-88, the applicant installed:

1) For corrosion protection - Fiberglass/steel double wall tanks and fiberglass double wall piping.

2) For spill and overfill prevention - Spill containment basins and sumps.

3) For leak detection - Tank monitor system.

The applicant also installed an oil/water separator.

The applicant reported that no soil testing was performed at the time of construction of the project because it is a new facility at a site where tanks had never existed before.

Based on information currently available, the applicant is in compliance with all applicable DEQ regulations in that these tanks are permitted and fee payments are current.

The Department concludes that the eligible facility cost for the project is $52,800. This represents a difference of $10,230 from the applicant's claimed cost of $63,030 due to a determination by the Department that the normal cost of installing tanks and piping at a new business facility is not eligible pursuant to the definition of a pollution control facility in ORS 468.155 because it would have been incurred regardless of pollution control.

b. Eligible Cost Findings

In determining the percent of the eligible pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

1) The extent to which the facility is used to recover and convert waste products into a salable or usable commodity.

   The equipment does not recover or convert waste products into a salable or usable commodity.

2) The estimated annual percent return on the investment in the facility.

   There is no annual percent return on investment as the applicant claims no gross annual income from the facility.

3) The alternative methods, equipment and costs for achieving the same pollution control objective.

   The applicant considered the method chosen to be the most cost effective and durable. The methods chosen are acceptable for meeting the requirements of federal regulations.

4) Any related savings or increase in costs which occur or may occur as a result of the installation of the facility.

   The applicant claims no savings or increase in costs as a result of the installation.

5) Any other factors which are relevant in establishing the portion of the actual cost of the facility properly allocable to pollution control.

   The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	Eligible Facility Cost	Percent Allocable	Amount Allocable
Corrosion Protection:			
Double wall tanks and double wall piping	$30,774	72%(1)	$22,157
Spill & Overfill Prevention:			
Spill containment basins	528	100	528
Sumps	1,680	100	1,680
Leak Detection:			
Tank monitor	7,205	90 (2)	6,485
Oil/water separator	2,585	100	2,585
Added labor due to double wall tanks	3,410	100 (3)	3,410
Labor & materials (not including labor to install tanks & pipe)	6,618	100	6,618
Total	$52,800	82%	$43,463

(1) The Department has determined the percent allocable on the cost of a corrosion protected tank and piping system by using a formula based on the difference in cost between the protected system and a bare steel system as a percent of the protected system. Applying this formula to the costs presented by the applicant, where the protected tank and piping system cost is $30,774 and the bare steel system is $8,500, the resulting portion of the eligible tank and piping cost allocable to pollution control is 72%.

(2) The applicant's cost for a tank monitor is reduced to 90% of cost based on a determination by the Department that this is the portion properly allocable to pollution control since the device can serve other purposes, for example, inventory control.

(3) While the normal cost of installing tanks at a new business facility is considered ineligible for pollution control tax credits because it would have been incurred regardless of pollution control, the Department has determined that additional cost due to the installation of double wall tanks, is eligible.

5. Summation

a. The facility was constructed in accordance with all regulatory requirements.

b. The facility is eligible for tax credit certification in that the principal purpose of the claimed facility is to comply with requirements imposed by the federal Environmental Protection Agency to prevent pollution of soil and water. This is accomplished by preventing releases in soil or water. The facility qualifies as a "pollution control facility" defined in OAR 340-16-025(2)(g): "Installation or construction of facilities which will be used to detect, deter or prevent spills or unauthorized releases."

c. The facility complies with DEQ statutes and rules.

d. The portion of the facility cost that is properly allocable to pollution control is 82%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $52,800 with 82% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-2800.

Barbara J. Anderson:ew
(503) 229-5870
December 4, 1990

Application No. TC-3058

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Merritt Truax, Inc.
PO Box 2099
Salem, OR 97308

The applicant owns and operates a retail fueling facility at 4395 Commercial St. SE, Salem, OR, facility no. 3607.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of leak detection and overfill prevention on four underground storage tanks in the form of automatic tank gauges with alarms.

Claimed facility cost (Documentation of cost was provided)	$ 10,790
Percent allocable to pollution control	100%

3. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16.

The facility met all statutory deadlines in that installation of the facility was substantially completed on February 26, 1990 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on February 27, 1990.

4. Evaluation of Application

a. The facility is eligible because the principal purpose of the facility is to comply with underground storage tank requirements imposed by the federal Environmental Protection Agency to prevent pollution of soil and water. This is accomplished by preventing releases into soil or water. The facility qualifies as a "pollution control facility", defined in OAR 340-16-025(2)(g): "Installation or construction of facilities which will be used to detect, deter or prevent spills or unauthorized releases."

Prior to the installation of pollution control, the facility consisted of four bare steel tanks with no corrosion protection, overfill prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

1) For spill and overfill prevention - Overfill alarm

2) For leak detection - Automatic tank gauges

The applicant did not indicate if any soil assessment or tank tightness testing was accomplished before undertaking the project.

Based on information currently available, the applicant is in compliance with all applicable DEQ regulations in that these tanks are permitted and fee payments are current.

The Department concludes that the eligible facility cost for the project is $10,699. This represents a difference of $91 from the applicant's claimed cost of $10,790 due to a determination by the Department that the cost of the equipment was claimed at the list price rather than the discount price.

b. Eligible Cost Findings

In determining the percent of the eligible pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

1) The extent to which the facility is used to recover and convert waste products into a salable or usable commodity.

The equipment does not recover or convert waste products into a salable or usable commodity.

2) The estimated annual percent return on the investment in the facility.

There is no annual percent return on investment as the applicant claims no gross annual income from the facility.

3) The alternative methods, equipment and costs for achieving the same pollution control objective.

The applicant indicated that no alternative methods were considered. The methods chosen are acceptable for meeting the requirements of federal regulations.

4) Any related savings or increase in costs which occur or may occur as a result of the installation of the facility.

The applicant claims no savings or increase in costs as a result of the installation.

5) Any other factors which are relevant in establishing the portion of the actual cost of the facility properly allocable to pollution control.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	Eligible Facility Cost	Percent Allocable	Amount Allocable
Spill & Overfill Prevention:			
Overfill alarm	$ 83	100%	$ 83
Leak Detection:			
Automatic tank gauges	4,584	90 (1)	4,126
Labor & materials	6,032	100	6,032
Total	$10,699	96%	$10,241

(1) The applicant's cost for a tank monitor is reduced to 90% of cost based on a determination by the Department that this is the portion properly allocable to pollution control since the device can serve other purposes, for example, inventory control.

5. Summation

a. The facility was constructed in accordance with all regulatory requirements.

b. The facility is eligible for tax credit certification in that the principal purpose of the claimed facility is to comply with requirements imposed by the federal Environmental Protection Agency to prevent pollution of soil and water. This is accomplished by preventing releases in soil or water. The facility qualifies as a "pollution control facility" defined in OAR 340-16-025(2)(g): "Installation or construction of facilities which will be used to detect, deter or prevent spills or unauthorized releases."

c. The facility complies with DEQ statutes and rules.

d. The portion of the facility cost that is properly allocable to pollution control is 96%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $10,699 with 96% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3058.

Mary Lou Perry:ew
(503) 229-5731
December 27, 1990

Application No. TC-3207

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Metrofueling, Inc.
PO Box 2099
Salem, OR 97308

The applicant owns and operates a cardlock facility at 30100 SW Parkway, Wilsonville, OR, facility no. 2591.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of leak detection on four underground storage tanks in the form of automatic tank gauges with overfill alarm.

Claimed facility cost (Documentation of cost was provided)	$ 11,286
Percent allocable to pollution control	100%

3. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16.

The facility met all statutory deadlines in that installation of the facility was substantially completed on March 2, 1990 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on March 3, 1990.

4. Evaluation of Application

a. The facility is eligible because the principal purpose of the facility is to comply with underground storage tank requirements imposed by the federal Environmental Protection Agency to prevent pollution of soil and water. This is accomplished by preventing releases into soil or water. The facility qualifies as a "pollution control facility", defined in OAR 340-16-025(2)(g): "Installation or construction of facilities which will be used to detect, deter or prevent spills or unauthorized releases."

Prior to the installation of pollution control, the facility consisted of four bare steel tanks with no corrosion protection, overfill prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

1) For spill and overfill prevention - Overfill alarm

2) For leak detection - Automatic tank gauges

The applicant did not indicate if any soil assessment or tank tightness testing was accomplished before undertaking the project.

Based on information currently available, the applicant is in compliance with all applicable DEQ regulations in that these tanks are permitted and fee payments are current.

The Department concludes that the eligible facility cost for the project is $11,110. This represents a difference of $176 from the applicant's claimed cost of $11,286 due to a determination by the Department that the cost of the equipment was claimed at the list price rather than the discount price.

b. Eligible Cost Findings

In determining the percent of the eligible pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

1) The extent to which the facility is used to recover and convert waste products into a salable or usable commodity.

The equipment does not recover or convert waste products into a salable or usable commodity.

2) The estimated annual percent return on the investment in the facility.

There is no annual percent return on investment as the applicant claims no gross annual income from the facility.

3) The alternative methods, equipment and costs for achieving the same pollution control objective.

The applicant indicated that no alternative methods were considered. The methods chosen are acceptable for meeting the requirements of federal regulations.

4) Any related savings or increase in costs which occur or may occur as a result of the installation of the facility.

The applicant claims no savings or increase in costs as a result of the installation.

5) Any other factors which are relevant in establishing the portion of the actual cost of the facility properly allocable to pollution control.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	Eligible Facility Cost	Percent Allocable	Amount Allocable
Spill & Overfill Prevention:			
Overfill alarm	$ 83	100%	$ 83
Leak Detection:			
Automatic tank gauges	4,935	90 (1)	4,442
Labor & materials	6,092	100	6,092
Total	$11,110	96%	$10,617

(1) The applicant's cost for a tank monitor is reduced to 90% of cost based on a determination by the Department that this is the portion properly allocable to pollution control since the device can serve other purposes, for example, inventory control.

5. Summation

a. The facility was constructed in accordance with all regulatory requirements.

b. The facility is eligible for tax credit certification in that the principal purpose of the claimed facility is to comply with requirements imposed by the federal Environmental Protection Agency to prevent pollution of soil and water. This is accomplished by preventing releases in soil or water. The facility qualifies as a "pollution control facility" defined in OAR 340-16-025(2)(g): "Installation or construction of facilities which will be used to detect, deter or prevent spills or unauthorized releases."

c. The facility complies with DEQ statutes and rules.

d. The portion of the facility cost that is properly allocable to pollution control is 96%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $11,110 with 96% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3207.

Mary Lou Perry:ew
(503) 229-5731
December 27, 1990

Application No. TC-3230

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Arnold E. Knox
23800-A Powerline Road
Harrisburg, Oregon 97446

The applicant leases and operates a grass seed farm operation in Harrisburg, Oregon.

Application was made for tax credit for air pollution control equipment.

2. Description of Claimed Facility

The equipment described in this application is a 12' Dandl row crop shredder, located at 23815 Powerline Road, Harrisburg, Oregon. The equipment is owned by the applicant.

Claimed equipment cost: $6,500
(The applicant provided proof of purchase.)

3. Description of farm operation plan to reduce open field burning.

The applicant's farming operation includes approximately 96 acres of perennial orchardgrass and 143 acres of annual ryegrass, and in recent years has registered 239 acres in the Department's open field burning program for the Willamette Valley and burned approximately 180 acres annually. The equipment will enable the applicant to reduce acreage to be open burned by approximately 100% as long as the applicant can continue to stack burn and experimental flail chopping proves successful.

4. Procedural Requirements

The equipment is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16. The equipment has met all statutory deadlines in that:

Purchase of the equipment was substantially completed on July 10, 1989 and the application for final certification was found to be complete on November 13, 1990, within two years of substantial purchase of the equipment.

5. Evaluation of Application

a. The equipment is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; by reducing the maximum acreage to be open burned in the Willamette Valley as required in OAR 340-26-013; and, the facility's qualification as a "pollution control facility", defined in OAR 340-16-025(2)(f)(A): "Equipment, facilities, and land for gathering, densifying, processing, handling, storing, transporting and incorporating grass straw or straw based products which will result in reduction of open field burning."

b. Eligible Cost Findings

In determining the percent of the pollution control equipment cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

1. The extent to which the equipment is used to recover and convert waste products into a salable or usable commodity.

The equipment does not recover or convert waste products into a salable or usable commodity. The row crop shredder enables the applicant to flail chop the residue to be turned back into the soil or left to decompose on the surface.

2. The estimated annual percent return on the investment in the equipment.

There is no annual percent return on the investment as applicant claims no gross annual income.

3. The alternative methods, equipment and costs for achieving the same pollution control objective.

The method chosen is an accepted method for reduction of air pollution. The method is one of the least costly, most effective methods of reducing air pollution.

4. Any related savings or increase in costs which occur or may occur as a result of the purchase of the equipment.

There is an increase in operating costs of $900 to annually maintain and operate the equipment. These costs were considered in the return on investment calculation.

5. Any other factors which are relevant in establishing the portion of the actual cost of the equipment properly allocable to the prevention, control or reduction of air pollution.

   There are no other factors to consider in establishing the actual cost of the equipment properly allocable to prevention, control or reduction of air pollution.

The actual cost of the equipment properly allocable to pollution control as determined by using these factors is 100%.

6. Summation

   a. The equipment was purchased in accordance with all regulatory deadlines.

   b. The equipment is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.

   c. The equipment complies with DEQ statutes and rules.

   d. The portion of the equipment that is properly allocable to pollution control is 100%.

7. Director's Recommendation

   Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $6,500, with 100% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3230.

Jim Britton, Manager
Smoke Management Program
Natural Resources Division
Oregon Department of Agriculture
(503) 378-6792

JB:bmTC3230
November 9, 1990

Application No. T-3241

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Paul D. Parker
Mill Waste Recycling Company
4993 Osage
Sweet Home, OR 97386

The applicant owns and operates a mobile log yard debris separation system.

Application was made for tax credit for a solid waste recycling facility.

2. Description of Facility

The equipment described in the application is a mobile log yard debris separation system. The equipment can be moved to various mill sites allowing the applicant to process material from more than just one mill site in a year.

Claimed Facility Cost: $230,000
(Accountant's Certification was provided).

3. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16.

The facility did not meet all statutory deadlines in that:

Installation of the facility was substantially completed on August 15, 1988 and the application for final certification was submitted to the Department on August 31, 1990. The application was found to be complete and was filed on November 14, 1990 over 2 years after substantial completion of the facility.

The applicant has provided a letter indicating why the application was not submitted in a timely manner.

4. Evaluation of Application

a. The facility is eligible because the sole purpose of the facility is to reduce a substantial quantity of solid waste through recycling.

This reduction is accomplished by the use of a material recovery process.

b. Eligible Cost Findings

In determining the percent of the pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

1) The extent to which the facility is used to recover and convert waste products into a salable or usable commodity.

This factor is applicable because the entire purpose is to separate wood waste and rock (20%), soil amendments and decorative landscape products (50-65%), and hog fuel (15-30%). Prior to utilizing this equipment, the dirt, rock and bark accumulated on the log yard and was periodically pushed into piles.

The percent allocable determined by using this factor would be 100%.

2) The estimated annual percent return on the investment in the facility.

Average annual cash flow is $10,468. This results from the value of the recycled material less operating costs. Dividing the annual average cash flow into the cost of the facility gives a return on investment factor of 21.97. Using Table 1 of OAR 340-60-030, for a life of 10 years, the percent return on investment is zero. As a result, the percent allocable would be 100%.

3) The alternative methods, equipment and costs for achieving the same pollution control objective.

An air classifier was also considered by the applicant, however, it cost the same amount and did not remove all the rock from the bark leaving a lower quality end product.

4) Any related savings or increase in costs which occur or may occur as a result of the installation of the facility.

There are no savings to the applicant from operating the facility. The cost of maintaining and operating the facility is $172,893 annually. The income from this facility is approximately $183,361 annually and has been included in the ROI calculation.

5) Any other factors which are relevant in establishing the portion of the actual cost of the facility properly allocable to the prevention, control or reduction of air, water or noise pollution or solid or hazardous waste or to recycling or properly disposing of used oil.

There are no other factors to consider in establishing the actual cost of the facility properly allocable to prevention, control or reduction of pollution.

The actual cost of the facility properly allocable to pollution control as determined by using these factors is 100%.

5. Summation

a. The facility was not constructed in accordance with all regulatory deadlines. The applicant did not submit the application within two years of substantial completion of the facility as required under ORS 468.165(6). ORS 468.165(6) further states that: "Failure to file a timely application shall make the facility ineligible for tax credit certification." The applicant did not, as provided by statute, request an extension of time to file the application. The applicant has submitted a letter indicating why the application was not submitted in a timely manner.

b. The facility is eligible for final tax credit certification in that the sole purpose of the facility is to reduce a substantial quantity of solid waste through recycling.

This reduction is accomplished by the use of a material recovery process.

c. The facility complies with DEQ statutes and rules.

d. The portion of the facility cost that is properly allocable to pollution control is 100%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $230,000 with 100% allocated to pollution control, not be issued for the facility claimed in Tax Credit Application No. T-3241. The Department makes this recommendation for the sole reason that the application for tax credit certification was not submitted within two years of the completion of the facility. The applicant states that inaccurate information was received from the Department regarding eligibility requirements and that this delayed the application process.

WEST:b
G:\YB10077.A
(503) 229-6823
November 26, 1990

Application No. TC-3249

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

K Farms, Inc.
Floyd M. Kropf, President
32191 Cartney Drive
Harrisburg, Oregon 97446

The applicant owns and operates a grass seed farm operation in Harrisburg, Oregon.

Application was made for tax credit for air pollution control equipment.

2. Description of Claimed Facility

The equipment described in this application is a Rear's 30 ft. swath propane flamer, located at 32191 Cartney Drive, Harrisburg, Oregon. The equipment is owned by the applicant.

Claimed equipment cost: $7,849
(The applicant provided purchase documents.)

3. Description of farm operation plan to reduce open field burning.

The applicant states that prior to purchasing equipment enabling him to pursue alternatives, almost all of his perennial (500 acres) and annual (500 acres) grass seed fields were open burned each year.

Fifty percent of his perennial fields are now treated by baling off the straw and propane flaming as an alternative to open field burning.

4. Procedural Requirements

The equipment is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16. The equipment has met all statutory deadlines in that:

Purchase of the equipment was substantially completed on August 9, 1990, and the application for final certification was found to be complete on November 14, 1990, within two years of substantial purchase of the equipment.

5. Evaluation of Application

a. The equipment is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; by reducing the maximum acreage to be open burned in the Willamette Valley as required in OAR 340-26-013; and, the facility's qualification as a "pollution control facility", defined in OAR 340-16-025(2)(f)(B): "Propane flamers or mobile field sanitizers which are alternatives to open field burning and reduce air quality impacts."

b. Eligible Cost Findings

In determining the percent of the pollution control equipment cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

1. The extent to which the equipment is used to recover and convert waste products into a salable or usable commodity.

   The equipment does not recover or convert waste products into a salable or usable commodity. The propane flamer is used to sanitize the perennial grass seed fields after the straw is baled off.

2. The estimated annual percent return on the investment in the equipment.

   There is no annual percent return on the investment as applicant claims no gross annual income.

3. The alternative methods, equipment and costs for achieving the same pollution control objective.

   The method chosen is an accepted method for reduction of air pollution. The method is one of the least costly, most effective methods of reducing air pollution.

4. Any related savings or increase in costs which occur or may occur as a result of the purchase of the equipment.

   There is an increase in operating costs of $2,740 to annually maintain and operate the equipment. These costs were considered in the return on investment calculation.

5. Any other factors which are relevant in establishing the portion of the actual cost of the equipment properly allocable to the prevention, control or reduction of air pollution.

   There are no other factors to consider in establishing the actual cost of the equipment properly allocable to prevention, control or reduction of air pollution.

The actual cost of the equipment properly allocable to pollution control as determined by using these factors is 100%.

6. Summation

a. The equipment was purchased in accordance with all regulatory deadlines.

b. The equipment is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.

c. The equipment complies with DEQ statutes and rules.

d. The portion of the equipment that is properly allocable to pollution control is 100%.

7. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $7,849, with 100% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3249.

Jim Britton, Manager
Smoke Management Program
Natural Resources Division
Oregon Department of Agriculture
(503) 378-6792

JB:bmTC3249
November 14, 1990

Application No. TC-3253

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Monte J. Lewis
31555 Fayetteville Drive
Shedd, Oregon 97377-9701

The applicant owns and operates a grass seed farm operation in Shedd, Oregon.

Application was made for tax credit for air pollution control equipment.

2. Description of Claimed Facility

The equipment described in this application is a Hesston 60 B stackhand, located at 31555 Fayetteville Drive, Shedd, Oregon. The equipment is owned by the applicant.

Claimed equipment cost: $13,000
(The applicant provided copies of purchase documents.)

3. Description of farm operation plan to reduce open field burning.

During the 1970s through the mid-1980s, the applicant open field burned as many of his 1757 acres of perennial grass seed fields annually as the weather and smoke management program permitted.

Over the last three years, the applicant has documented a gradual and progressive reduction in the number of acres open field burned. After baling the straw off his perennial fields, they are recut with windrowers. The stackhand, pulled behind a tractor, then sucks up to an additional 1/2 ton per acre preparing the fields for propaning. The 'loaves' generated by the stackhand are then stack burned. Purchase of the stackhand has aided in reducing perennial fields open burned by approximately 1,150 acres in 1990.

4. Procedural Requirements

The equipment is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16. The equipment has met all statutory deadlines in that:

Purchase of the equipment was substantially completed on November 2, 1988, and the application for final certification was found to be complete on November 15, 1990, within two years of substantial

purchase of the equipment and within 180 days of the date the Department requested additional information.

5. Evaluation of Application

a. The equipment is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; by reducing the maximum acreage to be open burned in the Willamette Valley as required in OAR 340-26-013; and, the facility's qualification as a "pollution control facility", defined in OAR 340-16-025(2)(f)(A): "Equipment, facilities, and land for gathering, densifying, processing, handling, storing, transporting and incorporating grass straw or straw based products which will result in reduction of open field burning."

b. Eligible Cost Findings

In determining the percent of the pollution control equipment cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

1. The extent to which the equipment is used to recover and convert waste products into a salable or usable commodity.

The equipment does not recover or convert waste products into a salable or usable commodity. The material collected by the equipment is disposed of by stack burning.

2. The estimated annual percent return on the investment in the equipment.

There is no annual percent return on the investment as applicant claims no gross annual income.

3. The alternative methods, equipment and costs for achieving the same pollution control objective.

The method chosen is an accepted method for reduction of air pollution. The method is one of the least costly, most effective methods of reducing air pollution.

4. Any related savings or increase in costs which occur or may occur as a result of the purchase of the equipment.

There is no claimed savings or increase in costs as a result of the equipment.

5. Any other factors which are relevant in establishing the portion of the actual cost of the equipment properly allocable to the prevention, control or reduction of air pollution.

   There are no other factors to consider in establishing the actual cost of the equipment properly allocable to prevention, control or reduction of air pollution.

   The actual cost of the equipment properly allocable to pollution control as determined by using these factors is 100%.

6. Summation

   a. The equipment was purchased in accordance with all regulatory deadlines.

   b. The equipment is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.

   c. The equipment complies with DEQ statutes and rules.

   d. The portion of the equipment that is properly allocable to pollution control is 100%.

7. Director's Recommendation

   Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $18,000, with 100% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3253.

Jim Britton, Manager
Smoke Management Program
Natural Resources Division
Oregon Department of Agriculture
(503) 378-6792

JB:bmTC3253
December 20, 1990

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Monte J. Lewis
31555 Fayetteville Drive
Shedd, Oregon 97377-9701

The applicant owns and operates a grass seed farm operation in Shedd, Oregon.

Application was made for tax credit for an air pollution control facility.

2. Description of Claimed Facility

The facility described in this application is a 104' x 144' x 22', metal clad, pole construction straw storage shed, located at 33820 Linn West Drive, Shedd, Oregon. The facility is owned by the applicant.

Claimed equipment cost: $61,925
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

During the 1970s through the mid-1980s, the applicant open field burned as many of his 1757 acres of perennial grass seed fields annually as the weather and smoke management program permitted.

Over the last three years, the applicant has documented a gradual and progressive reduction in the number of acres open field burned. Construction of the straw storage shed has enabled the applicant to bale off and store approximately 1,150 acres of his perennial fields during the 1990 season. Grass seed residue left after harvesting of the seed is baled, removed from the fields and stored in the shed until shipment to market.

4. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16. The facility has met all statutory deadlines in that:

Construction of the facility was substantially completed on May 15, 1990, and the application for final certification was found to be

complete on November 15, 1990, within two years of substantial completion of the facility.

5. Evaluation of Application

a. The facility is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; by reducing the maximum acreage to be open burned in the Willamette Valley as required in OAR 340-26-013; and, the facility's qualification as a "pollution control facility", defined in OAR 340-16-025(2)(f)(A): "Equipment, facilities, and land for gathering, densifying, processing, handling, storing, transporting and incorporating grass straw or straw based products which will result in reduction of open field burning."

b. Eligible Cost Findings

In determining the percent of the pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

1. The extent to which the facility is used to recover and convert waste products into a salable or usable commodity.

The facility promotes the conversion of a waste product (straw) into a salable commodity by providing protection from inclement weather, keeping the straw in a dry and usable condition for the buyers who use it as a livestock feed additive.

2. The estimated annual percent return on the investment in the facility.

There is zero annual percent return on the investment due to the minimal average annual cash flow. This is determined using an average annual cash flow of $4,435.00 and a useful life of 10 years which provides a 13.96 return on investment factor.

3. The alternative methods, equipment and costs for achieving the same pollution control objective.

The method chosen is an accepted method for reduction of air pollution. The method is one of the least costly, most effective methods of reducing air pollution.

4. Any related savings or increase in costs which occur or may occur as a result of the construction of the facility.

The applicant claims a gross annual income of $6,000 and annual operating expenses of $1,565.

5. Any other factors which are relevant in establishing the portion of the actual cost of the facility properly allocable to the prevention, control or reduction of air pollution.

   There are no other factors to consider in establishing the actual cost of the facility properly allocable to prevention, control or reduction of air pollution.

The actual cost of the facility properly allocable to pollution control as determined by using these factors is 100%.

6. Summation

   a. The facility was constructed in accordance with all regulatory deadlines.

   b. The facility is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.

   c. The facility complies with DEQ statutes and rules.

   d. The portion of the facility that is properly allocable to pollution control is 100%.

7. Director's Recommendation

   Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $61,925, with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application Number TC-3254.

Jim Britton, Manager
Smoke Management Program
Natural Resources Division
Oregon Department of Agriculture
(503) 378-6792

JB:bmTC3254
January 3, 1991

Application No. T-3255

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Kenneth Williams
Environmental Rubber Bonding Company
6142 Crater Lake Highway
Central Point, OR 97502

The applicant owns and operates a rubber recycling facility at Central Point, Oregon.

Application was made for tax credit for a solid waste recycling facility.

2. Description of Facility

The claimed facility is a pole barn and forklift to be utilized for storage and handling of recycled rubber and products made from recycled rubber.

Claimed Facility Cost: $36,617
(Accountant's Certification was provided).

3. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16.

The facility met all statutory deadlines in that:

Construction and installation of the facility was substantially completed on September 30, 1989 and the application for final certification was found to be complete on November 5, 1990 within 2 years of substantial completion of the facility.

4. Evaluation of Application

a. The facility is eligible because the sole purpose of the facility is to reduce a substantial quantity of solid waste through recycling.

This reduction is accomplished by the use of a material recovery process.

b. Eligible Cost Findings

In determining the percent of the pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

1) The extent to which the facility is used to recover and convert waste products into a salable or usable commodity.

This factor is applicable because 100% of the rubber utilized at this facility are bonded into rubber mats which are then sold for pick-up bed liners and horse stall mats.

The percent allocable determined by using this factor would be 100%.

2) The estimated annual percent return on the investment in the facility. Average annual cash flow is $6,812. This results from the value of the recycled product less operating costs. Dividing the annual average cash flow into the cost of the facility gives a return on investment factor of 5.375. Using Table 1 of OAR 340-16-030, for an average useful life of 6.586 years, the percent allocable would be 69%.

3) The alternative methods, equipment and costs for achieving the same pollution control objective.

There are no known alternatives. The applicant developed this process for bonding rubber under pressure and heat curing utilizing equipment used ordinarily in the manufacturing of plywood panels.

4) Any related savings or increase in costs which occur or may occur as a result of the installation of the facility.

There is no savings from the facility. The cost of maintaining and operating the facility is $319,835 annually. The income from this facility is approximately $326,647 annually and has been included in the ROI calculation.

5) Any other factors which are relevant in establishing the portion of the actual cost of the facility properly allocable to the prevention, control or reduction of air, water or noise pollution or solid or hazardous waste or to recycling or properly disposing of used oil.

There are no other factors to consider in establishing the actual cost of the facility properly allocable to prevention, control or reduction of pollution.

The actual cost of the facility properly allocable to pollution control as determined by using these factors is 69%.

5. Summation

a. The facility was constructed in accordance with all regulatory deadlines.

b. The facility is eligible for final tax credit certification in that the sole purpose of the facility is to reduce a substantial quantity of solid waste through recycling.

This reduction is accomplished by the use of a material recovery process.

c. The facility complies with DEQ statutes and rules.

d. The portion of the facility cost that is properly allocable to pollution control is 69%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $36,617 with 69% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-3255.

West:b
G:\YB10075
(503) 229-6823
November 16, 1990

Application No. TC-3287

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Burns Bros., Inc.
516 SE Morrison, Suite 1200
Portland, OR 97214

The applicant owns and operates a Truck station and convenience store at 8600 SW Elligsen Road, Wilsonville, OR, facility no. 7054.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of Spill containment basins, turbine leak detectors and a tank monitor system for six tanks (two tanks are siphoned together).

Claimed facility cost (Accountant's certification was provided)	$ 25,366
Percent allocable to pollution control	100%

3. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16.

The facility met all statutory deadlines in that installation of the facility was substantially completed on June 30, 1990 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation June 30, 1990.

4. Evaluation of Application

a. The facility is eligible because the principal purpose of the facility is to comply with underground storage tank requirements imposed by the federal Environmental Protection Agency to prevent pollution of soil and water. This is accomplished by preventing releases into soil or water. The facility qualifies as a "pollution control facility", defined in OAR 340-16-025(2)(g): "Installation or construction of facilities which will be used to detect, deter or prevent spills or unauthorized releases."

Prior to the installation of pollution control, the facility consisted of 21 steel tanks & piping. (Five tanks will be upgraded in the future, four had been previously cathodically protected & upgraded and another six will be temporarily closed.) The six upgraded here had no corrosion protection and no spill and overfill prevention or leak detection equipment. Corrosion protection will be added later.

To respond to requirements established 12-22-88, the applicant installed:

1) For spill and overfill prevention - Spill containment basins.

3) For leak detection - Turbine leak detectors and a tank monitor system.

The applicant reported that the soil was inspected during construction of the project and no evidence of contamination was found.

Based on information currently available, the applicant is in compliance with all applicable DEQ regulations in that these tanks are permitted and fee payments are current.

The Department concludes that all of the costs claimed by the applicant ($25,366) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

b. Eligible Cost Findings

In determining the percent of the eligible pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

1) The extent to which the facility is used to recover and convert waste products into a salable or usable commodity.

The equipment does not recover or convert waste products into a salable or usable commodity.

2) The estimated annual percent return on the investment in the facility.

There is no annual percent return on investment as the applicant claims no gross annual income from the facility.

3) The alternative methods, equipment and costs for achieving the same pollution control objective.

The applicant considered the method chosen to be the best available. The methods chosen are acceptable for meeting the requirements of federal regulations.

4) Any related savings or increase in costs which occur or may occur as a result of the installation of the facility.

The applicant claims no savings or increase in costs as a result of the installation.

5) Any other factors which are relevant in establishing the portion of the actual cost of the facility properly allocable to pollution control.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	Eligible Facility Cost	Percent Allocable	Amount Allocable
Spill & Overfill Prevention:			
Spill containment basins	$ 1,056	100	1,056
Leak Detection:			
Tank monitor	8,348	90 (1)	7,513
Turbine leak detectors	2,170	100	2,170
Labor and materials	13,792	100	13,792
Total	$25,366	97%	$24,531

(1) The applicant's cost for a tank monitor is reduced to 90% of cost based on a determination by the Department that this is the portion properly allocable to pollution control since the device can serve other purposes, for example, inventory control.

5. Summation

a. The facility was constructed in accordance with all regulatory requirements.

b. The facility is eligible for tax credit certification in that the principal purpose of the claimed facility is to comply with requirements imposed by the federal Environmental Protection Agency to prevent pollution of soil and water. This is accomplished by preventing releases in soil or water. The facility qualifies as a "pollution control facility" defined in OAR 340-16-025(2)(g): "Installation or construction of facilities which will be used to detect, deter or prevent spills or unauthorized releases."

c. The facility complies with DEQ statutes and rules.

d. The portion of the facility cost that is properly allocable to pollution control is 97%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $25,366 with 97% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3287.

Barbara J. Anderson:ew
(503) 229-5870
November 29, 1990

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Howard Schwanke
9950 Helmick Road
Monmouth, Oregon 97361

The applicant owns and operates a grass seed farm operation in Monmouth, Oregon.

Application was made for tax credit for air pollution control facilities.

2. Description of Claimed Facility

The facilities described in this application are three grass seed straw storage sheds, located near Monmouth, Oregon. The facilities are owned by the applicant.

The Parker Shed (18' x 40' x 84')	$6,198.70
The Home Shed (30' x 54' x 72')	10,696.97
The Airlie Shed (30' x 54' x 54')	8,022.84

Claimed facility cost: $24,918.51
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

The applicant has 120 acres of perennial grass seed varieties and 125 acres of annual ryegrass under grass-seed cultivation. Both annual and perennial acreage is baled off, the applicant block stacks the bales and moves them to the storage sheds with a hay squeeze. Some stored straw that is sold is transported with the applicant's truck. Each year annual and every fourth year perennial fields are plowed, harrowed, cultipacted, disked and re-seeded.

The applicant states that by utilizing this alternative, 245 acres have been removed from open field burning. This constitutes all of the applicant's grass seed acreage.

4. Procedural Requirements

The facilities are governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16. The facilities have met all statutory deadlines in that:

Construction of the facilities was substantially completed on February 20, 1989, and the application for final certification was found to be complete on November 27, 1990, within two years of substantial completion of the facilities. The request for preliminary certification was approved on June 12, 1988.

5. Evaluation of Application

a. The facilities are eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; by reducing the maximum acreage to be open burned in the Willamette Valley as required in OAR 340-26-013; and, the facility's qualification as a "pollution control facility", defined in OAR 340-16-025(2)(f)(A): "Equipment, facilities, and land for gathering, densifying, processing, handling, storing, transporting and incorporating grass straw or straw based products which will result in reduction of open field burning."

b. Eligible Cost Findings

In determining the percent of the pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

1. The extent to which the facilities are used to recover and convert waste products into a salable or usable commodity.

The facilities promote the conversion of a waste product (straw) into a salable commodity by providing protection from the elements.

2. The estimated annual percent return on the investment in the facilities.

The actual cost of the claimed facilities ($24,918.51) divided by the average annual cash flow ($1,694) equals a return on investment factor of 14.71. Using Table 1 of OAR 340-16-030 for a life of 20 years, the annual percent return on investment is 3%. Using the annual percent return of 3% and the reference annual percent return of 18.3%, 84% is allocable to pollution control.

3. The alternative methods, equipment and costs for achieving the same pollution control objective.

The method chosen is an accepted method for reduction of air pollution. The method is one of the least costly, most effective methods of reducing air pollution.

4. Any related savings or increase in costs which occur or may occur as a result of the construction of the facilities.

   There is no savings or increase in costs as a result of the construction of the facilities.

5. Any other factors which are relevant in establishing the portion of the actual cost of the facilities properly allocable to the prevention, control or reduction of air pollution.

   There are no other factors to consider in establishing the actual cost of the facilities properly allocable to prevention, control or reduction of air pollution.

The actual cost of the facilities properly allocable to pollution control as determined by using these factors is 84%.

6. Summation

   a. The facilities were constructed in accordance with all regulatory deadlines.

   b. The facilities are eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.

   c. The facilities comply with DEQ statutes and rules.

   d. The portion of the facilities that are properly allocable to pollution control is 84%.

7. Director's Recommendation

   Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $24,918.51, with 84% allocated to pollution control, be issued for the facilities claimed in Tax Credit Application Number TC-3290.

Jim Britton, Manager
Smoke Management Program
Natural Resources Division
Oregon Department of Agriculture
(503) 378-6792

JB:bmTC3290
January 3, 1991

Application No. TC-3293

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Clifford E. Jenkins
2025 SW Bridge St.
Grants Pass, OR 97526

The applicant leases and operates a service station and market at 2035 SW Bridge Street, Grants Pass, OR, facility no. 8603.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of two fiberglass tanks and piping, spill containment basins, tank monitor, overfill alarm, float vent valves, Stage I vapor recovery and piping for Stage II and monitoring wells.

Claimed facility cost (Documentation of cost was provided)	$ 18,571
Percent allocable to pollution control	100%

3. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16.

The facility met all statutory deadlines in that installation of the facility was substantially completed on June 15, 1990 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation June 15, 1990.

4. Evaluation of Application

a. The facility is eligible because the principal purpose of the facility is to comply with underground storage tank requirements imposed by the federal Environmental Protection Agency to prevent pollution of soil and water. This is accomplished by preventing releases into soil or water. The facility qualifies as a "pollution control facility", defined in OAR 340-16-025(2)(g): "Installation or construction of facilities which will be used to detect, deter or prevent spills or unauthorized releases."

Prior to the installation of pollution control, the facility consisted of two steel tanks and piping (one tank was asphalt coated) with no corrosion protection and no spill and overfill prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

1) For corrosion protection - Fiberglass tanks and piping.

2) For spill and overfill prevention - Spill containment basins and float vent valves.

3) For leak detection - Tank monitor system and monitoring wells.

The applicant also installed Stage I vapor recovery equipment and piping for Stage II in anticipation of that requirement.

The applicant reported that soil testing was performed at the time of tank removal and some contamination was discovered, reported to DEQ and removed.

Based on information currently available, the applicant is in compliance with all applicable DEQ regulations in that these tanks are permitted and fee payments are current.

The Department concludes that all of the costs claimed by the applicant ($18,571) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

b. Eligible Cost Findings

In determining the percent of the eligible pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

1) The extent to which the facility is used to recover and convert waste products into a salable or usable commodity.

The equipment does not recover or convert waste products into a salable or usable commodity.

2) The estimated annual percent return on the investment in the facility.

There is no annual percent return on investment as the applicant claims no gross annual income from the facility.

3) The alternative methods, equipment and costs for achieving the same pollution control objective.

The applicant indicated that no alternative methods were considered. The methods chosen are acceptable for meeting the requirements of federal regulations.

4) Any related savings or increase in costs which occur or may occur as a result of the installation of the facility.

The applicant claims no savings or increase in costs as a result of the installation.

5) Any other factors which are relevant in establishing the portion of the actual cost of the facility properly allocable to pollution control.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	Eligible Facility Cost	Percent Allocable	Amount Allocable
Corrosion Protection:			
Fiberglass tanks	$ 6,152	52%(1)	$ 3,199
Spill & Overfill Prevention:			
Spill containment basins	405	100	405
Overfill alarm	181	100	181
Float vent valves	73	100	73
Leak Detection:			
Tank monitor	4,784	90 (2)	4,306
Labor & materials (includes piping & Stage I & II vapor recovery)	6,976	100	6,976
Total	$18,571	82%	$15,140

(1) The Department has determined the percent allocable on the cost of a corrosion protected tank system by using a formula based on the difference in cost between the protected tank system and a bare steel tank system as a percent of the protected system. Applying this formula to the costs presented by the applicant, where the protected tank system cost is $6,152 and the bare steel system is $2,960, the resulting portion of the eligible tank cost allocable to pollution control is 52%.

(2) The applicant's cost for a tank monitor is reduced to 90% of cost based on a determination by the Department that this is the portion properly allocable to pollution control since the device can serve other purposes, for example, inventory control.

5. Summation

a. The facility was constructed in accordance with all regulatory requirements.

b. The facility is eligible for tax credit certification in that the principal purpose of the claimed facility is to comply with requirements imposed by the federal Environmental Protection Agency to prevent pollution of soil and water. This is accomplished by preventing releases in soil or water. The facility qualifies as a "pollution control facility" defined in OAR 340-16-025(2)(g): "Installation or construction of facilities which will be used to detect, deter or prevent spills or unauthorized releases."

c. The facility complies with DEQ statutes and rules.

d. The portion of the facility cost that is properly allocable to pollution control is 82%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $18,571 with 82% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3293.

Barbara J. Anderson:ew
(503) 229-5870
December 6, 1990

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Barry J. Desbiens
202 SE 181 St. #206
Portland, OR 97233

The applicant owns and operates a service station & convenience store at 12128 E. Burnside, Portland, OR, facility no. 9861.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of three fiberglass tanks and piping, spill containment basins, float vent valves, tank monitor, turbine leak detectors and underground preparation for a tank monitor.

Claimed facility cost (Accountant's certification was provided)	$ 54,056
Percent allocable to pollution control	100%

3. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16.

The facility met all statutory deadlines in that installation of the facility was substantially completed in December, 1988 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation in December, 1988.

4. Evaluation of Application

a. The facility is eligible because the principal purpose of the facility is to comply with underground storage tank requirements imposed by the federal Environmental Protection Agency to prevent pollution of soil and water. This is accomplished by preventing releases into soil or water. The facility qualifies as a "pollution control facility", defined in OAR 340-16-025(2)(g): "Installation or construction of facilities which will be used to detect, deter or prevent spills or unauthorized releases."

Prior to the installation of pollution control, the facility consisted of three bare steel tanks and piping with no corrosion protection and no spill and overfill prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

1) For corrosion protection - Fiberglass tanks and piping.

2) For spill and overfill prevention - Spill containment basins and float vent valves.

3) For leak detection - Tank monitor and turbine leak detectors.

The applicant reported that soil testing was performed at the time of tank removal and no contamination was found.

Based on information currently available, the applicant is in compliance with all applicable DEQ regulations in that these tanks are permitted and fee payments are current.

The Department concludes that the eligible facility cost for the project is $63,056. This represents a difference of $9,000 from the applicant's claimed cost of $54,056 due to a determination by the Department that the cost of the fiberglass tanks should have been claimed at full cost rather than as the difference between fiberglass and bare steel tanks.

b. Eligible Cost Findings

In determining the percent of the eligible pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

1) The extent to which the facility is used to recover and convert waste products into a salable or usable commodity.

The equipment does not recover or convert waste products into a salable or usable commodity.

2) The estimated annual percent return on the investment in the facility.

There is no annual percent return on investment as the applicant claims no gross annual income from the facility.

3) The alternative methods, equipment and costs for achieving the same pollution control objective.

The applicant indicated that no alternative methods were considered. The methods chosen are acceptable for meeting the requirements of federal regulations.

4) Any related savings or increase in costs which occur or may occur as a result of the installation of the facility.

The applicant claims no savings or increase in costs as a result of the installation.

5) Any other factors which are relevant in establishing the portion of the actual cost of the facility properly allocable to pollution control.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	Eligible Facility Cost	Percent Allocable	Amount Allocable
Corrosion Protection:			
Fiberglass tanks	$13,847	35%(1)	$ 4,846
Fiberglass piping	1,571	100	1,571
Spill & Overfill Prevention:			
Spill containment basins	1,168	100	1,168
Float vent valves	681	100	681
Leak Detection:			
Turbine leak detectors and prep for tank monitor	287	100	287
Labor & materials	45,502	100	45,502
Total	$63,056	86%	$54,055

(1) The Department has determined the percent allocable on the cost of a corrosion protected tank system by using a formula based on the difference in cost between the protected tank system and a bare steel tank system as a percent of the protected system. Applying this formula to the costs presented by the applicant, where the protected tank system cost is $13,847 and the bare steel system is $9,000, the resulting portion of the eligible tank cost allocable to pollution control is 35%.

5. Summation

a. The facility was constructed in accordance with all regulatory requirements.

b. The facility is eligible for tax credit certification in that the principal purpose of the claimed facility is to comply with requirements imposed by the federal Environmental Protection Agency to prevent pollution of soil and water. This is accomplished by preventing releases in soil or water. The facility qualifies as a "pollution control facility" defined in OAR 340-16-025(2)(g): "Installation or construction of facilities which will be used to detect, deter or prevent spills or unauthorized releases."

c. The facility complies with DEQ statutes and rules.

d. The portion of the facility cost that is properly allocable to pollution control is 86%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $63,056 with 86% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3294.

Barbara J. Anderson:ew
(503) 229-5870
December 7, 1990

Application No. TC-3295

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Sheldon Oil Company, Inc.
PO Box 776
Tillamook, OR 97141

The applicant owns and operates a service station at 15 Main Ave., Tillamook, OR, facility no. 1507.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of four fiberglass tanks and piping, spill containment basins, monitoring wells and float vent valves.

Claimed facility cost (Accountant's certification was provided)	$ 33,632
Percent allocable to pollution control	100%

3. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16.

The facility met all statutory deadlines in that installation of the facility was substantially completed in December, 1988 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation in August, 1988.

4. Evaluation of Application

a. The facility is eligible because the principal purpose of the facility is to comply with underground storage tank requirements imposed by the federal Environmental Protection Agency to prevent pollution of soil and water. This is accomplished by preventing releases into soil or water. The facility qualifies as a "pollution control facility", defined in OAR 340-16-025(2)(g): "Installation or construction of facilities which will be used to detect, deter or prevent spills or unauthorized releases."

Prior to the installation of pollution control, the facility consisted of four asphalt coated tanks and galvanized piping with no corrosion protection and no spill and overfill prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

1) For corrosion protection - Fiberglass tanks and piping.

2) For spill and overfill prevention - Spill containment basins and float vent valves.

3) For leak detection - Monitoring wells.

The applicant reported that the soil was inspected during construction of the project and no evidence of contamination was found.

Based on information currently available, the applicant is in compliance with all applicable DEQ regulations in that these tanks are permitted and fee payments are current.

The Department concludes that all of the costs claimed by the applicant ($33,632) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

b. Eligible Cost Findings

In determining the percent of the eligible pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

1) The extent to which the facility is used to recover and convert waste products into a salable or usable commodity.

   The equipment does not recover or convert waste products into a salable or usable commodity.

2) The estimated annual percent return on the investment in the facility.

   There is no annual percent return on investment as the applicant claims no gross annual income from the facility.

3) The alternative methods, equipment and costs for achieving the same pollution control objective.

   The applicant considered closing the business as the only alternative. The methods chosen are acceptable for meeting the requirements of federal regulations.

4) Any related savings or increase in costs which occur or may occur as a result of the installation of the facility.

   The applicant claims no savings or increase in costs as a result of the installation.

5) Any other factors which are relevant in establishing the portion of the actual cost of the facility properly allocable to pollution control.

   The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	Eligible Facility Cost	Percent Allocable	Amount Allocable
Corrosion Protection:			
Fiberglass tanks	$14,984	25%(1)	$3,746
Fiberglass piping	4,056	100	4,056
Spill & Overfill Prevention:			
Spill containment basins	704	100	704
Float vent valves	336	100	336
Leak Detection:			
Monitoring wells	132	100	132
Labor & materials	13,420	100	13,420
Total	$33,632	67%	$22,394

(1) The Department has determined the percent allocable on the cost of a corrosion protected tank system by using a formula based on the difference in cost between the protected tank system and a bare steel tank system as a percent of the protected system. Applying this formula to the costs presented by the applicant, where the protected tank system cost is $14,984 and the bare steel system is $11,194, the resulting portion of the eligible tank cost allocable to pollution control is 25%.

5. Summation

a. The facility was constructed in accordance with all regulatory requirements.

b. The facility is eligible for tax credit certification in that the principal purpose of the claimed facility is to comply with requirements imposed by the federal Environmental Protection Agency to prevent pollution of soil and water. This is accomplished by preventing releases in soil or water. The facility qualifies as a "pollution control facility" defined in OAR 340-16-025(2)(g): "Installation or construction of facilities which will be used to detect, deter or prevent spills or unauthorized releases."

c. The facility complies with DEQ statutes and rules.

d. The portion of the facility cost that is properly allocable to pollution control is 67%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $33,632 with 67% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3295.

Barbara J. Anderson:ew
(503) 229-5870
December 4, 1990

Application No. TC-3301

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Pendleton Grain Growers, Inc.
PO Box 1248
Pendleton, OR 97801

The applicant owns and operates a cardlock and tire sales facility at 217 E. Broadway, Milton-Freewater, OR, facility no. 6159.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of fiberglass piping, spill containment basins, tank monitor and line leak detectors.

Claimed facility cost (Documentation of cost was provided)	$ 13,958
Percent allocable to pollution control	100%

3. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16.

The facility met all statutory deadlines in that installation of the facility was substantially completed in August, 1989 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation in August, 1989.

4. Evaluation of Application

a. The facility is eligible because the principal purpose of the facility is to comply with underground storage tank requirements imposed by the federal Environmental Protection Agency to prevent pollution of soil and water. This is accomplished by preventing releases into soil or water. The facility qualifies as a "pollution control facility", defined in OAR 340-16-025(2)(g): "Installation or construction of facilities which will be used to detect, deter or prevent spills or unauthorized releases."

Prior to the installation of pollution control, the facility consisted of three painted steel tanks and galvanized piping with no corrosion protection and no spill and overfill prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

1) For corrosion protection - Fiberglass piping.

2) For spill and overfill prevention - Spill containment basins.

3) For leak detection - Tank monitor and line leak detectors.

The applicant reported that the soil was inspected during construction of the project and no evidence of contamination was found.

Based on information currently available, the applicant is in compliance with all applicable DEQ regulations in that these tanks are permitted and fee payments are current.

The Department concludes that all of the costs claimed by the applicant ($13,958) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

b. Eligible Cost Findings

In determining the percent of the eligible pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

1) The extent to which the facility is used to recover and convert waste products into a salable or usable commodity.

The equipment does not recover or convert waste products into a salable or usable commodity.

2) The estimated annual percent return on the investment in the facility.

There is no annual percent return on investment as the applicant claims no gross annual income from the facility.

3) The alternative methods, equipment and costs for achieving the same pollution control objective.

The applicant indicated that no alternative methods were considered. The methods chosen are acceptable for meeting the requirements of federal regulations.

4) Any related savings or increase in costs which occur or may occur as a result of the installation of the facility.

The applicant claims no savings or increase in costs as a result of the installation.

5) Any other factors which are relevant in establishing the portion of the actual cost of the facility properly allocable to pollution control.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	Eligible Facility Cost	Percent Allocable	Amount Allocable
Corrosion Protection:			
Fiberglass pipe & fittings	$ 852	100%	$ 852
Spill & Overfill Prevention:			
Spill containment basins	690	100	690
Leak Detection:			
Tank monitor	5,734	90 (1)	5,161
Line leak detectors	201	100	201
Labor & materials	6,481	100	6,481
Total	$13,958	96%	$13,385

(1) The applicant's cost for a tank monitor is reduced to 90% of cost based on a determination by the Department that this is the portion properly allocable to pollution control since the device can serve other purposes, for example, inventory control.

5. Summation

a. The facility was constructed in accordance with all regulatory requirements.

b. The facility is eligible for tax credit certification in that the principal purpose of the claimed facility is to comply with requirements imposed by the federal Environmental Protection Agency to prevent pollution of soil and water. This is accomplished by preventing releases in soil or water. The facility qualifies as a "pollution control facility" defined in OAR 340-16-025(2)(g): "Installation or construction of facilities which will be used to detect, deter or prevent spills or unauthorized releases."

c. The facility complies with DEQ statutes and rules.

d. The portion of the facility cost that is properly allocable to pollution control is 96%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $13,958 with 96% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3301.

Barbara J. Anderson:ew
(503) 229-5870
December 21, 1990

Application No. TC-3302

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Russell Oil Company
PO Box 7
Boardman, OR 97818

The applicant owns and operates a service station and cardlock at 101 SW Front Street, Boardman, OR, facility no. 4188.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of spill containment basins and line leak detectors for seven tank and piping systems.

Claimed facility cost (Documentation of cost was provided)	$ 8,229
Percent allocable to pollution control	100%

3. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16.

The facility met all statutory deadlines in that installation of the facility was substantially completed on November 23, 1990 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on November 23, 1990.

4. Evaluation of Application

a. The facility is eligible because the principal purpose of the facility is to comply with underground storage tank requirements imposed by the federal Environmental Protection Agency to prevent pollution of soil and water. This is accomplished by preventing releases into soil or water. The facility qualifies as a "pollution control facility", defined in OAR 340-16-025(2)(g): "Installation or construction of facilities which will be used to detect, deter or prevent spills or unauthorized releases."

Prior to the installation of pollution control, the facility consisted of seven bare steel tanks and galvanized piping with no corrosion protection and no spill and overfill prevention or leak detection equipment. An eighth tank and piping system at the site was already cathodically protected and equipped with spill containment and leak detection.

To respond to requirements established 12-22-88, the applicant installed:

1) For spill and overfill prevention - Spill containment basins.

3) For leak detection - Line leak detectors.

The applicant reported that the soil was inspected during construction of the project and no significant contamination was found.

Based on information currently available, the applicant is in compliance with all applicable DEQ regulations in that these tanks are permitted and fee payments are current.

The Department concludes that all of the costs claimed by the applicant ($8,229) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

b. Eligible Cost Findings

In determining the percent of the eligible pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

1) The extent to which the facility is used to recover and convert waste products into a salable or usable commodity.

The equipment does not recover or convert waste products into a salable or usable commodity.

2) The estimated annual percent return on the investment in the facility.

There is no annual percent return on investment as the applicant claims no gross annual income from the facility.

3) The alternative methods, equipment and costs for achieving the same pollution control objective.

The applicant indicated that no alternative methods were considered. The methods chosen are acceptable for meeting the requirements of federal regulations.

4) Any related savings or increase in costs which occur or may occur as a result of the installation of the facility.

The applicant claims no savings or increase in costs as a result of the installation.

5) Any other factors which are relevant in establishing the portion of the actual cost of the facility properly allocable to pollution control.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	Eligible Facility Cost	Percent Allocable	Amount Allocable
Spill & Overfill Prevention:			
Spill containment basins	$1,523	100%	$1,523
Leak Detection:			
Line leak detectors	617	100	617
Labor & materials	6,089	100	6,089
Total	$8,229	100%	$8,229

5. Summation

a. The facility was constructed in accordance with all regulatory requirements.

b. The facility is eligible for tax credit certification in that the principal purpose of the claimed facility is to comply with requirements imposed by the federal Environmental Protection Agency to prevent pollution of soil and water. This is accomplished by preventing releases in soil or water. The facility qualifies as a "pollution control facility" defined in OAR 340-16-025(2)(g): "Installation or construction of facilities which will be used to detect, deter or prevent spills or unauthorized releases."

c. The facility complies with DEQ statutes and rules.

d. The portion of the facility cost that is properly allocable to pollution control is 100%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $8,229 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3302.

Barbara J. Anderson:ew
(503) 229-5870
December 26, 1990

Application No. TC-3304

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Laurel Valley Store
Melvin & Glorinda Deulin
14025 SW Campbell Rd.
Hillsboro, OR 97123

The applicant owns and operates a gas station and grocery store at 14025 SW Campbell Rd., Hillsboro, OR, facility no. 7819.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of one 5,000 gallon STI-P3 tank, fiberglass piping, spill containment basins, check valves and a float vent valve.

Claimed facility cost (Documentation of cost was provided)	$ 15,301
Percent allocable to pollution control	100%

3. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16.

The facility met all statutory deadlines in that installation of the facility was substantially completed in January, 1989 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation in January, 1989.

4. Evaluation of Application

a. The facility is eligible because the principal purpose of the facility is to comply with underground storage tank requirements imposed by the federal Environmental Protection Agency to prevent pollution of soil and water. This is accomplished by preventing releases into soil or water. The facility qualifies as a "pollution control facility", defined in OAR 340-16-025(2)(g): "Installation or construction of facilities which will be used to detect, deter or prevent spills or unauthorized releases."

Prior to the installation of pollution control, the facility consisted of four bare steel tanks (1 - 1,000 gallon, 2 - 285 gallon and 1 - 500 gallon) and galvanized steel piping with no corrosion protection and no spill and overfill prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

1) For corrosion protection - STI-P3 tank and fiberglass piping.

2) For spill and overfill prevention - Spill containment basins, check valves and float vent valve.

The applicant reported that the soil was inspected during construction of the project and no evidence of contamination was found.

Based on information currently available, the applicant is in compliance with all applicable DEQ regulations in that these tanks are permitted and fee payments are current.

The Department concludes that all of the costs claimed by the applicant ($15,301) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

b. Eligible Cost Findings

In determining the percent of the eligible pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

1) The extent to which the facility is used to recover and convert waste products into a salable or usable commodity.

The equipment does not recover or convert waste products into a salable or usable commodity.

2) The estimated annual percent return on the investment in the facility.

There is no annual percent return on investment as the applicant claims no gross annual income from the facility.

3) The alternative methods, equipment and costs for achieving the same pollution control objective.

The applicant indicated that no alternative methods were considered. The methods chosen are acceptable for meeting the requirements of federal regulations.

4) Any related savings or increase in costs which occur or may occur as a result of the installation of the facility.

The applicant claims no savings or increase in costs as a result of the installation.

5) Any other factors which are relevant in establishing the portion of the actual cost of the facility properly allocable to pollution control.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	Eligible Facility Cost	Percent Allocable	Amount Allocable
Corrosion Protection:			
STI-P3 tank	$ 3,243	35%(1)	$ 1,135
Spill & Overfill Prevention:			
Spill containment basins	216	100	216
Check valves	59	100	59
Float vent valve	108	100	108
Labor & material (including fiberglass piping)	11,675	100	11,675
Total	$15,301	86%	$13,193

(1) The Department has determined the percent allocable on the cost of a corrosion protected tank system by using a formula based on the difference in cost between the protected tank system and a bare steel tank system as a percent of the protected system. Applying this formula to the costs presented by the applicant, where the protected tank system cost is $3,243 and the bare steel system is $2,100, the resulting portion of the eligible tank cost allocable to pollution control is 35%.

5. Summation

a. The facility was constructed in accordance with all regulatory requirements.

b. The facility is eligible for tax credit certification in that the principal purpose of the claimed facility is to comply with requirements imposed by the federal Environmental Protection Agency to prevent pollution of soil and water. This is accomplished by preventing releases in soil or water. The facility qualifies as a "pollution control facility" defined in OAR 340-16-025(2)(g): "Installation or construction of facilities which will be used to detect, deter or prevent spills or unauthorized releases."

c. The facility complies with DEQ statutes and rules.

d. The portion of the facility cost that is properly allocable to pollution control is 86%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $15,301 with 86% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3304.

Barbara J. Anderson:ew
(503) 229-5870
December 21, 1990

Oregon

ENVIRONMENTAL
QUALITY
COMMISSION

REQUEST FOR EQC ACTION

Meeting Date: January 31, 1991
Agenda Item: C
Division: HSW
Section: SW and SWR

SUBJECT:

Solid Waste Planning and Recycling Projects: Proposed Rules for Grants to Local Governments

PURPOSE:

The proposed rules are intended to implement Oregon Revised Statute (ORS) 459.294.(2)(e) by establishing the following rules for solid waste planning and recycling grants:

- grant limitations
- general requirements
- grant selection criteria
- grant approval process
- grant agreements and conditions
- grant limitations

ACTION REQUESTED:

___ Work Session Discussion
___ General Program Background
___ Potential Strategy, Policy, or Rules
___ Agenda Item ___ for Current Meeting
___ Other: (specify)

811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696

_X_ Authorize Rulemaking Hearing
___ Adopt Rules
Proposed Rules — Attachment A
Rulemaking Statements — Attachment B
Fiscal and Economic Impact Statement — Attachment C
Public Notice — Attachment D

___ Issue a Contested Case Order
___ Approve a Stipulated Order
___ Enter an Order
Proposed Order — Attachment ___

___ Approve Department Recommendation
___ Variance Request — Attachment ___
___ Exception to Rule — Attachment ___
___ Informational Report — Attachment ___
___ Other: (specify) — Attachment ___

DESCRIPTION OF REQUESTED ACTION:

A series of public hearings is requested to receive comment on the proposed rules. Notice of the public hearings will be mailed to known interested persons, and will be published in newspapers of general circulation in Oregon.

AUTHORITY/NEED FOR ACTION:

___ Required by Statute: _____ — Attachment ___
Enactment Date: _____
_X_ Statutory Authority: ORS 459.295 — Attachment E
___ Pursuant to Rule: _____ — Attachment ___
___ Pursuant to Federal Law/Rule: _____ — Attachment ___

_X_ Other: The statute (ORS 459.045(3)) allows the Commission to adopt rules on other subjects as necessary to carry out ORS 459.255 to 459.385. — Attachment ___

_X_ Time Constraints:
None required by law.

DEVELOPMENTAL BACKGROUND:

___ Advisory Committee Report/Recommendation — Attachment ___
___ Hearing Officer's Report/Recommendations — Attachment ___
___ Response to Testimony/Comments — Attachment ___
___ Prior EQC Agenda Items: (list)
Attachment ___

___ Other Related Reports/Rules/Statutes: Attachment ___

___ Supplemental Background Information Attachment ___

The 1989 Oregon Legislature passed a 50 cent per ton surcharge on domestic solid waste received at disposal sites except transfer stations. This surcharge went into effect on July 1, 1990. Under ORS 459.295 the money from these fees is authorized to be used for several purposes, including grants to local governmental units for recycling and solid waste planning activities (ORS 459.295(2)(e)). The statute allows the Department of Environmental Quality (Department) to award these grants, however, the statute does not give direction for selection criteria or method of award. The Department of Justice recommended that rules be adopted to implement the statute and specify the criteria and process to be used in awarding the grants.

Therefore, the Department has formed an informal work group including individuals from outside the Department to develop the proposed rules. Members have been recruited from Metropolitan Service District, the solid waste and solid waste reduction advisory committees, from the Association of Oregon Counties and from the League of Oregon Cities. A list of names and organizations (Attachment F) is attached.

The proposed rules are scheduled for adoption on April 26, 1991. The grant program, once established, will be ongoing, contingent on available revenue.

REGULATED/AFFECTED COMMUNITY CONSTRAINTS/CONSIDERATIONS:

The public and local governmental units are expected to be highly interested in the grant money and the number of requests for grant money is expected to exceed the legislatively authorized amount of grant monies. Therefore, the Department expects to receive considerable comment on the types of projects eligible for a grant, selection criteria, grant limitations, and method of award. Some of the areas of concern may be:

1. Types of projects. The Department believes that fixed facility capital costs should be eligible for recycling project grants, but not for solid waste planning grants. Recycling operations could require capital investment, however, there should be little or no need for capital expenditures in a planning activity. Local governments should be allowed to pass on the grant funds to private citizens or companies to carry out recycling or planning activities. Grants could be allowed to pay for new staff or for existing staff under specific circumstances.

2. Selection criteria. How do we decide who should get grant funding, and how much funding? The Department has developed a set of selection criteria to determine who will receive grants. The selection criteria address a number of key objectives:

(1) Targeting funds to areas of greatest need;
(2) Stretching the limited dollars available to maximize long term, statewide benefit;
(3) An equitable distribution of funds; and
(4) Providing for innovative and improved solid waste management.

The Department believes that the program should assist small communities and communities with the greatest need. The Department also believes that larger communities with more resources dedicated to recycling and solid waste management should have the opportunity to propose innovative recycling demonstration projects; therefore 20 per cent of the available funds will be reserved for such projects.

3. Grant limitations. The Department expects to have approximately $250,000 per year available for the grant program. To maximize the opportunity for a number of local governments to take advantage of the grant monies, the proposed rules place a ceiling of $50,000 on a single grant, and no community may receive more than $50,000 in a given year. The ceiling for the grants is proposed to be $50,000 because that is the estimated cost of a good solid waste planning project. Although we expect to see many recycling grant proposals for less than $50,000, the Department recommends that the ceiling for planning grants and recycling grants should be the same.

It is proposed that local government matching funds not be required and that grants be awarded for up to 100% of the cost of the project.

The Department recommends that 20 per cent of the available revenue each year be dedicated to grants for recycling demonstration projects. Although not proposed in the rules, it is the Department's intention to divide the remaining revenue each year between grants for solid waste planning and grants for recycling program activities or projects.

4. Method of award. The Department will decide who receives the grants and the amount of each grant. The rules establish an annual grant cycle. Grant projects will be reviewed and monitored through completion of the grant/project period. The Department will require the

grantee to submit progress reports and a final report on the grant project. The Department may require that the grantee share results of the project with other communities.

PROGRAM CONSIDERATIONS:

The statute provides that the 50 cent per ton fee may be used for grants for recycling and solid waste planning activities, and the administration of those grants. The Department has currently budgeted $250,000 for the first round of grant awards. Additional limitation will be necessary for awards in upcoming biennia. In addition, the Department has determined it will require a minimum of 1.2 full time equivalents (FTE) to administer the grant program.

ALTERNATIVES CONSIDERED BY THE DEPARTMENT:

1. Should there be different ceilings or no ceilings for the amount of each grant?

   The Department considered grant ceilings of $50,000 for each program, a lower grant ceiling of $25,000 for recycling grants, or no ceiling at all for either type of grant.

   The Department initially proposed $50,000 for a solid waste planning grant maximum because that is the amount the Department estimates a community would need in order to develop a good solid waste plan. A $25,000 maximum recycling grant was proposed in order that more grants in recycling could potentially be awarded, and that $25,000 was sufficient for many recycling projects. However, both the Solid Waste Reduction Advisory Committee (SWRAC) and the informal work group committee advised a ceiling of $50,000 for both grants. They believed that some recycling projects might need more than the $25,000 ceiling. This would not eliminate smaller grants.

   The option of no grant ceiling was discussed and rejected. The Department wants to insure that a number of grants can be awarded for the amount of funds available.

2. Should the Department favor recycling projects which take the most material out of the waste stream, or should funds be targeted for local governments with limited financial resources?

   Smaller communities are less likely to have available revenue sources to deal with solid waste and recycling problems. The legislative intent was that smaller communities without

sufficient revenue be helped through the grant program. The Department believes it is important to direct funds to areas that have worthy projects or priority needs that might not otherwise have revenue to address these needs.

The Department recognizes the immediate, short term environmental benefit of awarding grant money for projects which take the most amount of material from the waste stream. The Department also recognizes the majority of the revenue supporting the grant program comes from the local jurisdictions who generate the largest volumes of waste. However, the relatively small authorization of $250,000 is not enough money to have a significant impact on removal of material from the waste stream. Therefore, the Department proposes to set aside up to 20 per cent of available money to fund recycling demonstration projects. This will allow larger communities to successfully compete for a portion of the grant money.

3. Should the available funds be divided between solid waste planning and recycling activities, and if so, in what manner?

Choosing to fund a single program would make more money available for that program. The Department believes there are critical needs in various locations around the state in both program areas. Many areas need to seek new landfill capacity, due to landfills reaching capacity or closing due to the cost of upgrading to minimum landfill requirements. These areas must plan for solid waste alternatives. In addition, there are regions in the state that have difficulty maintaining a recycling program because their transportation costs to market are high. There are other communities that have volunteers who want to start or expand recycling programs but have no funding to purchase basic equipment to handle the source separated materials, or to provide education about recycling. Twelve of the thirty-eight wastesheds have curbside participation rates below 10 per cent.

The Department considered several alternatives for dividing the grant funds. Both SWRAC and the informal work group recommended a 50-50 split of funds between the solid waste and recycling programs. The Department's intent is to divide the money equally, provided that a sufficient number of good applications are received in both programs. However, if one program has few or no good applications, the Department would like to be able to shift funds to the other program.

Selection criteria are proposed for three types of grants: solid waste planning, recycling program activities, and recycling demonstration projects. Since criteria are different for each type of grant, projects will be ranked

within their own category. The proposed rules provide that the Department may award a minimum of one grant in each program, and that up to 20 per cent of grant money may be awarded for recycling demonstration projects.

DEPARTMENT RECOMMENDATION FOR ACTION, WITH RATIONALE:

1. Ceilings. The Department has chosen a ceiling of $50,000 for each grant program, based on the following:

   a. It was recommended by both the informal work group and SWRAC.

   b. The Department's intent is to award several smaller grants rather than one or two large grants.

   c. The Department estimates that $50,000 is an adequate amount to develop a good solid waste plan.

   d. Raising the recycling ceiling to $50,000 will allow larger projects but will not eliminate awards for smaller grants.

2. Maximum waste removal or limited resources.

   The Department recognizes the importance of removing the maximum amount of material from the waste stream and for helping communities with limited resources. Both concerns are addressed in the rules in that communities with limited or no resources will receive the majority of the grant money, yet communities with existing revenue and more sophisticated solid waste programs will be able to receive up to 20 per cent of grant monies for demonstration projects. This follows legislative intent. The long term benefits of all local governments, no matter how small or how sophisticated, taking an active and positive role in addressing their solid waste disposal problems and meeting the recycling needs of their community outweigh the short term benefits of reducing the most waste for the dollar.

3. Division of funds.

   The Department intends to set aside up to 20 per cent of the money for recycling demonstration projects and to divide the remaining funds equally between recycling projects and solid waste planning projects. This strikes a balance between the need for recycling programs and solid waste planning activities. Even though the total amount of grant monies available is limited, the Department believes there will be very worthy projects in both areas.

CONSISTENCY WITH STRATEGIC PLAN, AGENCY POLICY, LEGISLATIVE POLICY:

The rules are consistent with pollution prevention and other goals of the strategic plan, agency policy and implementation of legislative direction.

ISSUES FOR COMMISSION TO RESOLVE:

1. Is the grant limitation of $50,000 appropriate?

2 Are the selection criteria on track? Is it appropriate to slant grant selection toward local governments who need monetary support for their solid waste or recycling programs?

3. Should the grants be 100 per cent or should there be a required local match?

4. Should the funds be split between solid waste recycling and solid waste planning?

INTENDED FOLLOWUP ACTIONS:

Publication of intent to hold public hearings in the Secretary of State's Bulletin on February 1, 1991, and publication of notice of public hearing in newspapers.

Hold public hearings in Medford (February 25), Bend (February 26), La Grande (February 27), and Salem (February 28).

Receive public comment until March 8, 1991.

Prepare a hearing officer's report for final rule adoption by the Commission on April 26, 1991.

Approved:

Section: _____

Division: _____

Director: _____

Report Prepared By: Anne Cox

Phone: 229-6912

Date Prepared: January 15, 1991

AC/JM:b
G:\WT\SB10218
January 17, 1991

ATTACHMENT A

Draft Solid Waste/Recycle Grant Rules

Purpose and Scope

These rules are intended to implement Oregon Revised Statute (ORS) 459.294(2)(e), under which grants are made available to local government units for recycling and solid waste planning activities.

The purpose of the recycling and solid waste planning grants program is to provide grant funds to cities and counties in Oregon who are in need of financial assistance to plan for solid waste management options and to improve their recycling capabilities. In addition to improved recycling capabilities these grant funds will be available for demonstration projects that contribute to the development of new technology or advance new unproven concepts in recycling.

Definitions

As used in these rules unless otherwise specified:

(1) "Commission" -- the Environmental Quality Commission.

(2) "Department" -- the Department of Environmental Quality.

(3) "Director" -- the Director of the Department of Environmental Quality.

(4) "Local government unit" -- a city, county, metropolitan service district formed under ORS chapter 268, sanitary district or sanitary authority formed under ORS chapter 450, county service district formed under ORS chapter 451, regional air quality control authority formed under ORS 468.500 to 468.530 and 468.540 to 468.575 or any other local government unit responsible for solid waste management.

(5) "Permanent disposal capacity" --the local governing unit owns or has access for at least the next twenty years to a solid waste disposal facility meeting at least minimum Department standards.

(6) "Rolling stock" -- motor vehicles, anything on tires or wheels.

Grant Limitations

(1) Any single grant is limited to a maximum of $50,000.

(2) An applicant may receive no more than $50,000 in grant money during any grant award cycle.

(3) Adjustments. The Department may at any time review and audit requests for payment and make adjustments for, but not limited to, math errors, items not built or bought, unacceptable constructions, or lack of progress under the grant.

(4) The Department may award up to 20 per cent of available grant monies for demonstration or innovative recycling projects, and up to 80 per cent of the available grant monies for solid waste planning and general recycling program activities.

General Requirements

(1) Eligible applicants. A local government unit may apply to the Department for a grant for solid waste planning, recycling program activities or a recycling demonstration project. The grant revenue may be passed on to private citizens or companies to carry out recycling or planning activities that directly benefit the local government and its residents.

(2) Eligible solid waste planning projects. Grants may be awarded for up to 100 per cent of cost of the following types of projects and project-related costs:

(a) Evaluation of long-haul disposal options;
(b) Evaluation of disposal options due to imminent landfill closure or required upgrade;
(c) Planning disposal options for special wastes;
(d) Other planning activities; or
(e) Consultant work for the above activities.

(3) Eligible recycling program activities. Grants may be awarded for up to 100 per cent of cost of recycling projects and project-related costs which contribute to or accomplish one or more of the following:

(a) Reduction in per capita municipal solid waste generated;
(b) Improvement in markets for recyclable materials;
(c) Reduction in municipal solid waste disposed;
(d) Increased capture of recyclable materials;
(e) Increased or enhanced education or promotion programs.

(4) Eligible recycling demonstration projects. Grants may be awarded for up to 100 per cent of the cost of recycling demonstration projects and project-related costs which contribute to or accomplish one or more of the following:

(a) Development of new technology in the field of recycling and waste reduction;
(b) Innovative approaches to the reduction or prevention of waste generation; or
(c) Demonstration or pilot project for a new or unproven recycling concept.

(5) The following activities are not eligible for grant money under these rules:

(a) An activity required by Department permit.

(b) A project that already has or may have money from other outside sources.

(c) Capital expenditures for solid waste planning.

(d) Costs incurred prior to issuance of a grant award by the Department.

(e) Costs incurred after the expiration date of the grant award.

(f) License applications or permit fees.

(g) Existing local government staff, except in the case of certain pilot recycling projects.

(h) Capital expenditures for rolling stock.

Selection Criteria

(1) Eligible solid waste planning projects shall be ranked based on the following criteria:

(a) Ability to continue, or go to the next step if the grant is for one phase of a project.

(b) Extent to which the project will result in new information or will be addressing unanswered questions for the grantee.

(c) Intergovernmental cooperation/transferability of project results to other governmental units.

(d) Lack of environmentally sound permanent disposal capacity.

(e) Nearness in time to imminent closure of local landfill or required upgrade.

(f) Extent of the applicant's existing resources, staffing -- increasing with need.

(g) Economic feasibility of the plan; how cost effective is it?

(2) Eligible recycling program activities shall be ranked based on the following criteria:

(a) Degree of need.

(A) Distance from a market for recyclables.

(B) Extent of applicant's existing resources for solid waste management and recycling program activities.

(C) Extent of existing recycling opportunities in the jurisdiction.

(b) Impact on the waste management hierarchy.

(A) Per cent of total solid waste stream reduced.

(B) Extent to which project results in reduction or removal of a new material not previously separated from the solid waste stream.

(C) Extent to which project may result in increased recycling, reuse, or source reduction resulting from increased participation of solid waste generators in the commercial, institutional, or residential sector.

(c) General.

(A) Extent to which the project will result in new information for the jurisdiction to use in their recycling program.

(B) Intergovernmental cooperation.

(C) Transferability of project results to other governmental units.

(3) Recycling demonstration projects shall be ranked based on the following criteria:

(a) Transferability of project results to other governmental units.

(b) Extent to which the project will result in new information or will address unanswered questions.

(c) Results in the development of a new recycling market for use of a material that would otherwise be disposed.

(d) Ability to go to the next step if the grant is for one phase of a project.

Application and Procedure for Award

(1) Application for either type of grant shall be made on a form provided by the Department. Applications shall include such information as shall be required by the Department, including but not limited to:

(a) Description of the project and the expected results.

(b) Workplan and schedule for completion of project.

(c) Complete budget, including breakdown of costs.

(d) Person responsible for the project.

(e) A statement of compatibility with local land use requirements, if appropriate.

(2) The Department shall make grants available annually. Applications will be accepted from November 1 through January 15. Grant selections will be made by March 1 of each year, except that in 1991, applications will be accepted until July 1 and awards will be made by August 15.

(3) If sufficient monies are not available to fund all applications received for each grant award year, the Department shall rank the applications within each type and award grants by descending order of ranked scores.

(4) Qualified applicants who do not receive a grant award can apply again next year.

(5) The Department may award some, none or all of the grant monies available in any grant period.

(6) The Department reserves the right to award grants in amounts less than requested by the applicant. The Department shall make that determination based on the merits of the application, the project proposed, and the availability of grant monies.

Review and Approval

(1) A grant application must be reviewed by the Department prior to approval.

(2) To get approval, the following criteria must be met:
(a) Application must be complete. Applications must be received by the Department by January 15 for each grant year.
(b) Grant money must be available; and
(c) Project must be eligible under these rules.

(3) Grants shall be awarded to applicants based on approved applications ranking highest in selection criteria for solid waste planning, for recycling program activities, or recycling demonstration projects.

(4) The Department may award at least one grant in each program area during a grant period.

(5) When applications in any one program have the same score, the grant will be awarded to the applicant whose complete application was received on the earliest date.

Grant Agreements and Conditions

(1) Following approval and selection of the application, the Department and the applicant shall enter into an agreement. The agreement shall include but is not limited to the following conditions:

(a) Applicant's responsibility for progress reports;
(b) Monitoring requirements;
(c) End date--term of project and grant;
(d) Method of payment;
(e) Terms and conditions of the grant;
(f) Requirement for sharing of information resulting from project; and
(g) Final report.

(2) The Department may amend a grant award to accommodate major changes in project scope if it determines that the changes are necessary to meet the objectives of these rules. Any requests for a grant amendment shall be made in writing and fully documented by the grantee. Any amendments to a grant award shall be made in writing by the Department. The Department's approval of grant amendments shall be subject to the availability of funds. No amendment shall result in awarding more than a total of $50,000 for the project during the grant cycle.

(3) The Department may grant an extension of time for a grantee to complete a project, upon receipt from the grantee of acceptable documentation of need.

ATTACHMENT B

RULEMAKING STATEMENTS
for
Proposed Rules for Awarding Grants to
Local Governmental Units for
Solid Waste Planning and Recycling Grants

OAR Chapter 340, Division ____

Pursuant to ORS 183.335, these statements provide information on the intended action to adopt a rule.

STATEMENT OF NEED:

Legal Authority

The 1989 Oregon Legislature passed a 50 cent per ton surcharge on domestic solid waste received at disposal sites except transfer stations. Under ORS 459.295 the money from these fees is authorized to be used for several purposes, including grants to local governmental units for recycling and solid waste planning activities (ORS 459.295(2)(e)). ORS 459.045(3) allows the Commission to adopt rules on other subjects as necessary to carry out ORS 459.255 to 459.385. The Commission is adopting rules necessary to carry out ORS 459.295(2)(e).

Need for the Rules

The rules are needed to establish project eligibility, selection criteria and grant limitations. Prospective applicants will know what kinds of projects to propose and will understand the Department's mechanism and criteria for selection.

Principal Document Relied Upon

Oregon Revised Statutes, Chapter 459.

LAND USE CONSISTENCY STATEMENT:

The proposed rules appear to affect land use and appear to be consistent with Statewide Planning Goals and Guidelines.

With regard to Goal 6 (Air, Water and Land Resources Quality), the rules provide assistance to local governments to help them recycle materials and to do solid waste planning activities, and thus enhance the quality of air, water and land resources.

With regard to Goal 11 (Public Facilities and Services), the rule incorporates criteria for selecting and funding governmental projects with the best potential for increased benefits to the

public in the areas of solid waste planning and recycling activities. Local government solid waste management services should be enhanced by these rules.

The rules do not appear to conflict with other Goals.

Public comment on any land use issue involved is welcome and may be submitted in the manner described in the accompanying NOTICE OF PUBLIC HEARING.

It is requested that local, state and federal agencies review the proposed action and comment on possible conflicts with their programs affecting land use and with Statewide Planning Goals within their expertise and jurisdiction.

The Department of Environmental Quality intends to ask the Department of Land Conservation and Development to mediate any apparent conflicts brought to our attention by local, state or federal authorities.

WT\SK3240 (1/91)

ATTACHMENT C

FISCAL AND ECONOMIC IMPACT STATEMENT

I. Introduction

The rules implement a single statement in Oregon Revised Statute (ORS) 459.295(2)(e) which allows grants to be awarded to local governmental units for solid waste planning and recycling projects. The legislature authorized $250,000 as available for these grants through June 30, 1991.

The rules establish project eligibility standards and selection criteria for awarding the grants. The rules set limitations on the grant amounts and the frequency of awards.

II. General Public

The general public is not directly affected economically by these rules. The funds used for the grants is from the 50 cent per ton fee on in-state solid waste disposed. The general public pays that fee indirectly.

A successful recycling grant project in their area may bring new opportunities for citizens to increase their recycling abilities.

Solid waste planning grants will help ensure that proper disposal facilities will continue to be provided for the public.

III. Small Business

The grants are available only to local governmental units. Small (private) businesses would not be affected unless they are involved with local government in either solid waste planning or in recycling projects. The proposed rules allow a local government unit to pass through grant funds in order to implement an approved project. In that case small businesses may benefit by being the indirect recipient of some of the grant revenue.

IV. Large Business

The same remarks are true for large businesses.

V. Local Governments

Only local governments are eligible to apply for these awards and will be affected by the rules. The grants may help a community or area to introduce or improve a recycling project. The money could also be used to do long range planning for solid waste disposal or for other solid waste planning activities. Any one governmental unit may be eligible for up to $50,000 in any given year. The $250,000 initially authorized by the legislature to be spent this

biennium is proposed by staff to be split between the two programs, although the split is not part of the rules at this time.

VI. State Agencies

State agencies are not eligible for grant monies to be awarded under these rules. The Department has determined it will require a minimum of 1.2 FTE to administer the grant program.

WT\SK3241 (1/91)

Oregon Department of Environmental Quality

A CHANCE TO COMMENT ON...

Proposed Rules for Awarding Grants to Local Governments for Solid Waste Planning and Recycling Projects

Hearing Dates: 2/25,26,27,28/91
Comments Due: 3/8/91

WHO IS AFFECTED: Municipal governments that may want to apply for grants for solid waste planning and/or recycling projects.

WHAT IS PROPOSED: The Department of Environmental Quality is proposing to adopt rules to implement ORS 459.295(2)(e).

WHAT ARE THE HIGHLIGHTS: The proposed rules will set out project eligibility requirements, grant selection criteria and grant limitations.

HOW TO COMMENT: Send comments and/or requests for a copy of the complete proposed rule package to:

Hazardous and Solid Waste Division
Department of Environmental Quality
811 SW Sixth Avenue
Portland, OR 97204

For further information, call Jacquie Moon at (503) 229-5479.

Public hearings will be held:

February 28, 1991
1:00 p.m. to 3:00 p.m.
Chemeketa Comm. College
Bldg. 3, Rm. 118 & 119
4000 Lancaster Dr., NE
Salem, OR
(Handicap accessible)

February 25, 1991
1:30 p.m. to 3:30 p.m.
Jackson County Courthouse Auditorium
10 South Oakdale
Medford, OR

February 27, 1991
9:00 a.m. to 11:00 a.m.
City Hall
1000 Adams Avenue
La Grande, OR

February 26, 1991
9:00 a.m. to 11:00 a.m.
School Admin. Bldg. Conf. Rm. 330
520 NW Wall Street
Bend, OR

811 S.W. 6th Avenue
Portland, OR 97204

FOR FURTHER INFORMATION:

Contact the person or division identified in the public notice by calling 229-5696 in the Portland area. To avoid long distance charges from other parts of the state, call 1-800-452-4011.

11/1/86

Oral and written comments will be accepted at the public hearing. Written comments may be sent to the DEQ, but must be received no later than 4:00 p.m. March 8, 1991.

WHAT IS THE NEXT STEP: After public hearing, the Environmental Quality Commission may adopt a rule identical to the proposed rule, adopt a modified rule on the same subject matter, or decline to act. The Commission's deliberation may come in June as part of the agenda at a regularly scheduled meeting.

WT\SK3213 (1/91)

ATTACHMENT E

459.293 Policy. The Legislative Assembly finds and declares that:

(1) Domestic solid waste disposal capacity is a matter of state-wide concern;

(2) The disposal in Oregon of domestic solid waste generated both outside and within Oregon will reduce the total capacity available for disposal of domestic solid waste generated in this state;

(3) The disposal in Oregon of domestic solid waste generated outside Oregon and within Oregon will add to the level of environmental risk associated with the transportation and disposal of those wastes; and

(4) It is in the best interest of the public health, safety and welfare of the people of Oregon to reduce the amount of domestic solid waste being generated in Oregon in order to extend the useful life of existing domestic solid waste disposal sites and to reduce the environmental risks associated with receiving waste generated outside Oregon at those sites. [1989 c.833 §151]

Note: See note under 459.292.

459.294 Additional fees for reduction of domestic solid waste and environmental risks; assessment; maximum fee. (1) In addition to the permit fees provided in ORS 459.235, the commission shall establish a schedule of fees to begin July 1, 1990, for all disposal sites that receive domestic solid waste except transfer stations. The schedule shall be based on the estimated tonnage or the actual tonnage, if known, received at the site and any other similar or related factors the commission finds appropriate. The fees collected pursuant to the schedule shall be sufficient to assist in the funding of programs to reduce the amount of domestic solid waste generated in Oregon and to reduce environmental risks at domestic waste disposal sites.

(2) For solid waste generated within the boundaries of a metropolitan service district, the schedule of fees, but not the permit fees provided in ORS 459.235, established by the commission in subsection (1) of this section shall be levied on the district, not the disposal site.

(3) The commission also may require submittal of information related to volumes and sources of waste or recycled material if necessary to carry out the activities in ORS 459.295.

(4)(a) A local government that franchises or licenses a domestic solid waste site shall allow the disposal site to pass through the amount of the fees established by the commission in subsection (1) of this section to the users of the site.

(b) If a disposal site that receives domestic solid waste passes through all or a portion of the fees established by the commission in subsection (1) of this section to a solid waste collector who uses the site, a local government that franchises or licenses the collection of solid waste shall allow the franchisee or licensee to include the amount of the fee in the solid waste collection service rate.

(5) The fees generated under subsection (1) of this section shall be sufficient to accomplish the purposes set forth in ORS 459.295 but shall be no more than 50 cents per ton. [1989 c.833 §152]

Note: See note under 459.292.

459.295 Use of additional fees. (1) The fees established by the commission under ORS 459.294 shall be deposited in the General Fund and credited to an account of the department. Such moneys are continuously appropriated to the department to carry out the purposes set forth in subsection (2) of this section.

(2) The fees collected under ORS 459.294 shall be used only for the following purposes:

(a) To implement the provisions of ORS 459.411 to 459.417.

(b) Department of Environmental Quality programs to promote and enhance waste reduction and recycling state wide, including data collection, performance measurement, education and promotion, market development and demonstration projects.

(c) Department of Environmental Quality activities for ground water monitoring and enforcement of ground water protection standards at domestic solid waste landfills.

(d) Solid waste planning activities by counties and the metropolitan service district, as approved by the department, including planning for special waste disposal, planning for closure of solid waste disposal sites, capacity planning for domestic solid waste and regional solid waste planning.

(e) Grants to local government units for recycling and solid waste planning activities.

(f) To pay administrative costs incurred by the department in accomplishing the purposes set forth in this section, the amount allocated under this subsection shall not exceed 10 percent of the fees generated under ORS 459.294. [1989 c.833 §153]

Note: See note under 459.292.

ATTACHMENT F

Here is a list of those who have volunteered to work on proposed rules for solid waste planning and recycling grants:

Steve Kraten
Metropolitan Service District (MSD)
2000 SW 1st
Portland, OR 97201
221-1646

Tom Peters
CH2M Hill
2020 Sw 4th Avenue, 2nd Floor
Portland, OR 97201
224-9190

John Drew
Far West Fibers
P.O. Box 503
Beaverton, OR 97075
643-9944

Judge Kevin Campbell
P.O. Box 220
Canyon City, Oregon 97820
575-0059 or 575-1675

Larry Lehman
City Mgr. City of Seaside
989 Broadway
Seaside, OR 97138
738-5511
fax 738-5514

Joan Grimm
Department of Health & Human Services
Washington County
(also Assoc. of Ore. Recyclers)
155 N. First Avenue
Hillsboro, Oregon 97124
648-8722

WT\SK3242 (1/91)

Oregon

ENVIRONMENTAL
QUALITY
COMMISSION

REQUEST FOR EQC ACTION

Meeting Date: January 31, 1991
Agenda Item: D
Division: Air Quality
Section: Planning & Development

SUBJECT:

PM_{10} Air Pollution Control Strategies for the Eugene-Springfield, Medford-Ashland and Klamath Falls Areas.

PURPOSE:

Adopt the PM_{10} control strategies for these three areas as revisions to the State Implementation Plan (SIP).

ACTION REQUESTED:

___ Authorize Rulemaking Hearing
_X_ Adopt Rules

Proposed Rules	Attachment A
Rulemaking Statements	Attachment B
Fiscal and Economic Impact Statement	Attachment C
Public Notice	Attachment D

DESCRIPTION OF REQUESTED ACTION:

The Environmental Quality Commission (EQC, Commission) is requested to adopt the proposed PM_{10} control strategies as SIP revisions.

The proposed control strategies describe the State of Oregon's plan to meet federal Clean Air Act requirements to attain compliance with the annual and 24-hour PM_{10} standards in the Eugene-Springfield, Medford-Ashland, and Klamath Falls areas and maintain compliance with the PM_{10} standards in these areas through at least the year 2000.

811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696

The control strategy documents are proposed as revisions to the State Implementation Plan (OAR 340-20-047). This action will: (1) identify the control strategy elements necessary to attain and maintain compliance with PM_{10} air quality standards; and (2) make individual control strategy elements related to industry, woodstoves and fireplaces, open burning, road dust, and slash burning, which have already been adopted through either state rules or local ordinances (or a local PM_{10} plan, in the case of the Eugene-Springfield plan adopted by the Lane Regional Air Pollution Authority (LRAPA)) federally enforceable.

The proposed control strategies represent partial PM_{10} plans since they fulfill to varying degrees the requirements of the Clean Air Act. Additional work will be needed on all three strategies to meet new requirements of the recently amended Clean Air Act signed by the President on November 15, 1990 (e.g., reasonable further progress reporting, contingency plans with enforceable commitments, and other requirements which EPA will identify in the months to come). In addition, enforceable woodburning curtailment programs are needed in Klamath Falls and Central Point.

The Department of Environmental Quality (Department) is proposing these three control strategies for adoption as SIP revisions, even though they do not completely fulfill the Clean Air Act requirements, in order to: (1) demonstrate to the U.S. Environmental Protection Agency (EPA) that a good faith effort and reasonable progress have been made in developing PM_{10} control strategies; (2) provide firm guidance to the public, local governments and industries on what control strategy elements are necessary to attain and maintain compliance with PM_{10} standards; (3) guard against backsliding on industrial or residential elements of the strategies; and (4) improve air quality to healthful levels as soon as possible.

Mandatory programs to curtail woodburning emissions during pollution episodes are essential to each of the PM_{10} control strategies. .The legal frameworks for the mandatory curtailment programs are in various stages of development in the three areas: (1) In the Eugene-Springfield area, Lane County and the cities of Eugene and Springfield recently adopted the necessary ordinances; (2) In the Medford-Ashland area, Jackson County and the cities of Medford and Central Point adopted the necessary ordinances but Central Point voters recently repealed its ordinance; (3) In Klamath Falls, Klamath County and the city of Klamath Falls have not yet adopted ordinances.

Additional details on the proposals are outlined in the executive summaries of the PM_{10} control strategy documents (Attachment A).

AUTHORITY/NEED FOR ACTION:

___	Required by Statute: _____	Attachment ___
	Enactment Date: _____	
_X_	Statutory Authority: ORS 468.305	Attachment E
___	Pursuant to Rule: _____	Attachment ___
___	Pursuant to Federal Law/Rule: _____	Attachment ___
_X_	Time Constraints:	

Under the 1977 Clean Air Act, adopted PM_{10} control strategies were due to EPA as SIP revisions by May 1988, but none of the States were able to meet this deadline; PM_{10} air quality standards were to be met by September 1, 1991.

The Department and EPA Region 10 agreed to a November 1990 PM_{10} SIP submittal date which was incorporated into the FY91 State/EPA Agreement. The Grants Pass SIP revision was adopted on schedule but the other SIP revisions were delayed due to problems or delays with local ordinances.

The Sierra Club sued EPA for failure to require States nationally to submit PM_{10} plans according to the 1977 Clean Air Act schedule. This suit is expected to be set aside due to the 1990 Clean Air Act.

The Clean Air Act of 1990 requires that PM_{10} plans be submitted and PM_{10} standards be met as expeditiously as practicable, but provides for extensions of the deadlines for PM_{10} SIP submittals (to November 1991) and attainment of PM_{10} standards (to December 1994) if necessary.

EPA prefers that the PM_{10} plans be submitted in their present form as soon as possible so that the major PM_{10} responsibilities of the state, including state rules and the overall evaluation of the PM_{10} problems and control strategies, will be met. In addition, adoption of the plans in their current form will guard against backsliding by providing federal enforceability of the currently adopted control measures.

DEVELOPMENTAL BACKGROUND:

_X_	Advisory Committee Report/Recommendation	Attachment F
_X_	Hearing Officer's Report/Recommendations	Attachment G

The major issues raised during the public hearing process included the following:

1. Some of the Medford-Ashland testimony expressed concern that the proposed plan would not fully meet health standards and stressed that the plan should be more comprehensive, balanced and equitable with stricter requirements on industry, slash burning, agricultural burning, open burning, and woodstoves.

2. Some of the testimony in all three areas argued against mandatory curtailment of woodstoves during pollution episodes.

3. Some of the Klamath Falls and Medford-Ashland testimony claimed that the Department had overestimated the PM_{10} impact from residential woodburning emissions.

_X_ Response to Testimony/Comments Attachment _H_

The following statements correspond to the major public hearing issues and summarize the Department's responses:

1. The Department has drafted potential contingency measures for the proposed Medford-Ashland plan that would be pursued if a shortfall occurs in the control strategy. The Department and LRAPA intend to finalize contingency measures for each of the areas by November 1991 as part of the final SIP strategy.

2. Mandatory curtailment of woodstoves during pollution episodes is critical to the success of the control strategies in each of the three areas. Other state and local agencies in other western states with similar PM_{10} problems and EPA have come to the same conclusion.

3. Residential woodsmoke is clearly the dominant contributor to PM_{10} problems in Oregon based on emission inventories, dispersion modeling, chemical fingerprinting, seasonal patterns, and intensive ambient monitoring. EPA has reviewed the Oregon data and concurred with the Department's assessment. Other state and local agencies in other western states with similar PM_{10} problems have come to the same conclusion.

_X_ Prior EQC Agenda Items: Attachment _I_
___ Other Related Reports/Rules/Statutes: Attachment ___
___ Supplemental Background Information Attachment ___

REGULATED/AFFECTED COMMUNITY CONSTRAINTS/CONSIDERATIONS:

Implementation of the PM_{10} control strategy involves residents, industries, local governments, and state and federal agencies. The two groups most affected by the proposed PM_{10} control strategies are residents with woodstoves and fireplaces and owners/operators of wood products industries. The economic impacts from the state industrial rules and local woodburning ordinances which have already been adopted are outlined in Attachment C.

Wood products industry emissions in the Medford-Ashland area will be reduced by additional control requirements on veneer driers and large wood-fired boilers at plywood plants, more extensive source testing and continuous emission monitoring in order to maximize performance of pollution control equipment, and more restrictive emission offset requirements to insure a net air quality benefit from any new or expanded industries. Industrial PM_{10} rules to implement these requirements were adopted by the Commission in September 1989.

Woodstove and fireplace emissions must be substantially reduced in all three areas in order to achieve the PM_{10} health standards. This will be accomplished by implementation of an expanded public information program (all areas), areawide mandatory woodburning curtailment program (needed in all areas, but not all ordinances are in place yet), the Oregon woodstove certification program (statewide), financial assistance programs for replacement of existing woodstoves with cleaner burning units (Medford-Ashland and Klamath Falls, and also in other areas if the Comprehensive Emission Fee Bill is passed by Legislature) and weatherization of homes, a ban on installation of non-certified woodstoves (some areas), and continued improvements in firewood seasoning and woodstove operation (expected in all areas).

PROGRAM CONSIDERATIONS:

The new industrial emission control and monitoring requirements are requiring some additional plan reviews, tax credit reviews, inspections, monitoring report reviews, monitoring equipment audits, and other compliance assurance activities by Department staff. This additional work is being done by shifting existing resources, resulting in less attention to lower priority sources and an increased backlog in some permit or inspection activities.

The Department and LRAPA must rely on local governments to adopt mandatory woodburning curtailment programs since the Department and LRAPA do not have the statutory authority to adopt such programs. The Department will continue to work with local governments and the Legislature to develop enforceable mandatory programs where still needed by the November 1991 deadline (for final plan submittals) of the new Clean Air Act.

The daily decision on woodburning curtailment programs is based on air quality and meteorological information from the Department's and LRAPA's existing air monitoring networks and from the National Weather Service. The daily woodburning decision (red, yellow, green call) in the Eugene-Springfield area is made by LRAPA, in Medford-Ashland area by the Jackson County Health and Human Services Department, and in Klamath Falls by the Klamath County Health Department.

Under recently adopted local ordinances, the compliance assurance surveys and enforcement activities for the woodburning curtailment programs and opacity limits will be conducted by LRAPA in the Eugene-Springfield area, and by Jackson County and the cities of Medford and Ashland in the Medford-Ashland area. Central Point voters repealed the city's mandatory curtailment ordinance on November 1990, and Klamath County has not yet adopted a mandatory curtailment ordinance. The Department is pursuing financial assistance through the Comprehensive Emission Fee Bill (legislative concept) for local governments to operate woodsmoke control programs.

ALTERNATIVES CONSIDERED BY THE DEPARTMENT:

The major alternatives are:

1. Proceed with adoption now of the three PM_{10} control strategies as revisions to the State Implementation Plan as partial fulfillment of Clean Air Act requirements, and complete the remaining Act requirements by November 1991;

2. Delay submittal of the PM_{10} control strategies, and request extensions from EPA on the plan submittal schedule and/or attainment date in order to complete development of enforceable woodburning curtailment programs and also the new requirements of the 1990 Clean Air Act; or

3. Not adopt a PM_{10} State Implementation Plan and allow EPA

to impose sanctions or develop and implement a Federal Implementation Plan for the PM_{10} problem area(s).

The following additions to the PM_{10} control strategies are required by November 1991:

Eugene-Springfield: Additional sections to meet new requirements of the 1990 Clean Air Act (e.g., reasonable further progress reporting, contingency plans with enforceable commitments, and other requirements which EPA will identify in the months to come).

Medford-Ashland: Same as Eugene-Springfield, plus additional control measure(s) to fix the shortfall caused by the repeal of the Central Point woodburning curtailment ordinance. The Department will also use data from an expanded monitoring program this winter to further reconcile differences between dispersion modeling and ambient monitoring. This will provide a mid-course reassessment of the adequacy of the control strategy prior to final plan adoption in November 1991.

Klamath Falls: Same as Eugene-Springfield, plus the adoption of an enforceable woodburning curtailment program.

The 1990 Clean Air Act requires attainment of PM_{10} standards to be demonstrated as expeditiously as practicable but not later than the end of 1994. Delaying adoption of the PM_{10} control strategies could result in delaying achievement of healthful air quality for the public.

DEPARTMENT RECOMMENDATION FOR ACTION, WITH RATIONALE:

The Department recommends that the Commission adopt the proposed PM_{10} control strategies as revisions to the State Implementation Plan (Alternative 1). The Department believes that the proposed strategies are balanced and reasonable combinations of emission reduction elements that will be adequate to attain and maintain the PM_{10} health and welfare standards in the three areas.

While the legal framework for mandatory curtailment programs is not completely in place, and some additional requirements of the 1990 Clean Air Act still need to be completed, the Department believes it is in the best interest of the public to adopt the PM_{10} control strategies now as partial fulfillment of Clean Air Act requirements for the following reasons:

1. It would demonstrate a good faith effort by the state to fulfill as many of its responsibilities as soon as possible;

2. It will help insure that the existing industrial rules and residential ordinances are implemented as adopted and guard against potential backsliding by providing federal backup enforcement authority; and

3. Most importantly, it will bring about healthful air quality as soon as possible by guarding against backsliding and providing a formal position of EPA and the state on the needed strategies to accomplish this goal.

CONSISTENCY WITH STRATEGIC PLAN, AGENCY POLICY, LEGISLATIVE POLICY:

The proposed PM_{10} control strategies are consistent with Goals 2, 3, 4, and 5 of the Strategic Plan.

ISSUES FOR COMMISSION TO RESOLVE:

Without the critical Central Point and Klamath Falls ordinances, should the remainder of the control strategies and adequacy demonstrations be adopted now to provide federal enforcement authority backup and help prevent backsliding on other local ordinances or state rules?

INTENDED FOLLOWUP ACTIONS:

1. Work with local governments in Klamath Falls and Central Point and the Legislature to develop the necessary legal framework for enforceable programs to curtail woodburning emissions during pollution episodes.

2. Support the Comprehensive Emission Fee bill in the 1991 Legislative Session which would provide financial incentives to reduce and prevent air pollution, particularly from residential woodheating, provide additional needed Department resources to implement industrial control programs, and provide financial support for local woodsmoke control programs.

3. Complete the additional PM_{10} SIP requirements of the 1990 Clean Air Act as soon as possible.

4. Reassess the adequacy of the overall Medford-Ashland PM_{10} control strategy based on the 1990-91 winter

results of the expanded monitoring network and revise the final SIP as necessary.

5. At least annually, track progress to meet the annual and daily PM_{10} health standards and initiate contingency plans if necessary.

Approved:

Section: _____

Division: _____

Director: _____

Report Prepared By: Merlyn Hough
Phone: 229-6446
Date Prepared: January 15, 1991

MLH:a
PLAN\AH11813
1/15/91

Attachment A

Following this page are:

1. Introduction of Eugene-Springfield PM_{10} Control Strategy;
2. Executive Summary of Medford-Ashland PM_{10} Control Strategy;
3. Executive Summary of Klamath Falls PM_{10} Control Strategy.

COMPLETE COPIES OF THE PM_{10} CONTROL STRATEGIES HAVE BEEN PROVIDED TO THE ENVIRONMENTAL QUALITY COMMISSION AND ARE AVAILABLE FOR REVIEW AT THE FOLLOWING LOCATIONS:

Copies of all of the PM_{10} control strategies:

DEQ Air Quality Division
811 S.W. Sixth Avenue
Portland, Oregon 97204

Copy of the Eugene-Springfield PM_{10} control strategy:

Lane Regional Air Pollution Authority
225 W. 5th, Suite 501
Springfield, Oregon 97477

Copy of the Klamath Falls PM_{10} control strategy:

Klamath County Air Quality
403 Pine Street
Klamath Falls, Oregon 97601

DEQ Central Region Office
2146 N.E. Fourth
Bend, Oregon 97701

Copy of the Medford-Ashland PM_{10} control strategy:

DEQ Southwest Region Office
201 W. Main Street, Suite 2-D
Medford, Oregon 97501

Proposed State Implementation Plan

for Particulate Matter

Eugene-Springfield, Oregon
Nonattainment Area

A Plan for Attaining and Maintaining the National Ambient Air Quality Standard for PM_{10}

State of Oregon
Department of Environmental Quality
Air Quality Division

January 1991

LANE REGIONAL AIR POLLUTION AUTHORITY

PM10 STATE IMPLEMENTATION PLAN

MARCH, 1990

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INTRODUCTION

I. INTRODUCTION

BACKGROUND

On July 1, 1987, the U.S. Environmental Protection Agency (EPA) adopted revisions to the National Ambient Air Quality Standards for Particulate Matter which become effective on July 31, 1987. This action included:

1. Replacing total suspended particulate (TSP) as the indicator for particulate matter with a new indicator that includes only those particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM10).
2. Replacing the 24-hour primary standard for TSP with a PM10 standard of 150 $\mu g/m^3$ with no more than one expected exceedance per year (generally based on three consecutive years of data).
3. Replacing the annual primary TSP standard with a PM10 standard of 50 $\mu g/m^3$ (expected annual arithmetic mean generally based on the previous three calendar years).
4. Replacing the secondary TSP standards with PM10 standards that are identical with the primary standards.

Section 110 of the Federal Clean Air Act requires every State to submit to EPA a State Implementation Plan (SIP) which provides for implementation, maintenance, and enforcement of a new standard within 9 months of promulgation. The SIP must provide for attaining the standard as expeditiously as practicable, but no later than 3 years after the SIP has been approved by the EPA. Under certain conditions, an extension of up to 2 years can granted by the EPA.

For developing PM10 SIP's, the EPA categorized areas of concern into three different groups. Group I areas were those for which there was at least a 95% certainty of noncompliance with the standard. Group II areas were those having a 20% to 95% probability of noncompliance. The remaining areas below 20% probability were classed as Group III. In general, the most stringent requirements were placed on the Group I areas.

Based upon the available ambient data, the Eugene-Springfield Urban Growth Area (UGA) was classified by EPA as a PM10 Group I Area. The UGA was chosen as the area for study for a number of reasons: it is already defined as an AQMA for SIP purposes; most, if not all, of the sub-areas of potential non-attainment appear to be within the UGA. Three general purpose local governments have jurisdiction within the UGA; they include the cities of Eugene and Springfield, and Lane County.

The Lane Regional Air Pollution Authority (LRAPA) has the responsibility locally for developing and implementing plans for insuring that the air quality of Lane County complies with all relevant ambient air quality standards. Work on developing the PM10 SIP began in August, 1987. The LRAPA Citizens Advisory Committee was asked by the LRAPA Board of Directors to develop recommendations on how the Eugene-Springfield area should achieve compliance with the new PM10 standards. After a lengthy period of evaluating the problem, the committee completed its work in October, 1989, providing recommendations to the LRAPA Board of Directors. After a public hearing (held on January 30, 1990) the Board acted to adopt the SIP and forwarded it to the State of Oregon Environmental Quality Commission (EQC) for their action. Upon EQC approval the document will be sent to EPA Region 10 for approval.

AMBIENT PM10 DATA

Monitoring for PM10 in Lane County began in March, 1984, with 2 sites in Eugene sampling on an every sixth day schedule. A third daily sampling site was located at Key Bank in West Eugene in November, 1985. The Key Bank Site was identified by the dispersion model used in the 1978 TSP SIP as having the potential for the highest TSP levels. Two additional sites sampling on a sixth day schedule have subsequently been located within the Eugene-Springfield Urban Growth Area (see Figure 1). All sites were equipped with Sierra Anderson Model 1200 reference method samplers. The data is summarized in Table 1 and shows that exceedances of the 24-hour PM10 Standard were measured on 14 dates from the start of sampling through December, 1988. No violations of the annual arithmetic mean standard have been recorded. The highest annual average over the past three years was 39 $\mu g/m^3$ at the Key Bank Site, well below the annual standard of 50 $\mu g/m^3$.

All of the 24-hour PM10 standard exceedances have occurred during the winter months. Twelve of the 14 exceedance dates were in December of 1985. This was a period of extensive poor ventilation with no precipitation, cold temperatures (average daily temperatures near 0 degrees centigrade) and light winds (average daily wind speed of 1 to 2 meters per second). A summary of the historical Air Stagnation Advisories issued for Eugene-Springfield by the National Weather Service (NWS) is presented in Table 2. This shows that although the number of stagnation days was large that winter, it was not unusual. What was unusual for December, 1985 was the cold. There were 983 degree days (65 degree base) recorded that month at the NWS site at the Eugene Airport. This is higher than

FIGURE 1

URBAN GROWTH AREA WITH HISTORICAL MONITORING SITES

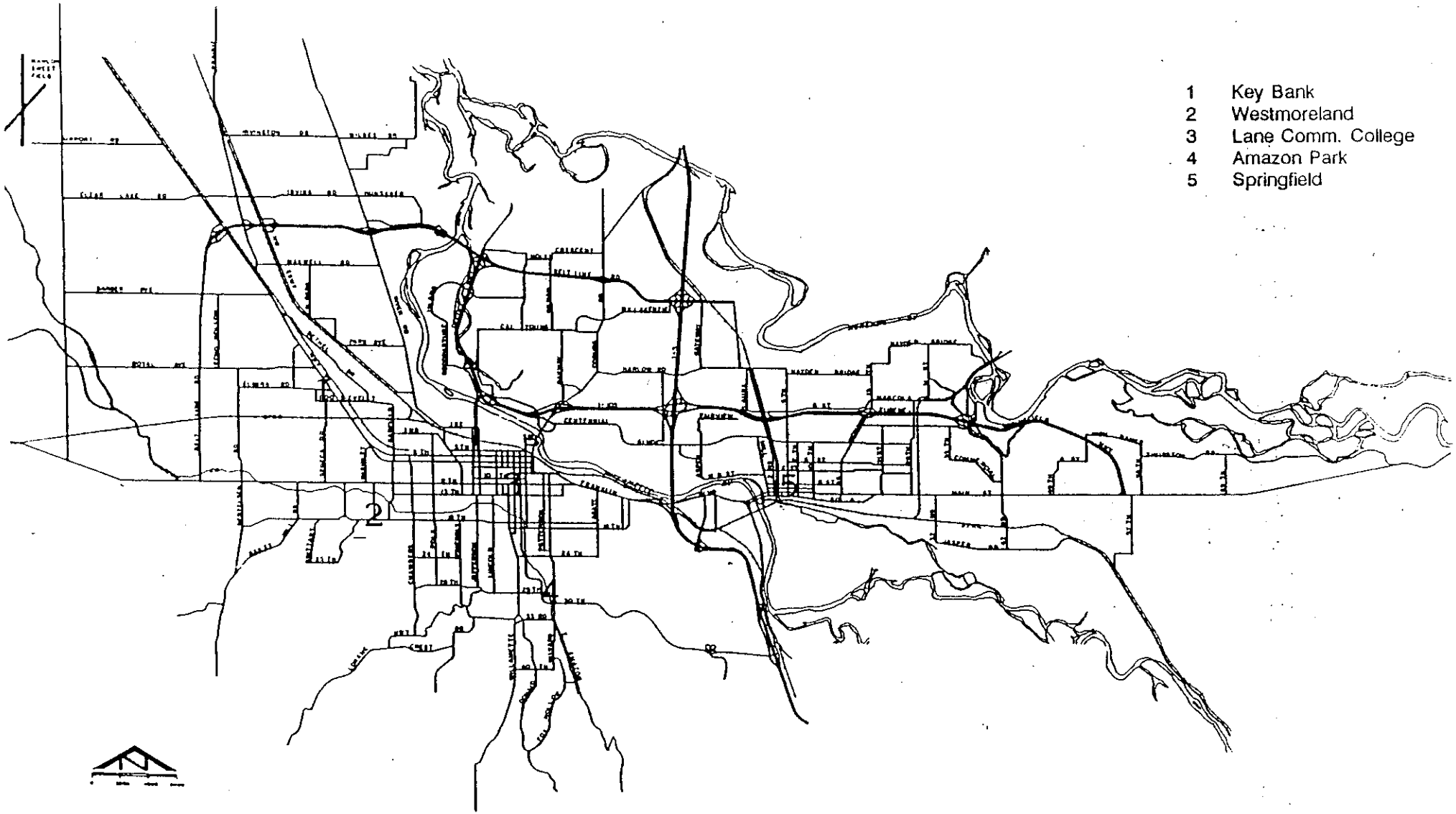


TABLE 1

MAXIMUM AMBIENT PM10 LEVELS

Eugene-Springfield Urban Growth Area

SITE IDENTIFICATION	1985			1986			1987			1988		
	A	B	C	A	B	C	A	B	C	A	B	C
LCC	37	197	3	31	85	0	37	129	0	29	72	0
Key Bank	--	267	12	39	151	0	43	175	2	37	129	0
Amazon Park	34	189	2	27	118	0	32	122	0	26	95	0
Springfield	--	80	0	--	57	0	35	104	0	34	75	0
Westmoreland	--	---	--	--	---	-	--	---	-	30	76	0

Key:
- A Annual Arithmetic Mean
- B Highest 24-Hour Concentration
- C Number of Days Exceeding 154 $\mu g/m^3$ (standard exceedance)
- -- Insufficient Data or Site Not in Operation

TABLE 2

NATIONAL WEATHER SERVICE AIR STAGNATION ADVISORIES

EUGENE-SPRINGFIELD

NOVEMBER THROUGH FEBRUARY

WINTER SEASON	NUMBER OF ASA DAYS
1979 - 1980	16
1980 - 1981	19
1981 - 1982	10
1982 - 1983	11
1983 - 1984	0
1984 - 1985	19
1985 - 1986	15
1986 - 1987	8
1987 - 1988	0
1988 - 1989	6

any December total over the past 30 years, which has a 30 year mean of 735 degree days for December (Table 3 depicts the past 19 years).

If PM10 monitoring data from the past three calendar years (1986-1988) is reviewed using EPA adopted Appendix K rounding criteria (round to the nearest 10), only 2 exceedances of the standard are recorded. This would imply compliance with the 24-hour standard. However, two critical questions arise:

1. Are the existing sampling sites representative of the highest locations in the area?
2. The fact that only two exceedances have occurred since a voluntary home wood heating curtailment program was instituted in November, 1986, could be coincidental or could be the result of actual reduced home wood heating emissions. What assurance is there that exceedances will not occur in future years?

These questions are addressed as part of the analysis in this SIP.

AREA OF APPLICABILITY

The area of applicability for this SIP is the Eugene-Springfield Urban Growth Area (UGA). This is an area of approximately 200 km^2 located at the upper (southern) end of the Willamette Valley in Western Oregon (see Figure 2). The area is at the confluence of two major rivers (Willamette and Mckenzie) and is bounded on the East, South and West by elevated terrain, which frequently restricts atmospheric ventilation. The current population of the area is estimated to be 190,000 with a projected increase to 290,000 by 2010 (Lane Council of Governments).

TABLE 3

DECEMBER METEOROLOGY

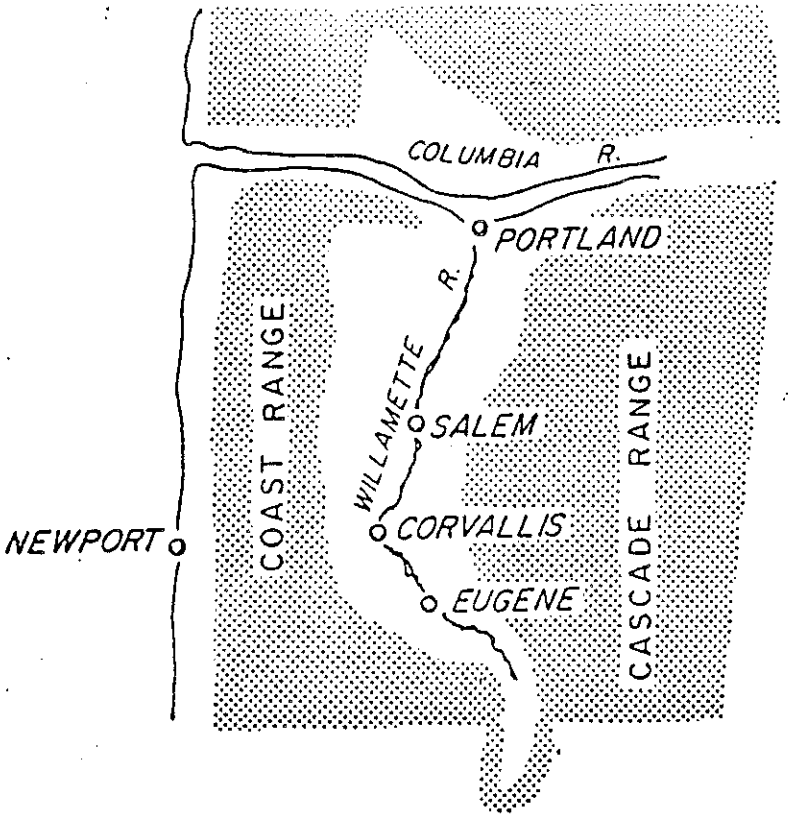
EUGENE

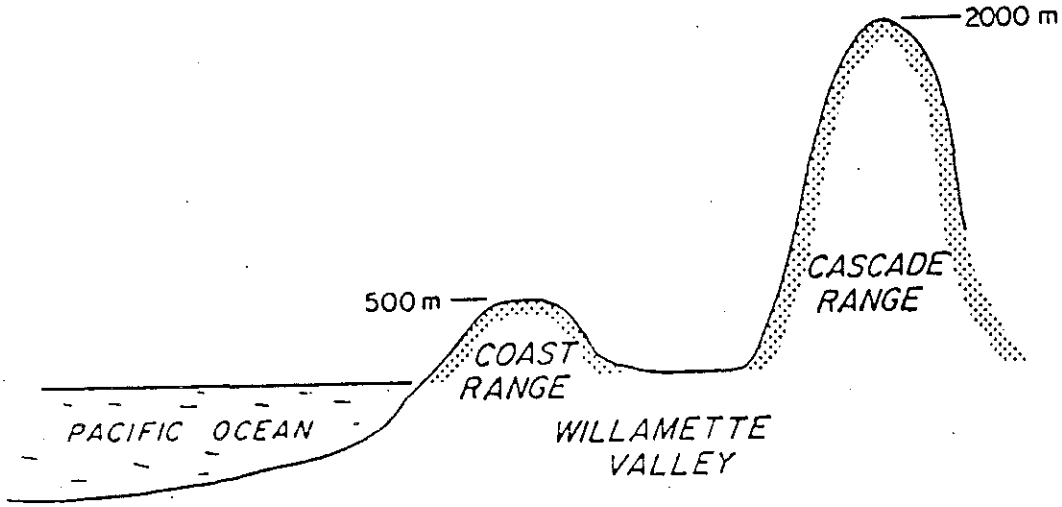
NATIONAL WEATHER SERVICE - AIRPORT

YEAR	DEGREE DAYS	TOTAL PRECIPITATION (INCHES)	DAYS WITH MEASURABLE PRECIPITATION
1970	769	11.57	20
1971	811	9.46	19
1972	945	10.78	21
1973	666	11.82	25
1974	589	9.26	23
1975	676	7.12	23
1976	840	1.24	7
1977	675	14.60	22
1978	919	2.86	15
1979	671	7.38	15
1980	697	14.73	15
1981	710	17.63	22
1982	791	13.53	20
1983	879	7.47	21
1984	851	4.56	16
1985	983	3.51	8
1986	773	3.30	12
1987	774	15.40	21
1988	749	5.18	11
MEAN	777	9.02	18

FIGURE 2

WILLAMETTE VALLEY





The Urban Growth Boundary, which circumscribes the Urban Growth Area, includes the cities of Eugene and Springfield, the major unincorporated areas of River Road and Santa Clara, and those adjacent areas zoned by Lane County for future development. This is the boundary used by local governmental planning organizations to project future development in the area. A legal description can be found in the Metropolitan Plan.

As shown in the Problem Analysis chapter of this SIP, the major sources impacting the area are emissions from home wood heating and industrial sources (primarily wood products). The wood heating emissions are ubiquitous throughout the area while the industrial emissions have localized concentrations in west Eugene and east Springfield.

As shown earlier (see Table 1), exceedances of the 24-hour standard have been recorded at several of the current monitoring sites. In addition, the results of the dispersion modelling analysis and the Saturation Monitoring Study (see Problem Analysis Chapter) indicate that elevated levels of PM10 can be expected to occur throughout the Urban Growth Area, with standard exceedances probable in areas currently not monitored.

All of these factors combine to indicate that the Urban Growth Area includes all existing and potential locations of noncompliance with the standard, and is therefore the logical choice as the area of applicability.

Proposed State Implementation Plan

for Particulate Matter

Medford-Ashland, Oregon
Nonattainment Area

A Plan for Attaining and Maintaining the National Ambient Air Quality Standard for PM_{10}

State of Oregon
Department of Environmental Quality
Air Quality Division

January 1991

Preface

Significant changes have occurred since the initial air quality analysis of this PM_{10} control strategy and the proposal as a revision to the State Implementation Plan:

1. The Central Point ordinance for curtailment of woodburning during air pollution episodes was repealed by voters in November 1990; and

2. The 1990 Clean Air Act was passed by Congress and signed by the President on November 15, 1990.

As a result, several additions to this plan are needed to fully meet the 1990 Clean Air Act requirements. The shortfall caused by the repeal of the Central Point ordinance must be corrected. Sections must be added or expanded to identify an enforceable contingency plan, reasonable further progress reporting, and possibly other provisions of the 1990 Clean Air Act to be clarified by the U.S. Environmental Protection Agency in the months ahead. These additions are expected by November 15, 1991, as required by the 1990 Clean Air Act.

The 1990 Clean Air Act also requires that PM_{10} air quality standards be attained by December 31, 1994.

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* Available upon request.
** Included with SIP revision.

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Executive Summary

The U.S. Environmental Protection Agency (EPA) adopted new particulate National Ambient Air Quality Standards (NAAQS) for PM_{10} on July 1, 1987. PM_{10} particulate is less than 10 micrometers in aerodynamic diameter or about one-tenth of the diameter of a human hair. The Clean Air Act requires that States develop and adopt State Implementation Plan (SIP) revisions to assure that areas which exceed the PM_{10} standards are brought into attainment within the time frames prescribed by the Clean Air Act (September 1991). This document describes the State of Oregon plan to attain the PM_{10} standards in the Medford-Ashland Air Quality Maintenance Area (AQMA).

High exposure to particulate matter is of concern because of human health effects such as changes in lung functions and increased respiratory symptoms, aggravation of existing respiratory and cardiovascular disease, alternation in the body's defense system against foreign materials, damage to lung tissue, increased risk of cancer and, in extreme cases, premature death. Most sensitive to the effects of particulate matter are people with chronic obstructive pulmonary cardiovascular disease and those with influenza, asthmatics, the elderly, children and mouth-breathers.

Air quality measurements taken in Medford have determined that the 24-hour PM_{10} health standard was exceeded an average of about 20 days per year during the winter months in 1984-86. In addition,the annual average concentration of PM_{10} exceeded the annual PM_{10} health standard.

The PM_{10} standards adopted by the EPA, and subsequently adopted by the Oregon Environmental Quality Commission, were established to protect public health and welfare. The 24-hour PM_{10} standard is 150 micrograms per cubic meter of air ($\mu g/m^3$). The maximum 24-hour concentration of PM_{10} measured in Medford was over 300 $\mu g/m^3$. The 24-hour standard cannot be exceeded more than an average of one day per year. The annual average PM_{10} concentration in Medford is about 58 to 68 $\mu g/m^3$ in the peak areas compared to the average annual PM_{10} standard of 50 $\mu g/m^3$.

An inventory of PM_{10} emissions developed for the Medford-Ashland Air Quality Maintenance Area (AQMA) indicates that the major sources of particulate emissions are residential wood combustion, industry, and soil and road dust. Annual average and worst day PM_{10} emissions during the baseline period (1985-86) are compared in the following table.

Source Category	Annual PM_{10} Emissions (%)	Worst Day PM_{10} Emissions (%)
Residential woodsmoke	38	60
Wood products industry	27	18
Soil and road dust	22	18
Other	13	4
Total	100	100

The air pollution impacts from these PM_{10} emissions have been measured, calculated and verified at various locations within the AQMA through the combination of the air monitoring network (PM_{10} measurement stations), dispersion modeling (mathematical modeling of diffusion in the atmosphere), and receptor modeling (chemical fingerprinting) techniques.

PM_{10} design values are those 24-hour worst case and annual average concentrations from which reductions must be made to achieve compliance with the standards. The 24-hour design value represents the fourth highest daily concentration measured in a 3-year period; the annual design value represents the 3-year average concentration.

The design values were determined with the following considerations. The eight highest 24-hour PM_{10} concentrations during 1984-86 occurred during December 1985 so the December 1985 meteorology was used for the worst-case-day dispersion modeling. The 1984-86 period had the highest 3-year PM_{10} average concentration since monitoring began so this period was used for the annual-average analysis; the most precise wind data was available during July 1985 to June 1986 and this 12-month period had average concentrations similar to the 1984-86 average so the annual-average dispersion modeling was done with the July 1985 to June 1986 meteorology. The highest PM_{10} concentrations were measured in the area between the Jackson County Courthouse at Oakdale/Main and McAndrews Road (monitors located near Oakdale/Main, Haven/Holly, Oak/Taft, and Welch/Jackson).

Analysis of the dispersion modeling results for 1985-86 and all of the available PM_{10} air quality data from 1984-1986 indicates a 24-hour design value of 266 to 309 $\mu g/m^3$ (Oakdale/Main and Oak/Taft, respectively) and an annual average design value of 58 to 68 $\mu g/m^3$ (Oakdale/Main and Oak/Taft, respectively) depending on the location within the peak problem area. In addition to the peak impact site (Oak/Taft), the impact analysis is also summarized for the Courthouse site (Oakdale/Main) since most of the historical particulate data (20+ years) and chemical fingerprinting data (10+ years) has been collected at the Courthouse. These specific design values are based on the dispersion modeling results but they agree very closely with the actual ambient monitoring data at these sites.

Control strategies included in this plan have been designed to reduce 24-hour concentrations of PM_{10} by at least 159 $\mu g/m^3$ (309-150 $\mu g/m^3$) and the annual average by at least 18 $\mu g/m^3$ (68-50 $\mu g/m^3$) by 1992.

Control measures adopted in this plan must be legally enforceable, demonstrated to be adequate to achieve the needed air quality improvements, and designed to attain the standards within the time frames provided by the Clean Air Act.

The principal means of achieving these air quality improvements within the 3-year period allowed by the Clean Air Act is through PM_{10} emission reductions from woodstoves and fireplaces (RWC), the wood products industries, open burning of debris, and road dust. Additional reductions are expected from statewide efforts to reduce slash burning smoke.

Residential Wood Combustion Strategies

The residential woodsmoke reduction strategies are closely patterned after the December 1987 recommendations of the Jackson County Wood burning Task Force. Woodstove and fireplace emissions will be reduced by an expanded public information program, an areawide mandatory wood burning curtailment program (75% compliance rate needed to meet standards at the Courthouse, but 85% compliance rate needed to meet standards at Oak/Taft), the Oregon woodstove certification program, financial assistance programs for replacement of existing woodstoves with cleaner burning units and weatherization of homes, a ban on installation of non-certified woodstoves, and continued improvements in firewood seasoning and woodstove operation.

Wood Products Industry Strategies

Wood products industry emissions will be reduced by additional control requirements on veneer driers and large wood-fired boilers at plywood plants, more extensive source testing and continuous emission monitoring in order to maximize performance of pollution control equipment, and more restrictive emission offset requirements to insure a net air quality benefit from any new or expanded industries.

Open Burning Strategies

Open burning emissions will be reduced during the critical November to February period by local ordinances banning open burning during these months. Annual open burning emissions will be reduced by a year around ban within Medford and more restrictive ventilation criteria and shorter burn seasons in unincorporated areas of Jackson County and in Central Point.

Road Dust Strategies

Road dust emissions will be reduced by continuing programs to pave unpaved roads, to curb and gutter shoulders on paved roads, and to control mud and dirt trackout from industrial, construction and agricultural operations.

Other Strategies

Slash burning emissions will be reduced in western Oregon by about 20% between 1984 and the year 2000 as part of the Oregon Visibility Protection Plan. These emission reductions will further insure that background PM_{10} concentrations will not increase in future years.

In addition, forestry slash burning impacts on the nonattainment area will be minimized through voluntary agreements among forest land managers. This program will help assure that forestry open burning does not adversely affect Medford-Ashland AQMA air quality on winter wood heating curtailment days.

Implementation of all of the elements of the overall PM_{10} control strategy will require the efforts of residents and industries within the Medford-Ashland AQMA, Jackson County, the cities within the AQMA, the Oregon Department of Environmental Quality, the State Forestry Department, U.S. Forest Service and Bureau of Land Management.

Strategy Emission Reduction - 24 Hour Worst Case Day

Attainment of the 24-hour PM_{10} standards by 1992 will require up to a 51% reduction in ambient PM_{10} concentrations depending on the location within the AQMA. This reduction will be accomplished by the previously described strategies. The PM_{10} impacts at the Jackson County Courthouse from the major source categories are compared in the following table for the 1985-86 base period and the 1992 attainment year. The PM_{10} impacts are in micrograms per cubic meter ($\mu g/m^3$). (NC indicates No Change.)

Site: Jackson County Courthouse

Source Category	24-Hour PM_{10} Impact ($\mu g/m^3$) Worst Day 1985-86	Worst Day 1992	Change
Residential woodsmoke	195.0	26.4	-86%
Wood products industry	29.2	20.3	-30%
Soil and road dust	27.6	27.6	NC
Other	10.6	11.6	+9%
Local sources	262.4	85.9	-67%
Background	44.0	44.0	NC
Total	306.4	129.9	-58%

Source Category	Design Day 1985-86	Design Day 1992	Change
Residential woodsmoke	156.2	23.1	-85%
Wood products industry	22.6	14.6	-35%
Soil and road dust	32.1	32.1	NC
Other	11.6	12.6	+9%
Local sources	222.5	82.4	-63%
Background	44.0	44.0	NC
Total	266.5	126.4	-53%

The Courthouse monitoring site is of special interest since it is the site of the longest historical particulate monitoring in the AQMA and it is located in the general area of highest particulate levels. However, the Oak and Taft monitoring site in Medford has recorded and projects slightly higher PM_{10} levels which are summarized in the following table.

Site: Medford Oak and Taft

Source Category	24-Hour PM_{10} Impact ($\mu g/m^3$) Worst Day 1985-86	Worst Day 1992	Change
Residential woodsmoke	182.2	24.5	-87%
Wood products industry	77.8	55.1	-26%
Soil and road dust	28.7	28.7	NC
Other	9.5	10.3	+9%
Local sources	298.2	118.6	-60%
Background	44.0	44.0	NC
Total	342.2	162.6	-52%

Source Category	24-Hour PM_{10} Impact ($\mu g/m^3$) Design Day 1985-86	Design Day 1992	Change
Residential woodsmoke	167.3	22.3	-87%
Wood products industry	58.8	42.0	-29%
Soil and road dust	29.8	29.8	NC
Other	9.5	10.3	+9%
Local sources	265.3	104.4	-61%
Background	44.0	44.0	NC
Total	309.3	148.4	-52%

These 24-hour PM_{10} impacts represent the worst day and design day during the 1985-86 baseline period. The design value is based on the fourth highest day during a 3-year period. For the Oak/Taft site the modeled fourth highest day after implementation of the control strategy in 1992 is 148 $\mu g/m^3$ which would be in compliance with the 24-hour health standard of 150 $\mu g/m^3$.

Other areas of the AQMA had been measured in violation of the 24-hour or annual standards, notably the White City and Central Point areas, but the dispersion modeling also indicated compliance in those areas, with 1992 concentrations lower than at Oak/Taft.

Strategy Emission Reduction - Annual Average Case

Attainment of the annual average PM_{10} standards by 1992 will require up to a 26% reduction in ambient PM_{10} concentrations depending on the location within the AQMA. This reduction will be accomplished by the previously described strategies. The PM_{10} impacts at the Jackson County Courthouse from the major source categories are compared in the following table for the 1985-86 base period and the 1992 attainment year. Again, the PM_{10} impacts are in micrograms per cubic meter ($\mu g/m^3$).

Site: Jackson County Courthouse

Source Category	Annual PM_{10} Impact ($\mu g/m^3$) 1985-86	1992	Change
Residential woodsmoke	28.8	16.6	-42%
Wood products industry	7.2	4.3	-40%
Soil and road dust	6.9	6.9	NC
Other	2.7	3.0	+9%
Local sources	45.6	30.8	-32%
Background	13.1	13.1	NC
Total	58.7	43.9	-25%

The Oak and Taft monitoring site in Medford recorded slightly higher annual PM_{10} levels than the Courthouse. The Oak and Taft PM_{10} levels are summarized in the following table.

Site: Medford Oak and Taft

Source Category	Annual PM_{10} Impact ($\mu g/m^3$) 1985-86	1992	Change
Residential woodsmoke	28.2	16.2	-43%
Wood products industry	17.9	11.3	-37%
Soil and road dust	6.6	6.6	NC
Other	2.3	2.5	+9%
Local sources	55.0	36.6	-33%
Background	13.1	13.1	NC
Total	68.1	49.7	-27%

The annual average PM_{10} levels at both the Courthouse and Oak and Taft sites are projected to be in compliance with the annual PM_{10} health standard of 50 $\mu g/m^3$ after implementation of the control strategy in 1992.

The dispersion modeling projected potential PM_{10} problems in two other one-kilometer grids north of the Oak & Taft grid but the 1985 Medford particulate gradient study and the 1989 mobile nephelometer surveys indicated that PM_{10} levels at the DeHague & Howard and McAndrews & Court sites were not as high as at the Oak & Taft site. The Department will conduct additional monitoring in the two potential problem grids by 1991 to determine the actual PM_{10} concentrations as the control strategy is implemented. If the ambient data confirms a nonattainment problem that the control strategy will not bring into attainment by 1992, then the control strategy will be modified as necessary to assure that attainment will be reached.

Air Quality Standard Maintenance

Subsequent to attainment and by the year 2000, a net decrease in emissions is projected to occur as a result of continuation of the attainment strategies, offsetting increases in fugitive dust and transportation emissions. Both the 24-hour and annual standards are projected to be maintained to the year 2000 at which time worst case day PM_{10} and the annual average PM_{10} are projected to be 146 and 48 $\mu g/m^3$, respectively, at Oak and Taft.

Enforceability

The Clean Air Act requires SIP control strategies to be enforceable. The necessary state rules and local ordinances have

been adopted and are included in the appendix for this plan. The 1984 Oregon woodstove certification program and the 1989 industrial rules have been submitted to EPA previously.

Several existing strategy elements to reduce residential woodsmoke will be continued or expanded including: comprehensive public information programs on proper woodstove operation, firewood seasoning, and home weatherization; financial assistance programs to replace existing woodstoves with cleaner burning units and provide home weatherization (CLEAR, SOLVE and ACCESS programs); voluntary firewood moisture certification programs; daily woodburning advisory program (for areas outside the critical PM_{10} control area); and the woodstove certification program.

The major new residential wood combustion strategies in this plan are the mandatory wood burning curtailment programs and the bans on installation of non-certified woodstoves. The mandatory curtailment programs adopted by the cities of Medford and Central Point and Jackson County and the ban on installation of non-certified stoves adopted by the City of Ashland and Jackson County are included in the appendix. Also included are local ordinances on opacity limits, what can be burned in woodstoves, and sale of seasoned firewood.

The new industrial strategies are more stringent control requirements on veneer dryers and large wood-fired boilers, more extensive source testing and continuous emission monitoring, and more restrictive emission offset requirements for new or expanded industries. These rules were adopted by the Environmental Quality Commission on September 8, 1989, and are included in the appendix. The new industrial rules are in addition to the industrial rules for the Medford-Ashland area adopted in 1978 and 1983.

The current local ordinances that regulate open burning and trackout are included in the appendix. Also included is a progress report on paving of unpaved roads and curbing of shoulders on paved roads within the city of Medford.

Proposed State Implementation Plan for Particulate Matter

Klamath Falls, Oregon Nonattainment Area

A Plan for Attaining and Maintaining the National Ambient Air Quality Standard for PM_{10}

State of Oregon
Department of Environmental Quality
Air Quality Division

January 1991

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Executive Summary

The US Environmental Protection Agency (EPA) adopted a new particulate National Ambient Air Quality Standard (NAAQS) for PM_{10} on July 1, 1987. PM_{10} particulate is less than 10 micrometers in aerodynamic diameter or about one-tenth of the diameter of a human hair. The NAAQS adopted by the US Environmental Protection Agency were established to protect public health and welfare. The Clean Air Act requires that states develop and adopt State Implementation Plan (SIP) revisions to assure that areas which exceed the PM_{10} NAAQS are brought into attainment within the time frames prescribed by the Clean Air Act (September, 1991). This document describes the State of Oregon's plan to attain the PM_{10} standard in Klamath Falls.

High exposure to particulate matter is of concern because of human health effects such as changes in lung functions and increased respiratory symptoms, aggravation of existing respiratory and cardiovascular disease, alteration in the body's defense system against foreign materials, damage to lung tissue, increased risk of cancer and, in extreme cases, premature death. Most sensitive to the effects of particulate matter are people with chronic obstructive pulmonary cardiovascular disease and those with influenza, asthmatics, the elderly, children and mouth-breathers.

Air quality measurements taken in Klamath Falls have indicated that the 24-hour PM_{10} health NAAQS was exceeded on average 47 days per year during the winter months during the period of mid-1986 to mid-1989. The annual average concentration of PM_{10} during the years 1986-1989 of 75 $\mu g/m^3$ also exceeds the annual average PM_{10} NAAQS of 50 $\mu g/m^3$.

The 24-hour PM_{10} NAAQS is 150 micrograms per cubic meter of air ($\mu g/m^3$), not to be exceeded more than three times averaged over three calendar years. Winter 24-hour concentrations of PM_{10} in Klamath Falls are among the highest recorded anywhere in the nation with maximum concentrations reaching as high as 792 $\mu g/m^3$ on January 25, 1988.

An inventory of PM_{10} emissions developed for the Klamath Falls Urban Growth Boundary indicates that the major sources of particulate emissions during 1986 winter periods of worst-case 24-hour PM_{10} concentrations are residential wood combustion (81%), industrial emissions (7 %) and soil dust (9 %). On an annual basis, these sources contribute 61 %, 10 % and 12 %, respectively. Emission inventory information representative of worst-case 24-hour conditions has been verified through receptor modeling techniques which actually measure source contributions to ambient air quality on the basis of their chemical "fingerprints".

Extensive air monitoring surveys have been completed which clearly demonstrate that the south suburban area of Klamath Falls, which comprises about 54 % of the population within the UGB, has the highest winter PM_{10} concentrations within the airshed. Based on these surveys, ambient air monitoring conducted at Peterson School have been shown to generally represent the highest PM_{10} levels within the Urban Growth Boundary. Development of a SIP which assures attainment and maintenance of the NAAQS at the Peterson School site should therefore be adequate to demonstrate attainment of the NAAQS anywhere within the airshed.

PM_{10} design values are those representative 24-hour worst case and annual average concentrations from which reductions must be made to achieve the NAAQS. Analysis of all of the available PM_{10} air quality data over the period of mid-1986 to mid-1989 (the largest available database) indicates 1986 24-hour and annual design values of 550 $\mu g/m^3$ and 75 $\mu g/m^3$, respectively. The design values adjusted for expected or potential emission changes during the 1986-1992 period are 592 $\mu g/m^3$ and 73 $\mu g/m^3$, respectively. Control strategies included in this plan have been designed to reduce projected 24-hour concentrations of PM_{10} by 442 $\mu g/m^3$ (592 - 150 $\mu g/m^3$) and the annual average by 23 $\mu g/m^3$ (73 - 50 $\mu g/m^3$). To achieve these 24 hour and annual average air quality improvements will require a 76 % reduction in 24 hour worst case day emissions and a 40 % reduction in annual emissions within the Urban Growth Boundary.

The control strategies needed to assure attainment of the PM_{10} National Ambient Air Quality Standards focus on control of residential wood combustion and road sanding emission. Other strategies includes stringent management of future growth in industrial emissions and restrictions on residential and forestry open burning.

Residential Wood Combustion Strategies

The principal means of achieving the needed reductions is through an effective wood burning curtailment and emission reduction programs. At least a 90 % reduction in wood smoke emissions is needed on poor ventilation days to attain the 24 hour NAAQS. This reduction will have to come from most of Klamath Falls' estimated 10,000 wood burning households which will have to forego use of their woodstoves during air stagnation episodes. Additional reductions throughout the heating season from the phase in of certified woodstoves will help achieve attainment of the annual standard. A strong public education program is an essential element of the strategy.

The strategy is implemented through the Klamath County Air Quality Compliance Development Plan and the Department's woodstove certification program. Another strategy element that will help assure maintenance of the NAAQS includes a county ordinance requiring certification that commercially sold firewood is

properly seasoned. Contingency strategies include financial assistance to low income households to upgrade their heating systems, enforcement of a wood smoke opacity limit and home weatherization programs to reduce wood heating requirements of poorly insulated homes.

Winter Road Sanding Strategies

A 60 % reduction in winter road sanding emissions through the use of liquid road deicing techniques in lieu of rock aggregate, application of less road sanding material and rapid cleanup of used road sanding aggregate will achieve fugitive dust emissions reductions needed to assure attainment of the annual standard. The road sanding strategy is implemented through a Memorandum of Understanding with the Oregon Department of Transportation Highway Division.

Other Strategies

Additional enforceable strategies include new rules designed to tightly manage industrial emission growth through reduction in the significant emission rate increase that triggers emission offset requirements. The significant emission rate was reduced from 15 to 5 tons per year. The rule was adopted to assure that industrial emission growth beyond the current Plant Site Emission Limits does not jeopardize emission reductions gained through other strategy elements.

Prohibitions on issuance of fire permits for residential, land clearing and agricultural open burning during winter woodstove curtailment periods are implemented through the State Fire Marshal's office and local Board of Fire Chiefs. Slash burning emission reductions included in the Oregon Visibility Protection Plan for Western Oregon of 50 % relative to 1978-79 emissions will be achieved by the year 2000, providing further assurance that background PM_{10} concentrations will not increase.

In addition, forestry slash burning impacts on the nonattainment area will be minimized through voluntary agreements among forest land managers. This program will help assure that forestry open burning does not adversely affect Klamath Falls air quality on winter wood heating curtailment days.

Strategy Emission Reduction - 24 Hour Worst Case Day

Attainment of the 24 hour NAAQS in 1992 will require a 76 % reduction in worst case day emissions equalling a reduction of 18,486 pounds per day. The needed reduction is achieved through the strategy elements listed below.

Summary of 24 Hour Emission Reductions
To Be Achieved by 1992

Strategy Element	Credit	Emission Reduction
New Road Deicing Practices	60 %	1,308 Pounds/Day
Wood Burning Strategies:		
- Wood Burning Curtailment	90%	17,171 Pounds/Day
- Certification of Woodstoves	20%	336 Pounds/Day
- Fuel Wood Certification	2%	27 Pounds/Day
Woodstove Strategies, Total		17,736 Pounds/Day

Total reduction from all strategies....19,044 Pounds/Day
Required emission reduction .....18,486 Pounds/Day

(Note: Because emission reductions are calculated on a declining balance basis, the product of percentage credits and total reduction (17,736 pounds/day) will not yield the individual element emission reductions shown. See Appendix 9)

No credits have been taken for the Klamath County public education programs.

Strategy Emission Reduction - Annual Average Case

Attainment of the annual average NAAQS in 1992 will require a 40 % reduction in annual emissions or a reduction of 756 tons per year. Although the entire needed emission reduction is achieved through the wood burning curtailment program, emission reductions obtained from the road deicing and other elements of the wood burning emission reduction programs are also included since they will occur as a result of implementing the 24 hour strategy. The needed reductions are achieved through the strategy elements listed below.

Summary of Annual Average Emission Reductions
To be Achieved by 1992

Strategy Element	Credit	Emission Reduction
New Road Deicing Practices	60 %	18 Tons/Year
Wood Burning Strategies:		
- Wood Burning Curtailment	74% *	756 Tons/Year
- Woodstove Certification	21%	48 Tons/Year
- Fuel Wood Certification	2%	4 Tons/Year
Woodstove Strategies, Total		808 Tons/Year

Total reduction from all strategies..... 826 Tons/Year *
Total required emission reduction..... 756 Tons/Year

* Note: On an annual basis, the wood burning curtailment program will result in a 18 % reduction in annual wood smoke emissions. This, however, is not reflective of annual air quality benefits the program since the restricted ventilation during the curtailment periods compounds the benefits of the emission reductions. The effective or equivalent reduction is calculated based on a 90 % curtailment program operating on 47 days per year indicating a reduction of the annual average PM_{10} concentration from 75 to 50.2 $\mu g/m^3$. As a result, the wood burning curtailment program alone, implemented on 47 days per year, will provide sufficient benefits to assure that the annual NAAQS is achieved. Additional strategy elements are claimed as a result of reductions achieved through the 24 hour strategy. See Section 4.12.3.3.

Air Quality Standard Maintenance

During the eight year period following attainment of the NAAQS, a net decrease in emissions is projected to occur as a result of attainment strategies and the replacement of older conventional stoves with certified cord wood and pellet stoves, offsetting increases in fugitive dust and transportation emissions. Both the 24 hour and annual NAAQS are projected to be maintained to the year 2000 at which time worst case day and the annual average PM_{10} air quality is projected to be 134 and 48 $\mu g/m^3$, respectively.

Enforceability

The Clean Air Act requires SIP control strategies to be enforceable. Based on EPA guidance, a woodstove curtailment program requiring more than a 30 % credit must be based on enforceable measures in order for the SIP to be approved by EPA. Klamath County has developed a voluntary curtailment program with an objective of achieving a 20 % compliance rate in the 1988-89 heating season, 46-52 % compliance in the 1989-90 heating season and a 85-92 % compliance goal in the 1990-91 season. Based on infrared curtailment survey results, the actual compliance rate on days surveyed during the 1989-90 season was 45 %. Compliance on any single curtailment day varies from zero to 65 %. None of the survey have documented curtailment compliance rates approaching that required to attain the 24 hour NAAQS. As a result, the 24 hour NAAQS was exceeded on 39 days during the 1989-90 heating season.

(Note: The following text will be revised to described the Klamath County mandatory curtailment ordinance following its adoption)

A mandatory, enforceable wood burning curtailment ordinance will need to be adopted by the Klamath County Board of Commissions prior to the Environmental Quality Commission's adoption of this SIP revision in November, 1990. This requirement is based on the following:

- Public participation in the Klamath Falls voluntary curtailment program has not met the objective of the Klamath County program nor the level of curtailment compliance needed to achieve the 24 hour NAAQS. No other community in the country been able to continually demonstrate the 90 % compliance rate needed with voluntary curtailment programs;

- Other communities, most recently the Medford area, have nearly achieved the required level of curtailment compliance through mandatory curtailment programs;

- At the level of curtailment needed in Klamath Falls, EPA requires a mandatory, enforceable curtailment program.

A county ordinances requiring the commercial sale of seasoned firewood should also be adopted to help assure maintenance of the NAAQS to the year 2000.

The road deicing program is implemented through commitments provided by the Oregon Department of Transportation; residential open burning restrictions on curtailment days is implemented through the State Fire Marshall Fire Protection Statutes (ORS 478.960 (2)) and through agreements among the local fire districts. The Department's open burning rules (OAR 340-23-042(4)) are enforced by the Department. Restrictions to forestry slash burning are implemented and enforced through the Oregon Smoke Management Program (OAR 629-43-043).

Implementation of the above control strategies will assure that attainment of the PM_{10} NAAQS is achieved by September 1, 1991 and maintained through the year 2000.

STATEMENT OF NEED FOR PROPOSED RULE AMENDMENTS

Pursuant to ORS 183.335(2), the following statement provides information on the proposed action to amend Oregon's Revised State Implementation Plan (SIP) for Particulate Matter for the Eugene/Springfield Air Quality Maintenance Area.

Legal Authority

ORS 183, 468.535 and the Federal Clean Air Act Amendments of 1977 (PL 95-95).

Need for Amendments

The federal government adopted a new standard for particulate matter which took effect July 31, 1987, replacing total suspended particulate as an indicator for particulate matter with a new indicator for particles with an aerodynamic diamter less than 10 micrometers (PM10). The federal Clean Air Act requires that areas which do not meet National Ambient Air Quality Standards develop and implement a control program to attain the standards. Eugene-Springfield has been designated by EPA as a Group I attainment area for PM10, which means there is a 95% probability that the area violates the PM10 National Ambient Air Quality Standard. LRAPA has responsibility for developing and implementing the required plan to attain and maintain compliance with the standards. These proposed amendments to the SIP provide the necessary control strategy description and attainment demonstration. They provide some rules rquired by EPA. They do not provide the ordinances enacting the enforcement elements.

Principal Documents Relied Upon

1. Draft State Implementation Plan Revision, Eugene/Springfield AQMA
2. Recommendations of LRAPA Advisory Committee, October 18, 1989
3. LRAPA Staff Report to LRAPA Board of Directors, December 12, 1989
4. Clean Air Act Amendments of 1977 (PL 95-95)
5. ORS 468, et. seq.

FISCAL AND ECONOMIC IMPACT STATEMENT

Impact on State Agencies: None.

Impact on Local Agencies: There would be some cost involved in public education efforts and enforcment of the home wood heating curtailment program which is the main element of the plan.

Impact on Public: Little if any. Owners of home wood heating devices would be subject to the same voluntary wood heating curtailment program which has been in effect since 1986, until November of 1991, at which time curtailment periods would become enforceable. Economic impact for individual households using wood heating devices would be any difference in cost to use conventional heating appliances for space heating during periods of air stagnation when wood heating is curtailed or prohibited.

LAND USE CONSISTENCY STATEMENT

The proposed rule amendments are consistent with land use as described in applicable land use plans in Lane County.

RULEMAKING STATEMENTS FOR THE PROPOSED MEDFORD-ASHLAND PM_{10} CONTROL STRATEGY AS A REVISION TO THE STATE IMPLEMENTATION PLAN

STATEMENT OF NEED FOR RULEMAKING

Pursuant to ORS 183.335(7), this statement provides information on the intended action to amend a rule.

(1) Legal Authority

This proposal amends Oregon Administrative Rules (OAR) 340-20-047. It is proposed under authority of Oregon Revised Statutes (ORS) Chapter 468.

(2) Need for these Rules

The Medford-Ashland area has a serious PM_{10} air pollution problem. PM_{10} refers to particulate matter ten micrometers or smaller in diameter. PM_{10} particles are considered a risk to human health due to the body's inability to effectively filter out particles of this size.

The federal Clean Air Act requires that States develop and adopt State Implementation Plan (SIP) revisions to assure that areas which violate the PM_{10} health and welfare standards are brought into attainment with those standards within prescribed time frames. The proposed control strategy document describes the State of Oregon plan to attain and maintain the annual and 24-hour PM_{10} standards in the Medford-Ashland Air Quality Maintenance Area (AQMA).

The principal means of achieving the necessary air quality improvements is through PM_{10} emission reductions from woodstoves and fireplaces, the wood products industries, open burning of debris, and road dust. Additional reductions are expected from statewide efforts to reduce slash burning smoke.

(3) Principal Documents Relied Upon

PM_{10} SIP Development Guideline, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park NC, June 1987, EPA-450/2-86-001.

Report of the Jackson County Woodburning Task Force, December 1987, Jackson County Department of Planning and Development, Medford, Oregon.

Previous staff reports to the Environmental Quality Commission (EQC):

Agenda Item D, January 22, 1988, EQC Meeting, Informational Report: New Federal Ambient Air Quality Standard for Particulate Matter (PM_{10}) and Its Effects on Oregon's Air Quality Program.

Agenda Item H, November 4, 1988, EQC Meeting, Request for Authorization to Conduct Public Hearings on New Industrial Rules for PM_{10} Emission Control in the Medford-Ashland AQMA and Grants Pass and Klamath Falls Urban Growth Areas (Amendments to OAR 340, Divisions 20 and 30).

Agenda Item E, September 8, 1989, EQC Meeting, Industrial PM_{10} Rules for Medford-Ashland and Grants Pass: Adoption of New Industrial Rules That Were Taken to Public Hearings in January 1989.

Guidance Document for Residential Wood Combustion Emission Control Measures, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park NC, September 1989, EPA-450/2-89-015.

All documents referenced may be inspected at the Department of Environmental Quality, Air Quality Division, 811 S.W. 6th Avenue, Portland, Oregon, during normal business hours.

LAND USE CONSISTENCY STATEMENT

The proposed rule changes appear to affect land use as defined in the Department's coordination program with DLCD, but appear to be consistent with the Statewide Planning Goals.

With regard to Goal 6, (air, water, and land resources quality), the proposed changes are designed to enhance and preserve air quality in the State and are considered consistent with the goal. The proposed rule changes do not appear to conflict with the other Goals.

Public comment on any land use issue involved is welcome and may be submitted in the same fashion as indicated for other testimony on these rules.

It is requested that local, state, and federal agencies review the proposed action and comment on possible conflicts with their programs affecting land use and with Statewide Planning Goals within their expertise and jurisdiction.

The Department of Environmental Quality intends to ask the Department of Land Conservation and Development to mediate any appropriate conflicts brought to our attention by local, state, or federal authorities.

MLH:a
PLAN\AH8095 (5/90)

Attachment B

RULEMAKING STATEMENTS FOR PROPOSED KLAMATH FALLS PM_{10} CONTROL STRATEGY AS A REVISION TO THE STATE OF OREGON CLEAN AIR ACT IMPLEMENTATION PLAN

STATEMENT OF NEED FOR RULEMAKING

Pursuant to ORS 183.335(7), this statement provides information on the intended action to amend a rule.

(1) Legal Authority

This proposal amends Oregon Administrative Rules (OAR) 340-20-047. It is proposed under authority of Oregon Revised Statutes (ORS) Chapter 468.

(2) Need for these Rules

The Klamath Falls Basin has a serious PM_{10} air pollution problem. PM_{10} refers to particulate matter ten micrometers or smaller in diameter. PM_{10} particles are considered a risk to human health due to the body's inability to effectively filter out particles of this size.

The federal Clean Air Act requires that States develop and adopt State Implementation Plan (SIP) revisions to assure that areas which violate the PM_{10} health and welfare standards are brought into attainment with those standards within prescribed time frames. The proposed control strategy document describes the State of Oregon plan to attain and maintain the annual and 24-hour PM_{10} standards in the Klamath Falls Nonattainment Area.

The principal means of achieving the necessary air quality improvements is through PM_{10} emission reductions from woodstoves, fireplaces and winter road sanding. Emission offset requirements for wood products industry emission increases are also included as are reductions expected from statewide efforts to reduce slash burning smoke.

(3) Principal Documents Relied Upon

PM_{10} SIP Development Guideline, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park NC, June 1987, EPA-450/2-86-001.

STATEMENT OF NEED FOR PROPOSED RULE AMENDMENTS

Pursuant to ORS 183.335(2), the following statement provides information on the proposed action to amend Oregon's Revised State Implementation Plan (SIP) for Particulate Matter for the Eugene/Springfield Air Quality Maintenance Area.

Legal Authority

ORS 183, 468.535 and the Federal Clean Air Act Amendments of 1977 (PL 95-95).

Need for Amendments

The federal government adopted a new standard for particulate matter which took effect July 31, 1987, replacing total suspended particulate as an indicator for particulate matter with a new indicator for particles with an aerodynamic diamter less than 10 micrometers (PM10). The federal Clean Air Act requires that areas which do not meet National Ambient Air Quality Standards develop and implement a control program to attain the standards. Eugene-Springfield has been designated by EPA as a Group I attainment area for PM10, which means there is a 95% probability that the area violates the PM10 National Ambient Air Quality Standard. LRAPA has responsibility for developing and implementing the required plan to attain and maintain compliance with the standards. These proposed amendments to the SIP provide the necessary control strategy description and attainment demonstration. They provide some rules rquired by EPA. They do not provide the ordinances enacting the enforcement elements.

Principal Documents Relied Upon

1. Draft State Implementation Plan Revision, Eugene/Springfield AQMA
2. Recommendations of LRAPA Advisory Committee, October 18, 1989
3. LRAPA Staff Report to LRAPA Board of Directors, December 12, 1989
4. Clean Air Act Amendments of 1977 (PL 95-95)
5. ORS 468, et. seq.

FISCAL AND ECONOMIC IMPACT STATEMENT

Impact on State Agencies: None.

Impact on Local Agencies: There would be some cost involved in public education efforts and enforcment of the home wood heating curtailment program which is the main element of the plan.

Impact on Public: Little if any. Owners of home wood heating devices would be subject to the same voluntary wood heating curtailment program which has been in effect since 1986, until November of 1991, at which time curtailment periods would become enforceable. Economic impact for individual households using wood heating devices would be any difference in cost to use conventional heating appliances for space heating during periods of air stagnation when wood heating is curtailed or prohibited.

LAND USE CONSISTENCY STATEMENT

The proposed rule amendments are consistent with land use as described in applicable land use plans in Lane County.

FISCAL AND ECONOMIC IMPACT STATEMENT FOR PROPOSED MEDFORD-ASHLAND PM_{10} CONTROL STRATEGY AS A REVISION TO THE STATE IMPLEMENTATION PLAN

PROPOSAL SUMMARY

The Medford-Ashland area has a serious PM_{10} air pollution problem. PM_{10} refers to particulate matter ten micrometers or smaller in diameter. PM_{10} particles are considered a risk to human health due to the body's inability to effectively filter out particles of this size.

The federal Clean Air Act requires that States develop and adopt State Implementation Plan (SIP) revisions to assure that areas which violate the PM_{10} health and welfare standards are brought into attainment with those standards within prescribed time frames. The proposed control strategy document describes the State of Oregon plan to attain and maintain the annual and 24-hour PM_{10} standards in the Medford-Ashland Air Quality Maintenance Area (AQMA).

The principal means of achieving the necessary air quality improvements is through PM_{10} emission reductions from woodstoves and fireplaces, the wood products industries, open burning of debris, and road dust. Additional reductions are expected from statewide efforts to reduce slash burning smoke.

The implementation of the PM_{10} control strategy involves residents, industries, local governments, and state and federal agencies. The two groups most affected by the proposed PM_{10} control strategy for the Medford-Ashland area are the owners/operators of wood products industries and residents with woodstoves or fireplaces.

COSTS TO WOOD PRODUCTS INDUSTRIES

Wood products industry emissions will be reduced by additional control requirements on veneer driers and large wood-fired boilers at plywood plants, more extensive source testing and continuous emission monitoring in order to maximize performance of pollution control equipment, and more restrictive emission offset requirements to insure a net air quality benefit from any new or expanded industries. The new industrial emission control and monitoring requirements will result in estimated capital costs of about $6-10 million; there will also be related increases in maintenance costs but those costs are more difficult to quantify. Industrial PM_{10} rules to implement these requirements were adopted by the Environmental Quality Commission in September 1989.

COSTS TO RESIDENTS WITH WOODSTOVES OR FIREPLACES

The residential woodsmoke reduction strategies are closely patterned after the December 1987 recommendations of the Jackson County Wood burning Task Force. Woodstove and fireplace emissions will be reduced by an expanded public information program, an areawide local mandatory woodburning curtailment program, the Oregon woodstove certification program, financial assistance programs for replacement of existing woodstoves with cleaner burning units and weatherization of homes, a ban on installation of non-certified woodstoves, and continued improvements in firewood seasoning and woodstove operation.

The typical cost of woodburning curtailment (under the local ordinances adopted between November 1989 and May 1990) is estimated at $2-4 per curtailment day per woodburning home, depending primarily on the type of alternative heat, amount of weatherization, and size of home. Economic, sole-source and certified-stove exemptions are available to qualifying households. Up to 12,000 homes in the critical PM_{10} control area would be affected about 22 red days and 14 yellow days per year (five-year average, 1985-1990).

The CLEAR (Coordinated Local Effort for Air Resources) Project of the Housing Authority of Jackson County and ACCESS, Inc. are providing assistance to low-income families for home weatherization and replacement of existing woodstoves with cleaner burning units. Approximately $1.7 million of funding has been secured thus far through Community Development Block Grants, Regional Strategies Funds, Oil Overcharge Settlement Funds, and utility company rebates. The City of Ashland has budgeted $64,494 for the first year of the SOLVE (Save Our Liveability, View and Environment) Program to replace existing woodstoves and weatherize homes.

COSTS TO STATE AND LOCAL GOVERNMENT AGENCIES

The new industrial emission control and monitoring requirements will require additional plan reviews, inspections, monitoring report reviews, and other compliance assurance activities by Department of Environmental Quality staff. This additional work will be done by shifting existing resources and seeking additional revenue to fund deferred work.

The daily decision on woodburning curtailment programs will be based on air quality information from the Department's existing air monitoring network and meteorological information from the National Weather Service. The daily woodburning decision (red, yellow, green call) will be made by the Jackson County Health Department. Public information programs will be done by Jackson County and cities within the AQMA with DEQ or subcontractor assistance. The compliance assurance surveys, exemption permitting and enforcement activities for the woodburning curtailment programs will be conducted by local government staff of Jackson County and the cities of Medford and Central Point. Some EPA grant funds may be available to help support these activities.

Jackson County has budgeted $152,856 for the next year for a full-time air quality coordinator, three part-time technicians, one part-time clerical assistant, and the public information program. The City of Medford spent $17,967 on its air quality program between December 1, 1989, and February 28, 1990, and will probably spend about $24,000 during the next heating season. The City of Ashland has budgeted $64,494 for the first year of the SOLVE Program. These local governments, and other cities within the AQMA, will also shift existing resources as necessary to handle the workload associated with the air quality programs.

HEALTH BENEFITS

The health benefits of PM_{10} controls cannot be accurately quantified but they are expected to be substantial. Testimony during the public hearing on the industrial rules indicated that the expected health benefits of industrial and residential pollution controls may be greater than the pollution control costs.

MLH:a
PLAN\AH8096 (6/90)

Attachment C

FISCAL AND ECONOMIC IMPACT STATEMENT FOR PROPOSED KLAMATH FALLS PM_{10} CONTROL STRATEGY AS A REVISION TO THE STATE IMPLEMENTATION PLAN

PROPOSAL SUMMARY

The Klamath Falls area has a serious PM_{10} air pollution problem. PM_{10} refers to particulate matter ten micrometers or smaller in diameter. PM_{10} particles are considered a risk to human health due to the body's inability to effectively filter out particles of this size.

The federal Clean Air Act requires that States develop and adopt State Implementation Plan (SIP) revisions to assure that areas which violate the PM_{10} health and welfare standards are brought into attainment with those standards within prescribed time frames. The proposed control strategy document describes the State of Oregon plan to attain and maintain the annual and 24-hour PM_{10} standards within the Klamath Falls Urban Growth Boundary.

The principal means of achieving the necessary air quality improvements is through PM_{10} emission reductions from woodstoves and fireplaces and winter road sanding emissions. Additional reductions are expected from statewide efforts to reduce slash burning smoke and restrictions on open burning on wood burning curtailment days. Restrictions requiring offsets of future industrial emission growth will help assure future maintenance of air quality standards.

The implementation of the PM_{10} control strategy involves residents, industries, local governments, and state and federal agencies. The group most affected by the proposed PM_{10} control strategy for the Klamath Falls Nonattainment are residents with woodstoves or fireplaces, public works agencies responsible for winter road sanding and wood products industries subject to the emission offset requirements of the strategy.

COSTS TO WOOD PRODUCTS INDUSTRIES

Industrial rules which lower the emission offset requirements for new or modified sources from 15 to 5 tons per year of PM_{10} are included in the strategy to assure that industrial emission increases do not interfere with emission reduction achieved by the wood burning and winter road sanding control strategies. Based on recent or proposed pollution control equipment for wood products industries in the Medford area, the estimated increased capital costs associated with the Klamath Falls industrial emission offset program could range from $5,000 to $15,000 per ton of annual particulate emissions. The increased operation and maintenance costs could range from $500 to $1,000 per ton of particulate

collected. The maximum cost impact of the offset rule for new or expanded sources with potential particulate emissions of 15 or more tons per year could be increased capital costs of $50,000 to $150,000 and increased annual operations and maintenance costs of $5,000 to $10,000. Rules to implement the offset requirements were adopted by the Environmental Quality Commission in June, 1989.

COSTS TO RESIDENTS WITH WOODSTOVES OR FIREPLACES

Woodstove and fireplace emissions will be reduced by a public information program, an areawide local mandatory woodburning curtailment program, the Oregon woodstove certification program, financial assistance programs for replacement of existing woodstoves with cleaner burning units and weatherization of homes, a ban on installation of non-certified woodstoves and adoption of a fuelwood certification ordinance.

The typical cost of woodburning curtailment is estimated at about $2-$5 per curtailment day per woodburning home, depending primarily on the type of alternative heat, amount of weatherization and size of home. Economic, sole-source and certified-stove exemptions are available to qualifying households. Up to 10,000 homes in the critical PM_{10} control area would be affected about 50 red days and 20 yellow days per year (two year average, 1988-1990). All wood burning (except pellet stoves) is curtailed on red days whereas only noncertified wood stoves are curtailed on yellow days.

The woodstove replacement-home weatherization program administered by Klamath County provides assistance by replacing existing woodstoves with cleaner burning units in low-income households who use woodstoves as their only source of heat. Approximately $550,000 in funding has been secured thus far through Community Development Block Grants.

COSTS TO STATE AND LOCAL GOVERNMENT AGENCIES

The daily decision on woodburning curtailment programs will be based on air quality information from the Department's existing air monitoring network and meteorological information from the National Weather Service. The daily woodburning decision (red, yellow, green calls) will be made by the Klamath County Health Department which also conducts public information programs. Enforcement activities associated with the woodburning curtailment programs will also be conducted by Klamath County staff. Some EPA grant funds may be available to help support these activities.

Klamath County has budgeted $85,000 for the next year for a full-time air quality coordinator, one full-time clerical assistant, and a full-time compliance coordinator during the heating season. These funds also support the public education, curtailment forecasting and other elements of the air quality program. In addition, the County will also shift existing resources as

necessary to handle the workload associated with the air quality programs. Additional funding may be provided by the Department to assist Klamath County's program.

Attachment D

D-1

OREGON BULLETIN

VOLUME 29, No.13
Issue Date: January 1, 1990

This issue contains Administrative Rule Orders and Notices of Proposed Rulemaking officially filed **December 6, 1989, 8:00 a.m. through December 18, 1989, 5:00 p.m.**

Published by
BARBARA ROBERTS
Secretary of State

NOTICE OF PROPOSED RULEMAKING HEARING

(Statement of Need and Fiscal Impact must accompany this form.)

AGENCY: Oregon Housing Agency

The above named agency gives notice of hearing.

HEARINGS TO BE HELD:

Date:	Time:	Location:
Jan. 11, 199-	10:00-11:00	Department of Transportation 300 E. Summer, Room 122 Salem, Oregon 97310

Hearings Officer(s): Lynn Schoessler

Pursuant to the statutory authority of ORS 458.210 through 458.240, specifically ORS 458.235 or Chapter(s) (Chapter 1030), Oregon Laws 19 89 or House Bill(s) (HB 3285) or Senate Bill(s) _____, 19 89 Legislature

the following action is proposed:

ADOPT: OAR 813-47-001 through 813-47-025

AMEND:

REPEAL:

☐ Prior Notice Given; Hearing Requested by Interested Persons ☒ No Prior Notice Given

SUMMARY: Adopt permanent rules to implement the Community Development Corporation program. Implementation of the Community Development Corporation (CDC) program will make available to nonprofit housing providers, grants and other assistance in providing housing for low-income persons. Funds may be used to leverage other public or private financial assistance or expand CDC organizational capacity. Use of the program will encourage the development of housing which will benefit low-income persons or families who will occupy the housing.

Interested persons may comment on the proposed rules orally or in writing at the hearing. Written comments received by January _____, 199- will also be considered. Written comments should be sent to and copies of the proposed rulemaking may be obtained from.

AGENCY: Oregon Housing Agency
ADDRESS: 1600 State St., Suite 100
Salem, Oregon 97310

ATTN: Diane Kolb
PHONE: 373-1625

Sheila B. Baker
Signature

Sheila B. Baker
Typed or printed name

Housing Administrator
Title

Date

NOTICE OF PROPOSED RULEMAKING HEARING

SED 424
(Rev 10/1/87)

(Statement of Need and Fiscal Impact must accompany this form.)

D-2

AGENCY: Lane Regional Air Pollution Authority
(Department)

The above named agency gives notice of hearing.

HEARING TO BE HELD:

Date: 01/30/90 Time: 7:00 p.m. Location: City Council Chambers
Eugene City Hall
777 Pearl Street
Eugene, OR

Hearings Officer: Donald R. Arkell

Pursuant to the statutory authority of ORS 183 and 468, the following action is proposed:

AMEND: Oregon's Revised State Implementation Plan for Particulate Matter for the Eugene-Springfield Air Quality Maintenance Area

X Prior Notice Given; Hearing Requested by Interested Persons ___ No Prior Notice Given

SUMMARY: The federal government adopted a new standard for particulate matter which took effect July 31, 1987, replacing total suspended particulate as an indicator for particulate matter with a new indicator for particles with an aerodynamic diameter less than 10 micrometers (PM10). The federal Clean Air Act requires that areas which do not meet National Ambient Air Quality Standards develop and implement a control program to attain the standards. Eugene-Springfield has been designated by EPA as a Group I attainment area for PM10, which means there is a 95% probability that the area violates the PM10 National Ambient Air Quality Standard. LRAPA has responsibility for developing and implementing the required plan to attain and maintain compliance with the standards. These proposed amendments to the SIP provide the necessary control strategy description and attainment demonstration. They provide some rules required by EPA. They do not provide the ordinances enacting the enforcement elements.

Interested persons may comment on the proposed rules orally or in writing at the hearing. Written comments received by January 29, 1990 will also be considered. Written comments should be sent to and copies of the proposed rulemaking may be obtained from:

AGENCY: Lane Regional Air Pollution Authority
ADDRESS: 225 North 5th, Suite 501
Springfield, OR 97477

ATTN: Donald R. Arkell, Director
PHONE: (503) 726-2514

Donald R. Arkell 12-12-89
Signature Date

Oregon Department of Environmental Quality

Attachment D

A CHANCE TO COMMENT ON...

PM_{10} CONTROL STRATEGY FOR MEDFORD-ASHLAND AREA
NOTICE OF PUBLIC HEARING

Hearing Date: August 6, 1990
Comments Due: August 9, 1990

WHO IS AFFECTED: Residents, local governments and industries in the Medford-Ashland Air Quality Maintenance Area.

WHAT IS PROPOSED: The Department of Environmental Quality is proposing to amend OAR 340-20-047, the State of Oregon Clean Air Act Implementation Plan.

WHAT ARE THE HIGHLIGHTS:

1) The Medford-Ashland area has a serious PM_{10} air pollution problem. (PM_{10} refers to particulate matter ten micrometers or smaller in diameter.) PM_{10} particles are considered a risk to human health due to the body's inability to effectively filter out particles of this size.

2) The proposed control strategy document describes the overall plan to attain compliance with the annual and 24-hour PM_{10} health and welfare standards in the Medford-Ashland Air Quality Maintenance Area by September 1991 and maintain compliance with the PM_{10} standards through at least the year 2000.

3) The principal means of achieving the necessary air quality improvements is through PM_{10} emission reductions from woodstoves and fireplaces, the wood products industries, open burning of debris, and road dust. State industrial rules and local residential ordinances have been adopted to achieve these reductions. Additional reductions are expected from statewide efforts to reduce slash burning smoke.

HOW TO COMMENT: Copies of the complete proposed rule package may be obtained from: Air Quality Division, Department of Environmental Quality, 811 S.W. Sixth Avenue, Portland, OR 97204 or the regional office nearest you. For further information contact Merlyn Hough at (503) 229-6446.

A public hearing will be held before a hearings officer at:

7:00 p.m.
August 6, 1990
Smullin Center Auditorium
Rogue Valley Medical Center
2825 Barnett Road
Medford, Oregon

811 S.W. 6th Avenue
Portland, OR 97204

FOR FURTHER INFORMATION:

Contact the person or division identified in the public notice by calling 229-5696 in the Portland area. To avoid long distance charges from other parts of the state, call 1-800-452-4011.

Oral and written comments will be accepted at the public hearing. Written comments may be sent to the DEQ, but must be received by no later than August 9, 1990.

WHAT IS THE NEXT STEP: After public hearing the Environmental Quality Commission may adopt rule amendments identical to the proposed amendments, adopt modified rule amendments on the same subject matter, or decline to act. The adopted rules will be submitted to the U.S. Environmental Protection Agency as part of the State Clean Air Act Implementation Plan. The Commission's deliberation should come in November 1990 as part of the agenda of a regularly scheduled Commission meeting.

A Statement of Need, Fiscal and Economic Impact Statement, and Land Use Consistency Statement are attached to this notice.

MLH:a
PLAN\AH8097

Oregon Department of Environmental Quality

A CHANCE TO COMMENT ON...

PM_{10} CONTROL STRATEGY FOR THE KLAMATH FALLS NONATTAINMENT AREA
NOTICE OF PUBLIC HEARING

Hearing Date: August 7, 1990
Comments Due: August 10, 1990

WHO IS AFFECTED: Residents, local governments and industries within the Klamath Falls Urban Growth Boundary.

WHAT IS PROPOSED: The Department of Environmental Quality is proposing to amend OAR 340-20-047, the State of Oregon Clean Air Act Implementation Plan.

WHAT ARE THE HIGHLIGHTS:

1) The Klamath Falls Basin has a serious PM_{10} air pollution problem. (PM_{10} refers to particulate matter ten micrometers or smaller in diameter.) PM_{10} particles are considered a risk to human health due to the body's inability to effectively filter out particles of this size.

2) The proposed control strategy document describes the overall plan to attain and maintain the annual and 24-hour PM_{10} health and welfare standards in the Klamath Falls Nonattainment Area.

3) The principal means of achieving the necessary air quality improvements is through PM_{10} emission reductions from woodstoves, fireplaces and winter road sanding. Additional reductions are expected from statewide efforts to reduce slash burning smoke. Restrictions requiring emission offsets for wood products industry emission growth are also included.

4) The proposed control strategies will assure attainment of air quality health standards by September, 1992 and maintenance of the standards through the year 2000. Environmental Quality Commission adoption of the strategy is contingent upon local government adoption of mandatory curtailment ordinances and enforcement programs prior to November, 1990.

HOW TO COMMENT: Copies of the complete proposed rule package may be obtained from: Air Quality Division, Department of Environmental Quality, 811 S.W. Sixth Avenue, Portland, OR 97204 or the regional office nearest you. For further information contact John Core at (503) 229-5380.

811 S.W. 6th Avenue
Portland, OR 97204

11/1/86

FOR FURTHER INFORMATION:

Contact the person or division identified in the public notice by calling 229-5696 in the Portland area. To avoid long distance charges from other parts of the state, call 1-800-452-4011.

A public hearing will be held before a hearings officer at:

7:00 p.m.
August 7, 1990
Commissioner's Hearing Room
Klamath County Courthouse Annex
305 Main Street
Klamath Falls, Oregon

Oral and written comments will be accepted at the public hearing. Written comments may be sent to the DEQ, but must be received by no later than August 10, 1990.

WHAT IS THE NEXT STEP:

After public hearing the Environmental Quality Commission may adopt rule amendments identical to the proposed amendments, adopt modified rule amendments on the same subject matter, or decline to act. The adopted rules will be submitted to the U.S. Environmental Protection Agency as part of the State Clean Air Act Implementation Plan. The Commission's deliberation should come in November 1990 as part of the agenda of a regularly scheduled Commission meeting.

A Statement of Need, Fiscal and Economic Impact Statement, and Land Use Consistency Statement are attached to this notice.

JEC:a
PLAN\AH10034

(2) In determining air purity standards, the commission shall consider the following factors:

(a) The quality or characteristics of air contaminants or the duration of their presence in the atmosphere which may cause air pollution in the particular area of the state;

(b) Existing physical conditions and topography;

(c) Prevailing wind directions and velocities;

(d) Temperatures and temperature inversion periods, humidity, and other atmospheric conditions;

(e) Possible chemical reactions between air contaminants or between such air contaminants and air gases, moisture or sunlight;

(f) The predominant character of development of the area of the state, such as residential, highly developed industrial area, commercial or other characteristics;

(g) Availability of air-cleaning devices;

(h) Economic feasibility of air-cleaning devices;

(i) Effect on normal human health of particular air contaminants;

(j) Effect on efficiency of industrial operation resulting from use of air-cleaning devices;

(k) Extent of danger to property in the area reasonably to be expected from any particular air contaminants;

(L) Interference with reasonable enjoyment of life by persons in the area which can reasonably be expected to be affected by the air contaminants;

(m) The volume of air contaminants emitted from a particular class of air contamination source;

(n) The economic and industrial development of the state and continuance of public enjoyment of the state's natural resources; and

(o) Other factors which the commission may find applicable.

(3) The commission may establish air quality standards including emission standards for the entire state or an area of the state. The standards shall set forth the maximum amount of air pollution permissible in various categories of air contaminants and may differentiate between different areas of the state, different air contaminants and different air contamination sources or classes thereof. [Formerly 449.785]

468.300 When liability for violation not applicable. The several liabilities which may be imposed pursuant to ORS 448.305, 454.010 to 454.040, 454.205 to 454.255, 454.405, 454.425, 454.505 to 454.535, 454.605 to 454.745 and this chapter upon persons violating the provisions of any rule, standard or order of the commission pertaining to air pollution shall not be so construed as to include any violation which was caused by an act of God, war, strife, riot or other condition as to which any negligence or wilful misconduct on the part of such person was not the proximate cause. [Formerly 449.825]

468.305 General comprehensive plan. Subject to policy direction by the commission, the department shall prepare and develop a general comprehensive plan for the control or abatement of existing air pollution and for the control or prevention of new air pollution in any area of the state in which air pollution is found already existing or in danger of existing. The plan shall recognize varying requirements for different areas of the state. [Formerly 449.782]

468.310 Permits. By rule the commission may require permits for air contamination sources classified by type of air contaminants, by type of air contamination source or by area of the state. The permits shall be issued as provided in ORS 468.065. [Formerly 449.727]

468.315 Activities prohibited without permit; limit on activities with permit. (1) Without first obtaining a permit pursuant to ORS 468.065, no person shall:

(a) Discharge, emit or allow to be discharged or emitted any air contaminant for which a permit is required under ORS 468.310 into the outdoor atmosphere from any air contamination source.

(b) Construct, install, establish, develop, modify, enlarge or operate any air contamination source for which a permit is required under ORS 468.310.

(2) No person shall increase in volume or strength discharges or emissions from any air contamination source for which a permit is required under ORS 468.310 in excess of the permissive discharges or emission specified under an existing permit. [Formerly 449.731]

468.320 Classification of air contamination sources; registration and reporting of sources. (1) By rule the commission may classify air contamination sources according to levels and types of emissions and other characteristics which cause or tend to cause or contribute to air pollution and may require registration or reporting or both for any such class or classes.

(2) Any person in control of an air contamination source of any class for which registration and reporting is required under subsection (1) of this section shall register

FINAL RECOMMENDATIONS

LRAPA ADVISORY COMMITTEE

October 18, 1989

It is recognized by the committee that LRAPA does not currently have the legal jurisdiction to implement some of these recommendations, and that local governmental ordinances and/or state legislative action will be required to fully implement the program.

The LRAPA Advisory Committee has evaluated the effect of the discharge of small particulate matter from residential wood heating smoke (woodstoves and fireplaces) in the Eugene/Springfield Urban Growth Boundary for the past two years. It is the considered opinion of the Committee that wood smoke emissions adversely affect the quality of life in this region; as well as the health of those individuals with specific lung problems, particularly the very young and elderly. Wood smoke emissions regularly cause higher air pollution levels in Eugene/Springfield than any other source, including field burning. In fact, local wood smoke emission have the potential under adverse weather conditions to initiate an air pollution incident with severe impacts on human health and welfare.

The following recommendations apply to the area within the Eugene/Springfield Urban Growth Boundary.

1. The current voluntary curtailment program for home wood heating should continue until November 1, 1991, when a mandatory program may be implemented. During the heating seasons of 1989-1990 and 1990-1991, an evaluation of the effectiveness of the voluntary program will be conducted. If there are no violations of the PM10 standard contributed to by home wood heating during this period, then the mandatory program should not be implemented, the attainment status should be evaluated, and the SIP amended as needed.

2. The mandatory curtailment plan will exempt sole source of heat. The committee will develop the final recommendation on other exemptions by July 1, 1990.

3. Only those sources exempted from the mandatory program will be required to register their burning devices. Substantive proof of meeting the requirements for an exemption will be provided by the applicant. In some cases this may require a physical inspection of the property by the LRAPA staff or its' agents.

4. LRAPA should be the agency to enforce the mandatory program. The enforcement should be performed primarily on a complaint basis.

5. The installation of non-certified used wood stoves should be prohibited. If this is not legally possible, then as an alternative the sale of non-certified used wood stoves should be prohibited.

6. The LRAPA staff should define seasoned wood. A voluntary certification program should be implemented that shows proof of the commercial fire wood dealer's knowledge and concern for selling seasoned wood and training the public on proper burning techniques.

7. Public education should be a major, ongoing part of this program. The LRAPA staff should evaluate the following ideas:

   a. Develop a cartoon-type figure or mascot for use in print materials and for school presentations.

   b. Develop an educational video/public service announcement to support the program.

8. To assist in funding this program, LRAPA should pursue increased funding from local cities and Lane County and an increase in the federal grant. The staff should also pursue the possibility of community block grants for the low income households to fund the establishment of alternative heating sources.

REPORT OF
JACKSON COUNTY WOODBURNING TASK FORCE

DECEMBER 21, 1987

EXECUTIVE SUMMARY

The Medford-Ashland Air Quality Maintenance Area has a serious particulate air pollution problem. Particulate concentrations violate national health standards, both the annual average standard (50 micrograms per cubic meter) and the peak day standard (150 micrograms per cubic meter). The peak day standard will be the more difficult standard to meet in the Medford, White City, and Central Point areas. The inhalable particulate, called PM_{10} because it represents particulate matter that is less than 10 micrometers in diameter, is of greatest health concern. Annual average PM_{10} concentrations must be reduced by 20% and peak day concentrations must be reduced by 50% to meet health standards.

The peak particulate concentrations generally occur during air stagnation periods in December and January. About 65-70% of the peak day inhalable particulate is due to residential woodsmoke from stoves and fireplaces. On an annual basis, about 40% of the inhalable particulate is from residential woodsmoke.

The Jackson County Commissioners appointed the Woodburning Task Force in May 1987 to evaluate the particulate problem and recommend corrective measures. The Task Force has reviewed the air quality data, the relative source contributions to the problem, past efforts to reduce pollution, and the available alternatives to reduce particulate pollution from woodburning. The Task Force has considered the relative costs and benefits (economic, energy, safety, environmental, and health) of the alternatives in making its recommendations.

The Task Force recommends the following measures be included in the woodsmoke reduction strategy for the portion of Jackson County and the cities within the Medford-Ashland Air Quality Maintenance Area:

1. Mandatory curtailment of woodstove/fireplace use during air stagnation;
2. Comprehensive public education program;
3. Clean air utility rates for electricity and natural gas;
4. Financial incentives/subsidies for cleaner woodburning units; and
5. Ban on installation of non-certified woodstoves.

This package of measures represents strategy options C, D, or E outlined in the full report. The differences between these strategy options are the amount of financial incentives provided and the number of cleaner heating units installed. This in turn affects the number of curtailment days and the amount of room in the airshed for additional growth.

Differences in Options	Option: C	D	E
Subsidy in $ million	1.7	2.9	6.0
Curtailment days per year	15-20	10-15	0-10
Airshed space in tons per year	None	100-200	200-400

Additional details are included in the full report and appendices.

KLAMATH COUNTY VOLUNTARY AIR QUALITY PLAN
KLAMATH FALLS CITY & URBAN GROWTH BOUNDARY

W. LOUELLYN KELLY, Klamath County Department of Health Services, Klamath Falls, Oregon

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Air Quality Advisory Committee:

HARRY FREDRICKS, Klamath County Commissioner
BOB FREIRICH, Klamath County Schools
KURT SCHMIDT, RON LOVELESS, MODOC Lumber Company
BUD HART, Klamath Falls City Council, OIT
STEVE SOUNDER, Pacific Power & Light
JAMES GILLAN, Ash Bros. Chimney Sweep
MARIE WALKER, Royal Hearth & Patio
JOE RIKER, City Planning
DON CROWNOVER, Klamath Falls Fire Department
DR. RICK ZWARTVERWER, Pediatrician
ANN RUDD, Concerned Citizen

Adopted in response to a need to resolve violation of federal air quality standards. Content is based upon input from the public hearing process and the two appointed citizen task forces. The first task force meeting in October, 1987, and the second in March, 1988.

Implementation assigned the Klamath County Board of Health and Public Health Department per Resolution No. 88-116 on August 31, 1988.

The Klamath County Board of Health and Public Health Department's initial 18-point program management plan was heard by commissioners Jan. 18, 1989, and adopted officially as the Klamath County Air Quality Plan on April 5, 1989.

COMMISSIONERS:

Officially signed and adopted 4/19/89, all commissioners

TED LINDOW, CHAIRMAN OF THE BOARD

ROGER HAMILTON

HARRY FREDRICKS

KLAMATH COUNTY AIR QUALITY COMPLIANCE DEVELOPMENT PLAN FOR THE KLAMATH FALLS CITY & URBAN GROWTH BOUNDARY

ADOPTED BY THE KLAMATH COUNTY COMMISSIONERS, MAY, 1988

COMMISSIONERS:
ROGER HAMILTON, CHAIRMAN OF THE BOARD
TED LINDOW
JIM ROGERS

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COMMISSIONERS:

Officially signed and adopted 4/19/89, all commissioners

By _____
Ted Lindow, Chairman

By _____
Harry Fredrick, Commissioner

By: _____
Roger Hamilton, Commissioner

STATEMENT OF PROBLEM

In 1987, the federal government issued a new air quality standard limiting the amount of particulate matter, 10 microns and smaller, in the air. This standard, called PM-10, is designed to protect the public from fine particulate pollution (replacing the TSP).

Particulate matter, the tiny 10 micron sized particles in smoke and dust, is a serious health concern for all area residents due to the heavy concentrations recorded.

The major source of the PM-10 particles in Klamath Falls, according to nephelometer, emissions inventory and chemical analysis by the Oregon State Department of Environmental Quality, is wood stove contributions. DEQ monitoring shows that during winter months, particulate concentrations in the Klamath Falls area violates federal health standards about 40 days each year on the average. The highest readings ever recorded in the state were recorded in Klamath Falls during the 1987/1988 woodheating season - more than four times the national health standard. STEPS MUST BE TAKEN TO REDUCE THIS POLLUTION.

The geography and meteorology are a part of the problem creating inversions that trap pollutants in stagnant air. The major catch basin for the Klamath Falls Urban Growth Boundary, where the highest concentrations of PM-10s accumulate, is in the Peterson area in the suburbs.

STATEMENT OF BROAD PLAN TO REDUCE PARTICULATES IN THE KLAMATH FALLS CITY & URBAN GROWTH BOUNDARY

In order for the Klamath Falls City and Urban Growth Boundary to meet EPA standards of 150 PM-10 daily average and 50 PM-10 annual average, an 85% to 92% compliance is estimated by DEQ as needed.

A number of strategies under the general heading of "EDUCATION" appears to be the key to developing a voluntary compliance program in the Klamath County Klamath Falls City and Urban Growth Boundary. In addition, an education plan that is pursued with great vigor of purpose may potentially be successful where others have failed.

Each element developed and added in the future to this plan must at all times address the ability of the community to carry out, effect, community need & adding to understanding of problem, appropriateness of action and if it fits the direction/scope of program.

COMPLIANCE PROGRAM STRATEGIES:

1. Accepting of GREEN, YELLOW AND RED as woodburning advisory signals for the public because of their ease of understanding.
2. Public forums and hearings such as lectures, slide presentations, panel discussions, public neighborhood meetings to get the message out.
3. Involvement of media in informing the pubic.
4. Brochures distributed through large employers in paychecks, county offices and library, city offices, extension service, Chamber of Commerce, OIT and private business.
5. Public speaking programs through local service, business and fraternal organizations.
6. Encourage conversion from non-approved wood stoves to state of the art heating devises.
7. Gaining support from DEQ to measure year-round.
8. Survey homes to determine number of woodstove/heat users.

OPERATING PLAN GOAL STATEMENT

1988/1989 WOODHEATING SEASON GOALS:
(October, 1988 to June, 1989)

1. 20% Compliance
2. Hold health symposium - October, 1988
3. Set up woodburning advisory telephone, answering machine and recorder to register number of calls
4. Enlist news media involvement and concern, develop promotion of woodburning advisory number
5. Order moisture meters, provide training and set a program
6. Develop a citizen action advisory committee of varied community expertise
7. Format public speaking program, begin process in March
8. Write and record radio promotions of woodburning advisory
9. Infrared surveying in four target neighborhoods, develop and train teams from OIT Engineering program
10. Begin development of house-to-house surveying
11. Begin development of road advisory signs
12. Set up neighborhood meetings in targeted survey zones, distribute materials house-to-house - set up for April & May
13. Develop networking with other out-of-attainment areas and set up information bank to examine methodologies and comparisons of techniques: what works vs. what doesn't work
14. Explore development of a health study

F-3

1989/90 WOODHEATING SEASON GOALS: (June, 1989, to June, 1990)

1. 46% to 52% Compliance
2. Infrared surveying - five areas
3. Ongoing media relations
4. Ongoing public speaking
5. Finalize road advisory signs
6. Develop volunteers to change signs
7. Promote wood moisture meters heavily
8. Finalize survey or drop
9. Continue networking
10. Critique operating plan and update
11. Operation paycheck underway & education programs
12. Develop health symposiums on television
13. Problem specific brochure development
14. Woodburning advisory promotion
15. Health studies finalization or drop
16. Airshed studies development
17. Curriculum & programs for schools
18. "Earth Day" Fair development
19. Ongoing Advisory Committee
20. Begin development burn video
21. Certified wood program to vendors w/posters
22. Exemptions program
23. OCDBG application
24. Increase public participation
25. Organize group to pursue compliance activity
26. Neighborhood meetings

1990/1991 WOODHEATING SEASON GOALS: (June, 1990, to June, 1991)

1. 85% to 92% Compliance
2. Infrared surveying - target zones
3. Ongoing media relations
4. Ongoing pubic speaking
5. Woodburning road and telephone advisory program
6. Larger VOLUNTEERS FOR COMPLIANCE program
7. Ongoing wood moisture meters promotion
8. Ordinances (See Plan: 28, 29, 30, 31)
9. Ongoing networking
10. Critique operating plan and update
11. Ongoing operation paycheck & education program
12. Develop health symposiums in schools
13. Reprints of broader based materials
14. Health studies ongoing
15. Airshed studies ongoing
16. "Earth Day" Fair
17. Ongoing Advisory Committee
18. Neighborhood meetings
19. Operation Compliance Push
20. Public Speaking program
21. Burn video usage
22. Increase public participation
23. Certified wood program to vendors
24. OCDBG application

1991/1992 WOODHEATING SEASON GOALS: (June, 1991, to June, 1992)

Maintain program according to ongoing plan

KLAMATH COUNTY IMPLEMENTATION PLAN 1989-1991

I. PLAN DEVELOPMENT

A. BASIC ANALYSIS: VOLUNTARY COMPLIANCE HISTORICALLY

In developing a voluntary plan, we felt it was important to learn about the occurrences in other out-of-attainment communities to see how they handled their voluntary phases of pollution management. We found no one cohesive resource for this information. So we began researching individually the varied areas in the U.S., mostly out of an aversion for reinventing the wheel.

We observed through this research, that most or none of the communities designated by the EPA as being out-of-attainment ever had the luxury of trading information or sharing project concepts. These communities did however, share the commonality of going through a process of anger. Further observations were that they had all concluded that community education was the key to a voluntary program. But, in the actual process of program development, many of the communities pursued a minimally energized effort in education campaigns. The best seems to have been Boise and Missoula. We are sure that money and time constraints played a large part in the efforts - plus, many were blazing the trail for dealing with this problem and our hind

sight is always better than anyone else's foresight! The results of the various programs were that a basic awareness did develop within the communities about the causes of pollution and the resultant potential and/or real health problems. Research has also shown that invariably most communities develop in the first few years of nonattainment small vocal groups that publicly doubt the information and testing methods, thus causing difficulties in convincing the public of curtailment needs (reinforcing what they believed). None were successful with voluntary compliance.

The following chart outlines voluntary pursuits:

	YEARS OUT-OF-COMPLIANCE	VOLUNTARY PROGRAM	MANDATORY
Albuquerque, NW Carbon Monoxide exceedance	12	5	2
Yakima, WA	?	1	1
Lakewood, CO	5+	No	3
Boise, ID	14	3	4***
Jackson Co, OR	10yrs+	2	No
Medford, OR	10yrs+	2?	Yes**
Missoula, MT	10?	5	3***
Washoe, NV	10?	6	3
Juneau, AS	?	1	4***
Klamath Falls, OR	3	2	No
Provo, UT	10+	No	No

* Source: Wood Heating Alliance
** No enforcement effort
*** Meeting standards presently

B. CONCLUSIONS REACHED

As a result of the research, we concluded that it appears that the first year of any program is spent mollifying the community anger before any real strides are made. With this observation, it was also concluded that a portion of any program design should be aimed specifically at reducing this anger, while on the other hand, a portion of the program should be aimed at getting the health affected portion of the community mobilized and more vocal to develop a peer pressure within neighborhoods.

C. LOCAL ANALYSIS AND DEVELOPMENT

With these understandings and a specific analysis of this community's personality, it was decided that the Klamath Falls Urban Growth Boundary Implementation Plan needed a stronger more varied strategy in order to
1) combat community anger,
2) mobilize health affected individuals,
3) develop hard-core community awareness,
4) diffuse splinter nay-saying groups that were showing signs of developing and
5) adequately address the higher levels of pollution that we experience as compared to other out-of-attainment areas in the U.S..

D. LONG RANGE STRATEGY

In searching for a strong strategy, we knew that the requirement would have to be an energetic program with a multitude of on-going ever-expanding complimentary projects if we were going to see any successes. It was found that commercial advertising

concepts were the only strategies that properly addressed our needs. The strategy selected was: AIDA - an actual direct mail technique that we broadened to incorporate bandwagon (emphasis on peer pressure) propaganda as a main component.

A = Attention
I = Interest
D = Desire
A = Action

Our final remaining question was "Is the success of a voluntary program possible?" Who knows? But, belief was a need and the program as a whole had to be as innovative as possible. Enough projects had to be developed and included in order to address all of the five areas of concern on an ongoing basis. In addition, each project had to be responsive to the needs of the strategy: AIDA (does it create ATTENTION, does it create INTEREST, etc.).

E. RATING FOR SUCCESS

A success number of 100% was assigned the plan as a whole with rating levels of up to 10 attached to a given project with these rating concerns: (1) each portion of the AIDA, (2) energy output to make each project happen, (3) assigned benefits that would be given individual projects, (4) each of the five areas of community concern and (5) each year's goal. With the latter rating, this meant the formula would constantly be changing. THEN AND ONLY THEN, THE FLESHING OUT OF INDIVIDUAL PROJECTS TO RESPOND TO THE REQUIREMENTS OF THE PLAN WAS BEGUN ALONG WITH DEVELOPMENT OF YEAR-BY-YEAR DETAILED GOALS. The beginning result was an 18-point project plan which ran shy mathematically of adding up to 100% success. This meant that we needed to devise a lot more projects. As we went along in our first heating season, some of the projects - which had low to no ratings anyway - proved worthless fluff and fill, so that they were dumped. We feel it is extremely important to be self-effacing on the project and its effectiveness. We also feel it is important not to do "feel good" projects - things that make us feel good or those we work for feel good for the sake of the "feel good."

II. PLAN PROJECTS

1. WOODBURNING TELEPHONE ADVISORY PROGRAM

a. 2nd Year of Program Do Calls Locally
   (1) Two calls daily
      (a) Satisfy needs of community
   (2) Provide program information
      (a) Push neighborhood meetings

6 points
Timeline: Through life of program
Benefit: Public Awareness, lowering PM-10 levels

2. HEALTH SYMPOSIUMS

a. Convert symposiums to television

Time Line: Near end of 2nd year
Benefit: Broader audience opportunity, impact

3. XEDAR SURVEYING/COMPLIANCE EVALUATION

a. Continue API/Wood Burning Advisory Telephone
   (1) Use automatic counter to register calls
b. Select Comparison Areas For Compliance
   (1) Develop Population Samples
      (a) Inversion areas
      (b) Clear areas
   (2) Survey GREEN & RED days
      (a) Compare data
c. Increase Public Information If Comparisons Poor
   (1) Take Commissioners oh one survey
   (2) Take news media on survey

2 points
Benefit: Ready method of determining public involvement in compliance program, effectiveness understanding, public impact by doing
Time Line: Heating seasons of 1989 & 1990 & 1991 & 1992

4. NETWORK WITH OTHER AREAS/LIAISON

a. DEQ
b. EPA
c. Areas with working programs
d. Areas just setting up programs

No points
Benefit: Broaden Coordinators Knowledge, Adds New thinking for More Projects
Time Line: Now to end of program

5. BURNING CLEAN & SMART: MOISTURE METERS (Householder, Wood Vendors and Certified Wood)

a. Purchase Wood Moisture Meters
b. Set Up Checking Stations
   (1) Fire Departments
c. Area Residents Can Have Woodpiles Checked
   (1) Publicize and encourage
d. Public Information Program
e. Certified Wood
   (1) Notify all vendors
   (2) Offer posters
   (3) Certify wood
      (a) Check moisture

2 points
Benefit: Allows Public the Opportunity to Burn Cleaner
Time Line: Order/set up in 88/89 season by end of Jan. 89. Begin p.i. as soon as meters arrive. Continue through life of program.

6. MEDIA INVOLVEMENT

a. Public Service Announcements
   (1) Promote Wood Burning Advisory Number
      (a) Involve electronic media in process
      (b) Develop spots & record
      (c) Daily announcement in newspaper
   (2) Promote Moisture Meters & Certified Wood
      (a) Through all media
b. Newspaper Involvement
   (1) Provide interesting interview resource people
   (2) Gather research materials for articles
c. Develop Information Interviews - Electronic Media

6 points
Time Line: Ongoing throughout life of program
Benefit: Broaden information base within community

7. OPERATION PAYCHECK

a. Insert Voluntary Compliance Information
   (1) Use to help establish neighborhood meetings
      (a) Wood seasoning
      (b) How to burn
      (c) Volunteer program
      (d) Certified woodstoves
      (e) Health effects
      (f) API information
      (g) Economic effects

b. Do Brochure That Covers OUR Needs
   (1) Use Particulate Matters these
   (2) Promote advisory phone number
   (3) Neighborhood meeting promotion
c. Contact local employers
   (1) County
   (2) Industry
   (3) City
   (4) Other larger employers
      (a) Enlist cooperation

4 points
Time Line: 89/90 season and through life of program
Benefit: Broaden public information base

8. ADVISORY COMPLIANCE COMMITTEE & VOLUNTEERS

a. Committee Composition
   (1) Committee of Health Board
   (2) Experts needed
      (a) PP&L Weatherization Specialist
      (b) CP National Weatherization Specialist
      (c) Klamath Basin Solid Fuel Assn. members
      (d) Others as identified

No points
Time Line: Through life of program
Benefit: Assists coordinator in gaining better information and understanding of public needs.

b. Public Information Volunteers
   (1) Advisory signs
   (2) Take part in forums
   (3) Get visuals/brochures out to public

2 points
Time Line: 1990 and ongoing throughout life of program, beginning immediately
Benefit: Involvement actively in the program by public will encourage compliance; broadens scope of program in public being better informed.

9. NEIGHBORHOOD MEETINGS

a. Worst API Areas First
b. Ideal: In Homes
   (1) Check TV schedules for popular shows/specials
c. Use Industrial Employees As Base
d. Hands-on Sessions
   (1) Visuals and graphs
   (2) Handout materials
   (3) Cover all issues
e. End of each season
   (1) Notify in survey neighborhoods

5 points
Time Line: 2/15/89 through life of program
Benefit: Broadens information dissemination and develops volunteers to help in the Program.

10. WOOD BURNING ADVISORY ROAD SIGNS

a. Signs Change According to Air Quality
   (1) Specialized sign design needed
      (a) Green, yellow, red advisories
      (b) Ease of recognition/promotion value
b. Signs Changed by Volunteers
c. In Place For 90/91 Season
   (1) Permission of placement needed:
      (a) State, County, City
         1. Adjust to conditions
d. Promotion of Project
e. Project "Red Daze" Will Compliment Program

9 points
Time Line: Begin design work by 1/31/89' approvals by 1990 in place by 10/1/90; ongoing throughout remainder of project. throughout life of project
Benefit: Quickens Process of Getting Advisory Out to the Greatest Number in the Shortest Amount of Time.

11. PUBLIC SPEAKING PROGRAM

a. Develop list of organizations
   (1) Make engagements appointments
b. Develop visuals & handouts
c. Prepare speech materials
   (1) Health issues
   (2) How to burn
   (3) Weatherization
   (4) API
   (5) Financial issues
   (6) Suit to audience

2 points
Time Line: Ongoing throughout life of program, beginning immediately
Benefits: Broaden Range of Information to Community

12. COMPLIANCE VOLUNTEERS - SCHOOLS

a. Get Approval for Presentations Through Administration
b. Develop "Fun" Programs
c. Use Smoky the Bear
   (1) Include Fire Prevention
   (2) Include Pollution
d. Emphasize Health Information
e. Wood Burning Advisory Information
f. Wood Seasoning/Storage/Burning
g. Explain Compliance Programs
h. Develop Newspaper for Completion of Project
   (1) Children write & design

4 points
Time Line: Fall 1990; 1991
Benefit: Reaches broader audience range.

13. "EARTH DAY" FAIR (FOR SCHOOLS)

a. Develop Parameters of Fair
   (1) Involve schools in planning
   (2) Approve through administration
b. Projects & Awards
c. Enlist help from local groups

5 points
Time Line: Begin process with schools 1990; for 90/91 school year; program content selection March 1990.
Benefit: Furthers Involvement in the Process

14. RESEARCH PROJECT: SPIROMETRY TESTING

a. Interest Researcher In Local Inversions
   (1) Show uniqueness of area for project
      (a) Intermittent, overly high API during inversions
b. Research Peterson Students vs. A Control School
   1. 3, 4, 5, 6 grades
c. Send Home Health Charts For Parents To Fill Out
   (1) Heavy respiratory ailments emphasis
d. Include Public Health Nurses In Program

1 point for public information
Time Line: Set up beginning for Fall 1989
Benefit: Tracks actual health effects in long term study

15. VISUAL EDUCATION TOOLS, BROCHURE, POSTER, BILLBOARDS

a. Develop "A Primer in Particulate Matters"
   (1) Include: "Everything you ever wanted to know about woodsmoke but didn't have the breath to ask!
b. Develop "Particulate Matters" Poster
   (1) To promote voluntary compliance
   (2) To promote wood burning advisory number
c. Consider Placemats for Restaurants
d. Billboards to emphasize program

5 points
Time Line: Poster development 1/13/89; new design assessment for 89/90 season or same - assess August, 1989; Brochure development analyze content 2/15/89; develop for autumn 89 beginning dissemination; volunteers distribute Sept/Oct 89, 90, etc. throughout life of program. Billboards October 1989, 1990; placemat Fall 1990
Benefit: Broadens Public Information

16. GRANTS DEVELOPMENT/FAMILIES AT RISK

a. Identify families at risk through grant
b. ID woodstoves as primary heat source
c. ID alt/main heat sources or provide replacement
d. Income levels to determine risk
e. Time lived in area
f. ID respiratory problems
g. Attitudes on voluntary compliance
h. Cost of utilities
i. Cover insulation/window types

5 points on publicity/5 points effect
Time Line: Apply 1990
Benefit: Accurately identifies families at risk from block grant and other sources.

23. SLASH BURNING VOLUNTARY PROGRAM

a. Line up participants
   (1) Forestry
      (a) State
      (b) Federal
   (2) BLM
   (3) Farmers/Ranches
   (4) Contract burners/industrial
   (5) State Highway Division
   (6) Interest DEQ
b. Set up program
   (1) Establish base

2 points
Time Line: 1990
Benefit: Area impact odd burn times, perception

24. EXEMPTIONS PROGRAM

a. To develop concept of hardship and sole source

No points
Time Line: 1990 only
Benefit: Community perception

25. GREEN WOOD BAN

a. Develop ordinance to end selling of green wood
   (1) Require wood certification with vendors
   (2) Moisture meter checks
   (3) Encourage covering wood

6 points
Time Line: Fall 1990
Benefit: Reduction of PM-10s

26. FUGITIVE DUST VOLUNTEER PROGRAM

a. Alternate to rocking
   (1) Harder aggregate or other
   (2) Highway Division, County Roads and City

3 points
Time Line: 1989/1990 heating season
Benefit: PM-10 reduction

27. EDUCATION SEMINARS/FORUMS

a. Use Impact Programming
b. Present "Other Towns" Programs
c. Include All Informational Materials
   (1) Wood seasoning'
   (2) How to burn
   (3) Wood burning advisory
   (4) Health risks
   (5) Economic risks
   (6) Other information
d. Make As Hands-on As Possible

3 points
Time Line: Development of 10 specific programs, establish need and benefit - Spring 1990; ongoing throughout life of program.
Benefit: Broadens understandings to move into cooperation on compliance

28. USED OIL BURNING BAN ORDINANCE

a. Reduce heavy dioxins airshed PM-10 emissions
b. Reduce creation of dioxins
c. Reduce sulphur emissions

4 points
Time Line: By October 1990
Benefit: Reduced airshed effects/education effect

29. USED WOODSTOVE SALES BAN ORDINANCE

a. Both sales & installation
   (1) Including private party sales
b. To reduce PM-10 emissions
c. To get rid of conventional non-certified stoves

2 points
Time Line: By October 1990
Benefit: Reduced airshed effect/education effect

30. LIMIT OUTDOOR BURN ORDINANCE

a. Permitting of burns
   (1) No stagnate air days year-round
   (2) Identified as larger than 2" x 2" pile
      (a) Must be fire safety attended
   (3) Within 1 mile of KF UGB
b. Reduce impact on air quality
c. Reduce PM-10 effect

2 points
Time Line: By October, 1990
Benefit: Reduced airshed effect/education effect

31. BAN OF BURNING TOXIC MATERIALS ORDINANCE

a. Particle board
b. Plastics/parafin coated products
c. Indoors and outdoors

2 points
Time Line: October 1990
Benefit: Cleaner air effect, elimination of dioxins and other harmful materials from air

32. OPERATION COMPLIANCE PUSH

a. Fair, September 15, 1990
b. Demonstrations
c. 1990 wood & pellet stoves
d. Health materials
e. Fire/flue safety

2 points
Time Line: September 1990
Benefit: Further education, prepare community for compliance

Klamath County Department of Health Services

3300 VANDENBERG ROAD

KLAMATH FALLS, OREGON 97603

PUBLIC HEALTH
503 / 882-8846

Administration
Nursing Services
Vital Statistics
WIC - Nutritional

ENVIRONMENTAL HEALTH
503 / 883-1122

Food Service
DEQ
Tourist & Travelers
Water Programs

Dear Resident of _____:

WE NEED YOUR HELP. We need you to personally involve yourself and your family in the Klamath County Air Quality Volunter, Compliance Program. We ARE TRYING to preserve your ability to burn wood as a heating resource.

While our air quality crews were out the other day doing opacity surveys, they made note of the fact that you were burning on a RED DAY. Are you aware that Klamath County has an Air Quality Woodburning Advisory telephone? The number is 883-7449. The advisory keeps people informed of whether we are getting air inversions or not - the culprit that helps the pollution you and I are creating stay on the ground.

Our airshed is limited in the amount of smoke particulates it can hold. We have outgrown the airshed because of all the things we burn and dump into the air. Unfortunately, THERE'S NO STORE WHERE WE CAN BUY A BIGGER AIRSHED -- THIS IS IT. As a result, we either have to start caring about ourselves, our quality of life, what we are breathing and at the same time, caring about our friends and neighbors or we will have to accept the responsibility for adversely affecting ours and our neighbors health. OUR AIR GETS THAT BAD!

We must reduce the effects of woodsmoke within our airshed in the Klamath Falls Urban Growth Boundary.

Each year thousands of people (particularly the elderly and the young) in this area (many of them in your neighborhood) are directly affected health-wise by high counts of woodsmoke. Asthmatics and individuals with Angina are particularly hard hit, among others. At times we even request the schools to curtail physical activity - so this is no joking matter.

EQUAL OPPORTUNITY EMPLOYER

YOUR INVOLVEMENT CAN MAKE THE DIFFERENCE!!! If you have sole source heat, please consider getting a backup heating system. If you have backup heating, please take part as a volunteer and use it to help battle our particulate problem. A number of people have said "Until somebody makes me do it, I'll burn my woodstove when I want to." The point here is THAT YOU ARE BREATHING THIS JUNK TOO. As a member of an urban area YOU HAVE THE RESPONSIBILITY TO CARE ENOUGH TO HELP CLEAN UP THE AIR.

PLEASE INVOLVE YOUR NEIGHBORS AND FRIENDS IN THE EFFORT. WE CAN make great strides in solving THIS PROBLEM THIS YEAR IF EVERYONE WILL GET INVOLVED. Or, we can do it all the hard way with mandatory compliance as the solution with potential fines of up to $250 being given to some very, otherwise nice people. ISN'T THAT A BIT NEGLIGENT ON OUR PART?

We have an expanded voluntary compliance program as of Nov. 22, with agriculture, ranching, outdoor burning and forestry now involved. We will be developing an expanded plan for dealing with some of the other causes of this problem.

We are out-of-attainment according to the U.S. Environmental Protection Agency and the Federal Clean Air Act on PARTICULATES (PM-10) and carbon monoxide. Pollution has an exact thumb print to track "what' has caused it. Contrary to what people wish to think, laboratory testing shows <u>both</u> are caused by too much smoke from <u>woodstoves</u> (84%) (not industry, not slash burning). Therefore, SOMETHING MUST BE DONE. SO LETS DO IT AS CARING RESPONSIBLE PEOPLE.

GET INVOLVED AND CARE.

PERRY RICKARD
Health Department Director

W.LOUELLYN KELLY
Air Quality Program

P.S. Yes, you are welcome to call LouEllyn to discuss this at 882-8846!

Klamath County Department of Health Services

3300 VANDENBERG ROAD
KLAMATH FALLS, OREGON 97603

PUBLIC HEALTH
503 / 882-8846
Administration
Nursing Services
Vital Statistics
WIC - Nutritional

ENVIRONMENTAL HEALTH
503 / 883-1122
Food Service
DEQ
Tourist & Travelers
Water Programs

Dear Resident of_____:

You were again observed burning wood on a red night.

Did you know that within a six to eight block area of your home there are individuals with respiratory and/or heart problems? All of these people are affected in someway by our poor winter air quality which is choked by woodsmoke, some with terrible results. Your failure to participate in the air quality program may add to their health problems.

YOU HAVE TO CHOOSE, but your following a reduced burning schedule would help greatly....particularly if you would cease burning after 7:30 or 8 p.m. when you have warmed your house up on red nights. We of course would prefer that you NOT BURN on red nights (or on yellow nights if you do not have a DEQ/EPA certified woodstove).

The voluntary woodburning compliance program is scheduled to go through the 1990/91 winter heating season. If the needed compliance cannot be developed from this program, a reevaluation will be made. Wouldn't it be better to have compliance because we want to instead of through a mandatory program that fines and enforces? In many communities, woodstoves have to be licensed annually and if you do not have a certified stove, you are forced to get rid of it. Why do we have to go to these extremes? All we are doing is asking that you take part in the voluntary program and burn with consideration for others.

THANK YOU FOR YOUR PARTICIPATION.

Perry Rickard
Health Services Administrator

W. LouEllyn Kelly
Air Quality Program

ATTACHMENT 1

LANE REGIONAL AIR POLLUTION AUTHORITY

SUMMARY OF HEARING

Subject: PM10 STATE IMPLEMENTATION PLAN
Date: January 30, 1990
Place: Eugene City Council Chambers
Time: 7:00 p.m.

BACKGROUND

LRAPA board chair Emily Schue explained that the reason for this public hearing was to receive comments from the public regarding the proposed PM10 State Implementation Plan for Eugene-Springfield. She advised those present that LRAPA had been designated as hearings officer for the Oregon Environmental Quality Commission, and this was a concurrent LRAPA/EQC public hearing. Schue entered into the record affidavits of publication of notice of the hearing in the Eugene Register-Guard, the Springfield News and the Cottage Grove Sentinel. The proposed plan had also undergone area-wide and state clearinghouse reviews and had fulfilled all notice of rulemaking requirements. Schue indicated that the record of this hearing would remain open until 5:00 p.m. on February 13 to allow opportunity for written comments following this meeting. The matter was to be placed on the March 13, 1990 LRAPA board agenda for possible action. She asked Ralph Johnston of LRAPA staff to give a brief overview of the proposal prior to opening the public hearing.

Johnston explained that the proposed plan had been developed in response to the July 1987 adoption by the federal government of a health-related standard for particles smaller than 10 microns in diameter (PM10). He said this area had been designated as a Group I area, meaning that there was a 95 percent or better chance that the area would violate the new standard. The area did violate the standard, and was required to develop a plan to bring Eugene-Springfield into attainment with the standard. The LRAPA Board of Directors then charged the LRAPA Advisory Committee with the task of developing a plan. Johnston described the process employed by the advisory committee over the past two years to develop the proposed plan. He said that, following the public hearing and LRAPA board adoption of the plan, it would be forwarded to the state Environmental Quality Commission for its approval and then to the U. S. Environmental Protection Agency for its review and approval.

Johnston described the meteorological conditions and emissions sources which cause Eugene-Springfield to be in nonattainment. The exceedances of the standard occurred in the wintertime in residential areas, and computer modeling results showed that substantial reductions in emissions from home heating would result in attainment of the standard. For that reason, the plan's sole attainment strategy was to achieve a 70 percent reduction in home

heating emissions. The plan would change the curtailment program which had been in place in Eugene-Springfield for the past four years from voluntary to mandatory. Staff would continue to evaluate the effectiveness of the voluntary program through the remainder of the current heating season and through the 1990/91 season. If there are exceedances of the standard during that period, the program would be made mandatory for the 1991/92 heating season. The plan also contains provision for a certification program for firewood dealers to help ensure that only well-seasoned wood is sold. Public education is also a big component of the plan, including production of a public service announcement. Another provision of the plan is additional air quality monitoring. The curtailment program would be structured to provide exemptions for people who have no other source of heat, and possibly for low-income households and certified stoves. The program would affect Eugene-Springfield and the River Road-Santa Clara area.

Enforcement of the mandatory curtailment program would depend either on a change in the state statutes, which would allow LRAPA to adopt the necessary rules, or on ordinances adopted by the cities and Lane County. The rules or ordinances would be developed in the next year and put into place so that, if exceedances occur, LRAPA will have the ability to deal with them quickly. Johnston stressed that a curtailment program, whether voluntary or mandatory, would involve only a few days a year when the air is stagnant and pollution levels approach the standard.

SUMMARY OF ORAL TESTIMONY

Ron Crasilneck, 3091 Hendricks Hill, Springfield, (National Steelcrafters/ Breckwell/Craft Stove Center/Wood Heating Alliance)

Crasilneck stated that, in his various capacities with the above-referenced groups, he has been involved with this issue on the national, regional, state and local levels. He felt that he could give a well-balanced, informed opinion regarding LRAPA's recommendations. He had attended all of the LRAPA Advisory Committee meetings. He believes that clean air is important, but does not want to see expensive, restrictive and unnecessary regulations. While he agreed, generally, with the proposal, there were several parts to which he and those he represented were strongly opposed.

The industry could not support any curtailment plan which does not include an exemption for people who had made a financial commitment to clean air by replacing a dirty stove with a cleaner-burning one. The industry supports the voluntary program which has been in place for several years and which does contain such an exemption. They feel it has been working well.

Crasilneck explained why the industry believes an exemption for certified stoves is necessary. In 1983, DEQ established a long-term strategy to clean up woodstove emissions. This was followed by a national strategy adopted by EPA. Many people had purchased woodstoves in the 1970's which were guaranteed to last a lifetime or had 25-year guarantees. Those people need more of an incentive than clean air to be induced to abandon those stoves for newer, cleaner-burning stoves. The woodstove industry has developed stoves which are much more efficient, burn cleaner and look better than the old ones. Exemption from a mandatory curtailment program would be an additional incentive to purchase the newer technology. The industry feels that government agencies must not offer disincentives by not including the exemption.

Crasilneck stated that LRAPA has created the impression that someone will come into people's homes and pull out their woodstoves. People are afraid that it is LRAPA's intention to completely eliminate all home wood heating in Lane County. Crasilneck asked whether it is LRAPA's intention to force people to be dependent on utility or gas companies, and to pay whatever rates are necessary to build new facilities; or is it LRAPA's intention to clean up the air while allowing people the freedom to heat their homes in their own way. He said that exempting certified stoves and pellet stoves would not be promoting the sale of woodstoves: it would be eliminating a disincentive for people to make a commitment to local clean air.

Crasilneck also disagreed with LRAPA's contention that there is no evidence to show that the new stoves actually provide emissions reductions when in home use. He presented a report from Bonneville Power Administration and one from U. S. EPA which show that the newer stoves have three to four-and-a-half times

less particulate emissions as old stoves. He added that there have been many improvements in the technology since these studies were done, and the reductions in emissions are probably even greater by now. He indicated that the new pellet stoves reduce emissions by 20 to 40 times and that they are so user-friendly that it is impossible for an owner to interfere with their proper operation. He feels that the woodstove industry is being "attacked" for not providing technology to clean up the air, even though they have made great strides toward that goal.

Another subject which, Crasilneck said, has woodstove manufacturers worried is the "Best" program developed by DEQ, based on the premise that the new woodstoves don't perform well in the field. Crasilneck said he feels the DEQ has used tax dollars to get into the woodstove development business and that, eventually, the LRAPA board will be asked to exempt only "Best" stoves, thus endorsing DEQ as woodstove designers and setting up a de facto new regulation for the industry to meet.

Crasilneck strongly recommended that any curtailment program include an exemption for 1988 DEQ-certified and 1990 EPA-certified woodstoves and all pellet stoves that are either certified or exempted by EPA. He went on to say that the industry feels that a mandatory program may not be necessary because there are fewer people using wood for heat than there were in 1985. He said people are becoming accustomed to higher heating bills; many have been scared away from wood heating by LRAPA publicity; and many are just tired of all the work involved in heating with wood. He cited Willamette national Forest statistics that firewood permits were down 48 percent in 1989 from 1985. Crasilneck said that many of the old stoves have been replaced with new-technology stoves since 1985, and he feels that the conditions for the worst-case scenario of 1985, upon which the attainment plan is based, no longer exist.

Enforcement of a mandatory program would require additional effort on the part of LRAPA staff. Crasilneck wondered how tax payers would feel about paying for special smoke police for violations occurring maybe once or twice a year. He said the board must distinguish between what could be viewed as a self-serving proposal by LRAPA and one that deals with a real crisis. Crasilneck said that, while it has been stated that EPA will not accept a plan that has a voluntary curtailment program, there is no evidence that EPA would reject a plan that says: "LRAPA will operate the existing voluntary curtailment program indefinitely or until, over a three- or five-year period, there is clear evidence that air, with respect to home heating, is worsening. In that case, a mandatory curtailment program will be implemented." He said the way the proposed plan is written, implementation of a mandatory plan is totally dependent on one year's experience, but trends take more than one year to show up.

Crasilneck maintained that, if the woodstove industry is allowed to do its job of developing clean-burning technology and getting people to replace older

stoves, there will be no need for even a voluntary curtailment program. His final recommendations were:

1. Combine Numbers 1 and 5 of Appendix I of the plan to state that LRAPA will operate a voluntary emissions curtailment program indefinitely, or if over a five-year period, there is clear evidence that air quality is worsening, then implement a mandatory plan, as proposed.

2. Support Numbers 2 and 3 dealing with firewood dealers.

3. Support Number 4, the public service announcement, although the regulations should explicitly state that industry will be involved in its development.

4. Regarding public education, the woodstove industry should also be used as a resource and as a conduit to get the word out to people.

5. In Number 6, the exemption should be explicitly stated, for DEQ- and EPA-certified stoves and all pellet stoves either certified or exempted by EPA.

6. Support Number 7 because, if there is a mandatory program, he agrees that LRAPA should enforce it.

7. Support Number 8, prohibition of the sale of used woodstoves, although he feels it should be a prohibition of the installation of used stoves, rather than sales. He would like to see a legal outlet for used stoves when people purchase new ones. These stoves would be sold only to people from areas outside the Eugene-Springfield nonattainment area.

In summary, Crasilneck said he would encourage the board to spend tax payers' money wisely, to recognize the value of today's wood-burning technology and to recognize that the voluntary program is working. He said LRAPA and the woodstove industry should work together and not against each other.

Michael Copely, 1415 Skyline Park Loop, Eugene.

Copely stated that, in general, he supported the proposal, although he felt that it was not strong enough. He said he is aware of the pressures placed on public agencies when considering regulations such as these; however, he said that regulation of home heating emissions is necessary. He said it seemed ironic to him that an area such as Eugene, which prides itself on its environmental quality, is capable of tolerating such an offensive level of air pollution during the winter months. Regarding the expense involved in the new stove technology, Copely said that, on the other side of that argument, there are medical bills from the effects of smoke on individuals. Because some members of his family have asthma, he must maintain an expensive electronic air cleaning system in his home, as well as having a house which is basically

hermetically sealed from the outside air. He resents not being able to open his windows during the winter for several weeks. He said this is a function of our unique topography, and as long as we are stuck with it, we must contend with it in a responsible manner. Copely said that, based on his observation around town on Yellow days watching smoke pour out of chimneys of houses, fall to the ground around the houses and lay there like a dirty puddle of water, he feels the agency should consider mandatory curtailment on the Yellow days. In this way, he said, Red days might be avoided altogether. Copely recognizes that wood heating is pleasant and comfortable and aesthetically appealing; however, it creates pollution problems because the area is in a valley, blocked in by hills on three sides. He feels the proposed plan should be regarded only as a first step.

Verne Reinmuth, 600 Kingswood Avenue, Eugene

Reinmuth moved to Eugene when he retired, partially because of the good air quality in the area. He uses a very efficient woodstove and burns only well seasoned wood. He worked for the electric utility industry for 38 years and raised some questions regarding the effects of curtailing--or eliminating--wood heating. If the wood is not burned for heat, it must be taken to a landfill. If wood burning is not allowed, there will increased demand for other kinds of energy, from coal or nuclear or hydro or some other source. Coal causes significant pollution problems. When temperatures get down below 40 degrees, wood heating becomes most beneficial and takes a part of the load off the electric generation plants. The electric companies use their most efficient equipment during normal conditions, and when there is added demand during cold weather, they must put into use older, less efficient equipment which is more expensive to operate. The electricity costs more money to generate, so it is more expensive to the consumer. Gas companies operate the same way. Reinmuth contended that curtailing wood heating greatly increases the cost of electric and gas energy. He asked that the board not cut out wood burning unless it is really necessary.

William M. Ward, 2367 Emerald Street, Eugene

Ward has depended on wood heat for approximately eight years. He feels that people should be allowed to use their woodstoves but that there should be some controls. He feels the proposed plan does not go far enough, to the extent that at least 80 to 90 percent of the houses in the area that we're concerned with that have existing functional heating systems besides wood heat. Wood heat is not a necessity for most people in this area--it is a luxury, and luxuries come at a price. Unfortunately, the person who uses this particular luxury is not the only one who has to pay the price. Everyone pays with ill effects on their health. He understands that people want to be able to use their woodstoves, and that there would be some problems enforcing this type of program.

Ward things that there should be a permit system for persons wishing to use woodstoves, and that the fee for the permits should increase every year for five years. People would have time to foresee what was happening and review their expenses to see if it would be cost-effective at the end of five years to keep heating with wood, or if they should switch to some other heat source. He said there should be two classes of permits: Class A would be for people who have no other source of heat and should be allowed to use woodstoves on any day; Class B would be for people who have other heat sources available and for whom wood heating is a "luxury." Class B permits would allow use of wood heating on Green days, only, and would impose fines for any burning done on Yellow or Red days. The permits would be color-coded, and recipients would be required to post the permits in a window and leave it there, like with a building permit. It would be easily enforced through citizen complaints. He suggested that, if a person did not pay a fine within a given time limit, LRAPA could attach the individual's vehicle registration or some such mechanism. He feels that wood heat is a luxury and that people who use it should pay for the privilege. People who don't heat with wood should not have to pay for other people's use with their health.

Ellen Maddex, 2570 Van Ness, Eugene

Maddex does not feel that she and her family should have to pay with their health and well being for their neighbors' bad habits. She feels that burning wood on a Yellow day, when you have another heat source, is socially irresponsible and selfish. She also thinks the proposed plan is not strong enough, and that this weak stance puts Eugene-Springfield in an awkward position when trying to register complaints against pollution from outside sources such as field and slash burning. People keep telling her that wood heat is cheap, but she disagrees. It is not cheap when you consider the social and medical consequences to your neighbors. She would recommend much stricter mandatory regulations. She sympathizes with people in the woodstove industry; however, the airshed is too fragile to continue to allow excessive wood smoke for fear that it might hurt a few local industries, such as the woodstove industry.

Howard Robinson, Eugene (pellet stove dealer)

Robinson sells pellet stoves and believes that use of pellet stoves is a responsible way to heat because of the low emissions from this type of stove (.4 grams/hour as compared with some airtight stoves which produce as much as 60 grams/hour). He commended the woodstove industry for its voluntary efforts to help produce clean-burning technology. He sees the pollution problem being due to the fact that there are a lot of old stoves out there and not very many pellet stoves. He suggested a tax credit to a homeowner for removing an old stove and installing a new one. This would justifiably spread some of the cost of switching stoves to everyone, since everyone would benefit from it. He also suggested that any ordinances which are considered contain exemptions for clean-burning pellet stoves.

Jim Krupp

Krupp was in the woodstove business and hopes to re-enter the business soon. He said people need to understand that there are clean-burning stoves out there. The old stoves need to be taken out because they are dangerous.

Son Schneider

Schneider said that, with all due respect to the people who are producing clean-burning stoves, he thinks that LRAPA's efforts should be tied also to projected population increases in the area. He believes that, within a finite area, you cannot continually increase the number of stoves, no matter how efficient they are, without ultimately maxing out the airshed.

There were no further comments. Schue reiterated the fact that the record would remain open until February 13 and encouraged submittal of written comments. Action on this proposal is scheduled for the March meeting of the LRAPA Board of Directors.

Attachment G

STATE OF OREGON
DEPARTMENT OF ENVIRONMENTAL QUALITY INTEROFFICE MEMORANDUM

DATE: November 7, 1990

TO: Environmental Quality Commission

FROM: Merlyn Hough, Hearing Officer

SUBJECT: Hearing Report:

Proposed PM_{10} Control Strategy for the Medford-Ashland Air Quality Maintenance Area as a Revision to the State Implementation Plan.

Schedule and Procedures

Public hearings were held at the Smullin Center Auditorium, Rogue Valley Medical Center, in Medford on August 6 and September 12, 1990. Public notices included the following:

- The Secretary of State published a Notice of Proposed Rulemaking Hearing, Statement of Need for Rulemaking, Land Use Consistency Statement, and Fiscal and Economic Impact Statement on July 1, 1990;
- The Department of Environmental Quality (Department) provided a news release dated July 31, 1990, on the public hearings;
- The State Clearinghouse initiated the 45-day intergovernmental review process on August 3, 1990;
- The Ashland Daily Tidings published a news article on August 4, 1990, announcing the August 6 public hearing;
- The Medford Mail Tribune published a news article on August 5, 1990, summarizing the proposal and announcing the public hearings; and
- The Medford Mail Tribune published a Notice of Public Hearing on Proposed Air Quality Rule Amendments (paid advertisement by the Department) on August 10, 1990.

Verbal testimony was provided by 19 of the 51 persons that attended the August 6 hearing and 13 of the 23 persons that attended the September 12 hearing. Written testimony was provided by 36 persons (some people provided both verbal and written testimony). All of the written materials have been photocopied and provided to each member of the Environmental Quality Commission.

Summary of Testimony

Most of the testimony followed a similar theme: the proposed plan is a good start but much more needs to be done to reduce air pollution and ensure that health standards will be met on schedule. Much of the testimony stressed the need for a comprehensive, balanced and equitable approach to reducing pollution from all of the significant sources.

There were several major issues in the testimony:

1. Many people indicated the current air quality situation is unacceptable and stressed the health concerns associated with the PM_{10} (i.e., particulate matter ten microns or smaller) concentrations measured in the Medford area. They also expressed concern that the proposed plan will not be adequate to fully meet health standards.

2. Many people stressed the importance of reducing all sources of PM_{10}, not just the residential woodheating and industrial sources; other sources such as open burning, slash burning, fugitive dust, and car and truck exhaust also need to be controlled. Total bans on open burning and slash burning during October (or November) through February were recommended by some.

3. Several people recommended more stringent industrial requirements, including dual-fueling requirements on large wood-fired boilers (with natural gas to be used instead of wood during periods of poor ventilation).

4. Many people expressed the need for tight enforcement of air pollution requirements on all sources, especially industry, and the need for extensive continuous emission monitoring of industrial processes.

5. Some people recommended additional air monitors, including the re-establishment of a background monitoring station on Dodge Road.

6. Several people stressed the need to establish quantifiable milestones and carefully track progress periodically with woodheating surveys, emission inventory updates, stack test and continuous monitoring data reviews, and air quality data analysis.

7. Several people recommended a contingency plan with additional control measures that would be implemented if necessary to keep the projected air quality improvements on schedule.

8. Several people expressed concern that the proposed plan does not adequately address the future growth of the region.

MEDFORD PUBLIC HEARING TESTIMONY

No.	Written	Name	Affiliation	Major Issues Raised
1.	A	Vera Morrell	Coalition to Improve AQ	1,2,3,4,5,6,7,8
2.	B	Maxwell Foster		1,2,3,5,6,7,8
3.	C	Gary K. Stevens	Jackson County	2,4,5,6,7,8
4.	C	Paula G. Fields	Jackson County	2,4,5,6,7,8
5.	D	Sean Downey		2,4
6.	E,O	Robert J. Palzer, PhD	Coalition to Improve AQ	1,2,3,4,5,6,7,8
7.	F,P,T	Wally Skyrman	American Lung Association	1,2,4,8
8.	G	Myra Erwin	Rogue Group Sierra Club	1,2,4,6,7
9.	H	Liz Vesecky		1
10.	I	Paul Wyntergreen	Oregon Environ. Council	1,2,3,4,5,6,7,8
11.	J	Herschel King, MD	Coalition to Improve AQ	1,2,4,5
12.	K	Joe C.A. Eckhardt, MD		1,2,4
13.	L	Teresa Giacomini	Friends of Greensprings	1,2,4,6,7,8
14.	M	Christi Courian		1,4,6,7
15.	N	Stephen Boyd		4
16.	P	Jan Young	Medford Better Breathers	1,2,4
17.	P	Harold Thurston	Medford Better Breathers	1,2,4
18.	P	Margaret Wylie	Medford Better Breathers	1,2,4
19.	P	James Weir	Medford Better Breathers	1,2,4
20.	P	Ethel Shuck	Medford Better Breathers	1,2,4
21.	P	Glenn E. Smith	Medford Better Breathers	1,2,4
22.	P	Lois H. Alfhill	Medford Better Breathers	1,2,4
23.	P	Les Calvert	Medford Better Breathers	1,2,4
24.	P	Norm Barrett	Medford Better Breathers	1,2,4
25.	P	Marge Faske	Medford Better Breathers	1,2,4
26.	P	Doug Faske	Medford Better Breathers	1,2,4
27.	P	Anne Hesek	Medford Better Breathers	1,2,4
28.	P	Bernice Fischer	Medford Better Breathers	1,2,4
29.	P	Donald L. Fischer	Medford Better Breathers	1,2,4
30.	P	Anne Gattschalb	Medford Better Breathers	1,2,4
31.	P	Mae E. Lacey	Medford Better Breathers	1,2,4
32.	Q	Frank H. Hirst	Ashland LWV, Audubon Soc.	1,2,4
33.	R	Patricia Kuhn		1,2,4
34.	S	Patricia D. Kauffman	Rogue Valley Manor	1
35.	U,V	Harvey Caine		1,2,3,4,7
36.	W	Bob Palzer	Oregon Chapter Sierra Club	1
37.	No	Jeff Golden	Jackson County Commission	1,2,4
38.	No	Marc Prevost		2,3,4
39.	No	Bob Karl		1,2
40.	No	Jameson Selleck		2
41.	No	Anna DeSpain		2
42.	No	Alden Moffatt		1,2

MEDFORD PUBLIC HEARING TESTIMONY (continued)

No.	Written	Name	Affiliation	Major Issues Raised
43.	No	James Shute		1,2,4,6
44.	No	Marty Main		1,2
45.	No	Gary Clarida		2
46.	No	Otis Swisher		1,2,3,4,5,6,7,8
47.	No	James Dodson	(opposed to the local woodburning ordinances)	2
48.	No	Marciel Mizerak		2,4
49.	No	Jan Young		2,4
50.	No	David Bassett	Medford Building Official	2
51.	No	Charles Skupeen		1,2,4
52.	No	Erik Wallbank		1,2

MLH:a
PLAN\AH11815
(1/15/91)

STATE OF OREGON

Attachment G

DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE MEMORANDUM

DATE: September 26, 1990

TO: Environmental Quality Commission

FROM: John Core, Hearing Officer

SUBJECT: Hearing Report for September 18, 1990 in Klamath Falls

Proposed Particulate Matter (PM_{10}) Control Strategy for the Klamath Falls Nonattainment Area

Schedule and Procedure

A public hearing was held at the Klamath County Courthouse Annex, Commissioner's Hearing Room, on September 18, 1990. A public notice was published in the Secretary of State's Bulletin and in the Klamath Falls Herald and News 30 days prior to the hearing. John Core was the Hearing Officer.

Of the 45 persons attending, oral testimony was given by 13 people. Written testimony was received from 6 persons.

Primary Positions

Of the 19 persons that gave oral or written testimony, 13 persons were primarily opposed, one person was in favor and 5 persons did not state a position with regard to adoption of the Strategy. A listing describing the persons affiliation and primary position of persons providing testimony is attached. A petition signed by 500 persons in support of Klamath County adoption of a mandatory wood burning curtailment ordinance was submitted as part of the hearing record.

Major Issues

A common theme among those that testified in opposition to the proposed PM_{10} control strategy was that mandatory wood burning curtailment ordinances would place an unreasonable economic burden on homeowners, especially those on low or fixed incomes that cannot afford other means of heating their homes and that voluntary programs are adequate. A number of persons testified regarding health effects of toxic compounds emitted by the Bio-Medical incinerator at Keno, Oregon. Summaries of the testimony are provided below.

Testimony in Favor of Strategy Adoption

One person testified in support of adoption. Terry Wagstaff testified regarding the adverse health effects of woodsmoke and the need for the Department of Environmental Quality to take the necessary steps to restore healthful air quality to Klamath Falls. She stressed the need for economic assistance to the community to help homeowners install alternative forms of space heating in their homes. She submitted copies of a petition containing about 500 signatures of Klamath Basin residents that would support a mandatory wood heating curtailment ordinance.

Testimony in Opposition to Strategy Adoption

Thirteen persons testified in opposition to adoption.

Harry Fredricks, Klamath County Board of Commissioners, testified that the Commission would not consider a mandatory wood burning curtailment ordinance until the spring of 1991, completing the third year of the voluntary program. He noted the success of the voluntary program in reducing wood smoke levels, the County's need for economic assistance to help low income homeowners switch to other forms of home heating. Commissioner Fredricks said he would support a mandatory curtailment ordinance after completing three years of voluntary curtailment if economic assistance is provided.

Paul Wyntergreen, Oregon Environmental Council (OEC), opposed adoption on the basis that the control strategies were not sufficient to assure that air quality standards will be met. Mr. Wyntergreen's written testimony comments that:

1. Fuel switching to geothermal resources should be a major thrust of the strategy;

2. Home weatherization, a year-around stove opacity standard, a ban on installation of non-certified stoves and firewood seasoning requirements need to be added to the strategy;

3. Air monitoring information is insufficient to determining nonattainment area boundaries and contributions from the Weyerhauser mill; the technical analysis of source contributions is inadequate and emission inventory estimates for industrial sources are incorrect.

4. Because of the uncertainties in the Department's analysis, OEC believes that industrial emission rules recently adopted for Medford should also be adopted in Klamath Falls. These restrictions should be expanded to include curtailment of industrial emissions during wood burning curtailment periods.

5. Emission growth allowed under the current industry Plant Site Emission Limits (PSELs) are far too great; a cap needs to be placed on woodstove emissions and open burning should be prohibited during October to March.

6. Slash burning emissions need to be reduced and the Klamath Basin set aside as a designated area under the Oregon Dept. Forestry smoke management plan. Agricultural burning should be prohibited within 30 miles of Klamath Falls.

Bob Palzer, Coalition to Improve Air Quality, provided written testimony that the Oregon Chapter of the Sierra Club is opposed to the strategy because it is inadequate to assure that air quality standards will be met.

Lord Maitreya, Roy Birdsong, Dorothy Chiero, Doss Decker, Nancy Roeder, Robert Sweet, Donna Hunt, William Conklin and George Nurnberger provided written or oral testimony in opposition to strategy adoption, citing their opposition to a mandatory curtailment ordinance and belief that if adopted by the Klamath County Commissions, the ordinance would be immediately repealed through referendum. They also noted that other sources including cars, trucks and industry caused the high pollution levels, not wood burning; that the Department should enforce its regulations on industry and leave those that choose to burn wood alone. Several persons commented that restrictions on wood burning are discriminatory and the only means of heating their homes within their economic means. They commented that wood smoke is not a health hazard but that other sources do emit pollutants that the Department should be more concerned about (e.g., carbon monoxide from cars).

Cheryl Endicott, Carol Yarbrough, Jeff Anderson, George Nurnberger and Nancy Roeder testified that emissions from the Bio-medical incinerator at Keno, Oregon are far more toxic that emissions from woodstoves and that requirements for mandatory woodburning ordinances cannot be justified in light of Department's approval of the Air Contaminant Discharge Permit

for the incinerator. Several of the speakers noted the toxic effects of dioxins on people and wildlife as well as perceived inequities in the Department's management of air toxic issues in Klamath Falls; the need to recycle plastics being burned in the incinerator and health effects caused by incinerator emissions.

John Monfore of Weyerhauser Company in written testimony questioned the 1.5% growth rate included in the strategy analysis and the likelihood that the industrial emissions projected will ever been seen in reality. He also questioned if the Department technical analysis of source impacts was correct and if background PM_{10} levels referenced in the SIP are reasonable. Mr. Monfore testified that slash burning impacts on PM_{10} levels in Klamath Falls are very minor and his support for a continuing voluntary curtailment program.

Other Testimony

Kurt Schmidt of Modoc Lumber submitted written testimony questioning the potential impact of a new Clean Air Act on the strategy adoption process, operation of pellet stoves during curtailment periods and wording of the Emission Offset and Banking section of the strategy. He took no position on adoption of the strategy.

Don Thurston of the Oregon Department of Transportation Highway Division submitted comments regarding roadways that are ODOT's responsibility for winter road sanding. He took no position on adoption of the strategy.

--- ### ---

Attachment

Klamath Falls PM_{10} Control Strategy Hearing Testimony
September 18, 1990

-Testimony-				-Position-	
Written	Oral	Name	Affiliation	Support	Oppose
X		Kurt Schmidt	Modoc Lumber	No Position	
X		Don Thurston	Oregon Highway Div.	No Position	
X		Lord Maitreya	Public		X
X		Bob Palzer	Coalition to Improve Air Quality		X
X		Paul Wyntergreen	Ore.Environ. Council		X
X		John Monfore	Weyerhauser Co.		X
X	X	Harry Fredricks	Klamath County Comm.		X
	X	Roy Birdsong	Public		X
	X	Dorothy Chiero	Public		X
	X	Doss Decker	Public		X
	X	Nancy Roeder	League of Women Voters		X
	X	Robert Sweet	Public		X
	X	Donna Hunt	Public		X
	X	Cheryl Endicott	Public	No Position	X*
	X	William Conklin	Public		X
	X	Carol Yarbrough	Citizens for Quality Living	No Position	X*
	X	Jeff Anderson	Movement to Expose Corrupt Environmental Politics	No Position	X*
	X	George Nurnberger	Public		X*
	X	Terry Wagstaff	Public	X	

* Note: Testimony comments on toxic air pollution emissions from the Bio-Medical incinerator at Keno, Oregon.

LANE REGIONAL AIR POLLUTION AUTHORITY

(503) 726-2514
225 North 5th, Suite 501, Springfield, OR 97477

Donald R. Arkell, Director

To: Oregon Environmental Quality Commission

From: Donald R. Arkell, Hearings Officer

Subject: Hearings Officer's Report of Public Hearing, January 30, 1990
Eugene-Springfield State Implementation Plan for PM10

Summary of Procedure

Pursuant to public notice, a public hearing was convened by the Board of Directors of the Lane Regional Air Pollution Authority at 7:00 p.m. on January 30, 1990 in the Eugene City Council Chamber at 777 Pearl, Eugene. LRAPA received designation from the DEQ Director as hearings officer for the Oregon Environmental Quality Commission, and this was a concurrent EQC/LRAPA hearing. The purpose of the hearing was to receive testimony concerning the proposed PM10 SIP for the Eugene-Springfield metropolitan area. There were approximately 40 people in attendance, and 9 citizens presented oral testimony at the hearing. The hearing was held open until February 13, 1990, and written testimony was received from 8 individuals during that time (see Attachment I).

Summary of Testimony

There was general consensus in the testimony that an air quality problem exists, and that home wood heating emissions are a primary cause of the problem. There were, of course, differing ideas as to how the problem should be addressed. These generally fell into two basic groups. One group felt that the proposed home wood heating curtailment program was not restrictive enough. In this regard, several stated that burning should be restricted under conditions now defined only as "yellow" advisories. The other group (largely representing the woodstove industry) felt that, if a mandatory program were implemented, exemptions from restricted burning days were needed for EPA- and DEQ-certified stoves.

There were no comments requiring staff responses at this time. Since the SIP provides for the future evaluation of the home wood heating curtailment program and for changes to be implemented as needed, citizen concerns can be addressed at that time.

Action of the LRAPA Board of Directors

Based on the information presented, the board voted unanimously to adopt the SIP as presented. In order to enforce the plan, Lane County and the cities of Eugene and Springfield will be asked to adopt ordinances restricting home wood heating during periods of air stagnation. In addition, LRAPA will attempt to achieve state legislation removing the home heating exemption from LRAPA and DEQ jurisdiction.

DRA/MJD

RESPONSE TO TESTIMONY RECEIVED AT THE PUBLIC HEARINGS ON THE PROPOSED PM_{10} CONTROL STRATEGIES FOR THE MEDFORD-ASHLAND AIR QUALITY MAINTENANCE AREA

Issue No. 1: Many people indicated the current air quality situation is unacceptable and stressed the health concerns associated with the PM_{10} (i.e., particulate matter ten microns or smaller) concentrations. They also expressed concern that the proposed plan will not be adequate to fully meet health standards.

Response: The Department concurs that the current air quality situation is unacceptable and of serious health concern. The PM_{10} concentrations measured in Medford and Klamath Falls substantially violate both the annual and 24-hour PM_{10} ambient air quality standards. These standards are based on a thorough evaluation of health effects by the U.S. Environmental Protection Agency (EPA) and the Clean Air Scientific Advisory Committee (CASAC). CASAC is a panel of eleven nationally recognized non-EPA experts that reviews health effects information and recommends appropriate air quality standards to the EPA Administrator. PM_{10} concentrations measured in Medford and Klamath Falls are of special health concern because the smoke particles that are a dominant part of the aerosol in both airsheds are small enough to be easily inhaled and lodged in the lungs.

The Department recognizes that it will be difficult to meet the PM_{10} health standards in Medford and Klamath Falls. In addition to the ambitious control measures identified in the proposed PM_{10} control strategies, the Department is working with other agencies to develop appropriate contingency plans that would be implemented if shortfalls occur. It should be recognized, however, that the contingency measures will generally be more expensive and more difficult to implement than the proposed PM_{10} control strategies.

Issue No. 2: Many people stressed the importance of reducing all sources of PM_{10}, not just the residential woodheating and industrial sources; other sources such as open burning, slash burning, fugitive dust, and car and truck exhaust also need to be controlled. Total bans on open burning and slash burning during October (or November) through February were recommended by some.

Response: The Department agrees in general that the PM_{10} control strategies should be as broad-based as possible. However, it is important to consider the potential emission reductions and air quality benefits, the relative cost-effectiveness, and the technical feasibility in selecting the appropriate combination of control measures. The combination of the proposed control strategies and the contingency plans

should result in a comprehensive approach that not only focuses on the most effective and efficient emission reductions possible but also is broad-based enough to insure that health standards are met.

Residential woodsmoke is clearly the dominant contributor to PM_{10} problems in Oregon based on emission inventories, dispersion modeling, chemical fingerprinting, seasonal patterns, and intensive ambient monitoring. EPA has reviewed the Oregon data and concurred with the Department's assessment. Other state and local agencies in other western states with similar PM_{10} problems have come to the same conclusion. A few examples help illustrate this:

a. The PM_{10} plans for Juneau in Alaska, Olympia and Yakima in Washington, Boise in Idaho, and Eugene-Springfield, Grants Pass, Medford-Ashland, Klamath Falls in Oregon involved seven different air pollution agencies and used several different analytical techniques to apportion the sources contributing to the PM_{10} problems. But the results were similar: Residential woodsmoke was identified as the major PM_{10} contributor, especially on worst winter days.

b. The Medford-Ashland and Grants Pass PM_{10} plans have the most significant industrial emission reduction components in the Pacific Northwest. The non-Oregon areas listed above (Juneau, Boise, Olympia, and Yakima) have relied almost solely on woodsmoke reduction strategies to meet PM_{10} standards.

c. During 1985-87, the Department and LRAPA conducted woodheating surveys in Portland, Eugene-Springfield, Medford-Ashland, and Klamath Falls. The Department and LRAPA also operate extensive particulate monitoring in each of these areas. The highest particulate concentrations were measured in the areas with the highest reliance on woodheating as shown in Figure 1.

d. The long-term particulate trend in Medford indicates that winter particulate concentrations worsened during 1969-85 even though summer particulate concentrations improved over this period as shown in Figure 2. The summer improvement is attributed to progressively better control of industrial, road dust and open burning emissions. The winter worsening is attributed to increased residential woodheating due to the mid-1970s energy crisis. Winter particulate concentrations have improved since 1985 due to woodburning curtailment

programs (voluntary beginning in November 1985, mandatory since November 1989), the Oregon woodstove certification program (affecting new woodstoves sold since July 1986), and other programs.

e. Mandatory woodburning curtailment programs have made a difference in several PM_{10} problem areas. The Juneau program has eliminated the peak PM_{10} problem days that, prior to curtailment, were worse than ever measured in Medford. The magnitude and frequency of PM_{10} violations have been substantially reduced (almost eliminated) in Olympia and Yakima since the implementation of mandatory curtailment programs. Partial implementation of mandatory curtailment in the Medford area in December 1989 substantially reduced the peak day PM_{10} concentrations as shown in Figure 3.

Issue No. 3: **Several people recommended more stringent industrial requirements, including dual-fueling requirements on large wood-fired boilers (with natural gas to be used instead of wood during periods of poor ventilation).**

Response: The Department has included these recommended additional industrial control requirements among the potential contingency measures. The overall contingency plan is discussed under Issue No. 7.

Issue No. 4: **Many people expressed the need for tight enforcement of air pollution requirements on all sources, especially industry, and the need for extensive continuous emission monitoring of industrial processes.**

Response: The new industrial rules adopted in September 1989 will not only reduce emissions from veneer dryers and boilers by an additional 40% but will also provide continuous emission monitoring and more extensive source testing on major industrial sources. These additional monitoring requirements are expected to improve operation and maintenance of the pollution control equipment and increase the Department's enforcement capability.

Issue No. 5: **Some people recommended additional air monitors, including the re-establishment of a background monitoring station on Dodge Road.**

Response: The Department is doing additional monitoring this winter as committed in the proposed control strategy. The Department has re-established the Dodge Road background site.

Issue No. 6: Several people stressed the need to establish quantifiable milestones and carefully track progress periodically with woodheating surveys, emission inventory updates, stack test and continuous monitoring data reviews, and air quality data analysis.

Response: The Department concurs. The Department intends to formalize these procedures as part of the reasonable further progress reporting under the 1990 Clean Air Act requirements.

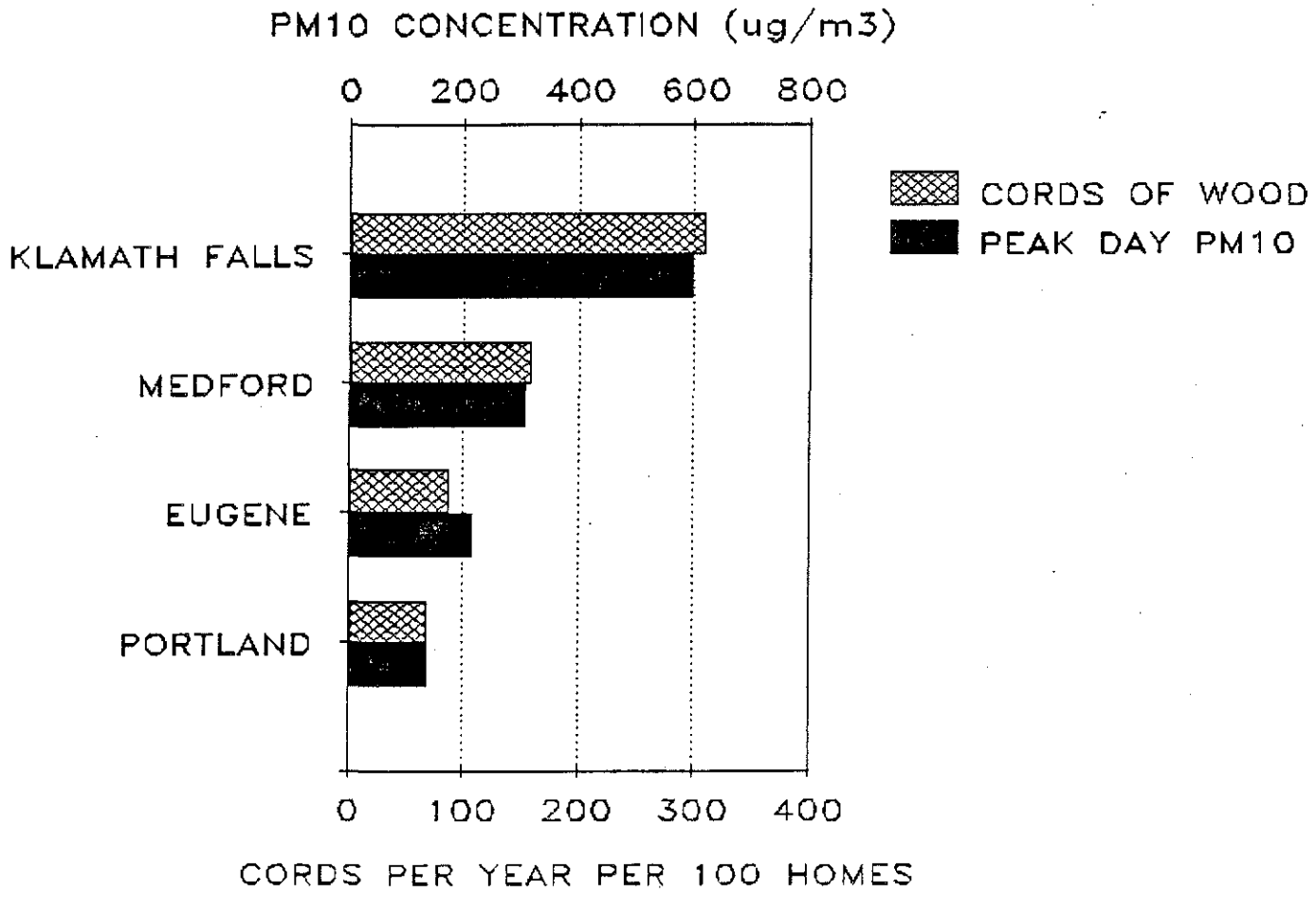
Issue No. 7: Several people recommended a contingency plan with additional control measures that would be implemented if necessary to keep the projected air quality improvements on schedule.

Response: The Department concurs. The Department has identified several potential contingency measures that could provide additional emission reductions from industries, residential woodburning, open burning, and slash burning. The Department intends to propose specific contingency measures, discuss them with the affected and other interested parties, and finalize the contingency plan by November 1991.

Issue No. 8: Several people expressed concern that the proposed plan does not adequately address the future growth of the region.

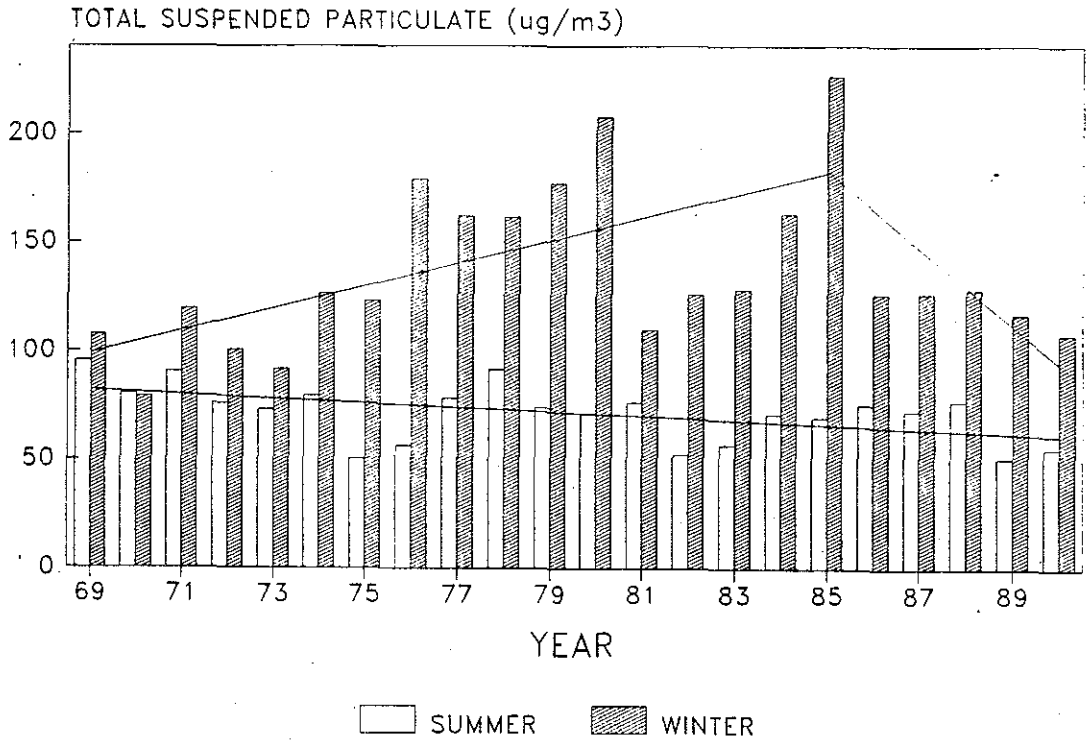
Response: The growth projections are consistent with accepted practice. The proposed plan is based on the traffic and population growth projections by the responsible local and state agencies. Industry emission are based on plant site emission limits adjusted downward due to the more restrictive emission requirements adopted September 1989.

Figure 1. Firewood use and peak day PM_{10} concentrations from 1985-87 DEQ/LRAPA woodheating surveys and ambient PM_{10} data.



Notes: The highest particulate concentrations were measured in the areas with the highest reliance on woodheating.

Figure 2. The long-term (1969-90) particulate trend in Medford at the Jackson County Courthouse.

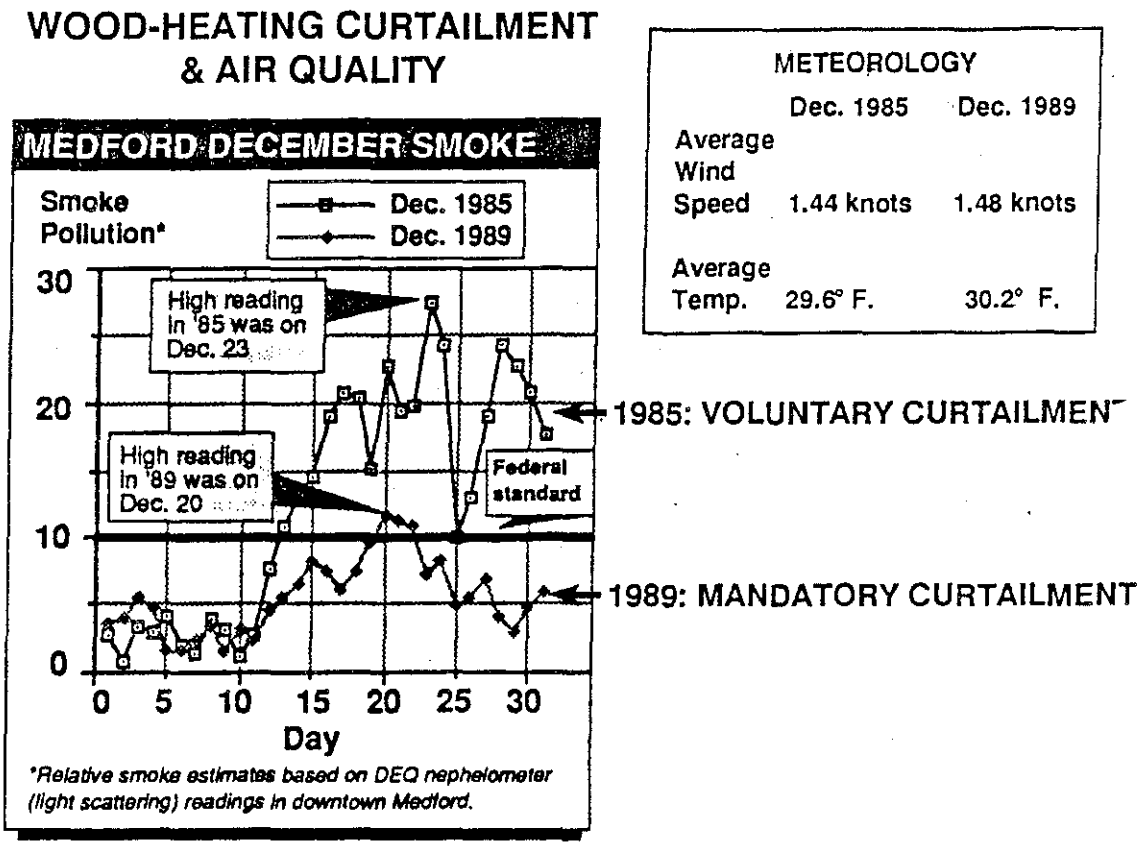


Notes: Winter particulate concentrations worsened during 1969-85 even though summer particulate concentrations improved over this period. The 1969-85 summer improvement is attributed to progressively better control of industrial, road dust and open burning emissions.

The 1969-85 winter worsening is attributed to increased residential woodheating due to the mid-1970s energy crisis.

Winter particulate concentrations have improved since 1985 due to woodburning curtailment programs (voluntary beginning in November 1985, mandatory since November 1989), the Oregon woodstove certification program (affecting new woodstoves sold since July 1986), and other programs.

Figure 3. Comparison of relative smoke concentrations in Medford during December 1985 and December 1989.



Graph – Medford Mail Tribune, Jan. 11, 1990.

Notes: Partial implementation of mandatory curtailment in the Medford area in December 1989 substantially reduced the peak day smoke (and PM_{10}) concentrations.

EQC\RESPONSE

RESPONSE TO TESTIMONY RECEIVED AT THE KLAMATH FALLS PUBLIC HEARING ON PM_{10} REVISIONS TO THE STATE IMPLEMENTATION PLAN

The major issues identified in the public hearing testimony are summarized and discussed in this report. The issues are grouped into the following categories: Air Toxics, Economic Impact on the Public and the Adequacy of the Control Strategies.

AIR TOXICS

Issue No. 1: Emissions of air toxics from the Biowaste Incinerator at Keno, Oregon present a greater public health risk than woodstove smoke.

Response: This issue is only indirectly related to the draft Klamath Falls PM_{10} SIP proposed by the Department. The Department has, however, estimated emission of dioxins from the Biowaste Incinerator and those from woodstoves located within the Klamath Falls PM_{10} nonattainment area. Based on published emission factors and assuming that 3,500 tons of waste are burned in the incinerator and that an average of 3 tons of wood are burned per year from each of the 10,000 woodstove in the airshed, dioxin emissions from woodstoves have been estimated to be about three times greater those emitted from the incinerator. In addition, the incinerator is located about five miles south of the PM_{10} nonattainment area. Based on this information, the fact that the highest population density is coincident with the areas of greatest woodsmoke concentration, and the known public health effects associated with woodsmoke, the Department believes that woodstove smoke is a far greater threat to public health than dioxin emissions from the Biowaste Incinerator at Keno.

ECONOMIC IMPACTS ON THE PUBLIC

Issue No. 2: Adoption of mandatory wood burning curtailment ordinances by local governments would impose an unreasonable economic burden on low income homeowners that cannot afford to heat their homes by other means.

Response: Any ordinance adopted by local governments will include exemptions for low income, sole source homeowners that heat exclusively with wood. An exemption for low income households will probably also be considered. These exemptions will likely be phased out over a period of several years. Those homeowners that do not qualify for an exemption may have increased heating costs if they have relied, in the past, exclusively on wood heat. The amount of the increase

depends on the form of space heating chosen, if the home is weatherized and the size of the home. A typical cost, however, is estimated at $2 to $4 per curtailment day per woodburning home. At 50 curtailment days per winter, the cost per household would be from $100 to $200 per year.

ADEQUACY OF THE CONTROL STRATEGIES

Issue No. 3: The proposed control strategy is not sufficient to assure attainment of the National Ambient Air Quality Standard (NAAQS).

Response: The technical analysis of the control strategy elements and the methodology for calculation of the emission reduction benefits of each element are based on technical guidance developed by the US Environmental Protection Agency. The Demonstration of Attainment section of the draft PM_{10} SIP indicates that the annual and 24-hour NAAQS can be attained and maintained if a rigorously managed and enforced mandatory curtailment program is adopted by local governments. In addition, the Clean Air Act Amendments of 1990 require States to adopt contingency measures to be enacted in the event of a failure of the control strategy to attain NAAQS. Contingency measures to backup the Klamath Falls strategy need to be adopted by November 1991.

Issue No. 4: Additional restrictions on woodburning, slash and agricultural burning and industrial emissions are needed to assure attainment of standards.

Response: Restrictions on residential wood and agricultural burning beyond those now included in the strategy are being considered as elements of a Klamath County ordinance. The additional restrictions on wood burning may include such elements as a ban on installation of used woodstoves, a mandatory seasoned fuel wood certification program and required removal of uncertified woodstoves upon sale of a home. The ordinance may also include a prohibition or other restrictions on agricultural burning within the nonattainment area. The Department is also working with the Oregon Department of Forestry on including Klamath Falls as a Designated Area under the Oregon Smoke Management Plan and expanding the Plan's Restricted Area to include forest lands adjacent to the nonattainment area. These and/or other measures may be included in the control strategy either as elements of the basic strategy or as contingency measures to be implemented in the event that NAAQS are not attained.

Issue No. 5: The technical analysis of PM_{10} source contributions is inadequate. Specifically, the impact of emissions from the Weyerhauser mill is underestimated.

Response: The Department has undertaken several studies of the distribution of PM_{10} concentrations within the Klamath Basin, including saturation studies conducted in November, 1985 and mobile nephelometer studies in January of 1989. In addition, chemical fingerprinting studies have been completed within the nonattainment area. These studies have shown that industrial sources impacts, as a percentage of PM_{10} mass, are consistent with airshed emission inventories which exclude Weyerhauser. DEQ has, however, made a commitment to conduct a screening model analysis of Weyerhauser's emissions. We have further agreed with EPA to revise the SIP, if necessary, to assure compliance with NAAQS.

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PRIOR EQC AGENDA ITEMS

Agenda Item D, January 22, 1988, EQC Meeting, Informational Report: New Federal Ambient Air Quality Standard for Particulate Matter (PM_{10}) and Its Effects on Oregon's Air Quality Program.

Agenda Item M, June 10, 1988, EQC Meeting, Informational Report: Implementation Status of the Total Suspended Particulate Air Pollution Control Strategy in the Medford-Ashland Air Quality Maintenance Area.

Agenda Item H, November 4, 1988, EQC Meeting, Request for Authorization to Conduct Public Hearings on New Industrial Rules for PM_{10} Emission Control in the Medford-Ashland AQMA and Grants Pass and Klamath Falls Urban Growth Areas (Amendments to OAR 340, Divisions 20 and 30).

December 8, 1988, EQC Work Session, Status Report on Medford PM_{10} Issues.

Agenda Item E, September 8, 1989, EQC Meeting, Industrial PM_{10} Rules for Medford-Ashland and Grants Pass: Adoption of New Industrial Rules That Were Taken to Public Hearings in January 1989.

Agenda Item F, June 29, 1990, EQC Meeting, Proposed Particulate Matter (PM_{10}) Control Strategy for the Klamath Falls Urban Area: Request for Authorization to Conduct Public Hearings.

Agenda Item G, June 29, 1990, EQC Meeting, Proposed Particulate Matter (PM_{10}) Control Strategy for the Medford-Ashland AQMA: Request for Authorization to Conduct Public Hearings.

Agenda Item L, December 14, 1990, EQC Meeting, Shortfall in Medford-Ashland PM_{10} Control Strategy Caused by Repeal of Central Point Ordinance: Informational Report.

I recommend that the voluntary wood stove program be expanded to address automobile exhaust emissions. There should be a major effort to curtail all nonessential running of automobile engines during wintertime temperature inversions. Particularly offensive is the practice of long idling to warm the passenger compartment of the vehicle. Industries should be asked to curtail their air contaminant discharges during wintertime temperature inversions. A comprehensive voluntary air quality program makes sense for the Klamath Falls area.

This headlong rush for a wood stove ordinance makes no sense!

Lord Maitreya
5721 Delaware Ave.
Klamath Falls, Or.
97603

Lord Maitreya

Proposed State Implementation Plan

for Particulate Matter

Eugene-Springfield, Oregon
Nonattainment Area

A Plan for Attaining and Maintaining the National Ambient Air Quality Standard for PM_{10}

State of Oregon
Department of Environmental Quality
Air Quality Division

January 1991

PRINTED ON RECYCLED PAPER

LANE REGIONAL AIR POLLUTION AUTHORITY

PM10 STATE IMPLEMENTATION PLAN

MARCH, 1990

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INTRODUCTION

I. INTRODUCTION

BACKGROUND

On July 1, 1987, the U.S. Environmental Protection Agency (EPA) adopted revisions to the National Ambient Air Quality Standards for Particulate Matter which become effective on July 31, 1987. This action included:

1. Replacing total suspended particulate (TSP) as the indicator for particulate matter with a new indicator that includes only those particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM10).
2. Replacing the 24-hour primary standard for TSP with a PM10 standard of 150 $\mu g/m^3$ with no more than one expected exceedance per year (generally based on three consecutive years of data).
3. Replacing the annual primary TSP standard with a PM10 standard of 50 $\mu g/m^3$ (expected annual arithmetic mean generally based on the previous three calendar years).
4. Replacing the secondary TSP standards with PM10 standards that are identical with the primary standards.

Section 110 of the Federal Clean Air Act requires every State to submit to EPA a State Implementation Plan (SIP) which provides for implementation, maintenance, and enforcement of a new standard within 9 months of promulgation. The SIP must provide for attaining the standard as expeditiously as practicable, but no later than 3 years after the SIP has been approved by the EPA. Under certain conditions, an extension of up to 2 years can granted by the EPA.

For developing PM10 SIP's, the EPA categorized areas of concern into three different groups. Group I areas were those for which there was at least a 95% certainty of noncompliance with the standard. Group II areas were those having a 20% to 95% probability of noncompliance. The remaining areas below 20% probability were classed as Group III. In general, the most stringent requirements were placed on the Group I areas.

Based upon the available ambient data, the Eugene-Springfield Urban Growth Area (UGA) was classified by EPA as a PM10 Group I Area. The UGA was chosen as the area for study for a number of reasons: it is already defined as an AQMA for SIP purposes; most, if not all, of the sub-areas of potential non-attainment appear to be within the UGA. Three general purpose local governments have jurisdiction within the UGA; they include the cities of Eugene and Springfield, and Lane County.

The Lane Regional Air Pollution Authority (LRAPA) has the responsibility locally for developing and implementing plans for insuring that the air quality of Lane County complies with all relevant ambient air quality standards. Work on developing the PM10 SIP began in August, 1987. The LRAPA Citizens Advisory Committee was asked by the LRAPA Board of Directors to develop recommendations on how the Eugene-Springfield area should achieve compliance with the new PM10 standards. After a lengthy period of evaluating the problem, the committee completed its work in October, 1989, providing recommendations to the LRAPA Board of Directors. After a public hearing (held on January 30, 1990) the Board acted to adopt the SIP and forwarded it to the State of Oregon Environmental Quality Commission (EQC) for their action. Upon EQC approval the document will be sent to EPA Region 10 for approval.

AMBIENT PM10 DATA

Monitoring for PM10 in Lane County began in March, 1984, with 2 sites in Eugene sampling on an every sixth day schedule. A third daily sampling site was located at Key Bank in West Eugene in November, 1985. The Key Bank Site was identified by the dispersion model used in the 1978 TSP SIP as having the potential for the highest TSP levels. Two additional sites sampling on a sixth day schedule have subsequently been located within the Eugene-Springfield Urban Growth Area (see Figure 1). All sites were equipped with Sierra Anderson Model 1200 reference method samplers. The data is summarized in Table 1 and shows that exceedances of the 24-hour PM10 Standard were measured on 14 dates from the start of sampling through December, 1988. No violations of the annual arithmetic mean standard have been recorded. The highest annual average over the past three years was 39 $\mu g/m^3$ at the Key Bank Site, well below the annual standard of 50 $\mu g/m^3$.

All of the 24-hour PM10 standard exceedances have occurred during the winter months. Twelve of the 14 exceedance dates were in December of 1985. This was a period of extensive poor ventilation with no precipitation, cold temperatures (average daily temperatures near 0 degrees centigrade) and light winds (average daily wind speed of 1 to 2 meters per second). A summary of the historical Air Stagnation Advisories issued for Eugene-Springfield by the National Weather Service (NWS) is presented in Table 2. This shows that although the number of stagnation days was large that winter, it was not unusual. What was unusual for December, 1985 was the cold. There were 983 degree days (65 degree base) recorded that month at the NWS site at the Eugene Airport. This is higher than

FIGURE 1

URBAN GROWTH AREA WITH HISTORICAL MONITORING SITES

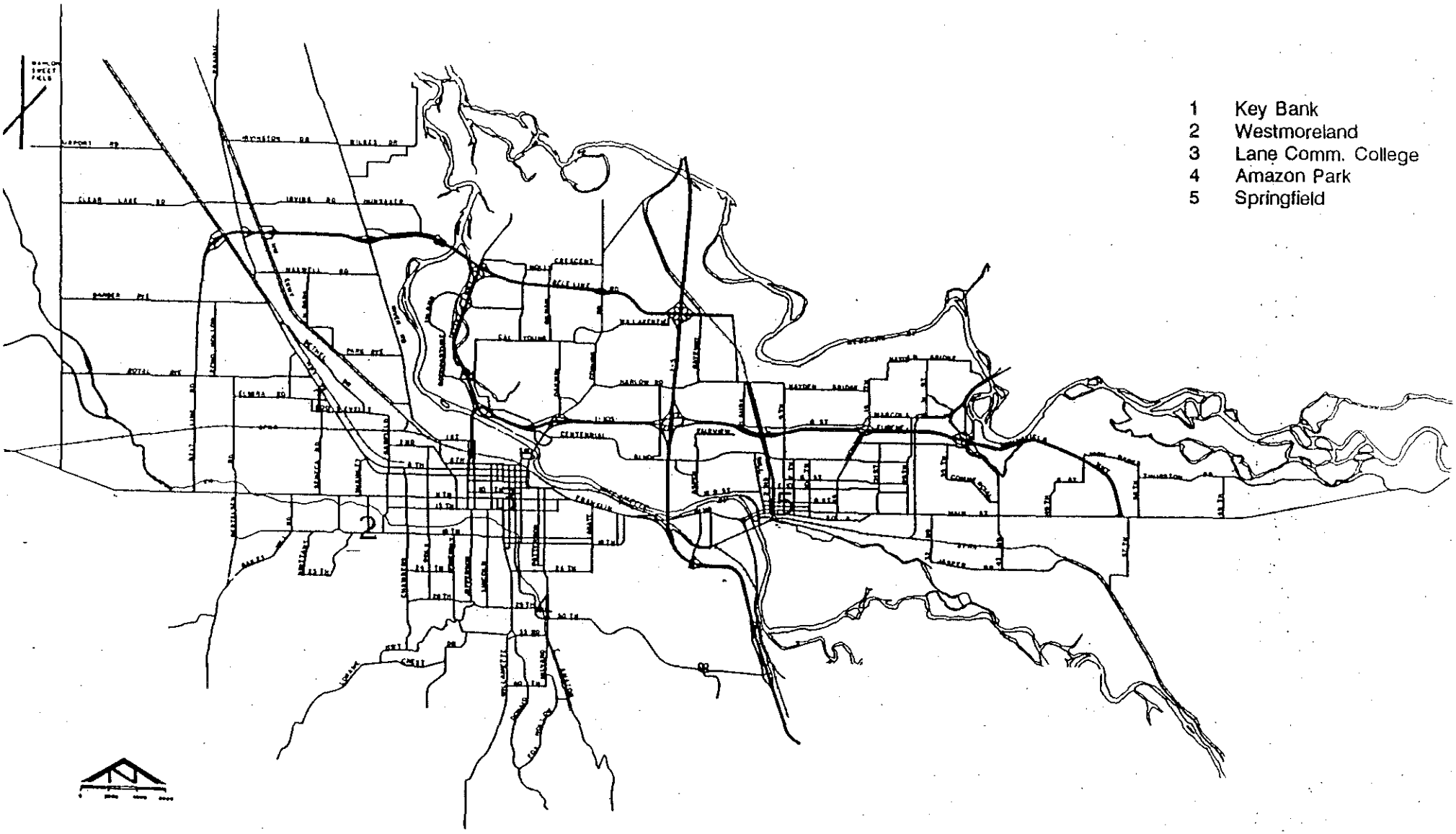


TABLE 1

MAXIMUM AMBIENT PM10 LEVELS

Eugene-Springfield Urban Growth Area

SITE IDENTIFICATION	1985			1986			1987			1988		
	A	B	C	A	B	C	A	B	C	A	B	C
LCC	37	197	3	31	85	0	37	129	0	29	72	0
Key Bank	--	267	12	39	151	0	43	175	2	37	129	0
Amazon Park	34	189	2	27	118	0	32	122	0	26	95	0
Springfield	--	80	0	--	57	0	35	104	0	34	75	0
Westmoreland	--	---	--	--	---	-	--	---	-	30	76	0

Key:
- A Annual Arithmetic Mean
- B Highest 24-Hour Concentration
- C Number of Days Exceeding 154 $\mu g/m^3$ (standard exceedance)
- -- Insufficient Data or Site Not in Operation

TABLE 2

NATIONAL WEATHER SERVICE AIR STAGNATION ADVISORIES

EUGENE-SPRINGFIELD

NOVEMBER THROUGH FEBRUARY

WINTER SEASON	NUMBER OF ASA DAYS
1979 - 1980	16
1980 - 1981	19
1981 - 1982	10
1982 - 1983	11
1983 - 1984	0
1984 - 1985	19
1985 - 1986	15
1986 - 1987	8
1987 - 1988	0
1988 - 1989	6

any December total over the past 30 years, which has a 30 year mean of 735 degree days for December (Table 3 depicts the past 19 years).

If PM10 monitoring data from the past three calendar years (1986-1988) is reviewed using EPA adopted Appendix K rounding criteria (round to the nearest 10), only 2 exceedances of the standard are recorded. This would imply compliance with the 24-hour standard. However, two critical questions arise:

1. Are the existing sampling sites representative of the highest locations in the area?
2. The fact that only two exceedances have occurred since a voluntary home wood heating curtailment program was instituted in November, 1986, could be coincidental or could be the result of actual reduced home wood heating emissions. What assurance is there that exceedances will not occur in future years?

These questions are addressed as part of the analysis in this SIP.

AREA OF APPLICABILITY

The area of applicability for this SIP is the Eugene-Springfield Urban Growth Area (UGA). This is an area of approximately 200 km^2 located at the upper (southern) end of the Willamette Valley in Western Oregon (see Figure 2). The area is at the confluence of two major rivers (Willamette and Mckenzie) and is bounded on the East, South and West by elevated terrain, which frequently restricts atmospheric ventilation. The current population of the area is estimated to be 190,000 with a projected increase to 290,000 by 2010 (Lane Council of Governments).

TABLE 3

DECEMBER METEOROLOGY

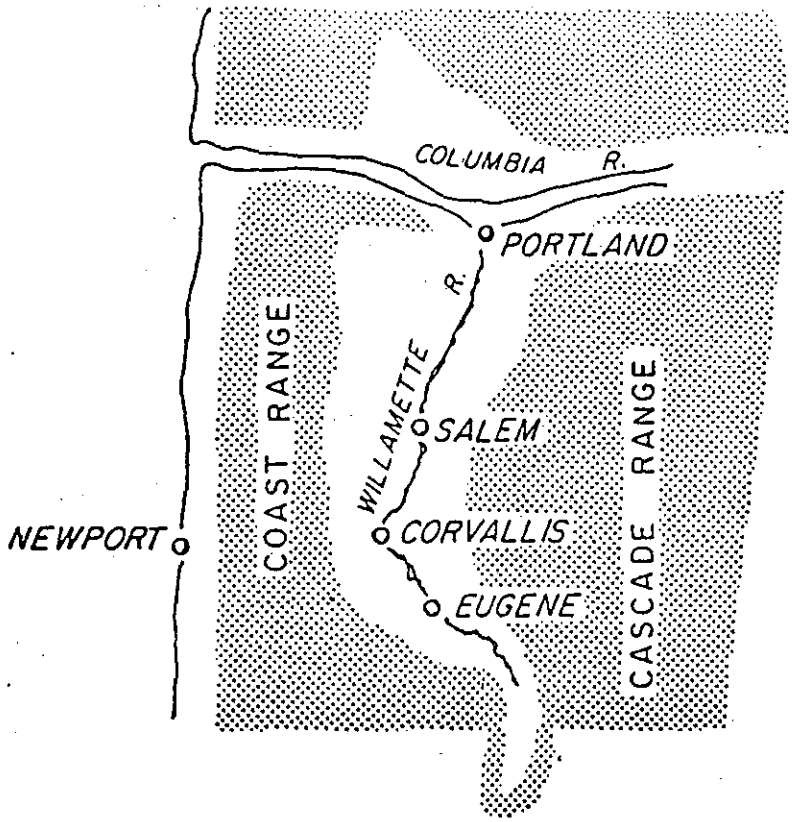
EUGENE

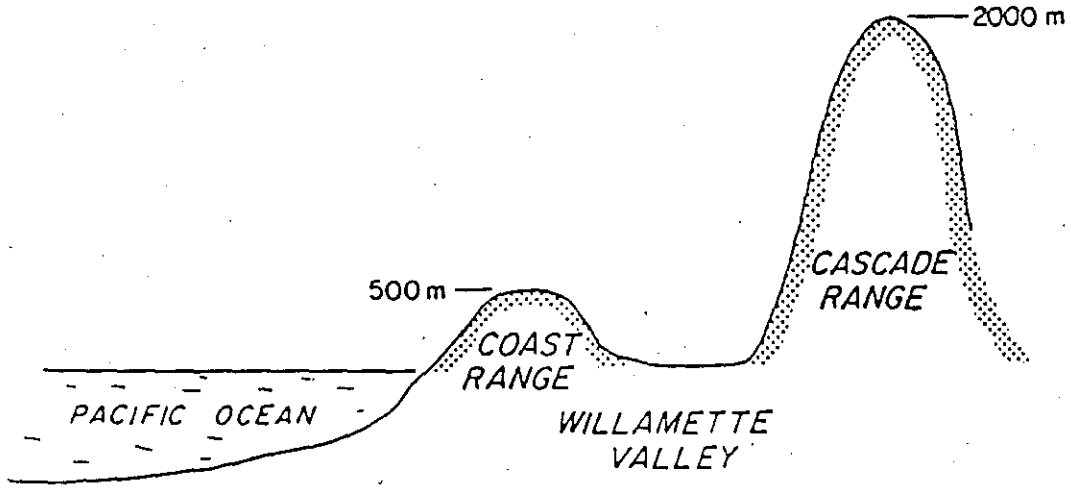
NATIONAL WEATHER SERVICE - AIRPORT

YEAR	DEGREE DAYS	TOTAL PRECIPITATION (INCHES)	DAYS WITH MEASURABLE PRECIPITATION
1970	769	11.57	20
1971	811	9.46	19
1972	945	10.78	21
1973	666	11.82	25
1974	589	9.26	23
1975	676	7.12	23
1976	840	1.24	7
1977	675	14.60	22
1978	919	2.86	15
1979	671	7.38	15
1980	697	14.73	15
1981	710	17.63	22
1982	791	13.53	20
1983	879	7.47	21
1984	851	4.56	16
1985	983	3.51	8
1986	773	3.30	12
1987	774	15.40	21
1988	749	5.18	11
MEAN	777	9.02	18

FIGURE 2

WILLAMETTE VALLEY





The Urban Growth Boundary, which circumscribes the Urban Growth Area, includes the cities of Eugene and Springfield, the major unincorporated areas of River Road and Santa Clara, and those adjacent areas zoned by Lane County for future development. This is the boundary used by local governmental planning organizations to project future development in the area. A legal description can be found in the Metropolitan Plan.

As shown in the Problem Analysis chapter of this SIP, the major sources impacting the area are emissions from home wood heating and industrial sources (primarily wood products). The wood heating emissions are ubiquitous throughout the area while the industrial emissions have localized concentrations in west Eugene and east Springfield.

As shown earlier (see Table 1), exceedances of the 24-hour standard have been recorded at several of the current monitoring sites. In addition, the results of the dispersion modelling analysis and the Saturation Monitoring Study (see Problem Analysis Chapter) indicate that elevated levels of PM10 can be expected to occur throughout the Urban Growth Area, with standard exceedances probable in areas currently not monitored.

All of these factors combine to indicate that the Urban Growth Area includes all existing and potential locations of noncompliance with the standard, and is therefore the logical choice as the area of applicability.

PROBLEM

ANALYSIS

II. PROBLEM ANALYSIS

EMISSIONS INVENTORY

A critical part of the analysis of the PM10 problem is the development of an emissions inventory (EI). This data serves primarily as input to modelling exercises which attempt to identify the sources impacting the air quality and the relative magnitude of impact from each source category.

The base year used for analysis was 1985, during which 12 of the 14 standard exceedances were recorded in the past 4 years. This represents a true "worst case" scenario which can be expected to occur at some time in the future. Historical TSP emissions were used as a data base to develop the PM10 EI. For the point sources, actual emission test results were used where they were available. When test data was not available, appropriate emission factors (using EPA AP42 guidelines) based upon the quantity of material processed were used to estimate emissions. For the ubiquitous area sources such as home wood heating and motor vehicles, emission factors were applied to the appropriate parameters such as amount of wood burned or vehicle miles traveled. For input into the computer simulation model, the area source emissions were tabulated for 1 km^2 units covering the entire Urban Growth Area (UGA).

A brief description of how the EI was developed for each major source category follows:

1. Point Sources

The historical TSP EI was used as the data base for developing the PM10 EI. The source listings were reviewed by the LRAPA staff for completeness and the

source parameters were edited to reflect the best available data. This included a review by the Advisory Committee and representatives from the individual point sources.

The base year 1985 EI represents the best available estimate of winter emissions in December, 1985 (the period being modeled).

A future year (design year) EI was also developed. This represents what emissions would be if all sources were operating at their maximum permitted limits, often referred to as plant site emission limits or PSEL. The metropolitan planning organization (Lane Council of Governments or LCOG) is projecting level employment in the wood products industry (the primary industry in this area) through 1992 and a slight reduction in employment by 2000. As a result, with no anticipated area-wide cumulative growth in industrial emissions, the current PSEL-based inventory represents the worst case point source emission scenario.

A detailed spread sheet of the point source EI and associated parameters appears in Appendix A.

2. Home Wood Heating

Developing an emission inventory for this source category was not a simple task. The emission factor estimates are crude at best, with scant in-home "real world" test results available such as frequency of use, quantity of wood fuel consumed, and fuel quality. In addition, other factors were developed from surveys which may have some subjective elements. Nonetheless, the data used here is the best available at this time.

The assumptions that were used to develop the home wood heating emission inventory were as follows:

a. 53.1% of the households in the UGA burn wood[1].

b. Woodstove and fireplace insert households burn 2.35 cords of wood annually and fireplace households burn 0.79 cords annually[2].

c. 48% of the woodburning households use a woodstove or fireplace insert[3].

d. Wood burning devices are used from October through April[4].

e. The average life of a woodstove is 15 years[5].

f. The PM10 emission factor for the conventional woodstove is 20 g/kg and for the fireplace it is 14 g/kg[6].

g. The 1986 and 1988 DEQ certified stoves achieve an emission reduction of 30% from conventional stoves[7].

h. The 1990 EPA certified stoves achieve an emission reduction of 45% from conventional stoves[8].

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[1]From 1987 LRAPA Survey.

[2]Ibid.

[3]Ibid.

[4]From 1985 LRAPA Survey.

[5]Commonly accepted number by industry and regulators.

[6]AP42, Environmental Protection Agency, September, 1988.

[7]Estimate based on available home use data from DEQ (May 8, 1989, communication from DEQ).

[8]Conservative estimate based upon EPA Guidance Document, April, 1989; and May 8, 1989, communication with Oregon Department of Environmental Quality.

i. Worst Case Day emissions are calculated on a degree day basis (65°F base)[9].

Combining these assumptions with the population and household data from the Lane Council of Governments results in the emission estimates used in this analysis (see Table 4).

3. Motor Vehicle Emissions and Road Dust

The motor vehicle PM10 emissions estimates were developed from EPA AP42 emission factors including tailpipe emissions as well as airborne particulate from brake and tire wear factors. Incorporating the vehicle mix provided by LCOG (97% LDV and 3% HDV) results in an emission factor of 0.103572 g/vmt. LCOG estimates 3,188,829 vehicle miles traveled (VMT) within the UGA which results in a total of 727 lbs/day.

The data supporting the available emission factors for road dust emissions is not consistent, creating a large uncertainty in these results. Therefore, a better method using locally generated elemental chemical analysis of ambient filters was used. Chemical analysis performed by the Oregon Department of Environmental Quality on local samples collected during 1985 results in the following:

a. the silicon content of local soils is 25.942%.

b. the lead content of motor vehicle emissions is 8.834%.

c. the ambient ratio of soils impact to motor vehicle emissions is 3.516.

If it is conservatively assumed that the soils all come from road dust, then applying a simple ratio formula equating the ratio of the road dust emission factor with the motor vehicle emission factor to the ratio of the soils mass on

[9]Best available parameter for estimating heating needs.

TABLE 4

HOME WOODHEATING PM10 EMISSION CALCULATIONS

EUGENE-SPRINGFIELD

YEAR	POPULATION	TOTAL NO. HOUSEHOLDS WITH WOODSTOVES	TOTAL NO. HOUSEHOLDS WITH FIREPLACES	TOTAL NO. CORDS BURNED	COMPOSITE WEIGHTED EMISSION FACTOR	TOTAL EMISSIONS (TONS)
1985	185,000	20,791	22,533	66,660	18.38 g/kg	2,429
1992	215,436	24,212	26,240	77,628	15.69 g/kg	2,415
2000	250,220	28,121	30,477	90,161	12.12 g/kg	2,166

the filters to the motor vehicle emissions mass on the filters the road dust emission factor can be calculated. The equation is as follows:

EFrd = EFmv * Ms/Mmv

EFrd = 0.103572 g/vmt * 3.516

EFrd = 0.364 g/vmt

where: EFrd = road dust emission factor

EFmv = motor vehicle emission factor

Ms = mass of soils on filters

Mmv = mass of motor vehicle emissions on filters

Using the LCOG estimated daily VMT for the UGA results in an estimated 1.28 tons/day of road dust emissions. LCOG also provided a detailed breakout of VMT by 1 km^2 grid for the UGA. With this data, grid-by-grid estimates of emissions were made to input into the model.

4. Other Minor Sources

Several minor source categories were also inventoried as part of this analysis. These included emissions from non-wood space heating (oil and gas fired devices), railroads, aircraft, agricultural tilling, field burning, and residential open burning. Except for field burning, which used local test data from the DEQ, the emissions were estimated using EPA AP42 emission factors. The agricultural tilling, field burning, and residential open burning emissions are not included in the modelling analysis since these emissions do not occur or are prohibited during the periods of standard exceedance.

The results of these emission estimates for a worst case winter day are summarized in Table 5 for the base year (1985), design year (1992), and maintenance demonstration year (2000). Although the Eugene-Springfield area does not exceed the annual standard, an annual EI was developed and appears in Table 6.

DISPERSION MODEL DEVELOPMENT AND RESULTS

Federal regulations (Section 51.12 of 40 CFR) require that the adequacy of a control strategy for attainment and maintenance of a national ambient air quality standard be demonstrated by means of a dispersion model or other procedure which is shown to be adequate and appropriate for this purpose. In the "PM10 SIP Development Guideline" (6/87), the EPA recommends three possible options for estimating the air quality impact of PM10 emissions using models:

1. Use a receptor and dispersion model in combination.
2. Use a dispersion model alone.
3. Use two receptor models, with control strategy developed using a proportional model (if no applicable dispersion model is available).

Since the necessary data is not available for applying a receptor model, only a dispersion model was selected to perform the analysis. The process for selecting the appropriate model followed the EPA "Protocol for Determining the Best Performing Model (9/87)." This process was necessary since winds were very light and mixing heights very low during the periods of non-compliance (see Tables 7 and 8). These are conditions under which the EPA Guideline Models are not designed to work. As a result, two non-guideline models (Oregon Grid

TABLE 5

WORST CASE WINTER DAY

PM10 EMISSIONS ESTIMATES IN TONS/DAY - ALL SOURCES

EUGENE-SPRINGFIELD URBAN GROWTH AREA

SOURCE CATEGORY	1985 BASE YEAR	1992 DESIGN YEAR	2000
Home Wood Heating	21.2	21.1	18.9
Large Hog Fuel Boilers	6.0	7.9	7.9
Pulp Mill Operation	0.7	4.6	4.6
Road Dust	1.2	1.4	1.6
Particleboard Operations	1.0	0.6	0.6
Motor Vehicle Exhaust	0.4	0.5	0.7
Charcoal Manufacturing	0.2	0.4	0.4
Wood Fired Veneer Dryers	0.1	0.3	0.3
Small Hog Fuel Boilers	0.2	0.3	0.3
Home Oil Heating	0.2	0.2	0.3
Home Gas Heating	0.1	0.1	0.1
Railroads/Airport	0.1	0.1	0.1

TABLE 6

ANNUAL BASE YEAR 1985 PM10 EI ESTIMATES - ALL SOURCES

EUGENE-SPRINGFIELD URBAN GROWTH AREA

TONS/YEAR

SOURCE CATEGORY	EMISSION ESTIMATES
All Point Sources	3,804
Home Wood Heating	2,429
Road Dust	436
Field Burning	157
Motor Vehicle Exhaust	133
Railroads/Airport	37
Agricultural Tilling	19
Home Oil Heating	16
Open Burning	13
Home Gas Heating	7
TOTAL	7,051

TABLE 7

DECEMBER, 1985, PM10 EXCEEDANCE PERIOD

OAKWAY MALL SITE WIND DATA

DATE	NUMBER OF CALM HOURS	DAILY AVERAGE WIND SPEED (M/S)
12	10	3.3
13	7	3.3
14	21	1.6
15	19	2.0
16	19	2.2
17	14	1.5
18	18	1.7
19	20	1.5
20	15	1.3
21	17	2.1
22	16	2.3
23	16	3.2
24	15	1.8
25	7	2.1
26	16	2.5
27	20	2.0
28	13	1.8

Calm wind is defined as speed less than or equal to 1.0 meters per second.

TABLE 8

EUGENE MIXING HEIGHTS

DECEMBER, 1985, EXCEEDANCE PERIOD

NATIONAL WEATHER SERVICE USING SALEM SOUNDING

DATE	4 AM HEIGHT (M)	4 PM HEIGHT (M)
12	60	403
13	191	358
14	127	235
15	184	236
16	49	49
17	74	144
18	39	88
19	31	237
20	123	298
21	115	307
22	138	365
23	128	317
24	36	412
25	110	408
26	130	311
27	168	374
28	160	317

and Wyndvalley) were evaluated with the guideline model ISCST to determine the best performing model (see Appendix B for protocol details). The results of the model comparison indicated that the Oregon Grid Model was the best performing model (see Appendix C for detailed results).

Although the Oregon Grid Model performed well within the EPA approved limits of accuracy, it did give mixed results when compared with actual monitoring data. The model underpredicted levels at the historical high site (Key Bank) and significantly overpredicted levels at the Lane Community College and Amazon Park Sites (see Table 9). However, given the current state of the art of modelling, this is to be expected. According to the "EPA Guideline on Air Quality Models (revised)" (July 1986), even a perfect model will only be accurate to within 50%, and this error estimate does not include the errors in the input data. It is stated in the guideline that " . . . models are more reliable for estimating longer time averaged concentrations than for estimating short term concentrations at specific locations." In addition, it is stated that " . . . estimates of concentrations that occur at a specific time and site, are poorly correlated with actually observed concentrations and are much less reliable."

Given the variance of the model predicted values with the actual measured values and the known inaccuracies in computer simulation models documented by the EPA, extreme care must be taken when trying to use the results of the modelling exercise. The values should not be considered as absolutes but rather as an indicator of what the ambient levels might be.

The results from the modelling exercise for 1985 and 1992 are summarized for selected sites in Table 10. The geographic location of these sites is

TABLE 9

GRID MODEL RESULT COMPARISONS

DECEMBER, 1985

$\mu g/m^3$

DATE	KEY BANK ACTUAL	KEY BANK MODEL ESTIMATE	LCC ACTUAL	LCC MODEL ESTIMATE	AMAZON PARK ACTUAL	AMAZON PARK ESTIMATE
11	144	86				
12	193	133				
13	172	127				
14	222	159				
15	234	131	197	260	189	241
16	267	165				
17	234	201				
18	169	163				
19	188	176				
20	158	170				
21	188	157	156	208	152	193
22	154	141				
23	151	129				
24	135	93				
25	92	90				
26	147	124				
27	170	120	154	231	149	218
28	190	142				

TABLE 10

SELECTED SITES MODELING RESULTS

$\mu g/m^3$

SITE	BASE YEAR PEAK CONCENTRATION	DESIGN YEAR PEAK CONCENTRATION
Depue Street	302	300
S.U.B.	185	184
H Street	323	322
42nd Street	223	221
52nd Street	293	270
Carmel Street	239	237
Scenic Road	335	333
Manzana	312	308
Key Bank	201	196
Wood	201	200
Cross	152	138
14th Street	326	326
Alley	244	244
Hilyard	271	271
High Street	261	261
City Hall	210	208
Amazon	260	260
LCC	260	259
Westmoreland	210	209

depicted in Figure 3. The results indicate that exceedances of the standard can be expected throughout the UGA. The model predicted source impacts at the selected sites are summarized in Table 11 for the base year. These results indicate that home wood heating emissions are clearly the most significant source impacting the air quality of the UGA.

DESIGN VALUE

A critical element in the development of this plan is the determination of the maximum expected level of PM10 (referred to as "design value"). This is the level for which control measures are developed to insure attainment of the standards. According to the EPA "PM10 SIP Development Guideline" (June, 1987), the design concentration for attainment of the 24-hour PM10 standard can be based upon ambient measurements of PM10 or model estimates of ambient concentrations at individual sites during one or more years of stable emissions conditions. This requires modelling 5 years of National Weather Service meteorological data (or at least 1 year of on-site data), or using three years of representative air quality measurements.

Applying the EPA approved statistical distribution using the daily monitoring data from the historically high monitoring site at Key Bank results in a design concentration of 237 $\mu g/m^3$. However, using the results of the 1992 design year modelling exercise, the peak value at another, unmonitored site is 333 $\mu g/m^3$ (see Table 12). The results from the two methods present a large discrepancy, and depending upon which method is chosen, it would affect the stringency of control measures needed to demonstrate attainment.

FIGURE 3

SATURATION STUDY MONITORING SITES

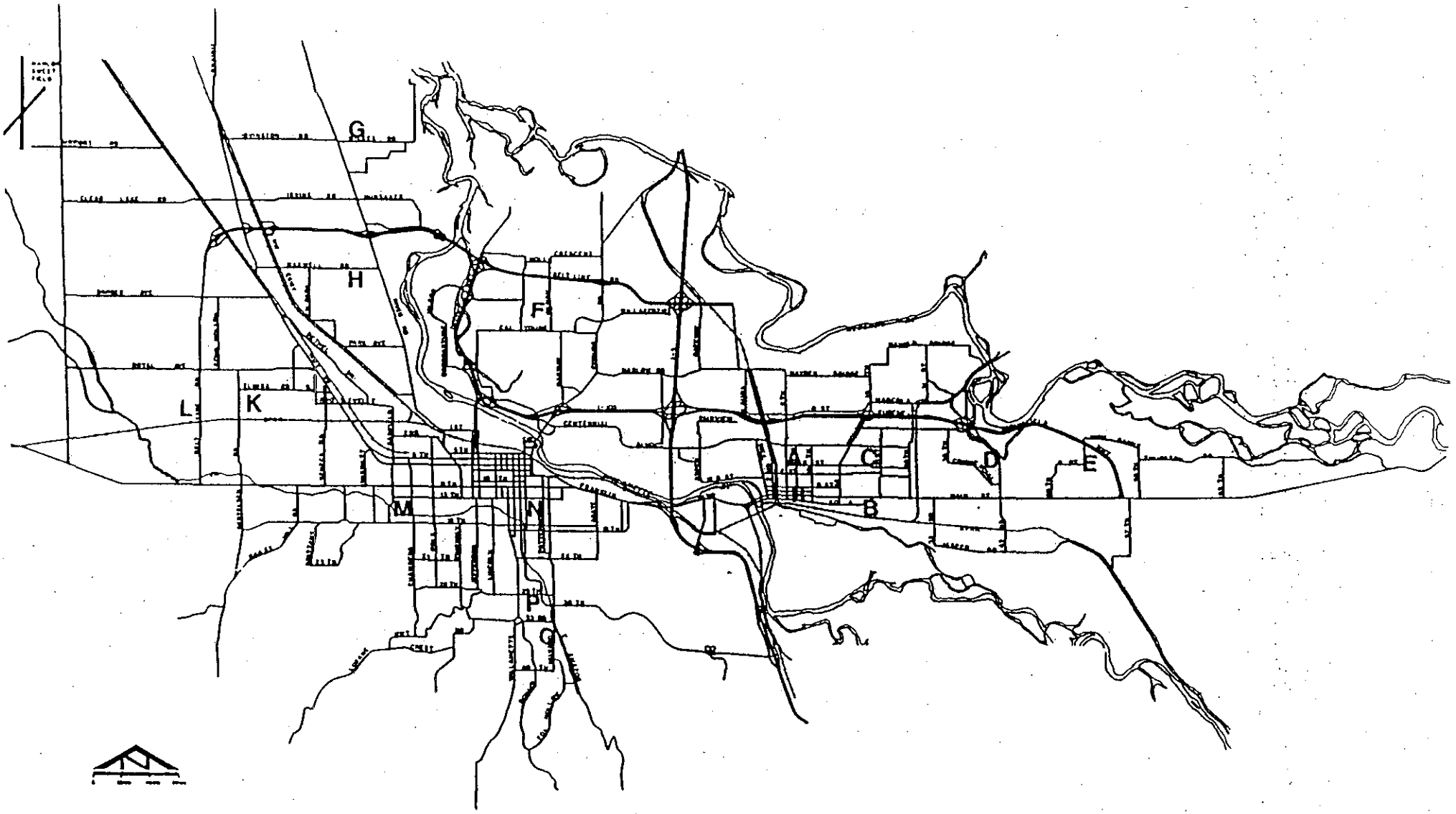


TABLE 11

1985 BASE YEAR MODELING RESULTS

EUGENE-SPRINGFIELD URBAN GROWTH AREA

$\mu g/m^3$

SITE	MAX. CONC.	HOME WOOD HEAT	ROAD DUST	HOGGED FUEL BOILER	VENEER DRYERS	PULP MILL	PART. BOARD	CHAR COAL	BACKGRD & MINOR SOURCES
Depue	302	236	8	3	*	1	2	*	52
S.U.B.	185	122	6	2	*	*	1	*	54
H Street	323	258	6	2	*	2	5	*	50
42nd Street	223	154	5	3	*	3	7	*	51
52nd Street	293	190	4	1	*	2	45	*	51
Carmel	239	173	8	6	*	*	1	*	51
Scenic	335	274	6	3	*	*	*	*	52
Manzana	312	250	6	4	1	*	*	*	51
Key Bank	201	125	12	6	1	*	1	*	55
Wood	201	131	12	4	1	*	1	*	53
Cross	152	69	6	9	1	*	3	*	64
14th Street	326	262	12	1	*	*	*	*	51
Alley	244	181	10	2	*	*	*	*	51
Hilyard	271	214	7	1	*	*	*	*	50
High	261	203	7	1	*	*	*	*	50
City Hall	210	145	8	3	*	*	1	*	54
Amazon	260	199	10	1	*	*	*	*	50
LCC	260	192	14	3	*	*	*	*	51
Westmoreland	210	155	4	1	*	*	*	*	51

* = less than 1 $\mu g/m^3$
BACKGRD = 50 $\mu g/m^3$

TABLE 12

1992 DESIGN YEAR MODELING RESULTS

EUGENE-SPRINGFIELD URBAN GROWTH AREA

$\mu g/m^3$

SITE	MAX. CONC.	HOME WOOD HEAT	ROAD DUST	HOGGED FUEL BOILER	VENEER DRYERS	PULP MILL	PART. BOARD	CHAR COAL	BACKGRD & MINOR SOURCES
Depue	300	234	9	2	*	3	1	*	52
S.U.B.	184	121	7	2	*	1	*	*	53
H Street	322	256	7	1	*	4	3	*	51
42nd Street	221	152	6	2	*	5	4	*	51
52nd Street	270	188	4	*	*	4	23	*	51
Carmel	237	171	10	3	*	1	1	*	51
Scenic	333	272	7	1	*	*	*	*	53
Manzana	308	248	7	1	1	*	*	*	52
Key Bank	196	124	15	3	1	*	*	*	53
Wood	200	130	14	3	1	*	*	*	52
Cross	138	68	7	6	2	*	2	*	54
14th Street	326	260	14	1	*	*	*	*	51
Alley	244	180	12	1	*	*	*	*	51
Hilyard	271	212	8	*	*	*	*	*	50
High	261	201	8	1	*	*	*	*	50
City Hall	208	144	9	2	*	2	1	*	52
Amazon	260	197	11	1	*	*	*	*	50
LCC	259	190	16	2	*	*	*	*	51
Westmoreland	209	153	5	*	*	*	*	*	51

* = less than 1 $\mu g/m^3$
BACKGRD = 50 $\mu g/m^3$

Design value is a very important issue. The discrepancy between highest monitored and modeled values is large enough to substantially change the scope and cost of the attainment demonstration and the timing of implementation. As a result, given the inherent inaccuracy of models and given the limited distribution of PM10 monitoring sites, an effort was made to quickly gather more data. A PM10 saturation monitoring study was conducted by LRAPA (see Appendix D for the full report). For the purposes of SIP development, the objectives were to provide data that would aid in determining the design value and to determine the geographic extent of the area in non-compliance with the standard.

A network of 17 monitoring sites was established throughout the UGA using LRAPA designed portable PM10 monitors. Six of the sites were chosen based on high values predicted by modeling; the remainder provided the needed geographic distribution (see Table 13). The study period ran from January 29, 1989, through February 12, 1989. During this period there were several days of cold temperatures and low wind speeds (historically conducive to high PM10 levels). Over the sampling period, the Key Bank site had the highest mean value overall. Three other sites recorded 24-hour peak levels slightly higher than the peak level at Key Bank. However, no site was statistically higher than Key Bank. The study concluded the following:

1. Elevated levels of PM10 can be expected to occur throughout the UGA, with standard exceedances probable in areas currently not monitored.
2. The model predicted maximum values should not be used for determining the design concentration. The design concentration should be determined based on actual monitored values.

TABLE 13

PM10 SATURATION MONITORING SITE DESCRIPTION

SITE	LOCATION	LAND USE
A*	Springfield - Depue St. north of G St. west of 5th St.	Residential
B	Springfield - Spfld. Utility Board on Main Street	Ind./Comm.
C*	Springfield - H Street at 20th Street	Residential
D	Springfield - 42nd Street south of Olympic Street	Industrial
E*	Springfield - G Street at 52nd Place	Res./Ind.
F	Eugene - Carmel Street at Diane Street	Residential
G*	River Road - Scenic Street north of Wilkes Street	Residential
H*	River Road - Manzana Street south of Howard Street	Residential
I	Eugene - Key Bank on Hwy. 99	Comm./Res.
J	Eugene - Wood Street at Gilbert Street	Residential
K	Eugene - Cross Street east of Bertelsen Street	Ind./Res.
L	Eugene - Danebo Street south of Royal Street	Industrial
M*	Eugene - 14th Street west of Grant Street	Residential
N	Eugene - Alley between Ferry Street and Patterson	Residential
O	Eugene - Hilyard Street at 37th Street	Residential
P	Eugene - High Street south of 29th Street	Residential
Q	Springfield - Springfield City Hall at N. 5th Street	Commercial
R	Springfield - Co-located site with site Q	Commercial

* modeled peak locations

Given the results of the saturation study, with the good correlation of the other sites with Key Bank (see Table 14), it was deemed appropriate by LRAPA to use a date paired standard linear regression technique to estimate design values using the Key Bank monitored value as the independent variable. This would provide the desired geographic distribution for estimating design value, while using monitoring data which has more credibility in absolute values than the modeling results. This method resulted in an estimated design value of 276 $\mu g/m^3$. Upon receiving this data, EPA Region 10 recommended that a two-way regression be performed on ranked paired data limited to levels $\geq$ 60 $\mu g/m^3$, with a minimum number of four pairs. Using this EPA method results in predicted maximum levels closer to the modelled design values (see Table 15). In fact, the peak design value for the Eugene-Springfield Urban Growth Area is predicted to be 345 $\mu g/m^3$.

Although using the EPA regression method results in a significantly higher predicted design value than the standard regression using the full data set, it is still preferred over the modelling results since it uses actual monitored data.

TABLE 14

LINEAR REGRESSION AND CORRELATION ANALYSIS

SITE I (KEY BANK) INDEPENDENT VARIABLE

SITE	MEAN $\mu g/m^3$	STD. DEV. $\mu g/m^3$	TOTAL # OF DATE PAIRED PAIRS	DATE PAIRED CORR. COEFF.	# OF RANKED PAIRED EPA METHOD PAIRS	EPA METHOD RANK PAIRED CORRELATION COEFFICIENT	EPA METHOD RANK PAIRED 2-WAY REGRESSION SLOPE	EPA METHOD RANK PAIRED 2-WAY REGRESSION INTERCEPT	95% CONFIDENCE LIMIT ON ESTIMATE
A	65.4	49.7	16	0.854	9	0.969	1.35	-41.64	13.26
B	30.1	18.7	12	0.932	5	0.950	.57	-4.83	6.55
C	43.3	26.8	12	0.959	5	0.997	.93	-18.33	2.51
D	47.4	28.0	12	0.934	5	0.969	1.02	-22.04	9.17
E	60.5	36.8	16	0.823	9	0.972	1.04	-24.28	9.67
F	43.4	45.2	11	0.904	5	0.972	1.87	-99.61	16.00
G	44.0	40.0	11	0.891	5	0.970	1.61	-74.38	14.35
H	57.3	34.1	15	0.679	9	0.952	.93	-11.18	11.62
I	72.1	43.6	16	-----	-	-----	----	------	-----
J	53.5	28.5	11	0.920	5	0.876	.65	19.47	11.45
K	59.9	24.9	16	0.795	9	0.953	.65	8.84	7.86
L	48.4	16.3	12	0.206	6	0.842	.41	27.97	10.28
M	58.3	46.2	12	0.916	5	0.998	1.59	-45.52	4.01
N	51.0	40.2	11	0.894	5	0.973	1.36	-41.33	11.58
O	35.2	30.0	9	0.880	-	-----	----	------	-----
P	39.5	28.3	11	0.871	4	0.962	.84	-12.74	10.11
Q	45.5	33.2	16	0.935	9	0.948	.83	-17.60	10.43

TABLE 15

PM10 DESIGN VALUE ESTIMATES

EUGENE-SPRINGFIELD URBAN GROWTH AREA

$\mu g/m^3$

SITE	BASE YEAR MAXIMUM VALUE MODEL	MONITORING EPA ANALYSIS METHOD 2-WAY REGRESSION
A - Depue Street	302	278
B - S.U.B.	185	131
C - H Street	324	202
D - 42nd Street	225	219
E - 52nd Place	300	223
F - Carmel Street	239	345
G - Scenic Street	335	307
H - Manzana Street	312	210
I - Key Bank	201	237
J - Wood Street	201	174
K - Cross Street	152	164
M - 14th Street	326	332
N - Ferry St. Alley	244	282
O - Hilyard Street	271	*
P - High Street	261	186
Q - City Hall	211	179

* Insufficient data pairs for analysis.

ATTAINMENT DEMONSTRATION

IV. ATTAINMENT DEMONSTRATION

POTENTIAL CONTROL MEASURES

Based primarily upon data from the emissions inventory (see Table 5), several source categories were selected for evaluation of possible control measures.

The industrial operations are treated as site specific emissions and are therefore termed "point sources". Those point sources considered for possible control measures are listed in Table 16. The total emissions from these source categories account for over 98% of the total point source emissions (see Appendix A). Also listed in table 16 are the potential emission standards considered for each source category and the resultant estimated emission reductions. The largest point source emitters are hog fuel fired boilers, and several possible control measures were considered for this source category. These ranged in effectiveness from 59% reductions in PM10 emissions for an emission standard of 0.1 grains per standard cubic foot of exhaust (gr/scf) to 93% reduction for a standard of 0.015 gr/scf. The other point source categories evaluated were wood fired veneer dryers, particleboard dryers, charcoal manufacturing, and the pulp mill operation. However, as noted in the table, only emission controls on hog fuel fired boilers would achieve significant emissions reductions in total emissions within the UGA.

A detailed cost analysis was performed for each of the potential point source control measures (see Appendix E). Both capital and annual operating costs were estimated for each of the potential control systems. This results in a range

TABLE 16

POTENTIAL POINT SOURCE CONTROL MEASURES

SOURCE CATEGORY	POTENTIAL EMISSION STANDARD	ESTIMATED % REDUCTION IN SOURCE PM10 EMISSIONS	ESTIMATED % REDUCTION IN TOTAL PM10 EMISSIONS
Hog Fuel Boilers	0.1 gr/scf	59	11
	0.05 gr/scf	64	12
	0.015 gr/scf	93	18
Wood Fired Veneer Dryers	$\leq$ 10% Opacity	24	<1
Particleboard Dryers	1.5 lbs/1,000 ft^2	64	2
Charcoal Manufacturing	$\leq$ 5 lbs/ton char	69	1
Pulp Mill	20% Emission Reduction	20	2

of costs for each potential control measure. For the large hog fuel fired boilers, the total capital cost ranged from $5.0 million to $9.4 million while the total annual operating costs ranged from $200,000 to $650,000.

Those sources in the emissions inventory which are not defined as point sources are treated as area sources. The potential control measures for these sources are listed in Table 17. As noted earlier (see Table 5), home wood heating emissions comprise 56% of the total UGA emissions on a winter day. There were several potential control measures evaluated for this source category. These included mandatory curtailment during air pollution episodes, economic incentives for replacing old stoves, retrofit devices for non-certified stoves, removal or replacement of non-certified stoves upon sale of home, and fuel quality enhancements. In addition, control strategies for residential backyard burning and unpaved road dust were also considered. A detailed cost analysis was performed for each of the potential control measures (see Appendix F). Using data from operational programs in other areas, a range of cost estimates were made. For a mandatory curtailment program, annual operating costs could exceed $70,000. In addition, $30,000 would be needed for capital expenditures.

CONTROL MEASURE SELECTION

The critical question is: which of these strategies are needed to demonstrate attainment with the standard? The answer to this question lies in the results of the dispersion modelling. The modelled area included over 500 one km^2 grids, of which 212 are within the UGA. Of these 212, 185 were projected by the model to have the potential to exceed the 24-hour standard under worst case conditions. An isopleth map of maximum predicted concentrations is

TABLE 17

POTENTIAL AREA SOURCE CONTROL MEASURES

SOURCE CATEGORY	CONTROL MEASURES
1. Home Wood Heating	A. Mandatory Curtailment During Air Pollution Episode
	B. Economic Incentives for Replacing Non-Certified Stoves
	C. Retrofit Devices for Non-Certified Stoves
	D. Removal or Replacement of Non-Certified Stoves Upon Sale of Home
	E. Fuel Quality Enhancements
2. Backyard Burning	A. Year-Round Ban in Urban Growth Area
	B. Shorten Season in Urban Growth Area
3. Unpaved Roads	A. Paving

presented in Figure 4 for the base year and in Figure 5 for the design year. The model indicates that on worst case days exceedances of the standard would be widespread throughout the UGA in both the base year and design year. A summary of modelled concentrations at selected sites is presented in Table 10. As discussed earlier in this document and in the "PM10 Saturation Study Report" (see Appendix D), these sites represent the highest modelled locations and provide for geographic distribution.

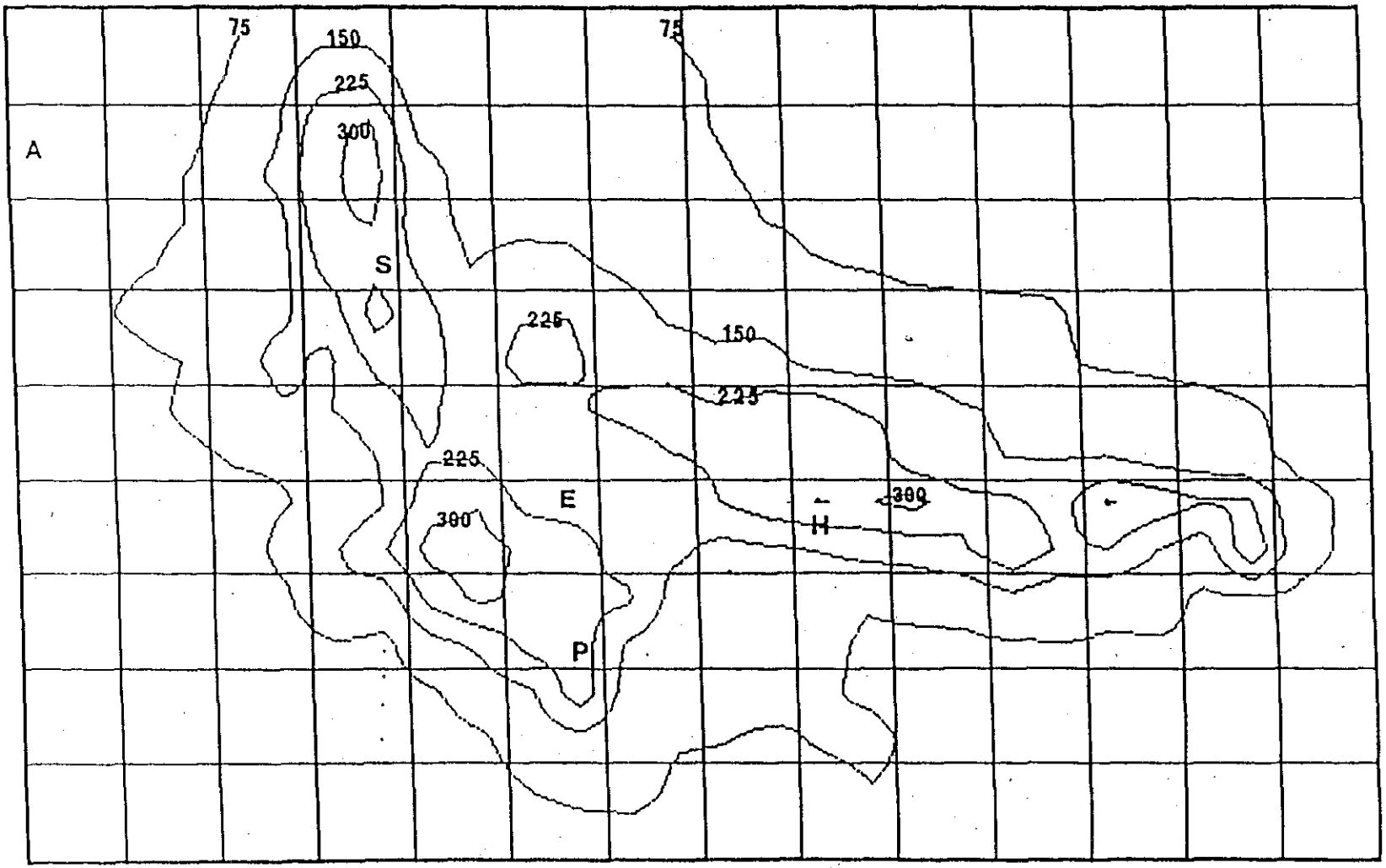
The design value was determined from the monitoring results using the EPA regression method and the modelling was used to determine the relative source impacts. Table 18 presents the estimated source impacts at these selected sites for the base year (1985) and Table 19 presents the design year (1992) impacts. The major difference between these two results are the reduced particleboard plant impacts due to the implementation of additional control measures in 1989. The base year model run depicted actual emissions from plants which were in excess of allowed levels. The plants were on a compliance schedule and demonstrated compliance in 1989.

It is clear from the design year data that home wood heating is by far the most significant source impacting the ambient air quality of the UGA during exceedance periods. This data is convincing to the point that the LRAPA Citizen's Advisory Committee who developed the original recommendation and the LRAPA Board of Directors who adopted the plan were confident in limiting the sources to be addressed in the plan to home wood heating. (For details of the actions of both bodies see Appendix G.)

Using the EPA regression method, the monitoring-based design value is 345 $\mu g/m^3$ and this peak concentration occurs at a location in Eugene (Site F). As noted in Table 20, this will require a reduction of 66% from sources impacting at this site to achieve a concentration under 150 $\mu g/m^3$. The model predicts

FIGURE 4

BASE YEAR 24 HOUR PM10 CONCENTRATIONS, WORST CASE DAY, MODEL PREDICTION



A Airport

S Santa Clara Square

E Eugene City Hall

P Amazon Park

H Springfield City Hall

FIGURE 5

DESIGN YEAR 24 HOUR PM10 CONCENTRATIONS, WORST CASE DAY, MODEL PREDICTION

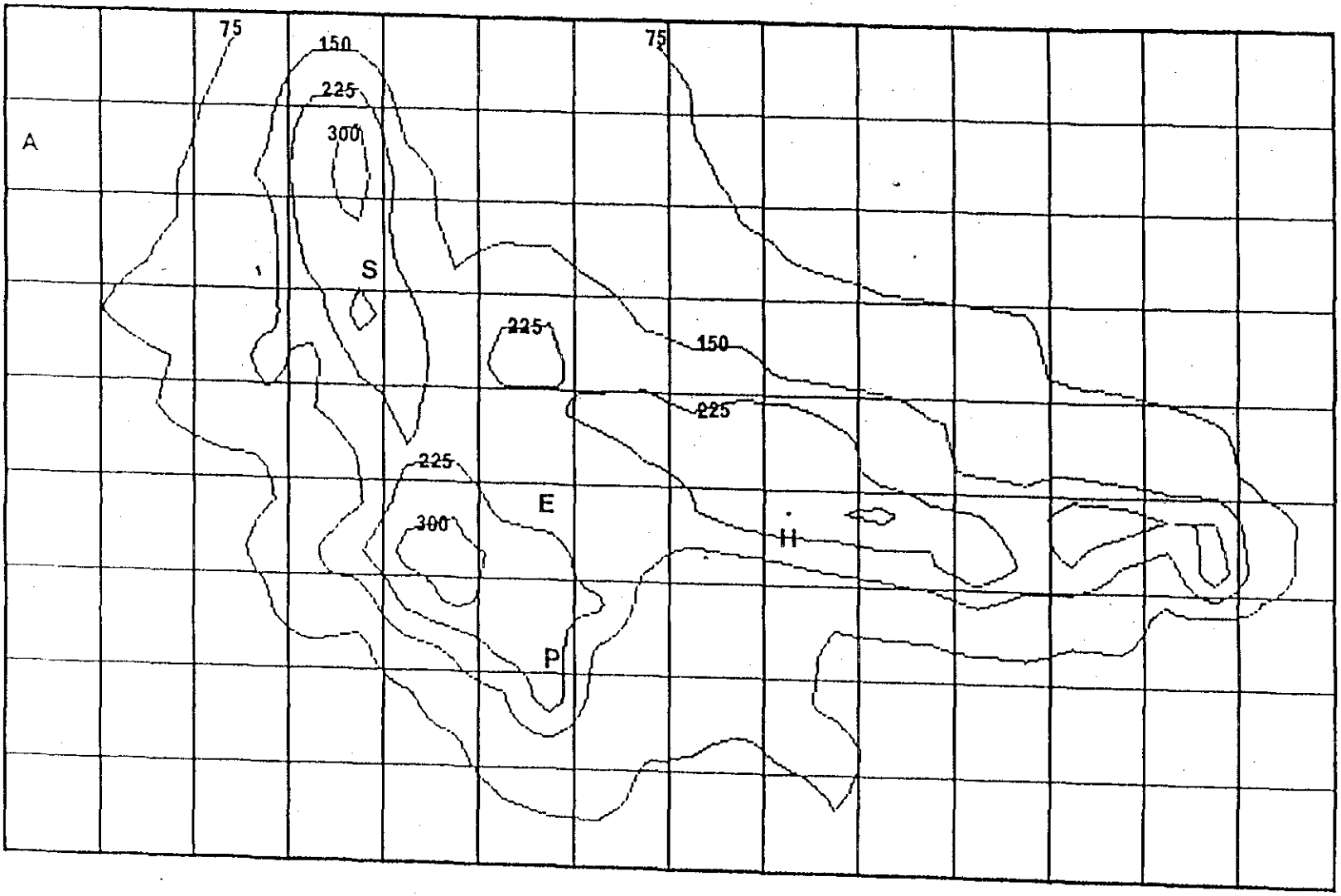


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TABLE 18

BASE YEAR MAXIMUM PM10 CONCENTRATIONS

MODELING PREDICTION

PERCENT OF TOTAL LOCAL SOURCE IMPACTS

SITE	HOME WOOD HEATING	ROAD DUST	HOG FUEL BOILERS	PARTICLE BOARD	PULP MILL	VENEER DRYERS	CHAR COAL	OTHER MINOR SOURCES
A - Depue St.	93.7	3.0	1.3	0.8	0.2	0.0	0.1	0.9
B - S.U.B.	90.1	4.5	1.7	0.7	0.2	0.0	0.1	2.7
C - H Street	94.1	2.2	0.6	2.3	0.6	0.0	0.1	0.1
D - 42nd Street	78.0	2.7	0.9	15.1	2.7	0.0	0.3	0.3
E - 52nd Place	76.0	1.4	0.5	20.9	0.8	0.0	0.1	0.3
F - Carmel St.	91.2	4.5	3.2	0.4	0.0	0.1	0.0	0.6
G - Scenic St.	96.1	2.0	1.0	0.1	0.0	0.1	0.0	0.7
H - Manzana St.	95.4	2.2	1.5	0.1	0.0	0.2	0.0	0.6
I - Key Bank	83.0	8.3	4.0	0.7	0.0	0.7	0.0	3.3
J - Wood Street	86.5	7.7	2.9	0.6	0.0	0.4	0.0	1.9
K - Cross St.	67.4	5.8	9.0	2.9	0.0	1.1	0.0	13.9
M - 14th Street	94.9	4.2	0.5	0.0	0.0	0.1	0.0	0.3
N - Alley	93.3	5.1	1.2	0.1	0.0	0.0	0.0	0.3
O - Hilyard St.	96.6	3.0	0.3	0.0	0.0	0.0	0.0	0.1
P - High Street	96.1	3.4	0.3	0.0	0.0	0.0	0.0	0.2
Q - City Hall	90.2	4.7	1.9	0.7	0.2	0.0	0.1	2.2
Amazon Park	94.8	4.5	0.4	0.0	0.0	0.0	0.0	0.3
LCC	91.5	6.6	1.4	0.0	0.0	0.1	0.0	0.4
Westmoreland	96.6	2.6	0.3	0.1	0.0	0.1	0.0	0.3

TABLE 19

DESIGN YEAR 24-HOUR MAXIMUM CONCENTRATIONS

MODELING PREDICTION

ESTIMATED PERCENT OF TOTAL LOCAL SOURCE IMPACTS

SITE	HOME WOOD HEATING	ROAD DUST	HOG FUEL BOILERS	PARTICLE BOARD	PULP MILL	VENEER DRYERS	CHAR COAL	OTHER MINOR SOURCES
A - Depue St.	93.6	3.6	0.8	0.4	1.0	0.0	0.1	0.5
B - S.U.B.	90.2	5.3	1.3	0.3	0.8	0.0	0.1	2.0
C - H Street	93.9	2.5	0.5	1.0	1.6	0.0	0.1	0.4
D - 42nd Street	89.0	3.5	1.4	2.1	3.2	0.0	0.2	0.6
E - 52nd Place	85.5	1.9	0.2	10.4	1.7	0.0	0.1	0.2
F - Carmel St.	91.6	5.3	1.7	0.1	0.4	0.2	0.0	0.7
G - Scenic St.	96.1	2.3	0.4	0.0	0.0	0.1	0.0	1.1
H - Manzana St.	95.8	2.6	0.6	0.0	0.0	0.3	0.0	0.7
I - Key Bank	85.0	10.0	1.9	0.2	0.0	0.8	0.0	2.1
J - Wood Street	86.9	9.1	1.8	0.2	0.0	0.5	0.0	1.5
K - Cross St.	77.8	7.9	6.3	0.8	0.0	2.2	0.0	5.0
M - 14th Street	94.3	4.9	0.4	0.0	0.0	0.1	0.0	0.3
N - Alley	92.8	5.9	0.8	0.0	0.1	0.0	0.0	0.4
O - Hilyard St.	96.1	3.5	0.2	0.0	0.0	0.0	0.0	0.2
P - High Street	95.5	4.0	0.3	0.0	0.0	0.0	0.0	0.2
Q - City Hall	90.7	5.6	1.3	0.3	1.0	0.0	0.1	1.0
Amazon Park	94.1	5.3	0.3	0.0	0.0	0.0	0.0	0.3
LCC	90.9	7.7	0.9	0.0	0.0	0.1	0.0	0.4
Westmoreland	96.2	3.1	0.3	0.0	0.0	0.1	0.0	0.3

TABLE 20

ATTAINMENT DEMONSTRATION ESTIMATES

EUGENE-SPRINGFIELD URBAN GROWTH AREA

SITE	ESTIMATED DESIGN VALUE	LOCAL SOURCE CONTRIBUTION $\mu g/m^3$	% REDUCTION OF LOCAL SOURCE IMPACT NEEDED FOR ATTAINMENT
A - Depue Street	278	228	56
C - H Street	202	223	23
D - 42nd Street	219	169	41
E - 52nd Street	223	173	42
F - Carmel Street	345	295	66
G - Scenic Street	307	257	61
H - Manzana Street	210	160	38
I - Key Bank	237	187	46
J - Wood Street	174	125	19
K - Cross Street	164	114	12
M - 14th Street	332	282	65
N - Ferry St. Alley	282	232	57
P - High Street	186	136	26
Q - City Hall	179	129	22

that home wood heating emissions contribute almost 92% of the local source impact at this site. As a result, a reduction of approximately 70% in home wood heating emissions is needed at this site to achieve attainment with the standard. Table 20 illustrates that significant reductions will be needed throughout the UGA to achieve attainment. An isopleth map of the UGA which depicts the air quality with this magnitude of a reduction in home wood heating emissions is presented in Figure 6. This indicates that, with a 70% reduction in HWH emissions, the entire UGA achieves attainment with the 24-hour standard.

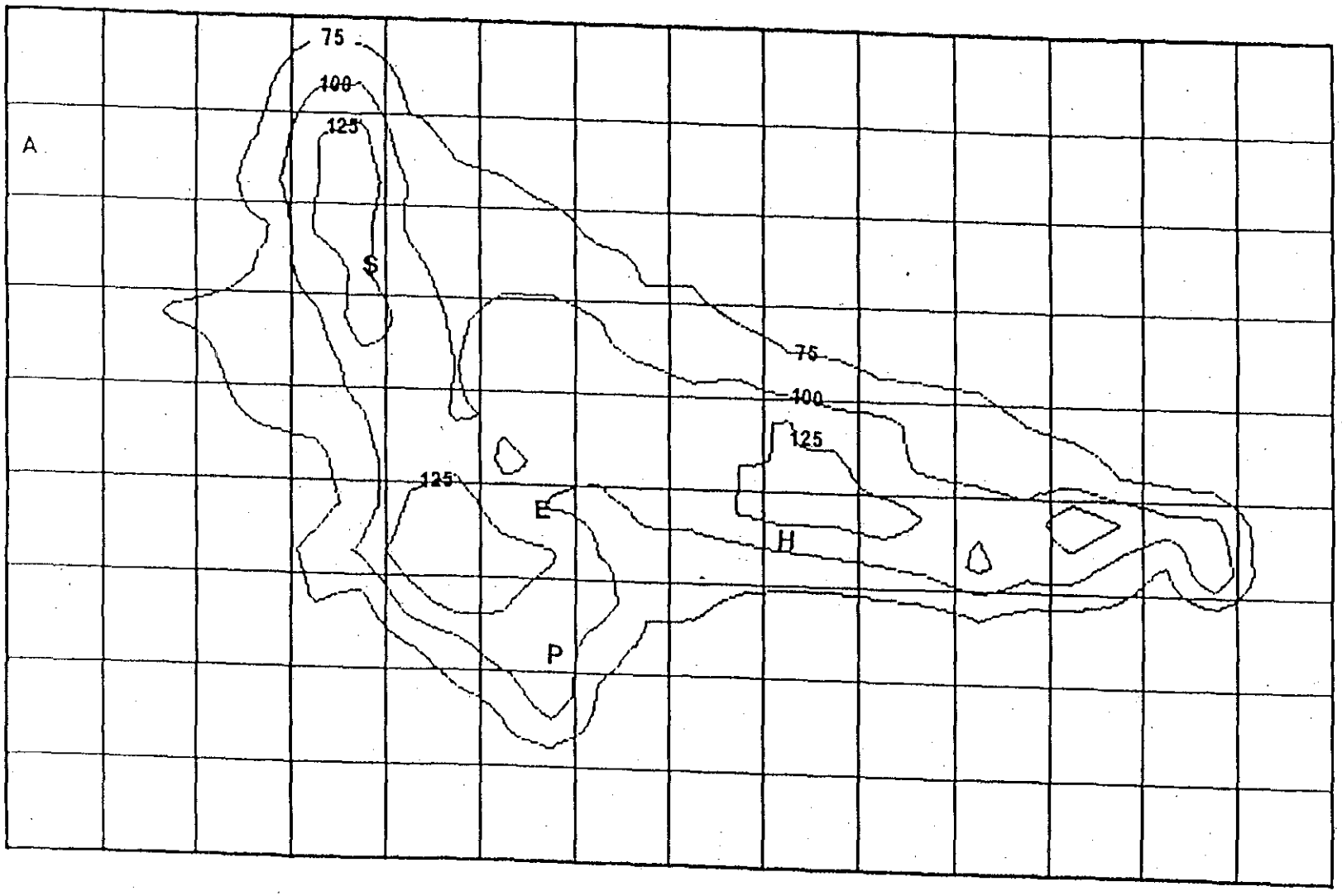
Under the current voluntary curtailment program, only two exceedances of the standard have occurred in the last three heating seasons. This is attributed in part to more favorable meteorological conditions during the last three heating seasons than occurred during the 1985 worst case season. Even so, there have been periods in the past three heating seasons when air stagnation episodes have occurred yet the air pollution levels have not reached those levels experienced during December, 1985. There is also some feeling that practices of wood burning may have changed since 1985, due to better public awareness. Since these factors contribute to uncertainties in the emissions database for home wood heating, they need to be re-examined.

From public testimony it is clear that full implementation of an enforceable episodic curtailment program should be phased in to obtain sufficient public support. In addition, some time is needed to resolve the uncertainties in the emissions database for home wood heating.

As adopted by the Board of Directors (see Appendix I), the home wood heating emissions reduction program provides for continuing a voluntary curtailment program during the next two heating seasons evaluating its effectiveness. November 1, 1991, is the scheduled date to start the mandatory curtailment phase

FIGURE 6

DESIGN YEAR 24 HOUR PM10 CONCENTRATIONS WITH HWH CONTROL MEASURES
MODEL PREDICTION



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of the program.

During the next two heating seasons, there will be additional ambient monitoring, chimney surveys, and another telephone survey of home wood heating practices. This data will determine if the improved air quality since the base year is attributable to changes in wood stove use or operating practices. If this data is substantially different than that used in the base year analysis, there may be cause to re-calculate a design value. In addition, if there are no violations of the standard attributed to home wood heating during this interim period, the need for a mandatory program would be reconsidered and the non-attainment designation evaluated.

By Oregon statute, LRAPA does not have the legal jurisdiction to implement enforceable controls on home wood heating. As a result, ordinances adopted by the local cities and county will be required to provide the legal framework for implementing this program. Copies of the draft ordinances can be found in Appendix H. The mandatory curtailment program can achieve the needed emission reductions; however, there are additional features that will aid in the success of this program (see Appendix I for details). These will include an extensive public education program, which will provide for the development and public dissemination of literature, production of public service announcements, and frequent public contact through various media.

MAINTENANCE DEMONSTRATION

To insure that the UGA will continue to be in attainment of the PM10 24-hour standard, an analysis of the ambient air quality for the year 2000 was performed. Using the population and employment projections of the Lane Council of

Governments developed for the Eugene-Springfield Metropolitan Plan, emissions were projected for the year 2000 (see Table 5). These were then modelled and air quality impacts were estimated. An isopleth map of these impacts is presented in Figure 7. The adopted mandatory curtailment program was then applied to these emissions with the result that the UGA remains in attainment with the standard (see Figure 8).

In order to monitor the attainment status of the UGA, LRAPA will maintain a PM10 monitoring network as outlined in Appendix J. Contingent upon available resources, this network includes the historical high monitoring site as well as three additional permanent sites determined from the modelling results. It will be data from these sites that will determine the actual attainment status of the UGA.

FIGURE 7

2000 24 HOUR PM10 CONCENTRATIONS, WORST CASE DAY, MODEL PREDICTION

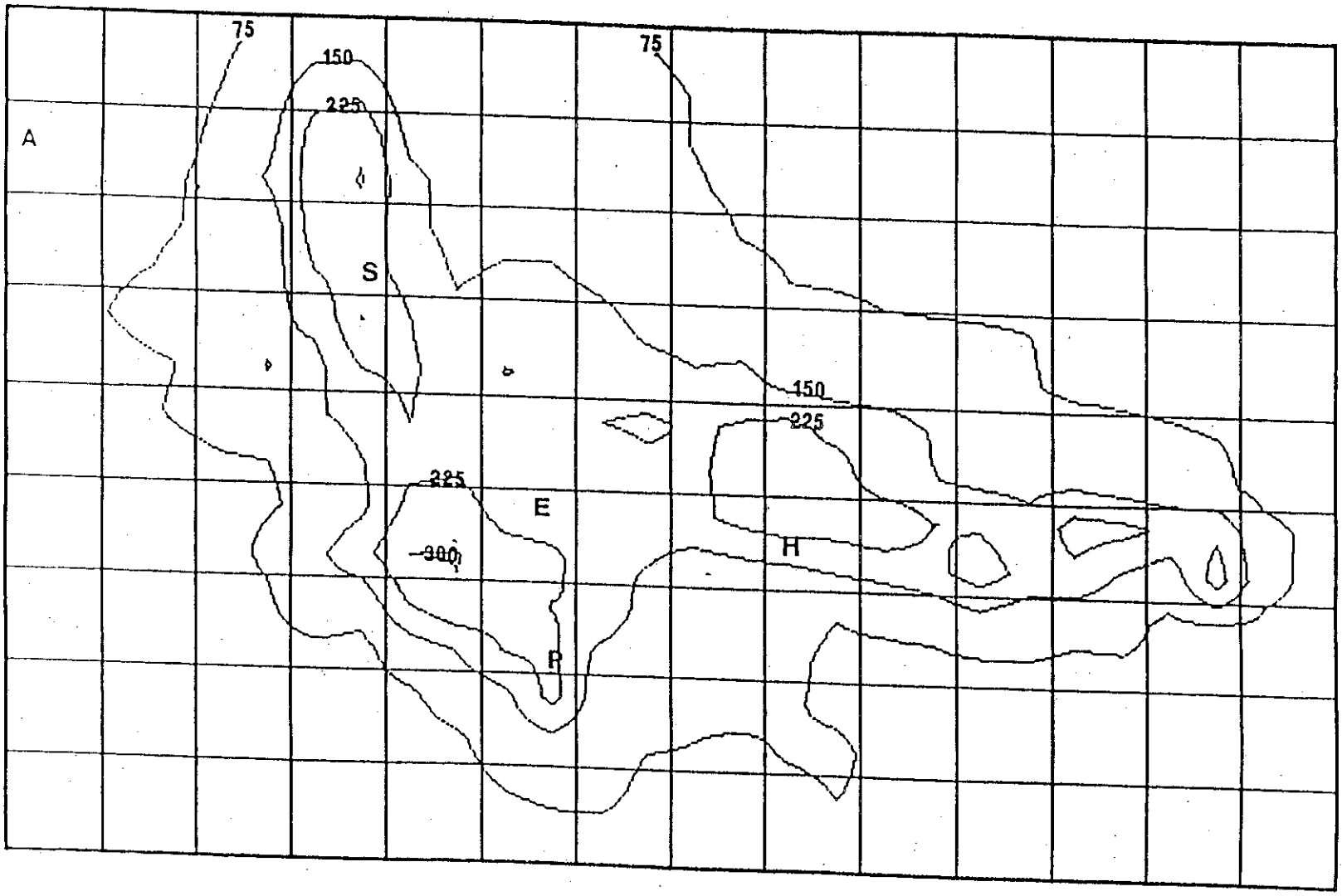

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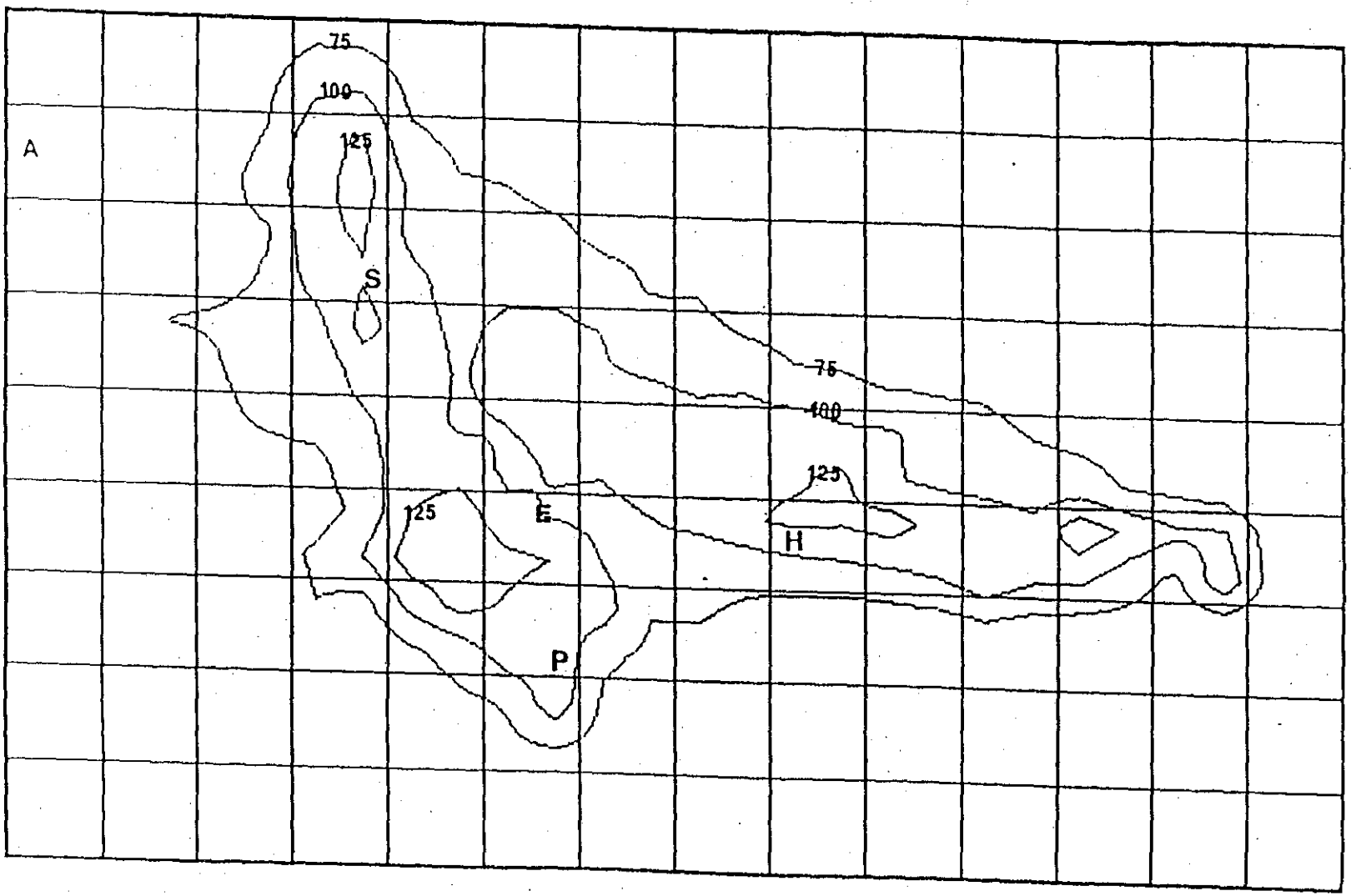
FIGURE 8

2000 24 HOUR PM10 CONCENTRATIONS WITH HWH CONTROL MEASURES
MODEL PREDICTION



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APPENDIX

H

LOCALLY ADOPTED ORDINANCES

IN THE BOARD OF COUNTY COMMISSIONERS OF LANE COUNTY, OREGON

ORDINANCE NO. 9-90 (ALTERNATIVE 2)	IN THE MATTER OF AMENDING CHAPTER 9 OF LANE CODE TO ADD PROVISIONS PROVIDING A RESTRICTION ON USE OF SOLID FUEL SPACE HEATING DEVICES (LC 9.120 - LC 9.160) AND INCORPORATING PROCEDURES AND PENALTIES FOR ENFORCEMENT, PROVIDING AN EFFECTIVE DATE OF JANUARY 1, 1991 FOR ALL SECTIONS, EXCEPT LC 9.155, WHICH IS TO TAKE EFFECT ON NOVEMBER 1, 1991 (LC 9.990(6))

The Board of County Commissioners of Lane County ordains as follows:

Chapter 9 of Lane Code is hereby amended by removing, adding and substituting the following pages:

REMOVE THESE PAGES	INSERT THESE PAGES
-------	9.120 - 9.125 to 9.145 - 9.160 i.e. 9-9a to 9-9c (a total of three new pages)
9.990(1) - 9.995, i.e. 9-51 (a total of one page)	9.990(1) - 9.995, i.e. 9-51 (a total of one page)

Said pages are attached hereto and incorporated herein by reference. The purpose of these additions and substitutions is to add provisions providing a restriction on use of solid fuel space heating devices (LC 9.120) - LC 9.160) and incorporating procedures and penalties for enforcement, providing an effective date of January 1, 1991 for all sections, except LC 9.155, which is to take effect on November 1, 1991 (LC 9.990(6)).

Enacted this 19th day of December, 1990.

Bill Rogers
Chair, Lane County Board of Commissioners

Judy Haldeman
Recording Secretary for this Meeting of the Board

RECEIVED
1990
#20026

APPROVED AS TO FORM
DATE 12/20/90 Lane County
OFFICE OF LEGAL COUNSEL

1 - IN THE MATTER OF AMENDING CHAPTER 9 OF LANE CODE TO ADD PROVISIONS PROVIDING A RESTRICTION ON USE OF SOLID FUEL SPACE HEATING DEVICES (LC 9.120) - LC 9.160) AND INCORPORATING PROCEDURES AND PENALTIES FOR ENFORCEMENT, PROVIDING AN EFFECTIVE DATE OF JANUARY 1, 1991 FOR ALL SECTIONS, EXCEPT LC 9.155, WHICH IS TO TAKE EFFECT ON NOVEMBER 1, 1991 (LC 9.990(6)) bcj/4210

RESTRICTION ON USE OF SOLID FUEL SPACE HEATING DEVICES

9.120 Purpose and Findings.

(1) The health, safety and welfare of the citizens of Lane County are adversely affected by the degradation of air quality. Violations of federal ambient air quality standards, as measured by the Lane Regional Air Pollution Authority (LRAPA), occur periodically in Lane County.

(2) Wood and other solid fuel combustion for space heating produces particulate matter and other emissions which are physically harmful and aesthetically unpleasant, and which contribute to the degradation of air quality and the violation of federal ambient air quality standards.

(3) Periodic restriction of the use of solid fuel space heating devices will improve air quality. LRAPA has the expertise to determine when such air quality is at such a level that such restriction is necessary to preserve the health, safety and welfare of the citizens of Lane County.

(4) It is the intent of Lane County that the penalty section of this ordinance not take effect until November 1, 1991.

9.125 Definitions. As used herein, the following words and phrases shall mean:

Lane Regional Air Pollution Authority. A regional air quality control authority established under the provisions of and with the authority and powers derived from Oregon Revised Statutes 468.500 et seq.

Pellet Stove. An enclosed solid fuel space heating device designed and operated to burn manufactured solid fuel and having an air-to-fuel ratio greater than 35-to-1 as determined by the federal test method described in 40 CFR Part 60.534

Person. Any individual, partnership, corporation, association, governmental subdivision or public or private organization of any character.

Person in Charge of Property. An agent, occupant, lessee, tenant, contract purchaser, or other person having possession or control of property.

PM 10. Solid or liquid particulate matter (excluding uncombined water) with an aerodynamic diameter less than or equal to 10 micrometers.

Sole Source of Heat. A solid fuel space heating device which constitutes the only source of heating in a private residence. A solid fuel space heating device shall not be considered to be the sole source of heat if the private residence is equpped with any permanently-installed furnace or heating system utilizing oil, natural gas, electricity or propane.

Solid Fuel Space Heating Device. Any device designed or operated to burn solid fuel for the heating of the interior of a building, including, but not limited to, solid fuel burning stoves, fireplaces or wood stoves of any nature, combination fuel furnaces or boilers used for space heating which can burn solid fuel, and solid fuel burining cooking stoves. "Solid fuel space heating device" does not include natural gas-fired artificial fireplaces.

Stage I Red Advisory. A 24-hour period beginning at 4:00 p.m. when PM 10 levels are forecast by LRAPA to be greater than or equal to 125 micrograms per cubic meter but less than 150 micrograms per cubic meter within the Eugene/Springfield Metropolitan Area General Plan Urban Growth Boundary.

Stage II Red Advisory. A 24-hour period beginning at 4:00 p.m. when PM 10 levels are forecast by LRAPA to be greater than or equal to 150 micrograms per cubic meter within the Eugene/ Springfield Metropolitan Area General Plan Urban Growth Boundary.

Visible Emissions. The reduction in transmission light or the obscuring of the view of an object in the background caused by the air pollutants emitted by the heating device. This does not include the visual distortion caused by the heated air emitted by the heating device.

9.130 Area of Applicability. The Metropolitan Area General Plan Urban Growth Boundary adopted in 1982 as amended through June 1990, excluding the area within the city limits of Eugene and Springfield.

9.135 Prohibitions.

(1) Stage I Red Advisory. No person in charge of property during a Stage I Red Advisory shall operate or allow to be operated a solid fuel space heating device which emits visible emissions into the air outside of the building housing the device unless the person in charge of the property has been granted an exemption to use the device by LRAPA.

(2) Stage II Red Advisory. No person in charge of property during a Stage II Red Adivsory shall operate or allow to be operated a solid fuel space heating device unless the person in charge of the property has been granted an exemption to use the device by LRAPA or unless the person is operating a pellet stove which emits no visible emissions into the air outside of the building housing the device.

9.140 Exemptions. Exemptions from LC 9.135 above for Stage II and/or Stage I Red Advisories may be obtained from LRAPA for the following:

(1) Sole Source of Heat. A person in charge of property who signs a sworn statement that the solid fuel space heating device is the sole source of heat for that person's residence is exempt from LC 9.135 above, for both State I and Stage II Red Advisories. Individual exemptions shall expire on July 1 of each year and must be renewed annually. This exemption shall not be issued by LRAPA after June 30, 1996.

(2) Economic Need. Persons in charge of property who satisfy criteria established under the Low Income Energy Assisance Program as administered by the Lane County Housing Authority and as established by the United States Department of Energy are exempt from LC 9.135 above for both Stage I and Stage II Red Advisories. Individual exemptions shall expire on July 1 of each year and must be renewed annually.

9.145 Enforcement. The Board of County Commissioners designates LRAPA to enforce the probibitions contained herein. The investigation, initiations of proceedings, adjudication of a violation and appeal of such violation shall be regulated by the adopted administrative and hearing procedures of LRAPA set forth in its Rules and Regulations,

The County shall also retain the right to investigate and enforce the terms of this ordinance. Existing citation, complaint or violation procedures applicable to the County may be utilized to prosecute such violations.

9.150 Warnings. Until November 1, 1991, violation of LC 9.135 above shall only result in notification without penalty.

9.155 Penalties. Violation of LC 9.135 above shall be punished by a fine of a minimum of $50 to a maximum of $500 for each day in which such violation occurs. This remedy is cumulative and is in addition to any and all other remedies available to Lane County. This subsection shall be effective November 1, 1991.

9.160 Effective Date. All sections of this ordinance except LC 9.155 above shall take effect on January 19, 1991. LC 9.155 shall take effect on November 1, 1991.

Violations and Penalties

9.990 Violation.

(1) Violation of any provisions of this Chapter, except LC 9.745, LC 9.120 to 9.160 and those sections enumerated in LC 9.995, constitutes a Class A Infraction and shall be handled in accordance with LC Chapter 5. A violation of LC 9.745 constitutes a Class B Infraction.

(2) Any person may sign County Infraction summonses and complaints for violations of section 9.035.

(3) The Director of the Department of Public Works, or duly authorized representative, may sign County infraction summonses and complaints for violations of LC sections 9.710 and 9.745, the Director of the Department of Community Health and Social Services, or duly authorized representative, may sign County Infraction summonses and complaints for violations of any other LC sections listed in subsection (1) of this section.

(4) Each day in which a violation of sections 9.554, 9.558, 9.560, 9.564, 9.710 or 9.745 continues constitutes a separate infraction.

(5) At the expiration of the period set by the County for correction of any violation of sections 9.310 to 9.370, the County shall again inspect the dwelling. If the violation has not been corrected, the violation shall constitute a County Infraction.

(6) Violation of LC 9.135 shall be subject to the procedures of LC 9.145 to LC 9.150 and the penalty as specified in LC 9.155.

9.995 Penalty. Violation of sections 9.020, 9.030, 9.040, 9.045, 9.050, 9.060, 9.080, 9.085, 9.090, 9.095, 9.100, 9.115 or any of the rules or regulations published under the authority of Lane Code 9.110 shall be deemed to be a misdemeanor and shall be punishable on conviction by a fine of not more than $500 or by imprisonment in the County jail for not more than six months, or both.

20-72; 10.13.72
5-73; 8.4.73
9-73; 8.15.73
10-74; 8.23.74
7-75; 5.16.75
7-84;;7.27.84

9-51

WP 1/co/00021/C/51
REV: 1/cr/00081/C

RESTRICTION ON USE OF SOLID FUEL SPACE HEATING DEVICES

9.120 Purpose and Findings.

(1) The health, safety and welfare of the citizens of Lane County are adversely affected by the degradation of air quality. Violations of federal ambient air quality standards, as measured by the Lane Regional Air Pollution Authority (LRAPA), occur periodically in Lane County.

(2) Wood and other solid fuel combustion for space heating produces particulate matter and other emissions which are physically harmful and aesthetically unpleasant, and which contribute to the degradation of air quality and the violation of federal ambient air quality standards.

(3) Periodic restriction of the use of solid fuel space heating devices will improve air quality. LRAPA has the expertise to determine when such air quality is at such a level that such restriction is necessary to preserve the health, safety and welfare of the citizens of Lane County.

(4) It is the intent of Lane County that the penalty section of this ordinance not take effect until November 1, 1991.

9.125 Definitions. As used herein, the following words and phrases shall mean:

Lane Regional Air Pollution Authority. A regional air quality control authority established under the provisions of and with the authority and powers derived from Oregon Revised Statutes 468.500 et seq.

Pellet Stove. An enclosed solid fuel space heating device designed and operated to burn manufactured solid fuel and having an air-to-fuel ratio greater than 35-to-1 as determined by the federal test method described in 40 CFR Part 60.534

Person. Any individual, partnership, corporation, association, governmental subdivision or public or private organization of any character.

Person in Charge of Property. An agent, occupant, lessee, tenant, contract purchaser, or other person having possession or control of property.

PM 10. Solid or liquid particulate matter (excluding uncombined water) with an aerodynamic diameter less than or equal to 10 micrometers.

Sole Source of Heat. A solid fuel space heating device which constitutes the only source of heating in a private residence. A solid fuel space heating device shall not be considered to be the sole source of heat if the private residence is equpped with any permanently-installed furnace or heating system utilizing oil, natural gas, electricity or propane.

Solid Fuel Space Heating Device. Any device designed or operated to burn solid fuel for the heating of the interior of a building, including, but not limited to, solid fuel burning stoves, fireplaces or wood stoves of any nature, combination fuel furnaces or boilers used for space heating which can burn solid fuel, and solid fuel burining cooking stoves. "Solid fuel space heating device" does not include natural gas-fired artificial fireplaces.

Stage I Red Advisory. A 24-hour period beginning at 4:00 p.m. when PM 10 levels are forecast by LRAPA to be greater than or equal to 125 micrograms per cubic meter but less than 150 micrograms per cubic meter within the Eugene/Springfield Metropolitan Area General Plan Urban Growth Boundary.

Stage II Red Advisory. A 24-hour period beginning at 4:00 p.m. when PM 10 levels are forecast by LRAPA to be greater than or equal to 150 micrograms per cubic meter within the Eugene/ Springfield Metropolitan Area General Plan Urban Growth Boundary.

Visible Emissions. The reduction in transmission light or the obscuring of the view of an object in the background caused by the air pollutants emitted by the heating device. This does not include the visual distortion caused by the heated air emitted by the heating device.

9.130 Area of Applicability. The Metropolitan Area General Plan Urban Growth Boundary adopted in 1982 as amended through June 1990, excluding the area within the city limits of Eugene and Springfield.

9.135 Prohibitions.

(1) Stage I Red Advisory. No person in charge of property during a Stage I Red Advisory shall operate or allow to be operated a solid fuel space hearing device which emits visible emissions into the air outside of the building housing the device unless the person in charge of the property has been granted an exemption to use the device by LRAPA.

(2) Stage II Red Advisory. No person in charge of property during a Stage II Red Advisory shall operate or allow to be operated a solid fuel space heating device unless the person in charge of the property has been granted an exemption to use the device by LRAPA or unless the person is operating a pellet stove which emits no visible emissions into the air outside of the building housing the device.

9.140 Exemptions. Exemptions from LC 9.135 above for Stage II and/or Stage I Red Advisories may be obtained from LRAPA for the following:

(1) Sole Source of Heat. A person in charge of property who signs a sworn statement that the solid fuel space heating device is the sole source of heat for that person's residence is exempt from LC 9.135 above, for both State I and Stage II Red Advisories. Individual exemptions shall expire on July 1 of each year and must be renewed annually. This exemption shall not be issued by LRAPA after June 30, 1996.

(2) Economic Need. Persons in charge of property who satisfy criteria established under the Low Income Energy Assisance Program as administered by the Lane County Housing Authority and as established by the United States Department of Energy are exempt from LC 9.135 above for both Stage I and Stage II Red Advisories. Individual exemptions shall expire on July 1 of each year and must be renewed annually.

9.145 Enforcement. The Board of County Commissioners designates LRAPA to enforce the probibitions contained herein. The investigation, initiations of proceedings, adjudication of a violation and appeal of such violation shall be regulated by the adopted administrative and hearing procedures of LRAPA set forth in its Rules and Regulations.

The County shall also retain the right to investigate and enforce the terms of this ordinance. Existing citation, complaint or violation procedures applicable to the County may be utilized to prosecute such violations.

9.150 Warnings. Until November 1, 1991, violation of LC 9.135 above shall only result in notification without penalty.

9.155 Penalties. Violation of LC 9.135 above shall be punished by a fine of a minimum of $50 to a maximum of $500 for each day in which such violation occurs. This remedy is cumulative and is in addition to any and all other remedies available to Lane County. This subsection shall be effective November 1, 1991.

9.160 Effective Date. All sections of this ordinance except LC 9.155 above shall take effect on January 19, 1991. LC 9.155 shall take effect on November 1, 1991.

Violations and Penalties

9.990 Violation.

(1) Violation of any provisions of this Chapter, except LC 9.745, LC 9.120 to 9.160 and those sections enumerated in LC 9.995, constitutes a Class A Infraction and shall be handled in accordance with LC Chapter 5. A violation of LC 9.745 constitutes a Class B Infraction.

(2) Any person may sign County Infraction summonses and complaints for violations of section 9.035.

(3) The Director of the Department of Public Works, or duly authorized representative, may sign County infraction summonses and complaints for violations of LC sections 9.710 and 9.745, the Director of the Department of Community Health and Social Services, or duly authorized representative, may sign County Infraction summonses and complaints for violations of any other LC sections listed in subsection (1) of this section.

(4) Each day in which a violation of sections 9.554, 9.558, 9.560, 9.564, 9.710 or 9.745 continues constitutes a separate infraction.

(5) At the expiration of the period set by the County for correction of any violation of sections 9.310 to 9.370, the County shall again inspect the dwelling. If the violation has not been corrected, the violation shall constitute a County Infraction.

(6) Violation of LC 9.135 shall be subject to the procedures of LC 9.145 to LC 9.150 and the penalty as specified in LC 9.155.

9.995 Penalty. Violation of sections 9.020, 9.030, 9.040, 9.045, 9.050, 9.060, 9.080, 9.085, 9.090, 9.095, 9.100, 9.115 or any of the rules or regulations published under the authority of Lane Code 9.110 shall be deemed to be a misdemeanor and shall be punishable on conviction by a fine of not more than $500 or by imprisonment in the County jail for not more than six months, or both.

20-72; 10.13.72
5-73; 8.4.73
9-73; 8.15.73
10-74; 8.23.74
7-75; 5.16.75
7-84;;7.27.84

9-51

WP 1/co/00021/C/51
REV: 1/cr/00080/C

RECEIVED
CITY OF EUGENE
DEC 14

ORDINANCE NO. 19731

AN ORDINANCE RESTRICTING THE USE OF SOLID FUEL SPACE HEATING DEVICES DURING AIR POLLUTION EPISODES; ADDING SECTIONS 6.250, 6.255, 6.260, 6.265 AND 6.270 TO THE EUGENE CODE, 1971; ESTABLISHING PENALTIES; AND DECLARING AN EFFECTIVE DATE.

The City Council of the City of Eugene finds that:

A. The health, safety and welfare of the citizens of Eugene are adversely affected by the degradation of air quality. Violations of federal ambient air quality standards, as measured by the Lane Regional Air Pollution Authority (LRAPA), occur periodically in Eugene.

B. Wood and other solid fuel combustion for space heating produces particulate matter and other emissions which are physically harmful and aesthetically unpleasant, and which contribute to the degradation of air quality and the violation of federal ambient air quality standards.

C. Periodic restriction of the use of solid fuel space heating devices will improve air quality. LRAPA has the expertise to determine when air quality is at such a level that such restriction is necessary to preserve the health, safety and welfare of the citizens of Eugene.

Now, therefore,

THE CITY OF EUGENE DOES ORDAIN AS FOLLOWS:

Section 1. Sections 6.250, 6.255, 6.260, 6.265, and 6.270 are hereby added to the Eugene Code, 1971, to provide:

Solid Fuel Space Heating Devices

6.250 Solid Fuel Space Heating Devices - Definitions. As used in sections 6.255 to 6.270, the following words and phrases mean:

City manager. City manager or designee, including, if the city manager so designates, LRAPA.

LRAPA. Lane Regional Air Pollution Authority, a regional air quality control authority established under the provisions of, and with authority and powers derived from, Oregon Revised Statutes 468.500 et seq.

Person. Any individual, partnership, corporation, association, governmental subdivision or public or private organization of any character.

Person in charge of property. An agent, occupant, lessee, tenant, contract purchaser, or other person having possession or control of property.

PM10. Solid or liquid particulate matter (excluding uncombined water) with an aerodynamic diameter less than or equal to 10 micrometers.

Sole source of heat. A solid fuel space heating device which constitutes the only source of heating in a private residence. A solid fuel space heating device shall not be considered to be the sole source of heat if the private residence is equipped with any permanently installed furnace or heating system utilizing oil, natural gas, electricity or propane.

Solid fuel space heating device. Any device designed or operated to burn solid fuel for the heating of the interior of a building, including, but not limited to, solid fuel burning stoves, fireplaces or woodstoves of any nature, combination fuel furnaces or boilers used for space heating which can burn solid fuel, and solid fuel burning cooking stoves. "Solid fuel space heating device" does not include natural gas fired artificial fireplaces.

Stage I red advisory. A 24-hour period beginning at 4:00 p.m. when PM10 levels are forecast by LRAPA to be greater than or equal to 125 micrograms per cubic meter but less than 150 micrograms per cubic meter within the Eugene-Springfield Metropolitan Area General Plan Urban Growth Boundary.

Stage II red advisory. A 24-hour period beginning at 4:00 p.m. when PM10 levels are forecast by LRAPA to be greater than or equal to 150 micrograms per cubic meter within the Eugene-Springfield Metropolitan Area General Plan Urban Growth Boundary.

Visible emissions. The reduction in transmission of light or the obscuring of the view of an object in the background caused by the air pollutants emitted by the heating device. This does not include the visual distortion caused by the heated air emitted by the heating device.

6.255 Solid Fuel Space Heating Devices - Prohibitions.

(1) No person in charge of property during a Stage I Red Advisory shall operate or allow to be operated a solid fuel space heating device which emits visible emissions into the air outside of the building housing the device.

(2) No person in charge of property during a Stage II Red Advisory shall operate or allow to be operated a solid fuel space heating device.

6.260 Solid Fuel Space Heating Devices - Exemptions. Notwithstanding section 6.255 of this code, a person in charge of property may operate a solid fuel space heating device during a Stage I or Stage II Red Advisory if that person has previously obtained one of the following exemptions from the city manager:

(a) Sole source of heat exemption. A person in charge of property who signs a sworn statement that their solid fuel space heating device is the sole source of heat for their residence. This exemption shall expire on July 1 of each year and must be renewed annually. This exemption shall not be issued after June 30, 1996.

(b) Economic need exemption. Persons in charge of property who satisfy criteria established under the Low Income Energy Assistance Program as administered by the Lane County Housing Authority and as established by the United States Department of Energy. This exemption shall expire on July 1 of each year and must be renewed annually thereafter.

6.265 Solid Fuel Space Heating Devices - Enforcement. In addition to, and not in lieu of any other enforcement mechanism authorized by this code, upon a determination that a person has violated section 6.255 of this code, the city manager may impose upon the violator and any other person in charge of the property, an administrative penalty not greater than $500, as provided by section 2.018 of this code. The city manager also is authorized to designate LRAPA to enforce and administer the provisions of sections 2.655 to 2.670 of this code, including LRAPA's use of administrative and hearing procedures adopted by LRAPA in its duly promulgated regulations.

6.270 Solid Fuel Space Heating Devices - Warnings. Violation of section 6.255 of this code prior to November 1, 1991 shall result only in a warning, and no penalty.

Section 2. On or before the first Council meeting in November, 1991, the City Manager shall provide the Council with a report that will enable the Council to review the performance under the provisions adopted herein.

Section 3. This Ordinance shall become effective on January 1, 1991.

Passed by the City Council this

5th day of November, 1990

City Recorder

Approved by the Mayor this

5th day of November, 1990

Mayor

ORDINANCE NO. 5546 (General)

AN ORDINANCE CONCERNING THE AIR QUALITY OF THE CITY; RESTRICTING THE USE OF SOLID FUEL SPACE HEATING DEVICES DURING AIR POLLUTION EPISODES; ESTABLISHING PENALTIES AND ADDING SECTION 4-8-4 TO THE SPRINGFIELD CITY CODE 1965.

The City Council of the City of Springfield finds that:

A. The health, safety and welfare of the citizens of Springfield are adversely affected by the degradation of air quality. Violations of federal ambient air standards, as measured by the Lane Regional Air Pollution Authority (LRAPA), occur periodically in Springfield.

B. Wood and other solid fuel combustion for space heating produces particulate matter and other emissions which are physically harmful and aesthetically unpleasant, and which contribute to the degradation of air quality and the violation of federal ambient air quality standards.

C. Periodic restriction of the use of solid fuel space heating devices will improve air quality. LRAPA has the expertise to determine when air quality is at such a level that such restriction is necessary to preserve the health, safety and welfare of the citizens of Springfield.

THE CITY OF SPRINGFIELD DOES ORDAIN AS FOLLOWS:

Section 1. Section 4-8-4 of the Springfield Code 1965 is added to provide:

4-8-4 Solid Fuel Space Heating Devices

(1) Definitions. As used herein, the following words and phrases shall mean:

(a) City Manager. City Manager or designee, including, if the city manager so designates, LRAPA.

(b) LRAPA. Lane Regional Air Pollution Authority, a regional air quality control authority established under the provisions of, and with authority and powers derived from, Oregon Revised Statutes 468.500 et seq.

(c) Pellet Stove. An enclosed solid fuel space heating device designed and operated to burn manufactured solid fuel and having an air-to-fuel ratio greater than 35-to-1 as determined by the federal test method described in 40 CFR Part 60.534.

(d) Person. Any individual, partnership, corporation, association, governmental subdivision or public or private organization of any character.

(e) Person in Charge of Property. An agent, occupant, lessee, tenant, contract purchaser or other person having possession or control of property.

(f) PM10. Solid or liquid particulate matter (excluding uncombined water) with an aerodynamic diameter less than or equal to 10 micrometers.

(g) Sole Source of Heat. One or more solid fuel burning devices which constitute the only source of heating in a private residence. No solid fuel burning devices shall be considered to be sole source of heat if the private residence is equipped with any permanently-installed furnace or heating system utilizing oil, natural gas, electricity, or propane.

(h) Solid Fuel Space Heating Device. Any device designed or operated to burn solid fuel for the heating of the interior of a building, including without limitation, solid fuel burning stoves, fireplaces, or woodstoves of any nature, combination fuel furnaces or boilers used for space heating which can burn solid fuel, and solid fuel burning cooking stoves. "Solid fuel burning device" does not include natural gas fired artificial fireplaces.

(i) Stage I Red Advisory. A 24 hour period beginning at 4:00 p.m. when PM10 levels are forecast by LRAPA to be greater than or equal to 125 micrograms per cubic meter but less than 150 micrograms per cubic meter within the Eugene/Springfield Metropolitan Area General Plan Urban Growth Boundary.

(j) Stage II Red advisory. A 24 hour period beginning at 4:00 p.m. when PM10 levels are forecast by LRAPA to be greater than or equal to 150 micrograms per cubic meter within the Eugene/Springfield Metropolitan Area General Plan Urban Growth Boundary.

(k) Visible Emissions. The reduction in transmission of light or the obscuring of the view of an object in the background caused by the air pollutants emitted by the heating device. This does not include the visual distortion caused by the heated air emitted by the heating device.

(2) PROHIBITIONS.

(a) Stage I Red Advisory. No person in charge of property during a Stage I Red Advisory shall operate or allow to be operated a solid fuel space heating device which emits visible emissions into the air outside of the building housing the device unless the person in charge of the property has been granted an exemption to use the device by LRAPA.

(b) Stage II Red Advisory. No person in charge of property during a Stage II Red Advisory shall operate or allow to be operated a solid fuel space heating device unless the person in charge of the property has been granted an exemption to use the device by LRAPA or unless the person is operating a pellet stove which emits no visible emissions into the air outside of the building housing the device.

(3) EXEMPTIONS. A person in charge of property may operate a solid fuel space heating device during a Stage I or Stage II Red Advisory if that person has previously obtained one of the following exemptions from LRAPA.

(a) Sole Source of Heat: A person in charge of property who signs a sworn statement that the solid fuel space heating device is the sole source of heat for that persons residence is exempt from Section 2 above. Individual exemptions shall expire on July 1 of each year and must be renewed annually. This exemption shall not be issued by LRAPA after June 30, 1996.

(b) Economic Need: Persons in charge of property who satisfy criteria established under the Low Income Energy Assistance Program as administered by the Springfield Utility Board and as established by the United States Department of Energy are exempt from the prohibitions established herein. Individual exemptions shall expire on July 1 of each year and must be renewed annually.

(4) ENFORCEMENT. LRAPA is hereby authorized and designated to enforce and administer the process of Section 4-8-4(2) through 4-8-4(5) of the code in accordance with LRAPA Title 14 "Rules of Practice and Procedures" adopted February 13, 1990.

(5) VIOLATIONS. Violations of section 4-8-4(2) through 4-8-4(5) shall be in accordance with applicable Oregon Revised Statutes and LRAPA title in "Rules of Practice and Procedures" adopted February 13, 1990.

(6) WARNINGS. Prior to November 1, 1991, violation of Section 4-8-4(2) of this code shall result only in a warning, and no penalty.

ADOPTED by the Common Council of the City of Springfield this 17th day of December, 1990 by a vote of 4 for and 1 against.

APPROVED by the Mayor this 17th day of December, 1990 .

Bill Morrisette
Mayor

ATTEST:
Gilbertson

REVIEWED & APPROVED
AS TO FORM
Joseph J Leahy
DATE: 12/10/90
OFFICE OF CITY ATTORNEY
CITY OF SPRINGFIELD

APPENDIX

I

HOME WOOD HEATING CURTAILMENT PROGRAM

APPENDIX I

HOME WOOD HEATING EMISSION REDUCTION PROGRAM

In order to reduce the emissions from home wood heating devices, the following program will be implemented in the Eugene-Springfield Urban Growth Area:

1. The Lane Regional Air Pollution Authority (LRAPA) will operate a voluntary emission curtailment program for home wood heating devices during the 1989-1990 and 1990-1991 heating seasons. The program will begin on November 1 and end on the last day in February for each season. The daily advisory will follow a four stage scenario as follows:

Green: Residents who burn wood are advised to use proper burning techniques to minimize smoke.

Yellow: Air Quality is deteriorating and weather conditions are such that wood burning would be curtailed. You are encouraged to exercise special care to minimize air pollution from woodstoves and fireplaces.

Red I: Air quality is approaching unhealthful levels. Residents are asked to stop wood burning unless you have no other source of heat or unless you are using an Oregon (EPA) certified woodstove or fireplace insert.

Red II: Due to unhealthful air quality, residents are asked to stop use of all wood heating appliances and fireplaces unless this is your only source of heat.

Setting these advisories will involve an evaluation of expected meteorological conditions and wood heating emissions. This effort will initially, of necessity, be subjective, based upon past experience with the program.

During the 1989-1990 season, the relative effectiveness of the voluntary program will be evaluated. This will be done through a series of area surveys estimating the relative number of wood burning devices being operated under the various program stages. By October 1, 1990, after a review of the survey results, any needed program changes to improve the effectiveness for the 1990-1991 season will be made. Additional area surveys will be performed during the 1990-1991 heating season.

2. By June 30, 1990, LRAPA will have developed a definition of seasoned wood.

3. By December 30, 1990, a voluntary certification program for fire wood dealers will have been implemented by LRAPA. This program will demonstrate the dealers knowledge and concern for selling seasoned wood and training the public on proper burning techniques.

4. By December 30, 1990, a public service announcement will have been developed in support of the emission curtailment program.

5. By June 30, 1991, an evaluation of the air quality for the previous two heating seasons will have been performed. If there were violations of the PM10 standard contributed to by home wood heating, then a mandatory home wood heating program will be implemented for the 1991-1992 heating season (which would begin on November 1, 1991). If no PM10 violations contributed to by home wood heating occur during the previous two heating seasons, then a re-evaluation of the home wood heating emission curtailment program will be performed using available data.

6. If a mandatory home wood heating emission curtailment program is implemented, it may have exemptions for specific household categories. The exemption program will be developed by LRAPA by December 30, 1990.

7. If a mandatory home wood heating emission curtailment program is implemented, it will be enforced by LRAPA. The enforcement will entail complaint response and patrols concentrated in areas of high wood burning device usage. This effort will be escalated as necessary to achieve needed emission reductions. A first offense will receive a warning citation with succeeding offenses subject to fines as follows: second offense, $25; third offense, $50; additional offenses, $100.

8. In conjunction with the implementation of a mandatory home wood heating curtailment program, the cities of Eugene, Springfield, and Lane County will institute a prohibition of the installation of non-certified (DEQ or EPA) woodstoves and fireplace inserts within the Urban Growth Area.

Proposed State Implementation Plan for Particulate Matter

Klamath Falls, Oregon Nonattainment Area

A Plan for Attaining and Maintaining the National Ambient Air Quality Standard for PM_{10}

State of Oregon
Department of Environmental Quality
Air Quality Division

January 1991

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Executive Summary

The US Environmental Protection Agency (EPA) adopted a new particulate National Ambient Air Quality Standard (NAAQS) for PM_{10} on July 1, 1987. PM_{10} particulate is less than 10 micrometers in aerodynamic diameter or about one-tenth of the diameter of a human hair. The NAAQS adopted by the US Environmental Protection Agency were established to protect public health and welfare. The Clean Air Act requires that states develop and adopt State Implementation Plan (SIP) revisions to assure that areas which exceed the PM_{10} NAAQS are brought into attainment within the time frames prescribed by the Clean Air Act (September, 1991). This document describes the State of Oregon's plan to attain the PM_{10} standard in Klamath Falls.

High exposure to particulate matter is of concern because of human health effects such as changes in lung functions and increased respiratory symptoms, aggravation of existing respiratory and cardiovascular disease, alteration in the body's defense system against foreign materials, damage to lung tissue, increased risk of cancer and, in extreme cases, premature death. Most sensitive to the effects of particulate matter are people with chronic obstructive pulmonary cardiovascular disease and those with influenza, asthmatics, the elderly, children and mouth-breathers.

Air quality measurements taken in Klamath Falls have indicated that the 24-hour PM_{10} health NAAQS was exceeded on average 47 days per year during the winter months during the period of mid-1986 to mid-1989. The annual average concentration of PM_{10} during the years 1986-1989 of 75 $\mu g/m^3$ also exceeds the annual average PM_{10} NAAQS of 50 $\mu g/m^3$.

The 24-hour PM_{10} NAAQS is 150 micrograms per cubic meter of air ($\mu g/m^3$), not to be exceeded more than three times averaged over three calendar years. Winter 24-hour concentrations of PM_{10} in Klamath Falls are among the highest recorded anywhere in the nation with maximum concentrations reaching as high as 792 $\mu g/m^3$ on January 25, 1988.

An inventory of PM_{10} emissions developed for the Klamath Falls Urban Growth Boundary indicates that the major sources of particulate emissions during 1986 winter periods of worst-case 24-hour PM_{10} concentrations are residential wood combustion (81%), industrial emissions (7 %) and soil dust (9 %). On an annual basis, these sources contribute 61 %, 10 % and 12 %, respectively. Emission inventory information representative of worst-case 24-hour conditions has been verified through receptor modeling techniques which actually measure source contributions to ambient air quality on the basis of their chemical "fingerprints".

Extensive air monitoring surveys have been completed which clearly demonstrate that the south suburban area of Klamath Falls, which comprises about 54 % of the population within the UGB, has the highest winter PM_{10} concentrations within the airshed. Based on these surveys, ambient air monitoring conducted at Peterson School have been shown to generally represent the highest PM_{10} levels within the Urban Growth Boundary. Development of a SIP which assures attainment and maintenance of the NAAQS at the Peterson School site should therefore be adequate to demonstrate attainment of the NAAQS anywhere within the airshed.

PM_{10} design values are those representative 24-hour worst case and annual average concentrations from which reductions must be made to achieve the NAAQS. Analysis of all of the available PM_{10} air quality data over the period of mid-1986 to mid-1989 (the largest available database) indicates 1986 24-hour and annual design values of 550 $\mu g/m^3$ and 75 $\mu g/m^3$, respectively. The design values adjusted for expected or potential emission changes during the 1986-1992 period are 592 $\mu g/m^3$ and 73 $\mu g/m^3$, respectively. Control strategies included in this plan have been designed to reduce projected 24-hour concentrations of PM_{10} by 442 $\mu g/m^3$ (592 - 150 $\mu g/m^3$) and the annual average by 23 $\mu g/m^3$ (73 - 50 $\mu g/m^3$). To achieve these 24 hour and annual average air quality improvements will require a 76 % reduction in 24 hour worst case day emissions and a 40 % reduction in annual emissions within the Urban Growth Boundary.

The control strategies needed to assure attainment of the PM_{10} National Ambient Air Quality Standards focus on control of residential wood combustion and road sanding emission. Other strategies includes stringent management of future growth in industrial emissions and restrictions on residential and forestry open burning.

Residential Wood Combustion Strategies

The principal means of achieving the needed reductions is through an effective wood burning curtailment and emission reduction programs. At least a 90 % reduction in wood smoke emissions is needed on poor ventilation days to attain the 24 hour NAAQS. This reduction will have to come from most of Klamath Falls' estimated 10,000 wood burning households which will have to forego use of their woodstoves during air stagnation episodes. Additional reductions throughout the heating season from the phase in of certified woodstoves will help achieve attainment of the annual standard. A strong public education program is an essential element of the strategy.

The strategy is implemented through the Klamath County Air Quality Compliance Development Plan and the Department's woodstove certification program. Another strategy element that will help assure maintenance of the NAAQS includes a county ordinance requiring certification that commercially sold firewood is

properly seasoned. Contingency strategies include financial assistance to low income households to upgrade their heating systems, enforcement of a wood smoke opacity limit and home weatherization programs to reduce wood heating requirements of poorly insulated homes.

Winter Road Sanding Strategies

A 60 % reduction in winter road sanding emissions through the use of liquid road deicing techniques in lieu of rock aggregate, application of less road sanding material and rapid cleanup of used road sanding aggregate will achieve fugitive dust emissions reductions needed to assure attainment of the annual standard. The road sanding strategy is implemented through a Memorandum of Understanding with the Oregon Department of Transportation Highway Division.

Other Strategies

Additional enforceable strategies include new rules designed to tightly manage industrial emission growth through reduction in the significant emission rate increase that triggers emission offset requirements. The significant emission rate was reduced from 15 to 5 tons per year. The rule was adopted to assure that industrial emission growth beyond the current Plant Site Emission Limits does not jeopardize emission reductions gained through other strategy elements.

Prohibitions on issuance of fire permits for residential, land clearing and agricultural open burning during winter woodstove curtailment periods are implemented through the State Fire Marshal's office and local Board of Fire Chiefs. Slash burning emission reductions included in the Oregon Visibility Protection Plan for Western Oregon of 50 % relative to 1978-79 emissions will be achieved by the year 2000, providing further assurance that background PM_{10} concentrations will not increase.

In addition, forestry slash burning impacts on the nonattainment area will be minimized through voluntary agreements among forest land managers. This program will help assure that forestry open burning does not adversely affect Klamath Falls air quality on winter wood heating curtailment days.

Strategy Emission Reduction - 24 Hour Worst Case Day

Attainment of the 24 hour NAAQS in 1992 will require a 76 % reduction in worst case day emissions equalling a reduction of 18,486 pounds per day. The needed reduction is achieved through the strategy elements listed below.

Summary of 24 Hour Emission Reductions
To Be Achieved by 1992

Strategy Element	Credit	Emission Reduction
New Road Deicing Practices	60 %	1,308 Pounds/Day
Wood Burning Strategies:		
- Wood Burning Curtailment	90%	17,171 Pounds/Day
- Certification of Woodstoves	20%	336 Pounds/Day
- Fuel Wood Certification	2%	27 Pounds/Day
Woodstove Strategies, Total		17,736 Pounds/Day

Total reduction from all strategies....19,044 Pounds/Day
Required emission reduction .....18,486 Pounds/Day

(Note: Because emission reductions are calculated on a declining balance basis, the product of percentage credits and total reduction (17,736 pounds/day) will not yield the individual element emission reductions shown. See Appendix 9)

No credits have been taken for the Klamath County public education programs.

Strategy Emission Reduction - Annual Average Case

Attainment of the annual average NAAQS in 1992 will require a 40 % reduction in annual emissions or a reduction of 756 tons per year. Although the entire needed emission reduction is achieved through the wood burning curtailment program, emission reductions obtained from the road deicing and other elements of the wood burning emission reduction programs are also included since they will occur as a result of implementing the 24 hour strategy. The needed reductions are achieved through the strategy elements listed below.

Summary of Annual Average Emission Reductions
To be Achieved by 1992

Strategy Element	Credit	Emission Reduction
New Road Deicing Practices	60 %	18 Tons/Year
Wood Burning Strategies:		
- Wood Burning Curtailment	74% *	756 Tons/Year
- Woodstove Certification	21%	48 Tons/Year
- Fuel Wood Certification	2%	4 Tons/Year
Woodstove Strategies, Total		808 Tons/Year

Total reduction from all strategies..... 826 Tons/Year *
Total required emission reduction..... 756 Tons/Year

* Note: On an annual basis, the wood burning curtailment program will result in a 18 % reduction in annual wood smoke emissions. This, however, is not reflective of annual air quality benefits of the program since the restricted ventilation during the curtailment periods compounds the benefits of the emission reductions. The effective or equivalent reduction is calculated based on a 90 % curtailment program operating on 47 days per year indicating a reduction of the annual average PM_{10} concentration from 75 to 50.2 $\mu g/m^3$. As a result, the wood burning curtailment program alone, implemented on 47 days per year, will provide sufficient benefits to assure that the annual NAAQS is achieved. Additional strategy elements are claimed as a result of reductions achieved through the 24 hour strategy. See Section 4.12.3.3.

Air Quality Standard Maintenance

During the eight year period following attainment of the NAAQS, a net decrease in emissions is projected to occur as a result of attainment strategies and the replacement of older conventional stoves with certified cord wood and pellet stoves, offsetting increases in fugitive dust and transportation emissions. Both the 24 hour and annual NAAQS are projected to be maintained to the year 2000 at which time worst case day and the annual average PM_{10} air quality is projected to be 134 and 48 $\mu g/m^3$, respectively.

Enforceability

The Clean Air Act requires SIP control strategies to be enforceable. Based on EPA guidance, a woodstove curtailment program requiring more than a 30 % credit must be based on enforceable measures in order for the SIP to be approved by EPA. Klamath County has developed a voluntary curtailment program with an objective of achieving a 20 % compliance rate in the 1988-89 heating season, 46-52 % compliance in the 1989-90 heating season and a 85-92 % compliance goal in the 1990-91 season. Based on infrared curtailment survey results, the actual compliance rate on days surveyed during the 1989-90 season was 45 %. Compliance on any single curtailment day varies from zero to 65 %. None of the survey have documented curtailment compliance rates approaching that required to attain the 24 hour NAAQS. As a result, the 24 hour NAAQS was exceeded on 39 days during the 1989-90 heating season.

(Note: The following text will be revised to described the Klamath County mandatory curtailment ordinance following its adoption)

A mandatory, enforceable wood burning curtailment ordinance will need to be adopted by the Klamath County Board of Commissions prior to the Environmental Quality Commission's adoption of this SIP revision in November, 1990. This requirement is based on the following:

- Public participation in the Klamath Falls voluntary curtailment program has not met the objective of the Klamath County program nor the level of curtailment compliance needed to achieve the 24 hour NAAQS. No other community in the country been able to continually demonstrate the 90 % compliance rate needed with voluntary curtailment programs;

- Other communities, most recently the Medford area, have nearly achieved the required level of curtailment compliance through mandatory curtailment programs;

- At the level of curtailment needed in Klamath Falls, EPA requires a mandatory, enforceable curtailment program.

A county ordinances requiring the commercial sale of seasoned firewood should also be adopted to help assure maintenance of the NAAQS to the year 2000.

The road deicing program is implemented through commitments provided by the Oregon Department of Transportation; residential open burning restrictions on curtailment days is implemented through the State Fire Marshall Fire Protection Statutes (ORS 478.960 (2)) and through agreements among the local fire districts. The Department's open burning rules (OAR 340-23-042(4)) are enforced by the Department. Restrictions to forestry slash burning are implemented and enforced through the Oregon Smoke Management Program (OAR 629-43-043).

Implementation of the above control strategies will assure that attainment of the PM_{10} NAAQS is achieved by September 1, 1991 and maintained through the year 2000.

4.12.0 State Implementation Plan for Klamath Falls PM_{10} Nonattainment Area

4.12.0.1 Introduction

On July 1, 1987, the Environmental Protection Agency promulgated new federal ambient air quality standards for particles less than or equal to 10 micrometers in aerodynamic diameter (PM_{10}) to replace the Total Suspended Particulate (TSP) standard[1]. The standard became effective 30 days later on July 31, 1987. On August 7, 1987, EPA classified Klamath Falls as a Group I PM_{10} nonattainment area (52 FR 29383). Group 1 areas are those which have a greater than 95 percent probability of exceeding the PM_{10} NAAQS. Subsequent air monitoring has shown that air quality within the Klamath Falls Urban Grown Boundary far exceeds the PM_{10} National Ambient Air Quality Standards (NAAQS).

Section 110 of the Federal Clean Air Act requires states to adopt and submit plans (State Implementation Plans or SIPs) to EPA within nine months after the effective date of the standard. The Clean Air Act allows EPA four months to approve or disapprove the plan. The plan must provide for attainment of the standard as expeditiously as practicable but no later than three years from the date of EPA approval of the SIP[2]. Hence, attainment theoretically must be reached by September 1, 1991.

The Air Quality Division of the Department of Environmental Quality has developed this plan in consultation with officials of the City and County of Klamath Falls, the Oregon Department of Transportation and the US EPA. The plan was prepared in accordance with the regulations and requirements of the Federal Clean Air Act and the US EPA. The Department believes that the PM_{10} plan can achieve attainment of the NAAQS within the time frame required by the Act.

4.12.0.2 SIP Overview

This revision to the State Implementation Plan (SIP) has five sections. The first (4.12.1) provides a description of PM_{10} ambient air quality in Klamath Falls; Section 4.12.2 describes the PM_{10} air quality problem within the Klamath Falls Nonattainment Area; Section 4.12.3 describes emission reductions needed to attain NAAQS; Section 4.12.4 describes implementation of the control strategies and Section 5 described public involvement.

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[1] A micrometer (μm) is a unit of length equal to about 1/25,000 of an inch. For comparison, the thickness of a human hair is about 100 to 200 micrometers.

[2] Clean Air Act Section 110 (a)(1).

4.12.0.3 Area Description

Klamath Falls is located in south central Oregon at an elevation of 4,105 feet. The area is typified by its semi-arid, high desert climate where annual rainfall is only 14.3 inches. The population of south suburban Klamath Falls within which the highest PM_{10} concentrations are found is about 19,300 (1980 census) while the population with in the Klamath Falls urban area is 36,500. About 13,600 households are located within the Urban Growth Boundary.

The Klamath basin is a relatively flat area of some several thousand square miles of old lake bed which is drained by the Klamath River. Upper Klamath Lake covers 132 square miles and has a surface elevation of 4140 ft above sea level. The Lower Klamath Lake area is a very large flat somewhat marshy region with an elevation of about 4100 ft above sea level. The region is punctuated by occasional hills and a system of elongated ridges aligned with a northwest-southeast orientation. These ridges may rise up to 2,000 ft above the basin floor. Two such ridges form a narrow opening at the out fall of Upper Klamath Lake.

The central business district of Klamath Falls is situated in this narrow opening at the southern end of Upper Klamath Lake where the elevation changes between the Upper and Lower Klamath Lake areas. Most of the Klamath Falls residential area, especially the south suburban area, is located on the lower elevation area. Thus it may be seen that the Klamath Falls area is confined by high terrain to the east and west. To the north is large expanse of Upper Klamath Lake and the flat terrain stretches for a number of miles to the south.

Figure 4.12.0-1 shows the boundaries of the Klamath Falls Urban Growth Boundary which was adopted as the nonattainment area boundary by the Environmental Quality Commission on June 2, 1989 (OAR 340-20-225 (22)). The criteria for selection of the UGB as the nonattainment area are as follows:

1. The nonattainment boundary must include the geographical area within which national ambient air quality standards are <u>currently</u> being exceeded. Air Sampling studies completed in November, 1985, March, 1988 and January, 1989 have consistently show that minor day-to-day variations in the pattern of PM_{10} levels exist depending on wind direction and the time of day of the survey. All surveys indicate a consistent pattern of maximum concentrations near Peterson School extending outward toward the downtown district, south toward Kingsley Field and westerly toward Green Springs Junction. The PM_{10} levels appear to follow local topography with concentrations decreasing with increases in elevation. They also appear to follow the emission density of homes (woodstoves) in the area..

2. The nonattainment boundary must include the area within which air standards may be exceeded in the future. EPA requires that SIP control strategies consider future population, transportation, housing and industrial growth to assure that air standards will be attained and maintained. Development of a strategy to assure maintenance of air standards therefore requires that the nonattainment area boundary be consistent with the regional planning boundary for which community growth projections are available.

3. The nonattainment area must be a legally defined boundary recognized by local governments. A legal definition is required for rule making purposes. Additionally, some component of the control strategy may need to be implemented through county land use planning ordinances tied to the Urban Growth Boundary.

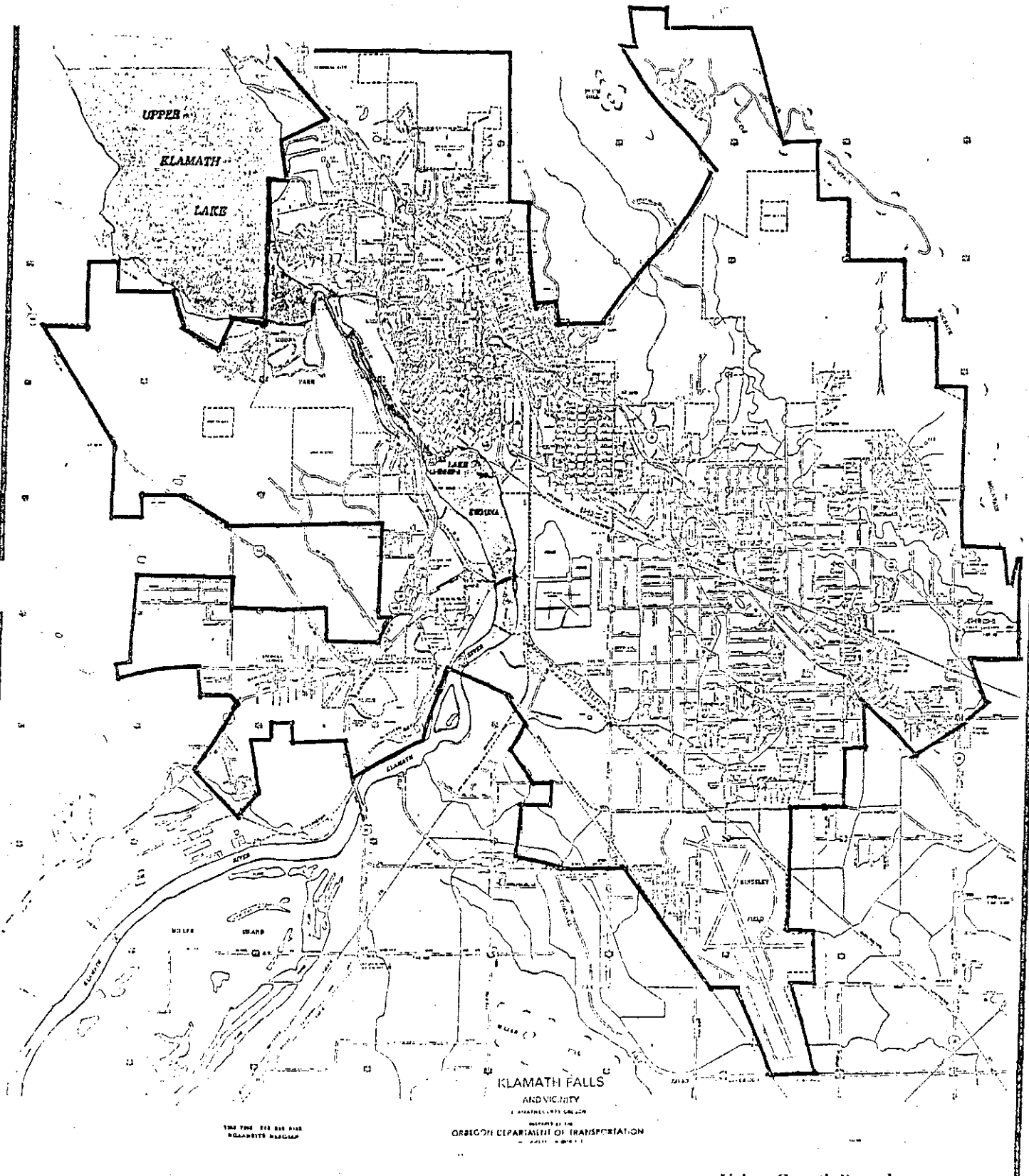
Designation of the Urban Growth Boundary as the nonattainment area is the only legally defined boundary that meets all of the above criteria (Note: a legal definition of the UGB will be needed prior to SIP adoption).

4.12.0.4 Klamath Falls Meteorology

Because of it's elevation, dry climate and low frequency of cloud cover, Klamath Falls experiences very strong and shallow night time winter radiation inversions which break up with day time solar heating. In winter time, frigid arctic air masses frequently invade the Klamath Basin. Temperatures can remain well below freezing for several weeks at a time. Upper Klamath Lake often freezes over and 6 to 10 inches or more of snow may cover the ground.

Winter nights are commonly clear and cool in the Klamath Basin. Under these conditions, strong nocturnal radiation inversions occur as a result of the snow covered surface and frozen lake, creating extreme inversions over the south suburban area of Klamath Falls. These inversions are confined and maintained by the surrounding terrain. Inversions of as much as 10 °F have been observed within 60 ft of the surface, creating an impenetrable barrier to smoke from wood stoves and fireplaces. The highest smoke concentrations of any place in the State have been recorded in the Klamath Falls residential areas under these intense, shallow inversions.

Figure 4.12.0-1: Nonattainment Area Map



A-14

4.12.0.5 Health Effects of PM_{10} and Wood Smoke

Particulate matter measuring less than or equal to 10 micrometers is considered a risk to human health due to the body's inability to effectively filter out particles of this size. These particles deeply penetrate and become lodged in the alveolar regions of the respiratory system for days, weeks or even years where they trigger biochemical and morphological changes in the lungs[3].

For example, constriction of air passages (i.e., reduced air flow) occurs rapidly upon exposure to PM_{10}. Episodic and continuous exposure aggravates chronic respiratory diseases such as asthma, bronchitis, and emphysema which in turn restrict the lung's ability to transfer oxygen into the bloodstream. Traditionally, children, the elderly, and cigarette smokers are the most susceptible to lung dysfunctions and are therefore at greatest risk from PM_{10} exposure.[4] Episodic exposure can also cause changes in the activity of the lung's mucous secretions and accelerates the mucociliary action to sweep the particulates out of the lungs. This results in increased symptoms of cough, phlegm, and dyspnea (difficulty in breathing). Continuous exposure can inhibit this defense mechanism by introducing new particles into the lungs and redistributing those being swept out. This slows the clearance of the bronchial system thus increasing susceptibility to acute bacterial and viral infections.

The increased stress on the pulmonary system caused by PM_{10} exposure is usually tolerable for those with healthy respiratory systems, however, it can lead to irreversible or fatal damage in people already suffering from cardiopulmonary disease, typically children, the elderly, the ill, and cigarette smokers.[4] Another group that falls into the high risk category are people who breathe through their mouths.[4] This group includes a wide range of people from chronic mouth-breathers to anyone involved in outdoor exercise and heavy labor. During mouth-breathing, particulate matter is breathed more directly into the lungs since it bypasses the filtering systems of the nasal passages.

Among the sources of PM_{10} emissions, wood smoke is of particular concern in Klamath County because it accounts for a majority of the small particulate matter measured in the nonattainment area. A description of emission sources is found in

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[3]J. Koenig, T.V. Larson, P. Jenkins, D. Calvert, N. Maykut and W. Pierson, "Wood Smoke: Health Effects and Legislation," Health Effects of Woodsmoke, Northwest Center for Occupational Health and Safety, January 20, 1988.

[4]U.S. Environmental Protection Agency, Second Addendum to Air Quality Criteria for Particulate Matter and Sulfur Oxides (1982: Assessment of Newly Available Health Effects. EPA 600/8-86-020.

Section 4.12.2.2. These particles are less than 1 μm in diameter and remain suspended in the air for long periods of time. Because of their small size and their ability to remain airborne, they are easily inhaled and lodged in the alveolar region of the lungs. These particles can also act as carriers for toxic chemicals which are transported deep into the respiratory system. Some of these toxics are then absorbed into the bloodstream.

Wood smoke contains at least fourteen carcinogenic compounds including benzo(a)pyrene, benzo(a)anthracene, and other polycyclic organic materials.[5] Additionally, wood smoke contains several other hazardous compounds such as aldehydes, phenols, carbon monoxide and volatile organic vapors. These compounds can cause or contribute to illness ranging from neurological dysfunctions and headaches to lung cancer.3 Many of the components of wood smoke are also found in cigarette smoke and coke oven emissions and can affect the cilia in a similar manner making it difficult for the body to expel the particulate matter. Because wood smoke concentrations are highest in residential areas, a large segment of the population is routinely exposed to wood smoke pollution in the winter months. Additionally, it is those people who are most sensitive, children, the elderly, and the ill, who spend the most time in their homes, thereby increasing their risk [5].

4.12.1 Ambient Air Quality

Particulate ambient air quality monitoring for Total Suspended Particulate (TSP) began in Klamath Falls in November of 1969 at the Broad and Wall Street Fire Station. During the period of 1970 to 1986, annual average TSP concentrations averaged 66 $\mu g/m^3$ with maximum 24 hour TSP concentrations (which have occurred exclusively within the winter months) reaching 295 $\mu g/m^3$ in 1973. While these levels were over the TSP NAAQS, it was thought that rural fugitive dust (considered uncontrollable and not a health hazard by EPA) was the principal contributing source. To determine those areas that had a high probability of exceeding the PM_{10} NAAQS, the US Environmental Protection Agency completed an analysis of historical Klamath Falls TSP data. The results of the analysis indicated a better than 95% probability that Klamath Falls PM_{10} levels would exceed the NAAQS. Based on these findings, EPA classified Klamath Falls as a Group I area. EPA regulations requires that daily PM_{10} air quality monitoring must be conducted in all Group I areas.

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[5]P.G. Jenkins, Washington Wood Smoke: Emissions, Impacts and Reduction Strategies, Washington Department of Ecology, Olympia, Washington. December, 1986.

PM_{10} air quality monitoring began in November, 1985 following completion of an area-wide survey designed to characterize the spacial distribution of PM_{10} concentrations[6]. Results from the study demonstrated that the Broad and Wall Street monitoring site was not representative of the highest levels of PM_{10} in the airshed and that levels recorded at the Peterson School site in south suburban Klamath Falls better represented worst case levels within the area. The PM_{10} concentration contours shown in Figure 4.12.1-1 were developed from the survey. The Figure also shows the location of the Peterson School site. A review of the area encompassed by the 150 $\mu g/m^3$ (the 24-hour NAAQS) contour shows that it best approximates the Urban Growth Boundary.

In February of 1987, monitoring at the Broad and Wall Street site was discontinued. PM_{10} monitoring at the Peterson School site began in February, 1986. Additional PM_{10} data was gathered during the November 1988 to April, 1989 period at Sixth and Hope Streets as additional verification of the extent of the high levels measured in the south suburban area.

In March of 1988 and February, 1989, the Department conducted evening mobile nephelometer surveys to further verify the spacial distribution of PM_{10} concentrations. Figure 4.12.1-1 shows a typical distribution of concentrations measured during these surveys. Although the distributions of particulate mass vary slightly from day to day depending on wind directions and mixing height, the surveys are basically consistent with the findings of the February, 1985 particulate survey that identified the Peterson School area as the location of the highest concentrations. The surveys also provide evidence that the major sources of PM_{10} are found within the residential area of south suburban Klamath Falls where the wood stove emission density is greatest.

4.12.1.1 Air Monitoring Methods

Several sampling methods have been used to measure PM_{10} concentrations in Klamath Falls:

Integrating Nephelometer measurements of light scattering (a surrogate for PM_{10}) have been conducted during the winter months of highest PM_{10} concentrations at the Peterson School site. This method provides hourly light scattering averages which are highly correlated to PM_{10} concentrations measured using the high volume samplers equipped with size selective inlets (HV-SSI).

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[6]Special Study Report: Klamath Falls Particulate Survey. Report 87-7. Program Planning & Development Section, Air Quality Division, State of Oregon Department of Environmental Quality. June, 1987.

The PM_{10} Medium-Vol. sampler collects PM_{10} aerosol using a 12 port, 47 mm filter sequencing system that is programmed to collect 24-hour samples. The sampler pulls ambient air at a 4 CFM flow rate through a 10 μm Sierra-Anderson 254 inlet providing a PM_{10} cut point. A dual-port system capable simultaneously collecting aerosol on both Teflon and quartz filter substrate is used to allow complete chemical analysis for Chemical Mass Balance receptor modeling purposes. Because of the excellent agreement between PM_{10} concentrations measured by the Medium-Vol and the HV-SSI reference method, EPA has designated the Medium-Vol sampler as an acceptable equivalent method.

The PM_{10} High Volume Size Selective Inlet (HV-SSI) is a High Volume air sampler equipped with a Sierra-Anderson SA321A, SA321B or SA1200 PM_{10} cut-point inlet. This method has been designated by EPA as a reference method to be used to judge attainment with the NAAQS. Sampling occurs every 6th day.

The High Volume air sampler collects samples of Total Suspended Particulate (TSP). The method uses pre-weighted 8" X 10" filters through which air is drawn at 50 CFM over a 24 hour period. Because these samplers are not equipped with a size selective inlet, the upper limit of particle size captured on the filter may reach 100 μm. Prior to EPA's adoption of the PM_{10} NAAQS, this method was the standard reference method for measurement of airborne particulate matter at the Broad & Wall Street site but has now been discontinued.

All of the data discussed herein was collected at the Peterson School site in south suburban Klamath Falls. Table 4.12.1-1 lists monitoring data collection periods by measurement method.

Table 4.12.1-1: Data Collection Periods by Method
Peterson School

Measurement Method	Began	Terminated
Integrating Nephelometer (Light Scattering or Bscat)	Jan. 30, 1985	Apr. 24, 1986
	Jan. 23, 1986	Apr. 15, 1986
	Oct. 23, 1986	Apr. 7, 1987
	Nov. 3, 1987	Apr. 20, 1988
	Nov. 1, 1988	Current
PM_{10} Medium-Vol.(MV) * (Daily Sampling)	Jan. 2, 1987	Apr. 3, 1987
	Nov. 30, 1987	Current
PM_{10} HV-SSI (SSI) (Every 6th Day)	Jan. 3, 1987	Current
High-Volume TSP (TSP)	Jan. 24, 1986	Oct. 6, 1987

* Both Teflon and Quartz filter substrate are used.

4.12.1.2 PM_{10} Air Quality in Klamath Falls

Figure 4.12.1-2 illustrates the hourly and seasonal variations in PM_{10} concentrations in Klamath Falls. As seen in the Figure, the highest 24-hour concentrations occur during the winter space heating season when PM_{10} concentrations have reached levels as high as 792 $\mu g/m^3$. This exceeds the EPA Significant Harm level (the level at which an imminent and substantial risk to public health exists) of 600 $\mu g/m^3$. Peak 24-hour concentrations decrease dramatically during the spring months and reach a low of about 50 $\mu g/m^3$ during the summer months. Concentrations then raise again in the fall months as woodstove use increases and atmospheric dispersion decreases.

Review of PM_{10} Concentrations

The four highest concentrations of PM_{10} mass measured in Klamath Falls during the past 3 years are listed in Table 4.12.1-2, below.

Table 4.12.1-2: PM_{10} Maximum Concentrations, 24 hour Averages

	$\mu g/m^3$	Date	Method
Highest Value	792	880125	Medium-Vol.
Second High	723	880203	SA321B HV-SSI
Third High	507	880122	SA321B HV-SSI
Fourth High	502	890120	Nephelometer Est.

Table 4.12.1-3 summarizes PM_{10} monitoring data for the mid-1986 to mid-1989 period over which the design values were calculated. Appendix 1 contains a tabulation of daily PM_{10} concentrations over the period of July 1, 1986 to June 30, 1989.

Table 4.12.1-3: Summary PM_{10} Data
($\mu g/m^3$)

	All Data	1986*	1987	1988	1989+
No. Days Sampled	1191	343	365	303	180
Arithmetic Mean **	--	77	73	71	---
Maximum Value	792 (880125)		330	792	502
Second High	723 (880203)		298	723	482
No.Days > 150	134	40	38	29	27

* For period January 23 to December 31, 1986.
+ For period January 1 to June 30, 1989.
** Annual average values computed as prescribed in 40CFR52 Appendix K.

Hourly Variability

Hourly variations in PM_{10} levels on worst-case winter days can be seen in the diurnal variations of light scattering measurements from the Peterson School site (Figure 4.12.1-2). Particulate concentrations begin increasing from a mid-day low, peak during the 11 PM to 1 AM period and then steadily decrease until 8-9 AM at which time the levels again reach mid-day concentrations. The early morning peak at 6 AM is believed to be associated with early morning wood stove start up by Klamath Falls residents.

Worst Case Day Characteristics

During the mid-1986 to mid-1989 period, the 24 hour NAAQS was exceeded an average of 47 days per year, exclusively during the months of late October to April. During these periods, residential wood heating reaches it's peak and atmospheric dispersion is at it's poorest. Worst case winter days typically have daily average temperatures of 10 ^{o}F (55 degree heating days), snow cover, intense, extremely shallow temperature inversions as low as 50 feet and extended periods of calm winds. These conditions occur during periods when snow producing storm systems are followed by stable high pressure systems. The spacial distribution of PM_{10} concentrations during worst case day conditions is shown in Figure 4.12.1-1 [7].

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[7] J.E. Core, "Distribution of PM_{10} Within the Klamath Falls Nonattainment Area: Mobil Nephelometer Surveys of January, 1989," State of Oregon Department of Environmental Quality, Air Quality Division. Report 89-1. February, 1989.

Impacts from Sources External to the Urban Growth Boundry

The largest industrial sources within Klamath County located outside of the UGB is the Weyerhauser plant which emits a total of 631 tons of PM_{10} per year, largely from hog fuel boilers used to generate steam for the plant. In spite of the magnitude of these emissions and the proximity of the plant to the Urban Growth Boundry, the Department does not believe that emissions from the plant have a significant impact on the nonattainment area. This is based on findings from two field measurement programs and receptor modeling analysis.

The spatial distribution of PM_{10} levels measured during the mobil nephelometer surveys of January, 1989 indicated that concentration fell as the distance from the plant increased. These findings were confirmed by the saturation survey conducted in the Fall of 1985. If the plant had a major impact on the nonattainment area, concentrations should have increased as the distance from the plant decreased.

Receptor modeling analysis of source impacts at the Peterson School site confirm that hog fuel boiler impacts are small. This is based on studies indicating that the Chemical Mass Balance receptor model is able to quantify hog fuel boiler impacts at levels of 2 $\mu g/m^3$ or greater impact with relative uncertainties of +- 20 %.[8]

These findings are consistent with the hypothesis that emissions from Weyerhauser's hog fuel boiler are emitted, on worst case winter days, above the very shallow inversions that form within the Klamath Basin. As a result, their ground level impacts would be expected to be small.

Background Air Quality

PM_{10} aerosols from sources external to the UGB collectively contribute to background air quality or the concentration of PM_{10} in the air mass as it is transported into the Klamath Falls Basin. The closest background monitoring site is located in the Quartz Creek Valley (elevation 5,390 ft) at the Quartz Mountain Gold Project 50 miles east of Klamath Falls [9].

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[8] Pacific Northwest Source Profile Library: Volume 2 Final Project Report. J. Core, Editor. Department of Environmental Quality. September, 1989.

[9] Quartz Mountain Gold Project Environmental Impact Statement. Prepared for the Fremont National Forest by Air Sciences, Inc. Lakewood, Colorado. February, 1989.

The Quartz Mountain data was collected by a Air Sciences, Inc. of Lakewood, Colorado under contract to the Quartz Mountain mining project. The data was collected pursuant to Federal EIS requirements imposed by the US Forest Service, Bly District. The data was collected persuant to standard EPA quality assurance requirements.

The Quartz Mountain background data during worst case winter days is representative of the Klamath Falls UGB for the following reasons:

1. The site is located in a remote area not influenced by sources within the Klamath Falls UGB yet not located at such distance that it would clearly not be representative of the regional air mass. Even if the site were located at the edge of the Growth Boundry, little change in the data would be expected because of the fact that lands immediately beyond the UGB are sparcely inhabited and largely of a wilderness nature.

2. A worst case winter day background of 7 $\mu g/m^3$ is reasonable considering that the Quartz Mountain site is above the very shallow mixing height found in the nonattainment area, that snow cover eliminates windblown fugitive dust emissions and that there are no wildfires or slash burning emissions during the winter months. It is common to encounter long range visibility conditions at elevations of only a few hundred feet above the basin floor where the highest PM_{10} concentrations are found.

On an annual basis, there is little differences between the background levels at Medford's Dodge Road site (12 $\mu g/m^3$) and Quartz Mountain (13 $\mu g/m^3$), supporting the Department's belief that neither site are being unduly impacted by nearby sources; that the annual distribution of the data is not being unduly bias by high winter worst case concentrations and that both sites are representative of regional background.

PM_{10} monitoring at the Quartz Mountain site was based on GMW 2310 samplers with GMW 321-B inlets was conducted during the November, 1987 to November, 1988 period (108 observations) on a 6th day schedule. The annual arithmetic average was 12 $\mu g/m^3$ while the worst case winter (November-March) observation was 7 $\mu g/m^3$. The maximum observed value (86 $\mu g/m^3$) occurred on September 4th, 1988 when several forest fires were active in the area. The sources contributing to background PM_{10} concentrations are regional and global in nature.

The Quartz Mountain background air quality values used in the annual and 24 hour winter worst case control strategy calculations are 15 $\mu g/^3$ annual arithmetic average and 7 $\mu g/m^3$ 24 hour average, respectively.

Aerosol Chemistry

Chemically, Klamath Falls winter-season PM_{10} aerosol is composed of organic carbon (37%), elemental carbon or soot (6%), crustal elements (5%), other trace elements (2%) and secondary sulfate and nitrates (3%). The balance is associated oxygen, hydrogen, water and ammonium. While the winter season aerosol is chemically very similar to the composition of woodsmoke with small amounts of soil elements, the composition of the aerosol during the summer months is quite different and is largely composed of crustal elements (Al,Si,Ca and Fe). Lead concentrations are very low, averaging 0.1 $\mu g/m^3$, 24-hour average. The aerosol composition cannot be used to directly infer source contributions.

4.12.2 Nonattainment Area Analysis

This section describes the Department's analysis of PM_{10} air quality in Klamath Falls as it related to the National Ambient Air Quality Standards. Source contributions to the airshed's PM_{10} air quality are discussed both in terms of emission strengths and source contributions to air quality as measured at the Peterson School site.

4.12.2.1 Design Values Determination

Attainment of the annual NAAQS requires that a control strategy be adopted which will reduce ambient concentrations from the 1992 design value to below the NAAQS; specifically that the expected number of exceedances of the 24-hour NAAQS not exceed 150 $\mu g/m^3$ more than once per year averaged over three years.

The EPA PM_{10} Development Guidelines specify that the preferred approach for estimating a design value is through the use of an applicable dispersion model corroborated by receptor models.[10] If there is no applicable dispersion model and at least one complete year of PM_{10} data is available, then the PM_{10} data should be used to estimate the design value. This is the case for Klamath Falls.

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[10] PM_{10} SIP Development Guidelines. US Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, N.C. June, 1987. EPA-450/2-86-001.

EPA specifies that the annual design value should be calculated as arithmetic average of 3 years of PM_{10} monitoring data and that the 24-hour design concentration should be estimated using the empirical frequency distribution for the largest available data base. Both the annual and 24-hour design concentrations must then be adjusted to compensate for emission changes that will occur as a result of emission growth and control strategy affects likely to occur by 1992, the year in which attainment must be demonstrated.

The current design values are based on PM_{10} data collected between mid-1986 and mid-1989. The information used to calculate design values is a composite of data collected over the year using a number of different PM_{10} measurement methods in accordance with agreements reached with EPA Region X staff in December, 1989. As a result, a hierarchy of daily measurements has been used to build a composite data set. Reference method Medium-Vol. samples were selected first. Where these measurements were not available, reference method SSI data was used. If neither were available, non-reference method Medium Vol. data was used and if none of the above data was available, non-reference SSI data adjusted to a Medium-Vol. sampler equivalent value was used. If only integrating nephelometer scattering coefficient measurements were available, they were adjusted to medium-vol. equivalent values. This approach (1) greatly expands the database available for analysis; (2) provides a design value that is consistent with the measurement method that the Department will be using to determine NAAQS attainment and (3) assures that future receptor modeling analysis of PM_{10} source contributions are consistent with control strategy design considerations. This approach is described further in Appendix 2.

Table 4.12.2-1: Design Values Summary

24-Hour Design Value, Graphical Procedure	550 $\mu g/m^3$
Annual Design Value	75 $\mu g/m^3$

4.12.2.2 Emission Inventory

Introduction

Emission inventories provide information on the relative strength of sources within an airshed and provide a basis for control strategy evaluation. In addition, emission inventories provide a basis for tracking emission reductions and growth. PM_{10} emissions (usually expressed in tons of particulate per year or TPY) are calculated from emission factors and source activity records. Emission factors are the weight of pollutant emitted per unit weight of material processed such as grams of PM_{10} emitted per pound of cord wood burned; pounds of road dust emitted per vehicle mile driven or pounds of particulate emitted per unit area

of plywood veneer processed. Emission factors used in this analysis are principally from the Environmental Protection Agency's compilation of emission factors AP-42.[11]

Source activity information on the amount of cord wood burned by residents, vehicle miles driven or veneer production volumes are obtained from a variety of sources including industrial air contaminant discharge permits, public mail surveys and data gathered from other government agencies.

Estimation of seasonal or worst-case day PM_{10} emissions requires development a of source operating schedule which describes the percent of annual emission that occur during specific seasons, months or 24-hour periods.

Base Year Emission Inventory

PM_{10} emissions for the 1986 base year within the Urban Growth Boundary (UGB) were estimated for industrial sources, residential heating (gas, oil and wood), commercial space heating, residential open burning, agricultural field burning, paved and unpaved roads, construction and agricultural dust as well as transportation sources (cars,trucks railroads and aircraft). The basis of the emission estimates for the most significant sources are described below:

Industrial Sources: 189 TPY PM_{10}. These emissions are principally from the wood products industry wood-fired boilers and material handling. Twelve point sources, principally wood products, are included in the inventory. The largest source emits 100 tons per year of PM_{10}. The 1986 annual emissions are those that actually occurred during the year.

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[11] Compilation of Emission Factors, U.S. Environmental Protection Agency AP-42 Fourth Edition and subsequent supplements. US EPA Office of Air Quality Planning and Standards. Research Triangle Park, N.C. 27711.

Figure 4.12.1-1: Klamath Falls PM_{10} Distribution

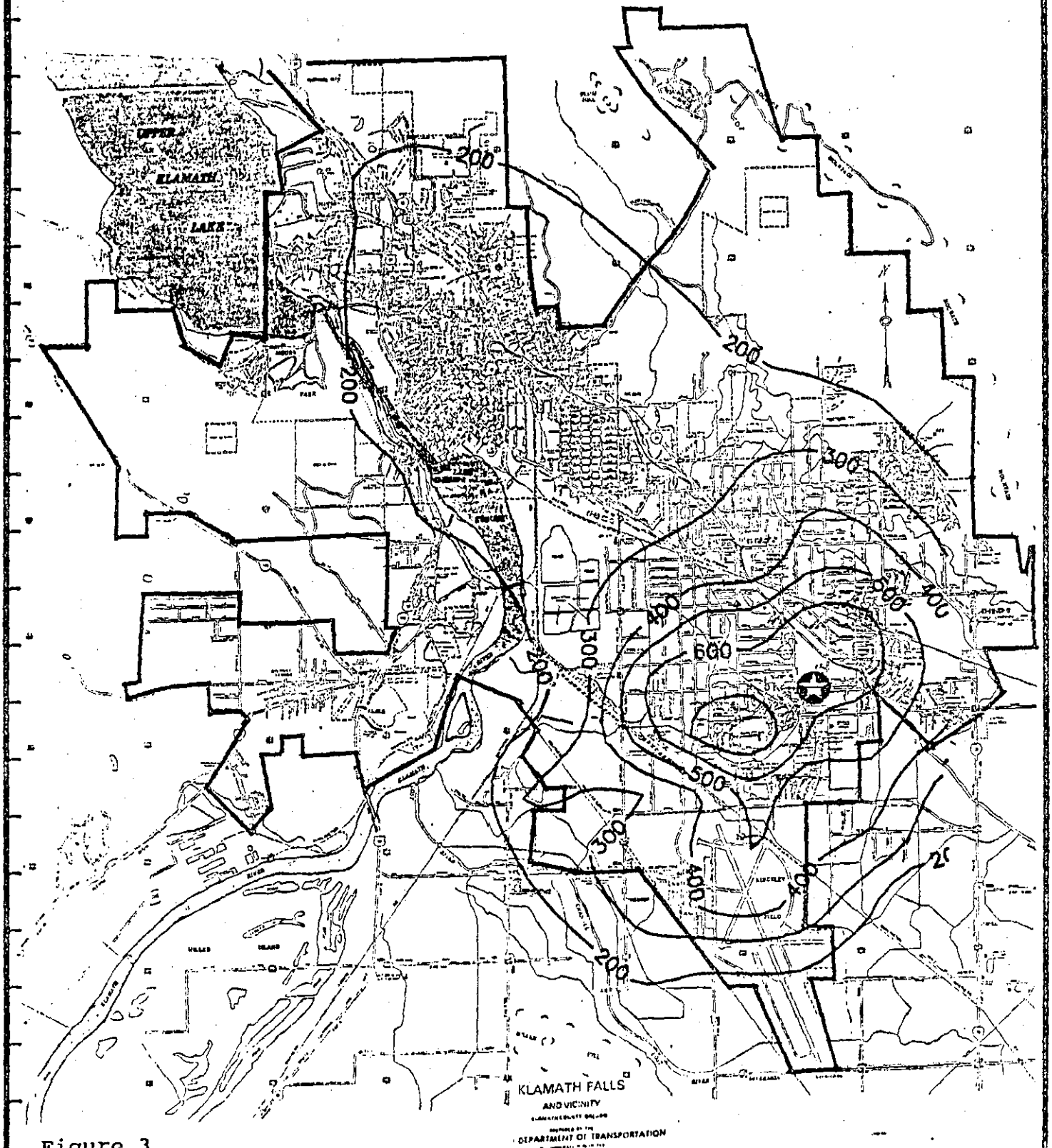


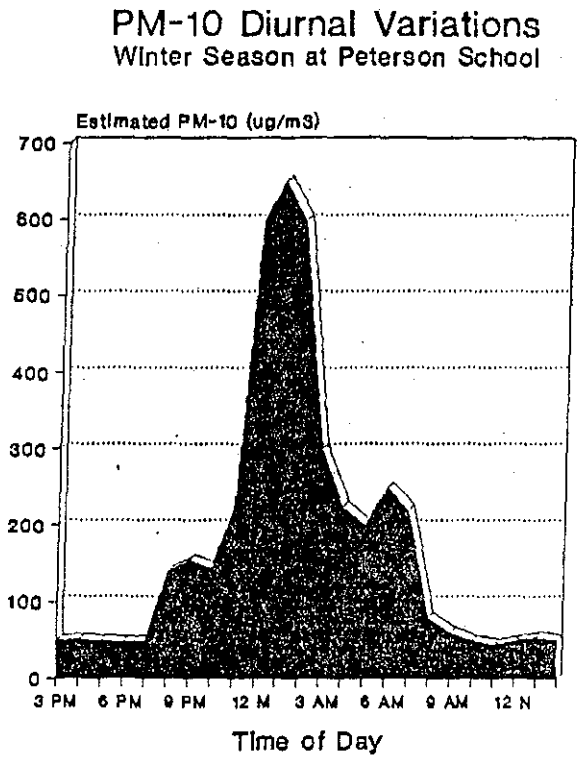
Figure 3

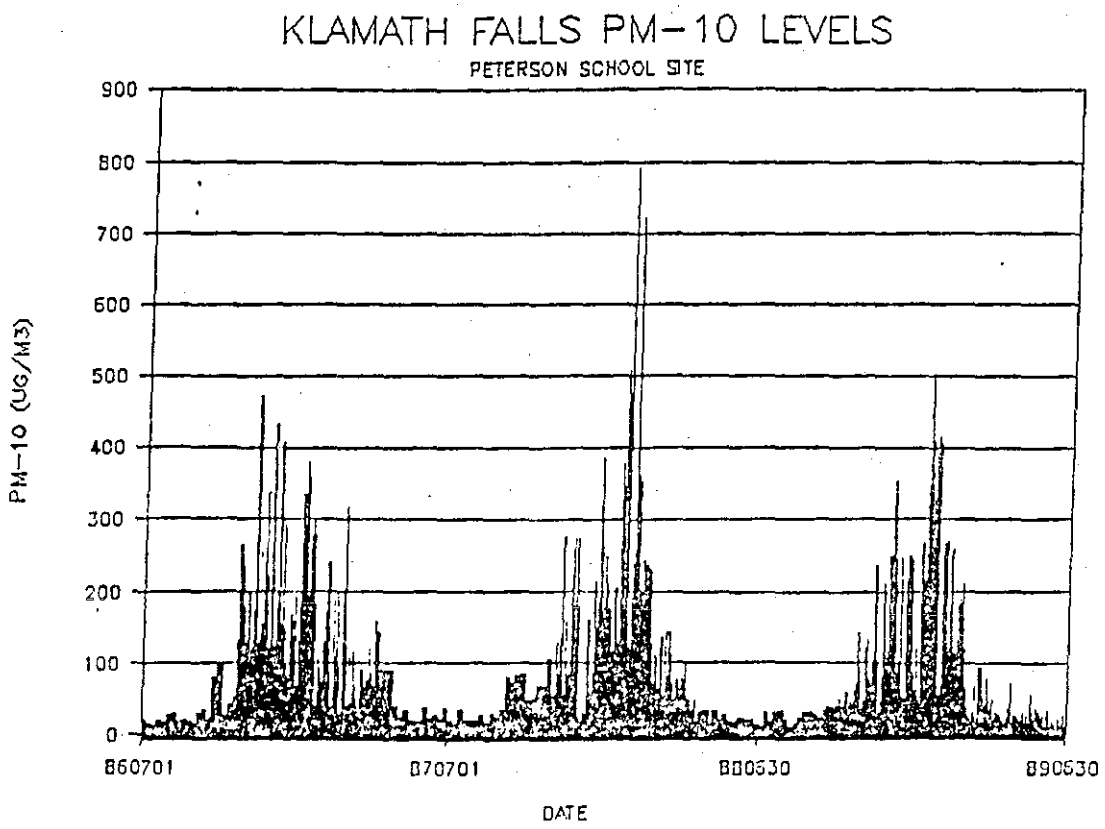
Klamath Falls Nephelometer Survey
January 25, 1989 at 7 AM
($\mu g/m^3$ PM_{10}, 5 Minute Averages)

Urban Growth Boundary

Peterson School A-26

Figure 4.12.1-2: Diurnal & Seasonal Variations in PM_{10} Levels





Residential Wood Heating: 1,202 TPY PM_{10}. Information obtained from the Department's 1987 wood heating survey[12] and the County of Klamath Falls indicates that 13,600[13] single family housing units are located within the UGB and that 73% of the housing units use wood burning devices. Approximately 75% of the devices are woodstoves while the remainder are fireplaces. The survey indicates that, on average, residents burn 4.1 cords/year of firewood in their woodstoves and 2.7 cords/year in fireplaces. At 39.9 pounds of PM_{10} emitted per ton of wood burned in a woodstove, 1,076 tons of PM_{10} are emitted per year. Fireplace emissions at 26.6 pounds per ton of wood burned total 126 TPY for a total 1202 tons per year.

Based on the survey, about 12% of the woodstoves are DEQ-certified models. Forty six percent of those surveyed indicated that wood was the main source of heat in their home. Wood is the only source of heat in 4-5% of Klamath Falls homes.

Backyard and Agricultural Burning: 172 TPY PM_{10}. Approximately 3,380 tons of backyard debris is burned each year generating 26 TPY of PM_{10}. This estimate assumes that 183 pounds of combustible material (principally yard debris) is burned per person each year during the months of March through November. Each ton of debris burned is assumed to emit 15.3 pounds of PM_{10} particulate. Although (for purposes of the emission inventory) no backyard burning is assumed to occur during the months of December through February, local observations have confirmed that some burning is occurring on woodstove curtailment days. Agricultural burning also occurs within the UGB and, in early November, 1989 was occurring during wood heating curtailment periods. Agricultural Extension Service estimates that about 30% of the 8,000 acres of cereal grain fields within the UGB are burned annually. Assuming 3.8 tons of straw per acre, approximately 146 TPY of PM_{10} would be generated by this source during the late summer and early fall. Other agricultural burning is know to occur outside of the UGB, but no reliable information is available to estimate emissions.

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[12] Oregon Wood Heating Survey for 1987: Klamath Falls Area. State of Oregon Department of Environmental Quality, Air Quality Division. February, 1987.

[13] Klamath County Planning Department Correspondence of May 4, 1990.

Fugitive Dust Emissions: 230 TPY PM_{10}. The principal sources of dust within the UGB on an annual basis are paved and unpaved road dust (112 and 53 TPY, respectively) and emissions from winter road sanding (27 TPY). Paved and unpaved road dust estimates are based on a 1985 estimate of 414,800 vehicles miles per day and an assumed PM_{10}/TSP ratio of 24 %. There are 127 miles of dirt road and 68 miles of gravel road within the UGB.

Transportation Sources: 131 TPY PM_{10}. Highway vehicles (autos and trucks) emit 97 TPY PM_{10} in tailpipe and tire wear particulate; off highway vehicles 12 TPY and railroad diesel engines, 19 TPY. Aircraft emissions are 3 TPY.

Table 4.12.2-2 and Figure 4.12.2-1 summarize annual PM_{10} emissions within the UGB.

Table 4.12.2-2: 1986 UGB Annual Emission Inventory

Source	Tons/Year PM_{10}	Percent
Industry	189	10 %
Residential Wood Burning	1200	62 %
Commercial Space Heating	3	0 %
Solid Waste Disposal	174	9 %
Fugitive Dust	230	12 %
Transportation	131	7 %
Other Sources	9	0 %
Totals	1936	100 %

24-Hour Worst Case Day Inventory

Development of an inventory representative of emissions during 24 hour periods when PM_{10} ambient air concentrations reach their highest levels is important to understanding the sources that cause winter season episodes. The relative proportion of emissions during these periods is expected to be quite different than those reflected in the annual emission inventory because some sources (such as agricultural burning) are not active while others (such as residential wood heating) are much stronger.

The 24-hour worst case inventory for the UGB is based on the following information and assumptions:

Industrial and Transportation Source. The 1986 worst case day industrial emissions are based on 1986 annual emissions increased by the ratio of the 1992 daily Plant

Site Emission Limit (PSEL) (pounds/hour PSEL over 24 hours) to the 1992 annual PSEL emissions.

Residential Wood Burning emissions are assumed to be proportional to the coolness of the weather as reflected in the degree heating days statistic tabulated by the National Weather Service. During the period of October, 1986 to October, 1987, the coldest day (January 9, 1986) had 47 degree heating days. Since the total degree heating days for this period was 6,109, this represents 0.76 % of the annual total or 9.2 tons of PM_{10} emission.

Winter Road Sanding emissions peak during periods when several inches of snow covers the area. During these periods, as much as 70 cubic yards per day of aggregate are spread on roads within the UGB. Because snow covers the roadways and landscape, essentially all of the fugitive dust emissions are assumed to originate from road sanding. Chemical analysis of PM_{10} samples collected on days exceeding the 24-hour NAAQS indicated that 9 % of the PM_{10} mass was soil dust. Road sanding emission were therefore estimated to be of similar magnitude in the inventory or about 2,000 lbs/day during the 27 days per year when road sanding occurs. The worst case day emission estimates provide the basis for the annual emission estimate for road sanding.

As noted, road sanding emissions were based on chemical mass balance analysis of PM_{10} samples, not on the basis of emission factors. This was done for several reasons:

(1) the CMB model can very accurately apportion soil dust impacts on actual worst case days. Even with the best possible emission factors, estimates of fugitive emissions are highly uncertain;

(2) Paved road dust emission factors are not appropriate since road surfaces are covered with packed snow;

(3) Initial calculations of emissions assuming unpaved road dust emission factors and the silt content of the aggregate used in road samding resulted in unrealistic emission estimates far greater that the sum of all other air shed sources.

New information on winter road sanding emissions will be used to confirm the CMB derived estimate as it becomes available.

Table 4.12.2-3: 24-Hour Worst Case Emission Inventory 1986 Base Year Period.

Source	Tons PM_{10}	Percent
Industry	0.75	6.6 %
Residential Wood Burning	9.2	80.7 %
Commercial Space Heating	0.03	0.2 %
Fugitive Dust	1.0	8.8 %
Transportation	0.4	3.4 %
Other Sources	0.03	0.3 %
Totals	11.4	100 %

Appendix 3 provides a detailed annual and worst case 24-hour emission inventory listing.

Growth Factors

PM_{10} emission growth factors are used to estimate future year emission inventories and source category impacts. Key indicators used to estimate emissions in 1992 include population growth, increases in transportation (vehicle miles traveled) and Plant Site Emission Limits (PSELs) for industrial sources.

Transportation Growth, estimated at 1.5 % per year is used to estimate increases in vehicular and road dust emissions.[14]

Population Growth data indicates that the number of people living within the Klamath Falls Urban Growth Boundary will increase by 1.1 % per year from 37,000 to 39,500 by the year 1992.[15] Population growth is used to proportionally increase residential open burning emission and woodstove use. The population growth rate used herein is consistent with those used by the Klamath County Planning Department.

Woodburning Emission Growth from wood stoves is expected to increase by 1 % per year (6 % total) by the year 1992 as a result of an increased amount of firewood burned and fireplace emissions are expected to decrease by 2 % per year. The one percent growth rate is based on energy projections and fuel cost modeling performed to estimate future woodburning emission growth in the

[14]State of Oregon Department of Transportation Highway Division Planning Section estimate. February 22, 1989.

[15] Klamath Basin Wastewater Facilities Plan Update for the North Suburban Area of the City of Klamath Falls, Klamath County, Oregon. June, 1987.

Pacific Northwest. [16] These projections do not account for emission reductions that will occur as a result of woodstove certification programs as these reductions are explicitly accounted for in the Section 4.12.3.2, Evaluation of Potential Control Measures.

Industrial Emission Growth has been projected to increase to the maximum permitted within their current Plant Site Emission Limits (PSELs). The 24-hour worst case growth factor is calculated as the increase from the 1986 actual hourly emissions to their hourly maximum PSEL emission rate over a 24 hour period.

Projected Emissions, 1986 to 1992

The 1986 annual and 24-hour emission and design value estimates must be adjusted to account for emission growth or decreases that may occur within the airshed during the six year period of 1986-1992. Estimates are based on the emission growth factors described above. The information presented in Table 4.12.2-4 provides a basis for the future year source impact estimates (Section 4.12.3.1) which, in turn, provided the basis for the control strategy analysis.

Table 4.12.2-4: 1992 Estimated Emissions

	-Annual- 1992		-24-Hr Worst Case- 1992	
Source Category	Tons	%	Tons	%
Industry	265	13 %	1.1	9 %
Residential Wood Burning	1028	55 %	9.5	78 %
Fugitive Dust	211	10 %	1.1	9 %
Solid Waste Disposal	185	10 %	0.0	0 %
Transportation	141	8 %	0.4	3 %
Other	59	4 %	0.1	1 %
Totals	1888	100 %	12.2	100 %

Projected Emissions Beyond 1992

Analysis of the ability of the attainment strategies to maintain the NAAQS during the period 1992 to the year 2000 requires development of a third set of emission estimates. The growth rates assumed for the maintenance analysis are based on the 1992 inventory adjusted to reflect the attainment strategy emission reductions:

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[16] U.S. Environmental Protection Agency, Region X "Residential Wood Combustion Study, Task 3, Fuel Wood Use Projections", EPA 910/9-82-089 (1984).

- Population growth rate of 1.1% per year to residential oil, gas and wood combustion emissions; solid waste incineration emissions and structural fires;

- Transportation growth rate of 1.5 % per year to transportation sources and paved, unpaved and construction dust as well as street sanding emissions;

- Industrial emissions are held constant at the annual and 24 hour PSEL emission rates shown in the 1992 emission inventory;

The projected residential wood combustion emissions, following application of a 1.1 % per year growth rate, were adjusted to reflect emission reduction credits associated with the woodstove certification program. Information from the Klamath County Building Department indicates that approximately 100% of the new woodstoves being installed in new construction homes are certified and 20 % of these are pellet stoves.[17] Additional information from manufacturers suggests that certified pellet stoves sales should expand to a larger share of the market in future years. This may be, in part, supported by the fact that pellet stoves owners have not been asked to curtail burning during cord wood stove curtailment periods.[18] Therefore, during the period 1992 to 1996, it is assumed that 80 % of newly installed stoves are cord wood and 20 % are pellet stoves. During the period 1996 to 2000, it is assumed that 50 % are cord wood and 50% are pellet stoves.

Actual and projected annual emissions during 1992 to the year 2000 are tabulated in Table 4.12.2-5. Projected 24 Hour Worst Case emissions are summarized in Table 4.12.2-6. Figure 4.12.2-2 shows changes in emission inventories during the period 1986 to the year 2000. The year 2000 annual and 24 hour projected emissions were reduced from 1986 levels by 888 tons per year and 17,400 pounds per day, respectively, through the implementation of mandatory curtailment; the woodstove certification program, fuel wood certification and road deicing programs.

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[17] Correspondence from Klamath County Building Department of February 14, 1990.

[18] Personal communications with the Chairman, Association of Pellet Fuel Industries, Sparks, Nevada. February 22, 1990.

Table 4.12.2-5: 1992 to Year 2000 Annual Emissions
Tons Per Year

Source Category	1992	1994	1996	1998	2000
Industry	264	264	264	264	264
Residential Wood Burning	220	212	201	189	177
Fugitive Dust	192	197	204	209	215
Solid Waste Disposal	185	166	166	167	167
Transportation	141	144	147	151	155
Other	59	62	65	67	71
Totals	1062	1045	1046	1047	1049

Table 4.12.2-6: 1992 to Year 2000 24 Hour Worst Case Emissions
Pounds Per Day

Source Category	1992	1994	1996	1998	2000
Industry	2246	2246	2246	2246	2246
Residential Wood Burning	1344	1290	1174	1103	1045
Fugitive Dust	875	898	925	953	981
Solid Waste Disposal	0	0	0	0	0
Transportation	832	853	875	898	921
Other	130	133	136	139	142
Totals	5425	5418	5350	5330	5322

4.12.2.3 Source Contributions to PM_{10}

Development of strategies designed to attain and maintain the PM_{10} NAAQS requires an accurate knowledge of contributions that sources make to the measured PM_{10} aerosol mass. Two approaches are commonly used to estimate source contributions (1) atmospheric dispersion modeling and (2) receptor model analysis based on the properties of the aerosol measured at the receptor.

The Environmental Protection Agency PM_{10} SIP Development Guidelines Section 4.4 describes procedures to be used by the states for using receptor models to estimate source contributions to PM_{10} concentrations. These guidelines support the use of receptor models as an important element of the SIP strategy development process. Receptor modeling (specifically Chemical Mass Balance or CMB) is especially appropriate in Klamath Falls where severe air stagnation and complex terrain conditions likely make dispersion modeling inappropriate. The specific application of the

CMB Receptor Model to PM_{10} source apportionment in Oregon's Group 1 areas is described elsewhere.[19]

Chemical Mass Balance (CMB) is a form of receptor modeling based upon regression analysis of aerosol features such as trace element concentrations. The model attempts to find the most likely combination of source contribution estimates (SCE's) by minimizing the difference between the measured and model-predicted concentration of aerosol features. Values for the ambient aerosol matrix are obtained through chemical analysis of PM_{10} filters taken at the Peterson School sites while the source "fingerprint" values are obtained through analysis of stack emissions. The CMB modeling protocol applied follows EPA guidance.[20] All of the CMB modelling has been conducted using EPA's Version 7.0 CMB program.[21]

Ambient Aerosol & Source Emission Analysis

Thirty eight PM_{10} samples from the Peterson School site have been chemically analyzed for CMB analysis. Fourteen of the samples exceeded 150 $\mu g/m^3$, all of which were collected during the winter months. The highest sample analyzed was 417 $\mu g/m^3$ on January 19, 1989. Chemical characterization of the samples includes 19 trace elements analyzed by x-ray fluorescence, 3 anions and elemental/organic carbon, providing a data set that is compatible with the source emission profiles. Analytical uncertainties for each values are routinely reported and included in the CMB calculations.

PM_{10} source profiles representing all major emission groups within the airshed were used in the modeling. All of the profiles were obtained from the Pacific Northwest Source Profile Project.[22] A list of the sources included in the analysis is presented below:

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[19] PM_{10} Receptor Modeling for Oregon's Group I Areas: Medford, Grants Pass and Klamath Falls. State of Oregon Department of Environmental Quality, Air Quality Division. February, 1990.

[20] Protocol for Reconciling Differences Among Receptor and Dispersion Models. US EPA 450/4-87-008. March, 1987.

[21] Receptor Model Technical Series, Volume III (Revised): CMB User's Manual (Version 6.0) US EPA 450/4-83-014R. May, 1987.

[22] Pacific Northwest Source Profile Library Project, Final Report Prepared by the State of Oregon Department of Environmental Quality, Air Quality Division. J. Core, Ed. September, 1989.

Table 4.12.2-7: Source Profiles

No.	Acronym	Description
1	KFSOIL	Resuspended soil dust from Klamath Falls
2	SLASH	Forestry slash broadcast burning (Also may be vegetative burning such as yard debris)
3	RWC MED	Residential wood combustion profile for Medford
4	LD AUTO	Light duty autos (leaded gasoline)
5	HOGFUEL	Hogfuel boiler burning plywood trim in the fuel
6	WOOD	Wood fiber including sander dust
7	HDDIESEL	Diesel exhaust (Fed. Test Cycle)
8	SECSO4	Secondary sulfate estimated as ammonium sulfate
9	SECNO3	Secondary nitrate estimated as ammonium nitrate
10	SECNH4	Secondary Ammonium ion
11	SALT	Road salt applied during the winter months
12	CONST	Construction dust - Medford Aerosol Study
13	VENEER	Steam heated veneer drier emissions

Receptor Model Source Contribution Estimates

24 Hour Exceedance Days

Table 4.12.2-8 is a summary of the source contribution obtained for the 14 samples that exceeded the 24 hour NAAQS. All samples were collected during the winter months. Figure 4.12.2-3 illustrates the results in graphical form.

Table 4.12.2-8: Average Winter Exceedance Day PM_{10} Source Contribution Estimates

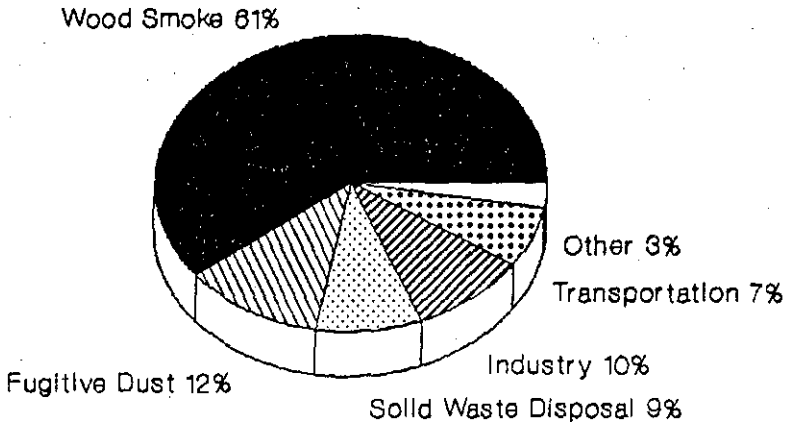
Source	PM_{10} ($\mu g/m^3$)	% PM_{10}
Soil Dust	27.4	10.9 %
Wood Smoke	219.0	82.0 %
Transportation	0.2	0.1 %
Sec. Aerosol	10.7	3.2 %
Others	11.7	4.3 %
	269 $\mu g/m^3$	100 %

Other sources noted in Table 4.12.2-8 include water associated with the aerosol; minor contributions and uncertainties in the apportionment. Studies recently conducted in Los Angeles suggest that as much as 7 % of the PM_{10} mass is water.[23]

[23] S. Witz, R. Eden, C. Liu and M. Wadley,"Water Content of Collected Aerosols in the Los Angeles Basin," Presented at the Pacific Conference on Chemistry and Spectroscopy, Irvine, CA. October, 1987.

Figure 4.12.2-1: Klamath Falls PM_{10} Emission Inventories

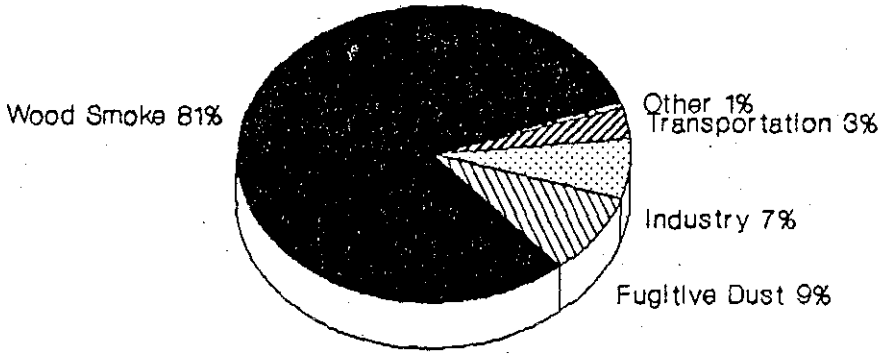
Klamath Falls Nonattainment Area
Annual Emission Inventory



PM-10 Emissions

Calendar Year 1986

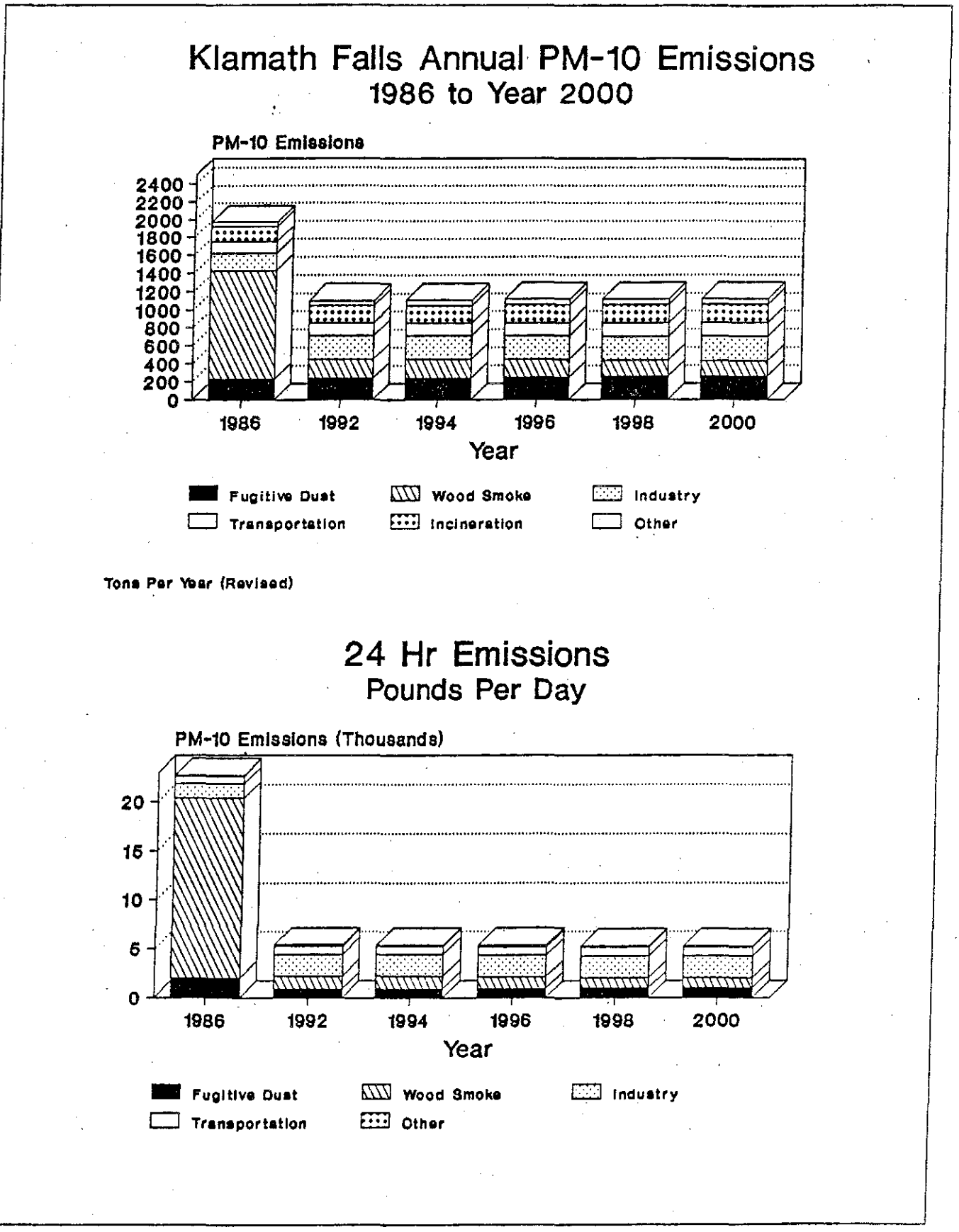
Klamath Falls Nonattainment Area
Worst Case Day Emission Inventory



PM-10 Emissions

Based on 1986 Emissions

Figure 4.12.2-2: 1986 to 2000 Emission Projections



No contribution from hogged fuel boilers was detected on these exceedance days. US EPA Chemical Mass Balance guidance specifies that the apportionment should account for at least 80 % of the measured aerosol mass. Ninety-six percent of the mass has been apportioned in the above table. Average source contribution uncertainties (relative percent of mass) are 18 % for wood smoke, 11 % for hog fuel boilers and 8 % for soil dust.

Annual Average Contributions

The annual average source contribution estimates noted in Table 4.12.2-9 were estimated from CMB analysis of PM_{10} samples with mass loadings that approximate monthly average mass loadings. No data was available for September or November. The average mass loading of the analyzed filters is 77 $\mu g/m^3$ as compared to an actual annual arithmetic mean of 75 $\mu g/m^3$. Since the source contributions shown are based on a limited number of samples, the annual averages shown are only approximations of the true annual source contributions.

Table 4.12.2-9: Annual Average PM_{10} SCE's

Source	PM_{10} ($\mu g/m^3$)	% PM_{10}
Soil Dust	12.9	17.0 %
Wood Smoke	55.4	72.9 %
Industry	0.9	1.1 %
Burning *	1.4	1.8 %
Transportation	0.1	0.1 %
Sec. Aerosol	1.5	1.9 %
Others	3.8	5.0 %
	76 $\mu g/m^3$	100 %

* Burning includes slash and field burning, land clearing and residential open burning.

Multiple Linear Regression Analysis

A second receptor modeling method of apportioning source contributions is multiple linear regression wherein the source contributions are estimated from variability in the aerosol chemistry. The MLR analysis was completed to determine the degree to which PM_{10} mass concentrations could be predicted from the aerosol chemistry and as a second independent check on the CMB source apportionment. Based on 49 observations, 90 % (R-Sq = 0.95) of the PM_{10} mass variability can be accounted for on the basis of the aluminum (a tracer for soil dust), sulfate (a secondary aerosol) and organic and elemental carbon (from wood burning). The relative standard errors for the coefficients are 53%, 45%, 5% and 40%, respectively. The results indicating that the PM_{10} mass can

reasonably be estimated from organic carbon measurements. The regression equation is:

$$PM_{10}\ (\mu g/m^3) = 7.3(Al) + 6.4(SO_4) + 1.9(OC) + 1.0(EC) + 26$$

Source apportionment based on MLR analysis indicate that on typical winter days exceeding the 24-hour NAAQS 5.3 % of the mass is soil dust, 7.7 % is sulfate and 67 % is wood smoke. These findings support the emission inventory and receptor modeling conclusions that soil dust and woodburning are significant contributors to Klamath Falls PM_{10} levels during winter 24-hour worst case episodes. Since industrial emissions cannot be identified by any single aerosol component, industry contributions cannot be reliably estimated using this approach.

Analysis of Impacts by Source Categories

Receptor modeling of samples collected on days exceeding the NAAQS clearly show that residential wood smoke is the predominant source; that wood smoke varies from 69 % to nearly all of the PM_{10} mass and that these impacts are consistent with the aerosol chemistry observed within the airshed. These finding are also generally consistent with diurnal and seasonal variations in Klamath Falls PM_{10} concentrations (Figure 4.12.1-2).

Comparisons between emission inventory and receptor modeling results has been used to provide a qualitative assessment of the relative significance of source categories. The source contribution estimates by these two methods for the winter 24-hour worst case and annual average periods are shown in Tables 4.12.2-11 and -12. They illustrate the generally close agreement between the source categories. The wood products industry contributions as estimated by emission inventory are higher than that estimated by receptor modeling because dispersion of the emissions is not considered. Transportation emissions are also somewhat higher than indicated by receptor modeling.

Background PM_{10} Air Quality

Annual average background PM_{10} air quality being transported into the Klamath Basin is estimated to be similar to background levels at the Medford Dodge Road monitoring site, about 15 $\mu g/m^3$ (see Section 4.12.1.2). This is similar to annual average background of 12 $\mu g/m^3$ measured at the Quartz Mountain PM_{10} site southeast of Klamath Falls. The 24-hour average exceedance day background of 7 $\mu g/m^3$ apportionment is based on the percentage contributions found at the Peterson School site with very low PM_{10} concentrations (11 $\mu g/m^3$) likely to reflect background sources.

Table 4.12.2-10: Background PM_{10} Source Contributions

Source	Annual Ave. PM_{10} ($\mu g/m^3$)		24-Hr Ave. Exceedance Day	
Soil Dust	4.6	30.6 %	4.3	62 %
Industry	0.7	4.5 %	0.0	0 %
Wood Smoke	7.2	48.0 %	1.9	27 %
Sec. Aerosol	1.4	9.3 %	0.6	8 %
Others	1.0	6.6 %	0.2	3 %
	15 $\mu g/m^3$		7 $\mu g/m^3$	

Estimation of "Local" Air Quality Impacts

Estimation of the impact of emission sources within the UGB requires that background components listed in Table 4.12.2-10 be subtracted from the source contributions listed in Table 4.12.2-8 and 9. The difference between these two sets of estimates is the contribution of "local" sources identified in the emission inventories. Table 4.12.2-11 and 12 lists the "local" source contribution estimates (SCEs) to PM_{10} mass average winter days which exceed the NAAQS and annual PM_{10} mass loading, respectively.

Table 4.12.2-11: Average Exceedance Day "Local" PM_{10} SCE's

Source	PM_{10} ($\mu g/m^3$)	% PM_{10}	Emission Inventory
Soil Dust	23.1	8.8 %	9 %
Industry	0.0	0.0 %	7 %
Wood Smoke	217.1	82.8 %	81 %
Sec. Aerosol	10.1	3.8 %	----
Others	11.5	4.3 %	3 %
	262 $\mu g/m^3$	100 %	100 %

Table 4.12.2-12: Annual Average "Local" PM_{10} SCE's

Source	PM_{10} ($\mu g/m^3$)	% PM_{10}	Emission Inventory
Soil Dust	8.3	13.6 %	10 %
Industry	0.9	1.4 %	10 %
Wood Smoke	48.2	79.0 %	71 % **
Burning *	1.4	2.2 %	-----
Sec. Aerosol	0.1	0.1 %	-----
Transportation	0.1	0.1 %	7 %
Others	2.0	3.2 %	2 %
	61 $\mu g/m^3$	100 %	100 %

Table 4.12.2-12 Notes:

* Includes smoke from open burning occurring outside of the winter space heating season.

** Includes residential wood burning and solid waste disposal open burning.

The above analysis demonstrates that the 1986 emission inventory and receptor modeling analysis results are reasonably comparable. The validated emission inventories support the use of the 1992 emission inventory projection as the basis for the emission rollback calculations used in the attainment demonstration.

4.12.3 Emission Reduction Analysis

This section describes the emission reductions necessary to attain the NAAQS (4.12.3.1), a review of potential control measures that may be applied in Klamath Falls (4.12.3.2) and an assessment of the adequacy of the control measures to attain the NAAQS within the time limits specified by Section 110 (a) of the Clean Air Act (4.12.3.3).

4.12.3.1 Emission Reduction Necessary for Attainment

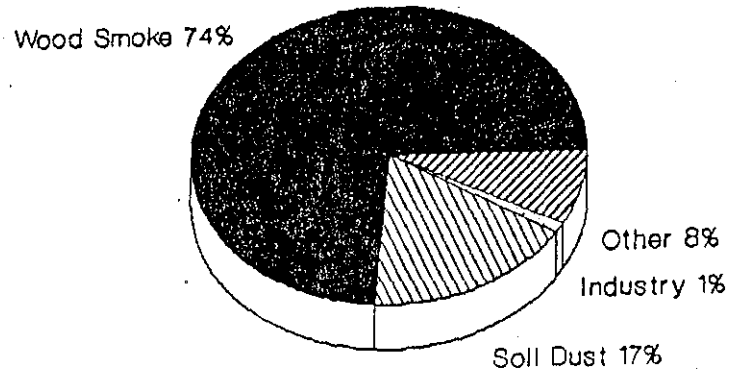
The EPA PM_{10} SIP Development Guidelines specify that a proportioning method should be used to estimate the control strategy requirements of the SIP. In the analysis below, the contribution of emission sources to the 1992 design values have been apportioned based on the 1992 annual and 24-hour worst case emission inventory estimates. Emission growth rates between 1986 and 1992 were first applied to each emission inventory source category. The sum of the 1992 source impacts plus background provide the 1992 24-hour worst case design value. A similar approach is taken to estimate 1992 annual emission reduction requirements.

Projected 24-Hour Source Impacts in Future Years

Table 4.12.3-1 lists 1992 source contribution estimates for the 24-hour worst case scenario. Source contributions at the 1992 design level were apportioned using the 1986 24-hour worst case day emission inventory percentages applied to the "local" PM_{10} air quality level of 543 $\mu g/m^3$ (550 $\mu g/m^3$ design value less the 7 $\mu g/m^3$ background).

Figure 4.12.2-3: Klamath Falls PM_{10} Source Contributions

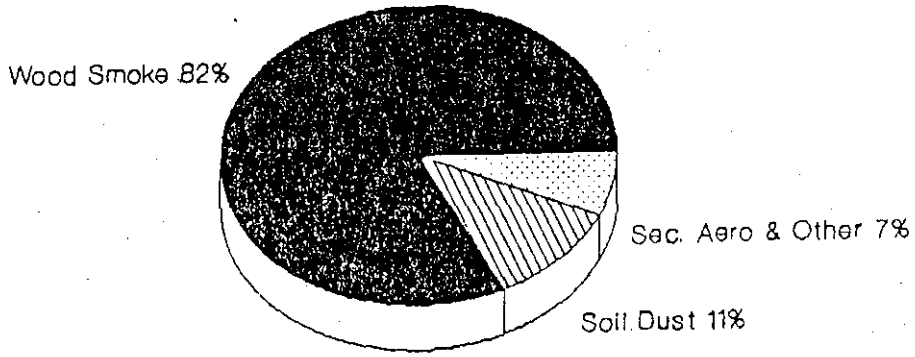
Klamath Falls Annual Source Impacts
Chemical Mass Balance Estimates



Peterson School

Dec. 1987 - Jan. 1989

Klamath Falls PM-10
Typical Winter Worst Case Day



Peterson School

(Samples Greater Than 150 Ug/m3)

Table 4.12.3-1: Projected Future Source Category Impacts (24-Hr Worst Case)

Source	1986 Worst Day EI	"Local" Design ($\mu g/m^3$)	1986-92 Growth (%)	1992 $\mu g/m^3$	1992 % "Local" PM_{10}
Wood Stoves	72 %	392	6.0 %	416	70.2 %
Fireplaces	9 %	46	-12.0 %	40	6.8 %
Industry	7 %	36	49.6 %	54	9.1 %
Fugitive Dust	9 %	48	9.0 %	52	8.8 %
Transportation	3 %	18	8.3 %	20	3.3 %
Other Sources	1 %	3	6.6 %	3	0.5 %
Subtotals		543		585 $\mu g/m^3$	
Background				7 $\mu g/m^3$	
Total				592 $\mu g/m^3$	

Air quality improvement needed = 442 $\mu g/m^3$ (592-150 $\mu g/m^3$) or a 75.5 % (442/593) reduction in worst case day emissions equivalent to 18,486 pounds per day.

The control strategy must be comprised of a mix of individual source reduction measures such that the sum of the reductions equal or exceed the total reduction requirement. Adopted control strategies must be shown through a demonstration of attainment (Section 4.12.3.3) to attain and maintain the NAAQS by reducing emissions such that an overall reduction in PM_{10} 24 hour worst case concentrations is at least 442 $\mu g/m^3$.

Projected Annual Source Impacts in 1992

Table 4.12.3-2 lists 1992 source contribution estimates for the annual scenario. Source contributions at the 1992 annual design level were apportioned using the 1992 annual emission inventory percentages applied to the "local" PM_{10} air quality level of 60 $\mu g/m^3$ (75 $\mu g/m^3$ design value less the 15 $\mu g/m^3$ background).

Table 4.12.3-2: Projected Annual Source Category Impacts

Source	1986 Annual EI	"Local" Design ($\mu g/m^3$)	1986-92 Annual Growth	1992 Annual $\mu g/m^3$	1992 % "Local" PM_{10}
Wood Stoves	55 %	33	-15 %	28	48 %
Fireplaces	6 %	4	-11 %	4	7 %
Industry	10 %	6	41 %	8	14 %
Fugitive Dust	10 %	6	4 %	6	10 %
Transportation	7 %	4	8 %	4	7 %
Open Burning	9 %	5	7 %	6	10 %
Other Sources	3 %	2	9 %	2	3 %
Sub Totals		60		58 $\mu g/m^3$	
Background				15 $\mu g/m^3$	
Total				73 $\mu g/m^3$	

Air quality improvement needed = 23 $\mu g/m^3$ (73-50 $\mu g/m^3$) or a 40 % (23/66) reduction in 1992 annual emissions. This is equivalent to a reduction of 756 tons per year.

4.12.3.2 Evaluation of Potential Control Measures

The PM_{10} control strategy for the Klamath Falls UGB focus on residential wood burning and winter road sanding fugitive emission dust control measures. Public education programs and on-going restrictions on open burning, forest slash burning emissions reductions and management of industrial point source emission growth are supplemental elements of the attainment strategy.

PM_{10} Control Strategy Elements

The following control strategy elements have been set in place to assure attainment of the annual and 24-hour PM_{10} NAAQS. Emission reduction credits associated with each element are listed and discussed. A PM_{10} emission reduction credit is a measure of the reduction in PM_{10} emissions that would be accomplished through adoption and implementation of the program element. The strategy elements and credits are further described in Section 4.12.3.3.

Table 4.12.3-3 PM_{10} Control Strategies Elements

Element	Strategy	Emission Reduction Credits by 1992 24-Hr.	Annual
Attainment Strategies (Required)			
1	Woodstove Certification Program	20 %	20 %
2	Woodstove Curtailment Programs	90 %	74 % *
3	Fuel Wood Certification Program	2 %	2 %
4	New Road Deicing Controls	60 %	60 %
5	Public Education Programs	No Credit Taken	
6	Industrial Significant Emission Rate Offset Restrictions	No Credit Taken	
7	Forestry Slash Burning Emission Reductions & Restrictions	No Credit Taken	

* Equivalent Emission Reduction Credit - See Text

Residential Wood Smoke Control Elements

There are two basic approaches to reducing woodsmoke from stoves and fireplaces: (1) improving the performance of the wood heating systems such as through a certified woodstove program; and (2) burning less wood through woodstove curtailment programs. Some strategies have multiple advantages. Certified woodstoves, for example, improve emission performance by reducing the amount of woodsmoke per cord of wood burned while improving energy efficiency, thus reducing the amount of wood burned. Other examples are well designed public information, energy conservation, or firewood seasoning programs that result in better combustion (lower emissions) and better energy efficiency (less fuel burned). The key elements of the residential wood smoke control program are described below.

The Woodstove Certification Program

In 1983, the Oregon Legislature directed the Department to require that all new woodstoves sold in the state be laboratory tested for emissions and efficiency to assure compliance with established woodstove emission standards. As a result, stoves sold after July, 1986 were required to emit 50% less emissions than conventional woodstoves. After July 1988 new woodstoves were required to emit 70% less emissions.

Subsequent to the adoption of Oregon's emission standards, the Environmental Protection Agency adopted a slightly more restrictive national certification program which will become effective in July, 1990. In March, 1990, the Department completed rulemaking to modify the Oregon Woodstove Certification Rules

(OAR 340 Division 21) to assure consistency with EPA's national program.

In-home studies of first generation certified woodstoves have indicated that they actually reduce emissions by about 30%. Second generation certified woodstoves have been shown to reduce emissions by about 50%. Their lesser than expected performance has to a large extent been due to durability problems with critical stove components. The majority of the stoves certified by the Department and sold in Oregon have been second generation stoves.

Second generation catalytic stove designs have incorporated new advancements in combustor technology which in part accounts for the stoves increased effectiveness. First generation catalytic stoves incorporated less effective catalytic elements which are currently reaching the end of their useful life. When replaced with new generation catalysts, the first generation catalytic stoves will provide effective emissions reductions approaching that of second generation stoves. These improved first generation stoves will make up in part the stove population in 1992.

Recent in-home studies have also shown that woodstove designs which met experimental durability criteria have demonstrated emission reductions averaging 79%. Durability criteria are those design features, and methods of construction which will help ensure that the initial emission performance achieved by a stove is maintained over it's usable life. Some of these units will also make up the woodstove population in 1992.

Additionally, sales of pellet stoves in non-attainment areas, as well as statewide, are reported to have significantly increased and are expected to accelerate in the foreseeable future. Pellet stoves provide a 90% reduction in emissions and are expected to become a significant segment of the woodstove population in non-attainment areas where they have typically been exempted from curtailment programs. Therefore, the Department is using a 50% emission reduction credit overall for the stove population of 1992.

RESIDENTIAL WOODBURNING

WOODSTOVES:

Residential woodstove emissions constitute 89.5% (1075 tons) of the 1986 RWC base line emission inventory. Growth of residential woodstove use was estimated by comparing a study of projected firewood use, conducted by Del Green Associates, and actual wood heating surveys conducted by the department from 1981 through 1987. The Del Green projections can be used to estimate wood use growth from 1986 to 1992 at a 1% per year increase. This projection is conservative compared to the actual firewood use trends projected from the 1981 and 1987 woodheating surveys.

FIREPLACES:

Fireplace emissions in Klamath Falls represent 10.5% (126 tons) of the 1986 base line RWC emission inventory. The emission impact from fireplaces has been separated from woodstove use in calculating the emission reduction benefit derived from the woodstove certification program. The Del Green projections for wood use trends in fireplaces estimates a 2% per year decrease in fireplace use from 1986 through 1992. This estimate is also conservative when compared to the actual firewood use trends for fireplaces from the 1981 and 1987 woodheating surveys.

PELLET STOVES

Residential pellet stoves are included as part of the 1986 baseline woodstove EI, and are expected to grow at a significantly accelerated rate in the near future. A conservative estimate of pellet stove growth is to assume a growth rate equivalent to cord wood stoves.

The following calculations are included in Appendix 8.

RESIDENTIAL WOODSTOVES

Basis for a 19.7 % Woodstove Certification Program Credit

As noted above, firewood use in residential woodstoves is projected to increase by 1 % per year over the 6 year period from 1986 to 1992. This is the basis of the growth factor used in calculating projected 1992 wood smoke emissions. Therefore, in the absence of any certification program, emission would increase by:

1 % per year x 6 years = + 6 %

Building permit authorities in Klamath County indicate that essentially all permitted installations are certified stoves and that about 20 % of these are pellet stoves. A 5 % per year replacement rate for removal of conventional stoves and installation of certified stoves is also assumed.

(1) For new certified cord wood stoves emitting 50 % of conventional stoves, emissions would be expected to decrease over the period 1986-1992 by :

(a) Assuming 80% are new or replacement cord wood stoves:

80% x {[6% x (100%-50%)] x BL86 + [5%/Yr. x 6 Yrs x (100-50%)] x BL86) = 14.4%(BL86)[tons]

Where BL86 = Baseline emissions in 1986

(2) For new certified pellet stoves emitting 10 % of conventional stove, emissions would be expected to decrease over the period 1986-1992 by :

(a) Assuming 20 % are new or replacement pellet stoves:

20% x ([6% x (100%-10%)] x BL86 + [5%/Yr. x 6 Yrs x (100-10%)] x BL86) = 6.48%(BL86)[tons]

(3) The total emission reduction as a function of the 1992 uncontrolled woodstove emissions is:

$$\{14.4(BL86) + 6.48(BL86)\}/BL92 = \frac{20.88(BL86)}{1.06(BL86)} = 19.7\%$$

Where: BL92 = 1.06 x BL86

Therefore, the woodstove certification program alone provides a 19.7 % credit by 1992.

RESIDENTIAL FIREPLACE EMISSION PROJECTION

Emissions from residential fireplaces are expected to decrease 2% per year from 1986 to 1992.

NET BENEFIT OF CERTIFICATION PROGRAM AND FIREPLACE TRENDS

Woodstove and Pellet Stove Replacement:

Assuming 80% of replacement stoves to be certified cord-wood stoves, and 20% pellet stoves; the net emission reduction from the 1986 base line will be 31.2 tons per year. This yearly reduction is applied consistently (not compounded) each year from 1986 to 1992.

[80% x(5%/yr x .5)] + [20% x (5%/yr x .9)] = 2.9%/yr reduction.

1986 woodstove baseline [1076] x .029 = 31.2 tons/yr.

New Woodstoves and New Pellet Stoves:

Assuming 80% of new certified stoves to be cord-wood stoves, and 20% to be pellet stoves; the net emission increase due to growth will be 4.5 tons/yr. This yearly increase is applied consistently (not compounded) from 1986 to 1992.

[80% x (1%/yr x .5)] + [20% x (1%/yr x .1)] = 0.42%/yr increase.
1986 woodstove baseline [1076] x .0042 = 4.5 tons/yr.

Residential Fireplace Trend:

Residential Fireplace use is projected to decrease by 2% each year. This means a constant reduction of 2.5 tons per year, (not compounded) from the 1986 fireplace emission baseline. [126 t/yr x .02] = 2.5 tons/yr.

Source Category	ANNUAL EMISSIONS BY YEAR (Tons) 1986	1987	1988	1989	1990	1991	1992
Existing Stoves	1076	1045	1014	982	951	920	889
New Stoves	0	5	9	14	18	23	27
Old & New Fireplaces	126	124	121	119	116	113	112
TOTAL	1202	1174	1144	1115	1085	1056	1028

The net reduction due to the woodstove certification program, and fireplace usage trends (from the projected 1992 uncontrolled RWC emissions of 1252 tons) becomes 18.0% :

$$1 - \frac{[1992 \text{ controlled}] \quad 1028 \text{ tons}}{[1992 \text{ uncontrolled}] \quad 1252 \text{ tons}} = 18.0\% \text{ reduction}$$

Maintenance Credits Beyond 1992

The credits claimed for the certification program beyond 1992 follow the same approach but are based on the fact that pellet stoves are likely to be an increasing proportion of the new stoves being installed. During the period 1992-1996, an 80% - 20% cord-wood/pellet stove mix is assumed increasing to a 50% - 50% mix during the period 1996 to year 2000. Growth in new stoves is expected to increase to 1.1% per year, reflecting the projected population growth rate.

The stove replacement is expected to remain 5% per year, and fireplace use trends will continue at a 2.0% per year reduction. The calculated net benefits adjusted for emission growth provide a 98 ton reduction during the 1992-96 period, and an additional 113 ton reduction during the period of 1996 to 2000.

Maintenance Period 1992 through 1996

Replacement: Woodstoves and Pellet Stoves

[80% x (5%/yr x .5)] + [20% x (5%/yr x .9)] = 2.9%/yr

BL1992 [916 tons] x .0029/yr = 26.6 ton/yr reduction.

New: Woodstoves and Pellet Stoves:

[80% x (1.1%/yr x .5)] + [20% x (1.1% x .1)] = 0.46%/yr

BL1992 [916 tons] x .0046/yr = 4.2 tons/yr increase.

Fireplace: continue at -2%/yr. from the 1992BL.[112] x .02/yr] = 2.24 tons/yr decrease.

	1992	1993	1994	1995	1996
Existing Stoves	889	862	836	809	783
New Stoves	27	31	35	40	44
Fireplaces	112	110	108	105	103
TOTAL	1028	1003	979	954	930

Net Emission Benefit for 1992 - 1996:

[1028 - 930] = 98.0 ton reduction

Maintenance Period 1996 through 2000

Replacement: Woodstoves and Pellet Stoves

[50% x (5%/yr x .5)] + [50% x (5%/yr x .9)] = 3.5%/yr

BL1996 [827tons] x .035/yr = 28.9 ton/yr reduction.

New: Woodstoves and Pellet Stoves:

[50% x (1.1%/yr x .5)] + [50% x (1.1% x .1)] = 0.33%/yr

BL1996 [827 tons] x .0033/yr = 2.73 ton/yr increase.

Fireplace: continues at -2%/yr. from the 1996BL.{[103] x .02/yr} = 2.06 tons/yr decrease.

	1996	1997	1998	1999	2000
Existing Stoves	783	754	725	696	667
New Stoves	44	47	50	52	55
Fireplaces	103	101	99	97	95
TOTAL	930	902	874	845	817

Net Emission Benefit for 1996 - 2000:

[930 - 817] = 113.0 ton reduction.

The Klamath County Air Quality Program

Resolution 89-116, adopted August 31, 1988 by the Klamath County Board of Commissions established Klamath County's Air Quality Program under the direction of the County Health Department. The program was established to implement the Klamath County Air Quality Compliance Development Plan for the Klamath Falls City and Urban Growth Boundary which was adopted as Resolution 89-148 on April 19, 1989. The program is funded by Klamath County at a level of $64,000 per year (FY 89) and employs one full time Air Quality Coordinator. Additional special project funds are provided by the Department to support major capital outlay and other one-time program needs. The Klamath County Program is found in Appendix 4. Key elements of the County program are described below.

1. Public Information Programs.

A comprehensive, professional, and well-financed public information program is essential for public cooperation and support in reducing woodsmoke emissions. The program clearly describes the need for the public's cooperation, the health-safety-energy-economic benefits to individuals and the community, and precisely what individuals can do to help. Key elements include: home weatherization, firewood seasoning, cleaner burning practices, proper stove installation and sizing, maintenance of woodburning systems and most importantly curtailment of woodburning during poor ventilation episodes. Although no emission reduction credits are taken for the public information program, it is critical to the success of all of the other woodsmoke reduction elements.

The Klamath Falls Air Quality Compliance Development Plan education program fulfills all of these criteria. Key element of this aggressive program include:

- Television and radio public service announcements;
- Billboards, posters, brochures and road side signs;
- Neighborhood and house-to-house meetings promoting clean air and proper wood heating practices;
- Newspaper articles on clean air issues, Air Pollution Index (API) trends and wood burning curtailment calls;
- Advertising in newspapers and on radio;
- Wood smoke health effects studies and symposiums;
- Public classes and forums on proper burning methods;
- A voluntary firewood moisture certification program for fuel wood dealers;
- Coordination with advisory committees, woodstove dealers environmental and governmental groups;
- Operation of the Klamath County Burning Advisory telephone system which, during the 1988-89 heating season, answered 23,118 public call. An additional 1,120 calls were handled by the Klamath County Air Quality staff.

EPA's Guidance Document for Residential Wood Combustion Emission Control Measures recognizes public education programs as an essential element of any residential wood burning control strategy. The highest level education program described by EPA is based on a comprehensive, aggressive program that includes all of the elements found in the Klamath County program described above. Although EPA recognizes public education programs as an essential element of wood burning control programs, no emission reduction credits can be assigned to the program without further technical justification.[24]

2. Home Weatherization and Stove Replacement Program

In May, 1990, the City and County of Klamath Falls received an award of $548,000 from the State of Oregon Community Block Grant funds for a home weatherization and wood stove replacement program similar to the Medford CLEAR Project. Wood stoves in

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[24] US EPA, "Guidance Document for Residential Wood Combustion Emission Control Measures," EPA-450/2-89-015 (1989).

approximately 140 low income, sole source homes will be replaced by natural gas or electrical furnaces or pellet stoves and weatherized with grant funds. Award of the funds will decrease the number of households exempt from mandatory curtailment to 2.5 % and require that a 92 % compliance rate be acheived by the remaining households. Additional funding would eliminate exemptions to the curtailment program.

3. Curtailment During Poor Ventilation Episodes.

A Voluntary Woodburning Curtailment Program has been operated by Klamath County since 1988 during the months of November through March of each year. The program strategy in 1988 was designed to limit the use of woodstoves and fireplaces during periods likely to exceed the 24-hour NAAQS.

Woodburning curtailment forecasts are made twice daily at 7 AM and 4 PM during the wood heating season by the County Health Department. The forecasts are made daily between November 1st and April 1st. A "Yellow" forecast is issued if the 6 AM to 6 PM levels are forecast to be greater than 4.0 but less than 7.0 Bscat (equivalent to 81-150 $\mu g/m^3$ PM_{10})[25]. A "Red" forecast is issued if the 6AM-6PM forecast is for Bscat levels greater than 7.0 or 150 $\mu g/m^3$. The curtailment calls are based on criteria provided by the Department and are based on a forecast algorithm using National Weather Service upper air and barometric pressure data, forecasts of synoptic meteorology; surface temperatures and wind speed/direction. Nephelometer measurements of hourly light scattering and local observations of air quality conditions are also used. A detailed discussion of the curtailment methodology is found in Appendix 7.

Wood burning curtailment advisories are issued at three levels:

"Green" advisories are issued for periods during which NAAQS violations are unlikely. Woodburning is unrestricted during these periods but the public is asked to follow good woodburning practices. "Green" advisories are issued when PM_{10} levels are expected to be less than 80 $\mu g/m^3$, 12 hour average from 6 AM to 6 PM.

"Yellow" advisories are issued for periods approaching exceedance of the NAAQS. Under a "Yellow" curtailment, the public is asked to curtail all unnecessary woodburning, excepting only pellet stoves, certified woodstoves and those that use wood as their sole source of heat

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[25] Bscat measured by integrating nephelometer in units of 10^{-4} M^{-1}.

"Red" advisories are issued for periods of severely restricted ventilation during which PM_{10} levels are expected to exceed the NAAQS. Only households in which woodburning is the sole source of heat are permitted to burn during these periods.

Based on the past three years of air monitoring data, about 47 curtailment days are expected to occur during the space heating season.

Compliance with the advisories is determined through evening surveys of woodburning activity during "Green", "Yellow" and "Red" curtailment periods using infrared cameras. Surveys are conducted in four residential areas of Klamath Falls, totalling 735 homes.[26] Data from the surveys is used to direct the public education program, evaluate progress toward achieving program goals and in evaluating trends in PM_{10} concentrations.

The goal of the Klamath Falls Woodburning Advisory Program has been to reduce wood use by 85% to 90% on the 40-50 days per year on which violations of the PM_{10} health standard would be expected. Compliance with the advisory during the 1988-89 season was 27 % (as compared to a goal of 20 %), thereby achieving about fifteen percent of the compliance level needed to attain the PM_{10} air quality standard.[27] Actual compliance with the 1989-90 curtailment advisories averaged 45% on the days surveyed has ranged on a daily basis from 0 to 63%. The goals for the 1989-90 and 1990-91 heating seasons are, 46% to 52%, and 85% to 92% compliance, respectively.

The Klamath Falls compliance rate during the first year of the program was expected to be similar to that reported for other voluntary curtailment programs such as the ones operated in Medford, Oregon (25 % compliance per year for the last 4 years), and Missoula, Montana (30 %).

The Medford area implemented a mandatory curtailment program for the 1989-90 heating season and is showing a marked increase in compliance, about 85% during the first months of the program.

Note: The following bracketed text will be deleted following adoption of a mandatory curtailment ordinance by the Klamath County Board of Commissioners.

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[26] Klamath Falls Wood Stove Curtailment Program Evaluation Methodology. Department of Environmental Quality. February, 1989.

[27] Klamath County Woodstove Curtailment Program Evaluation for the 1988-89 Heating Season. Department of Environmental Quality, Air Quality Division. April, 1989.

[The Clean Air Act requires that control strategies be enforceable. EPA has advised the Department that curtailment program must be mandatory, if they require an emission reducion of greater than 30%. Although the Klamath Falls voluntary curtailment program is not meeting the 90 % compliance level needed, it has achieved compliance rates greater than other voluntary programs around the country. The Klamath Falls area will need a mandatory curtailment program provision.]

[Therefore, the Department will work with the Klamath County Board of Commissioners to support their adoption of a mandatory curtailment program ordinance by the time the SIP is adopted by the Environmental Quality Commission in November 1990.]

[This timetable is consistent with the Klamath County Commission's periodic review of the Voluntary Curtailment Program. The mandatory ordinance would have to include provisions for implementation and effectiveness monitoring as well as periodic review of the program.]

RESERVED FOR DISCUSSION OF MANDATORY CURTAILMENT PROGRAM

Long-Term Wood Heating Control Strategy

Wood heating curtailment is viewed as a short-range control strategy to allow rapid attainment of the short-term (24-hour) PM_{10} air quality standard. The Department of Environmental Quality is committed to pursue permanent reductions in wood heating emissions as a long-range strategy to reduce and even eliminate the reliance on curtailment and to provide significant improvement in annual PM_{10} air quality.

At least the following measures will be pursued to reduce permanently wood heating emissions:

- Public education activities will include more specific information on the true cost of wood heating in relation to other alternative cleaner heating sources. The major goal of this effort is to pursuade those households that are spending more money to heat with wood than with conventional fuels, such as natural gas, to convert from wood heat.

- Further information and studies on the toxicity, health effects and other detrimental effects of woodsmoke will be pursued and heavily publicized in a continuing effort to convince more people that they should reduce wood burning.

- In home emission control performance of certified stoves will be improved through promotion of durable design criteria and development of a stress test which will aid in identifying durable certified stoves.

- Financial incentive programs will be pursued through the Oregon Legislature and other avenues to promote replacement of conventional wood heating appliances with less polluting systems. These programs could include tax credits, low interest loans and total buyouts for low income households. An objective would be to graduate these incentives in proportion to the emission reduction potential of the alternative heating systems, with electric and gas systems qualifying for the largest financial incentives followed by pellet stoves, durable certified woodstoves and finally, other certified woodstoves.

Basis for Wood Burning Curtailment Credits (Worst Case Day)

The highest reported compliance rates have been for mandatory curtailment programs in Washoe County, Nevada (90%), Juneau, Alaska (80-90%), Yakima, Washington (80%), and Missoula, Montana (70%). In the Medford area a 80% to 85% compliance rate was achieved in the first year of mandatory curtailment. The 90% emission reduction credit for Klamath Falls attainment is based on the above compliance rates, Klamath County's commitment to achieve the National Ambient Air Quality Standards, adoption of a mandatory wood burning curtailment ordinance, and achievements in the Medford area mandatory curtailment program.

Basis for Wood Burning Curtailment Credits (Annual Emissions)

Annual emission credits taken for reductions made on the 47 curtailment days that occur, on average, each year have been estimated by two methods:

Reductions Based on Degree Heating Days were calculated by summing the product of the number of degree heating days that occurred on the 47 coldest days (most of which exceeded the 24 hour NAAQS) during the winter months, generally curtailment days (December, 1987 to March, 1989) and the total number of degree heating days per year to obtain the fraction of annual degree days that occurred on the 47 coldest days of the winter. This fraction (0.31) was then applied to the 1992 annual woodburning emission estimate of 1274 tons per year to obtain the total tons of emissions on curtailment days (398 tons). If emissions are reduced by 90 % on curtailment days, than emissions should be reduced by 358 tons (90 % of 398 tons) which represents 28 % of the 1992 annual emissions. The curtailment program will therefore provide, at minimum, a 28 % credit on an annual basis. However if the fact that reductions occur during poor ventilation conditions is considered, much greater benefits are apparent:

Annual Air Quality Improvements of Curtailment are believed to be much greater than the above emission reduction credit would estimate because the emission reductions are occurring during the worst atmospheric ventilation periods of the year. To estimate the true annual air quality benefits of curtailment, actual PM_{10} concentrations on winter days with PM_{10} levels greater than 150 $\mu g/m^3$ (mid-1986 to mid-1989) were used to estimate daily PM_{10} concentrations that would occur on curtailment days given the following: (1) a background PM_{10} level of 7 $\mu g/m^3$; (2) 83 % of non-background PM_{10} is wood smoke and (3) the curtailment program will reduce woodsmoke concentrations by 90 %. These PM_{10} estimates were then used to recalculate the three year, annual average. Given these assumptions, the design value annual average of 75 $\mu g/m^3$ was reduced to 50.2 $\mu g/m^3$. Since the emission inventory rollback model estimates that a 756 ton per year emission reduction is needed to attain the annual NAAQS and given that the curtailment program alone will attain the annual NAAQS, the curtailment program will provide an equivalent emission reduction credit of 74 % (756 TPY/1028 TPY). This is the basis for the 74% "comparable" emission reduction credit noted in Table 4.12.3-3.

Basis for Fuel Wood Certification Credit of 2% Per Year

EPA provides for a 5 % credit for an enforced fuel wood certification program to assure that firewood is properly seasoned prior to sale. Since only one half of the firewood burned in Klamath Falls is purchased, a 2 % credit is claimed in the attainment and maintenance analysis. (NOTE: This discussion will be expanded to include a description of the Klamath County certification program following adoption of a county ordinance)

Fugitive Dust Control Element

A 60 % reduction in emissions from winter road sanding is required to attain the 24-hour NAAQS on worst-case winter days. Sanding materials used in the Klamath Falls area are obtained from a gravel pit located near Merrill, Oregon where volcanic cinders, pea gavels, silts and clays have been deposited. Nearly all of the aggregate used within the UGB is applied by the Oregon Department of Transportation Highway Division, mostly on US 97, South Sixth Street, Alameda Bypass and the South Side Bypass. The City, County and State all maintain sections of Washburn Way and other streets in South suburban Klamath Falls. The City maintains streets within the Central Business District. Approximately 2,000 cubic yards of aggregate are applied each year by the Highway Division. The County and City use very little sanding material.

Three control options were evaluated: (1) processing of aggregate from the Merrill pit to remove silts and clays thereby reducing the amount of material to be entrained by traffic; (2) substitution of the Merrill aggregate with crushed gravel from hard rock sources located in the area or (3) use of a deicing slurry in lieu of road sanding and improved road sanding practices to minimize use of the aggregate consistent with public safety standards.

Basis for 60 % Credit for the Winter Road Sanding Control Program

The specifics of the winter road sanding control strategy are contained in correspondence form the Oregon State Highway Division (Appendix 5). The 60 % credit is based on the Highway Division's commitment to reduce winter road sanding by 60 % through (a) replacement of aggregate with a deicing slurry; (b) reduction in the amount of aggregate used by maintenance crews and (c) rapid cleanup using street washing or sweeping of road sanding materials used on major thoroughfares. Streets included in the program are South Sixth Street, Alameda Bypass, Washburn Way, South Side Bypass and portions of US 97. During worst case winter days, a 1,300 pound per day emission reduction will occur. On an annual basis, road sanding emissions will be reduced by 18 tons per year.

Since all of the heavily traveled roads in the Klamath Falls UGB are paved, reductions in resuspended road dust from paved streets may also be considered should additional emission reductions be required. Other methods of control include the addition of asphalt shoulders and curbs to major paved streets thereby eliminating trackout from the edge of the pavement into the traffic lanes. The paving of unpaved roads and control of mud trackout from construction sites are additional strategies that may be useful.

Other Strategies

The following additional elements have been developed to help assure the success of the attainment strategy. Restrictions to open burning and the prescribed burning are not included in the attainment strategy as insufficient information is available to estimate impacts of these sources on current PM_{10} air quality.

Restrictions on Open Burning.

In correspondence dated November 27, 1989 (Appendix 6), the Department requested that the State Fire Marshal direct the local fire districts not to issue open burning permits during periods when "Yellow" or "Red" wood burning advisories are issues by the Klamath County Health Department. A cooperative agreement between the Klamath County Board of Fire Cheifs and the Klamath County Health Department restricting open burning has also been adopted. The Department has further requested that land clearing and agricultural burning permits not be issued within approximately 30

miles of the Urban Growth Boundary during poor air quality days. Those wishing to open burn are advised of air quality conditions through telephone recordings. These restrictions will help assure that open burning during worst case air quality conditions will no longer occur. An additional emission reduction of 6 tons per year could be obtained by banning residential open burning within the UGB during the months of November through March. (NOTE: THIS DISCUSSION WILL BE EXPANDED IF KLAMATH COUNTY ADOPTS AN ORDINANCE RESTRICTING OPEN BURNING).

Forestry Slash Burning

The Visibility Protection Program incorporated as Section 5.2 of the Oregon State Implementation Plan was adopted October 24, 1986. The visibility program long term control strategy includes as a goal a 50 % reduction in western Oregon PM_{10} prescribed burning emissions relative to the 1978-79 baseline emissions. These emission reductions are to be achieved in a reasonably linear manner over by the year 2000. Reductions are to be achieved through increases in wood waste utilization, rescheduling burning to spring-like fuel moisture conditions, application of mass ignition burning techniques, reductions in acres burned and accelerated mop-up of smoldering units. Although the emission reductions will occur west of the Cascades, the strategy will reduce impacts from forestry burning that may be transported into the Urban Growth Boundary from units burned on the Rogue River and Umpqua National Forests and BLM's Medford District.

In addition, forest land owners surrounding Klamath basin are developing a voluntary smoke management program to minimize slash smoke intrusions into the nonattainment area. The voluntary program will be developed by March, 1990 and implemented immediately thereafter. Since forestry burning on lands east of the Cascades are not currently regulated on a day-to-day basis under the Oregon Department of Forestry's Smoke Management Program, failure of the voluntary effort to protect the nonattainment area will require revision of the Smoke Management Program rules to set aside the Klamath basin as a mandatory, designated area under program.

Industrial Emission Growth Management

In June, 1989, the Department amended OAR 340-20-225 Significant Emission Rate provisions for industrial sources. The significant emission rate for new or expanding industrial emission was revised from 15 to 5 tons per year to assure that even relatively small increases in industrial emissions would be offset by compensating emission reductions of an equal or greater amount. The tightened offset requirement assures that future industrial emission growth will not offset emission reductions achieved through elements of the attainment strategy.

4.12.3.3 Demonstration of Attainment

This section describes the application of emission reduction credits described in Section 4.12.3.2. in demonstrating attainment of the NAAQS. The calculations are based on proportional rollback of 1992 emission estimates. Appendix 8 contains the detailed calculations that support the following text.

Summary of 24 Hour Emission Reductions To Be Achieved by 1992

Strategy Element	Credit	Emission Reduction
New Road Deicing Practices	60 %	1,308 Pounds/Day
Wood Burning Strategies:		
- Wood Burning Curtailment	90%	17,171 Pounds/Day
- Certification of Woodstoves	20%	336 Pounds/Day
- Fuel Wood Certification	2%	27 Pounds/Day
Woodstove Strategies, Total		17,736 Pounds/Day

Total reduction from all strategies....19,044 Pounds/Day
Required emission reduction .....18,486 Pounds/Day

No credits have been taken for the Klamath County public education programs.

Strategy Emission Reduction - Annual Average Case

Attainment of the annual average NAAQS in 1992 will require a 40 % reduction in annual emissions or a reduction of 756 tons per year. Although the entire needed emission reduction is achieved through the wood burning curtailment program, emission reductions obtained from the road deicing and other elements of the wood burning emission reduction programs are also included since they will occur as a result of implementing the 24 hour strategy. The needed reductions are achieved through the strategy elements listed below.

Summary of Annual Average Emission Reductions
To be Achieved by 1992

Strategy Element	Credit	Emission Reduction	
New Road Deicing Practices	60 %	18	Tons/Year
Wood Burning Strategies:			
- Wood Burning Curtailment	74%	756	Tons/Year
- Woodstove Certification	21%	40	Tons/Year
- Fuel Wood Certification	2%	3	Tons/Year
Woodstove Strategies, Total		845	Tons/Year
Total reduction from all strategies.....		863	Tons/Year *
Total required emission reduction.....		756	Tons/Year

* Note: On an annual basis, the wood burning curtailment program will result in a 28 % reduction in annual wood smoke emissions. This, however, is not reflective of annual air quality benefits of the program since the restricted ventilation during the curtailment periods compounds the benefits of the emission reductions. The effective or equivalent reduction is calculated based on a 90 % curtailment program operating on 47 days per year indicating a reduction of the annual average PM_{10} concentration from 75 to 50.2 $\mu g/m^3$. As a result, the wood burning curtailment program alone, implemented on 47 days per year, will provide sufficient benefits to assure that the annual NAAQS is achieved. Additional strategy elements are claimed as a result of reductions achieved through the 24 hour strategy. See Section 4.12.3.3.

4.12.3.4 Emission Offsets and Banking

Although the control strategy does not formally incorporate provisions for growth in industrial emissions through an emission offset and banking provisions, there is considerable growth margin for increases in industrial emissions within the current plant permits. The difference between the 1986 actual and the 1992 projected industrial emission projections is 77 tons per year in annual and 745 pounds per day in PM_{10} emissions.

OAR 340-20-225 (22) requires that new or modified industrial sources that emit more than 5 tons per year of PM_{10} emissions must obtain emission reductions from other sources to offset their emissions. The emission offsets may be obtained by reducing emissions within the facility to be modified, from other industrial sources or from external sources, including woodstove emissions from sole source, low income households. The Department estimates that an additional 100 tons per year could be obtained by reducing existing wood-fired boiler emissions by 70-85% to 0.03 grains per standard cubic foot and veneer driers by 42-70 % to

0.3-0.45 pounds per thousand square feet of veneer (3/8" basis). In addition, at least 175 tons per year of PM_{10} emission offset is available by replacing conventional woodstoves in sole source, low income households with natural gas or electrical heating systems.[28]

The emissions margins and sources of offsets will help assure continued maintenance of the NAAQS beyond 1992.

4.12.3.5 Demonstration of Maintenance

Emission reductions achieved through the adoption of a county ordinance banning the installation of non-certified woodstoves will assure that emission growth associated with fugitive dust and transportation sources will not cause the NAAQS to be exceeded by the year 2000. Appendix 8 lists emission projections for the eight year period following attainment in 1992.

4.12.3.6 Emergency Action Plan Provisions

OAR 340 Division 27 describes Oregon's Emergency Action Plan. The rule is intended to prevent the excessive accumulation of air contaminants during periods of air stagnation which, if unchecked, could result in concentrations of pollutants which could cause significant harm to the public health. The rules establish criteria for identifying and declaring air pollution episodes below the significant harm level and were adopted pursuant to requirements of the Clean Air Act. The action levels found in the Plan were established by the Environmental Protection Agency and subsequently adopted by the Department.

The significant harm level for PM_{10} particulate matter of 600 $\mu g/m^3$, 24 hour average (adopted by the Environmental Quality Commission April, 1988) was exceeded twice in Klamath Falls; on January 25, 1988 (792 $\mu g/m^3$) and on February 3, 1988 (723 $\mu g/m^3$). At the time of these events, the significant harm level was 1,000 $\mu g/m^3$ of Total Suspended Particulate, a level which was not exceeded.

The PM_{10} "Alert" level is 350 $\mu g/m^3$; the "Warning" level is 420 $\mu g/m^3$ and the "Emergency" level is 500 $\mu g/m^3$, 24 hour average. These levels must be coupled with meteorological forecasts for continuing air stagnation to trigger the Action Plan.

Authority for the Department to regulate air pollution sources during emergency episodes is provided under ORS 468, including emissions from woodstoves. When there is an imminent and

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[28] Response to testimony received at the Klamath Falls public hearing on proposed changes to industrial rules. Attachment E to staff report prepared for the June 2, 1989 Environmental Quality Commission, Agenda Item H.

substantial endangerment to public health (the significant harm level), ORS 468.115 authorizes the Department, at the direction of the Governor, to enforce orders requiring any person to cease and desist actions causing the pollution. State and local police are directed to cooperate in the enforcement of such orders.

4.12.4 Implementation of the Control Strategy

All of the elements of the attainment strategy will be adopted prior to Environmental Quality Commission adoption in November, 1990. Specific elements of the strategy were implemented as noted below.

4.12.4.1 Schedule for Implementation

The Oregon Woodstove Certification Program became effective June 30, 1986; the Klamath County Air Quality and voluntary wood burning curtailment programs were implemented on August 31, 1988 and the road sanding control strategy commitments were received from the Oregon Department of Transportation on December 11, 1989 and will be implemented during the winter of 1989-1990. Open burning restrictions implemented through the Oregon State Fire Marshal's office and local Board of Fire Chiefs began in November, 1989. The Department's Significant Emission Rate rules became effective on the date of adoption, June 2, 1989. Implementation of a mandatory wood burning curtailment program will occur prior to the 1991-92 heating season following adoption of a County ordinance prior to November, 1990.

4.12.4.2 Rules, Regulations and Commitments

The following rules and commitments have been adopted to assure the enforceability of the control strategies.

State of Oregon Rules

Woodstove Certification Program	OAR 340 Division 21
Klamath Falls Significant Emission Rate Rule	OAR 340-20-225

Klamath County Ordinances

Klamath County Air Quality Program	Resolution 89-116
Klamath County Air Quality Compliance Development Plan for the Klamath Falls City and Urban Growth Boundary	Resolution 89-148

Regulations Yet to be Adopted

Klamath County Mandatory Curtailment Ordinance	By Oct. 1990
Klamath County Open Burning Ordinance	By Oct. 1990
Klamath County Fuel Wood Certification Ordinance	By Oct. 1990

Interagency Commitments

Winter Road Sanding Program, Oregon Department of Transportation Highway Division Memorandum of Understanding.

Oregon Dept. of Forestry Smoke Management Plan OAR 629-43-043
State Fire Marshall's Office Open Burning Statute ORS 478.960

4.12.5 Public Involvement

Development of the Klamath Falls PM_{10} control strategy included several areas of public involvement including a continuing Citizen Advisory Committees, public participation at hearing on proposed industrial source rules and attendance at hearings conducted by the Klamath County Board of Commissioners.

Proposed industrial rules to reduce the significant emission rate for new or modified industrial sources within the Klamath Falls Urban Growth Boundary were approved by the Environmental Quality Commission on November 4, 1988. A public hearing on the proposal to reduce the significant emission offset from 15 to 5 tons per year PM_{10} was held in Klamath Falls on February 15, 1988. The rule was adopted at the Environmental Quality Commission's April, 1989 meeting.

4.12.5.1 Citizen Advisory Committee

The Klamath County Board of Commissions appointed members to the Klamath County Air Quality Task Force in November of 1987 to assist the County and the Department in the development of control programs for the Klamath Falls Nonattainment Area. The 14 member committee was advised of the requirements of the Clean Air Act and State Implementation Plan. The Task Force considered alternative control strategies and provided recommendation to the Board in November, 1988. On January 26th and February 3rd, 1988, the Board of Commissioners held public hearings on a proposed county mandatory curtailment ordinance designed to achieve the degree of woodsmoke emission reduction required. Following the hearings, the ordinance was dropped from further consideration and a second 15 member Task Force (New Citizens Air Quality Committee) was appointed to consider other options, including development of a voluntary curtailment program. In May of 1988, the Committee submitted an outline for a voluntary curtailment program to the Department and the Klamath County Board of Commissioners and, in April, 1989, the Board adopted the Klamath County Voluntary Woodburning Compliance Program. The Program is enclosed as Appendix 4.

4.12.5.2 Public Notice

Public notice of proposed rule revisions is done through mailing lists maintained by the Department, through notifications published in local newspapers and through Department press releases.

4.12.5.3 Public Hearings

As noted above, public hearings on the Klamath County Plan were held on January 26 and February 3, 1988. A hearing on revisions to the industrial rules on significant offset emission rates was held February 15, 1988 and public hearings on proposed woodstove legislation were held before the Senate Agriculture and Natural Resources Committee on several occasions in February and March, 1989.

4.12.5.4 Intergovernmental Review

Public hearing notices regarding adoption of this revision to the State Implementation Plan will be distributed for local and state agency review through the A-95 State Clearinghouse process forty-five days prior to adoption by the Environmental Quality Commission.

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Proposed State Implementation Plan

for Particulate Matter

Medford-Ashland, Oregon
Nonattainment Area

A Plan for Attaining and Maintaining the National Ambient Air Quality Standard for PM_{10}

State of Oregon
Department of Environmental Quality
Air Quality Division

January 1991

Preface

Significant changes have occurred since the initial air quality analysis of this PM_{10} control strategy and the proposal as a revision to the State Implementation Plan:

1. The Central Point ordinance for curtailment of woodburning during air pollution episodes was repealed by voters in November 1990; and

2. The 1990 Clean Air Act was passed by Congress and signed by the President on November 15, 1990.

As a result, several additions to this plan are needed to fully meet the 1990 Clean Air Act requirements. The shortfall caused by the repeal of the Central Point ordinance must be corrected. Sections must be added or expanded to identify an enforceable contingency plan, reasonable further progress reporting, and possibly other provisions of the 1990 Clean Air Act to be clarified by the U.S. Environmental Protection Agency in the months ahead. These additions are expected by November 15, 1991, as required by the 1990 Clean Air Act.

The 1990 Clean Air Act also requires that PM_{10} air quality standards be attained by December 31, 1994.

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Appendices

* Available upon request.
** Included with SIP revision.

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Executive Summary

The U.S. Environmental Protection Agency (EPA) adopted new particulate National Ambient Air Quality Standards (NAAQS) for PM_{10} on July 1, 1987. PM_{10} particulate is less than 10 micrometers in aerodynamic diameter or about one-tenth of the diameter of a human hair. The Clean Air Act requires that States develop and adopt State Implementation Plan (SIP) revisions to assure that areas which exceed the PM_{10} standards are brought into attainment within the time frames prescribed by the Clean Air Act (September 1991). This document describes the State of Oregon plan to attain the PM_{10} standards in the Medford-Ashland Air Quality Maintenance Area (AQMA).

High exposure to particulate matter is of concern because of human health effects such as changes in lung functions and increased respiratory symptoms, aggravation of existing respiratory and cardiovascular disease, alternation in the body's defense system against foreign materials, damage to lung tissue, increased risk of cancer and, in extreme cases, premature death. Most sensitive to the effects of particulate matter are people with chronic obstructive pulmonary cardiovascular disease and those with influenza, asthmatics, the elderly, children and mouth-breathers.

Air quality measurements taken in Medford have determined that the 24-hour PM_{10} health standard was exceeded an average of about 20 days per year during the winter months in 1984-86. In addition,the annual average concentration of PM_{10} exceeded the annual PM_{10} health standard.

The PM_{10} standards adopted by the EPA, and subsequently adopted by the Oregon Environmental Quality Commission, were established to protect public health and welfare. The 24-hour PM_{10} standard is 150 micrograms per cubic meter of air ($\mu g/m^3$). The maximum 24-hour concentration of PM_{10} measured in Medford was over 300 $\mu g/m^3$. The 24-hour standard cannot be exceeded more than an average of one day per year. The annual average PM_{10} concentration in Medford is about 58 to 68 $\mu g/m^3$ in the peak areas compared to the average annual PM_{10} standard of 50 $\mu g/m^3$.

An inventory of PM_{10} emissions developed for the Medford-Ashland Air Quality Maintenance Area (AQMA) indicates that the major sources of particulate emissions are residential wood combustion, industry, and soil and road dust. Annual average and worst day PM_{10} emissions during the baseline period (1985-86) are compared in the following table.

Source Category	Annual PM_{10} Emissions (%)	Worst Day PM_{10} Emissions (%)
Residential woodsmoke	38	60
Wood products industry	27	18
Soil and road dust	22	18
Other	13	4
Total	100	100

The air pollution impacts from these PM_{10} emissions have been measured, calculated and verified at various locations within the AQMA through the combination of the air monitoring network (PM_{10} measurement stations), dispersion modeling (mathematical modeling of diffusion in the atmosphere), and receptor modeling (chemical fingerprinting) techniques.

PM_{10} design values are those 24-hour worst case and annual average concentrations from which reductions must be made to achieve compliance with the standards. The 24-hour design value represents the fourth highest daily concentration measured in a 3-year period; the annual design value represents the 3-year average concentration.

The design values were determined with the following considerations. The eight highest 24-hour PM_{10} concentrations during 1984-86 occurred during December 1985 so the December 1985 meteorology was used for the worst-case-day dispersion modeling. The 1984-86 period had the highest 3-year PM_{10} average concentration since monitoring began so this period was used for the annual-average analysis; the most precise wind data was available during July 1985 to June 1986 and this 12-month period had average concentrations similar to the 1984-86 average so the annual-average dispersion modeling was done with the July 1985 to June 1986 meteorology. The highest PM_{10} concentrations were measured in the area between the Jackson County Courthouse at Oakdale/Main and McAndrews Road (monitors located near Oakdale/Main, Haven/Holly, Oak/Taft, and Welch/Jackson).

Analysis of the dispersion modeling results for 1985-86 and all of the available PM_{10} air quality data from 1984-1986 indicates a 24-hour design value of 266 to 309 $\mu g/m^3$ (Oakdale/Main and Oak/Taft, respectively) and an annual average design value of 58 to 68 $\mu g/m^3$ (Oakdale/Main and Oak/Taft, respectively) depending on the location within the peak problem area. In addition to the peak impact site (Oak/Taft), the impact analysis is also summarized for the Courthouse site (Oakdale/Main) since most of the historical particulate data (20+ years) and chemical fingerprinting data (10+ years) has been collected at the Courthouse. These specific design values are based on the dispersion modeling results but they agree very closely with the actual ambient monitoring data at these sites.

Control strategies included in this plan have been designed to reduce 24-hour concentrations of PM_{10} by at least 159 $\mu g/m^3$ (309-150 $\mu g/m^3$) and the annual average by at least 18 $\mu g/m^3$ (68-50 $\mu g/m^3$) by 1992.

Control measures adopted in this plan must be legally enforceable, demonstrated to be adequate to achieve the needed air quality improvements, and designed to attain the standards within the time frames provided by the Clean Air Act.

The principal means of achieving these air quality improvements within the 3-year period allowed by the Clean Air Act is through PM_{10} emission reductions from woodstoves and fireplaces (RWC), the wood products industries, open burning of debris, and road dust. Additional reductions are expected from statewide efforts to reduce slash burning smoke.

Residential Wood Combustion Strategies

The residential woodsmoke reduction strategies are closely patterned after the December 1987 recommendations of the Jackson County Wood burning Task Force. Woodstove and fireplace emissions will be reduced by an expanded public information program, an areawide mandatory wood burning curtailment program (75% compliance rate needed to meet standards at the Courthouse, but 85% compliance rate needed to meet standards at Oak/Taft), the Oregon woodstove certification program, financial assistance programs for replacement of existing woodstoves with cleaner burning units and weatherization of homes, a ban on installation of non-certified woodstoves, and continued improvements in firewood seasoning and woodstove operation.

Wood Products Industry Strategies

Wood products industry emissions will be reduced by additional control requirements on veneer driers and large wood-fired boilers at plywood plants, more extensive source testing and continuous emission monitoring in order to maximize performance of pollution control equipment, and more restrictive emission offset requirements to insure a net air quality benefit from any new or expanded industries.

Open Burning Strategies

Open burning emissions will be reduced during the critical November to February period by local ordinances banning open burning during these months. Annual open burning emissions will be reduced by a year around ban within Medford and more restrictive ventilation criteria and shorter burn seasons in unincorporated areas of Jackson County and in Central Point.

Road Dust Strategies

Road dust emissions will be reduced by continuing programs to pave unpaved roads, to curb and gutter shoulders on paved roads, and to control mud and dirt trackout from industrial, construction and agricultural operations.

Other Strategies

Slash burning emissions will be reduced in western Oregon by about 20% between 1984 and the year 2000 as part of the Oregon Visibility Protection Plan. These emission reductions will further insure that background PM_{10} concentrations will not increase in future years.

In addition, forestry slash burning impacts on the nonattainment area will be minimized through voluntary agreements among forest land managers. This program will help assure that forestry open burning does not adversely affect Medford-Ashland AQMA air quality on winter wood heating curtailment days.

Implementation of all of the elements of the overall PM_{10} control strategy will require the efforts of residents and industries within the Medford-Ashland AQMA, Jackson County, the cities within the AQMA, the Oregon Department of Environmental Quality, the State Forestry Department, U.S. Forest Service and Bureau of Land Management.

Strategy Emission Reduction - 24 Hour Worst Case Day

Attainment of the 24-hour PM_{10} standards by 1992 will require up to a 51% reduction in ambient PM_{10} concentrations depending on the location within the AQMA. This reduction will be accomplished by the previously described strategies. The PM_{10} impacts at the Jackson County Courthouse from the major source categories are compared in the following table for the 1985-86 base period and the 1992 attainment year. The PM_{10} impacts are in micrograms per cubic meter ($\mu g/m^3$). (NC indicates No Change.)

Site: Jackson County Courthouse

Source Category	24-Hour PM_{10} Impact ($\mu g/m^3$) Worst Day 1985-86	Worst Day 1992	Change
Residential woodsmoke	195.0	26.4	-86%
Wood products industry	29.2	20.3	-30%
Soil and road dust	27.6	27.6	NC
Other	10.6	11.6	+9%
Local sources	262.4	85.9	-67%
Background	44.0	44.0	NC
Total	306.4	129.9	-58%

Source Category	Design Day 1985-86	Design Day 1992	Change
Residential woodsmoke	156.2	23.1	-85%
Wood products industry	22.6	14.6	-35%
Soil and road dust	32.1	32.1	NC
Other	11.6	12.6	+9%
Local sources	222.5	82.4	-63%
Background	44.0	44.0	NC
Total	266.5	126.4	-53%

The Courthouse monitoring site is of special interest since it is the site of the longest historical particulate monitoring in the AQMA and it is located in the general area of highest particulate levels. However, the Oak and Taft monitoring site in Medford has recorded and projects slightly higher PM_{10} levels which are summarized in the following table.

Site: Medford Oak and Taft

Source Category	24-Hour PM_{10} Impact ($\mu g/m^3$) Worst Day 1985-86	Worst Day 1992	Change
Residential woodsmoke	182.2	24.5	-87%
Wood products industry	77.8	55.1	-26%
Soil and road dust	28.7	28.7	NC
Other	9.5	10.3	+9%
Local sources	298.2	118.6	-60%
Background	44.0	44.0	NC
Total	342.2	162.6	-52%

Source Category	24-Hour PM_{10} Impact ($\mu g/m^3$) Design Day 1985-86	Design Day 1992	Change
Residential woodsmoke	167.3	22.3	-87%
Wood products industry	58.8	42.0	-29%
Soil and road dust	29.8	29.8	NC
Other	9.5	10.3	+9%
Local sources	265.3	104.4	-61%
Background	44.0	44.0	NC
Total	309.3	148.4	-52%

These 24-hour PM_{10} impacts represent the worst day and design day during the 1985-86 baseline period. The design value is based on the fourth highest day during a 3-year period. For the Oak/Taft site the modeled fourth highest day after implementation of the control strategy in 1992 is 148 $\mu g/m^3$ which would be in compliance with the 24-hour health standard of 150 $\mu g/m^3$.

Other areas of the AQMA had been measured in violation of the 24-hour or annual standards, notably the White City and Central Point areas, but the dispersion modeling also indicated compliance in those areas, with 1992 concentrations lower than at Oak/Taft.

Strategy Emission Reduction - Annual Average Case

Attainment of the annual average PM_{10} standards by 1992 will require up to a 26% reduction in ambient PM_{10} concentrations depending on the location within the AQMA. This reduction will be accomplished by the previously described strategies. The PM_{10} impacts at the Jackson County Courthouse from the major source categories are compared in the following table for the 1985-86 base period and the 1992 attainment year. Again, the PM_{10} impacts are in micrograms per cubic meter ($\mu g/m^3$).

Site: Jackson County Courthouse

Source Category	Annual PM_{10} Impact ($\mu g/m^3$) 1985-86	1992	Change
Residential woodsmoke	28.8	16.6	-42%
Wood products industry	7.2	4.3	-40%
Soil and road dust	6.9	6.9	NC
Other	2.7	3.0	+9%
Local sources	45.6	30.8	-32%
Background	13.1	13.1	NC
Total	58.7	43.9	-25%

The Oak and Taft monitoring site in Medford recorded slightly higher annual PM_{10} levels than the Courthouse. The Oak and Taft PM_{10} levels are summarized in the following table.

Site: Medford Oak and Taft

Source Category	Annual PM_{10} Impact ($\mu g/m^3$) 1985-86	1992	Change
Residential woodsmoke	28.2	16.2	-43%
Wood products industry	17.9	11.3	-37%
Soil and road dust	6.6	6.6	NC
Other	2.3	2.5	+9%
Local sources	55.0	36.6	-33%
Background	13.1	13.1	NC
Total	68.1	49.7	-27%

The annual average PM_{10} levels at both the Courthouse and Oak and Taft sites are projected to be in compliance with the annual PM_{10} health standard of 50 $\mu g/m^3$ after implementation of the control strategy in 1992.

The dispersion modeling projected potential PM_{10} problems in two other one-kilometer grids north of the Oak & Taft grid but the 1985 Medford particulate gradient study and the 1989 mobile nephelometer surveys indicated that PM_{10} levels at the DeHague & Howard and McAndrews & Court sites were not as high as at the Oak & Taft site. The Department will conduct additional monitoring in the two potential problem grids by 1991 to determine the actual PM_{10} concentrations as the control strategy is implemented. If the ambient data confirms a nonattainment problem that the control strategy will not bring into attainment by 1992, then the control strategy will be modified as necessary to assure that attainment will be reached.

Air Quality Standard Maintenance

Subsequent to attainment and by the year 2000, a net decrease in emissions is projected to occur as a result of continuation of the attainment strategies, offsetting increases in fugitive dust and transportation emissions. Both the 24-hour and annual standards are projected to be maintained to the year 2000 at which time worst case day PM_{10} and the annual average PM_{10} are projected to be 146 and 48 $\mu g/m^3$, respectively, at Oak and Taft.

Enforceability

The Clean Air Act requires SIP control strategies to be enforceable. The necessary state rules and local ordinances have

been adopted and are included in the appendix for this plan. The 1984 Oregon woodstove certification program and the 1989 industrial rules have been submitted to EPA previously.

Several existing strategy elements to reduce residential woodsmoke will be continued or expanded including: comprehensive public information programs on proper woodstove operation, firewood seasoning, and home weatherization; financial assistance programs to replace existing woodstoves with cleaner burning units and provide home weatherization (CLEAR, SOLVE and ACCESS programs); voluntary firewood moisture certification programs; daily woodburning advisory program (for areas outside the critical PM_{10} control area); and the woodstove certification program.

The major new residential wood combustion strategies in this plan are the mandatory wood burning curtailment programs and the bans on installation of non-certified woodstoves. The mandatory curtailment programs adopted by the cities of Medford and Central Point and Jackson County and the ban on installation of non-certified stoves adopted by the City of Ashland and Jackson County are included in the appendix. Also included are local ordinances on opacity limits, what can be burned in woodstoves, and sale of seasoned firewood.

The new industrial strategies are more stringent control requirements on veneer dryers and large wood-fired boilers, more extensive source testing and continuous emission monitoring, and more restrictive emission offset requirements for new or expanded industries. These rules were adopted by the Environmental Quality Commission on September 8, 1989, and are included in the appendix. The new industrial rules are in addition to the industrial rules for the Medford-Ashland area adopted in 1978 and 1983.

The current local ordinances that regulate open burning and trackout are included in the appendix. Also included is a progress report on paving of unpaved roads and curbing of shoulders on paved roads within the city of Medford.

4.14.0 State Implementation Plan for the Medford-Ashland AQMA PM_{10} Nonattainment Area

4.14.0.1 Introduction

On July 1, 1987, the U.S. Environmental Protection Agency (EPA) promulgated new federal ambient air quality standards for particles less than or equal to 10 micrometers in aerodynamic diameter (PM_{10}) to replace the Total Suspended Particulate (TSP) standard[1]. The standard became effective 30 days later on July 31, 1987. On August 7, 1987, EPA classified the Medford-Ashland Air Quality Maintenance Area as a Group I PM_{10} nonattainment area (52 FR 29383). Group I areas are those which have a greater than 95 percent probability of exceeding the PM_{10} National Ambient Air Quality Standards (NAAQS). Air monitoring has shown that air quality within the Medford-Ashland AQMA exceeds the PM_{10} standards (NAAQS).

Section 110 of the Federal Clean Air Act requires States to adopt and submit plans (State Implementation Plans or SIPs) to EPA within nine months after the effective date of the standard. The Clean Air Act allows EPA four months to approve or disapprove the plan. The plan must provide for attainment of the standard as expeditiously as practicable but no later than three years from the date of EPA approval of the SIP[2]. Hence, attainment theoretically must be reached by September 1, 1991.

The Air Quality Division of the Department of Environmental Quality (subsequently referred to as the Department) has developed this plan in consultation with officials of Jackson County, the cities within the Medford-Ashland AQMA, the Oregon Departments of Transportation and Forestry, and EPA. The plan was prepared in accordance with the regulations and requirements of the Federal Clean Air Act and the EPA. The Department believes that the PM_{10} plan can achieve attainment of the NAAQS within the time frame required by the Act and maintain attainment at least through the year 2000.

4.14.0.2 SIP Overview

This revision to the State Implementation Plan (SIP) has five sections. Section 4.14.1 provides a description of PM_{10} ambient air quality in Medford-Ashland AQMA; Section 4.14.2 describes the PM_{10} air quality problem within the Medford-Ashland AQMA; Section

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[1] A micrometer (μm) is a unit of length equal to about 1/25,000 of an inch. For comparison, the thickness of a human hair is about 100 to 200 micrometers.

[2] Clean Air Act Section 110 (a)(1).

4.14.3 describes emission reductions needed to attain NAAQS; Section 4.14.4 describes implementation of the control strategies; and Section 4.14.5 describes public involvement.

4.14.0.3 Area Description

The following description of the topography is from the annual climatological summary for the Medford area prepared by the National Weather Service.[3]

> Medford is located in a mountain valley formed by the Rogue River and one of its tributaries, Bear Creek. The major portion of the valley ranges in elevation from 1,300 to 1,400 feet above sea level. Mountains surround the valley on all sides: to the east, the Cascades, ranging up to 9,500 feet; to the south, the Siskiyous, ranging up to 7,600 feet; and to the west and north, the Coast Range and Umpqua Divide, ranging up to 5,500 feet above sea level. The valley exits to the ocean 80 miles westward through the narrow canyon of the Rogue River.

The Medford-Ashland Air Quality Maintenance Area (AQMA) is outlined in Figure 4.14.0-1. The AQMA covers about 228 square miles and approximates the Bear Creek Basin. The AQMA boundary is the PM_{10} nonattainment area for the purposes of this plan.

At a minimum, the PM_{10} nonattainment area must be large enough to include all of the local geographical areas that violate the ambient PM_{10} standards. The ambient monitoring network and dispersion modeling indicate that the PM_{10} violation areas are located within the AQMA and include the Medford, Central Point, White City, Phoenix, and Talent areas.

The boundary must also be large enough to include potential future PM_{10} problem areas resulting from residential, industrial or transportation growth. The AQMA includes about 80% of the Jackson County population. The 1988 population was estimated to be 143,400 in Jackson County[4] and 115,000 in the AQMA. All of the major industries in Jackson County are located within the Medford-Ashland AQMA. Most of the traffic (vehicle-miles-traveled or VMT) in Medford is from vehicles registered within the AQMA (about 88% of the VMT).

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[3]"Local Climatological Data, 1987 Annual Summary with Comparative Data, Medford, Oregon," National Oceanic and Atmospheric Administration, National Climatic Data Center, Ashville, North Carolina.

[4]Center for Population Research and Census, School of Urban and Public Affairs, Portland State University

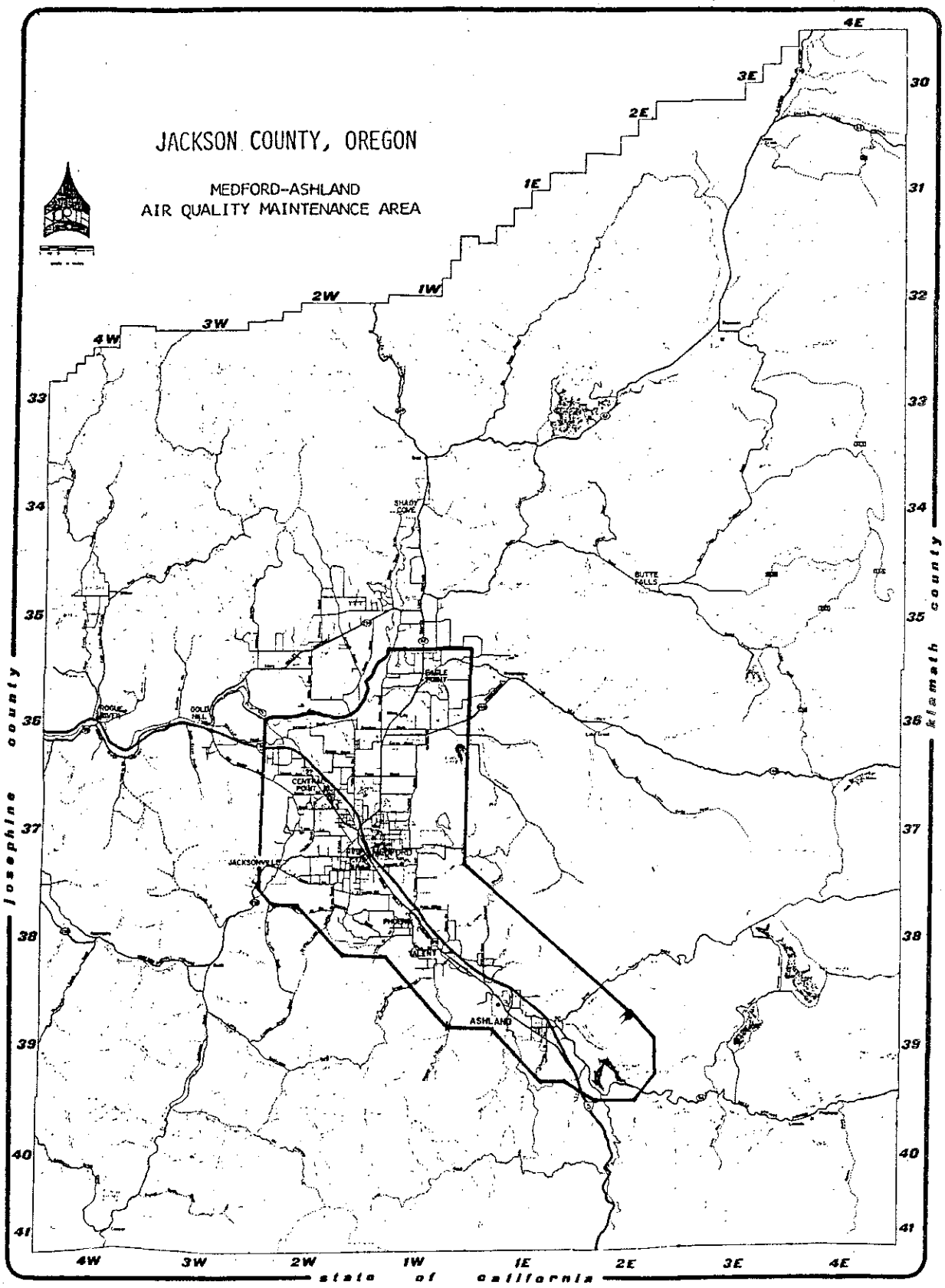

Figure 4.14.0-1: Map of Medford-Ashland AQMA

The AQMA boundary has been used for the special industrial air pollution control rules adopted in 1978, 1983 and 1989.

The Department of Environmental Quality and Jackson County Health Department have also identified an area within the AQMA that is referred to as the critical PM_{10} control area outlined in Figure 4.14.0-2. This area includes the PM_{10} problem areas, most of the AQMA population (about 90,000 of the 115,000 AQMA population), and all of the major industries.

4.14.0.4 Medford-Ashland Meteorology

The following description of climate and meteorology in the Medford-Ashland area is from the annual climatological summary prepared by the National Weather Service.[5]

> Medford has a moderate climate of marked seasonal characteristics. Late fall, winter, and early spring months are damp, cloudy, and cool under the influence of marine air. Late spring, summer, and early fall are warm, dry, and sunny, due to the dry continental nature of the prevailing winds aloft that cross this area.
>
> The rain shadow afforded by the Siskiyous and Coast Range results in a relatively light annual rainfall, most of which falls during the winter season. Summertime rainfall is brought by thunderstorm activity. Snowfall is quite heavy in the surrounding mountains during the winter. Valley snowfall is light. Individual accumulations of snow seldom last more than 24 hours and present little hindrance to transportation on the valley floor.
>
> Few extremes of temperatures occur. High temperatures in the summer months average slightly below 90 degrees. High temperatures are always accompanied by low humidity, and hot days give way to cold nights as cool air drains down the mountain slopes into the valley. The length of the growing season is 170 days, from late April to mid-October. The last date of 32 degrees in the spring normally occurs in mid-June and the first date of 32 degrees in the fall occurs in mid-September.
>
> Valley winds are usually very light, prevailing from the north or northwest much of the year. Winds exceeding 10 mph during the winter months nearly always come from the southerly quadrant. Highest velocities are reached when a

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[5]"Local Climatological Data, 1987 Annual Summary with Comparative Data, Medford, Oregon," National Oceanic and Atmospheric Administration, National Climatic Data Center, Ashville, North Carolina.

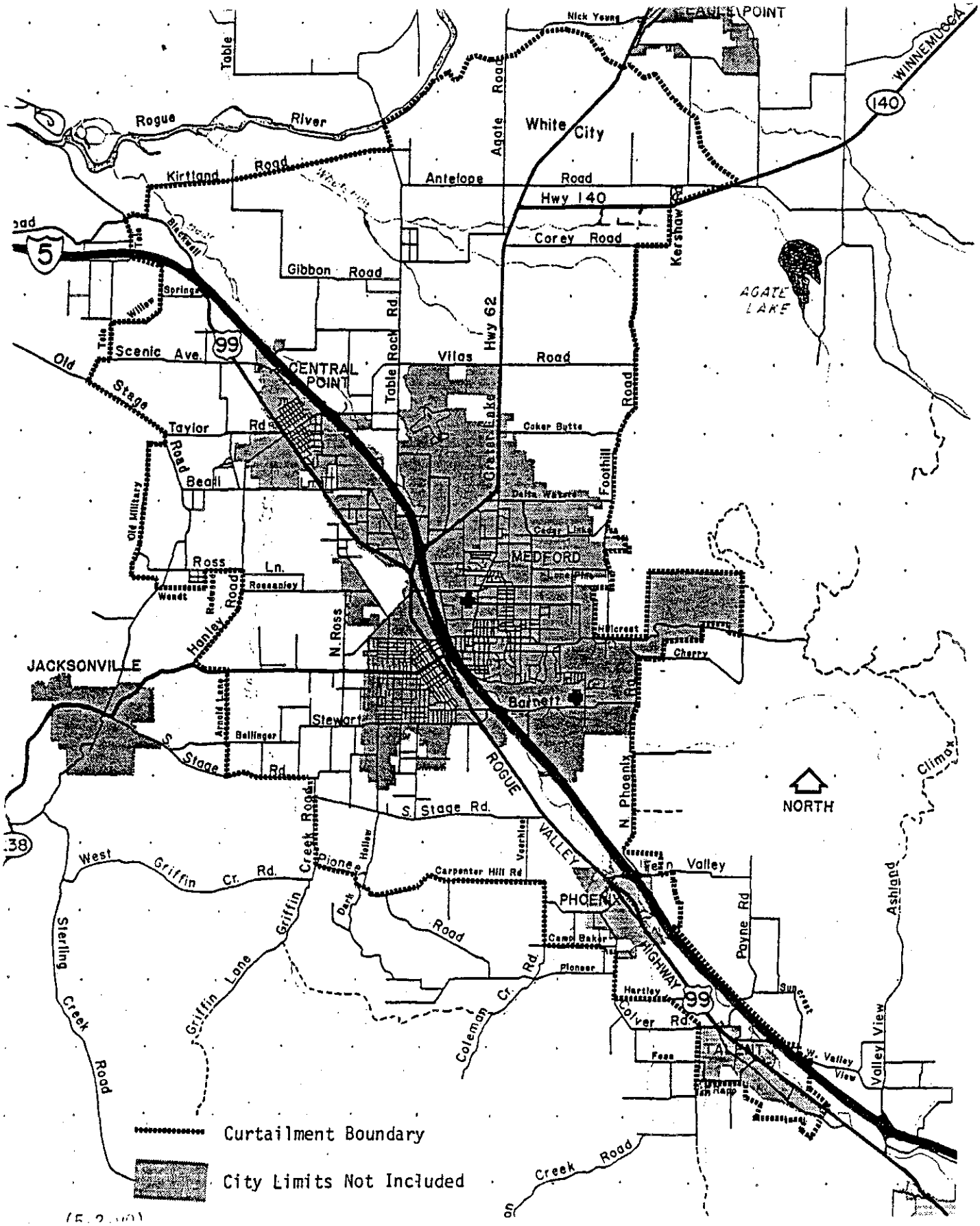

Figure 4.14.0-2: Map of Critical PM_{10} Control Area.

well developed storm off the northern California coast causes a foehn or chinook wind off the Siskiyou Mountains to the south; speeds to 50 mph are common and gusts to 70 mph have been recorded occasionally. Summer thunderstorms produce gusty winds to 40 or 50 mph which may come from any direction.

Fog often fills the lower portion of the valley during the winter and early spring months, when rapid clearing of the sky after a storm allows nocturnal cooling of the entrapped moist air to the saturation point. Duration of the fog is seldom more than three days. Geographical and meteorological conditions contribute to a smoke problem during the fall, winter, and early spring months. Smoke from local sources occasionally reduces visibility to 1 to 3 miles under stable conditions.

The particulate air pollution problems in the Medford-Ashland area are caused by the combination of poor ventilation, especially during the fall and winter months, and particulate emissions from various sources. A national study of weather patterns indicated that the interior valleys of southwest Oregon had among the poorest atmospheric ventilation in the country.[6] This comparison of national ventilation data is summarized in Figure 4.14.0-3 from the Oregon Environmental Atlas.[7]

4.14.0.5 Health Effects of PM_{10} and Woodsmoke

National ambient air quality standards are established by the U.S. Environmental Protection Agency (EPA) following extensive review by the public and the Clean Air Scientific Advisory Committee. The Clean Air Scientific Advisory Committee is a group of non-EPA scientists and engineers that reviews health effects information and recommends appropriate air quality standards for protection of public health. The Committee during the deliberations on the PM_{10} standards was a panel of eleven nationally recognized experts chaired by Dr. Morton Lippman, Professor of Medicine at the New York University Medical Center.

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[6]G.C. Holzworth, Mixing Heights, Wind Speeds, and Potential for Urban Air Pollution Throughout the Contiguous United States, U.S. Environmental Protection Agency, Office of Air Programs, Publication No. AP-101, January 1972.

[7]Department of Environmental Quality and Portland State University, Oregon Environmental Atlas, Portland, Oregon, 1988.

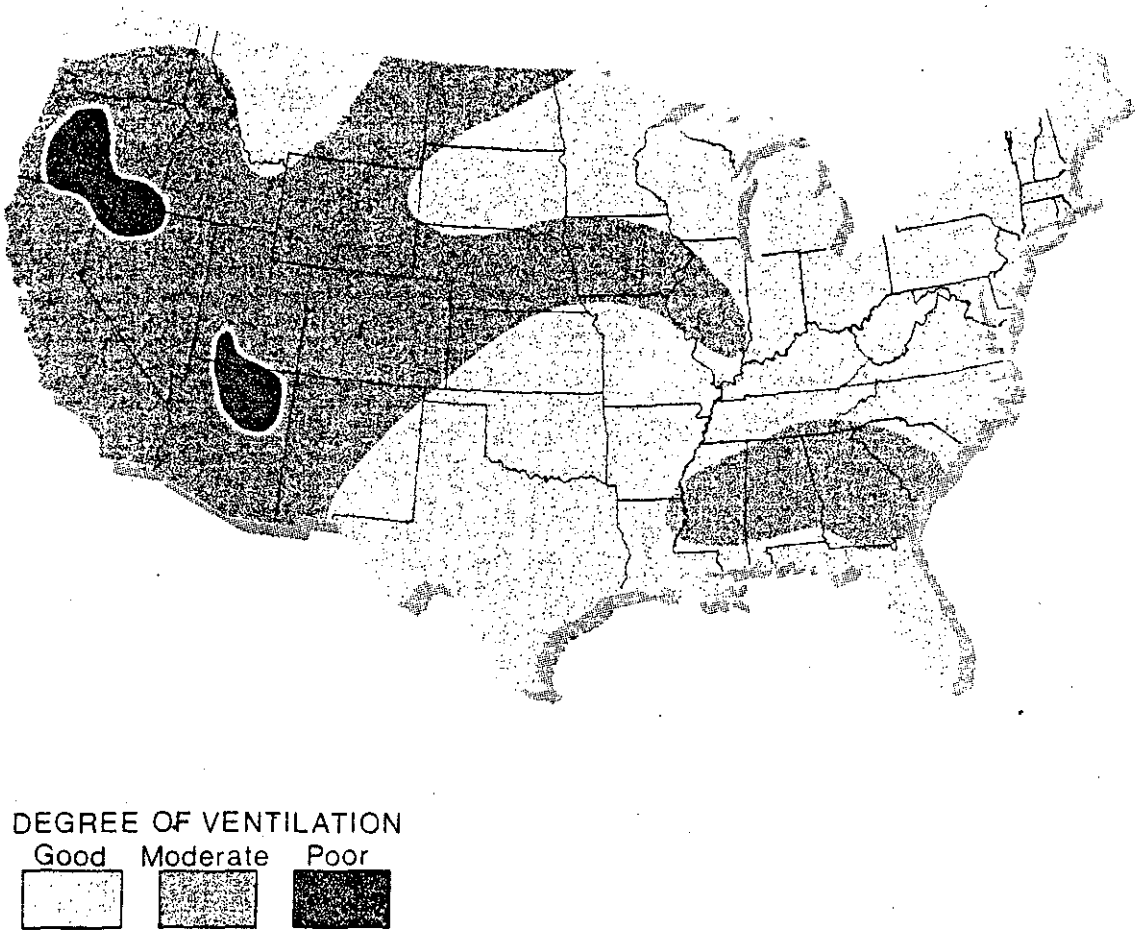

Figure 4.14.0-3: Comparison of Atmospheric Ventilation in U.S.

The health effects information that forms the basis of the PM_{10} standards was compiled in 1982 and updated in 1986. The members of the Clean Air Scientific Advisory Committee and other peer-reviewers of the PM_{10} health effects information are listed in the document.[8]

Particulate matter measuring less than or equal to 10 micrometers (μm) is considered a risk to human health due to the body's inability to effectively filter out particles of this size. These particles can become lodged in the alveolar regions of the respiratory system where they trigger biochemical and morphological changes in the lungs.[9]

For example, constriction of air passages (i.e., reduced air flow) occurs rapidly upon exposure to PM_{10}. Episodic and continuous exposure aggravates chronic respiratory diseases such as asthma, bronchitis, and emphysema which in turn restrict the lung's ability to transfer oxygen into the bloodstream. Traditionally, children, the elderly, and cigarette smokers are the most susceptible to lung dysfunctions and are, therefore, at greatest risk from PM_{10} exposure.[8] Episodic exposure can also cause changes in the activity of the lung's mucous secretions and accelerates the mucociliary action in an attempt to sweep the particulates out of the lungs. This results in increased symptoms of cough, phlegm, and dyspnea (difficulty in breathing). Continuous exposure can inhibit this defense mechanism by introducing new particles into the lungs and redistributing those being swept out. This slows the clearance of the bronchial system thus increasing susceptibility to acute bacterial and viral infections.

The increased stress on the pulmonary system caused by PM_{10} exposure is usually tolerable for those with healthy respiratory systems, however, it can lead to irreversible or fatal damage in people already suffering from cardiopulmonary disease, typically children, the elderly, the ill, and cigarette smokers.[8] Another group that falls into the high risk category are people who breathe through their mouths.[8] This group includes a wide range of people from chronic mouth-breathers to anyone involved in outdoor exercise and heavy labor. During mouth-breathing,

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[8]U.S. Environmental Protection Agency, Second Addendum to Air Quality Criteria for Particulate Matter and Sulfur Oxides (1982: Assessment of Newly Available Health Effects. EPA 600/8-86-020-F. NTIS # PB-87-176574.

[9]J. Koenig, T.V. Larson, P. Jenkins, D. Calvert, N. Maykut and W. Pierson, "Wood Smoke: Health Effects and Legislation," Health Effects of Woodsmoke, Northwest Center for Occupational Health and Safety, January 20, 1988.

particulate matter is breathed more directly into the lungs since it bypasses the filtering systems of the nasal passages.

Among the sources of PM_{10} emissions, woodsmoke is of particular concern in the Medford-Ashland AQMA because it accounts for a majority of the small particulate matter measured in the nonattainment area. These particles are less than 1 μm in diameter and remain suspended in the air for long periods of time. Because of their small size and their ability to remain airborne, they are easily inhaled and lodged in the alveolar region of the lungs. These particles can also act as carriers for toxic chemicals which are transported deep into the respiratory system. Some of these toxic substances are then absorbed into the bloodstream.

Woodsmoke contains fourteen carcinogenic compounds including benzo(a)pyrene, benzo(a)anthracene, and other polycyclic organic materials.[10] Additionally, woodsmoke contains several other hazardous compounds such as aldehydes, phenols, carbon monoxide and volatile organic vapors. These compounds can cause or contribute to illness ranging from neurological dysfunctions and headaches to lung cancer. Many of the components of woodsmoke are also found in cigarette smoke and coke oven emissions and can affect the cilia in a similar manner making it difficult for the body to expel the particulate matter. Because woodsmoke concentrations are highest in residential areas, a large segment of the population is routinely exposed to woodsmoke pollution in the winter months. Additionally, it is those people who are most sensitive, children, the elderly, and the ill, who spend the most time in their homes, thereby increasing their risk.[10]

Because of these health concerns, a number of symposiums on woodsmoke health effects have been held in the Pacific Northwest. The University of Washington Department of Environmental Health and several other organizations sponsored a conference called "Health Effects of Woodsmoke" in January 1988, the Klamath County Health Department sponsored the "Symposium on Health Concerns of Woodsmoke" in October 1989, and the Jackson County Medical Society and Jackson County Health Department co-sponsored "Woodsmoke and Your Health" in February 1989.

4.14.1 Ambient Air Quality

Particulate ambient air quality monitoring for Total Suspended Particulate (TSP) began in Medford in 1969 at the Jackson County Courthouse near Oakdale/Main Streets. TSP monitoring in White City near Agate Road began in 1977.

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[10]P.G. Jenkins, Washington Wood Smoke: Emissions, Impacts and Reduction Strategies, Washington Department of Ecology, Olympia, Washington. December, 1986.

The Medford Aerosol Characterization Study (MACS) was conducted during 1979-81 in order to determine the sources contributing to the TSP and respirable particulate (particles smaller than 2 μm) problems in the Medford and White City areas. MACS included both dispersion modeling (climatological dispersion model, or CDM) and receptor modeling (chemical mass balance, or CMB).

An automated particulate monitor (APM) was installed in 1978 in Medford at the Brophy Building at Central/Main Streets. An integrating nephelometer was added at Central/Main in 1980. The APM and nephelometer provide hourly average data that can be used to estimate particulate concentrations. These instruments have been used to report the daily particulate subindex for the Air Pollution Index since 1978.

PM_{10} monitoring began in Medford in 1983 and in White City in 1985. Based on measured violations of the PM_{10} standards during 1983-86, the Medford - White City area was identified as a Group I PM_{10} area in August 1987. During 1984-86, the PM_{10} concentrations on worst days were over 300 micrograms per cubic meter ($\mu g/m^3$), or over twice the 24-hour PM_{10} standard of 150 $\mu g/m^3$, and the annual average was over 60 $\mu g/m^3$, or about 20% above the annual PM_{10} standard of 50 $\mu g/m^3$.

A Medford particulate gradient study was conducted from September 1985 to February 1986 in order to characterize the TSP and PM_{10} gradients and determine if additional monitoring sites should be established. This gradient study included the extended air stagnation episode of December 1985 which resulted in the highest PM_{10} levels measured to date in the Medford area. TSP levels were generally higher at the Oak/Taft and Haven/Holly gradient study sites than at the historical monitoring site at Oakdale/Main; but PM_{10} levels were similarly high during December 1985 at the historical monitoring site at Oakdale/Main and the special monitoring sites at Oak/Taft and Haven/Holly. As a result of this study, an additional PM_{10} monitoring site was established at the Oak/Taft site (1985-88) and the Welch/Jackson site (1989 on) in order to insure that the monitoring network included the site of maximum impact.

Ambient PM_{10} data for various locations in the Medford-Ashland AQMA are discussed in more detail in Section 4.14.1.2.

4.14.1.1 Air Monitoring Methods

Several sampling methods have been used to measure TSP or PM_{10} concentrations in Medford:

> The TSP High-Volume air sampler collects TSP samples on pre-weighed 8" X 10" filters through which air is drawn at 50 cubic feet per minute (CFM) over a 24-hour period.

Because these samplers are not equipped with a size selective inlet, the upper limit of particle size captured on the filter may reach 100 μm. Prior to EPA's adoption of the PM_{10} NAAQS, this method was the standard reference method for measurement of airborne particulate matter.

The PM_{10} Medium-Volume (MV) sampler collects PM_{10} aerosol using a 12 port, 47 mm filter sequencing system that is programmed to collect 24-hour samples. The sampler pulls ambient air at a 4 CFM flow rate through a 10 μm Sierra-Anderson 254 inlet providing a PM_{10} cut point. A dual-port system capable of simultaneously collecting aerosol on both Teflon and quartz filter substrate is used to allow complete chemical analysis for CMB receptor modeling purposes. EPA has designated the MV sampler as a reference method. Sampling typically occurs every day during the winter months and every sixth day during the remainder of the year.

The PM_{10} High-Volume Size-Selective-Inlet (HV-SSI) is a sampler equipped with a Sierra-Anderson SA321A, SA321B or SA1200 PM_{10} cut-point inlet. This method (except for the SA321A) has been designated by EPA as a reference method. Sampling typically occurs every sixth day.

Integrating Nephelometer measurements of light scattering (a surrogate for PM_{10}) have been conducted at Central/Main. This method provides hourly light scattering averages which are highly correlated to PM_{10} concentrations measured using the MV or HV-SSI reference methods.

Table 4.14.1-1: Data Collection Periods/Methods at Jackson County Courthouse (Oakdale/Main) or Brophy Building (Central/Main).

Measurement Method	Began	Terminated
TSP High-Volume (TSP)	Jan-69	Current
Automated Particulate Monitor (APM)	Apr-78	Aug-88
Integrating Nephelometer	Apr-80	Current
PM_{10} Dichotomous Virtual Impactor (VI)	May-83	Sep-87
PM_{10} High-Volume (SSI)	May-83	Oct-89
PM_{10} Medium-Volume (MV)*	Dec-87	Current

* Both Teflon and quartz filter substrate are used.

PM_{10} concentrations in a given 24-hour period can vary by about +/-10% depending on the monitoring method used. The differences between methods have decreased over time as the sampler manufacturers have improved the units; as a result, several units have recently been designated as reference methods by EPA. The reference methods include the following units that have been used in Medford: the Medium-Volume PM_{10} samplers, the High-Volume SSI samplers (Models SA321B and SA1200), and similar but not identical Low-Volume Dichotomous VI samplers.

Because of the differences in monitoring methods, especially in the period prior to designation of reference methods, PM_{10} data in the following sections is sometimes referred to as PM_{10}MV, PM_{10}SSI, or PM_{10}VI to indicate the monitoring method used to collect the data. EPA guidance[11] indicates that: non-reference PM_{10}SSI data prior to August 1988 should be multiplied by a factor of 0.8-1.0 in order to reflect the "grey-zone" around true PM_{10} concentrations (i.e., the PM_{10}SSI data is biased high relative to the other PM_{10} monitoring methods); and non-reference PM_{10}VI data prior to August 1988 should be taken at face value, since the VI samplers had excellent performance in the EPA intercomparison studies. DEQ intercomparisons between the SSI, VI and MV samplers indicated that the MV method produced results in between the SSI and VI methods (i.e., lower than the SSI but higher than the VI).

The composite of all available particulate data was used to calculate everyday PM_{10}VI and PM_{10}SSI values for 1984-86.[12] Since most of the recent and future PM_{10} data will be collected as PM_{10}MV, and in order to properly compare future PM_{10} levels with the historical PM_{10} levels, the historical PM_{10} data has been converted to the PM_{10}MV-equivalent using the following formula based on the Department's intercomparison studies:

$$PM_{10}MV = 1.044\ (PM_{10}VI) + 5.38$$

The PM_{10}MV data results in only slightly higher PM_{10} values than using PM_{10}VI data at face value (about 6% higher at the 24-hour design value). More importantly, the PM_{10}MV agrees quite closely with the dispersion modeling results and provides the measured mass data for the chemical fingerprinting analysis in recent and future years.

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[11]Revision to Policy on the Use of PM_{10} Measurement Data, November 21, 1988.

[12]M.L.Hough, Estimation of Everyday PM_{10} Concentrations Using Non-reference Monitoring Methods, In Transactions, PM_{10}: Implementation of Standards, Edited by C.V.Mathai and D.H. Stonefield, TR-13, APCA, Pittsburgh, PA (1988).

4.14.1.2 PM_{10} Air Quality in Medford and White City

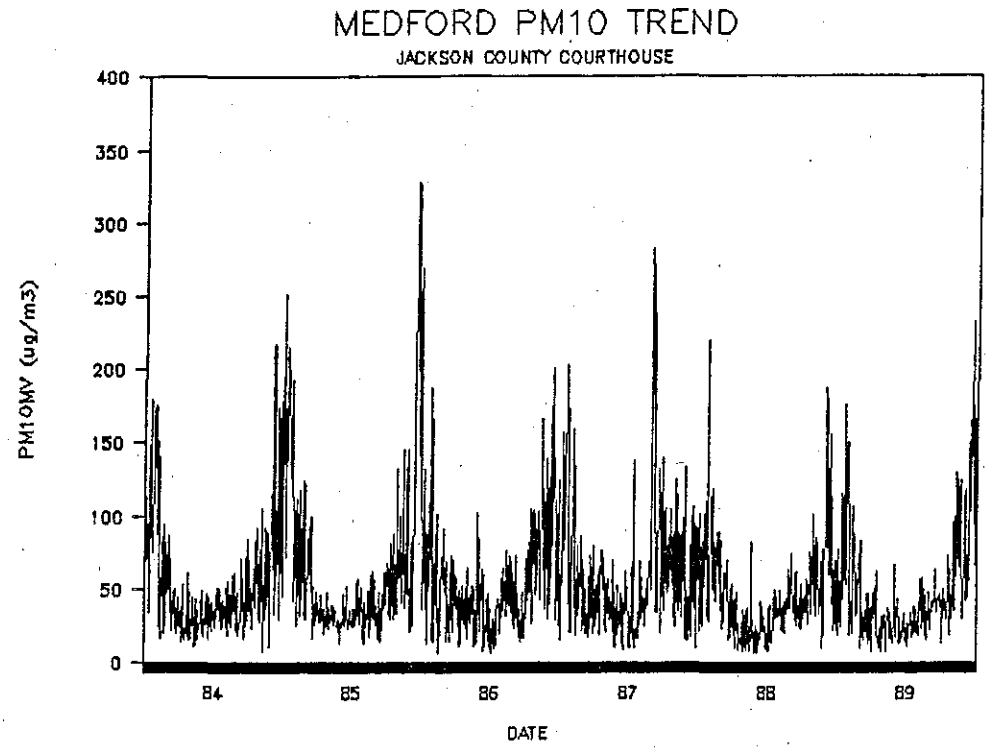
The PM_{10}MV-equivalent data from the Courthouse and White City Post Office for the 1984-89 period are plotted in Figure 4.14.1-2. Peak PM_{10} concentrations typically occur during December and January. This is due to poorer ventilation and increased woodheating emissions during these months. The peak PM_{10} levels measured or calculated during 1984-89, other than the forest fire smoke impacts in September 1987, are summarized in Table 4.14.1-2.

Table 4.14.1-2: Peak Days PM_{10}MV and PM_{10}VI Levels ($\mu g/m^3$) During 1984 to 1989 in the Medford-Ashland AQMA.

Rank	PM_{10}MV	PM_{10}VI	Date	Location
Highest Value	327	308	851217	Courthouse
Second Highest	326	308	851223	Courthouse
Third Highest	295	277	851218	Courthouse
Fourth Highest	283	266	851220	Courthouse
Fifth Highest	269	253	851229	Courthouse
Highest Value	363	NA	851217	Oak & Taft
Second Highest	340	NA	851219	Oak & Taft
Third Highest	330	NA	851223	Oak & Taft
Fourth Highest	297	NA	851220	Oak & Taft
Fifth Highest	295	NA	851218	Oak & Taft
Highest Value	329	NA	851229	White City
Second Highest	302	NA	851224	White City
Third Highest	272	NA	851219	White City
Fourth Highest	268	NA	851227	White City
Fifth Highest	250	NA	851226	White City

During 1984-89, the most severe air stagnation episodes occurred in January 1985, December 1985, and December 1989. The peak PM_{10} concentrations in the previous table occurred during the December 1985 episode.

The highest annual average PM_{10} concentrations during 1984-89 at the Jackson County Courthouse (the site with the longest historical particulate monitoring record) were measured during 1985 with annual average concentrations of 60 $\mu g/m^3$ to 74 $\mu g/m^3$, depending on the PM_{10} monitoring method used.



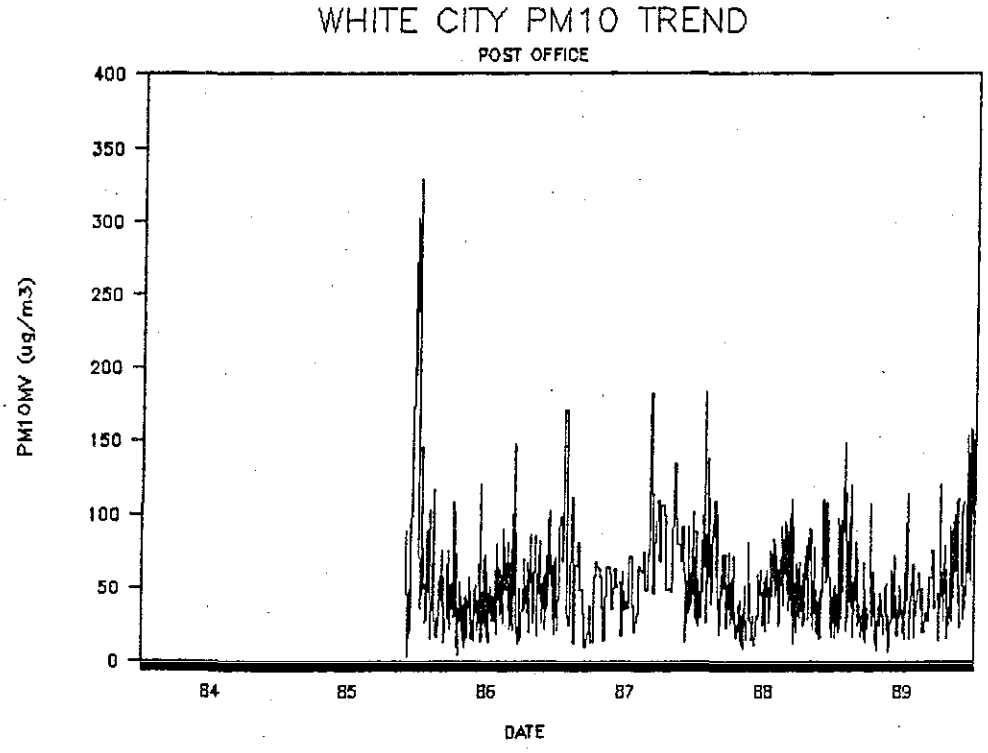


Figure 4.14.1-2: PM_{10}MV Concentrations Measured or Estimated at the Jackson County Courthouse and White City Post Office During 1984-89.

Particulate gradient studies were completed in Medford and White City during 1985. The maximum Medford PM_{10} impacts occurred in the Oak & Taft and Haven & Holly areas. The maximum White City PM_{10} impacts occurred in the Post Office area on Antelope Road. New PM_{10} monitors were established at the peak PM_{10} impact sites prior to the December 1985 episode in Medford (Oak & Taft from November 1985 to October 1989, Welch & Jackson from July 1989 to present) and White City (Post Office from November 1985 to present).

EPA reference samplers were installed at all of the PM_{10} monitoring sites in the Medford and White City areas by December 1987. This reduced the uncertainty of 1988-forward PM_{10} data. The 1989 PM_{10} data, which is the most recent year of data and includes data during an extended air stagnation episode in December 1989 similar to the December 1985 episode, is summarized in Table 4.14.1-3.

Table 4.14.1-3: Peak Days and Annual Average PM_{10}MV Levels ($\mu g/m^3$) During 1989 in the Medford-Ashland AQMA.

Rank	PM_{10}MV	Date	Location
Highest Value	232	891221	Courthouse
Second Highest	229	891222	Courthouse
Third Highest	176	890119	Courthouse
Fourth Highest	166	891227	Courthouse
Fifth Highest	165	891215	Courthouse
Annual Average	50	1989	Courthouse
Highest Value	246	891221	Welch & J*
Second Highest	210	891223	Welch & J*
Third Highest	198	891227	Welch & J*
Fourth Highest	170	891214	Welch & J*
Fifth Highest	161	891226	Welch & J*
Annual Average	60	1989	Welch & J*
Highest Value	158	891220	White City
Second Highest	157	891223	White City
Third Highest	154	891223	White City
Fourth Highest	150	891227	White City
Fifth Highest	149	890130	White City
Annual Average	52	1989	White City

* Welch & Jackson data combined with Oak & Taft data for 1989.

The recent PM_{10} data indicate that the Oak & Taft (Welch & Jackson) site and the Courthouse site have the most severe violations of the 24-hour PM_{10} standard and the Oak & Taft (Welch & Jackson) site has the most severe violations of the annual average PM_{10} standard.

Background Air Quality

PM_{10} aerosols from sources external to the AQMA collectively contribute to background air quality or the concentration of PM_{10} in the airmass as it is transported into the Medford Basin. Sources such as wildfires, slash and agricultural burning, wind entrained soil and secondary aerosols are believed to be the principal contributors to background air quality. A background monitoring site was operated by the Department on Dodge Road in Sams Valley during 1979-87. The annual average PM_{10} concentrations at the Dodge Road site were about 14.8 $\mu g/m^3$. Dispersion modeling indicates that about 1.7 $\mu g/m^3$ of the annual measured at Dodge Road during 1985-86 was from sources in the Medford-Ashland AQMA. Therefore the true background at Dodge Road is estimated at about 13.1 $\mu g/m^3$ (14.8-1.7 $\mu g/m^3$). This is very similar to the 12 $\mu g/m^3$ annual average concentration measured during 1987-88 in the Quartz Creek Valley which is also located in southern Oregon (about 50 miles east of Klamath Falls).

The highest concentration measured at Dodge Road was 44 $\mu g/m^3$ during the winter months. Sampling was on an every-sixth-day schedule, thus providing a good estimate of annual average total PM_{10} measured at the background site but a weaker estimate of peak day total PM_{10} impact at the background site. It is possible that the peak day total impact was slightly higher than the 44 $\mu g/m^3$ measured. Because of this uncertainty, the full 44 $\mu g/m^3$, instead of 44 $\mu g/m^3$ minus the dispersion modeled impact, was used as the more conservative estimated background level on worst case days.

4.14.2 Nonattainment Area Analysis

This section describes the Department's analysis of PM_{10} air quality in Medford as it related to the National Ambient Air Quality Standards. Source contributions to the airshed PM_{10} air quality is discussed both in terms of emission strengths and source contributions to air quality as measured at the Jackson County Courthouse and other monitoring sites in the AQMA.

4.14.2.1 Design Values Determination

Attainment of the annual NAAQS requires that a control strategy be adopted which will reduce ambient concentrations from the design value to below the NAAQS; specifically that the expected number

of exceedances of the 24-hour NAAQS be less than or equal to one per year, and the annual average over a period of three or more years be less than or equal to the annual NAAQS.

The EPA PM_{10} SIP Development Guideline specifies that the preferred approach for estimating a design value is through the use of an applicable dispersion model corroborated by receptor models.[13] This approach was used for the Medford-Ashland AQMA.

EPA has not yet approved a guideline dispersion model for valley stagnation conditions such as occur in Medford on the peak days. Therefore the Department evaluated two non-guideline dispersion models (GRID and WYNDvalley) designed for valley stagnation conditions and one guideline dispersion model (ISCST) not designed for valley stagnation conditions. The time period selected for dispersion modeling was mid-1985 to mid-1986. The most precise meteorological data (McAndrews/Riverside meteorological station with lower wind speed threshold than the National Weather Service anemometer) was available for July 1985 to June 1986 as part of the Medford particulate gradient study. This time period included the highest several days on record (during December 1985), and the 12-month average was similar to the overall 1984-86 average.

The dispersion model results were corroborated with the chemical mass balance (CMB) receptor model (Version 7.0). CMB filters were analyzed for 88 days during 1984-89. The Department used the ambient monitoring data (1984-89) and dispersion model data (1985-86) to estimate the annual and 24-hour design values.

The ISCST dispersion model consistently underpredicted impacts on the worst case days of December 1985. Both the GRID and WYNDvalley dispersion models performed well, providing results similar to the ambient PM_{10} measured at the Jackson County Courthouse. GRID gave slightly better results and was selected as the model for additional analyses. The dispersion modeling detailed results and methodology are outlined in the appendix.

The dispersion model output was compared to the ambient PM_{10} monitoring data from the Courthouse and Oak & Taft sites. The results of these comparisons are outlined in Table 4.14.2-1. The Oak & Taft monitor was not installed until late in 1985 so a 12-month average was not available (NA) for that site. On average, the GRID dispersion model slightly overpredicted at the Oak & Taft site and slightly underpredicted at the Courthouse site.

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[13] PM_{10} SIP Development Guideline. US Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, N.C. June, 1987. EPA-450/2-86-001.

Table 4.14.2-1: Comparison of Ambient PM_{10}MV and GRID Dispersion Model Results ($\mu g/m^3$) for July 1985 to June 1986.

Rank	PM_{10}MV	GRID	Location
Highest Value	327	307	Courthouse
Second Highest	326	304	Courthouse
Third Highest	295	281	Courthouse
Fourth Highest	283	266	Courthouse
Fifth Highest	269	252	Courthouse
Annual Average	58	59	Courthouse
Highest Value	363	342	Oak & Taft
Second Highest	340	331	Oak & Taft
Third Highest	330	318	Oak & Taft
Fourth Highest	297	309	Oak & Taft
Fifth Highest	295	296	Oak & Taft
Annual Average	NA	68	Oak & Taft

The GRID dispersion model was used to calculate the 24-hour (based on the fourth highest day) and annual design values. The Oak & Taft site was the most critical site and the Courthouse was the reference site for reconciliation with the receptor modeling. The design values are summarized in Table 4.14.2-2.

Table 4.14.2-2: Summary of Design Values at the Critical Sites Within the Medford-Ashland AQMA.

Time Period	Design Value	Location
24-Hour	309	Oak & Taft
24-Hour	266	Courthouse
Annual	68	Oak & Taft
Annual	59	Courthouse

4.14.2.2 Emission Inventory

Introduction

Emission inventories provide information on the relative strength of sources within an airshed and provide a basis for control strategy evaluation. In addition, emission inventories provide a basis for tracking emission reductions and growth. They cannot, however, in some cases estimate with certainty the impact of a source, or group of sources, at a specific location. Atmospheric dispersion caused by wind movements within the airshed and transport of pollutants into the airshed from exterior sources (i.e., wildfires, slash burning smoke and secondary aerosols) must generally be considered.

PM_{10} emissions (usually expressed in tons of particulate per year or TPY) are calculated from emission factors and source activity records. Emission factors are the weight of pollutant emitted per unit weight of material processed such as grams of PM_{10} emitted per pound of cord wood burned; pounds of road dust emitted per vehicle mile driven or pounds of particulate emitted per unit area of plywood veneer processed. Emission factors used in this analysis are principally from the Environmental Protection Agency's compilation of emission factors AP-42.[14]

Source activity information on the amount of cord wood burned by residents, vehicle miles driven or veneer production volumes are obtained from a variety of sources including industrial air contaminant discharge permit reports on source testing and production rates, public mail surveys, census data, and population and traffic data gathered from other government agencies.

Estimation of seasonal or worst-case day PM_{10} emissions requires development a of source operating schedule which describes the percent of annual emission that occur during specific seasons, months, or 24-hour periods.

Base Year Emission Inventory

PM_{10} emissions for the 1985-86 base year within the AQMA were estimated for industrial sources, residential heating (gas, oil and wood), commercial space heating, residential open burning, burning for agriculture and forestry, paved and unpaved roads, construction and agricultural dust and transportation sources (cars, trucks, railroads and aircraft). The basis of the emission estimates for the most significant sources are described below:

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[14] Compilation of Emission Factors, U.S. Environmental Protection Agency AP-42 Fourth Edition and subsequent supplements. US EPA Office of Air Quality Planning and Standards. Research Triangle Park, N.C. 27711.

Wood Products Industry Sources: 1275 TPY PM_{10}. Almost all (1275 of 1303 TPY) of the industrial emissions are from the wood products industry, and include wood-fired boilers, veneer dryers, particle dryers, fiber dryers, charcoal furnace, and air conveying systems for sawdust and sanderdust. Other industry emissions (28 TPY) are listed below under other sources.

Residential Wood Heating: 1777 TPY PM_{10}. Information obtained from the Department's 1985 and 1987 wood heating surveys[15] in Medford was combined with population estimates to project emissions from woodheating appliances in the AQMA. Approximately 43,350 housing units (1985-86 estimate) were located within the AQMA, and approximately 16,470 housing units used woodstoves and 8,670 used fireplaces. The 1985 survey indicated that, on average, residents burn 2.7 cords/year of firewood in their woodstoves and 1.2 cords/year in fireplaces. At 40 pounds of PM_{10} emitted per ton of wood burned in a woodstove, 1543 tons of PM_{10} are emitted per year. Fireplace emissions at 27 pounds per ton of wood burned total 234 TPY. By 1987 about 12% of the woodstoves were DEQ-certified models.

Fugitive Dust Emissions: 1008 TPY PM_{10}. The principal sources of dust within the AQMA are paved and unpaved road dust (430 and 489 TPY, respectively). Paved and unpaved road dust estimates are based on a 1986 estimate of 1,475,745 vehicles miles per day. Paved road dust PM-10 emissions were calculated using a 0.7 gram/mile emission factor derived from CMB data collected in Medford and Klamath Falls. Unpaved road dust PM-10 emissions were estimated by adjusting 1980 MACS results using differences in VMT and rainfall from 1980 to 1986 and assuming a PM_{10}/TSP ratio of 36%.

Backyard and Agricultural Burning: 83 TPY PM_{10}. Approximately 10,100 tons of backyard debris is burned each year generating 77 TPY of PM_{10}. This estimate is based on an average of 183 pounds of combustible material (principally yard debris) burned per person per year during the months of March through November. Each ton of debris burned is assumed to emit 15.3 pounds of PM_{10} particulate. The Oregon State University Experimental Station in Medford estimates that about 50 of the 1,800 acres of cereal grain fields and 35 of the 300 acres of grass seed fields within the AQMA are burned annually. At four tons of straw per acre, approximately 6

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[15] Oregon Woodheating Survey for 1987: Medford Area. State of Oregon Department of Environmental Quality, Air Quality Division. February, 1987.

TPY of PM_{10} would be generated by this source during the late summer and early fall. Backyard and agricultural burning emissions are combined with other sources in the following summary tables.

Transportation Sources: 290 TPY PM_{10}. Highway vehicles (autos and trucks) emit 225 TPY PM_{10} in tailpipe and tire wear particulate; off-highway vehicles emit 58 TPY; and railroad diesel engines and aircraft emit the remainder. Transportation emissions are combined with other sources in the following summary tables.

Other Sources: 241 TPY PM_{10}. Industries other than the wood products industries emit about 28 TPY. Residential and commercial space heating with fuels other than wood contribute 83 TPY. Structural fires contribute about 28 TPY. Slash burning and forest wildfires within the AQMA boundaries contribute about 75 TPY and 34 TPY, respectively, but these sources are of more interest for emissions outside the AQMA that contribute to the background PM_{10} entering the AQMA.

Table 4.14.2-2 summarizes annual PM_{10} emissions within the AQMA for 1985-86.

Table 4.14.2-2: PM_{10} Emission Inventory for 1985-86 Base Year in Medford-Ashland AQMA (July 1985 to June 1986).

Source Category	Tons/Year	Percent
Wood Products Industry	1275	27%
Residential Wood Burning	1777	38%
Fugitive Dust	1008	22%
Other	614	13%
Total	4674	100%

24-Hour Worst Case Inventory

Development of an inventory representative of emissions during a 24-hour period when PM_{10} ambient air concentrations reach their highest levels is important to understanding the sources that cause winter season episodes in the Medford-Ashland AQMA. The relative proportion of emissions during these periods is expected to be quite different than those reflected in the annual emission inventory, because some sources (such as open burning) are not as active, while others (such as residential wood heating) are much more active.

The 24-hour winter worst case inventory for the AQMA is based on the following information and assumptions:

Wood Products Industry emissions are assumed to be about 20% higher on worst case days during the winter months due to colder ambient temperatures, colder and damper fuel and raw materials, etc. The worst case day emissions for each industrial source that operates during the winter months are based on the annual average emissions multiplied by the ratio of the pound/hour plant site emission limits (PSELs) to the annual average PSELs.

Transportation Source emissions are based on the average daily traffic (ADT). The December ADT was 101% of the annual ADT in 1985 and 99% of the annual ADT in 1986. Therefore, the worst case day inventory is based on 1/365 of the annual transportation emissions.

Residential Wood Burning emissions are assumed to be proportional to the coolness of the weather as reflected in the degree heating days statistic calculated by the Department using maximum and minimum temperatures recorded in Medford and reported by the National Weather Service. The highest winter time PM10 concentrations recorded in Medford occurred during December 1985 when ambient temperatures averaged about 30 degrees Fahrenheit. The average heating-degree-day (HDD) during this period (35 HDD) was used to determine the worst case emission rate.

Table 4.14.2-3 summarizes the 24-hour worst case emissions for 1985-86. Figure 4.14.2-1 illustrates the percent contribution from each major source group for both annual and 24-hour worst case periods.

Table 4.14.2-3: PM_{10} Emission Inventory for 1985-86 Base Year in Medford-Ashland AQMA (July 1985 to June 1986).

Source Category	Pounds/Day	Percent
Wood Products Industry	8601	18%
Residential Wood Burning	29098	60%
Fugitive Dust	8652	18%
Other	2129	4%
Total	48480	100%

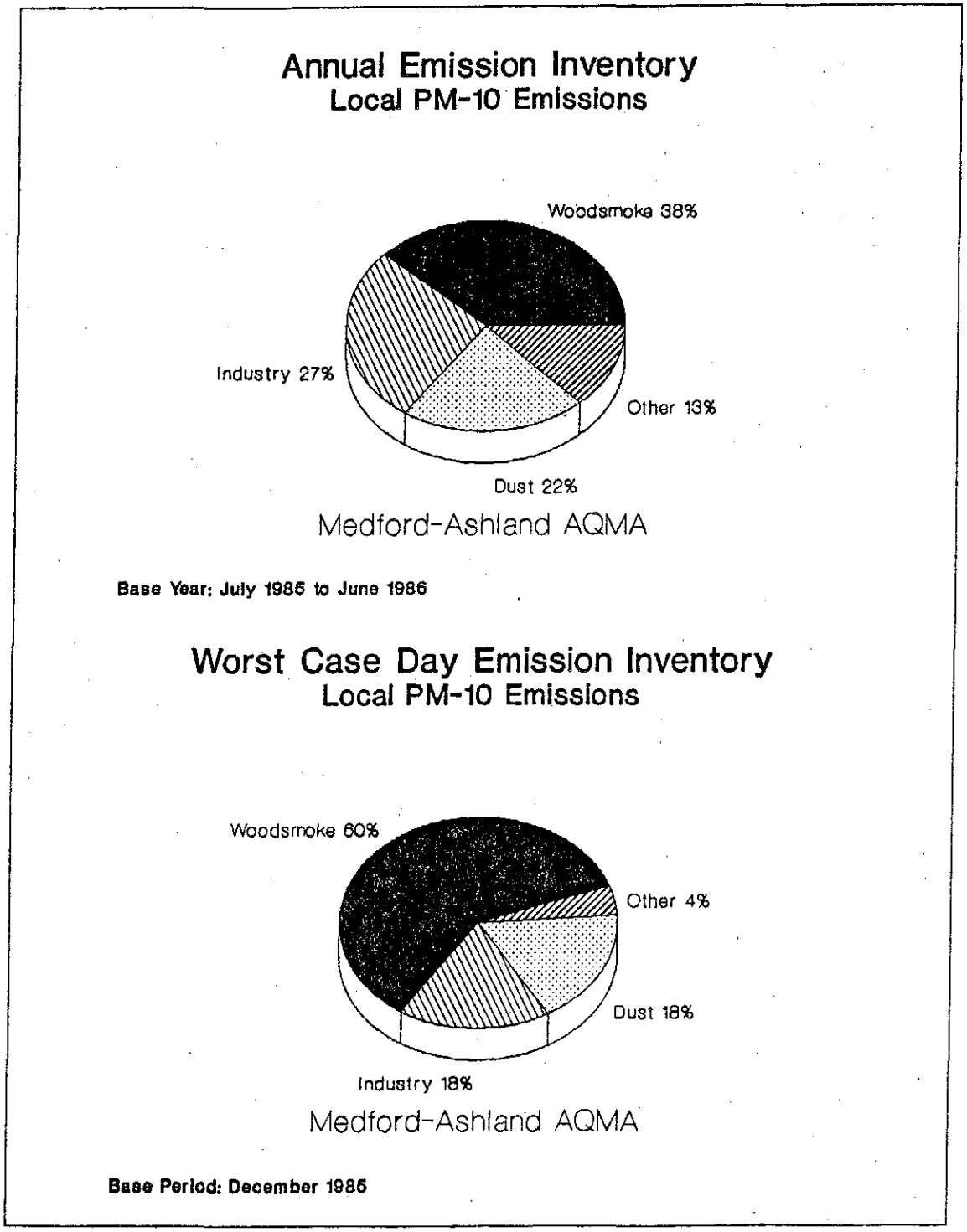

Figure 4.14.2-1: Medford-Ashland AQMA PM_{10} Emission Inventories.

A more detailed summary of the annual and worst case day emission inventories are included in the appendix.

Growth Factors

PM_{10} emission growth factors are used to estimate future year emission inventories and source category impacts. Key indicators used to estimate emissions in 1992 include population growth, increases in transportation (vehicle-miles-traveled, or VMT) and Plant Site Emission Limits (PSELs) for industrial sources.

Transportation Growth, estimated at 2.0% per year is used to estimate increases in vehicular and road dust emissions.[16] Road dust reductions from the paving of unpaved roads and the curbing of unpaved shoulders and trackout control have resulted in a net decrease in coarse fraction PM_{10} and road dust impacts in Medford during 1984-87 despite a higher than average traffic growth rate. Continuation of these programs is expected to reduce road dust emissions and continue to offset the effect of traffic growth during 1986-92.

Population Growth data indicates that the number of people living within the Medford-Ashland AQMA will increase by 1.6% per year between 1986 and 1992.[17] Population growth is used to proportionally increase residential open burning emission and woodstove use. The population growth rate used herein is consistent with those used by the Jackson County Planning Department.

Residential Firewood Use in woodstoves is expected to increase by 1% per year (6% total) and in fireplaces is expected to decrease by about 2% per year (12% total) between 1986 and 1992. These rates of change in firewood use are based on energy projections and fuel cost modeling performed to estimate future firewood use in the Pacific Northwest.[18]

On the emission reduction side, annual wood burning emissions are expected to decrease by about 26% due to replacement of existing

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[16]Oregon Department of Transportation, Highway Division Planning Section. State Implementation Plan, Appendix 4.9-15, September 1985.

[17]Center for Population Research and Census, School of Urban and Public Affairs, Portland State University.

[18] U.S. Environmental Protection Agency, Region X "Residential Wood Combustion Study, Task 3, Fuel Wood Use Projections", EPA 910/9-82-089 (1984).

woodstoves with cleaner burning units (woodstove certification program, Project CLEAR, SOLVE Program), home weatherization, improved firewood seasoning and woodstove operation. The mandatory wood burning curtailment program is expected to reduce worst day woodburning emissions by up to 85% and annual average wood burning emissions by 20%.

The net result (growth minus annual and worst day emission reductions) is a projected 42% decrease in annual wood burning emissions and an 85% reduction on worst case days within the mandatory curtailment area and slightly smaller percentage reductions (35% annual and 75% worst day) over the entire AQMA.

Industrial Emissions have been projected as the maximum permitted within their current Plant Site Emission Limits (PSELs). The base year emission inventories and the dispersion and receptor modeling indicate that industry emissions were close to the PSELs during 1985-86. The 24-hour emissions in 1992 are calculated as the current hourly maximum PSEL emission rate over a 24-hour period minus the required reductions in wood-fired boiler and veneer dryer emissions (and thus the new PSELs) due to the new industrial rules adopted in September 1989. The net result is a 22% reduction in industrial emissions by 1992.

Projected Emissions: 1985-86 to 1992

The 1985-86 annual and 24-hour emission and design value estimates must be adjusted to account for emission growth that may occur within the airshed during the six year period of 1986-1992. Estimates are based on the emission growth factors described above. The information presented in Table 4.14.2-4 provides a basis for the future year source impact estimates (Section 4.14.3.1).

Table 4.14.2-4: PM_{10} Emission Inventory for 1992 in Medford-Ashland AQMA with Growth and Control Strategy Implementation.

Source Category	Annual Tons	Annual δ*	Worst Case Day Pounds	Worst Case Day δ*
Wood Products Industry	995	-22%	6721	-22%
Residential Wood Burning	1155	-35%	7275	-75%
Fugitive Dust	1008	NC	8655	NC
Other	642	+5%	2352	+10%
Total	3800	-19%	25003	-48%

* Change from 1985-86 baseline to 1992 attainment year. NC indicates No Change. Industry reductions are in addition to those achieved during 1978-84.

Projected Emissions Beyond 1992

Analysis of the ability of the attainment strategies to maintain the NAAQS during the period 1992 to the year 2000 requires development of a third set of emission estimates. The growth rates assumed for the maintenance analysis are based on the 1992 inventory adjusted to reflect the attainment strategy emission reductions:

Population growth rate of 1.6% per year to residential oil, gas and wood combustion emissions and to structural fires; a decrease of 35% in backyard burning emissions due to Medford year around ban;

Transportation growth rate of 2.0% per year to transportation sources and construction dust as well as street sanding emissions; paved and unpaved road dust growth rate suppressed to 1.0% per year due to ongoing paving, curbing and trackout control program;

Industrial emissions are held constant at the annual and 24-hour PSEL emission rates shown in the 1992 emission inventory;

The projected residential wood combustion emissions, following application of a 1.6% per year growth rate, were adjusted to reflect continued emission reduction credits associated with the woodstove certification program.

Projected annual emissions during 1992 to the year 2000 are tabulated in Table 4.14.2-5. Figure 4.14.2-2 shows changes in emission inventories during the period 1986 to the year 2000.

Table 4.14.2-5: PM_{10} Emission Inventory for 2000 in Medford-Ashland AQMA with Growth and Control Strategy Implementation.

Source Category	Annual Tons	Annual δ*	Worst Case Day Pounds	Worst Case Day δ*
Wood Products Industry	995	-22%	6721	-22%
Residential Wood Burning	1030	-42%	6400	-78%
Fugitive Dust	1092	+8%	9332	+8%
Other	705	+15%	2703	+27%
Total	3822	-18%	25156	-48%

* Change from 1985-86 baseline to 2000 maintenance year.

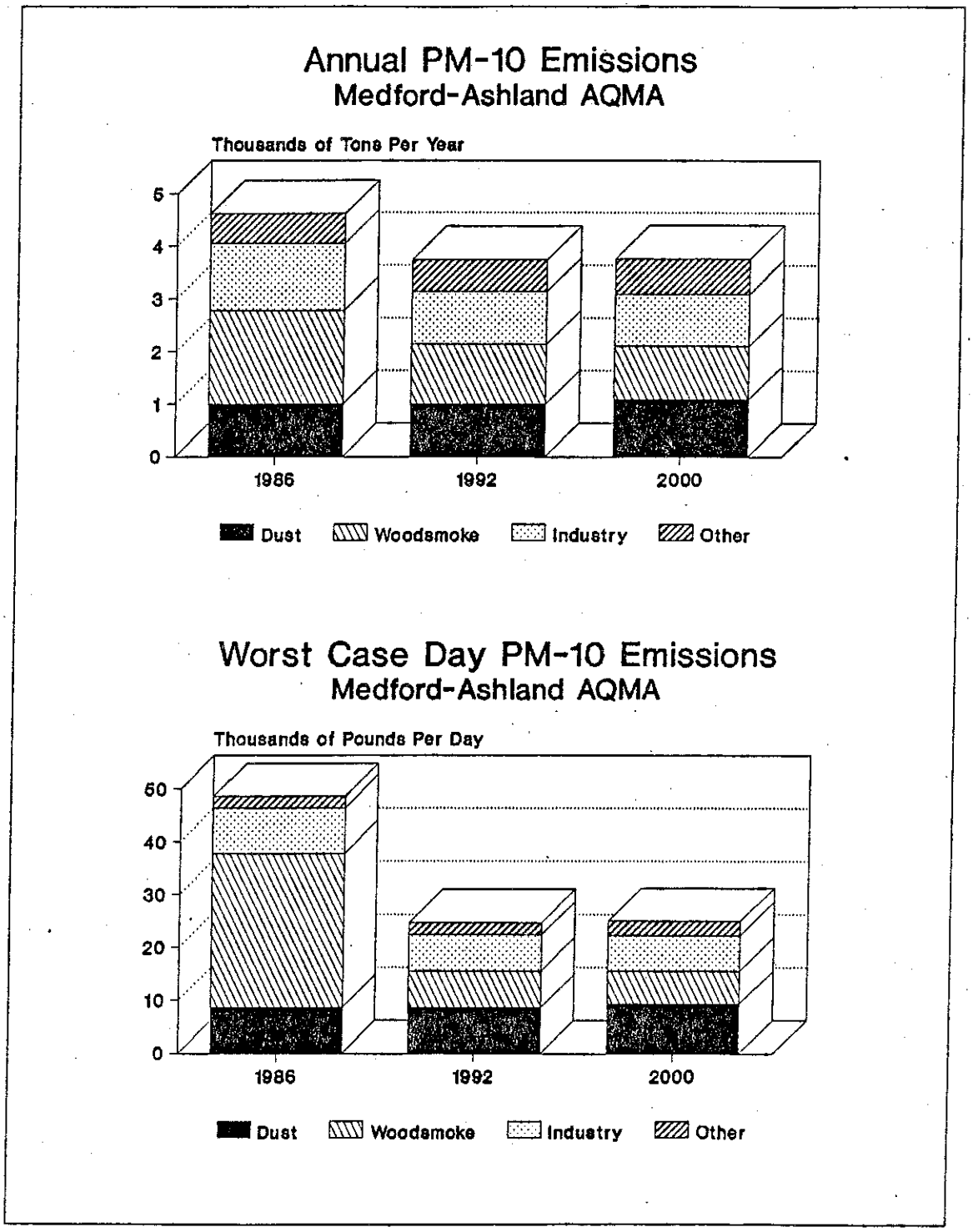

Figure 4.14.2-2: PM_{10} Emission Inventories for 1985-86 to 2000.

4.14.2.3 Source Contributions to PM_{10}

Development of strategies designed to attain and maintain the PM_{10} NAAQS requires an accurate knowledge of contributions that sources make to the measured PM_{10} aerosol mass. Two approaches are commonly used to estimate source contributions are: (1) atmospheric dispersion modeling and (2) receptor model analysis based on the properties of the aerosol measured at the receptor.

Dispersion Modeling

Three atmospheric dispersion models were used to determine source contributions in the Medford-Ashland AQMA. The ISCST model consistently underpredicted the PM_{10} impacts during testing so was set aside. The GRID and WYNDvalley models both performed well within EPA criteria during December 1985 simulations. GRID performed slightly better than WYNDvalley and was more compatible with the Department's mainframe computer so was selected for the annual PM_{10} simulations. GRID also performed very well in the annual PM_{10} simulations.

The GRID dispersion model results for the five highest days in December 1985 are summarized in Table 4.14.2-6. The background PM_{10} concentration of 44 $\mu g/m^3$ is based on the maximum PM_{10} levels measured at Dodge Road during December 1985.

Table 4.14.2-6: PM_{10} Source Contributions Using the GRID Dispersion Model for the Five Highest Days in December 1985.

Source Category	24-Hour PM_{10} Impact ($\mu g/m^3$) 1st	2nd	3rd	4th	5th
Jackson County Courthouse:					
Wood Products Industry	29	28	41	23	13
Residential Wood Burning	195	191	172	156	151
Fugitive Dust	28	30	17	32	34
Other	11	12	6	12	12
Local Sources	262	260	237	223	209
Background	44	44	44	44	44
Total PM_{10}	307	304	281	267	253
Medford Oak and Taft:					
Wood Products Industry	78	62	97	59	44
Residential Wood Burning	182	181	154	167	183
Fugitive Dust	29	33	16	30	19
Other	9	11	6	9	6
Local Sources	298	287	273	265	252
Background	44	44	44	44	44
Total PM_{10}	342	331	317	309	296

The 4th column (4th highest day) is of special interest since this represents the 24-hour PM_{10} design value that must be reduced to 150 $\mu g/m^3$ in order to achieve the 24-hour PM_{10} standard.

The GRID results for the annual average PM_{10} simulation are summarized in Table 4.14.2-7. The time period was July 1985 to June 1986. The ambient PM_{10} concentration measured at Dodge Road during this period averaged 14.8 $\mu g/m^3$ but the GRID dispersion model projected that about 1.7 $\mu g/m^3$ of this was from sources located in the Medford-Ashland AQMA. So the difference (13.1 $\mu g/m^3$) was taken as the true background and combined with the local source contributions to obtain the total PM_{10} impact.

Table 4.14.2-7: Annual Average PM_{10} Source Contributions Using the GRID Dispersion Model for the July 1985 to June 1986 Period.

Source Category	Annual PM_{10} Impact $\mu g/m^3$	Percent
Jackson County Courthouse:		
Wood Products Industry	7.2	12%
Residential Wood Burning	28.8	49%
Fugitive Dust	6.9	12%
Other	2.7	5%
Local Sources	45.6	78%
Background	13.1	22%
Total PM_{10}	58.7	100%
Medford Oak and Taft:		
Wood Products Industry	17.9	26%
Residential Wood Burning	28.2	41%
Fugitive Dust	6.6	10%
Other	2.3	3%
Local Sources	55.0	81%
Background	13.1	19%
Total PM_{10}	68.1	100%

The annual average PM_{10} must be reduced by 27% at the Oak and Taft site and by 15% at the Courthouse in order to meet the annual PM_{10} standard. However, the local PM_{10} must be reduced by 33% and 19% at the Oak and Taft site and the Courthouse, respectively, in order to meet the annual PM_{10} standard if the background PM_{10} of 13.1 $\mu g/m^3$ remains constant.

The annual average and worst case day GRID dispersion modeling results for the 1985-86 baseline period are summarized in Figures 4.14.2-3 (Courthouse) and 4.14.2-4 (Oak and Taft).

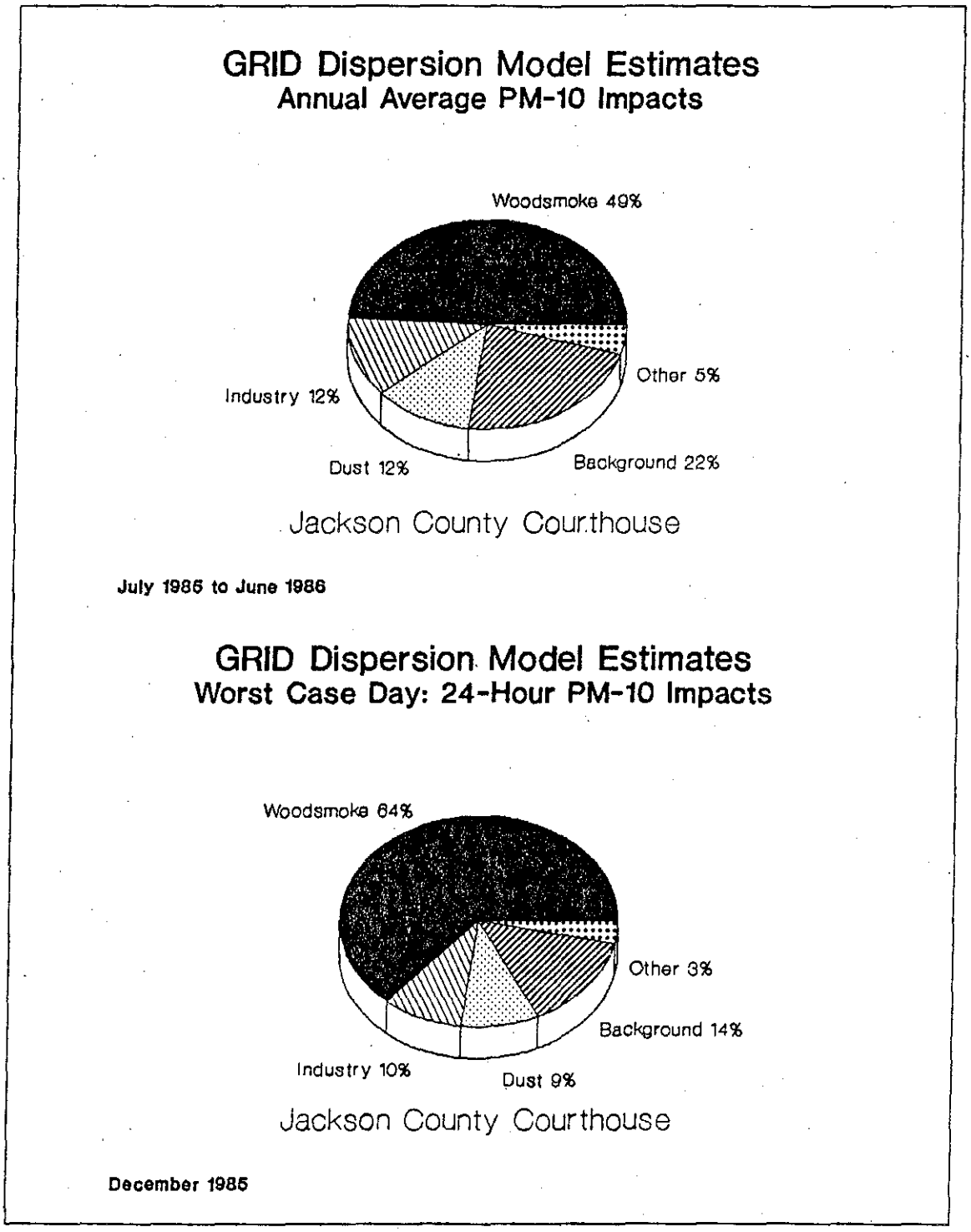

Figure 4.14.2-3: GRID Dispersion Modeling Results at Courthouse.

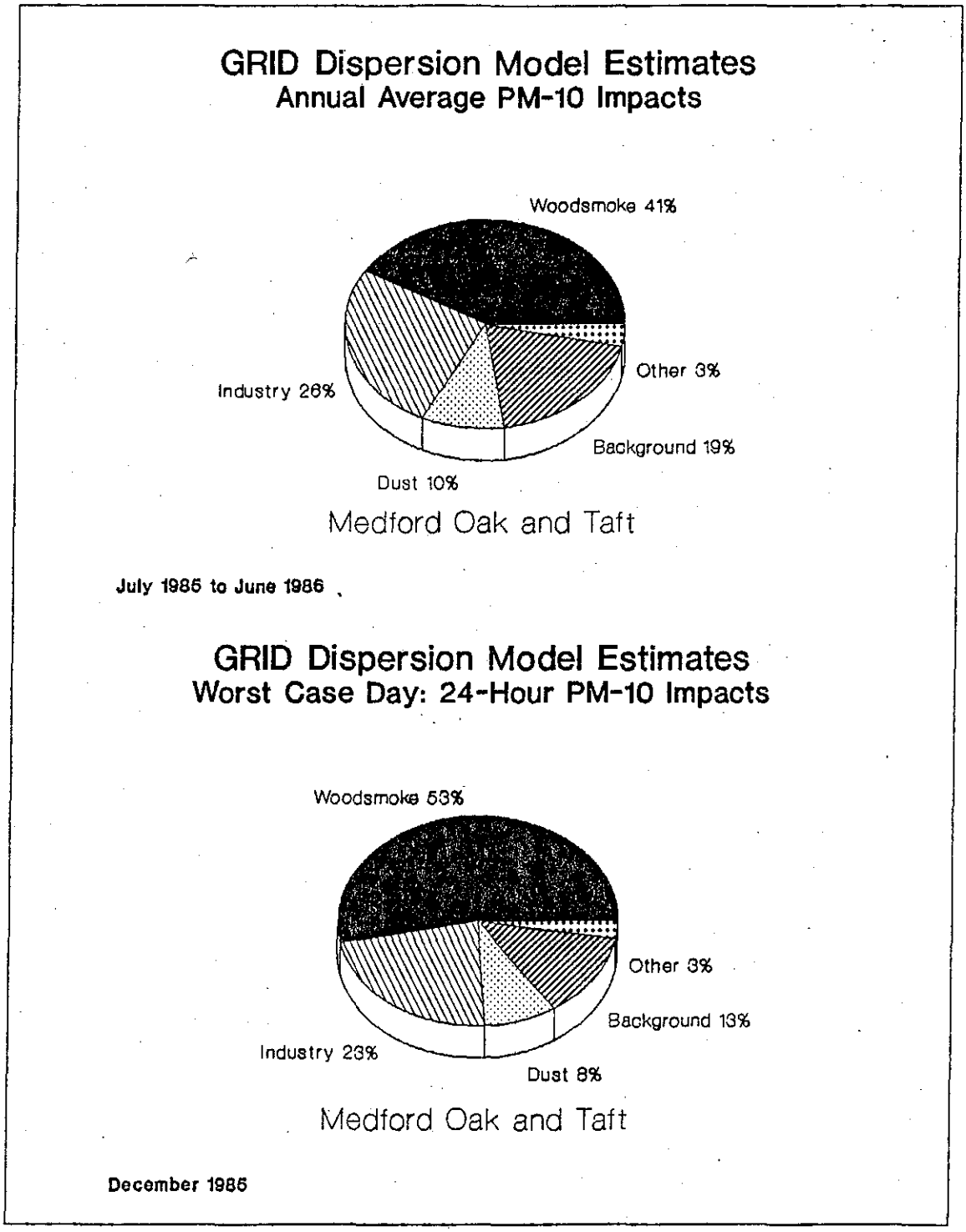

Figure 4.14.2-4: GRID Dispersion Modeling Results at Oak & Taft.

Receptor Modeling

The Environmental Protection Agency PM_{10} SIP Development Guideline Section 4.4 describes procedures to be used by the States for using receptor models to estimate source contributions to PM_{10} concentrations. These guidelines support the use of receptor models as an important element of the SIP strategy development process. Receptor modeling (specifically Chemical Mass Balance or CMB) is especially appropriate in the Medford-Ashland AQMA with severe air stagnation and complex terrain conditions where emission inventories alone may be somewhat misleading and dispersion modeling is more difficult. The specific application of the CMB Receptor Model to PM_{10} source apportionment in the Oregon Group I areas is described elsewhere.[19]

Chemical Mass Balance (CMB) is a form of receptor modeling based upon regression analysis of aerosol features such as trace element concentrations. The model attempts to find the most likely combination of source contribution estimates (SCEs) by minimizing the difference between the measured and model-predicted concentration of aerosol features. Values for the ambient aerosol matrix are obtained through chemical analysis of PM_{10} filters taken at the Jackson County Courthouse site while the source "fingerprint" values are obtained through analysis of stack emissions. The CMB modeling protocol applied follows EPA guidance.[20] All of the CMB modelling has been conducted using EPA's Version 7.0 CMB program.[21]

Ambient Aerosol and Source Emission Analysis

Eighty-eight PM_{10} samples from the Jackson County Courthouse site and 50 PM_{10} samples from the Dodge Road background site have been chemically analyzed for CMB analysis.

The Courthouse CMB analysis included 50 fine and coarse (dichotomous sampler) aerosol samples collected from January 1984 to January 1987 as well as 38 PM_{10} (medium-volume sampler) aerosol samples collected from January 1987 to July 1989. Eleven of the samples exceeded 150 $\mu g/m^3$, all of which were collected during the

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[19] PM_{10} Receptor Modeling for Oregon's Group I Areas: Medford, Grants Pass and Klamath Falls. State of Oregon Department of Environmental Quality, Air Quality Division. February, 1990.

[20] Protocol for Reconciling Differences Among Receptor and Dispersion Models. US EPA 450/4-87-008. March, 1987.

[21] Receptor Model Technical Series, Volume III (Revised): CMB User's Manual (Version 6.0) US EPA 450/4-83-014R. May, 1987.

winter months. The highest sample analyzed was 310 $\mu g/m^3$ on December 2, 1988.

The Dodge Road CMB analysis included 50 fine and coarse samples from the Dodge Road background site collected from January 1984 to December 1986.

Chemical characterization of the samples included 19 trace elements analyzed by x-ray fluorescence, 3 anions and elemental/organic carbon, providing a data set that is compatible with the source emission profiles. Analytical uncertainties for each value are routinely reported and included in the CMB calculations.

PM_{10} source profiles representing all major emission groups within the airshed were used in the modeling. All of the profiles were obtained from the Pacific Northwest Source Profile Project.[22] A list of the sources included in the analysis is presented below:

Table 4.14.2-8: PM_{10} Source Profiles Used in the Medford-Ashland AQMA Chemical Mass Balance Receptor Modeling.

No.	Acronym	Description
1	MEDSOIL	Resuspended soil dust from Medford-Ashland AQMA
2	SLASH	Forestry slash broadcast burning (also may be vegetative burning such as yard debris)
3	RWC MED	Residential wood combustion profile for Medford
4	LD AUTO	Light duty autos (leaded gasoline)
5	HOGFUEL	Hogged fuel boiler burning plywood trim in the fuel
6	WOOD	Wood fiber including sander dust
7	HDDIESEL	Diesel exhaust (Federal Test Cycle)
8	SECSO4	Secondary sulfate estimated as ammonium sulfate
9	SECNO3	Secondary nitrate estimated as ammonium nitrate
10	SECNH4	Secondary ammonium ion
11	CONST	Construction dust - Medford Aerosol Study
12	VENEER	Steam heated veneer drier emissions
13	RESIDOIL	Residual oil combustion

[22] Pacific Northwest Source Profile Library Project, Final Report Prepared by the State of Oregon Department of Environmental Quality, Air Quality Division. J. Core, Ed. September, 1989.

Receptor Model Source Contribution Estimates: 24-Hour Impacts

Table 4.14.2-9 is a summary of the source contribution obtained for the highest CMB sample (310 $\mu g/m^3$ on December 2, 1988). The background data was obtained from the highest sample collected at Dodge Road (43 $\mu g/m^3$ on January 19, 1985). The chemical fingerprints of woodsmoke and veneer dryers are very similar so the dispersion model results from the 1st highest day in Table 4.14.2-7 were used to fill in the veneer dryer and other industry impacts in the second half of the table and subtract the veneer dryer impact from the total woodsmoke impact.

Table 4.14.2-9: Worst Case 24-Hour PM_{10} Source Contributions at the Jackson County Courthouse Using the CMB Receptor Model.

Source Category	24-Hour PM_{10} Impact ($\mu g/m^3$) Total	Background	Local
Before Supplementing with Dispersion Model:			
Wood Products Industry			
Wood-fired Boilers	17.7	3.0	14.7
Veneer Dryers			
Other			
All Woodsmoke	249.7	31.6	218.1
Fugitive Dust	25.2	2.3	22.9
Other	17.4	7.1	10.3
Local Sources			266.0
Background		44.0	
Total PM_{10}	310.0		
After Supplementing with Dispersion Model:			
Wood Products Industry			
Wood-fired Boilers	17.7	3.0	14.7
Veneer Dryers	13.3		13.3
Other	7.3		7.3
Residential Wood Burning	236.4	31.6	204.8
Fugitive Dust	25.2	2.3	22.9
Other	10.1	7.1	3.0
Local Sources			266.0
Background		44.0	
Total PM_{10}	310.0		

The CMB receptor model worst case indicates that residential woodburning contributes about 66% of the PM_{10} measured at the Courthouse (204.8/310). This is very similar to the GRID dispersion model worst case residential woodburning impact of 64% at the Courthouse (195/307) in Table 4.14.2-6.

The CMB receptor model worst case also indicates that the wood products industry contributes about 11% of the PM_{10} measured at the Courthouse (14.7+13.3+7.3)/310). This is very similar to the GRID dispersion model worst case industry impact of 10% at the Courthouse (29.2/307) in Table 4.14.2-6.

Receptor Model Source Contribution Estimates: Annual Impacts

The annual average CMB receptor model results for the Courthouse are summarized in Table 4.14.2-10. The annual average is the composite of 88 CMB samples collected at the Courthouse during 1984-89. The annual average background results are the composite of 50 CMB samples collected at Dodge Road during 1984-87.

Table 4.14.2-10: Annual Average PM_{10} Source Contributions at the Jackson County Courthouse Using the CMB Receptor Model.

Source Category	Annual PM_{10} Impact ($\mu g/m^3$) Total	Background	Local
Before Supplementing with Dispersion Model:			
Wood Products Industry			
Wood-fired Boilers	5.0	0.6	4.4
Veneer Dryers			
Other			
All Woodsmoke	33.2	6.3	26.9
Fugitive Dust	11.9	4.1	7.8
Other	12.8	2.1	10.3
Local Sources			45.3
Background		13.1	
Total PM_{10}	58.4		
After Supplementing with Dispersion Model:			
Wood Products Industry			
Wood-fired Boilers	5.0	0.6	4.4
Veneer Dryers	2.7		2.7
Other	2.1		2.1
Residential Wood Burning	30.5	6.3	24.2
Fugitive Dust	11.9	4.1	7.8
Other	6.2	2.1	4.1
Local Sources			45.3
Background		13.1	
Total PM_{10}	58.4		

The CMB receptor model annual average indicates that residential woodburning contributes about 41% of the PM_{10} measured at the Courthouse (24.2/58.4). This is slightly lower than the GRID dispersion model annual average residential woodburning impact of 49% at the Courthouse (28.7/58.5) in Table 4.14.2-7.

The CMB receptor model annual average also indicates that the wood products industry contributes about 16% of the PM_{10} measured at the Courthouse (4.4+2.7+2.1)/58.4). This is slightly higher than the GRID dispersion model annual average industry impact of 12% at the Courthouse (7.2/58.5) in Table 4.14.2-7.

Overall Comparison of Dispersion and Receptor Modeling

The GRID dispersion model results and the CMB receptor model results are compared in Figures 4.14.2-5 (worst case day impacts) and Figure 4.14.2-6 (annual average impacts). Overall, the comparisons of the GRID dispersion model and the CMB receptor model results indicate quite good agreement on both worst case days and annual average for PM_{10} source contributions at the Jackson County Courthouse.

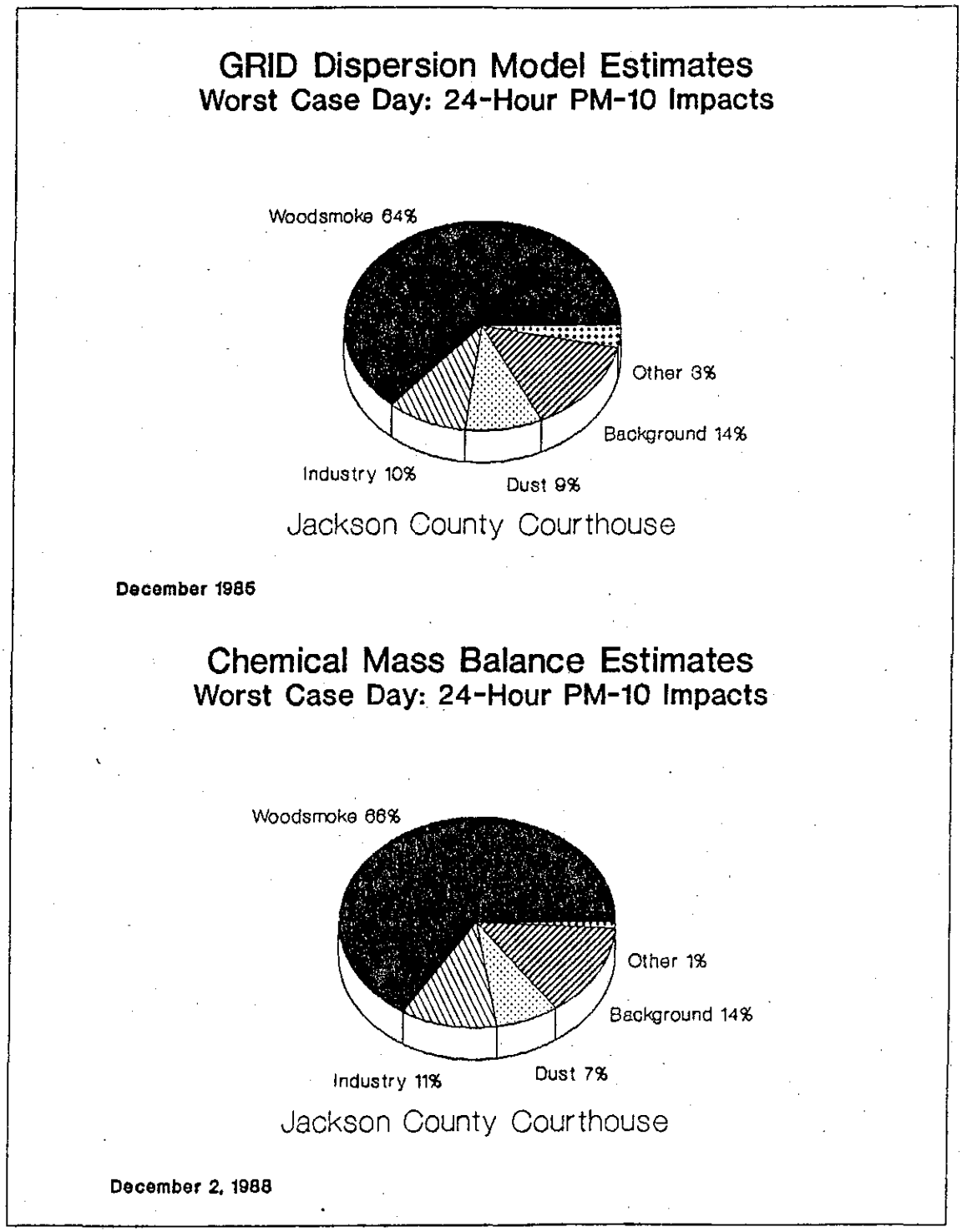


Figure 4.14.2-5: Worst Case Day PM_{10} Impacts at Courthouse

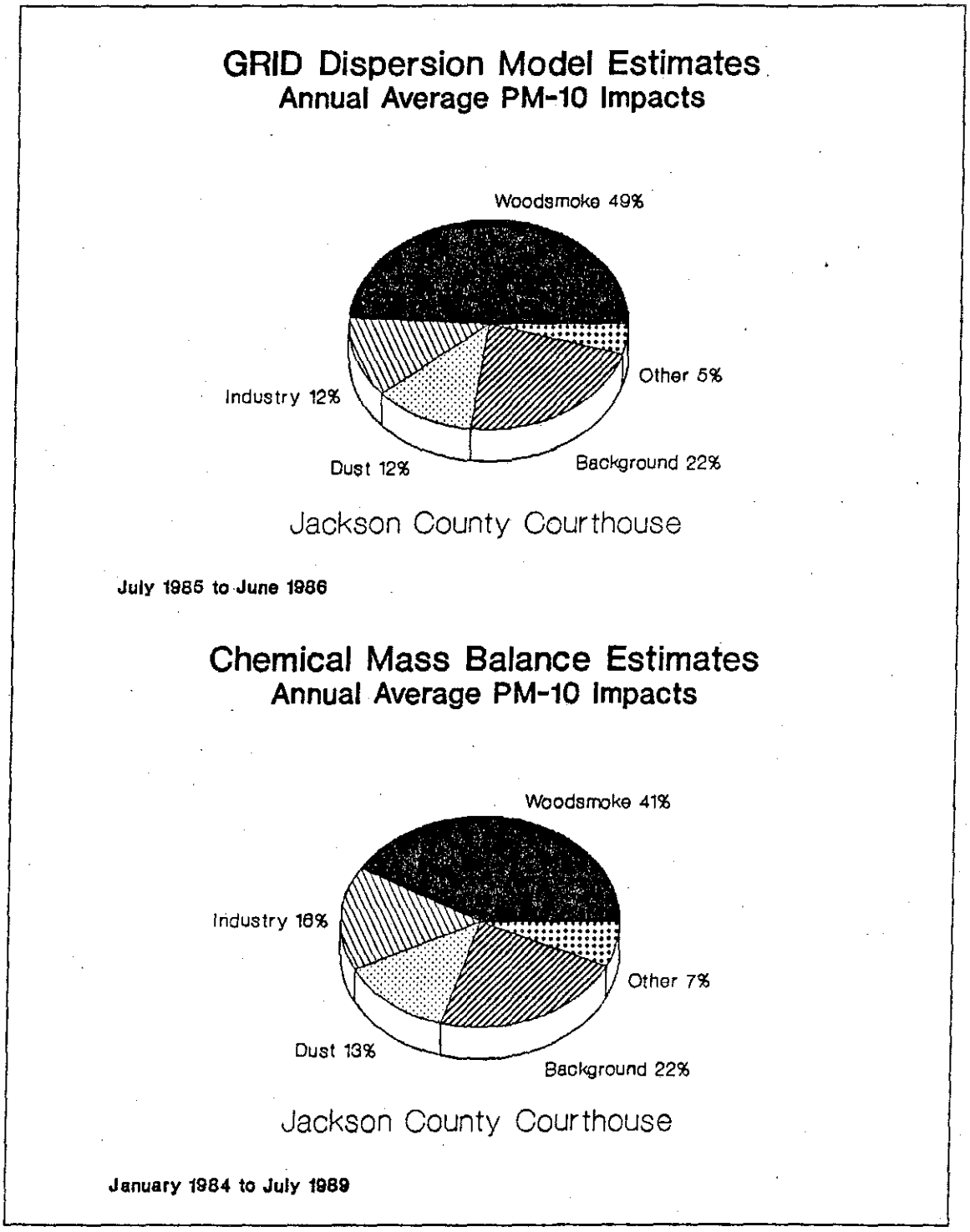


Figure 4.14.2-6: Annual Average PM_{10} Impacts at Courthouse.

4.14.3 Emission Reduction Analysis

This section describes the emission reductions necessary to attain the PM_{10} standards (Section 4.14.3.1), a review of potential control measures that may be applied in Medford-Ashland AQMA (Section 4.14.3.2) and an assessment of the adequacy of the control measures to attain the NAAQS within the time limits specified by Section 110 (a) of the Clean Air Act (Section 4.14.3.3).

4.14.3.1 Emission Reduction Necessary for Attainment

The GRID dispersion model was used to predict 1992 PM_{10} impacts by source category with expected growth but without any emission reductions from the control strategy. This provides the estimate of 1992 air quality if no controls were implemented between the 1985-86 base year and the 1992 required attainment year. The differences between the pre-control 1992 PM_{10} concentrations (24-hour and annual) and the PM_{10} standards (24-hour and annual) represent the PM_{10} reductions needed from the adopted control strategy.

Projected 24-Hour Source Impacts in 1992

The pre-control 1992 projections for the five highest days (using December 1985 meteorology) are summarized in Table 4.14.3-1. These represent the five highest days in the base year (Table 4.14.2-7) factored up for growth expected between the base year and 1992. Industry emissions are projected at the old PSELs, woodstove emissions are increased by 6%, transportation emissions are increased by 12%, and other emissions are factored up by 9%.

Table 4.14.3-1: PM_{10} Source Contributions Using the GRID Dispersion Model for the Five Highest Days in 1992-94 Before Implementation of the PM_{10} Control Strategy.

Source Category	24-Hour PM_{10} Impact ($\mu g/m^3$) 1st	2nd	3rd	4th	5th
Jackson County Courthouse:					
Wood Products Industry	29	28	41	23	13
Residential Wood Burning	207	202	183	166	160
Fugitive Dust	31	34	19	36	38
Other	12	13	7	13	13
Local Sources	278	276	249	237	224
Background	44	44	44	44	44
Total PM_{10}	322	320	293	281	268
Medford Oak and Taft:					
Wood Products Industry	78	62	97	59	44
Residential Wood Burning	193	192	164	177	194
Fugitive Dust	32	37	18	33	21
Other	10	12	6	10	7
Local Sources	313	303	285	280	265
Background	44	44	44	44	44
Total PM_{10}	357	347	329	324	309

The 4th column (4th highest day) is the 1992 design value since it represents the fourth highest day in a 3-year period. At both sites this value must be reduced to no more than 150 $\mu g/m^3$ in order to attain the 24-hour PM_{10} standard by 1992:

Courthouse 24-hour air quality improvement needed = 131 $\mu g/m^3$;
Oak & Taft 24-hour air quality improvement needed = 174 $\mu g/m^3$.

The control strategy must be comprised of a mix of individual source reduction measures such that the sum of the reductions equal or exceed the total reduction requirement. Adopted control strategies must be shown through a demonstration of attainment (Section 4.14.3.3) to attain and maintain the NAAQS by reducing emissions such that an overall reduction in PM_{10} 24-hour concentrations on the fourth highest day meets the above targets.

Projected Annual Source Impacts in 1992

The pre-control 1992 projections for the annual average (using July 1985 to June 1986 meteorology) are summarized in Table 4.14.3-2. These represent the annual average in the base year (Table 4.14.2-8) factored up for growth expected between the base year and 1992. Industry emissions are projected at the old PSELs, woodstove emissions are increased by 6%, transportation emissions are increased by 12%, and other emissions are factored up by 9%.

Table 4.14.3-2: Annual Average PM_{10} Source Contributions Using the GRID Dispersion Model for 1992-94 Before Implementation of the PM_{10} Control Strategy.

Source Category	Annual PM_{10} Impact $\mu g/m^3$	Percent
Jackson County Courthouse:		
Wood Products Industry	7.2	12%
Residential Wood Burning	30.5	50%
Fugitive Dust	7.7	12%
Other	2.9	5%
Local Sources	48.3	79%
Background	13.1	21%
Total PM_{10}	61.4	100%
Medford Oak and Taft:		
Wood Products Industry	17.9	25%
Residential Wood Burning	30.0	42%
Fugitive Dust	7.4	10%
Other	2.5	4%
Local Sources	57.8	81%
Background	13.1	19%
Total PM_{10}	70.9	100%

These annual PM_{10} concentrations are the 1992 annual design values since they represents the annual average in 1992 if no strategy is implemented. At both sites this value must be reduced to no more than 50 $\mu g/m^3$ in order to attain the annual PM_{10} standard by 1992:

> Courthouse 24-hour air quality improvement needed = 11.4 $\mu g/m^3$;
> Oak & Taft 24-hour air quality improvement needed = 20.9 $\mu g/m^3$.

The control strategy must be comprised of a mix of individual source reduction measures such that the sum of the reductions

The control strategy must be comprised of a mix of individual source reduction measures such that the sum of the reductions equal or exceed the total reduction requirement. Adopted control strategies must be shown through a demonstration of attainment (Section 4.14.3.3) to attain and maintain the NAAQS by reducing emissions such that an overall reduction in annual average PM_{10} concentrations meets the above targets.

4.14.3.2 Evaluation of Potential Control Measures

The PM_{10} control strategy for the Medford-Ashland AQMA focuses on PM_{10} emission reductions from woodstoves and fireplaces (RWC), the wood products industries, open burning of debris, and road dust. Additional reductions are expected from statewide efforts to reduce slash burning smoke.

The following control strategy elements have been set in place to assure attainment of the annual and 24-hour PM_{10} NAAQS. Emission reduction credits associated with each element are listed and discussed. A PM_{10} emission reduction credit is a measure of the reduction in PM_{10} emissions that would be accomplished through adoption and implementation of the program element. The strategy elements and credits are further described in the appendix.

Residential Wood Combustion Strategies

There are two basic approaches to reducing woodsmoke from stoves and fireplaces: (1) improving the performance of the woodheating systems such as through a certified woodstove program; and (2) burning less wood through woodstove curtailment programs. Some strategies have multiple advantages. Certified woodstoves, for example, improve emission performance by reducing the amount of woodsmoke per cord of wood burned while improving energy efficiency, thus reducing the amount of wood burned. Other examples are well designed public information, energy conservation, or firewood seasoning programs that result in better combustion (lower emissions) and better energy efficiency (less fuel burned).

The Jackson County Woodburning Task Force was appointed by the Jackson County Board of Commissioners in May 1987. The Task Force evaluated various control measures for reducing residential woodsmoke and made its recommendations to the Jackson County Board of Commissioners in December 1987. The woodsmoke reduction elements in this plan are closely patterned after the Task Force recommendations. A copy of the Report of the Jackson County Woodburning Task Force is included in the appendix.

Woodstove and fireplace emissions will be reduced by an expanded public information program, an effective mandatory wood burning curtailment program, the Oregon woodstove certification program,

financial assistance programs for replacement of existing woodstoves with cleaner burning units and weatherization of homes, a ban on installation of non-certified woodstoves, and continued improvements in firewood seasoning and woodstove operation.

No direct credit is taken for the public information program but it is considered critical to the success of the other woodburning elements. The woodstove public information program is summarized in the appendix.

Woodstove certification, combined with a ban on the installation of non-certified stoves, is projected to reduce woodstove emissions by about 14% due to existing stove replacements and 3% due to reduced emissions from new stoves between the base year and 1992. Additional reductions of 20% (replacements) and 6% (new) are expected between 1992 and 2000. These reductions will more than offset the projected increases in woodstove firewood use (6% during 1986-1992 and 13% during 1992-2000). Fireplace wood use and emissions are projected to continue to decrease (12% during 1986-1992 and 16% during 1992-2000) but at a slower rate than observed during 1981-1987.

The programs for weatherization combined with replacement of existing woodstoves with cleaner burning units (CLEAR and SOLVE) are expected to reduce woodburning emissions by about 5% by 1992. Other weatherization financial assistance programs, based on current participation rates, are expected to reduce woodburning emissions by about 3% by 1992.

Improved woodstove operation and firewood seasoning, based on trends documented in the biennial woodheating surveys, are expected to reduce woodburning emissions by 2% by 1992.

Mandatory woodburning curtailment programs are expected to reduce curtailment day woodburning emissions by 85% within the cities of Medford and Central Point and about 70% in the remainder of the critical PM_{10} control area. This projected effectiveness is based on comparisons of ambient nephelometer and particulate data between 1985 and 1989, the 1989-90 compliance surveys in the Medford area, feedback from field staff, and the experiences of successful mandatory curtailment programs in other western states. Annual woodburning emissions are expected to be reduced by about 20% based on the average number of curtailment days per year. Voluntary woodburning curtailment is expected to reduce woodburning emissions by 25% on worst days and 6% annual average in the remainder of the AQMA, based on the 1985-89 compliance surveys and the experiences of other voluntary programs in Oregon and other western states.

The net effect of the woodburning strategy elements by 1992 is a 42% reduction in annual woodburning emissions and a 85% reduction in worst day woodburning emissions within the mandatory

Wood Products Industry Strategies

Wood products industry emissions will be reduced by additional control requirements on veneer driers and large wood-fired boilers at plywood plants, more extensive source testing and continuous emission monitoring in order to maximize performance of pollution control equipment, and more restrictive emission offset requirements to insure a net air quality benefit from any new or expanded industries. These industrial emission reductions are in addition to the industrial pollution controls implemented during 1978-1984.

The new industrial rules will reduce industrial emissions by over 20% by the end of 1994, with most of this reduction occurring by 1992.

Open Burning Strategies

Open burning emissions will be reduced during the critical November to February period by local ordinances banning open burning during these months. Annual open burning emissions will be reduced by a year around ban within Medford and more restrictive ventilation criteria and shorter burn seasons in unincorporated areas of Jackson County and in Central Point.

Road Dust Strategies

Road dust emissions will be reduced by continuing programs to pave unpaved roads, to curb and gutter shoulders on paved roads, and to control mud and dirt trackout from industrial, construction and agricultural operations.

During 1984-87, despite an 11% increase in traffic volumes, the coarse PM_{10} fraction and the CMB dust fraction decreased slightly. Based on the apparent effectiveness of the dust control programs, the continuation of these programs is expected to offset the increased dust due to the projected 12% traffic growth between the base year and 1992. Dust is projected to increase by 8% (half the projected traffic growth) between 1992 and 2000 due to the continuation of these dust control programs.

Other Strategies

Slash burning emissions will be reduced in western Oregon by about 20% between 1984 and the year 2000 as part of the Oregon Visibility Protection Plan. These emission reductions will further insure that background PM_{10} concentrations will not increase in future years.

In addition, forestry slash burning impacts on the nonattainment area will be minimized through voluntary agreements among forest land managers. This program will help assure that forestry open burning does not adversely affect Medford-Ashland AQMA air quality on winter wood heating curtailment days.

4.14.3.3 Demonstration of Attainment

The GRID dispersion model was used to predict 1992 PM_{10} impacts by source category with expected growth and with the emission reductions from the control strategy discussed in Section 4.14.3.2. This provides the estimate of 1992 air quality with the implementation of the control strategy between the 1985-86 base year and the 1992 attainment year. The differences between the pre-control 1992 PM_{10} concentrations (24-hour and annual) in the previous Tables 4.14.3-1 and 4.14.3-2 and the following Tables 4.14.3-3 and 4.14.3-4 represent the PM_{10} reductions (24-hour and annual) provided by the adopted control strategy.

Projected 24-Hour Source Impacts in 1992

The 1992 projections for the five highest days (using December 1985 meteorology) are summarized in Table 4.14.3-3. These represent the five highest days in the base year (Table 4.14.2-7) factored up for growth expected between the base year and 1992, and then reduced by the control strategy. Industry emissions are projected at the new PSELs (pounds per hour limits) resulting from the new industrial rules, wood burning emissions are decreased by a net 75%, transportation emissions are increased by 12%, paved and unpaved road dust emissions are kept constant, and other emissions are factored up by 9%.

Table 4.14.3-3: PM_{10} Source Contributions Using the GRID Dispersion Model for the Five Highest Days in 1992-94 After Implementation of the PM_{10} Control Strategy.

Source Category	24-Hour PM_{10} Impact ($\mu g/m^3$) 1st	2nd	3rd	4th	5th
Jackson County Courthouse:					
Wood Products Industry	20	19	25	15	9
Residential Wood Burning	26	27	25	23	22
Fugitive Dust	28	30	17	32	34
Other	12	13	7	13	13
Local Sources	86	89	74	82	78
Background	44	44	44	44	44
Total PM_{10}	130	133	118	126	122
Medford Oak and Taft:					
Wood Products Industry	55	46	65	42	29
Residential Wood Burning	25	23	21	22	24
Fugitive Dust	29	33	16	30	19
Other	10	12	6	10	7
Local Sources	119	114	108	104	78
Background	44	44	44	44	44
Total PM_{10}	163	158	152	148	122

The 4th column (4th highest day) is the 1992 design value since it represents the fourth highest day in a 3-year period. At both sites this value by 1992 is projected to be less than the 24-hour PM_{10} standard (150 $\mu g/m^3$) as a result of the control strategy. The GRID dispersion model indicates that the worst case PM_{10} concentrations in 1992 in White City and Central Point will be lower than at Oak & Taft or the Courthouse.

Projected Annual Source Impacts in 1992

The 1992 projections for the annual average (using July 1985 to June 1986 meteorology) are summarized in Table 4.14.3-4. These represent the annual average in the base year (Table 4.14.2-8) factored up for growth expected between the base year and 1992, and then reduced by the control strategy. Industry emissions are projected at the new PSELs (tons per year limits) resulting from the new industrial rules, wood burning emissions are decreased by a net 35%, transportation emissions are increased by 12%, paved and unpaved road dust emissions are kept constant, and other emissions are factored up by 5%.

Table 4.14.3-4: Annual Average PM_{10} Source Contributions Using the GRID Dispersion Model for 1992-94 After Implementation of the PM_{10} Control Strategy.

Source Category	Annual PM_{10} Impact $\mu g/m^3$	Percent
Jackson County Courthouse:		
Wood Products Industry	4.3	9%
Residential Wood Burning	16.6	40%
Fugitive Dust	6.9	15%
Other	3.0	7%
Local Sources	30.8	71%
Background	13.1	29%
Total PM_{10}	43.9	100%
Medford Oak and Taft:		
Wood Products Industry	11.3	23%
Residential Wood Burning	16.2	32%
Fugitive Dust	6.6	13%
Other	2.5	5%
Local Sources	36.6	73%
Background	13.1	27%
Total PM_{10}	49.7	100%

At both sites the annual average PM_{10} concentration in 1992 is projected to be less than the annual PM_{10} standard (50 $\mu g/m^3$) as a result of the control strategy. On average, the GRID dispersion model slightly overpredicted at the Oak & Taft site so the annual average in 1992 is expected to be lower than indicated for Oak & Taft. The GRID dispersion model indicates that the annual average PM_{10} concentrations in 1992 in White City and Central Point will be lower than at Oak & Taft or the Courthouse.

The dispersion modeling projected potential PM_{10} problems in two other one-kilometer grids north of the Oak & Taft grid but the 1985 Medford particulate gradient study and the 1989 mobile nephelometer surveys indicated that PM_{10} levels at the DeHague & Howard and McAndrews & Court sites were not as high as at the Oak & Taft site. The Department will conduct additional monitoring in the two potential problem grids by 1991 to determine the actual PM_{10} concentrations as the control strategy is implemented. If the ambient data confirms a nonattainment problem that the control strategy will not bring into attainment by 1992, then the control

strategy will be modified as necessary to assure that attainment will be reached.

4.14.3.4 Emission Offsets and Banking

Industries in Oregon must comply with Plant Site Emission Limits (PSELs) as outlined in OAR 340-20-300 to 340-20-345. New industrial rules for the Medford-Ashland AQMA went into effect in September 1989. Industries in the Medford-Ashland AQMA were operating near their old PSELs in 1985-86 and most of these industries are required to reduce their actual emissions to meet the new PSELs by 1992 (possibly 1994 in a few cases where a large wood-fired boiler is not modified prior to 1994).

The Emission Reduction Credit Banking Rules (OAR 340-20-265) require that, to be eligible for banking, emission reduction credits must be in terms of actual emission decreases resulting from permanent continuous control of existing sources. Emission reductions which are required pursuant to adopted rules cannot be banked.

OAR 340-20-225 (22) requires that new or modified industrial sources that would increase emissions by more than 5 tons per year of PM_{10} emissions must obtain emission reductions from other sources to offset their emissions at a 1.2:1 ratio and provide a net air quality benefit. The emission offsets may be obtained by reducing emissions within the facility to be modified, from other industrial sources, or from external sources, including woodstove emissions from sole-source low-income households if the woodstove emission reductions are funded by the industry obtaining the offset.

4.14.3.5 Demonstration of Maintenance

Emission reductions will continue after 1992 as a result of: (1) continued replacement of existing woodstoves with cleaner burning units (certified woodstoves or pellet stoves, or non-woodburning units such as gas, oil or electric units); (2) continued home weatherization; and (3) continued programs to pave unpaved roads and curb unpaved shoulders on paved roads. These emission reductions are projected to offset emission growth associated with fugitive dust and transportation sources and to result in maintenance of the PM_{10} standards through at least the year 2000. Worst case day PM_{10} and the annual average PM_{10} in 2000 are projected to be 146 and 48 $\mu g/m^3$, respectively, at Oak and Taft.

4.14.4 Implementation of the Control Strategy

All of the elements of the attainment strategy will be adopted prior to Environmental Quality Commission adoption (expected

adoption by November 1990). Specific elements of the strategy are being implemented as noted below.

4.14.4.1 Schedule for Implementation

Residential Woodburning Elements

Public Information: Since 1981, increased emphasis has been placed on public information in the Medford-Ashland AQMA regarding proper firewood seasoning (brochures attached to all USFS and BLM firewood cutting permits, voluntary firewood certification program) and proper woodstove operation to maximize efficiency and minimize emissions. The Oregon State University Energy Extension Service has conducted numerous workshops in the area and prepared informational materials on these subjects. The public information program was further expanded by Jackson County in 1988 through contracts with Laurel Communications.

Home Weatherization: Home weatherization incentives (free energy audits, low-interest loans, and rebates) have been available for several years to all homeowners regardless of heat source. ACCESS (the local Community Action Program) has provided free cost-effective weatherization to low-income households. Weatherization of homes prior to installation of a new woodstove has been required by local ordinances of the City of Medford (No. 4732) and Jackson County (No. 82-6) since 1982.

Woodheating Surveys: The biennial woodheating surveys conducted by the Department indicate that firewood use and firewood emissions decreased slightly between 1981 and 1987, despite population growth, as a result of the above and other programs. For example, the length of firewood seasoning time and the percent of firewood stored under cover both significantly increased between 1981 and 1987.

Woodstove Certification: The Oregon Woodstove Certification Program became effective on July 1, 1986. New stoves sold in Oregon since then must meet specified emission standards. The woodstove emission standards became more restrictive on July 1, 1988. The EPA woodstove certification program, with slightly tighter standards than the 1988 Oregon standards, goes into effect on July 1, 1990. Jackson County (on December 22, 1989) and Ashland (on January 9, 1990) adopted bans on the installation of non-certified woodstoves (to prevent used non-certified stoves from being re-installed). The 1987 woodheating survey indicated that 12% of the woodstoves in the Medford-Ashland AQMA were certified units.

Woodstove Replacements: The Housing Authority of Jackson County began Project CLEAR (Cooperative Local Effort for Air Resources) in 1988 to replace woodstoves with cleaner burning units and provide cost-effective weatherization in low-income homes. About

$1.8 million in funding from various sources has been obtained to date for this project. About 350-400 homes are projected to have woodstoves replaced and weatherization provided with the current funding. The City of Ashland has proposed the SOLVE (Save Our Livability, View and Environment) Program to begin in July 1990 that would provide financial incentives (zero-interest or low-interest loans or rebates) for weatherization and the replacement of existing woodstoves in 400 homes over the next eight years.

Woodburning Curtailment: A voluntary woodburning curtailment program (with daily advisories from November through February) began on November 19, 1985. Jackson County curtailment surveys during 1985-88 indicated an average compliance rate of about 25% under the voluntary program. The City of Medford adopted a mandatory woodburning curtailment program on November 2, 1989. Ambient air monitoring and curtailment surveys within the City of Medford during 1989-90 indicated over 80% compliance in some areas. The City of Central Point adopted a mandatory woodburning curtailment program on December 21, 1989. Jackson County adopted a mandatory woodburning curtailment program on May 2, 1990.

Industrial Elements

The Oregon Environmental Quality Commission adopted specific industrial rules for the wood products industries in the Medford-Ashland AQMA in 1978, 1983 and 1989. The 1978 and 1983 rules included: (1) tighter pollution control requirements for particle dryers, fiber dryers, veneer dryers, large wood-fired boilers, charcoal furnaces, and air conveying systems for sanderdust and sawdust; (2) additional source testing requirements; (3) operation and maintenance plans to prevent or minimize excess emissions; and (4) site-specific fugitive dust control plans. These industrial requirements resulted in a 70% reduction in industrial particulate emissions between 1978 and 1986.

The most recent industrial rules for the Medford-Ashland AQMA were adopted by the Commission on September 8, 1989. These new rules require: (1) tighter emission limits and better pollution control equipment on veneer dryers and large wood-fired boilers; (2) more extensive source testing and continuous emission monitoring; and (3) more restrictive emission offset requirements (1.2:1) for new or expanding industries. These new requirements are projected to reduce industrial PM_{10} emissions by over 20% by the end of 1994, with most of this reduction occurring by 1992.

Road Dust Elements

The City of Medford and other local governments have ongoing programs to control mud and dirt trackout onto roadways. The City of Medford also has an ongoing program using HUD funding and

financial participation by affected landowners to pave unpaved roads and curb unpaved shoulders on paved roads.

4.14.4.2 Rules, Regulations and Commitments

The following rules and commitments have been adopted to assure the enforceability of the control strategies.

State of Oregon Rules

The Oregon Revised Statutes (ORS) 468.020, 468.295 and 468.305 authorize the Oregon Environmental Quality Commission to adopt programs necessary to meet and maintain state and federal standards. The mechanisms for implementing these programs are the Oregon Administrative Rules (OAR).

Specific air pollution rules applicable to the Medford-Ashland AQMA (OAR 340-30-005 to 070) are included in Section 3.1 of the Oregon State Implementation Plan.

OAR	Subject
340-30-005	Purposes and Application
340-30-015	Wood Waste Boilers
340-30-021	Veneer Dryer Emission Limitations
340-30-025	Air Conveying Systems
340-30-040	Charcoal Producing Plants
340-30-043	Control of Fugitive Emissions
340-30-044	Operation and Maintenance Plans
340-30-046	Compliance Schedules
340-30-050	Continuous Monitoring
340-30-055	Source Testing
340-30-065	New Sources
340-30-067	Rebuilt Sources
340-30-111	Emission Offsets

Additional rules applicable statewide include:

OAR	Subject
340-20-220 to 275	New Source Review
340-20-300 to 320	Plant Site Emission Limits
340-21-100 to 190	Woodstove Certification Program
340-27-005 to 035	Air Pollution Emergencies

Jackson County Ordinances and Orders

Air Quality Ordinance, Chapter 1810 of the Codified Ordinances of Jackson County, amended December 22, 1989

Air Quality Improvement Plan, Order No. 364-88, adopted November 30, 1988

Amendment to Air Quality Ordinance, Chapter 1810, Restriction on Woodburning on High Pollution Days, Ordinance No. 90-4, adopted May 2, 1990

City of Ashland Ordinances

Ban on Installation of Non-certified Solid Fuel Burning Devices, Ordinance No. 2552, adopted January 9, 1990

Regulation on What Can Be Burned in Woodstoves and the Sale of Seasoned Wood, Ordinance No. 2555, adopted February 8, 1990

Controls on Open Burning, Ordinance No. 2535, adopted November 21, 1989

City of Medford Ordinances and Resolutions

Control Strategies for Particulate Air Pollution, Ordinance No. 4740, adopted November 11, 1982, Section 4 repealed February 17, 1984

Outside Burning Ordinance, No. 4732, adopted October 21, 1982

Air Quality Improvement Plan, Resolution No. 6253, adopted December 1, 1988

Woodburning Restrictions, Ordinance No. 6484, adopted November 2, 1989

City of Central Point Ordinances and Resolutions

Air Quality Improvement Plan, Resolution No. 509, adopted December 1, 1988

Regulations and Permit Process for Outside Burning, Ordinance No. 1624, adopted October 19, 1989

Ordinance for Regulating Woodstoves and Other Solid Fuel Burning Devices for the Purpose of Reducing Health Hazards, Ordinance No. 1629, adopted December 21, 1989

Oregon Department of Forestry Smoke Management Plan, OAR 629-43-043

4.14.4.3 Emergency Action Plan Provisions

OAR 340 Division 27 describes Oregon's Emergency Action Plan. The rule is intended to prevent the excessive accumulation of air contaminants during periods of air stagnation which, if unchecked, could result in concentrations of pollutants which could cause significant harm to public health. The rules establish criteria for identifying and declaring air pollution episodes below the significant harm level and were adopted pursuant to requirements of the Clean Air Act. The action levels found in the Plan were established by the Environmental Protection Agency and subsequently adopted by the Department.

The 24-hour average emergency action levels for PM_{10} (adopted by the Environmental Quality Commission April 29, 1988) are as follows: significant harm level of 600 $\mu g/m^3$, emergency level of 500 $\mu g/m^3$; warning level of 420 $\mu g/m^3$; and alert level of 350 $\mu g/m^3$. These PM_{10} levels, coupled with meteorological forecasts for continuing air stagnation, trigger the Emergency Action Plan. PM_{10} concentrations have never been measured at the warning, emergency or significant harm level in the Medford-Ashland AQMA. Alert levels were measured during a severe air stagnation episode in December 1985 and during wildfire impacts in September 1987. Authority for the Department to regulate air pollution sources during emergency episodes is provided under Oregon Revised Statutes (ORS) Chapter 468, including emissions from woodstoves. When there is an imminent and substantial endangerment to public health, ORS 468.115 authorizes the Department, at the direction of the Governor, to enforce orders requiring any person to cease and desist actions causing the pollution. State and local police are directed to cooperate in the enforcement of such orders.

4.14.4.4 Enforcement and Compliance Assurance

The Oregon Department of Environmental Quality is responsible for enforcement of the state rules identified in Section 4.14.4.2. The DEQ enforcement procedures and civil penalties are described in OAR 340-12-026 to 080. The industrial control requirements of this plan will be incorporated into the specific air contaminant discharge permits for each source in the form of compliance schedules, emission limits, and operating conditions. Continuous emission monitoring, periodic source testing, DEQ inspections and complaint investigations will be used to determine compliance with emission limits. Additional performance requirements based on continuous emission monitoring results will be included as permit conditions after baseline conditions have been established.

Violations of permit conditions will be subject to enforcement action.

Jackson County is responsible for enforcement of the county ordinances identified in Section 4.14.4.2. Chapter 1810 of the Codified Ordinances of Jackson County describes enforcement and penalty provisions. Overall compliance with woodburning requirements will be determined from multiple statistical compliance surveys each heating season. Enforcement of woodburning and open burning requirements will be based on routine surveillance, especially on curtailment days, and complaint investigations.

The cities are responsible for enforcement of the city ordinances identified in Section 4.14.4.2. Enforcement and penalty provisions are described in the municipal codes of each city. Enforcement of woodburning and open burning requirements will be based on surveillance on curtailment days and complaint investigations.

4.14.4.5 Monitoring and Tracking of Progress

The Department will coordinate by October 1 of each year an annual assessment of progress to meet the annual and daily PM_{10} standards. The annual assessment will include review and evaluation of at least the following:

- Ambient air quality monitoring network (including background monitoring site);
- Annual emission inventories by source category;
- Industrial compliance inspections (multiple times per year depending on size and type of industry);
- Woodburning curtailment compliance inspections (multiple times per winter depending on weather conditions and local government resources); and
- Biennial woodheating surveys (during spring months of odd years).

4.14.4.6 Contingency Plan

If the annual assessment described in Section 4.14.4.5 indicates that there is a shortfall in the PM_{10} control strategy, then the Department of Environmental Quality will pursue rulemaking or other necessary implementation authority (in coordination with local or other state agencies) for the appropriate combination of the following control measures:

- Open burning ban within AQMA, Rogue Basin Open Burning Special Control Area, or Jackson County during November to February;

- Slash burning ban within Jackson County during November to February;

- Industrial dual-fueling requirements on large wood-fired boilers;

- Woodstove performance requirements (e.g., opacity limits or other year round reduction measures); restrictions on new woodstove or fireplace installations; and home weatherization requirements.

4.14.5 Public Involvement

Development of the Medford-Ashland AQMA PM_{10} control strategy included several areas of public involvement including a citizen advisory committee, public participation at hearings on proposed industrial source rules, and attendance at hearings conducted by the Jackson County Board of Commissioners and cities within the AQMA.

4.14.5.1 Citizen Advisory Committee

The Jackson County Board of Commissions appointed members to the Jackson County Woodburning Task Force in May 1987 to assist the County, cities within the AQMA, and the Department in the development of control programs for the Medford-Ashland AQMA. The Task Force considered alternative control strategies and provided recommendations to the Board in December 1987. The Report of the Jackson County Woodburning Task Force is included in the appendix.

4.14.5.2 Public Notice

Public notice of proposed rule revisions is done through mailing lists maintained by the Department, through notifications published in local newspapers, and through Department press releases.

4.14.5.3 Public Hearings

Public hearings on the new industrial rules for the Medford-Ashland AQMA were held on January 10 and 12, 1989. Local public hearings were held on the local ordinances in accordance with the public notice and hearing requirements of the city or county involved.

4.14.5.4 Intergovernmental Review

Public hearing notices regarding adoption of this revision to the State Implementation Plan were distributed for local and state agency review through the A-95 State Clearinghouse process forty-five days prior to adoption by the Environmental Quality Commission.

Appendix 7: Industrial PM_{10} Control Rules

Filed Secretary of State 9-26-89
EQC meeting date 9-07-89
Effective 9-26-89

DIVISION 30

SPECIFIC AIR POLLUTION
CONTROL RULES FOR THE
MEDFORD-ASHLAND AIR QUALITY
MAINTENANCE AREA
AND THE
GRANTS PASS URBAN GROWTH AREA

Purposes and Application

340-30-005 The rules in this division shall apply in the Medford-Ashland Air Quality Maintenance Area (AQMA) and the Grants Pass Urban Growth Area (Area). The purpose of these rules is to deal specifically with the unique air quality control needs of the Medford-Ashland AQMA and the Grants Pass Area. These rules shall apply in addition to all other rules of the Environmental Quality Commission. The adoption of these rules shall not, in any way, affect the applicability in the Medford-Ashland AQMA and the Grants Pass Area of all other rules of the Environmental Quality Commission and the latter shall remain in full force and effect, except as expressly provided otherwise. In cases of apparent conflict, the most stringent rule shall apply.

Stat. Auth.: ORS Ch. 468
Hist.: DEQ 4-1978, f. & ef. 4-7-78

OAR30005 (9/89)

Definitions

340-30-010 As used in these rules, and unless otherwise required by context:

(22) [(1)] "Medford-Ashland Air Quality Maintenance Area" is defined as beginning at a point approximately one mile NE of the town of Eagle Point, Jackson County, Oregon, at the NE corner of Section 36, T35S, R1W; thence south along the Willamette Meridian to the SE corner of Section 25, T37S, R1W; thence SE along a line to the SE corner of Section 9, T39S, R2E; thence SSE to the corner of Section 22, T39S, R2E; thence south to the SE corner of Section 27, T39S, R2E; thence SW to the SE corner of Section 33, T39S, R2E; thence NW to the NW corner of Section 36, T39S, R1E; thence west to the SW corner of Section 26, T39S, T1E; thence west to the SW corner of Section 12, T#(S, R1W; thence NW along a line to the SW corner of Section 20, T38S, R1W; thence west to the SW corner of Section 24, T38S, R2W; thence NW along a line to the SW corner of Section 4, T38S, R2W; thence west to the SW corner of Section 5, T38S, R2W; thence NW along a line to the SW corner of Section 31, T37S, R2W; thence north along a line to the Rogue River, thence north and east along the Rogue River to the north boundary of Section 32, T35S, R1W; thence east along a line to the point of beginning.

(3) [(2)] "Charcoal Producing Plant" means an industrial operation which uses the destructive distillation of wood to obtain the fixed carbon in the wood.

(1) [(3)] "Air Conveying System" means an air moving device, such as a fan or blower, associated ductwork, and a cyclone or other collection device, the purpose of which is to move material from one point to another by entrainment in a moving airstream.

(29) [(4)] "Particulate Matter" means any matter, except uncombined water, which exists as a liquid or solid at standard conditions.

(33) [(5)] "Standard Conditions" means a temperature of 60 degrees Fahrenheit (15.6 degrees Celsius) and a pressure of 14.7 pounds per square inch absolute (1.03 Kilograms per square centimeter).

(38) [(6)] "Wood Waste Boiler" means equipment which uses indirect heat transfer from the products of combustion of wood waste to provide heat or power.

(35) [(7)] Veneer Dryer" means equipment in which veneer is dried.

(37) [(8)] "Wigwam Waste Burner" means a burner which consists of a single combustion chamber, has the general features of a truncated cone, and is used for the incineration of wastes.

(4) [(9)] "Collection Efficiency" means the overall performance of the air cleaning device in terms of ratio of weight of material collected to total weight of input to the collector.

(9) [(10)] "Domestic Waste" means combustible household waste, other than wet garbage, such as paper, cardboard, leaves, yard clippings, wood, or similar materials generated in a dwelling housing four (4) families or less, or on the real property on which the dwelling is situated.

(27) [(11)] "Open Burning" means burning conducted in such a manner that combustion air and combustion products may not be effectively controlled including, but not limited to, burning conducted

in open outdoor fires, burn barrels, and backyard incinerators.

(10) [~~(12)~~] "Dry Standard Cubic Foot" means the amount of gas that would occupy a volume of one cubic foot, if the gas were free of uncombined water at standard conditions.

(5) [~~(13)~~] "Criteria Pollutants" means Particulate Matter, Sulfur Oxides, Nonmethane Hydrocarbons, Nitrogen Oxides, or Carbon Monoxide, or any other criteria pollutant established by the U.S. Environmental Protection Agency.

(13) [~~(14)~~] "Facility" means an identifiable piece of process equipment. A stationary source may be comprised of one or more pollutant-emitting facilities.

(20) [~~(15)~~] "Lowest Achievable Emission Rate" or "LAER" [~~means, for any source, that rate of emission which is the most stringent emission limitation which is achieved in practice or can reasonably be expected to occur in practice by such class or category of source taking into consideration the pollutant which must be controlled. This term applied to a modified source means that lowest achievable emission rate for that portion of the source which is modified. LAER shall be construed as nothing less stringent than new source performance standards.~~] is defined by section 340-20-220(13).

(23) [~~(16)~~] "Modified Source" means any physical change in, or change in the method of, operation of a stationary source which increases the potential emission of criteria pollutants over permitted limits, including those pollutants not previously emitted.

(a) A physical change shall not include routine maintenance, repair, and replacement.

(b) A change in the method of operation, unless limited by previous permit conditions, shall not include:

(A) An increase in the production rate, if such increase does not exceed the operating design capacity of the sources;

(B) Use of an alternative fuel or raw material, if prior to December 21, 1976, the source was capable of accommodating such fuel or material; or

(C) Change in ownership of a source.

(24) [~~(17)~~] "New Source" means any source not previously existing or having an Air contaminant Discharge Permit [~~permitted in the Medford-Ashland Air Quality maintenance Area~~] on the effective date of these rules.

(25) [~~(18)~~] "Offset" means the reduction of the same or similar air contaminant emissions by the source;

(a) Through in-plant controls, change in process, partial or total shut-down of one or more facilities or by otherwise reducing criteria pollutants; or

(b) By securing from another source or, through rule or permit action by DEQ, in an irrevocable form, a reduction in emissions similar to that provided in subsection (a) of this section.

(32) [~~(19)~~] "Source" means any structure, building, facility, equipment, installation or operation, or combination thereof, which is located on one or more contiguous or adjacent properties and which is owned or operated by the same person, or by persons under common control.

[(20) "Volatile Organic Compound", (VOC), means any compound of carbon that has a vapor pressure greater than 0.1 mm of Hg at standard conditions (temperature) 20 °C, pressure 760 mm of Hg). Excluded from the category of Volatile Organic Compound are carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and those compounds which the U.S. Environmental Protection Agency classifies as being of negligible photochemical reactivity which are methane, ethane, methylchloroform, and trichlorotrifluoroethande.]

(6) [(21)] "Department" means Department of Environmental Quality.

(11) [(22)] "Emission" means a release into the outdoor atmosphere of air contaminants.

(30) [(23)] "Person" includes individuals, corporations, associations, firms, partnerships, joint stock companies, public and municipal corporations, political subdivisions, the state and any agencies thereof, and the federal government and any agencies thereof.

(34) [(24)] "Veneer" means a single flat panel of wood not exceeding 1/4 inch in thickness formed by slicing or peeling from a log.

(26) [(25)] "Opacity" means the degree to which an emission reduces transmission of light and obscures the view of an object in the background.

(16) [(26)] "Fugitive emissions" means dust, fumes, gases, mist, odorous matter, vapors, or any combination thereof not easily given to measurement, collection and treatment by conventional pollution control methods.

(19) [(27)] "Hardboard" means a flat panel made from wood that has been reduced to basic wood fibers and bonded by adhesive properties under pressure.

(28) "Particleboard" means matformed flat panels consisting of wood particles bonded together with synthetic resin or other suitable binders.

(2) "Average Operating Opacity" means the average of the opacity determinations using EPA Method 9 on three days with a minimum of 48 opacity readings taken at 15-second intervals on each day: a violation of the average operating opacity limitation is judged to have occurred if the average opacity on each of the three days is greater than the specified average operating opacity limitation.

(7) "Design Criteria" means the numerical as well as verbal description of the basis of design, including but not necessarily limited to design flow rates, temperatures, humidities, contaminant descriptions in terms of types and chemical species, mass emission rates, concentrations, and specification of desired results in terms of final emission rates and concentrations, and scopes of vendor supplies and owner-supplied equipment and utilities.

(8) "Design Opacity" means the opacity for which the veneer drying emission control system is designed that is consistent with the average operating opacity during normal operation of the proposed pollution control equipment or operating procedures on similar veneer dryers operating under similar process conditions.

(12) "EPA Method 9" means the method for Visual Determination of the Opacity of Emissions From Stationary Sources as promulgated by the U.S. Environmental Protection Agency in Title 40 of the Code of Federal Regulations, Part 60, Appendix A, Method 9.

(14) "Fuel Moisture Content By Weight Greater Than 20 Percent" means bark, hogged wood waste, or other wood with an average moisture content of more than 20 percent by weight on a wet basis as used for fuel in the normal operation of a wood-fired veneer dryer as measured during compliance source testing.

(15) "Fuel Moisture Content By Weight Less Than 20 Percent" means pulverized ply trim, sanderdust, or other wood with an average moisture content of 20 percent or less by weight on a wet basis as used for fuel in the normal operation of a wood-fired veneer dryer as measured during compliance source testing.

(17) General Arrangement", in the context of the compliance schedule requirements in section 340-32-045(2), means drawings or reproductions which show as a minimum the size and location of the control equipment on a source plot plan, the location of equipment served by the emission-control system, and the location, diameter, and elevation above grade of the ultimate point of discharging contaminants to the atmosphere.

(18) "Grants Pass Urban Growth Area" means the area within the Grants Pass Urban Growth Boundary as shown on the Plan and Zoning Maps for the City of Grants Pass as of 1 February 1988.

(21) "Maximum Opacity" means the opacity as determined by EPA Method 9 (average of 24 consecutive observations).

(31) "Rebuilt Boiler" means a physical change after April 29, 1988, to a wood-waste boiler or its air-contaminant emission control system which is not considered a "modified source" and for which the fixed, depreciable capital cost of added or replacement components equals or exceeds fifty percent of the fixed depreciable cost of a new component which has the same productive capacity.

(36) "Wood-fired Veneer Dryer" means a veneer dryer which is directly heated by the products of combustion of wood fuel in addition to or exclusive of steam or natural gas or propane combustion.

Stat. Auth.: ORS Ch. 468
Hist.: DEQ 1-1978, f. & ef. 4-7-78; DEQ 9-1979, f. & ef. 5-3-79; DEQ 3-1980, f. & ef. 1-28-80; DEQ 14-1981, f. & ef. 5-6-81

Wood Waste Boilers

340-30-015 (1) No person shall cause or permit the emission of particulate matter from any wood waste boiler with a heat input greater than 35 million BTU/hr in excess of 0.050 grain per dry standard cubic foot (1.4 grams per cubic meter) of exhaust gas, corrected to 12 percent carbon dioxide.

(2) No person owning or controlling any wood waste boiler with a heat input greater than 35 million BTU/hour shall cause or permit the emission of any air contaminant into the atmosphere for a period or periods aggregating more than 3 minutes in any one hour equal to or greater than {20} 10 percent opacity, unless the permittee demonstrates by source test that the emission limit in paragraph (1) of this section can be achieved at higher visible emissions in which case emissions shall not exceed the visible air contaminant limitations of section 340-12-015(2).

(3) No person shall cause or permit the emission of particulate matter from any boiler with a heat input greater than 35 million Btu/hour unless the boiler has been equipped with emission control equipment which:

(a) Limits emissions to LAER; and
(b) limits visible emissions such that their opacity does not exceed [10%] 5% for more than an aggregate of 3 minutes in any one hour, unless the permittee demonstrates by source test that emissions can be limited to LAER at higher visible emissions in which case emissions shall not exceed the visible air contaminant limitations of section 340-30-015(2).
(c) For purposes of OAR 340-20-265(3) and 340-20-310(b), the boiler mass emission limits shall be based on particulate matter emissions of 0.030 grains per standard dry cubic foot, corrected to 12% CO_2.

Stat. Auth.: ORS Ch. 468
Hist.: DEQ -1978, f. & ef. 4-7-78; DEQ 29-1980, f. & ef. 10-29-80; DEQ 14-1986, f. & ef. 6-20-86

Veneer Dryer Emission Limitations

340-30-021 (1) No person shall operate any veneer dryer such that visible air contaminants emitted from any dryer stack or emission point exceed:

(a) A design opacity of 5%;
(b) An average operating opacity of 5%; and
(c) A maximum opacity of 10%, unless the permittee demonstrates by source test that the emission limits in (1)(d) through (g) can be achieved at higher visible emissions than specified in (1)(a) through (c) in which case the emissions shall not exceed the visible air contaminant limitations of section 340-25-315 (1)(b). Where the presence of uncombined water is the only reason for the failure to meet the above requirements, said requirements shall not apply.
(d) 0.30 pounds per 1,000 square feet of veneer dried (3/8" basis) for direct natural gas or propane fired veneer dryers;
(e) 0.30 pounds per 1,000 square feet of veneer dried (3/8" basis) for steam heated veneer dryers;
(f) 0.40 pounds per 1,000 square feet of veneer dried (3/8" basis) for direct wood fired veneer dryers using fuel which has a moisture content by weight less than 20%;
(g) 0.45 pounds per 1,000 square feet of veneer dried (3/8" basis) for direct wood fired veneer dryers using fuel which has a moisture content by weight greater than 20%;
(h) In addition to paragraphs (1)(f) and (g) of this section, 0.20 pounds per 1,000 pounds of steam generated.

(2) No person shall operate a veneer dryer unless:
(a) The owner or operator has submitted a program and time schedule for installing an emission control system which has been approved in writing by the Department as being capable of complying with subsections (1)(a), (b) and (c).
(b) The veneer dryer is equipped with an emission control system which has been approved in writing by the Department and is capable of complying with subsections (1)(b) and (c), or
(c) The owner or operator has demonstrated and the Department has agreed in writing that the dryer is capable of being operated and is operated in continuous compliance with subsections (1)(b) and (c).

(3) Each veneer dryer shall be maintained and operated at all times such that air contaminant generating processes and all contaminant control equipment shall be at full efficiency and effectiveness so that the emission of air contaminants is kept at the lowest practicable levels.

(4) No person shall willfully cause or permit the installation or use of any means, such as dilution, which, without resulting in a reduction in the total amount of air contaminants emitted, conceals an emission which would otherwise violate this rule.

(5) Where effective measures are not taken to minimize fugitive emissions, the Department may require that the equipment or structures in which processing, handling and storage are done, be tightly closed, modified, or operated in such a way that air contaminants are minimized, controlled, or removed before discharge to the open air.

(6) Compliance with the visible emission limits in section (1) of this rule shall be determined in accordance with the Department's Method 9 on file with the Department as of November 16, 1979.

Air Conveying Systems (Medford-Ashland AQMA Only)

340-30-025 All air conveying systems emitting greater than 10 tons per year of particulate matter to the atmosphere at the time of adoption of these rules shall, with the prior written approval of the Department, be equipped with a control system with collection efficiency of at least 98.5 percent.

Stat. Auth.: ORS Ch. 468
Hist.: DEQ -1978, f. & ef. 4-7-78

Charcoal Producing Plants

340-30-040 (1) No person shall cause or permit the emission of particulate matter from charcoal producing plant sources including, but not limited to, charcoal furnaces, heat recovery boilers, and wood dryers using any portion of the charcoal furnace off-gases as a heat source, in excess of a total from all sources within the plant site of 10.0 pounds per ton of char[~~coal~~] produced (5.0 grams per Kilogram of char[~~coal~~] produced).

(2) Emissions from char storage, briquette making, boilers not using charcoal furnace off-gases, and fugitive sources are excluded in determining compliance with section (1).

(3) Charcoal producing plants as described in section (1) of this rule shall be exempt from the limitations of 340-21-030(1) and (2) and 340-21-040 which concern particulate emission concentrations and process weight.

Stat. Auth.: ORS Ch. 468
Hist.: DEQ 4-1978, f. & ef. 4-7-78; DEQ 14-1986, f. & ef. 6-20-86

Control of Fugitive Emissions (Medford-Ashland AQMA Only)

340-30-043 (1) Large sawmills, all plywood mills and veneer manufacturing plants, particleboard and hardboard plants, charcoal manufacturing plants, stationary asphalt plants and stationary rock crushers shall prepare and implement site-specific plans for the control of fugitive emissions. (The air contaminant sources listed are described in OAR 340-20-155, Table 1, paragraphs 10a, 14a, 14b, 15, 17, 18, 29, 34a and 42a, respectively.)

(2) Fugitive emission control plans shall identify reasonable measures to prevent particulate matter from becoming airborne. Such reasonable measures shall include, but not be limited to the following:

(a) Scheduled application of asphalt, oil, water, or other suitable chemicals on unpaved roads, log storage or sorting yards, materials stockpiles, and other surfaces which can create airborne dust;

(b) Full or partial enclosure of materials stockpiled in cases where application of oil, water, or chemicals are not sufficient to prevent particulate matter from becoming airborne;

(c) Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials;

(d) Adequate containment during sandblasting or other similar operations;

(e) Covering, at all times when in motion, open bodied trucks transporting materials likely to become airborne; and

(f) Procedures for the prompt removal from paved streets of earth or other material which does or may become airborne.

~~[(3) Fugitive emission control plans shall be prepared and implemented in accordance with the schedule outline in OAR 340-30-045.]~~

Stat. Auth.: ORS Ch. 468
Hist.: DEQ 6-1983, f. & ef. 4-18-83

Requirement for Operation and Maintenance Plans (Medford-Ashland AQMA Only)

340-30-044 (1) Operation and Maintenance Plans shall be prepared by all holders of Air Contaminant Discharge permits except minimal source permits and special letter permits. All sources subject to regular permit requirements shall be subject to operation and maintenance requirements.

(2) The purposes of the operation and maintenance plans are to:

(a) Reduce the number of upsets and breakdown in particulate control equipment;

(b) Reduce the duration of upsets and downtimes; and

(c) Improve the efficiency of control equipment during normal operations.

(3) The operation and maintenance plans should consider, but not be limited to, the following:

(a) Personnel training in operation and maintenance;

(b) Preventative maintenance procedures, schedule and records;

(c) Logging of the occurrence and duration of all upsets, breakdowns and malfunctions which result in excessive emissions;

(d) Routine follow-up evaluation upsets to identify the cause of the problem and changes needed to prevent a recurrence;
(e) Periodic source testing of pollution control units as required by air contaminant discharge permits;
(f) Inspection of internal wear points of pollution control equipment during scheduled shutdowns; and
(g) Inventory of key spare parts.

~~[(4) The operation and maintenance plan shall be prepared and implemented in accordance with the schedule outlined in OAR 340-30-045.]~~

Stat. Auth.: ORS Ch. 468
Hist.: DEQ 6-1983, f. & ef. 4-18-83

Compliance Schedules

340-30-045 ~~[Sources affected by these rules shall comply with each increment of progress as soon as practicable but in no case later than the dates listed in Table I.]~~

Stat. Auth. ORS Ch. 468
Hist. DEQ 4-1978 f. & ef. 4-7-78; DEQ 27-1980 f. & ef. 10-29-80; DEQ 14-1981, f. & ef. 5-6-81; DEQ 6-1983, f. & ef. 4-18-83

TABLE-I
(340-30-045)
COMPLIANCE-SCHEDULE

Division 340-30 Rule --	Submit Plans to the Dept.	Place Purchase Orders --	Begin Construction	Complete Construction	Demonstrate Compliance
-015 Woodwaste Boilers	1/1/79	3/1/79	6/1/79	11/1/79	1/1/80
-020 Veneer Dryers	1/1/79	3/1/79	5/1/79	11/1/79	1/1/80
-025 Air-Conveying Systems	3/15/80	5/15/80	9/1/80	12/1/80	1/1/81
-030 Particle Dryers	7/30/81	1/1/82	5/1/82	1/1/83	6/30/83
-035 Wigwam Burners	1/1/79	3/1/79	6/1/79	11/1/79	1/1/80
-040 Charcoal Producing Plants	1/1/80	3/1/80	9/1/80	7/1/81	1/1/82
-043 Fugitive Emissions Control	10/1/83				6/1/84
-044 Operation and Maintenance	10/1/83				6/1/84

OAR30045 (9/89)

Emission-Limits Compliance Schedules

340-30-046 (1) Compliance with the emission limits for wood-waste boilers in the Grants Pass area and veneer dryers established in sections OAR 340-30-015(1) and (2) and OAR 340-30-021 shall be provided according to the following schedules:

(a) Within three months of the effective date of these rules, submit Design Criteria for emission control systems for Department review and approval;

(b) Within three months of receiving the Department's approval of the Design Criteria, submit a General Arrangement and copies of purchase orders for the emission-control devices;

(c) Within two months of placing purchase orders for emission-control devices, submit vendor drawings as approved for construction of the emission-control devices and specifications of other major equipment in the emission-control system (such as fans, scrubber-medium recirculation and make up systems) in sufficient detail to demonstrate that the requirements of the Design Criteria will be satisfied;

(d) Within one year of receiving the Department's approval of Design Criteria, complete construction;

(e) Within fifteen months of receiving the Department's approval of Design Criteria, demonstrate compliance.

(2) Compliance with the emission limits for wood-waste boilers in section 340-30-015(3) shall be provided according to OAR 340-30-067 or the following schedule, whichever occurs first:

(a) By no later than September 1, 1993, submit Design Criteria for emission control systems for Department review and approval;

(b) Within three months of receiving the Department's approval of the Design Criteria, submit a General Arrangement and copies of purchase orders for the emission-control devices;

(c) Within two months of placing purchase orders for emission-control devices, submit vendor drawings as approved for construction of the emission-control devices and specifications of other major equipment in the emission-control system (such as fans, scrubber-medium recirculation and make up systems) in sufficient detail to demonstrate that the requirements of the Design Criteria will be satisfied;

(d) Within one year of receiving the Department's approval of Design Criteria, complete construction;

(e) Within fifteen months of receiving the Department's approval of Design Criteria, demonstrate compliance.

Continuous Monitoring

340-30-050 (1) The Department {may} will require the installation and operation of {instruments and recorders} instrumentation for measuring and recording emissions and/or the parameters which affect the emission of air contaminants from {sources covered by these rules} wood-waste fired boilers, veneer dryers, fiber dryers, and particle dryers to ensure that the sources and the air pollution control equipment are operated at all times at their full efficiency and effectiveness so that the emission of air contaminants is kept at the lowest practicable level. The {instruments and recorders} instrumentation shall be periodically calibrated. The method and frequency of calibration shall be approved in writing by the Department. Continuous monitoring equipment and operation shall be in accordance with continuous emission monitoring systems guidance provided by the Department and shall be consistent, where applicable, with the EPA performance specifications and quality assurance procedures outlined in 40 CFR 60, Appendices B and F, and the Quality Assurance Handbook for Air Pollution Measurement Systems, Volume III. The recorded information shall be kept for a period of at least one year and shall be made available to the Department upon request. The selection, installation, and use of the instrumentation shall be done according to the following schedule:

(a) Within six months from the effective date of these rules, the persons responsible for the affected facilities shall submit to the Department a plan for process and/or emission monitoring. The Department's primary criterion for review and approval of the plans will be the ability of proposed instrumentation to demonstrate continuous compliance with these regulations.

(b) Within one year from the Department's approval of the plan(s), the persons responsible for the affected facilities shall purchase, install, place in operation the instrumentation as approved, verify that it is capable of demonstrating continuously the compliance status of the affected facilities, and commence continuous monitoring and reporting results to the Department, at a frequency and in a form agreed upon by the Department and the responsible persons.

(c) The implementation date in paragraph (1)(b) of this section can be extended up to one year, subject to Department approval, if justified by the persons responsible for the affected facilities based on unavailability of suitable equipment or other problems.

(2) At a minimum, the monitoring plan submitted under paragraph (1)(a) of this section shall include:

(a) Continuous monitoring and monthly reporting of carbon monoxide concentration, oxygen concentration, and steam production rate for any wood-waste fired boiler;

(b) Continuous monitoring and monthly reporting of pressure drop, scrubber water pressure, and scrubber water flow for any wood-waste fired boiler, veneer dryer, particle dryer, or fiber dryer using a wet scrubber as pollution control equipment;

(c) Continuous monitoring and monthly reporting of opacity for any wood-waste fired boiler not controlled by a wet scrubber; and

(d) Continuous availability by electronic means to the Department of the emission and performance data specified in paragraphs (2)(a) through (c) of this section for any wood-waste fired boiler subject to the emission requirements of OAR 340-30-015.

Source Testing

340-30-055 (1) The person responsible for the following sources of particulate emissions shall make or have made tests to determine the type, quantity, quality, and duration of emissions, and/or process parameters affecting emissions, in conformance with test methods on file with the Department at the following frequencies: ~~[Source Test Frequencies:]~~

(a) Wood Waste Boilers with heat input greater than 35 million Btu/hr. -- Once every year;

(b) Veneer Dryers -- Once every year ~~[until January 1, 1983]~~, during 1991, 1992, and 1993 and once every 3 years thereafter;

(c) Wood Particle Dryers at Hardboard and Particleboard Plants -- Once every year;

(d) Charcoal Producing Plants -- Once every year.

(2) Source testing shall begin at these frequencies within 90 days of the date by which compliance is to be achieved for each individual emission source.

(3) These source testing requirements shall remain in effect unless waived in writing by the Department because of adequate demonstration that the source is consistently operating at lowest practicable levels, or that continuous emission monitoring systems are producing equivalent information.

(4) Source tests on wood waste boilers shall not be performed during periods of soot blowing, grate cleaning, or other abnormal operating conditions ~~[which may result in temporary excursions from normal]~~. The steam production rate during the source test shall be considered the maximum permittee's steaming rate for the boiler.

(5) Source tests shall be performed within 90 days of the startup of air pollution control systems.

Stat. Auth.: ORS Ch. 468
Hist.: DEQ 4-1978, f. & ef. 4-7-78; DEQ 14-1986, f. & ef. 6-20-86

New Sources

340-30-065 New sources shall be required to comply with rules 340-30-015(3) and 340-30-020 through 340-30-~~[040]~~ 111 immediately upon initiation of operation.

Stat. Auth.: ORS Ch. 468
Hist.: DEQ 4-1978, f. & ef. 4-7-78

Rebuilt Sources

340-30-067 Rebuilt sources shall immediately comply with the requirements of 340-30-015(3) except that in the Grants Pass Urban Growth Area this provision will apply to sources that are rebuilt after they have complied with 340-30-015(1).

Emission Offsets
340-30-111

In the Medford-Ashland AQMA, emission offsets required in accordance with OAR 340-20-240 for new or modified sources shall provide reductions in emissions equal to 1.2 times the emission increase from the new or modified sources.

OAR30111 (9/89)

Appendix 8: Woodburning PM_{10} Control Programs/Ordinances

Jackson County
Air Quality Program Work Plan
FY 90-91

Staffing

Air Quality Coordination

Liaison with other County air quality personnel (Medford, Ashland, ODOF, BLM, USFS, citizen's groups, DEQ, industry, etc.)

Assure calculation of daily air quality advisory during woodburning season, November through February. Update broadcast system and notify all necessary parties of daily advisory.

Prepare and be responsible for carrying out administrative rules pertaining to Ordinance 1810 (Restrictions on woodburning during high pollution episodes.) This includes surveying, monitoring and enforcement activities.

Prepare monthly reports pertaining to progress of air quality (AQ) program. Report on number of surveys and monitoring activities, number of green/yellow/red days, number of letters sent out, number of exemptions on file, number of open burning complaints, and estimate of complaints handled. Prepare annual report summarizing the monthly activities.

Plan and implement County's public education program pertaining to woodburning restrictions, dry wood program, daily woodburning advisory and open burning restrictions.

Air Quality Technicians (AQT). Three or four will be hired. The AQT's duties are as follows:

Conduct monitoring and surveying.

Issue necessary warnings and provide woodburners with educational materials.

Operate necessary equipment.

Investigate complaints.

Perform necessary record keeping. Assist in issuance of exemptions.

Clerical Assistant. The clerk's duties as are follows:

Provide general information to the public (walk-ins and telephone inquiries).

Maintain the exemption and other logs and data on the computer. This will include logging and maintaining air quality data and other information as required.

Type correspondence, formal complaints, reports, etc.

Distribute educational materials.

Handle telephone complaints.

Total Hours

Daily Advisory (overtime, 1 1/2 time)	: 132 hours
Air Quality Coordination (1)	: 1600 hours (estimate)
Air Quality Technicians (3)	: 1920 hours
Clerk (1)	: 640 hours
TOTAL	: 4292 hours

Public Education (Pre-election)

Public education efforts, prior to the November 6 election, will be concentrated in the following areas:

Advisory - Advertise new telephone number (776-9000). Media will include billboards, and newspapers. From November through February, the advisory will be announced on radio, television and in Medford Mail-Tribune.

Dry Wood Program - The "Spring" phase includes running newspaper ads reminding woodburners to get their wood in early. The "Fall" phase emphasizes wood moisture testing. Brochures on the program will be distributed to woodstove dealers.

Public Education (Post-election)

Public education efforts will include post-election activities plus television advertisements encouraging curtailment compliance and information on pollution statistics, the progress we've made and the work we have to do, efficient burning, health effects of particulate pollution and pertinent advisory information.

Industry contact. As time permits contact will be made with industry to encourage them (wood products and wood by-products industries) to "blow their own horn" and inform public of their contribution to clean air.

Surveying and Monitoring

Surveys - Estimate 20 surveys (depending on the number of yellow/red days) will be conducted to measure woodstove use on green days and during air pollution episodes.

Monitoring - Monitoring will be conducted on most days when air pollution episodes occur. If visible emissions are observed by any woodburner on these days, the applicable enforcement procedures will be followed.

Open Burning

Open burning ordinance will be enforced by responding to open burning complaints.

City of Medford
Air Quality Program Work Plan
FY 90-91

Staffing

Air Quality Coordinator (Building Safety Director)

Liaison with air quality persons from Jackson County, DEQ.

Responsibility for administration of Medford Ordinance No. 6484. Prepare monthly and annual reports pertaining to progress of Air Quality Program. Plans and implements city program for wood burning restrictions.

Counter Technician

Supervise Air Quality Technicians (2) who will be hired by November. Provide support on monitoring activities, complaints, number of exemptions, and enforcement process. Work in the public education programs.

Air Quality Technicians (2)

Conduct monitoring. Provide public with educational materials. Investigate complaints, issued exemptions, perform record keeping.

Clerical Assistance

Provide general information to public. Type correspondence, reports and handle telephone complaints.

Total Hours

Air Quality Coordinator:	504 hours
Counter Technician:	840 hours
Air Quality Technicians:	1680 hours
Clerical Assistant:	504 hours
TOTAL:	3528 hours

Monitoring

Monitoring will be conducted on red days. Technicians will be looking for visible emissions. Yellow days will be the same except that DEQ woodstoves are exempt.

Public Education

Public education programs will be in conjunction with Jackson County and Central Point.

Open Burning

Open burn ordinance is handled by City of Medford Fire Department. All violations will be reported to them.

ROGUE VALLEY REGIONAL AIR QUALITY PROGRAM - WORK PLAN TIME TABLE

********** Fiscal Year 1990-91 **********

Scope of Work	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
AQC - Liaison Activities	J M	J M		J M	J M	J M	J M	J M	J M	J M	J M	J M
- Daily Advisory					J	J	J	J				
- Prep. Admin. Rules			J	J								
- Monthly Reports	J	J	J	J	J M	J M	J M	J M	J	J	J	J
- Annual Report									J M			
- Pub.Ed - Pre-Election:												
-Dry Wood Prog.		J	J	J					J	J		
- Open Burning				J	J	J						
- Woodburning	M	M	M	J M	J M	J M						
- Advisory			J	J	J	J	J					
- Pub.Ed -Post-Election:												
- Prepare			J	J								
- Industry			J	J								
- Dry Wood Bank			J	J								
Hire & Train AQTs and Clerk				J M								
Clean Air Fair			J M									
All Staff - Monitoring					J M	J M	J M	J M				
All Staff - Surveying					J	J	J	J				

J = Jackson County M = Medford

CITY OF ASHLAND CITY HALL
ASHLAND, OREGON 97520
telephone (code 503) 482-3211

March 26, 1990

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
MAR 28 1990
AIR QUALITY CONTROL

Merlyn Hough
ODEQ
811 South West Sixth Avenue
Portland, Oregon 97204-1390

Dear Merlyn:

Enclosed are copies of the three air quality ordinances recently adopted by the City of Ashland. Also enclosed is a copy of the proposed **SOLVE** program which we hope to have operational by the next heating season.

Feel free to give me a call at 488-5306 if you have questions or I can be of further assistance in this matter.

Sincerely,

Dick Wanderscheid
Energy Conservation Coordinator
Department of Community Development

RJW/sa

Enclosures: 3 Ordinances, **SOLVE** program description

RECEIVED
MAR 28 1990
AIR QUALITY CONTROL

ORDINANCE NO. 2552

AN ORDINANCE ADDING A NEW CHAPTER 15.06 TO THE ASHLAND MUNICIPAL CODE, BANNING THE INSTALLATION IN ASHLAND OF NON-CERTIFIED SOLID FUEL BURNING DEVICES IN ORDER TO HELP IMPROVE THE ROGUE VALLEY'S AIR QUALITY.

THE PEOPLE OF THE CITY OF ASHLAND DO ORDAIN AS FOLLOWS:

SECTION 1. A new Chapter 15.06 shall be added to the Ashland Municipal Code which shall read as follows:

"Chapter 15.06

SOLID FUEL BURNING DEVICE REGULATIONS

Sections:

Section 15.06.010 Definitions. As used in this Chapter, the following words shall have the meanings indicated:

A. "Solid fuel burning device" means a device designed for solid fuel combustion so that usable heat is derived for the interior of a building, and includes, without limitation, solid fuel burning stoves, fireplace inserts, woodstoves of any nature, or pellet stoves used for space heating which can burn solid fuel. Unmodified fireplaces and solid fuel burning devices not subject to DEQ certification are excluded from this definition.

B. "Certified stove" means a solid fuel burning device certified by DEQ as meeting the 1988 particulate emission standards for certified woodstoves specified in Oregon Administrative Rules 340-21-115.

Section 15.06.020 Installation Requirements. It shall be unlawful to install any solid fuel burning device which is not a "certified stove" as defined in this Chapter.

Section 15.06.030 Enforcement and Penalties. Any person, firm or corporation, whether as a principal, agent, employee or otherwise, violating or causing the violation of any of the provisions of this ordinance has committed an infraction, and upon conviction thereof, is punishable as prescribed in Section 1.08.020 of the Ashland Municipal Code. Such person, firm or corporation is guilty of a separate violation for each and every day during which any violation of this Title is committed or continued by such person, firm or corporation."

The foregoing Ordinance was first read on the 19th day of December, 1989 and duly PASSED and ADOPTED this 9th day of January, 1990.

Nan E. Franklin
City Recorder

SIGNED and APPROVED this 12th day of January, 1990.

Catherine M. Golden
Mayor

D.W.

RECEIVED
MAR 28 1990
AIR QUALITY CONTROL

ORDINANCE NO. 2655

AN ORDINANCE TO HELP IMPROVE THE ROGUE VALLEY AIR QUALITY BY REGULATING WHAT CAN BE BURNED IN WOODSTOVES AND THE SALE OF SEASONED WOOD IN ASHLAND.

THE PEOPLE OF ASHLAND DO ORDAIN AS FOLLOWS:

SECTION 1. DEFINITIONS

As used in this chapter:

"Solid fuel burning device" means a device designed for solid fuel combustion so that useable heat is derived for the interior of a building, and includes, without limitation, solid fuel burning stoves, fireplaces, fireplace inserts, woodstoves of any nature, combination fuel furnace or boilers used for space heating which can burn solid fuel, or pellet stoves.

SECTION 2. SOLID FUEL BURNING DEVICE OPERATION

It shall be unlawful for a person to cause or allow any of the following materials to be burned in a solid fuel burning device:

(1) Garbage;

(2) Treated Wood;

(3) Plastic Products;

(4) Rubber Products;

(5) Animals;

(6) Asphaltic Products;

(7) Waste Petroleum Products;

(8) Paints; or

(9) Any substance, other than properly seasoned fuel wood.

SECTION 3. SEASONED WOOD

It shall be unlawful to sell, advertise or deliver wood as 'seasoned or dry wood' unless the wood has a moisture content of 20% or less.

SECTION 4. ENFORCEMENT AND PENALTIES

Any person, firm or corporation, whether as a principal, agent, employee or otherwise, violating or causing the violation of any of the provisions of this ordinance has committed an infraction, and upon conviction thereof, is punishable as prescribed in Section 1.08.020 of the Ashland Municipal Code. Such person, firm or corporation is guilty of a separate violation for each and every day during which any violation of this Title is committed or continued by such person, firm or corporation.

The foregoing Ordinance was first read on the 16th day of January, 1990 and duly PASSED and ADOPTED this 6th day of February, 1990.

Nan E. Franklin
City Recorder

SIGNED and APPROVED this 8th day of February, 1990.

Pat Acklin, Council Chair
Acting Mayor

RECEIVED
MAR 28 1990
AIR QUALITY CONTROL

Staff Draft
November 23, 1989

Save
Our
Livability
View and
Environment

INTRODUCTION

The **SOLVE** (Save Our Livability, View and Environment) **Program** is designed to enhance the air quality of Ashland and the Rogue Valley. It will achieve this goal by using an incentive based program to remove existing woodstoves and fireplace inserts.

GOAL

The overall goal of the **SOLVE** Program is to remove 400 existing solid fuel burning devices over the next eight years.

BACKGROUND

1980 Census Data indicates that about 800 Ashland households used wood for their primary source of heat. While there exists no newer data, this number is probably still relatively accurate. By insulating these homes and replacing those existing woodstoves with efficient heating systems, we can make a significant impact on the amount of particulates introduced into the air shed by these households. Dr. Robert Palzer, of SOSC, has estimated that these 800 households release about 84 tons of particulates into the air shed annually.

The **SOLVE** Program, by making it economically attractive for these households to remove these old woodstoves, should be able to retire half of these stoves in the next eight years.

THE PROGRAM

The program proposed is a three pronged attack to influence people to remove woodstoves. It will utilize a woodstove removal rebate, a zero interest loan payable upon change of ownership for low and moderate income customers, and a low interest loan from Valley of the Rogue Bank or C.P. National for other customers. These loans can be used for weatherization and new heating system costs. In order to take part in the City program, each participant installing a new heating system will be required to:

1) Have a permanently installed solid fuel burning device in his/her home prior to January 1, 1990.

2) Agree to surrender that device to the City upon completion of his/her participation in the program.

3) Install ceiling insulation to R-38 or the highest feasible R-Value and install floor insulation in the crawl space to R-19 or the highest feasible R-Value. In addition, customers installing heat pumps will be required to comply to the minimum weatherization standards in the City's Retrofit Heat Pump Program.

4) Must take advantage of any utility or state sponsored weatherization programs to help pay the cost of weatherization.

5) Low or moderate income customers can use the program's zero interest loan funds to install a zonal electric heating system, a heat pump, a gas furnace, a DEQ approved cord wood stove of 70% or greater efficiency, or a DEQ approved pellet stove. Customers installing a catalytic cord wood stove will be required to purchase an extra catalyst when the stove is purchased. Customers using the City's 6.5% loan program through the Valley of the Rogue Bank can install any of the above devices except for a gas furnace. However, gas furnaces can be financed through a special C.P. National (6.5%) loan program for installing gas heating systems.

6) Low income customers will be able to use the zero interest loan to cover 100% of the customer's share of the costs of weatherization and new heating plant installation up to a maximum of $4,000.

7) Moderate income customers will be able to use the zero interest loan to cover 80% of the customer's share of the costs of weatherization and new heating plant installation up to a maximum of $3,000.

8) Customers not qualifying for the 0% loan can get a 6.5% loan from Valley of the Rogue Bank for up to $2,000 for two years for their share of the costs of weatherization and heating system installation.

9) Customers, regardless of income, who only want to remove their woodstoves will be given a $100 cash rebate upon surrender of the stove to the City. Payments will be limited to one rebate per household.

10) Customers who have an outstanding Housing Rehabilitation loan on their homes will not be eligible for an additional loan under the SOLVE Program.

11) In the initial years, only owner occupied dwellings will be eligible for the SOLVE Program.

The following matrix graphically illustrates how the three customer groups would be treated under the SOLVE program and also the source of funding:

NEW HEATING SYSTEM INSTALL	LOW INCOME	SOURCE OF FUNDS	MODERATE INCOME	SOURCE OF FUNDS	REGULAR INCOME	SOURCE OF FUNDS
(Rebate) Removal Only	$100	City	$100	City	$100	City
Gas Furnace Installed	0% loan for 100% of costs up to $4,000	City Housing Rehab Funds	0% loan for 80% of costs up to $3,000	City Housing Rehab Funds	6.5% loan	C.P. National
Electric heat Installed	0% loan for 100% of costs up to $4,000	City Housing Rehab Funds	0% loan for 80% of costs up to $3,000	City Housing Rehab Funds	6.5% loan for 2 years up to $2,000	Valley of the Rogue Bank + $250 City funds to buy down interest rate
Certified Woodstove Installed	0% loan for 100% of costs up to $4,000	City Housing Rehab Funds	0% loan for 80% of costs up to $3,000	City Housing Rehab Funds	6.5% loan for 2 years up to $2,000	Valley of the Rogue Bank + $250 City funds to buy down interest rate

INCOME CATEGORIES

The following income levels will be used to determine which program option the customer will fall into:

NUMBER OF INDIVIDUALS/HOUSEHOLD	MAXIMUM INCOME FOR LOW-INCOME	MAXIMUM INCOME FOR MODERATE-INCOME
1	$ 7,475	$22,275
2	$10,025	$25,465
3	$12,575	$28,655
4	$15,125	$31,845
5	$17,675	$33,825
6	$20,225	$35,805
7	$22,775	$37,840
8	$25,325	$39,820

COST OF THE PROGRAM

The following cost estimates are based on 50 stoves removed per year. Of these 50 stoves, we assumed that 10 would take advantage of the $100 rebate, 10 would be low income customers, 10 would be moderate income customers, 10 regular income customers would choose gas heat and 10 would change to electric or wood heat. Also, we have assumed an average low income loan of $2,500 and an average moderate income loan of $1,900. Based on these assumptions, the first year cost of the program would be:

SOLVE COSTS

	Program Costs	
	City Funds	Housing Rehab Funds
10 rebates @ $100 each	$1,000	--
10 low income loans @ $2,500/loan	--	$25,000
10 mod. income loans @ $1,900/loan	--	$19,000
10 reg. income gas conversions	--	--
10 reg. income - elec. or wood conversions @ $250/loan[1]	$2,500	--
50 stoves removed	$3,500	$44,000
	Staff Costs	
1/2 FTE Energy Analyst	$10,290	--
Benefits @ 36%	$ 3,704	--
Marketing	$ 2,000	
Office Supplies & Materials/Misc.	$ 1,000	--
	$16,994.	
GRAND TOTAL	$20,494	$44,000

[1]The cost of buying down the interest rate to 6.5% for a $2,000 loan for two years would be $250.

While the program funded at this pace with the above assumption, could remove 50 stoves/year, the actual program costs could vary, depending on how many of each type of customer chooses to utilize the program. However, this estimate probably gives a reasonable idea of the magnitude of the program costs based on the data available to present.

BENEFITS TO THE AIR SHED

The 800 or so woodstoves in Ashland contribute 84 tons of particulates to the air shed annually. If 100 of these stoves are converted to certified stoves and another 300 are removed, the 500 remaining stoves would contribute 44 tons of particulates annually. This results in a reduction of about 48% over current levels.

OTHER BENEFITS

The prospect of removing old woodstoves could accrue other benefits to the City. Unsafe installations could be rectified and thus potential fire hazard could be avoided. Also, the City could help residents by sizing their heating systems to correspond with their heating load. This results in more efficient operation and a longer life for the heating system. In addition, one-on-one contact established would also educate customers on the air quality problem and woodstove operation in general.

SUMMARY

The goal of this program is to remove 400, or about half of the existing non-certified woodstoves in Ashland over the next eight years. While we have gathered as much data as possible about other programs of this nature, it might turn out that the proposed incentive will not be adequate to motivate 50 stove owners per year to take part in SOLVE. On the other hand, it could be very successful and actually generate a waiting list of potential customers. However, it will be impossible to know the answers to these questions without actual implementation experience.

Funding the program for one year as a pilot would probably give enough data to decide if funding for a longer time period is merited.

ORDINANCE NO. 6484

AN ORDINANCE amending Chapter 7 of the Code of Medford by adding new sections 7.220 through 7.228 pertaining to woodburning restrictions.

WHEREAS, the health, safety, and welfare of the citizens of Medford are adversely affected by the degradation of the air quality; and

WHEREAS, wood combustion for space heating produces particulate matter which is physically harmful, aesthetically unpleasant, and contributes to the degradation of the air quality; now, therefore,

THE CITY OF MEDFORD ORDAINS AS FOLLOWS:

Section 1. Chapter 7 of the Code of Medford is amended by adding new sections 7.220 through 7.228 pertaining to woodburning restrictions to read as follows:

"7.220 Definitions.

For purposes of Sections 7.220 through 7.228, the following definitions shall apply:

(1) "Alternative heat source" means a heat source other than a solid fuel burning device.

(2) "High pollution period" means a period of time commencing three hours after designation as a red or yellow day by the Oregon Department of Environmental Quality (hereinafter referred to as DEQ). In the event that DEQ designates consecutive days as red or yellow, they shall all be considered a part of the same period.

(3) "Medford-Ashland Air Quality Maintenance Area" means that part of the County specifically identified by DEQ as an air quality maintenance area, that is one of several areas in the State wherein air quality has deteriorated due to unhealthful levels of pollutants in the air. A map and written description of the Medford-Ashland Air Quality Maintenance Area

(hereinafter referred to as AQMA) are included as Exhibits "A" and "B" respectively, following the text of this ordinance.

(4) "Oregon certified stove" means a woodstove certified by DEQ as meeting the emission performance standards specified in Oregon Administrative Rules 340-21-115.

(5) "Red day" means a 24 hour period beginning at 7:00 a.m. when PM_{10} levels are forecast by the DEQ to be 130 ug/m^3 and above in the AQMA.

(6) "Sole source of heat" means one or more solid fuel burning devices which constitute the only source of heating in a private residence. No solid fuel burning devices shall be considered to be the sole source of heat if the private residence is equipped with a permanently installed furnace or heating system utilizing oil, natural gas, electricity or propane.

(7) "Solid fuel burning device" means a device designed for solid fuel combustion so that usable heat is derived for the interior of a building, and includes, without limitation, solid fuel burning stoves, fireplaces, or woodstoves of any nature, combination fuel furnaces or boilers used for space heating which can burn solid fuel, or solid fuel burning cooking stoves. Solid fuel burning devices do not include barbecue devices, natural gas-fired artificial fireplace logs, DEQ approved pellet stoves, or Kachelofens.

(8) "Yellow day" means a 24 hour period beginning at 7:00 a.m. when the PM_{10} levels are forecast by the DEQ to be 91 ug/m^3 and above but less than 130 ug/m^3 in the AQMA.

7.222 Operation of Solid Fuel Burning Device Prohibition.

(1) The operation of a solid fuel burning device during a high pollution period shall be prohibited unless an exemption has been granted pursuant to Section 7.224. A rebuttable presumption of a violation for which a citation shall be issued shall arise if smoke is being discharged through a flue or chimney at any time during a high pollution period.

(2) After two years from the effective date of this Section, no property owner shall rent or lease a residential unit unless such unit is equipped with an alternative heat source complying with ORS 91.770. If the landlord violates this subsection (2), the tenant shall not be charged with any violation of subsection (1).

7.224 Exemptions.

It is permissible for a household to operate a solid fuel burning device during a high pollution period when the head of that household has previously obtained one of the following exemptions and possesses a certificate issued by the City granting the exemption. Exemptions granted under this section shall expire on September 1 of each year:

(1) Economic Need: An exemption for an economic need to burn solid fuel for residential space heating purposes may be issued to heads of households who can show their eligibility for energy assistance under the Low-Income Energy Assistance Program (hereinafter referred to as L.E.A.P.), as administered by ACCESS, Inc. and as established by the United States Department of Energy.

(2) Sole Source: An exemption may be issued to the heads of households who sign a sworn statement declaring their reliance on a solid fuel burning device as the sole source of heat for their residence. Sole source exemptions shall not be issued after two years from the effective date of this Section unless the residence is approved for installation of an alternative heating source through the Jackson County Wood Smoke Abatement CLEAR program guidelines.

(3) Oregon Certified Stoves: An exemption may be issued to the heads of households for the operation of an Oregon Certified Stove in a residence on a day declared to be a yellow day by the DEQ. The operation of an Oregon certified stove shall be prohibited on a day declared to be a red day by the DEQ unless some other exemption applies and has been granted.

7.226 Abatement; Legal Proceedings.

Whoever violates or fails to comply with any of the provisions of this chapter shall be subject to appropriate legal proceedings to enjoin or abate such violation or noncompliance, in addition to the penalty provided in Section 7.300 below.

7.228 Administrative Regulations.

The City Manager shall prescribe administrative regulations governing the procedure for granting exemptions."

Section 2. This ordinance shall be effective on and after November 20, 1989.

PASSED by the Council and signed by me in open session in authentication of its passage this 2nd day of November, 1989.

ATTEST: Kathleen Ishiara
City Recorder

Mayor

APPROVED: November 3, 1989

Mayor

(CHAP7.ORD)

STATE OF OREGON)
) ss.
COUNTY OF JACKSON)

I, Kathleen Ishiara, City Recorder of the City of Medford, do hereby certify that I have prepared the foregoing copy of Ord. No. 6484, have carefully compared the same with the original thereof on file in my office, and that it is correct, true and complete transcript therefrom and of the whole thereof.

Dated at Medford, Oregon, this 17th day of Nov., 1989.

Kathleen Ishiara
City Recorder

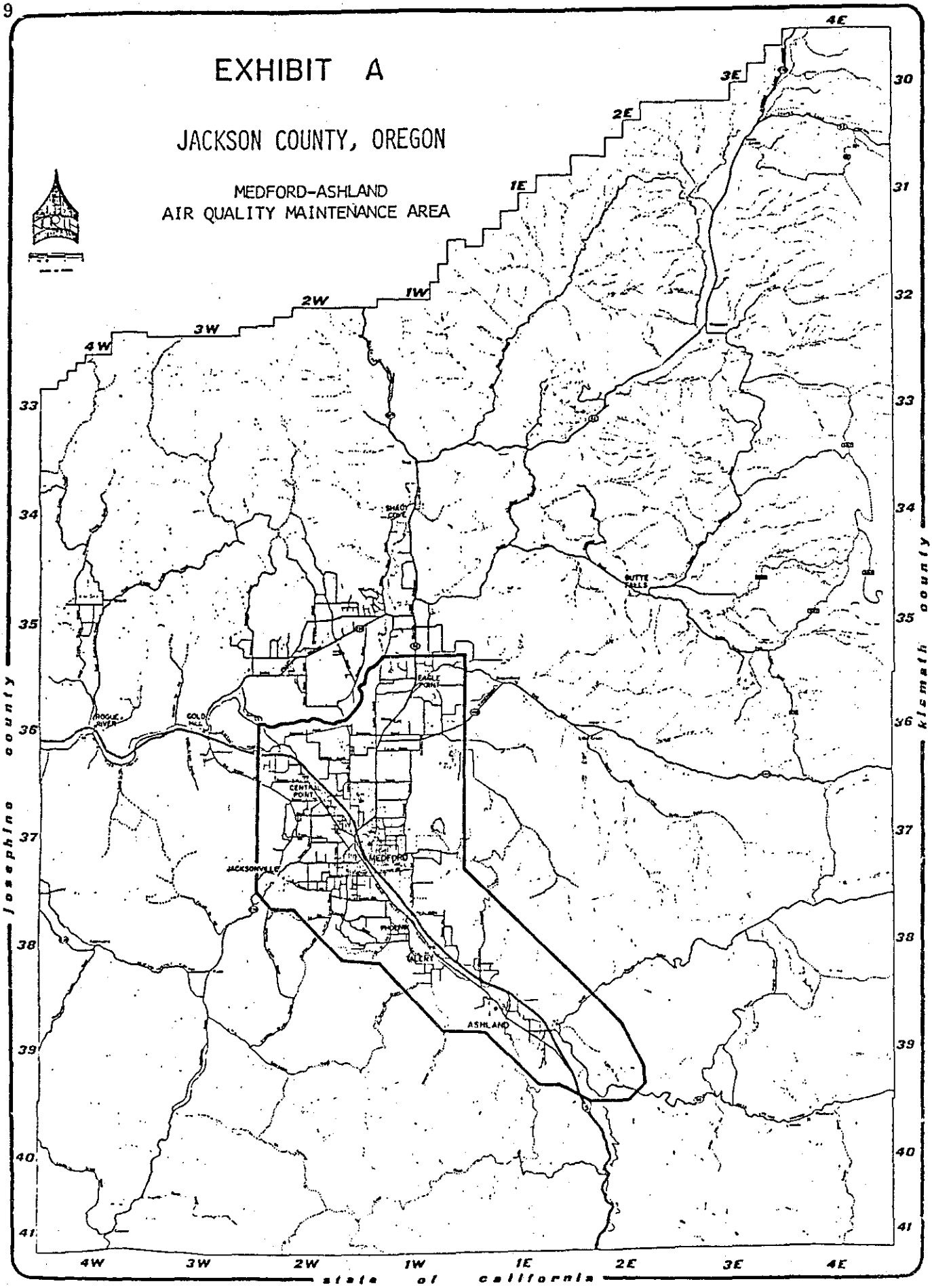


EXHIBIT A
JACKSON COUNTY, OREGON
MEDFORD-ASHLAND
AIR QUALITY MAINTENANCE AREA
4W
3W
2W
1W
1E
2E
3E
4E
30
31
32
33
34
35
36
37
38
39
40
41
josephine county
klamath county
state of california
SHADY COVE
BUTTE FALLS
EAGLE POINT
ROGUE RIVER
GOLD HILL
CENTRAL POINT
MEDFORD
JACKSONVILLE
PHOENIX
TALENT
ASHLAND

EXHIBIT B

BOUNDARY DESCRIPTION

MEDFORD-ASHLAND AIR QUALITY MAINTENANCE AREA

The Medford-Ashland Air Quality Maintenance Area is defined as beginning at a point approximately one mile NE of the town of Eagle Point, Jackson County, Oregon, at the NE corner of Section 36, T35S, R1W; thence south along the Willamette Meridian to the SE corner of Section 25, T37S, R1W; thence SE along a line to the SE corner of Section 9, T39S, R2E; thence SSE to the SE corner of Section 22, T39S, R2E; thence south to the SE corner of Section 27, T39S, R2E; thence SW to the SE corner of Section 33, T39S, R2E; thence west to the SW corner of Section 31, T39S, R2E; thence NW to the NW corner of Section 36, T39S, R1E; thence west to the SW corner of Section 26, T39S, R1E; thence NW along a line to the SE corner of Section 7, T39S, R1E; thence west to the SW corner of Section 12, T39S, R1W; thence NW along a line to the SW corner of Section 20, T38S, R1W; thence west to the SW corner of Section 24, T38S, R2W; thence NW along a line to the SW corner of Section 4, T38S, R2W; thence west to the SW corner of Section 5, T38S, R2W; thence NW along a line to the SW corner of Section 31, T37S, R2W; thence north along a line to the Rogue River, thence north and east along the Rogue River to the north boundary of Section 32, T35S, R1W; thence east along a line to the point of beginning.

ORDINANCE NO. 6686

AN ORDINANCE amending Chapter 7 of the Code of Medford by adding new section 7.240 banning installation of uncertified solid-fuel heating devices.

THE CITY OF MEDFORD ORDAINS AS FOLLOWS:

The Code of Medford is amended by adding section 7.240 to read as follows:

"7.240 Installation of Solid-Fuel Heating Devices.
No person shall install any new or used solid-fuel heating device in any building unless such device has been certified by the Oregon Department of Environmental Quality (DEQ) to comply with DEQ emission standards for such devices and such device bears an authorized permanent DEQ or EPA label attached by the manufacturer stating that the device has been certified. In addition to the penalties provided by this code, violation of this section shall be a public nuisance subject to abatement."

PASSED by the Council and signed by me in authentication of its passage this 2nd day of August, 1990.

ATTEST: Kathleen Ishiara
City Recorder

Mayor

APPROVED Aug. 6, 1990.

Mayor

(STOVE.ORD)

STATE OF OREGON)
) ss.
COUNTY OF JACKSON)

I, Kathleen Ishiara, City Recorder of the City of Medford, do hereby certify that I have prepared the foregoing copy of Ord. 6686, have carefully compared the same with the original thereof on file in my office, and that it is correct, true and complete transcript therefrom and of the whole thereof.

Dated at Medford, Oregon, this 6th day of Aug., 1990.

Kathleen Ishiara
City Recorder

BEFORE THE BOARD OF COMMISSIONERS OF JACKSON COUNTY OF THE STATE OF OREGON

IN THE MATTER OF AMENDING CHAPTER 1810 OF THE CODIFIED ORDINANCES OF JACKSON COUNTY TO PROVIDE FOR THE ENACTMENT OF A RESTRICTION ON WOODBURNING ON HIGH POLLUTION DAYS

ORDINANCE No. 90-4

WHEREAS, the health, safety, and welfare of the citizens of Jackson County are adversely affected by the degradation of the air quality within the Medford-Ashland Air Quality Maintenance Area; and

WHEREAS, wood combustion for space heating produces particulate matter which is physically harmful, aesthetically unpleasant, and contributes to the degradation of the air quality;

NOW THEREFORE, the Jackson County Board of Commissioners hereby ordains as follows:

Section 1.

Ordinance No. 86-5, entitled "The Codified Ordinances of Jackson County, 1985," is amended by amending Section 1810.01, adding Section 1810.04, and amending Section 1810.05, providing for the enactment of a restriction on emissions from solid fuel burning devices. The sections amended and added shall read as follows:

SECTION 1810.01. DEFINITIONS

As used in this chapter:

(a) "Agricultural operation" means an activity on land currently used or intended to be used primarily for the purpose of obtaining a profit by raising, harvesting, and selling crops or by raising and sale of livestock or poultry, or the produce thereof, which activity is necessary to serve that purpose.

(b) "Agricultural waste" means any material actually generated or used by an agricultural operation but excluding those materials described in Section 1810.07(d) of this Chapter.

(c) "Board" means the Board of County Commissioners.

(d) "Critical PM_{10} Control Area" means that part of the County specifically identified by the Board as the Critical PM_{10} Control Area. A map and written description of the Critical PM_{10} Control Area are included as Exhibits "A" and "B" respectively, following the text of this Chapter.

(e) "High pollution period" means a period of time commencing three hours after initial designation as a red or yellow day by the Oregon Department of Environmental Quality (hereinafter referred to as DEQ) or the Jackson County Department of Health and Human Services. In the event more than one consecutive days are designated as red or yellow, they shall all be considered a part of the same period.

(f) "Medford-Ashland Air Quality Maintenance Area" (hereinafter referred to as AQMA) means that part of the County specifically identified by the Oregon Department of Environmental Quality as an air quality maintenance area, that is one of several areas in the State wherein air quality has deteriorated due to unhealthful levels of pollutants in the air. A map and written description of the AQMA are included as Exhibits "C" and "D," respectively, following the text of this chapter.

(g) "Opacity" means the degree to which emissions from a solid fuel burning device reduce the transmission of light and obscure the view of an object in the background. It is expressed as a percentage representing the extent to which an object viewed through the smoke is obscured.

(h) "Open Burning" means burning in burn barrels or incinerators, open outdoor fires, and any other burning where combustion air is not effectively controlled and combustion products are not effectively vented through a stack or chimney.

(i) "Oregon certified stove" means a solid fuel burning device certified by DEQ as meeting the emission performance standards specified in Oregon Administrative Rules 340-21-115.

(j) "PM10" means airborne particles ranging from .01 to 10 microns in size, the breathing of which can be harmful to the human respiratory system.

(k) "Red day" means a 24 hour period beginning at 7:00 a.m. when PM_{10} levels are forecast by the DEQ or the Jackson County Department of Health and Human Services to be 130 ug/m^3 and above.

(l) "Residence" means a building containing one or more dwelling units used for habitation by one or more persons.

(m) "Residential Woodburning" means utilization of wood in a solid fuel heating device inside a residence.

(n) "Sole source of heat" means one or more solid fuel burning devices which constitute the only source of heating in a residence. No solid fuel burning device or devices shall be considered to be the sole source of heat if the residence is equipped with a permanently installed, furnace or heating system utilizing oil, natural gas, electricity, or propane.

(o) "Solid fuel burning device" means a device designed for solid fuel combustion so that usable heat is derived for the interior of a building, and includes, without limitation, solid fuel burning

stoves, fireplaces, or woodstoves of any nature, combination fuel furnaces or boilers used for space heating which can burn solid fuel, or solid fuel burning cooking stoves. Solid fuel burning devices do not include barbecue devices, natural gas-fired artificial fireplace logs, DEQ approved pellet stoves, or Kachelofens.

(p) "Space Heating" means raising the interior temperature of a room.

(q) "Trackout" means the deposit of mud, dirt, and other debris on paved public roadways by motor vehicles. "Trackout" also means the material being so tracked onto public roadways. Trackout can become pulverized and blown into the air by vehicular traffic where it becomes a part of the total suspended particulate level.

(r) "Ventilation Index" means the National Weather Service's indicator of the relative degree of air circulation for a specified area and time period.

(s) "Waste" means discarded or excess material, including:

(1) Agricultural waste resulting from farming or agricultural practices and operations; and

(2) Nonagricultural waste resulting from practices and operations, other than farm operations, including industrial, commercial, construction, demolition, and domestic wastes and yard debris.

(t) "Yellow day" means a 24 hour period beginning at 7:00 a.m. when the PM_{10} levels are forecast by the DEQ or the Jackson County Department of Health and Human Services to be 91 ug/m^3 and above but less than 130 ug/m^3.

SECTION 1810.04 SOLID FUEL BURNING DEVICE EMISSION STANDARD

(a) Within the Critical PM_{10} Control Area, no person owning or operating a solid fuel burning device shall at any time cause, allow, or discharge emissions from such device which are of an opacity greater than fifty (50) percent.

(b) The provisions of this subsection shall not apply to emissions during the starting or refueling of a new fire for a period not to exceed 30 minutes in any four-hour period.

(c) For the purposes of this section opacity percentages shall be determined by a certified observer using the standard visual method listed in 40 CFR 60A, Method 9, or operation of equipment approved by the Jackson County Department of Health and Human Services that is known to produce equivalent or better accuracy.

SECTION 1810.05 RESTRICTION OF WOODBURNING AND EMISSIONS ON HIGH POLLUTION DAYS

(a) Operation of Solid Fuel Burning Device Prohibition

(1) The operation of a solid fuel burning device within the Critical PM_{10} Control Area during a high pollution period shall be prohibited unless an exemption has been granted pursuant to Section 1810.05(b) of this Chapter. A presumption of a violation for which a citation shall be issued shall arise if smoke is being discharged through a flue or chimney after a time period of three hours has elapsed from the time of declaration of the high pollution period.

(2) Notwithstanding subsection (a)(1) of this section, the operation of an Oregon Certified solid fuel burning device shall be permitted during a high pollution period so long as no visible emissions of smoke are discharged through a flue or chimney after a time period of three hours has elapsed from the time of the declaration of the high pollution period. The provisions of this subsection shall not apply to emissions of smoke during the starting or refueling of a fire for a period not to exceed 30 minutes in any four-hour period.

(3) After two years from the effective date of this ordinance, no property owner within the Critical PM_{10} Control Area shall rent or lease a residential unit that is not equipped with a secondary source of heat other than a solid fuel burning device, unless the landlord has a valid exemption under Section 1810.05(b)(2) of this Chapter. Should a violation of this section occur it shall be attributable to the property owner and not to the tenant or lessee.

(b) Exemptions

It is permissible for a household to operate a solid fuel burning device within the Critical PM_{10} Control Area during a high pollution period when the head of that household has obtained one of the following exemptions. Exemptions granted under this section shall expire on September 1 of each year.

(1) **Economic Need:** An exemption for an economic need to burn solid fuel for residential space heating purposes may be issued to heads of households who can show their eligibility for energy assistance under the Federal Department of Energy Low-income Energy Assistance Program (hereinafter referred to as L.I.E.A.P.), as administered by ACCESS Inc. or its successor.

(2) **Sole Source:** An exemption may be issued to the heads of households who sign a statement declaring their reli-

ance on a solid fuel burning device as the sole source of heat for their residence. Sole source exemptions shall not be issued after two years from the effective date of this ordinance, unless the residence is approved for installation of an alternative heating source through the Jackson County Wood Smoke Abatement CLEAR program guidelines or in the absence of the CLEAR program when, the head of the household can show that the family income is less than 80% of the median income level for the Medford metropolitan area as established by the Federal Department of Housing and Urban Development (HUD). Households that qualify for an exemption based on economic need, as defined in this Chapter, may continue to rely on a solid fuel burning device as the sole source of heat for the residence beyond two years from the effective date of this ordinance.

(3) Special Need: Upon a showing of special need, as further defined by administrative rule, a temporary exemption may be granted authorizing the burning of a solid fuel burning device notwithstanding Section 1810.05 (a)(1) and (2) of this Ordinance. "Special need" shall include, but not be limited to occasions when a furnace or central heating system is inoperable other than through the owner or operator's own actions or neglect.

(c) Administrative Rules

The County Administrator shall develop administrative rules setting out the requirements necessary to qualify for the exemptions described herein and specifying the manner in which the ordinance will be enforced.

Dated this 2nd day of May, 1990.

APPROVED AS TO FORM:

Amanda Brown
County Counsel

JACKSON COUNTY BOARD OF COMMISSIONERS

Sue Kupillas
Sue Kupillas, Chair

ATTEST:

Katharine F. Bate
Recording Secretary

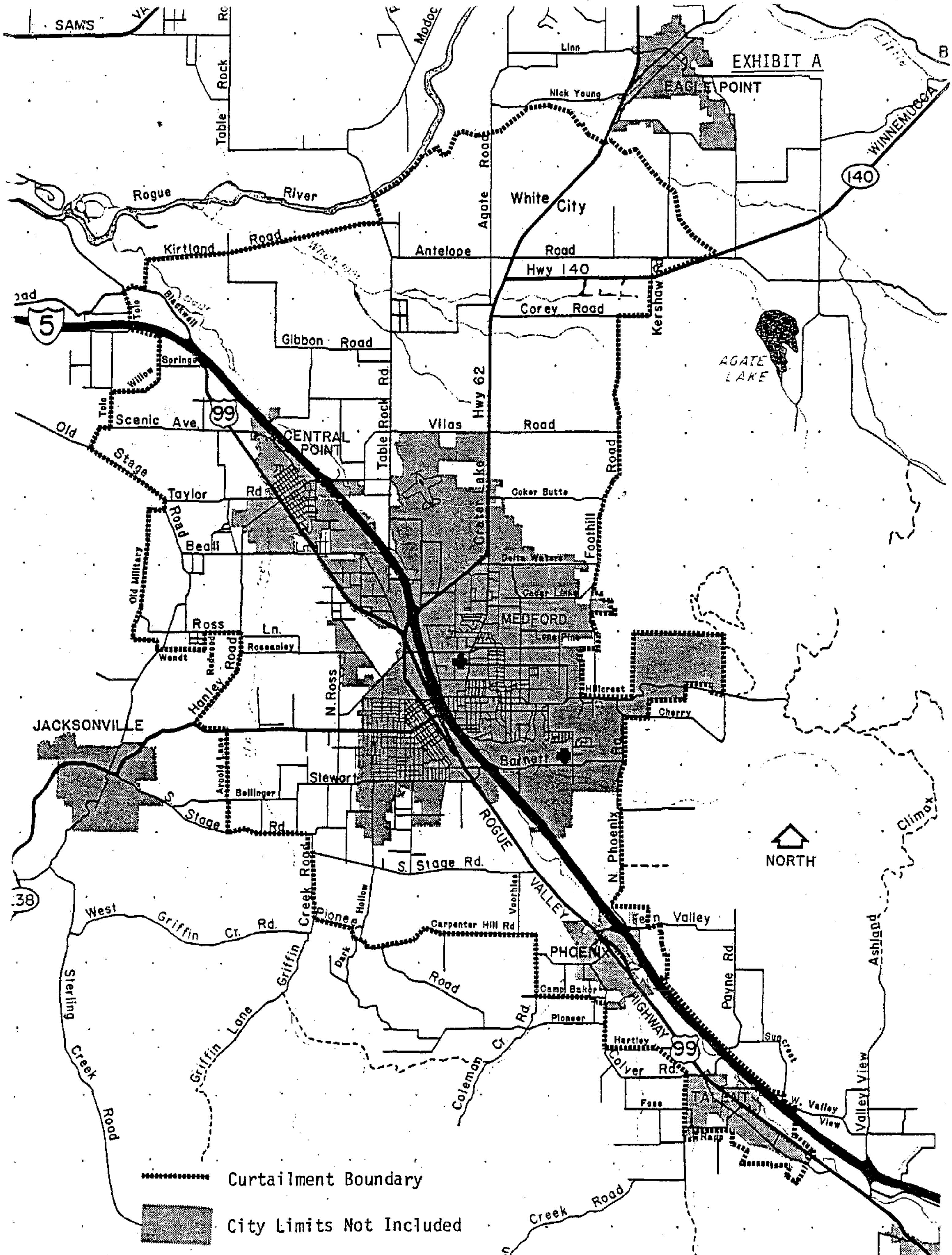


EXHIBIT A
EAGLE POINT
WINNEMUCCA
140
Rogue River
White City
Agate Road
Table Rock Rd.
Linn
Nick Young
Modoc
SAMS
Kirtland Road
Antelope Road
Hwy 140
Corey Road
Kershaw Rd
Gibbon Road
5
Blackwell
Tolo
Springs
Willow
AGATE LAKE
Hwy 62
Scenic Ave.
99
CENTRAL POINT
Vilas Road
Old Stage
Taylor Rd
Coker Butte
Crater Lake
Foothill Road
Beall Ln.
Delta Waters
Cedar Links
Old Military
MEDFORD
Ross Ln.
Rossanley
Wendt
Redwood
Road
Lone Pine
Hanley Road
N. Ross
Hillcrest
Cherry
JACKSONVILLE
Arnold Lane
Bellinger
Stewart
Barnett
S. Stage Rd
ROGUE VALLEY HIGHWAY
N. Phoenix Rd
S. Stage Rd.
NORTH
Climax
38
West Griffin Cr. Rd.
Griffin Creek Road
Pioneer
Hollow
Voorhies
Carpenter Hill Rd
Fern Valley
PHOENIX
Dark Hollow Road
Camp Baker
Payne Rd
Ashland
Sterling Creek Road
Griffin Lane
Coleman Cr. Rd.
Hartley
Colver Rd.
Suncrest
TALENT
Foss
Rapp
W. Valley View
Valley View
Creek Road
Curtailment Boundary
City Limits Not Included

EXHIBIT B

PROPOSED CURTAILMENT BOUNDARY - JACKSON COUNTY

Beginning on I-5 and Tolo Road, crossover north on Tolo Road to Old Hwy 99. East on Old Hwy 99 to Kirtland Road. Northeasterly on Kirtland Road to Tablerock Road. North on Tablerock Road to the Rogue River. Northeasterly along the southern bank of the Rogue River to the mouth of Little Butte Creek. Northeasterly along Little Butte Creek to Antelope Creek. Southeasterly along Antelope Creek to Dry Creek. Southeasterly on Dry Creek to Hwy 140. Southwesterly on Hwy 140 to Kershaw Road. South on Kershaw Road to Corey Road. West on Corey Road to Foothill Road. South on Foothill Road to Medford Urban Growth Boundary (UGB) (near Delta Waters Road). Follow eastern UGB south to North Phoenix Road. South on North Phoenix Road to Phoenix UGB. Follow eastern UGB south to I-5. Southeasterly on I-5 to Talent UGB. Follow the eastern southern and western UGB until intersection with Southern Pacific Railroad track. Southern Pacific Railroad track north to Hartley Lane. West on Hartley Lane to Talent-Phoenix Road. North on Talent-Phoenix Road to Phoenix UGB. West along southern boundary of Phoenix UGB to Camp Baker Road. West on Camp Baker Road to Coleman Creek Road. North on Coleman Creek Road to Carpenter Hill Road. West on Carpenter Hill Road to Pioneer Road. Northwest on Pioneer Road to Griffin Creek Road. North on Griffin Creek Road to Medford UGB. North along Medford UGB to South Stage Road. West on South Stage Road to Arnold Lane. North on Arnold Lane to Jacksonville Hwy. West on Jacksonville Hwy to Hanley Road. Northeast on Hanley Road to Ross Lane. West on Ross Lane to Redwood Drive. South on Redwood Drive to LaPine Avenue. West on LaPine Avenue to Old Stage Road. North on Old Stage Road to Old Military Road. North on Old Military Road to Old Stage Road. Northwest on Old Stage Road to Scenic Avenue. Northwest on Scenic Avenue to Tolo Road. North on Tolo Road to Willow Springs Road. East on Willow Springs Road to Ventura Lane. North on Ventura Lane to I-5. Northwest on I-5 to crossover of Tolo Road.

EXHIBIT C

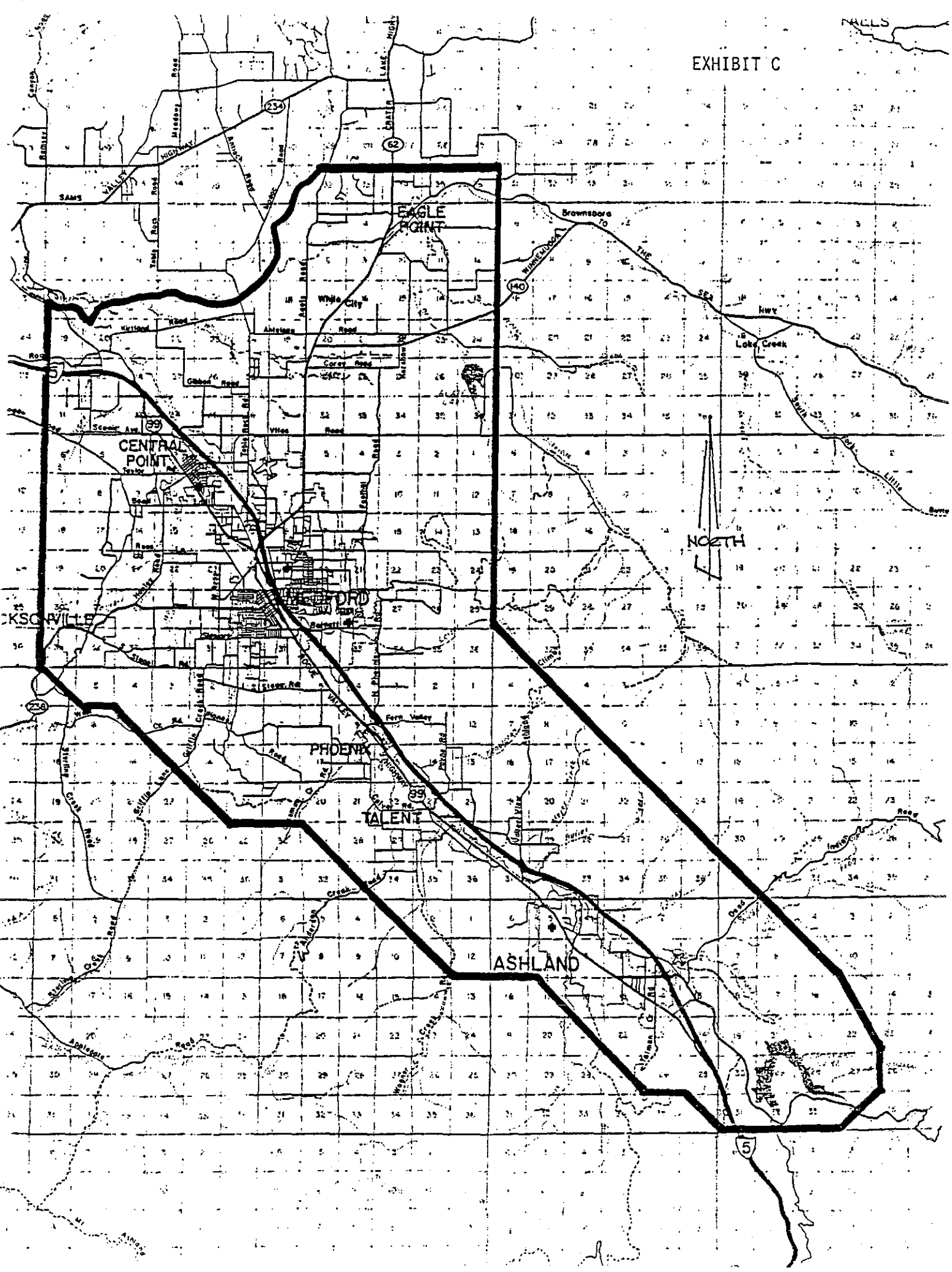


EXHIBIT D

BOUNDARY DESCRIPTION

MEDFORD-ASHLAND AIR QUALITY MAINTENANCE AREA

The Medford-Ashland Air Quality Maintenance Area is defined as beginning at a point approximately one mile NE of the town of Eagle Point, Jackson County, Oregon, at the NE corner of Section 36, T35S, R1W; thence south along the Willamette Meridian to the SE corner of Section 25, T37S, R1W; thence SE along a line to the SE corner of Section 9, T39S, R2E; thence SSE to the SE corner of Section 22, T39S, R2E; thence south to the SE corner of Section 27, T39S, R2E; thence SW to the SE corner of Section 33, T39S, R2E; thence west to the SW corner of Section 31, T39S, R2E; thence NW to the NW corner of Section 36, T39S, R1E; thence west to the SW corner of Section 26, T39S, R1E; thence NW along a line to the SE corner of Section 7, T39S, R1E; thence west to the SW corner of Section 12, T39S, R1W; thence NW along a line to the SW corner of Section 20, T38S, R1W; thence west to the SW corner of Section 24, T38S, R2W; thence NW along a line to the SW corner of Section 4, T38S, R2W; thence west to the SW corner of Section 5, T38S, R2W; thence NW along a line to the SW corner of Section 31, T37S, R2W; thence north along a line to the Rogue River, thence north and east along the Rogue River to the north boundary of Section 32, T35S, R1W; thence east along a line to the point of beginning.

Appendix 9: Fugitive Dust Control Programs/Ordinances

OFFICE OF THE MAYOR

CITY OF MEDFORD

MEDFORD, OREGON 97501

MEDFORD'S SISTER CITY
ALBA, ITALY

December 17, 1982

Mr. William Young, Director
Department of Environmental Quality
P. O. Box 1760
Portland, OR 97202

SUBJECT: PARTICULATE STRATEGIES

Dear Mr. Young:

Enclosed are a variety of documents relating to the City of Medford's regulations and programs for improving particulate air quality.

As you are aware, our City Council recently adopted an ordinance establishing several new control strategies for particulate air pollution. The ordinance, Number 4740, adopted on November 4, 1982, addresses 1) weatherization requirements for solid fuel heating device installation, 2) residential weatherization, 3) pollution episode curtailment, and 4) trackout. On October 21, 1982, the City Council adopted a revised open burning ordinance, making the City's open burning regulations consistent with those of Jackson County. These recent ordinances are included as attachment A.

In addition to the above strategies, the City of Medford is also implementing other measures which should have a positive impact on particulate pollution. These measures include 1) a program for paving unpaved granite streets, 2) a recently adopted arterial streets plan which, when implemented, will provide new curbs and gutters in several key areas which presently have unpaved shoulders, 3) a minimum impact street sweeping program, 4) a program for installation and sizing of wood stoves consistent with the 1981 State Policy Manual (Oregon Department of Commerce), and 5) a land development ordinance emphasizing proper solar orientation for new subdivisions. These measures are discussed by appropriate staff in several memos contained in attachment B.

We anticipate that Medford's particulate strategies will be incorporated into Oregon's State Implementation Plan for submittal to the EPA. Please let me know if I can be of further assistance in this important matter.

Sincerely,

Al Densmore
Mayor

AD:lh
Attachments

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
DEC 21 1982
- 391 -
AIR QUALITY CONTROL

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
DEC 20 1982
OFFICE OF THE DIRECTOR

ATTACHMENT B

CITY OF MEDFORD

INTER-OFFICE MEMORANDUM

RECEIVED
DEC 15 1982
PLANNING DEPARTMENT

To Planning Director via Public Works Director

From City Engineer

Subject Particulate Reduction

Date December 14, 1982

I. Improvement of Granite Streets

This year's (FY 82-83) City budget contains $200,000 of HUD Community Development Block Grant money that is earmarked for assistance on local improvement projects within the low/moderate income areas of the City. City Council approved the City Engineer's proposal that this money be directed toward residential streets with a granite type of riding surface. The City will provide 50% of the estimated costs of improving these streets; therefore, we effectively will have $400,000 worth of project money to upgrade these streets.

It is anticipated that the above funding level can cause improvement of approximately 5,700 linear feet of roadway. This type of street surfacing program should significantly improve air quality in Medford via the particle reduction avenue.

II. Paving Arterial Street Shoulders

The City currently has three different programs aimed at our arterial street needs. All three are at different levels of funding and different degrees of certainty. A brief description of each follows:

A. Bond Issue: The City has gone on record for presenting a bond issue question to the public in the March 1983 elections. The bond amount of $9.4 million would allow for improving approximately 20,000 linear feet of roadway. Of this amount, about 1/6 presently has curb and gutter type of construction, so this program would eliminate approximately 33,000 linear feet of unpaved shoulder area.

B. Revenue Sharing: The City Manager has directed that $850,000 of Federal Revenue Sharing money should be budgeted in the FY 82/83 budget for the improvement of certain segments of the identified arterial streets needed in "A" above. This is a safety valve move that would allow the program to go forward even if the bond measure was not approved. The funding level available in this program would allow for 2,500 linear feet of improved shoulder to be paved.

C. HUD Block Grant

It has been proposed by my office that FY 83-84 HUD funding be directed into a major street project servicing the low/moderate income areas. If this pro-

Subject: Particulate Reduction

gram is approved, it would run concurrently with "B" above and would provide paving for an additional 2,500 linear feet of presently unpaved shoulder.

All three of these programs would have positive impacts on particulate removal by the elimination of dust producing unpaved surface areas.

ahf

PUBLIC WORKS DEPARTMENT

CITY OF MEDFORD
MEDFORD, OREGON 97501

TELEPHONE: 776-7485

RECEIVED
JAN 20 1983
AIR QUALITY CONTROL

January 17, 1983

Merlyn Hough
DEQ-Air Quality Division
P. O. Box 1760
Portland, Oregon 97207

Subject: Particulate Strategies: Winter Sanding/Cleanup Program

Dear Mr. Hough:

This letter is in addition to the December 17, 1982, documents from the City of Medford regarding program commitments to reduce particulate emissions. This letter describes the Medford winter street sanding and cleanup program.

1. Material. Pea gravel will continue to be used as the sanding material. This material minimizes the amount of fines available for resuspension.

2. Locations. Subject to public safety requirements, a minimal amount of sanding material is normally used. Winter sanding will generally be limited to the necessary curves, intersections and overpasses.

3. Cleanup. Sanding material will be picked up using the regular street sweeping equipment as described in the Sweeping Report. Sanding material will be cleaned up as soon as possible, normally within two days following the icing episode. The prompt cleanup of sanding materials reduces the material resuspension time period.

4. Records. Cubic yards of pea gravel and man-hours spent on winter sanding are included in reports each December and June. This information can be obtained from the Medford Public Works Department by July 1 for the preceding fiscal year.

The City of Medford winter sanding and cleanup program is designed to provide safe driving conditions and also minimize road dust emissions. Please call me if you need additional information on this program.

Sincerely yours,

Lewis N. Powell

Lewis N. Powell, P.E.
Public Works Director

ahf

CC: Mayor and Council
(via City Manager)
City Manager
Public Works Superintendent
Planning Director

PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

CITY OF MEDFORD
411 WEST 8TH STREET
MEDFORD, OREGON 97501

TELEPHONE
(503) 770-4520

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
MAR 06 1990
AIR QUALITY CONTROL

February 28, 1990

DEQ
822 S.W. 8Th Ave.
Portland, OR 97204

Attn: Merlin Hough

Dear Mr. Hough,

Since January, 1985 the City of Medford has improved 0.64 miles (3365 l.f.) of formerly granite surfaced streets to city standards (full width asphalt concrete pavement with curbs and gutters).

During this same time period the City has also improved 3.04 miles (16,070 l.f.) of formerly 2 lane oil-mat streets with gravel or granite shoulders to city standards.

I hope this information is of use to you. If I can be of further assistance, please do not hesitate to call.

Sincerely,

Robert Janssen, PE
Administrative Engineer

RJ:js

Appendix 10: Open Burning PM_{10} Control Programs/Ordinances

file

RECEIVED
DEC 28 1990
AIR QUALITY

ORDINANCE NO. 2535

AN ORDINANCE ADDING A NEW CHAPTER 10.30 TO THE ASHLAND MUNICIPAL CODE, ENACTING CONTROLS ON OPEN BURNING

THE PEOPLE OF THE CITY OF ASHLAND DO ORDAIN AS FOLLOWS:

SECTION 1. A new Chapter 10.30 shall be added to Title 10 of the Ashland Municipal Code, which shall read as follows:

"Chapter 10.30

CONTROLS ON OPEN BURNING

Sections:

10.30.010 Outdoor Burning Restricted. No person shall start or maintain any outdoor fire (except for outdoor cooking) for the purpose of burning any combustible material, except as allowed under this ordinance. Nor shall any person in control of any premises cause or knowingly allow any such fire to be started or maintained on any part of such premises. No barrel burning or burning of garbage, plastic, styrofoam, or other noxious materials shall be allowed at any time during the year, including burning such materials in woodstoves or fireplaces.

10.30.020 Period When Outdoor Burning is Not Allowed. This ban on outdoor burning shall be in effect for the entire year except for the period April, May and September 15 to October 15.

10.30.030 Ventilation Index. No outdoor burning shall be allowed on any day when the ventilation index is less than 400. However, fires permitted by Sections 10.30.050 or 10.30.060 of this ordinance may be allowed on any day by permit from the City's Fire Chief. The ventilation index is the National Weather Service's indicator of the relative degree of air circulation in the Rogue Valley.

10.30.040 Exempted Fires. The following types of outdoor fires may be allowed by the Fire Chief, or his/her representative, by permit on days when the Fire Chief, or his/her representative, determines that the ventilation index exceeds 400 and that fire conditions are conducive to burning. With the

exceptions of fires allowed under Subsections A and F, the fire should not be allowed unless it is determined by the Fire Chief, or his/her representative, to be the only feasible way to dispose of the debris.

A. Burning of a structure or other use of fire for training purposes by the Fire Department;

B. Field burning in agricultural areas;

C. Fire hazard reduction burning;

D. Slash and other forest service burning in the interface and forested areas covered under the Smoke Management Plan;

E. Certain other fires when, because of topography, there is no other feasible way to remove debris; and

F. Any burning which has written approval of DEQ.

10.30.050 Special Exemptions--Disease Control. The following types of outdoor fires may be allowed by the Fire Chief, or his/her representative, on any day of the year:

A. Fires to control agricultural diseases, such as blight, that must be destroyed immediately by fire to prevent the spread of disease.

B. Burning bee hives and bee-keeping paraphernalia to eradicate the spread of disease.

10.30.060 Special Exemptions--Religious Fires.

A. Religious fires shall be allowed by the Fire Chief, or his/her representative, on any day of the year, provided that all safety precautions required by the Fire Chief have been complied with.

B. During periods which the Fire Chief, or his/her representative, has declared an extreme fire danger, religious fires shall also require six hours advance notification to the Fire Chief or his/her representative.

10.30.070 Permits Required. A permit issued by the Fire Chief, or his/her representative, shall be required for all burning, including the exempted fires of Sections 10.30.040, 10.30.050 and 10.30.060.

A. Upon receipt of a request for a permit and application fee for any fire, except a religious fire, the Fire Chief, or his/her representative, shall undertake whatever investigation he/she deems necessary. Based on this investigation, the Fire Chief or his/her representative may approve the permit. The Fire Chief, or his/her representative, shall approve fires only when it is determined such fires do not constitute a hazard and that steps have been taken to assure reasonable public safety. Such fires shall conform with Article 11 of the Uniform Fire Code. Fires which are approved by permit shall be maintained during daylight hours and by a competent adult person, and shall be extinguished prior to darkness unless continued burning is specifically authorized by the Fire Chief or his/her representative. In addition, the Fire Chief, or his/her representative, may deny a permit for fires allowed under Section

10.30.040 if it is determined that the debris proposed for burning has a high moisture content and would burn better after a period of aging. Outside burning without a permit is hereby declared to be a public nuisance and may be summarily abated by the Fire Chief, Chief of Police, or their representatives.

B. Annual permits for religious fires authorized under Section 10.30.060 shall be issued by the Fire Chief without charge, stipulating the safety precautions which must be followed. The stipulation of Subsection 10.30.070(A), limiting fires to daylight hours, shall not apply to this subsection.

10.30.080 Enforcement and Penalties. Any person, firm or corporation, whether as a principal agent, employee or otherwise, violating or causing violation of any of the provisions of this ordinance, has committed an infraction, and upon conviction thereof, is punishable as prescribed in Section 1.08.020 of the Ashland Municipal Code. Such person, firm or corporation is guilty of a separate violation for each and every day during which any violation of this Title is committed or continued by such person, firm or corporation.

The foregoing Ordinance was first read on the 7th day of November, 1989, and duly PASSED and ADOPTED this 21st day of November, 1989.

Karen Huckins

City Recorder (ACTING)

SIGNED and APPROVED this 27th day of November, 1989.

Catherine M. Golden

Catherine M. Golden
Mayor

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
FEB 20 1990
AIR QUALITY CONTROL

ORDINANCE NO. 1624

AN ORDINANCE ADOPTING REGULATIONS AND A PERMIT PROCESS FOR OUTSIDE BURNING

THE PEOPLE OF THE CITY OF CENTRAL POINT DO ORDAIN AS FOLLOWS:

Section 1. There is hereby added to the Municipal Code of the City of Central Point Chapter 8.02, which is to read as follows:

Chapter 8.02

OUTSIDE BURNING

8.02.010 Outside Burning - Conditions.

A. No person shall start or maintain any fire outside of a building (except for an outdoor cooking fire and agricultural heating devices) for the purpose of burning any combustible material, or cause or participate therein, nor shall any person in control of any premises cause or knowingly allow any such fire to be started or maintained on any part of said premises unless:

(1) A written permit has been issued by the City Fire Chief or designee to maintain such fire at that location; and

(2) The fire is started and maintained in accordance with the terms of the permit and the following requirements of this chapter.

8.02.020 Restriction on Permits.

A. No permit shall be issued under any circumstances for outside burning during December or January.

B. No permit shall be issued where burning would constitute a violation of Oregon Administrative Rules governing open burning in the Rogue Basin Open Burning Control Burning Area.

C. No permits shall be issued for burn barrels, trash incinerators or other similar devices, and the use thereof is prohibited within the City.

D. The Fire Chief or designee shall not approve outside burning on any day in which it is determined that low humidity, high winds, drought, or other weather or unusual conditions exist which make outside burning generally, or at the particular time and place proposed, unreasonably hazardous to the safety of persons or property. In no event shall the Fire Chief or designee approve outside burning on a day when one or more of the following conditions exist, or in the Fire Chief or designee's

determination are likely to exist:

(1) Temperatures above 90° fahrenheit,

(2) Winds above 20 miles per hour, or

(3) Humidity below 30 percent.

E. The Fire Chief or designee shall not approve outside burning on any day when it is determined that the Ventilation Index is less than 400 during that day. The Ventilation Index is the National Weather Service's indicator of the relative degree of air circulation for the Medford area.

Section 8.02.030 Issuance of Permit. A permit may be issued only for the following purposes:

A. Controlling agricultural diseases such as blight that must be quickly destroyed by fire to prevent the spread of the disease;

B. Burning contaminated pesticide containers as prescribed by DEQ and manufacturer specifications;

C. Burning beehives and beekeeping paraphernalia to eradicate the spread of disease;

D. Burning a structure or the other use of fire for training purposes by a fire department in coordination with DEQ;

E. Field burning in agricultural areas;

F. The burning of vegetative material by the public at large from March 15th to April 30th and from October 1st to November 15th of each year, subject to all terms and conditions of said permit and the terms and conditions of this ordinance.

Each permit shall contain a written condition in bold-faced type to the effect that permittee shall contact the Fire Chief's office before each fire is started and ascertain that outside burning is approved under the terms and restrictions of this ordinance, by the Fire Chief or designee, for that day. No permit shall be valid as to any day on which the Fire Chief has ascertained that burning is not permitted under said subsections. Additionally, the Fire Chief or designee may condition any permit issued hereunder to exclude the burning of any particular material upon a finding by the Fire Chief or designee that the burning of such material would be unduly obnoxious in the locality of the proposed burning site.

8.02.040 Time of Burning. Fires which are the subject of this chapter shall be maintained during daylight hours only, and by a competent adult person, and shall be extinguished prior to darkness unless continued burning is specifically authorized in writing by the Fire Chief or designee. Additionally, the Fire Chief or designee, as a permit condition, may restrict fires to limited daylight hours which shall be specified on the permit.

8.02.050 Nuisance. Burning without a permit as prescribed by this chapter, or in violation of the terms of any permit, or any other act in violation of this chapter, is hereby declared to be a public nuisance and may be summarily abated by the Fire Chief or designee or the Chief of Police.

8.02.060 Penalty. Burning without a permit as prescribed by this chapter, or in violation of the terms of any permit, or any other act in violation of this chapter shall be a violation of ordinance punishable under the general penalty ordinance of the City.

Section 2. Chapter 15.16 of the Central Point Municipal Code is hereby repealed.

Passed by the Council and signed by me in authentication of its passage this 19 day of OCTOBER, 1989.

Mayor

ATTEST:

Designated City Officer

APPROVED by me this _____ day of _____, 1989.

Mayor

DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
FEB 20 1990
AIR QUALITY CONTROL

BEFORE THE BOARD OF COMMISSIONERS OF JACKSON COUNTY OF THE STATE OF OREGON

IN THE MATTER OF AMENDING CHAPTER 1810 OF THE CODIFIED ORDINANCES OF JACKSON COUNTY TO PROVIDE FOR THE ENACTMENT OF A RESTRICTION ON OPEN BURNING, AND DECLARING AN EMERGENCY.

ORDINANCE No. 89-13

WHEREAS, the health, safety, and welfare of the citizens of Jackson County are adversely affected by the degradation of the air quality within the Medford-Ashland Air Quality Maintenance Area; and

WHEREAS, The Woodburning Task Force has recommended that a new provision be added to the Jackson County Code requiring that all woodstoves installed in the AQMA meet 1988 DEQ emission standards,

NOW THEREFORE, the Jackson County Board of Commissioners hereby ordains as follows:

Section 1.

Ordinance No. 86-5, entitled "The Codified Ordinances of Jackson County, 1985," is amended by amending Sections 1810.01, 1810.02, 1810.03, and 1810.07, 1810.08, and 1810.09 of Chapter 1810 on Air Pollution. The sections amended by this ordinance shall read as follows:

SECTION 1810.01. DEFINITIONS

As used in this chapter:

(a) "Agricultural operation" means an activity on land currently used or intended to be used primarily for the purpose of obtaining a profit by raising, harvesting, and selling crops or by raising and sale of livestock or poultry, or the produce thereof, which activity is necessary to serve that purpose.

(b) "Agricultural waste" means any material actually generated or used by an agricultural operation but excluding those materials described in Section 1810.07(d) of this Chapter.

(c) "Board" means the Board of County Commissioners.

(d) "Medford-Ashland Air Quality Maintenance Area" means that part of the County specifically identified by the Oregon Department of Environmental Quality as an air quality maintenance area, that is one of several areas in the State wherein air quality has deteriorated due to unhealthful levels of pollutants in the air. A map and written description of the Medford-Ashland Air Quality Maintenance Area (hereinafter referred to AQMA) are included as Exhibits "A" and "B," respectively, following the text of this chapter.

(e) "Open Burning" means burning in burn barrels or incinerators, open outdoor fires, and any other burning where combustion air is not effectively controlled and combustion products are not effectively vented through a stack or chimney.

(f) "PM_{10}" means airborne particles ranging from .01 to 10 microns in size which can be harmful to the human respiratory system.

(g) "Primary PM_{10} standard" means an average particulate concentration of 150 micrograms per cubic meter of air during a twenty-four hour period.

(h) "Regulations" means regulations promulgated by the Board of County Commissioners pursuant to this Chapter.

(i) "Residence" means a building containing two or fewer dwelling units which is used for habitation by one or more persons.

(j) "Residential Woodburning" means utilization of wood in a solid fuel heating device inside a dwelling.

(k) "Solid fuel heating device" means a stove, heater, fireplace modified with an insert or other receptacle, wherein wood or other solid fuel combustion occurs for the purpose of space heating. Unmodified fireplaces are excluded from this definition.

(l) "Space Heating" means raising the interior temperature of a room.

(m) "Trackout" means the deposit of mud, dirt, and other debris on paved public roadways by motor vehicles. "Trackout" also means the material being so tracked onto public roadways. Trackout can become pulverized and blown into the air by vehicular traffic where it becomes a part of the total suspended particulate level.

(n) "Ventilation Index" means the National Weather Service's indicator of the relative degree of air circulation for a specified area and time period.

(o) "Waste" means discarded or excess material, including:

(1) Agricultural waste resulting from farming or agricultural practices and operations; and

(2) Nonagricultural waste resulting from practices and operations, other than farm operations, including industrial, commercial, construction, demolition, and domestic wastes and yard debris.

SECTION 1810.02 EXCEPTIONS TO CHAPTER

This Chapter shall not apply:

(a) Within incorporated limits of any city;

(b) To Federal or State lands;

(c) To prescribed slash burns regulated by the State Smoke Management Plan;

(d) To open cooking fires or ceremonial fires; or

(e) To orchard heating devices in which combustion air is effectively controlled and combustion products are effectively vented through a stack or chimney provided that no materials which may emit dense smoke or noxious odors are burned.

SECTION 1810.03 REQUIREMENTS FOR SOLID FUEL HEATING DEVICE INSTALLATION

The purpose of this section is to reduce the amount of particulate pollution resulting from woodburning for space heating.

(a) It shall be unlawful for any new or used solid fuel heating device to be installed in the Medford-Ashland Air Quality Maintenance Area after the effective date of this Chapter (December 22, 1989), unless:

(1) The device is installed pursuant to the County Building Code and regulations of the Department of Planning and Development; and

(2) The solid fuel heating device complies with the Oregon Department of Environmental Quality 1988 Particulate Emission standards for certified woodstoves; and

(3) For all new construction, the structure contains an alternate form of space heating, including natural gas, propane, electric, oil, solar, or kerosene, sufficient to meet necessary space heating requirements, so that during episodes of high pollution levels, the occupant will be able to heat the home with other than a solid fuel heating device.

(b) If the conditions set forth in this subsection are not fulfilled, no person in possession of the premises shall cause or permit, and no public agency shall issue any permit for, the installation of the device.

SECTION 1810.07 OPEN BURNING

(a) The purpose of this section is to minimize the accumulation of PM_{10} air pollution resulting from open burning. The public should be aware that open burning may also be restricted during the fire season (typically June through October) by the fire districts or other fire regulating authorities. These authorities base their restrictions of open burning on such factors as low humidity, high winds, drought, or other conditions which make outside burning unsafe.

(b) Open burning of any kind is prohibited throughout unincorporated Jackson County on all days of the year when the maximum ventilation index is below 400.

(c) Open burning of any kind is prohibited within the Medford-Ashland Air Quality Maintenance Area during November, December, January, and February of each year due to generally poor smoke dispersion.

(d) Open burning of any wet garbage, plastic, wire insulation, automobile part, asphalt, petroleum product, petroleum treated material, rubber product, animal remains, or animal or vegetable matter resulting from the handling, preparation, cooking, or service of food or of any other material which normally emits dense smoke or noxious odors is prohibited throughout the unincorporated areas of Jackson County.

(e) The provisions of this section do not apply to the open burning of agricultural wastes which is necessary for disease or pest control.

SECTION 1810.08 BURNING OF MATERIAL EMITTING DENSE SMOKE OR NOXIOUS ODORS IN SOLID FUEL BURNING DEVICES

The burning of any of the materials listed in Section 1810.07(d) above in a solid fuel burning device is prohibited throughout the unincorporated areas of Jackson County at all times.

SECTION 1810.09 ABATEMENT; LEGAL PROCEEDINGS

Whoever violates or fails to comply with any of the provisions of this chapter shall be subject to appropriate legal proceedings to enjoin or abate such violation or noncompliance, in addition to the penalty provided in Section 1810.99.

Section 2. Emergency Declared.

This ordinance being necessary to the health, safety, and welfare of the people of Jackson County, an emergency is hereby declared to exist, and it shall take effect immediately upon adoption.

Dated this 22nd day of December, 1987.

APPROVED AS TO FORM:

Amanda J. B.
County Counsel

JACKSON COUNTY BOARD OF COMMISSIONERS

Hank Henry, Chairman

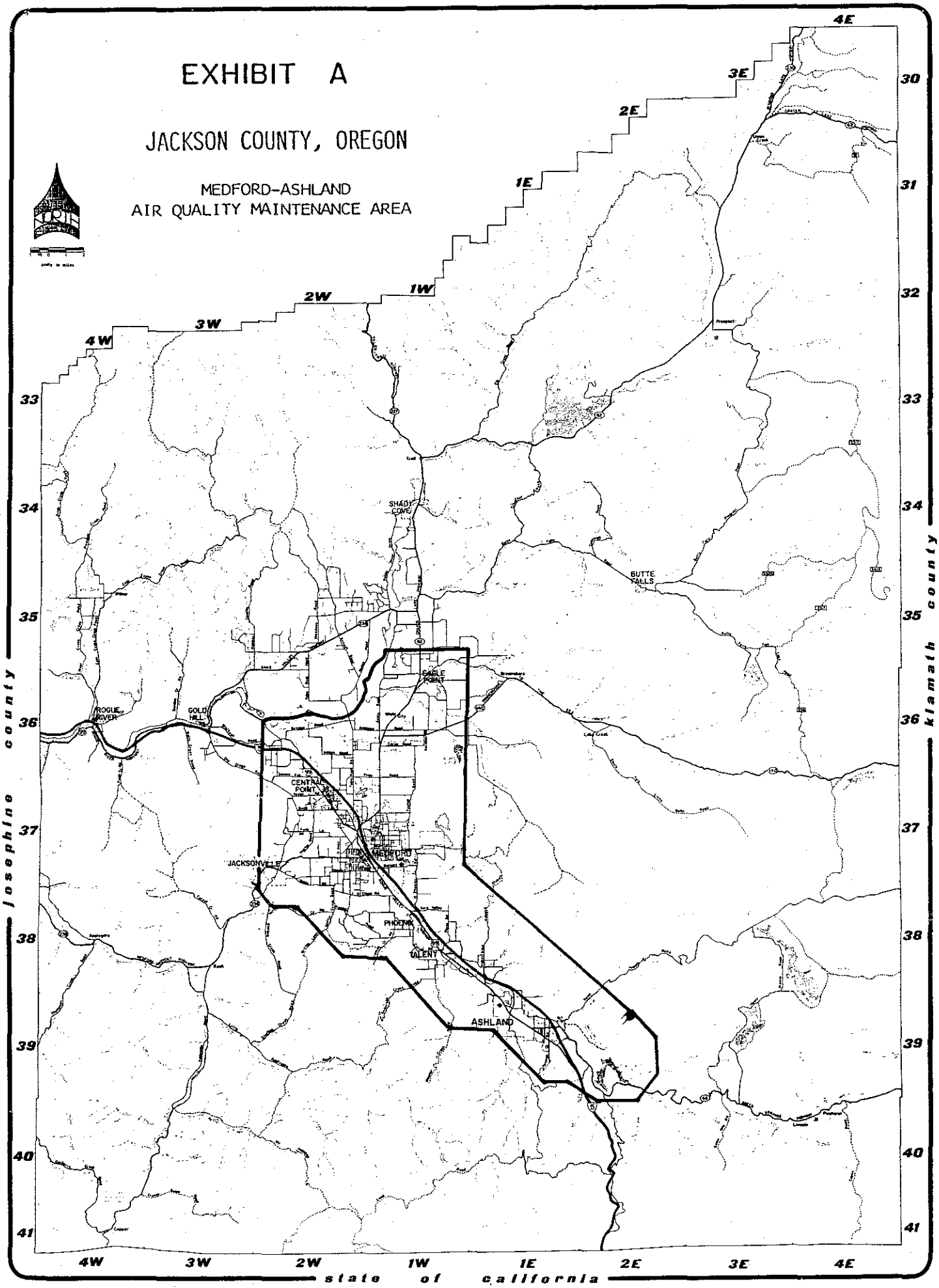
ATTEST:

Nancy Mitchell
Recording Secretary

EXHIBIT A

JACKSON COUNTY, OREGON

MEDFORD-ASHLAND
AIR QUALITY MAINTENANCE AREA



ORDINANCE NO. 6430

AN ORDINANCE amending Section 5.550 of the Code of Medford pertaining to outside burning.

THE CITY OF MEDFORD ORDAINS AS FOLLOWS:

Section 5.550 of the Code of Medford is amended to read as follows:

"5.550 Outside Burning.

(1) No person shall start or maintain any fire outside a building (except for an outdoor cooking fire and agricultural heating devices) for the purpose of burning any combustible material, or cause or participate therein, nor shall any person in control of any premises cause or knowingly allow any such fire to be started or maintained on any part of said premises unless:

(a) A written permit has been issued by the city Fire Chief or his agent to maintain such fire at that location; and

(b) The fire is started and maintained in accordance with the terms of the permit and the following requirements of this section.

[~~Permits shall be valid only during the months of February, March, April, May, June and from the end of the official Oregon fire season (on or about October 15), through November of the year in which they are issued.~~] No outside burning whatsoever shall be permitted during December and January, except for an outdoor cooking fire and agricultural heating devices.

(2) [~~The Fire Chief or his agent shall not issue any permit for the burning of garbage at any time or place, or for any running fire in uncut grass or brush, or for any fire within 25 feet of a combustible wall, fence, or structure or on any hard-surface public pavement, in addition.~~] No permit will be issued where burning would violate Oregon Administrative Rules governing open burning in the Rogue Basin Open Burning Control Area.

(3) Each permit shall contain a written condition in bold-face type to the effect that the permittee shall contact the Fire Chief's office before each fire is started and ascertain that outside burning is approved, under subsections (4) and (5), by the Fire Chief for that day. No permit shall be valid as to any day on which the Fire Chief has ascertained that burning is not permitted under said subsections. In addition, the Fire Chief may condition any permit issued hereunder to exclude the burning of any particular material when he finds that the burning of such material would be unduly obnoxious in the locality of the proposed burning site.

(4) The Fire Chief or his agent shall not approve outside burning on any day if he determines that low humidity, high winds, drought, or other weather or other unusual conditions exist which make outside burning generally, or at the particular time and place proposed, unreasonably hazardous to the safety of persons or property. In no event shall the Fire Chief approve outside burning on a day when one or more of the following conditions exist, or in his determination will exist:

(a) Temperatures above 90° Fahrenheit;
(b) Wind above 20 miles per hour; or
(c) Humidity below 30 percent.

(5) The Fire Chief or his agent may approve outside burning on any day when he determines that the ventilation index is or will be greater than 400 during that day. The ventilation index is the National Weather Service's indicator of the relative degree of air circulation for the Medford area.

(6) Fires which are subject to this section shall be maintained during daylight hours and by a competent adult person and shall be extinguished prior to darkness unless continued burning is specifically authorized in writing by the Fire Chief.

(7) [*Special burn permits using less restrictive criteria may be issued by the Fire Chief or his agent for the destruction of harmful agricultural diseases*] **A permit may be issued only for the following purposes:**

(a) controlling agricultural diseases such as blight that must be quickly destroyed by fire to prevent the spread of the disease;

(b) burning contaminated pesticide containers as prescribed by D.E.Q. and manufacturer specifications;

(c) burning bee hives and beekeeping paraphernalia to eradicate the spread of disease;

(d) burning a structure or the other use of fire for training purposes by a fire department in coordination with D.E.Q.; or

(e) field burning in agricultural areas.

(8) Violation of this section constitutes an infraction.

(9) Outside burning without a permit is hereby declared to be a public nuisance and may be summarily abated by the Fire Chief or Chief of Police."

PASSED by the Council and signed by me in open session in authentication of its passage this 17 day of Aug., 1989.

ATTEST: Kathleen Ishiara
City Recorder

Mayor

APPROVED Aug. 18, 1989.

Mayor

NOTE: Matter in **Bold Face** in an amended section is new; matter [*overstruck and bracketed*] is existing law to be omitted.

STATE OF OREGON)
) ss.
COUNTY OF JACKSON)

I, Kathleen Ishiara, City Recorder of the City of Medford, do hereby certify that I have prepared the foregoing copy of Ord. No. 6430, have carefully compared the same with the original thereof on file in my office, and that it is correct, true and complete transcript therefrom and of the whole thereof.

Dated at Medford, Oregon, this 8th day of Sept., 1989.

Kathleen Ishiara
City Recorder

RECEIVED
JUN 14 1990
AIR QUALITY CONTROL

ORDINANCE NO. 7-7

AN ORDINANCE CREATING THE OFFICE OF FIRE CHIEF, DEFINING HIS DUTIES AND POWERS; PREVENTING FIRE HAZARDS, AND PROVIDING FOR THEIR ABATEMENT; ADOPTING REGULATIONS AND A PERMIT PROCESS FOR OPEN BURNING AND WEED CONTROL, AND A PENALTY FOR THEIR CONTINUANCE; REPEALING ORDINANCES NO. 7-2 AND 7-5 AND DECLARING AN EMERGENCY.

The City of Eagle Point ordains as follows:

Section 1: The Chief of the Fire Department of the City of Eagle Point shall be ex officio Fire Marshal. He shall receive no compensation therefor other than his salary as Fire Chief.

Section 2: The Fire Chief shall have the power, with the consent of the Council, to appoint a deputy to serve without compensation and act in the place and stead of the Fire Chief. The Fire Chief and the deputy shall be subject to removal from office by vote of the City Council at any regular meeting. The Fire Chief or his deputy shall enforce the provisions of this ordinance and all other ordinances pertaining to the protection of the City of Eagle Point from fire.

Section 3: The Fire Chief, Deputy Fire Chief and any person under their control or supervision shall have the right to enter upon any premises at all reasonable hours for the purpose of inspection, and at any time in the course of performing their fire suppression or life safety duties.

Section 4: The Fire Chief or, in his absence, the Chief of Police shall have the authority to establish fire lines. It shall be unlawful for any unauthorized person, except the owner, lessee, or someone having some property rights or interest in the burning property or other property imperiled thereby, to enter the fire limits fixed by such lines.

Section 5: It shall be unlawful for any person or persons to deposit any ashes or cause them to be deposited or permit or suffer the same to remain in any wooden vessel or other combustible receptacle. Ashes shall be placed in some safe depository or galvanized iron or other incombustible material not less than 12 inches from any wooden wall, wooden fence, or other wood work, and not less than 20 feet from any wooden structure or building.

Section 6: Any person using or having charge of or control over any shavings, hay, straw, litter, or other combustible waste material fragments shall cause them to be securely deposited or removed so as to be safe from fire. All receptacles for waste, rags, paper, and other substances liable to spontaneous combustion must be made of incombustible material.

Section 7: It shall be unlawful for any person to allow or permit to remain upon roofs in the City of Eagle Point any accumulation of paper, hay moss, or other inflammable or combustible material.

Section 8: It shall be unlawful for any person to kindle any fire or cause a fire to be kindled upon public streets, alleys, or highways within the City of Eagle Point. This section shall not prohibit fires necessary for the heating of pitch or tar for roofing authorized buildings or street construction or repairs.

Section 9: It shall be unlawful for the owner, occupant, agent, or other person in possession of any lot, tract, or parcel of land within the corporate limits of the City of Eagle Point to permit grass or other vegetation excepting shrubs, trees, flowers or crops raised in the ordinary course of husbandry to grow over twelve (12) inches tall.

Prior to the 15th of May each year, such owner, occupant, agent, or other person in possession of property shall cause any such grass or growth on any unoccupied lot to be cut, removed, or destroyed. No person shall burn such grass or growth from any unoccupied lot without first having obtained a permit from the Fire Chief to do so. It shall be unlawful for any person within the City of Eagle Pint to accumulate, to permit to accumulate, to deposit, or to cause to be deposited on any premises within the City of Eagle Point any accumulation of inflammable refuse or rubbish in amount or quantity sufficient to constitute a fire hazard.

Section 10: It shall be unlawful for any person within said City to engage in any outside burning of refuse or rubbish without first obtaining a permit to do so from the Fire Chief, or as the Fire Chief may order from time to time.

A. A written permit has been issued by the City Fire Chief or designee to maintain such fire at that location; and

B. The fire is started and maintained in accordance with the terms of the permit and the following requirements of this ordinance.

Section 11: No permit will be issued under any circumstances for outside burning during December or January. The purpose of this section is to minimize the accumulation of PM 10 air pollution resulting from open burning. The public should be aware that open burning may also be restricted during the fire season (typically June through October) by the fire districts or other fire regulating authorities.

A. Burn barrels, trash incinerators or similar devices and their locations shall be approved by the Fire Chief or designee prior to the issuance of a permit.

B. The Fire Chief or designee shall not approve outside burning on any day when it is determined that the Ventilation Index is less than DEQ recommendations during the day.

Section 12: A permit may be issued only for the following purposes:

A. Controlling agricultural diseases such as blight that must be quickly destroyed by fire to prevent the spread of the disease;

B. Burning contaminated pesticide containers as prescribed by DEQ and manufacturer specifications;

C. Burning beehives and beekeeping paraphernalia to eradicate the spread of disease;

D. Burning a structure or the other use of fire for training purposes by a fire department in coordination with DEQ;

E. Field burning in agricultural areas;

F. The burning of vegetative material by the public at large from February 1st to beginning of fire season and from end of fire season to November 30th of each year, subject to all terms and conditions of said permit and the terms and conditions of this ordinance.

G. The Fire Chief or designee may condition any permit issued hereunder to exclude the burning of any particular material upon a finding by the Fire Chief or designee that the burning of such material would be unduly obnoxious in the locality of the proposed burning site.

H. Open burning of any wet garbage, plastic, wire insulation, automobile part, asphalt, petroleum product, petroleum treated material, rubber product, animal remains, or animal or vegetable matter resulting from the handling, preparation, cooking or service of food or of any other material which normally emits dense smoke or noxious odors is prohibited throughout the City of Eagle Point.

Section 13: Fires which are the subject of this ordinance shall be maintained during daylight hours only, and by a competent adult person, and shall be extinguished prior to darkness unless continued burning is specifically authorized in writing by the Fire Chief or designee. Additionally, the Fire Chief or designee, as a permit condition, may restrict fires to limited daylight hours which shall be specified on the permit.

Section 14: Burning without a permit as prescribed by this ordinance, or in violation of the terms of any permit, or any other act in violation of this ordinance, is hereby declared to be a public nuisance and may be summarily abated by the Fire Chief or designee or the Police Department.

Section 15: It shall be unlawful for any person to throw away any lighted cigar, cigarette, or other tobacco within any sawmill, box factory, lumber yard, or any part of any public street within 100 feet of such sawmill, box factory, or lumber yard; warning signs shall be posted in conspicuous places in every sawmill, box factory, or lumber yard and along any street, sidewalk, or alley within 100 feet of such place. Said signs shall be erected by the owners of said sawmill, box factory, or lumber yard at their sole expense.

Section 16: Upon notice of the Fire Chief or Chief of Police all consumers and users of water connected with the water systems now in use or hereafter installed in the City of Eagle Point, shall shut off all private systems, hydrants or appliances on their premises immediately.

Section 17: The Fire Chief, or designee, the Chief of Police or any other police officer in the City of Eagle Point shall, upon determining that a fire hazard exists as described in this ordinance, notify the owner, occupant, agent, or other person in charge of property upon which said fire hazard exists. Such notice shall be delivered personally in writing or by registered mail to the last known address of such person and shall state specifically the condition which has caused the fire hazard. Such fire hazard shall be removed within 24 hours after delivery of said notice. If removal is not completed within a reasonable time, the Fire Chief, his designee, the Chief of Police, or other police officer shall cause such fire hazard to be removed and the cost thereof shall become a lien upon the property which said fire hazard exists or to which it is adjacent, in the same manner as other liens under the laws of the State of Oregon and the Charter of the City of Eagle Point.

Section 18: Any owner or occupant of any tract, piece, or parcel of land against which a lien has been entered under the provisions of this ordinance who shall for any reason desire to dispute the same, may file his protest with the City Recorder and Municipal Judge within ten (10) days from the date of such docketing, which protest shall set forth the grounds thereof. The same shall be heard speedily and summarily, and the lien docketed as aforesaid shall be confirmed, modified, or vacated, as may be warranted by the facts, or, if confirmed, the same may thereafter be enforced by notice issued by the City Recorder and Municipal Judge to the Chief of Police to sell said premises upon published notice of such proceeding as is otherwise required on sale of real property for the satisfaction of city liens.

Section 19: Any violation of this ordinance shall be deemed an offense and any person upon conviction thereof shall be punished by a fine of not less than $25.00 nor more than $250.00. Each day the violation continues shall be a separate offense.

Section 20. To the extent that Ordinances No. 7-2 and 7-5 are inconsistent herewith, they are hereby repealed.

Section 21. The Council finds that the passage of this ordinance is necessary for the immediate preservation of the City of Eagle Point and of said City. Therefore, an emergency is declared to exist, and this ordinance shall be in full force and effect upon its passage by the Council and approval by the Mayor.

PASSED by the Council and signed by me in open session in authentication of its passage this 22 day of May, 1990.

Mayor

ATTEST:

Rita Gosnell
Recorder

APPROVED by me this 22 day of May, 1990.

Mayor

Supplement to
EQC Agenda Item D
January 31, 1991
Written Testimony

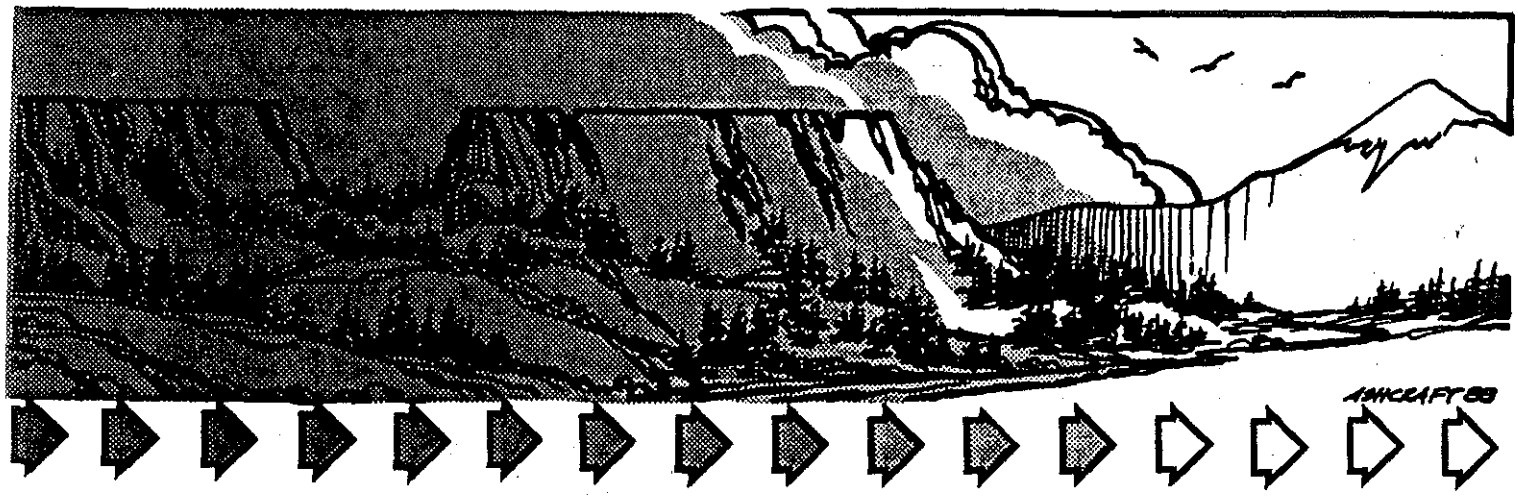
PUBLIC HEARING TESTIMONY ON PROPOSED PM_{10} CONTROL STRATEGIES FOR EUGENE-SPRINGFIELD, MEDFORD-ASHLAND AND KLAMATH FALLS AREAS

(Copies of Written Testimony)

Eugene-Springfield Hearing:	January 30, 1990
Medford-Ashland Hearing:	August 6, 1990
Medford-Ashland Hearing:	September 12, 1990
Klamath Falls Hearing:	September 18, 1990

A

COALITION TO IMPROVE AIR QUALITY



The Coalition to Improve Air Quality, a public interest advocacy group with representatives from the Rogue Valley Audubon Society, Rogue Group Sierra Club, Oregon Environmental Council, American Lung Association of Oregon, Better Breathers, Headwaters, Friends of the Greensprings, League of Women Voters, P.A.C.T, and other interested citizens.

MAJOR AIR QUALITY HEARINGS COMING UP THE FIRST WEEK OF AUGUST

Major public hearings will occur shortly concerning the Department of Environmental Quality's (DEQ) proposed master plan to clean up smoke pollution (particulate) in our region. In official jargon, this is a State Implementation Plan (SIP) for particulate matter.

Only those items present and clearly spelled out in the SIP are legally enforceable to mandate Clean Air.

Our earlier SIPs failed to obtain compliance with either the annual or the daily Federal health standard for particulate. This area has had smoke pollution problems for more than 20 years, so it is crucial that we get this one right. If this SIP fails, another hearing is unlikely this decade.

The SIP, as the DEQ proposes, needs amending. The plan focuses on two major elements: control of woodstoves for most of the reductions and additional controls on industry for the remaining 22% reduction. The woodstove controls are in place and the recently adopted industrial rules are being implemented over a five-year timetable. We fully support these components of the proposed SIP.

However, while the elements currently in the plan are good, they fall short of addressing all the components that we need to attain minimum health standards in the Rogue Valley. The Coalition to Improve Air Quality recommends against adoption of this proposed SIP unless the following additional measures are effectively addressed:

> ENFORCEMENT Many of these rules are not spelled out as to how they will be enforced. Exact methods of enforcement that are strictly followed need to be included in the SIP, so that backroom dealmaking does not occur. We need vigorous enforcement or the entire SIP is worthless.

MONITORING This is crucial to effective enforcement. This is especially true with industrial emissions where, unless monitoring methods are capable of accurately monitoring emissions at all times, there is no practical means of enforcing emission limits. Right now the new industrial rules are unclear as to what types of monitoring methods must be used. Direct measurements of actual emissions with continuous emission monitoring instruments is the most preferable method, but, where indirect methods that only monitor the performance of the pollution control equipment (not the emissions) are permitted, they must be able to withstand a legal challenge as to their adequacy to determine compliance.

SLASH BURNING This plan does not require any reduction from current impacts, which are substantial. DEQ now recognizes that slash burning accounts for as much as 24% of our smoke pollution in some months.

GROWTH The current SIP does not adequately address the future growth in this region and the problems that woodstove and industrial growth may bring.

GOALPOSTS & CONTINGENCY Since the two previous SIPs failed, it is important to have a series of fallback measures that will by kicked in if certain air quality goals are not met by clearly specified deadlines. The current SIP lacks these contingency provisions.

WE NEED YOUR INPUT AND SUPPORT. We need substantial citizen input to make sure that these changes are made. The Coalition to Improve Air Quality will be making more detailed comments on the above issues and others.

You don't need to be an expert on Clean Air to express how important air quality is to you and to influence this plan. You have a right to demand clean air. We urge you to attend these hearings and make your voice heard. Prior air quality hearings in this area have proven that strong public concern translates into stronger measures. May we count on you?

HEARING INFORMATION

For Medford: Monday, August 6th at 7:00 P.M. in the Smullin Center Auditorium, Rogue Valley Medical Center, 2825 Barnett Road, Medford.

For Grants Pass: Thursday, August 2nd at 7:00 P.M. in the Grants Pass City Council Chambers, 101 NW A, Grants Pass.

Written comments for either hearing must be received by August 9th, at the Department of Environmental Quality, 811 S.W. 6th Avenue, Portland, Or. 97204.

B

MAXWELL E. FOSTER, JR.
63 BUSH STREET
ASHLAND, OREGON 97520
TELEPHONE: (503) 488-0328

RECEIVED
AUG 03 1990
DEPARTMENT OF ENVIRONMENTAL QUALITY
PUBLIC AFFAIRS

Department of Environmental Quality
811 SW 6th Ave.
Portland, OR 97204

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
AUG 1990
AIR QUALITY CONTROL

Re: Proposed new SIP for Particulates in the Rogue Valley

Dear DEQ:

I am deeply concerned about the quality of the air in the Rogue Valley, both for myself & for my family. I applaud the DEQ's proposal of a new SIP for particulate matter for the region. I will not be able to attend the hearing in Medford on August 6, so I am sending these comments in writing.

The SIP as proposed is fine as far as it goes, but in my view it needs to be amended in the following respects:

1. The Plan does not sufficiently address the questions of the effects on air quality of growth of population and growth of industry in the region.

2. Enforcement & monitoring: the Plan needs greater specification as to means of enforcement and as to the monitoring methods that must be used by industry. Without these changes, ascertaining & enforcing compliance with the Plan will be difficult.

3. The Plan does not require reduction in the air quality impacts of slash burning. It should do so.

4. The Plan does not provide any contingency measure to go into effect as backup if the air quality goals are not met by specified deadlines. Provisions of this sort should be added.

Thank you for your consideration.

Sincerely,

Maxwell E. Foster, Jr.

C

JACKSON COUNTY, OREGON
1313 MAPLE GROVE DRIVE, MEDFORD, OREGON 97501

HEALTH AND HUMAN
SERVICES DEPARTMENT

August 2, 1990

Merlyn L. Hough
DEPARTMENT OF ENVIRONMENTAL QUALITY
Air Quality Division
811 S.W. 6th Avenue
Portland, OR 97204-1390

Dear Merlyn:

Enclosed are our comments on the draft State Implementation Plan (SIP) for the Medford-Ashland nonattainment area. Please be aware that these comments are "unofficial" in that they have not been approved by the County Administrator. We felt the need to send them to you now, so that you are aware of them before next week's hearing in Medford. Therefore, you may be receiving another set of comments in the future from Burke Raymond. Also, you addressed some of these concerns in a telephone conversation with Paula last week, but we would appreciate an official response by you now.

Overall, we feel the SIP is a well-written document that defines the air quality problem in the Medford-Ashland Air Quality Maintenance Area (AQMA). For the most part, solutions to the problem of non-attainment of the air quality standards are reasonable and accurately defined. However, we feel some improvement could be made in these areas:

An aggressive, balanced approach with active particulate reduction programs for each source is needed.

Residential Wood Smoke - Those entities without active wood smoke reduction programs should be identified.

Wood Product Industry - We would like to see continued and increased monitoring and enforcement of industrial emissions limits. Also, we recommend that industry comply with voluntary curtailment during high pollution episodes (i.e., extra monitoring, most efficient operation).

Other -

Slash: We recommend a ban on slash burning from November 1 to March 1. Our understanding of the table on page 10 of the SIP is that the particulate contribution from "other" sources is expected to increase 9%. Is this increase from slash burning? Also, the SIP refers to voluntary agreements between forest managers to decrease emissions and we feel such agreements should be more binding and well defined.

C

Open Burning: We recommend a ban on open burning from November 1 to March 1 throughout the AQMA. Also, we recommend the Department adopt an open burning enforcement VI of 400. This would increase uniformity of the open burning rules throughout the region, and be more easily understood by the public.

The factor of growth needs to be accounted for when making compliance predictions. The Department believes air quality standards can be reached with the proposed strategy. Does this mean the growth factor has been taken into consideration already, or does the Department expect local entities to have planned their strategies for growth?

Continue particulate measurement at the Oak and Taft site to better quantify relative contributions from residential wood smoke and industry.. We believe the major source contribution at Oak and Taft is from industry. However, this does not agree with Department data. As addition industrial controls are implemented, emission reductions should be measurable at Oak and Taft.

Another telephone or mail survey should be conducted in the AQMA to gather current statistics on number of wood stoves and fireplaces, etc.

A current background reading should be obtained. We are concerned about the impact of slash burning outside the AQMA on the background of 44 $\mu g/m^3$.

A non-attainment contingency plan should be adopted. What happens if we fail to meet the air quality standards with these new strategies? Also, what happens if voters refer the county wood burning ordinance and we return to voluntary compliance in the county? We would like to know what steps DEQ/EPA might take.

Detailed comments on the SIP are attached.

Thank you for allowing us an opportunity to respond to these issues.

Sincerely,

Gary K. Stevens
Program Manager, Environmental Health

Paula G. Fields
Air Quality Coordinator

Attachments
cc: David Bassett, Dave Kucera, John Zenz

C

DETAILED COMMENTS ON
"Draft State Implementation Plan for Particulate Matter"

All references to "Jackson County Health Department" should be changed to: "Jackson County Health and Human Services Department".

In our copy, we are missing Appendices 1 through 6.

Agenda Item G, Page 2, paragraph 2: "...federally enforceable..." What does this mean? Also, what happens if the County wood smoke ordinance is repealed by the voters in November?

Agenda Item G, Page 4, paragraph 2: "...expanded public information program." What does this mean? Are you talking about the county's program?

Agenda Item G, Page 4, paragraph 2: "Up to 12,000 homes in the critical PM_{10} control area would be affected an average of 22 red days (certified and non-certified cordwood stoves curtailed) and 14 yellow days (non-certified cordwood stoves curtailed) per year." If curtailment means no burning is allowed, then this is only true for Medford and Central Point. In Jackson County, certified wood stoves are not curtailed on red days if they are burned with no visible emissions.

Agenda Time G, Page 4, paragraph 4: regarding petitions. The petition referring the county ordinance to the voters has been filed (7-30-90).

Agenda Item G, Page 5, paragraph 1: "Some EPA grant funds may be available to help support (enforcement) activities." What type enforcement activities are inferred here? Staffing, infrared cameras?

Agenda Item G, Page 6, paragraph 3: To paraphrase, the Department believes the proposed strategy will be "adequate to attain and maintain the PM_{10} health and welfare standards in the Medford-Ashland area..." Has growth been accounted for in your analysis of the perceived effectiveness of the local air quality programs?

SIP, page 8, paragraph 6: regarding ventilation criteria. We recommend the following:

a. DEQ ventilation index should be 400, and consistent with other entities' VI.
b. A open-burning ban in DEQ jurisdiction from Nov. 1 - Mar. 1

SIP, page 9, paragraph 1: "Road dust emissions will be reduced by continuing programs to pave unpaved roads..." If road dust emissions are expected to reduce, then why is this not reflected in the expected change in the source category "Soil and road dust" on page 10?

SIP, page 9, paragraph 2: regarding slash burning. We recommend a ban on slash burning from Nov. 1 - Mar. 1. Also, we feel the agreements among forest land managers and the ODF should be more binding than "voluntary".

SIP, page 10, table: What is the source of the 9% increase in "Other"? Slash burning?

SIP, page 10, paragraph 1: regarding Oak and Taft. We feel that the source of the particulate measured at this site is primarily from industry. We recommend this site be monitored closely after increased industrial controls are implemented in order to better assess industrial versus residential contributions.

SIP, page 55, paragraph 3: typographical error at bottom of page.

SIP, page 57, paragraph 2: "The woodstove public information program is summarized in the appendix." We do not find this in the appendix.

SIP, page 57, paragraph 6: "Mandatory woodburning curtailment programs...and about 70% in the remainder of the critical PM_{10} control area." What are these percentages based on?

D

Monday August 5

Hi -

I'd like to give some input on the DEQ's State Implementation Plan for the Rogue Valley. I think that it is essential that continuous monitoring equipment be installed on all industrial smokestacks and that enforcement of emission regulations be strict. I also think that slash burning should be eliminated and replaced by chipping - better for the soil, better for our lungs.

Thanks alot

Jean Downey
246 N. 2nd ST
Ashland OR 97520

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
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AIR QUALITY CONTROL

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PM10 SIP testimony for August 6.

My name is Dr. Robert J. Palzer. I am adjunct professor of chemistry at Southern Oregon State College in Ashland and scientific director of the Coalition to Improve Air Quality.

In the three years since the PM10 health standards were adopted by EPA, the Coalition to Improve Air Quality has worked diligently in support of all measures that would reduce smoke pollution in this region. Namely, we have been strong advocates of reductions of emissions from industry, residential woodstoves, outdoor burning of yard debris, and forestry slash burning.

A successful master plan to attain and maintain minimum health standards for particulate, or a PM10 SIP as it is officially called, should address all of these sources to the greatest extent possible. The more equitably these measures are applied, the more likely the public will support them, and the greater chance we will achieve healthful air quality standards on a sustainable basis. Nationally 90% of SIP's fail because the expectations are much more optimistic than achievable. We want to prevent that from happening here again for the third time.

Woodstove curtailment measures are an important component of the solution of our smoke problem and yet these measures are under attack by members of this community. Public referendums on woodstove controls stand a much better chance of acceptance if the public is assured that all reasonable measures will be taken to address all smoke sources so the number of woodstove curtailment days well be kept to a minimum.

Last winter provided an excellent real time example of both the benefits and limitations of a mandatory woodstove curtailment program towards meeting minimum health standards in Medford.

Last December was abnormally cold, dry, and foggy as compared to the 40 year norm. Medford smoke levels tend to be highest when these conditions prevail. So it isn't surprising that 24 times (or 3 out of every 4 days last December) the forecasted PM10 levels were estimated to exceed 90 ug/m3 and were therefore declared yellow or red days requiring mandatory curtailment for most woodstoves. During similar conditions in 1985, PM10 levels reached 360 as compared with a high of 245 last year. Clearly this represents substantial progress between 1985 and 1989 and woodstove curtailment played a significant role.

Limited field surveys by Jackson County throughout ten representative cross sections of likely problem areas showed up to 82% reductions in woodburning from the prior year in some areas and an overall reduction of 64% of woodburning in the areas surveyed last winter. In addition to an impressive woodstove curtailment program, there was a prohibition of outdoor open burning throughout the critical area, and several of the major industrial sources had already installed the latest pollution

control equipment.

The particulate standards allow one exceedance per year, but last December we still exceeded the daily health standard of 150 ug/m3 on at least 8 days at the monitoring sites in Medford. Instead of exceeding the daily standard by 140% as in 1985, last year Medford exceeded the standard by 50% on the second highest day. Woodstove curtailment, open burning restrictions, reduced industrial emissions, and possible reductions of background levels entering our airshed from elsewhere can be credited toward the dramatic improvement between those periods.

Despite the obvious progress between 1985 and 1989, last year's results indicate woodstove curtailment must be augmented with significant additional control measures beyond those in the proposed SIP. DEQ has selected 1985 as a base year upon which the proposed strategy is based, but it would be much more relevant, and to us, more consistent with EPA SIP planning guidelines to use 1989 as a base year.

The proposed SIP calls for mandatory woodstove curtailment to account for more than 90% of the total smoke reductions required to attain peak day standards with the remaining 8% to be coming from new industrial controls. If the Jackson Country woodburning surveys are correct, only 9% of all homes were burning wood last winter. Despite a strong curtailment program we exceeded standards by 50% last December. It seems to us Medford would have been hard pressed to meet the minimum health standards last year even if no woodstoves were burning on curtailment days and if all the proposed new industrial control measures were in place. Clearly something is wrong with this picture.

Therefore, the Coalition to Improve Air Quality does not support this proposed PM10 SIP because it is too limited in scope and requests the following additional measures.

1. Continuous Emissions Monitoring (CEM). CEM should be used as the primary method of monitoring and enforcement of industrial emissions on a continuous basis. Although continuous monitoring is to be required, actual determinations of compliance on an ongoing basis is still slated to be done with the limited visual opacity detection methods and a once a year source test. We want real time monitoring with straightforward methods, applicable under all conditions, with standards that can survive possible legal challenges according the methodology in CFR 40 Part 60 Appendix B for the area's wood-fired boilers, veneer, and particleboard driers.

2. Residential woodburning. DEQ should make a ongoing commitment to continue to conduct the biannual wood burning surveys begun in 1981, that were skipped last year. In addition there should be an ongoing commitment to continue the drive by woodburning curtailment surveys as done by Jackson County in recent years. These surveys should also include nighttime

observations of visual emissions.

3. Outdoor open burning, including slash burning should be regulated on a regional basis (while maintaining local enforcement) in the Rogue Basin Open Burning Control Area. There should be a prohibition during periods when the forecasted VI is less then 400 and a seasonal prohibition during November through February.

4. Background site. There should be a restoration of the Background monitoring site at Dodge Road, so we can track the impact trends of PM10 on our airshed that originate outside the area.

5. Restoration of the Oak and Taft monitoring site. Between 1985 and 1988 the highest PM10 levels in Medford were measured at Oak and Taft. This is a site with substantial industrial impacts. We need to have a monitoring site capable of detecting ambient air impacts from our major industrial sources.

6. Eliminate the boiler emissions loophole. There should be an elimination of the loophole that allows a doubling of boiler capacity when new emissions controls are put in place thereby reducing a potential 80% drop from present wood-fired boiler emissions to half that amount. Industry should be burning less, not more wood.

7. RFP Report. There should be a report on reasonable further progress (RFP) in meeting standards showing annual changes emissions of PM10 by major source category. In addition, there should be a series of contingency plans if emissions reductions are not met in the appropriate increments of the proposed SIP timetable.

8. Better enforcement. Along with more enforceable rules, we need the staff and funding to do adequate enforcement. Currently DEQ has less than one full time employee to enforce all Air Quality standards in SW Oregon. Clearly more people and resources are required.

In summary, the Coalition to Improve Air Quality, while endorsing the major elements of the proposed SIP, does not support the SIP itself because it is too limited in scope to ensure attainment with minimum health standards on a sustainable basis. We have elaborated upon the above comments and others in our written testimony. As always we are willing to work with DEQ and others in coming up with a workable program to attain healthful air quality. Thank you.

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Regional comments

CEM monitoring. Continuous Emissions Monitoring (CEM) by properly installed and maintained instruments as defined in CFR 40 Part 60 Appendix B should be the primary method of monitoring and determining compliance with industrial emissions from wood-fired boilers, veneer, and particleboard driers. The proposed visual opacity measurements and annual source tests are inadequate to monitor, let alone enforce industrial emissions on a continuous basis. Indirect surrogate methods must conform to the same specifications and include measurements of particulate inflow into the control equipment such as a transmissometer opacity detector in addition to various parameters that indicate the performance of the control equipment itself.

In the local wood products industry the input into the control equipment on the boilers and driers can fluctuate dramatically depending on combustion conditions, fuels burned, or type of material being processed. By only measuring parameters dealing with how the pollution control equipment is operating at all times, cannot by itself determine the amount of pollution being emitted from the control equipment which is really the parameter of concern from a monitoring and enforcement standpoint. For example, some veneer driers could meet the new requirements by only drying white fir which has much lower emissions than red fir. Although this limitation can be spelled out in the permit, only with the method we are proposing, can the instruments demonstrate on a continuous basis, that high emitting red fir is not being processed in violation of permit requirements.

Woodstove monitoring. Monitoring of woodstove emissions has been done in two ways. One is by a mail survey to a cross section of area residents to determine the amount of wood burned, etc. that DEQ has conducted on a biannual basis since 1981. The DEQ survey was not done this past year, so we can't use that method to demonstrate the actual reduction of woodburning as a result of the various local woodstove control measures. Another type of survey, which involves a visual check of whether or not smoke is coming of a chimney has been done by Jackson County in a variety of selected neighborhoods since 1985. This method was used to determine the impressive woodstove curtailment observed last year. We request both methods continue to be used to determine both compliance with curtailment periods and to assess the annual emissions of smoke from woodstoves. Night surveys should be done to verify DEQ's assumption that 35% of all woodstove emissions occur during the four hour period of 11PM to 2AM as imputed into their computer modeling studies.

Regulate Outdoor Open burning on a regional basis. Since Jackson County and the largest cities in this area including Grants Pass have either totally banned outdoor burning year round, or during periods with a VI of less than 400. DEQ should require raise the threshold to this level in the Rogue Basin Open burning Control Area. In addition there should be a total ban of all outdoor burning between November through February. Such bans should be

extended to forestry slash burning in the Jackson and surrounding counties during the critical November through February period.

Slash burning. Slash burning is regulated through the Smoke Management Program. This program is currently under review. DEQ can and should insist on a total ban of slash burning in counties having a potential impact on PM10 non-attainment areas during November through February. Or at a minimum slash burning should have to comply with the yellow and red color advisory system, including stopping pile burns ignited previously when the color advisory changes. Although slash burning impacts are difficult to access during the heating season, slash not burned has no impact. Numerous foresters have assured us that it would be possible to reschedule slash disposal away from November through February in this area if such requirements were mandated.

Background monitoring site. Until April 1987, DEQ maintained a background monitoring site at Dodge Road. This site should be reactivated. In December of 1985 PM10 readings got up to 44ug/m3 as compared to an average of 15. That is 29% of the 150ug/m3 standard, and 44 ug/m3 is used in DEQ's dispersion models for projected background impacts in the future as if slash and other outdoor burning will continue at these excessive levels in the future.

A more satisfactory industrial monitoring impact site is required. In a special gradient survey in 1985, DEQ found that particulate levels were significantly higher at a monitoring site at Oak and Taft than at the Courthouse. This commercial/industrial site is in close proximity to three of the largest wood products mills in this area. This site was discontinued in mid 1988 and replaced with a monitor at Welch and Jackson which is further away from the major mills and is now in a significantly more residential neighborhood. During a three month period in the summer, when both sites were in use, the new site had lower readings. There is no data to show how these sites compare during late fall and winter when PM10 levels tend to be significantly higher. There appears to be little justification for the new location. If Oak and Taft is not satisfactory, a new site should be located where the highest impacts can be measured near the major industrial sources.

Better enforcement. We need significantly better enforcement at all levels. This past year only warnings were given for violations of the various woodstove ordinances. Assuming the ordinances survive what appear to be likely challenges by various referendums, this next year will determine how seriously they are enforced. (Medford and Jackson County have had mandatory woodstove control ordinances on the books since 1985, but to our knowledge no citations have ever been issued.) A review of DEQ's Air Quality enforcement actions for Jackson and Josephine County dating from 1985 through mid 1990 shows that the overwhelming bulk of the citations resulting in fines were for various commercial outdoor open burning violations. There are extremely

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few citations for mills violating their permit conditions. This is due in part to grossly inadequate monitoring and enforcement rules and an extreme lack of personal (less than one full time employee to cover all of the air quality violations in SW Oregon.) The revised rules are potentially better, but without CEM monitoring with clearly enforceable limits and adequate staffing to follow through major changes are unlikely.

RFP report. To monitor the progress we are making toward attainment with the new PM10 standards DEQ should issue an annual report of reasonable further progress RFP similar to those that were done for TSP by showing PM10 emissions by major source categories. This SIP proposes to meet both daily and annual standards for PM10 by 1992. If adequate progress is not being made on an annual basis various contingencies should be put in place.

Eliminate the boiler emissions loophole. Eliminate the loophole that requires boiler emissions to drop by 80% from current levels, but allows a doubling of boiler capacity which effectively drops the emissions by only 40%. The three largest mills in Medford burn three times more wood in their boilers than all of the woodstoves in the Rogue Valley. The new rules will allow this to double. All sources, both residential and industrial, should be encouraged to reduce the amount of wood burned in the valley, not increase it. Cleaner fuels such as natural gas should be required for further boiler expansion. In recent years there a dramatic drop in the amount of wood waste per unit of material processed. Much of what was once burned, now has greater economic value as product, so less fuel is available, and that which is has become very costly. Some plants in nearby areas are voluntarily converting to gas for purely economic reasons because of the great variability in the cost and availability of what was once an oversupply of wood fuel.

When the emission loophole was originally put forward, it was assumed that it would prompt industry to replace antiquated boilers with state of the art equipment with better combustion controls which would reduce carbon monoxide and particulate emissions. With production cutbacks and an astronomical increase in the cost of the wood fuel since these rules were proposed, indications are that many of the old boilers will not be replaced, the controls will not be installed until as long as possible and then on the old boilers, and emissions offsets will be accrue for the unused boiler capacity. These credits could then be applied to other uses or for resale to others. Not only can we not afford this extravagance, but also the airshed needs a permanent retirement of those emissions. Furthermore, all major wood-fired boilers should have dual fueling capability, so these sources can participate in additional emissions cutbacks during curtailment periods without having to cut back on production capacity.

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This SIP is supposed to be a three year plan, yet the new boiler controls aren't required for 5 years. If this SIP is intended to bring compliance by 1992 all components should be in place by then. We favor economic incentives or other measures to speed up the timetable.

Eliminate the Opacity loophole. Other than a once a year source test, the primary means of determining enforcement is opacity. The new rules for wood-fired boilers and veneer driers set limits for the amount of opacity allowed. The loophole is that if a source can demonstrate it can comply with the emissions limits at a higher opacity, the higher opacity becomes the new limit. There is no corresponding allowance for a lowering of the opacity limit if the emissions testing shows a lower opacity limit can be met. Since DEQ has limited visual opacity is the only approved method of determining particulate emissions on a continuous basis, this loophole is totally unjustified and makes monitoring and enforcement a farce.

Summary.

F

4588 Pacific Hwy N. Central Point OR 97502 August 6, 1990

Hearings on Proposed State Implementation Plan for the Medford

Good Evening

My name is Wally Skyrman of Central Point and I wish to thank you for giving citizens an opportunity to speak on this issue that is vital to many of us. As a life long valley resident and Patient Representive for the American Lung Association of Oregon I appreciate the DEQ's efforts to help make our valley a better place to live. As Patient Rep. I come in contact with a group of citizens, known as "Better Breathers" who live day to day with lung problems having little hope of regaining a what is considered a normal life style. Enclosed is a signed letter from some of our members that were present at our last meeting that wish to state their desires for a more healthful environment.

The new plan for PM10 control as presented need strengthening to be acceptable.

Monitoring of permited sources must be 24/hrs/day 365days/year proposition. For a concerned citizens to report excessive discharges and to be told by DEQ officials that no staff is available after hours to check on "upsets" is sad. For funding being present for only a .9 position to cover all of ~~South~~Western Oregon it is no wonder we have a hard time in cracking down on polluters. Lets devote the manpower needed to do the job right if we are going to claim we are doing the job.

Rules need to be written so public and industry knows what is to be expected. Presently permitted sources are allowed to take as many annual tests as necessary to pass. In this manner they can retain their full allowance of discharge tonage. If a corporation flunks their self administered test it should be an indicator that they have exceeded their limit since the last approved test and should be fined accordingly. Not a pat on the back and the admonition to Try Try Again... If a corporation flunks their tests the DEQ should institute unannounced tests and continue fining and testing until the permittee has shown an ability to operate on a daily schedule within the historic permitted allowable discharges. (Past procedures of rewriting the permit to new higher levels must be eliminated.)

While not within the DEQs role Slash Burning and Wood stove impacts can be lessened by better smoke control, fuel quality, and burning technique on all days not just on Red Days. Policy should be directed to all days not primarly to red days.

Growth in our valley is slowly being recognized as a hinderance and not a blessing. Unless attention is made towards the impact of increased activity we can never hope to even maintain the status quo even as bad as it is in our air quality.

Sincerely Wallace Skyrman

Wallace Skyrman

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Rogue Group - Sierra Club

August 6, 1990

Department of Environmental Quality
811 S.W. 6th Avenue
Portland, Oregon 97204

Subject: Rogue Valley Air Quality

The Rogue Group strongly supports the recommendations of the Coalition to Improve Air Quality

We believe that clearly defined, strict enforcement of the rules is essential if we are to be successful in cleaning our air. Without strict enforcement, the State Implementation Plan (SIP) will be an exercise in futility. The best plans in the world are useless if they are not enforced.

Enforcement of the rules is probably easiest and most practical for industrial emissions. Direct measurements of actual emissions with continuous emission monitoring instruments produce the most reliable monitoring results. We urge you to implement this kind of monitoring. We have observed smoke pouring from the stacks of the mills on many summer days when woodstoves are not used. Strict enforcement, especially for industrial emissions is absolutely necessary to win the confidence of the people.

Slash burning is another component of the problem which must be given more attention. We urge you to require a significant reduction in slash burning.

We are all sick and tired of what appears to be the agency's perpetual motion to nowhere whilewe wait and wait some more for the cleansing to healthful levels of our Rogue Valley air.

So, finally, we emphasize the need for specific deadlines by which the goals of the plan must be met, and contingency measures which will be implemented if these deadlines are missed.

Sincerely,

Myra Erwin

Myra Erwin, Chair
300 Grandview Dr. Ashland, Oregon

H

Statement to the DEQ
SIP Hearing August 6, 1990

My name is Liz Vesecky. I have been a resident of the Rogue Valley (Ashland) since October 1988. My husband and I moved here because of the natural beauty and healthful conditions we expected to find. We have been dismayed to find not only poor air quality, especially in the winter, but the valley deadlocked as to what to do about it.

Last winter, there was a period of at least two weeks, during which "red" days alerts were continuous. There were also warnings in the papers and on the radio strongly urging those with respiratory problems to stay indoors if possible, and to certainly refrain from strenuous activity outdoors. During this time, efforts were continuing at a snail's pace to improve conditions---for the next winter! Meanwhile, we were all breathing the dangerous air, loading our lungs with the dreaded particulates which accumulate there. Of course, I continued walking outdoors, doing my errands, living my life. I watched children playing on schoolgrounds..

Today, we have blue skies and breezes to take bad air away. But let us not be lured into the complacency of the monkeys in the old story who sit on their limb in the sunshine and cannot be bothered to build the house which would shelter them when winter arrives, as it always does. Our winter, too, will arrive; and where will the children play?

Liz Vesecky
August 6, 1990

L. Vesecky

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State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
AUG 15 1990
AIR QUALITY CONTROL

TESTIMONY REGARDING THE MEDFORD/ASHLAND SIP

by Paul Wyntergreen, Regional Director,
Oregon Environmental Council

This State Implementation Plan, and the curtailment ordinances that are its basis, are a good start, but fall short of guarenteeing the air quality levels that we need.

First, this SIP places too much emphasis upon intermittant control strategies and not enough attention to year around reductions. The intention of local Clean Air activists, and of the Clean Air Act itself, is to actually reduce the total emissions of pollutants into the air, not just disperse pollutants between times and areas.

The primary thrust of the SIP is focused on woodstove curtailment efforts which is an excellent tool for addressing peak day problems, but is inadequate to deal with our larger problem of annual violations. By curtailing woodstove emissions only on those days when PM10 levels are forecast to exceed certain thresholds, such a strategy allows total emissions to continue to increase. We need constant limitations that actually reduce the quantity of emissions.

As was stated in the EPA's comments on the draft SIP, dated March 29, 1990, "(w)e are uncomfortable, as may be DEQ, with the reliance on curtailment as a permanent solution to the (residential wood combustion) problem. ..... Obviously, we must rely on curtailment in the short term, however the SIP should discuss the need to develop longer term, permanent solutions"

There is inadequate use of longer term, permanent solutions such as improved firewood seasoning, weatherization, proper woodstove operation, or simple limitations on the numbers of woodstoves will occur. Growth is an area of paramount importance and yet receives scant attention.

Secondly, the plan has defficiencies in controlling all air quality sources comprehensively and equitably. The referendums in Central Point and the County have made this plan vulnerable through the spread of misinformation that preys upon the perception that wood stoves are being persecuted in favor of other polluting interests. This perception must be actively countered, whether the referendums succeed or fail.

In order for the cooperation of the entire wood stove-burning public to occur, that public must realize that every sector is equally helping to clean up the air. This means getting uniform controls on open burning and slash throughout the region, equating red day controls for industry with those for wood stoves, equating year round opacity controls for wood stoves with those for industry, and even expanding I & M programs to at least a county-wide basis.

While individually, these controls may or may not provide the most efficient means of reducing PM10 from a technical viewpoint, collectively they will serve to demonstrate a direction of mutual cooperation throughout the community. This SIP is the place to coordinate this cooperation.

Cooperation can be demonstrated by including:

* A tighter Smoke Management Plan that schedules slash burning to avoid curtailment periods, and acheives emissions reductions from a base period for which there are real data (1988).

* The requirement for a closer look (Environmental Assessments) at the impacts that current firewood sales programs administered by state and federal land managers have on non-attainment areas. The criteria in the Clean Air Yakima case should be applied and at least the cost of administrating and enforcing the programs charged for the firewood.

* A November through February ban on open burning in the Rogue Basin Control Area and applying a uniform 40% V.I. to all other times.

Additional measures need to be included in a contingency plan, that are triggered if certain air quality levels are not achieved.

Since the two previous SIPs failed, and because this SIP is based upon a number of debatable assumptions (regarding emissions inventories, PSEL accuracy, monitoring capability, potential growth, assumed # of woodstove changeouts, catalytic conversions, etc.), it is imperative that a periodic review be built in that will set interum criteria. If these criteria are not met, after adjusting for production and growth changes (such as recessions), then it is important to implement a series of fallback measures.

These contingencies should include: dual fueling requirements for industry, corresponding "red day" break points, annual wood stove standards (opacity), a wood stove offset system, an enlarged I & M program (to include diesals), and limitations upon boiler expansions.

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Testimony for SIP Hearing
August 6, 1990

I am Herschel King, retired physician living in Ashland. I am a member of the Coalition and support its position and endorse Dr. Palzer's presentation. I am speaking for myself, and the opinions are mine.

The SIP is flawed by the presumption that computer models, although DEQ and EPA approved, are an accurate representation of real conditions. I believe these models, which have been the basis of proof that residential woodstoves account for the major part of daily and annual PM 10 impact, are subject to the same problem inherent in all computer models of meteorologically influenced situations. That is "sensitive dependence on initial conditions". I believe the computer model results are meaningless, because most of the "initial conditions" are either arbitrary or assumptions based on other calculations. I do not believe source identification by CMB analysis or "fingerprinting" confirms anything. All such mathematical results should be "continuosly checked against one's own intuition about what constitutes reasonable"---behavior of a system. When computer models disagree with intuition and perception, either **a mistake has been made or starting assumptions are incorrect or overly simplified,** OR the observer's intuition is inadequately developed. ~~Funding for an adequate number of on-site trained observers is critical to success of the SIP~~. I personally believe the numbers generated by the computer models are not an accurate reflection of the true situation. I also believe the debate over these numbers has consumed a disproportionate amount of time and money from both the DEQ and the Coalition.

My doubts concerning the meaningfulness of computer-generated statistics are not a denial of the tremendous

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impact of residential woodstoves on the air quality of the Rogue Valley. Woodstoves undoubtedly cause much of the problem in the winter, and the use of inefficient stoves must be stopped and the PM 10 emission from so-called certified stoves must be reduced. Also, in order to deal with growth the total number of residential woodstoves must be reduced and capped. These are easily achievable goals, IF the public is convinced to cooperate.

I also believe that industrial emissions account for most of the problem during the NON-heating season and probably half in the winter, but that if all industry were in compliance with existing permits, and all the new and old industrial rules were made enforcible through Continuous Emission Monitoring and then strictly enforced, there would be a vast improvement, not only in warm weather conditions, but year-round. Again, I believe observation and perception and intuition are superior to computer models in discerning the reality of the local situation, but require adequate numbers of trained observers in the field.

Another flaw I see in the SIP is the use of 44 ug of particulate per cubic meter of air as an acceptable background count for the high pollution days of winter. 44 ug/m^3 is **not** a healthful level and is not clean air. The annual average of 50 ug/m^3 is a totally arbitrary figure chosen partly for its theoretical achievability. With 44 ug or 29% of the daily allowable ~~reduced background~~ limit of 150 ug/m^3 only 6.1 additional ug/m^3 need to be generated to exceed the annual average.

I believe the discontinued Dodge Road Monitor Site should be reactivated to help determine true background.

The difficulty with approaching a problem that virtually all agree to be a health problem, as a matter of meeting an arbitrary limit on PM 10 concentration is that a time and money-

H. King

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wasting debate about contribution percentages has been engaged. Instead the implementation of reasonable rules for the curtailment of smoke should be pursued by the DEQ with the help of all the citizens' groups affected.

I see in the proposed SIP an apparent reluctance to approach slash-burning and industrial fugitive dust. I believe these are the major factors in the background PM count. The fugitive issue must be resolved by on-site evaluation of real conditions and not excused as inevitable or as a non-reducible part of the background.

In summary, I feel the SIP is flawed in that it reduces an undeniable health problem to a matter of meeting an arbitrary PM 10 limit by using computer modeling to demonstrate success. The rules, ordinances and laws-as well as emission permits--should be made enforcible and enforced; then the results evaluated and more stringent steps taken if this SIP is not to fail, as have others in the past. The rules must be enforcible. Why require industry to install Continuous Emissions Monitors and then not use this data to determine ~~non~~-compliance? It seems obvious that more than one full-time person is needed in Southwest Oregon for DEQ to develop a true picture of the problem or to enforce the hopefully enforcible rules. There must be an ageed-upon contingency plan.

In no way do I doubt the honesty and sincerity of the DEQ and its staff or that of the Coalition to Improve Air Quality. I believe they must continue to cooperate in an effort to secure the compliance of residential woodstove users and the wood products industry.

C. Herschel King, M.D.

K

Testimony before Hearing Officer of DEQ pertaining to Draft State Implementation Plan for Particulate Matter in Medford-Ashland, Oregon Nonattainment Area; Speaker: Joe C. A. Eckhardt, M.D. ,Aug. 6, 1990.

Addressed to: Designated Hearing Officer for the DEQ, Nick Nikkila, Air Quality Division Administrator, and Mr. William P. Hutchison, Chairman, EQC 811 SW Sixth Ave., Portland, Oregon 97204.

Dear Sirs:

I have read carefully the copy of the Environmental Quality Commission's agenda item F on emmission Exceedances of May 25, 1990, and Draft State Implementation Plan for Particulate Matter, June 1990, for the Medford-Ashland, Oregon Nonattainment Area. I find the proposed Draft of the SIP inadequate to meet the National Ambient Air Quality Standards as written for the following reasons:

The Draft State Implementation Plan under discussion tonite is a most detailed, carefully researched document. It takes into consideration all the important health considerations, schedules for enforcement of penalties for violators. I commend all the people working on this complicated and vital document for their unstinting efforts to produce a SIP that will serve Oregon's citizens health and welfare. In

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particular I owe thanks to the DEQ for providing these documents to me for comment. I thank Keenan Smith for bringing me the most recent draft from Portland.

There are however some ommissions, some assumptions which are made that are without adequate confirmation from independently conducted studies: I.E.: June 29, 1990 meeting, Agenda item: G, "The Department is confident that woodstoves are the predominant cause of the Medford-Ashland area PM 10 problem based on the latest analysis techniques which have been reviewed and approved by EPA."

This is an in-house conducted test and assesment of source percentage of contribution which the Department is refering to. It is unproven, by indepenent testors , to be true. Throughout this document such assumptions are carried on to conclusions that may not be valid when subjected to independent testors' data. This discrepancy has been referred to, time and again by the Coalition for Clean Air scientist, Dr. Robert Palzer. To my knowledge his findings have never been reconciled with the Departments' findings.

I call your attention to my observations, supported by photographs taken in late August and early September of 1989. These photos are posted with written comments on the location of the takes as well as the stationary sources that were photographed.

The views of
Medford from just under the underpass as you leave Ashland, show a thick opaque smoke screen that completely obscures the city of Medford from this view point. At this time of summer,

few if any wood stoves are in use. I submit these observations in opposition to the assumption that woodstove burners are the largest contributors of PM 10 in this airshed.

Question no. 2, Enforcement: Throughout this document, enforcement is indicated by the Department to be in place for mandatory compliance by wood stove burners, with fines for violations indicated. Some of the city and county ordinances referred to, were implemented by local enforcement officials monitoring residences with both day and night observations. To my knowlege no fines of any kind were levied against these woodstove burners, on the contrary, they were sent polite letters asking them to comply and that fines would be suspended until later in the year.

For this draft SIP to rely largely on wood stove mandatory compliance, for a solution to the Medford- Ashland air quality imprevement, once again is a false assumption. The facts are that since this draft SIP was written, serious legal challenges have been instituted, supported by petitions for referendums to be voted on as to the legality and wishes of the communities of Central point and Jackson County to recind these mandatory wood burner compliance ordinances. It appears to me that to draw conclusions about "what a wonderful " improvement will accrue as the result of local ordinances, would be self deceiving.

I ask here, where are the drive-by inspection agents from the

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state DEQ, equipped with infrared detection devices, to cite an industry dumping tons of toxic PM 10s from an inefficient or disabled scrubbing device? These emissions do, on occassion, last for days with the only requirement of reporting the time of the upset emission, its duration, and when it might be repaired.

How come this industry is not shut down until repairs are made? That's what the stove burner is mandated to do when noted by a drive-by official that he is in violation of the air shed. It appears patently apparent that there is a two level offender here: one the wood stove burner that burns to keep warm and the offender that burns to make money and who recieves only a slap on the wrist for his violation.

The SIP draft in Attachment H, makes note that Dr. Palzer continues to disagree with the Department's assesment that wood stove burners contribute the larger share of PM 10 polutants. I think most citizens in this valley disagree with this gerimandered assumption as do I. I have recieved independent observations from citizens in this air shed that verify that the wood products industry , located near their homes , emits large opaque emmissions from their stacks late at night and this is a finding of many people in the valley. I have seen this same phenomenen on many occassions on my tours of industrial areas at night.

If these kinds of unproved assumptions are used to predict a very optomistic out-come in improvement of air quality, I would have to believe that this document would hoodwink the public, and that the Dept of Envioronmental Quality must

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revise this SIP to resolve these very serious discrepancies. Before completing its responsibility to issue a SIP that is credible and free from inequities as they concern the various sources contributing to our noncompliant status that has existed for 20 years. I feel that a reliable private Air Quality Consultant must do a complete study and submit its report to the Department for inclusion in the SIP as an addendum. In this independent Air Quality Report should be included a complete Environmental Impact Statement as concerns health, damage to people and to the environment.

To do such an exhaustive and complete study, like the one we are now testifying about, and miss the fact that some assumptions are invalid and that the conclusions point to the wrong culprit in this health threatened area, would be a futile , if not irresponsible act by a state agency.

In Conclusion: My assessment of the draft SIP as written at this time is that it is inadequate in the areas cited above, and should not be accepted for submission, without resolving the important features referred to above. In my opinion this draft relies upon too many in-house and EPA ageements for its assessments of the needs to accomplish compliance in 1991. Indepent highly competent scientific surveyors, who will include the health impacts as well as relative contribution assays need to be engaged to clarify these disparate pieces of data.

Respectively Submitted: Joe C.A. Eckhardt, M.D.
Licensed to paractice Medicine in Oregon 1983

K

Aug. 13, 1990

Mr. Fred Hansen, Director EQC

Dear Mr. Hansen,

I am forwarding a copy of my testamony before Merlyn Hough on Aug. 6, re: latest draft of the SIP.

I believe my comments need no elaboration as to the reasons that I find this SIP as written deficient in the two most important areas needed to enforce compliance with the NAAQC standards.

I believe, as stated in my testamony, that if these conclusions as to the percentage of contributions from industry are not verified by an impartial outside assessment group, they will not be considered valid or credible by the EPA reviewer , in spite of the opinion offered in the recent SIP.

It is my concern as well as yours, I would expect, that these discrepancies be addressed in the final draft of the SIP, since we are three years dilinquent in submitting a credible SIP.

Sincerely,

Joe Eckhardt

JOe Eckhardt, M.D.

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
AUG 17 1990
OFFICE OF THE DIRECTOR

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
AUG 17 1990
OFFICE OF THE DIRECTOR

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
AUG 17 1990
AIR QUALITY CONTROL

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Dear Mr. Nikkila, Aug.13,1990

I trust you will find these comments of value as concerns the health of the Southern Oregon community. I am forwarding copies of these comments of mine to Oregon State Health Department, local medical society, and the Health Science Division of the Portland Medical School.

The overall S.I.P.s appear to contain and address most of the issues of importance to finally approaching acceptable compliance with N.A.A.Q. standards. The issues in question I feel I have attempted to point out as needed corrections in the the S.I.P. to make it acceptable to the E.P.A. for endorsement.

Without these assurances in percentage of contributions of pollutions and adequate enforcement plans, the S.I.P. would be inadequate to achieve its' stated goals.

Sincerely,

Joe C. A. Eckhardt

Joe C. A. Eckhardt M.D.

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
AUG 17 1990
AIR QUALITY CONTROL

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
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AUG 14 1990
AIR QUALITY CONTROL

August 7, 1990

EQC
Hearing Section
AUG 14 1990

Department of Environmental Quality
811 S.W. Sixth Avenue
Portland, Oregon 97204

Dear DEQ Hearings Officials,

The following is written comment for the public hearing on the State Implementation Plan for particulate matter. Friends of the Greensprings is a community organization based near Ashland, representing approximately 120 local families as well as many others interested in the welfare of Southern Oregon. We are very interested in seeing that DEQ's new plans to improve air quality is sufficient to insure a healthy breathing environment in and around the Rogue Valley. We submit this comment for the record.

We are aware that the current proposed SIP focuses on the two elements of woodstove controls and industrial rules that are to be implemented over a five year period. We fully support these elements, but we feel more components are necessary to insure the maintenance of even minimum health standards in the Rogue Valley. We reccommend against adoption of the proposed SIP unless the following measures are effectively addressed:

1) We need strict and exact methods of enforcement spelled out in the SIP.

2) We need the requirement of strict monitoring methods that are capable of accurately monitoring emissions at all times and whose measurements will stand up to legal challenges as to their accuracy. Without proper monitoring, there is no way to determine

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compliance or to enforce the standards and rules.

3) DEQ recognizes that, in some months, 24% of our smoke pollution is from slash burning, yet there is no provision in the SIP to reduce this impact. We need slash burning regulation to be included in the SIP.

4) The proposed SIP needs to address the issue of growth in this region in regards to woodstove and industrial pollution.

5) The proposed SIP must include contingency provisions that consist of a series of fallback measures that will be implemented if certain air quality goals are not met by clearly specified deadlines.

We strongly encourage the DEQ to amend the proposed SIP to include these measures that we feel are essential to effective air quality regulation capable of insuring a healthy air environment in the Rogue Valley.

Sincerely,

Teresa Giacomini

Teresa Giacomini
Chairperson, F.O.G.

EQC
Hearing Section

AUG 13 1990

M

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
AUG 13 1990
AIR QUALITY CONTROL

712 W. 13th
Medford, OR 97501
August 8, 1990

Department of Environmental Quality
811 S.W. 6th Ave.
Portland, OR 97204

Dear Sirs:

I am writing on behalf of the proposed State Implementation Plan for particulate matter for the Rogue Valley. Clean air is important to me, since I suffer from asthma during the summer months. My hope is that our area will be able to comply with federal regulations for clean air.

I believe that a few additions to the plan will help ensure that the plan will succeed. One is specific language detailing how emission levels will be monitored and enforced. According to the Oregon Environmental Council, the new industrial rules do not specify the type of monitoring method that must be used. Without clear directives, industry will find it difficult to achieve desired levels of compliance. Secondly, the plan should include continguency plans that go into effect at specific deadlines, should air quality goals not be met. Because the plan extends over many years, only back-up measures will exist to keep the plan working toward its desired result.

Thank you for your consistent work on the Rogue Valley's air problem. I have seen and breathed a substantial difference due to local woodsmoke regulations, which can be attributed to your agency's presence.

Sincerely,

Christi Courian

Christi Courian

N 8/26/96

DEAR DEQ —

RE: STATE IMPLEMENTED PLAN (SIP) FOR REDUCING AIR POLLUTION IN S.W. OREGON —

VISUAL TESTING IS NOT SUFFICIENT IN WINTER FOG CONDITIONS!

THANK-YOU

STEPHEN BOYD
BOX 482, ASHLAND 97520

My name is Dr. Robert J. Palzer. I am adjunct professor of chemistry at SOSC and scientific director of the Coalition to Improve Air Quality.

The Coalition is an advocate of an equitable approach to air pollution control. Woodsmoke whether it comes from woodstoves, industrial wood-fired boilers, plywood veneer driers, or slash and other outdoor burning contains chemicals that cause cancer and other fatal diseases.

There are three major problems with your proposed PM10 SIP. First it is not equitable. It calls for 92% of the proposed reductions to come from woodstoves, with the remaining 8% to come from new industrial controls on veneer driers and wood fired boilers. No reductions are mandated for sources such as slash and other outdoor burning which contributes to our excessively high winter background levels. At 44 ug/m3, these levels are 6 times higher than those in Klamath Falls. Furthermore, until you restore the background site at Dodge Road, we can't even track the trends of smoke entering our airshed from elsewhere.

The second problem with your SIP is even worse. Your own models confirm what we have been saying all along. Your plan simply won't work. Your models show that in the vicinity of the industrial complex of North Medford, PM10 health standards will be exceeded by up to 50% to 60% on a daily and annual basis after all of the proposed controls are in place. Your model also shows that the impact of industrial emissions alone would have caused Medford to exceed minimum PM10 health standards in the 1985 base year. With industrial emissions that high, the proposed industrial measures in combination with woodstove curtailment will not be enough.

The third problem with the proposed SIP has to do with timing. This is supposed to be a 1992 plan, yet the new boiler controls aren't required until 1994. Last winter provided an excellent real time example of why new boiler controls are urgently needed now. In addition to the PM10 problem, carbon monoxide levels were exceeded 15 times last year in North Medford in the vicinity of the industrial complex. Since we already have an auto I&M program, better wood-fired boiler combustion and emission controls are the most logical next step to reduce both these pollutants to acceptable levels.

At the last hearing, I mentioned that Medford would have been hard pressed to meet standards even if there were no woodstoves and the recently required industrial controls were in place. I have since received data from DEQ that removes all doubts about this. DEQ models show that impact from industrial emissions alone were enough to cause minimum health standards to be exceeded on several occasions during 1985 and presumably last year as well.

We could eliminate woodstoves entirely and portions of North Medford in the vicinity of our largest mills will still not meet minimum health standards under the stagnation conditions of recent years even after your proposed industrial controls are in place.

Now lets look at what happened in White City between 1985 and 1989. During December of 1985 White City exceeded daily PM10 standards by up to 119% on 18 days. Medford exceeded the standard for the same number of days, but its peak day was slightly lower. By contrast in 1989, White City exceeded standards on 7 days, which was similar to Medford's 8 days (at two sites), but White City's peak day last December was only 5% over the standard as compared to 50% in Medford. So of the two areas, the White City results are the most impressive. DEQ isn't likely to mention this because Jackson County's woodstove ordinance was not adopted until this spring.

To be sure woodstove curtailment played a role in the improvement in White City. Jackson County surveys documented substantial woodstove curtailment there last winter. However, there is more to it than this. White City has approximately 15% of the residences and thus fewer woodstoves within a mile of the monitoring site as compared to the courthouse in Medford. White City is more of an industrial site and those emissions are now lower through a combination of new industrial controls and production cutbacks. For example, Biomass started up in late 1985 while the power source for the two mills it ultimately replaced remained on line. It was a rocky start for Biomass. Prior to last fall when they installed new boiler controls that meet the 1994 standards, Biomass was not able to meet standards at their rated capacity. The new controls work great. There are no visible emissions coming from those stacks. We cannot say the same for the mills in North Medford and aren't likely to for another 5 years.

For three years now, I have been saying that my models show DEQ's lopsided PM10 control strategy won't work. DEQ disagreed and said they had better models. Now that their models confirm my findings, they don't believe their models either. Their model, with their input of their data, shows that the highest impact site is North of their former Oak & Taft monitoring site in Medford on a daily and annual basis. When DEQ learned this last year, they moved the monitor South to Welch and Jackson which is further away from the problem area. When EPA said they had to revise their plan to meet standards at all locations, DEQ proposed instead to do additional monitoring. Here's what EPA Region 10 Air program chief, David Kircher, had to say about this in his April 3, 1990 letter to DEQ. "DEQ's proposed approach of doing additional monitoring and revising the SIP later if necessary, is not acceptable given the excellent model performance. This SIP control strategy should be modified to demonstrate attainment and maintenance at all locations." He has since dropped this requirement much to the chagrin of others in

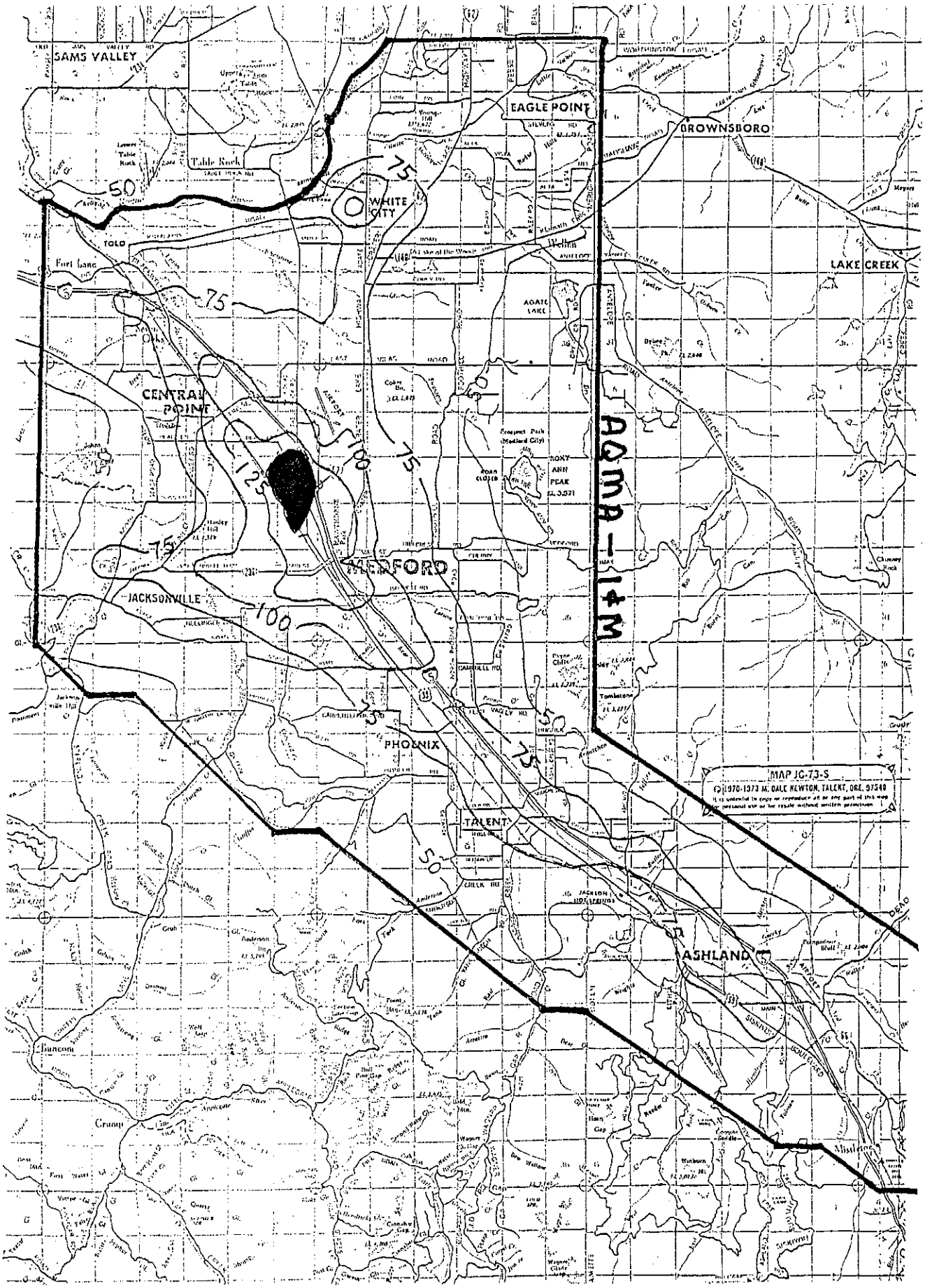
EPA.

Meanwhile DEQ continues to hold public hearings on a plan that is overweighed on woodstove curtailment and one that their own analysis and last winter's results shows is inadequate, while several woodstove ordinances are slated for repeal referenda. This timing is especially poor, but DEQ denied our request to hold this hearing later.

We support the woodstove curtailment portion of the plan. Woodstove curtailment is an excellent stopgap measure. For the long haul, however, we prefer measures aimed at reducing emissions from all sources at all times over peak day curtailment measures. The need for outright curtailment as a primary strategy should lessen as new industrial controls come on line and as woodstoves are upgraded or replaced and other measures are taken.

In conclusion the Coalition to Improve Air Quality, while supporting the woodstove curtailment component of your proposed SIP, does not support the SIP itself because it is inequitable and it won't work. More is needed. At the last hearing we detailed additional measures we would like to see included. Thank you.

Forcasted PM10 maximum daily concentrations after new controls.
(1992) Standard is 150 mg./cubic meter.



Forcasted PM10 maximum daily concentrations after new controls.
(1992) Standard is 150 mg./cubic meter.

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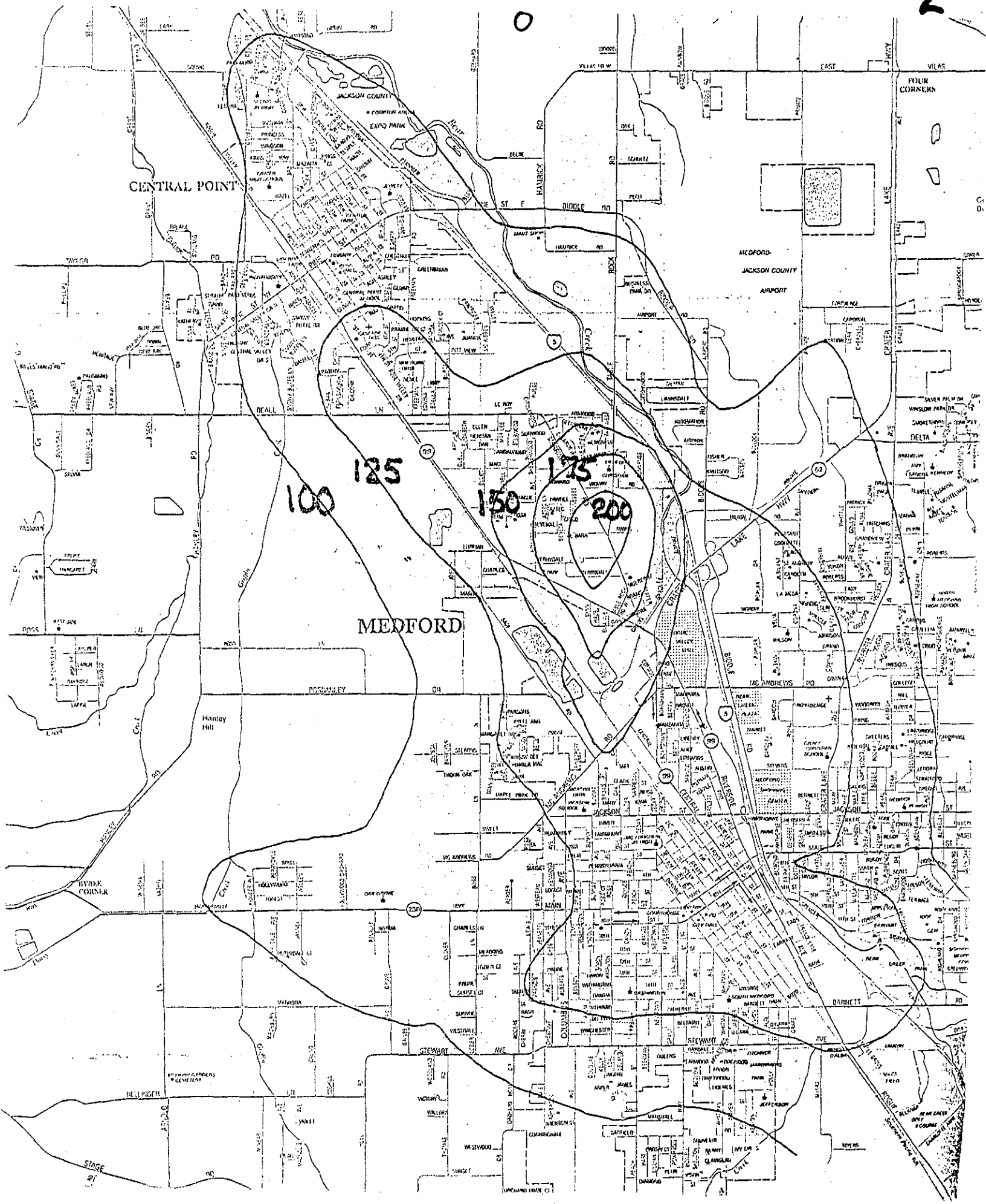
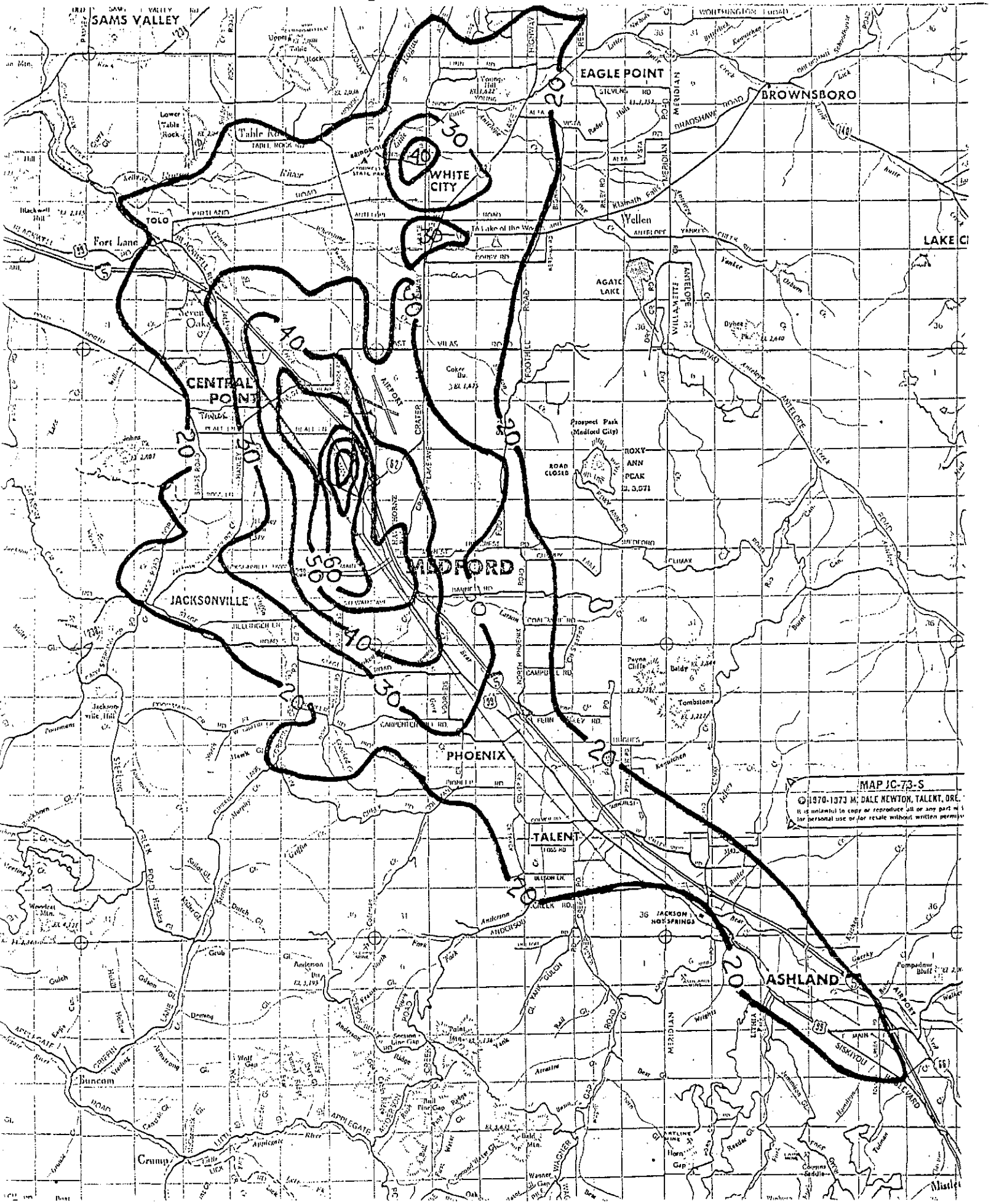
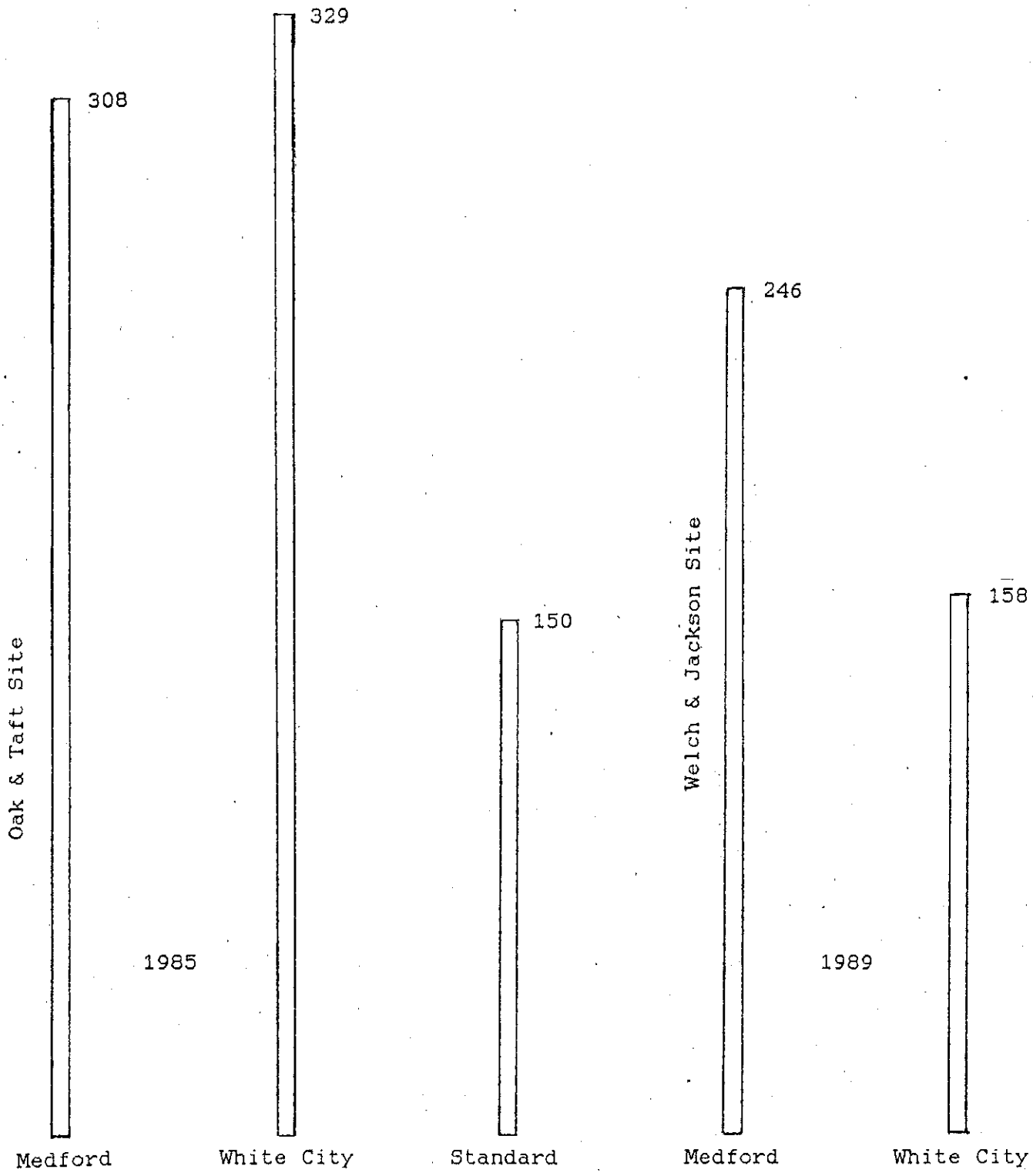


Forcasted PM10 annual average concentrations after new controls.
Standard is 50 mg./cubic meter.



Recorded PM 10 levels 1985 and 1989 in micrograms per cubic meter



from Wally Skyrman

P

Medford Better Breathers

(Meeting 3rd Thrusday of the Month at Smullin Center RVMC Medford)

Department of Environmental Quality
811 S.W. 6th Ave.
Portland, OR 97204

Dear Sirs

This letter is in reguards to the Medford's State Implementation Plan. PM10 As persons with lung problems we are acutely aware of Medford's air quality problems. As a group we are appreciative of your efforts to help clean up the air.

We also support the efforts of the Coalition to Improve Air Quality and the ideas that they urge you add in addition to the your basic implementation plan.

We must make gains on every day of the year not just on the red alert days. The valleys air can be made better by dillegent efforts of all polluters to cut back and the DEQ monitoring emmisions and enforcing the laws at all times.

Sincerely,

NAME	ADDRESS	ZIP
Jan Young	350 High St Ashland, OR	97520
Harold Thurston	2990 Seckel	or
Margaret Wylie	1707 S Columbus Medford, Or	97501
James Walker	2784 Nona Dr Medford Or	97501
Ethel Shuck	401 E 12th, Sp 10,	97501
Glenn E. Smith	401 E. 12th St. #10 Medford	97501
Lois Halfhill	816 Dakota, Medford, Or.	97501
Les Calvert	249 Hiatt Ln C.P. Or	97502
[illegible]	[illegible]	[illegible]
Marge Laske	63 Nutley, Ashland	97520
Doug Laske	63 Nutley Ashland	97520
Anne Hesik	2981 State St #62 Medford	97504
Bernice Fischer	6850 Downing Rd #27 Central Point OR	97502
Donald L Fischer	6850 Downing Rd #27 Central Point OR	97502
Anne Gottschalk	50 Allen Lane Talent, Or	97540
Mae E. Lacey	2782 Ingalls Drive White City Or	97503
Wally Skyrman	4588 Pac. Hwy N Central Point OR	97502

Q

Department of Environmental Quality
Air Quality Division
Portland, Or.

9/12/90

Re: Medford area SIP

I'm speaking today for the Ashland League of Women Voters and the Rogue Valley Audubon Society.

This is just one of the areas in Oregon where you badly need to improve air quality. Oregon is disgracing itself with its record in resperitory diseases; not because the numbers make us look bad, but because of the individual sacrifices and suffering those numbers represent when we know what to do to prevent them.

We urge you to follow the recommendations of our local Coalition to Improve Air Quality and tighten up the plans and programs in the state implimentation plas so you, the EPA, and the Coalition all have confidence we will at least meet EPA standards without having to go back to the drawing boards for a new plan down the road.

Thank you.

Frank H. Hirst

Frank H. Hirst
Natural Resources Chair
Ashland League of Women Voters

Also
Conservation Chair
Rogue Valley Audubon Society

R

MY NAME IS PATRICIA KUHN. I AM A MEDFORD RESIDENT AND A MEMBER OF OF THE COALITION TO IMPROVE AIR QUALITY. TONITE I AM SPEAKING FOR MYSELF.

FIRST OF ALL, I WOULD LIKE TO APPLAUD THE CITIZENS OF MEDFORD AND OF JACKSON COUNTY, THE MEDFORD AND CENTRAL POINT CITY COUNCILS AND THE JACKSON COUNTY COMMISIONERS AND STAFF FOR THEIR CONCERN AND ACTION ABOUT THE UNHEALTHY AIR WE BREATHE HERE IN THE ROGUE VALLEY. ALL POLITICAL ENTITIES HAVE BEEN WORKING DILIGENTLY TO ENACT ORDINANCES INTENDED TO REDUCE EMISSIONS OF PM10.

ORDINANCES ENACTED LAST NOVEMBER BY THE CITY COUNCILS OF MEDFORD AND CENTRAL POINT RESULTED IN SUBSTANTIAL REDUCTIONS OF PM10. JACKSON COUNTY'S ORDINANCE SHOULD ACHIEVE SIGNIFICANT REDUCTIONS THIS WINTER. I STRONGLY SUPPORT THESE EFFORTS TO REDUCE PARTICULATES IN OUR AIRSHED. I COMMEND THE DEQ WHOSE STAFF HAS WORKED WITH EVERYONE IN ORDER TO FORMULATE AN EFFECTIVE PM10 STATE IMPLEMENTATION PLAN WHICH WILL BE BINDING UNDER THE FEDERAL CLEAN AIR ACT. THEY HAVE ADDRESSED SOURCES OF PM10 POLLUTION BUT IN MY OPINION, ASSIGNED TOOMUCH A PERCENTAGE OF REDUCTION TO WOOD STOVES AND NOT ENOUGH TO INDUSTRIAL AND SLASH BURNING AND OTHER OUTDOOR BURNING. THEREFORE, AS SUBMITTED, I BELIEVE THE SIP TO BE INADEQUATE.

ONE OF THE REASONS LOWER PM10 LEVELS HAVE BEEN MEASURED IN THE VALLEY'S AIRSHED THIS PAST BURNING SEASON HAS BEEN THE WILLINGNESS OF INDIVIDUALS TO DO HIS AND HER PART WITH ASSURANCES THAT THE BURDEN WILL BE BORN BY ALL SOURCES, NOT JUST ONE SOURCE.

THEREFORE I ASK THE DEQ TO RECONSIDER AND TO ADDRESS THE NEEDED REDUCTIONS FROM INDUSTRY, PARTICULARLY BEING CERTAIN THAT ENFORCEMENT OF THE RULES AIREADY ON THE BOOKS IS OCCURRING AND THAT ATTAINMENT SCHEDULES ARE MET.

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Medford, Oregon
DEQ HEARING
September 12, 1990
Patricia Kuhn

SLASH BURNING AND OPEN BURNING MUST ALSO BE REDUCED.

IT IS NO LONGER ACCEPTABLE THAT OUR CHILDREN AND OUR ELDERLY, THOSE MOST AFFECTED BY DIRTY AIR, AND THE REST OF US MUST SCRUB THE PARTICULATES OUT WITH OUR OWN LUNGS RESULTING in major IMMEDIATE AND LONGTERM HEALTH AFFECTS. THE COSTS ARE JUST TOO HIGH ...IN LIVES, IN HEALTH, IN ECONOMICS.

THANK YOU, PATRICIA KUHN

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9/12/90

Public Hearing on Air Quality:

I'm representing the health concerns of approximately 550 senior citizens who reside at the Rogue Valley Manor. As the Director of Health Services, I see the first-hand effects of air pollution problems on our residents, especially during the months of December and January during the height of the burning season.

We examine and treat a high percentage of our residents for problems associated with breathing difficulties such as asthma, emphysema, and chronic bronchitis.

There is a great deal of concern about the quality of the air in the valley expressed by our senior population. They are very supportive of any ordinances and regulations that will decrease the amount of particulate in the air.

We feel this is an extremely important issue that demands our full attention and would support the recommended actions presented by the Coalition To Improve Air Quality.

Patricia D. Kauffman
Director of Health Services
Rogue Valley Manor

T

4588 Pacific Hwy N. Central Point OR 97502 Sept. 12, 1990

Hearings on Proposed State Implementation Plan for the Medford

Good Evening

My name is Wally Skyrman of Central Point and I wish to Thank you for giving us a second opportunity to speak on this issue that is vital to many of us. As a life long valley resident and Patient Representive for the American Lung Association of Oregon I appreciate the DEQ's efforts to help make our valley a better place to live.

The new plan for PM10 control as presented need strengthening to be acceptable. In light of the information that has come forth since the last hearing I am concerned that problem is much worse then as orginally presented and even more must be done to meet minimum standards.

I will let others detail out what possible revisions might be called for but if a meaningful PM10 plan can not be instituted on reasonable chances of meeting standards its time turn out the lights and lock the door.* Folks, I'm tired of the politics that takes place to clean up our air shed, for at the rate we are going none of us will live to see minimum standards meet in the Rogue Valley.

Sincerely

Wallace Skyrman

Wallace Skyrman

u

Harvey Caine
679 Beach St.
Ashland, OR. 97520

Dear DEQ,

Sept. 12, 1990

This S.I.P., as shown in appendix 4 p.32, will fail to bring most of Medford and portions of Central Point in to compliance with the Federal Clean Air Annual Average Standards.

(Appendix 4 goes into great depths supporting the accuracy of the detailed computer models chosen and tested against actual air samples. This model has shown its self to be more accurate than the E.P.A. approved models for this area.)

Since this S.I.P. predicts it will not succeed it is clearly in violation of the Clean Air Act and is not acceptable nor legal. Any further attempts to request approval on a State or Federal levels is seen as an obvious attempt to violate federal law. I believe it will also prove to be very embarrasing to DEQ. and E.P.A Region Ten. And should it actually be approved at the Federal level of E.P.A. it will clearly be struck down in a court of law as inadequate. It will not stand a court challange.

Decreasing the industrial output of PM_{10} is necessary to bring this S.I.P. into compliance with Federal law. Such decreases (the sizes) shall be determined & utilizing the model for annual averages in appendix 4 until the model predicts no exceedance of the 50 ug/m^3 annual average in the AQMA.

I respectful request that the S.I.P. be amended as suggested in addition to any contingencies that may be added. Failure to do so will leave this S.I.P. inadequate and legal flawed.

Sincerely,

Harvey Caine

RECEIVED
SEP 17 1990
DEPARTMENT OF ENVIRONMENTAL QUALITY
PUBLIC AFFAIRS

V

Harvey Caine
679 Beach St.
Ashland. OR 97520

For Medford Non-Attainment Area
Additional S.I.P. TESTIMONY · PM_{10} - Sept. 15, 1990

D.E.Q. has compiled a very extensive and comprehensive S.I.P. Unfortunately the plan relies almost completely on massive reductions (22,000 lbs/day) in residential wood burning emissions on worst case (bad) (red) days. Last year field observers from the Medford City and Jackson County logged a 60-85% compliance with local wood burning ordinances and we still registered average PM_{10} readings of over 200 $\mu g/M^3$. There is absolutely no way to achieve a 75% reduction in wood stove emissions when close to 75% of the residential wood burners have already stopped burning on red days. The peak day reduction plan will not WORK.

The S.I.P. to lower the average yearly PM_{10} is also going to fail in all likelyhood. DEQ continues to ignore what appears to me a simple real life analysis of air quality data. In the summer months when the valley's ventilation is at its best, and NO woodstove and no slash burning occurs we barely squeeze under the 50 $\mu g/m^3$ daily average. In winter months when ventilation is often one third the summer levels our air quality will be correspondingly

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Worse - even without slash burning or wood stoves. In short the S.I.P is bound to fail without greater restrictions on industry, slash burning and "Fugitive dust" (Some Fugitive dust has been tracked to industrial sites.)

I firmly ~~agree~~ recommend the S.I.P. not be approved for one simple reason, it won't work, and Rogue Valley residents will continue to be exposed to unhealthy levels of air pollution for another decade.

Specific problems and suggestions for improvements are as follows:

→ 1) Continuous Monitoring results on industry emissions of PM10 must be the legal vehicle for enforcement.* ~~Often~~ Visible emissions are only accurate to within 5% plus or minus. Also during the most critical periods fog lays close to the ground in Medford and obscures the stack top completely.

→ We must have reliable and accurate methods for measuring particulate on wet and "dry" scrubber equipped stacks. Allowing higher visible levels than the 5% must be struck from Regulations. Variation in fuels, moisture content and burning conditions vary far too much to allow a variance based on a single source test.

* As prescribed in C.F.R. 60 · 40 Appendix B -

2) Average Operating Opacity measured over 3 days ~~is~~ not a fair way to ~~not~~ judge compliance, Other states work on a one day basis. There is no reason why compliance needs to measured over 3 days. It also allows the source to pick and choose which days before or after and upset they ~~choose to~~ average with the "bad" day.

3) The SIP states all mechanisms must be legally enforcable it then goes on to state reductions in slash burning will be voluntary This is in direct conflict. Reductions in slash burning must be required, otherwise the S.I.P. is legally flawed

4) I question the reliability of the Chemical Mass Balance technique of "Fingerprinting" wood smoke Sources. What is its accuracy? Is it legally defendable to a court challange? Please send me information regarding the accuracy of the mass balance technique

~~5) Enforcement~~

5) Gas Fired (dual burning) industrial burners will be required ~~to~~ for use during Red days in order to meet the E.P.A. clean air standards

I hope the above suggestions will be incorporated especially necessary ~~are~~ is the change to requiring PM_{10} emission standards based on actual daily monitoring NOT visual perceptions. Sincerely; Harry Caine

W

DEQ
Air Quality Division
811 SW Sixth Ave.
Portland, OR 97204

9/14/90

Dear PM10 Hearings Officer(s):

The Oregon Chapter of the Sierra Club supports the proposed PM10 SIP for Grants Pass. We do not support the proposed PM10 SIP's for Medford or Klamath Falls as they are both inadequate.

Sincerely,

Bob Palzer

Bob Palzer
Air Quality Coordinator

Attached are Copies of Written Comments Received by the Lane Regional Air Pollution Authority Following the January 30, 1990 Public Hearing

January 30, 1990

Dear LRAPA Advisory Committee:

First I would like to thank you for the oppoutunty to share my thoughts regarding air pollution in the greater Eugene-Springfield area.Let me offer you the folloiwing thoughts.

l) Your effectiveness in establishing a Clear Air Standard for Eugene is in part determined by the credibility you have with the Public, and that credibility has been significantly undermined by:

A) Your apparent ineffectiveness with the field burning issue, relative to the significance of this pollution source. The preception that you will mandate a program for the little guy while essentially ignoring the Big Polluters, i.e. field burning, slash burners, and automobile pollution. All of which contribute to your lack of credibility.

2) Secondly, that the emphasis of your programs and policies are to often ineffectual.

EXAMPLE: The purchase of moisture meters for fire departments.

The logical extension of this program would have "Joe Public " ' bringing each piece of wood to be tested before burning, as one piece may or may not be truly representative of the lot. At best, only a small percentage of people have the time or inclination to involve themselves in this inconvenience.

Similarly, if the wood tested isn't covered from rain, the test becomes irrelevant. Also moisture is only one source of pollution, as pitch and starving a fire of oxygen also causes significant wood stove pollution.

The idea I suggest you pursue is to deal directly with the source of pollution - black billowy dark smoke. Educate ALL public servants (police, fire, medical tech, etc.) and use all networking possibilities of all Neighbor Groups to be on the look out for significant polluters. As they are identified, give the information to the local fire department public information officers to educate all individuals the pollution impacts, as well as the possible fire danger from creosote build-up on one's chmney. To educate from a perspective of individual safety

aligns ALL interests toward the same goals- ie.less pollution and greater fire safety, a win-win situation.

3) Thirdly, recommedations #5 & 6 are unworkable.

#5 - Prohibition of non-certified stoves

Stoves are less the issue than HOW one burns. Example - I have a 1918 Majestic wood cook stove. Obviously this stove is not and cannot be certified, yet I challenge anyone to verify this stove as a major source of wood pollution. As a person who has heated with wood for 18 years who's also concerned about air quality, not to mention effective utilization of our resources and heating effectiveness - I burn cleanly. I have recognized for a long time that the stove industry made a wrong turn many years ago when they turned to air tight stoves. Instead if they would have employed secondary combustion coupled with THERMAL MASS around the stove the present situation would be very different.

Similarly, these catalitic converters are band-aid solutions. They don't last nor will they ever be as effective as educating the public to burning cleanly. Target the education of the people who burn, not the stove, as the certification may or may not make a long term difference.

In summary, I'm very concerned about air quality and my involvement with this issue goes back many years. I want you, as the regulatory agency, to be effective and fair in your efforts, for the benefit of us all.

I request that you understand and deal with the perception the public has and develop a comprehensive program of point and non-point air pollution sources. That you not waste your time and resources with programs which cannot be truly effective and concentrate on those which can be, and that you engage everyone in the solution of air pollution by seeking fair, far-sighted and win-win solutions to this critical problem.

Sincerely,

Craig Patterson

RECEIVED
LANE REGIONAL AIR POLLUTION AUTHORITY

Eugene, Oregon

February 12, 1990

Board of Directors
225 N. 5th Street
Springfield, Oregon

I wish to apologize for not being able to attend the January 30th meeting, concerning pollution from wood stoves. I like to state, how can anyone who builds wood stoves for a living say anything other than what we read in the Eugene Register-Guard January 31 of this year.

I quote from Mr. Crasineckt, president of National Steelcrafters of Oregon, Wood Stove Co. "I think we need to show the problem of pollution worsening before we spend the money to implement a mandatory wood burning plan." My answer to this is, the pollution in Eugene is already at its highest during the wood burning season and we don't need to have it escalating before we decide to rectify this problem. Obviously the honor system doesn't work. People are still burning wood and garbage, totally ignoring air stagnation warnings. This convinces me that we should do the same as Seattle and ban wood burning altogether during air inversions. Mr. Craisneck's clean wood stove is not really clean because it still pollutes at 1/3 the level of old stoves. I think it's high time to take action now before the Federal Government forces us to meet clean air standards.

I will conclude by saying, a beautiful state like Oregon should not permit a small minority to foul-up the environment for all of us.

Sincerely,
Sally Wendring
Sally Wendring

LRAPA
[illegible] N. Fifth St, Suite [illegible]
Springfield, OR [illegible]

TO: LRAPA

FROM: Anne Perrault, concerned citizen, and staff member
of Oregon Environmental Council
2381 Jefferson St.
Eugene, OR 97405

Although efforts to reduce particulate matter emissions by mandatory curtailment (if mandatory curtailment becomes necessary) are appreciated, in my opinion they are essentially ineffective insofar as "cleaning up" the air in Eugene/Springfield. Furthermore, it is my belief (as well as Oregon Environmental Council's – based on recent research) that this type of regulation, insofar as it is an "intermittent control technique", may not be a legal means of attaining national ambient air quality standards. Various case law seems to indicate that "continuous emission limitations" are the necessary means of regulation of PM10 under the Federal Clean Air Act for nonattainment areas.

Regulations that focus on the source of the pollution would, I believe, be more effective. An opacity standard, or a standard which would require that there be no apparent smoke emission (after a brief "start up" period) would both effectively reduce the amount of particulate matter emitted into the air, and make the air more "healthful".

Although these regulations might be viewed by some as "overkill", it is also my understanding that the SIP regulations may be more stringent than is necessary for attaining minimal federal standards. I think the SIP regulations should be more stringent in order to have truly "clean" air.

Thank you for the opportunity to respond to your SIP proposal.

Anne M. Perrault

Anne M. Perrault

85 354 Item #4
Page 1742
Feb. 7, 1990

Board of Directors
LRAPA
225 N. 5th, Ste. 501
Springfield, Or 97477

RECEIVED
FEB 12 1990
#19394
LANE REGIONAL AIR POLLUTION AUTHORITY

We support the advisory committee recommendations concerning the PM 10 S.I.P. One addition, we suggest, to the 8th recommendation would be to add the word "and conservation techniques" so that it would read -

"8. To assist in funding .... the staff should also pursue the possibility of community block grants for low income households to fund the establishment of alternative heating sources and conservation techniques."

Sincerely,

Edward Winters

Feb. 6, 1994

19387

Attn: Tamara L Davis
Lane Regional Air Pollution Authority
225 North 5th, Suite 501
Springfield, OR 97477

Ms Davis:

It is somewhat late for me to write on this subject but I'll do so regardless.
I wish to note my impression of air quality on a Saturday January 20. We'd had some days of poor to marginal air and on the 20th it was as bad or worse. (I didn't note the color code for wood-burning that day). Despite this — and perhaps typical of people's behavior I drove my car to Eugene. The air was noxious in Springfield and if anything grew worse toward Eugene and in Eugene. I drove south in central Eugene to around 25th, which allowed a view of the air over the city, northward. The air was very murky, and breathing produced actual discomfort in my lungs. This began in Springfield and became more pronounced in south Eugene the air stank and smarted all the way home. This was a little past mid-day — maybe 3:00 PM. It's the first time I've noticed that strong a "bite" from our air. High Ozone concentrations, perhaps?

No reply requested.

Sincerely, Charles V Lucier
704 N 12th
Springfield, OR 97477

41 West 35th Avenue
Eugene, OR 97405
February 2, 1990

Lane Regional Air Pollution Authority
225 North Fifth Street
Springfield, OR 97477

Ladies & Gentlemen:

I was unable to attend the January 30, 1990 Public Hearing, but I would like to offer the following comments for inclusion in the hearing record.

I believe LRAPA has done a good job of protecting our environment and public health by legislating, monitoring and enforcing air quality standards. I appreciate LRAPA's work on reducing industrial emissions and believe it time to apply the same type of standards and enforcement to residential sources - wood space heating.

I believe wood space heating should be allowed only when the meteorological conditions are clearly able to disperse the smoke and other pollutants. Specifically, I suggest the "yellow" condition should occur at lower pollution levels than it does now and the "red" condition should include what is presently "yellow" and "red." Furthermore, I propose the new "red" condition should be accompanied by a mandatory prohibition against wood space heating with no exceptions. I do not believe the present exceptions for "only source of heat" or "new stoves" should be continued.

I find it difficult to understand why in a community which has otherwise high environmental standards, we continue to allow this significant source of pollution to go virtually unregulated. I urge you to adopt stricter standards than proposed. Thank you.

Sincerely,

John Replinger

John Replinger

RECEIVED
FEB 1990
LANE REGIONAL AIR POLLUTION AUTHORITY

LANE REGIONAL AIR POLLUTION AUTHORITY

690 West 31st Avenue
Eugene, Oregon 97405
February 1, 1990

Donald Arkell
Lane Regional Air Polution Authority
Springfield, Oregon 97477

Dear Mr. Arkell:

We are writing to you because we support greater restrictions on the use of wood stoves. At the very least we believe there should be mandatory curtailment during inversions. Moreover until the time that wood stove emissions do not exceed those of other heat sources; by which we mean oil, natural gas and electricity; they should be phased out except for occasional use.

It would appear to be very difficult to excercise control over how wood stoves are used. It would be difficult to verify the type and condition of the wood used. It would be difficult to monitor the condition of the stove and more so to determine how the stove is actually used.

Although it is clear that many of the combustion products are hazardous to health the effects do not seem to be determined. How many colds and other respiratory conditions result from wood-stove use? How many lost workdays result from wood-stove use? These are among the questions that need answers before any real evaluation can be made. In the meantime it seems to us that the public's health should take precedence over other considerations and the use of wood stove should be severely limited.

Sincerely,

Virginia Freeman

Robert Freeman

Virginia Freeman

Robert Freeman

1990
#193?7
LANE REGIONAL AIR POLLUTION [illegible]

Dear Mr. Arkell,

I spoke last night at the meeting (the last speaker) but hadn't had a chance to formulate my thoughts as I didn't expect to present anything. Upon further reflection, the point I was trying to make is as follows.

I support the PM10 SIP Plan but feel it needs to be tied to demographic projections of future population increase in the area. I'm concerned that even very efficient wood burning devices will exceed the areas topographic capacity for clean air if there are too many of them. This may require working with land use planning and population density planning as well as wood-stove industry people to determine a "quality of life" ratio based on various factors such as the areas resource capacity and environmental resilience. I'm still not sure this conception is very clear or articulate, but its basically getting at the notion that problems are inevitable if we try to place (or continue to allow) unlimited numbers of wood burning devices in a finite geographic area with unfortunate topography such as ours. Thank You.

Don Schneider
475 W. 28th
Eugene, Oregon 97405

[illegible]

THE LEAGUE OF WOMEN VOTERS OF LANE COUNTY

Affiliated with the League of Women Voters of Oregon and the United States

R[illegible] L[illegible]
[illegible] 1990
19313
LANE REGIONAL AIR POLLUTION AUTHORITY

January 30, 1990

To: Lane Regional Air Pollution Authority
Re: PM10 Regulations for Wood Smoke Emissions

The League of Women Voters of Lane County would like to express its strong support for the LRAPA Advisory Committee recommendations on controlling wood smoke emissions.

The League of Women Voters has worked for air pollution abatement at the local, state and federal levels for many years. We supported a strong woodstove regulation bill and more stringent field burning regulations in the last legislative session and were disappointed that neither passed. We are supporting the Governor's field burning initiative petition.

Given this metropolitan area's serious airshed problems, we must be searching continually for ways to decrease the amount of pollutants. Since wood smoke is a major source of air pollution in the winter months, the need to curtail it is obvious. We believe the advisory committee recommendations are both fair and desirable. A voluntary curtailment program will still be our primary method and if mandatory controls prove necessary, those homes whose sole source of heat is from woodstoves will be exempted. We would prefer that the installation of non-certified used wood stoves be prohibited. It makes no sense to allow the use of additional inefficient stoves while working to decrease the amount of emissions overall. If that is not legally possible, then certainly the sale of non-certified used wood stoves should be prohibited.

These recommendations also recognize the importance of education. We believe the residents of this area want to do their part for clean air. The fact that voluntary curtailment has worked as well as it has is proof of that. We sincerely hope that this recommended program, which would still rely primarily on cooperation rather than enforcement, will prove successful in providing a more healthful environment for all of us.

Sue Thiederman
President
343-7917

RECEIVED
FEB 6 1990
LANE REGIONAL AIR POLLUTION AUTHORITY

Box 927
Eugene, OR 97440
February 2, 1990

Lane Regional Air
Pollution Authority
225 N. 5th
Springfield, OR 97477

Dear LRAPA:

Thank you for holding your recent public hearing in Eugene on the State Implementation Plan for woodstove pollution. As a person who uses a bicycle for my principal means of transportation, and goes running outdoors, I have a keen interest in the quality of our air in Lane County.

The effects of excessive wood burning may be visually apparent here during some winter periods, but I find it difficult to get worked up over this smoke, especially when compared to the toxic materials being put into our air by things that burn hydrocarbon fuels. Isn't it possible that wood smoke may lessen somewhat on its own? I am hoping that a combination of the new stove design standards, higher firewood prices, and better home insulation practices will clean up the air faster than any increases in the population of wood stoves will dirty it.

However, in considering the issue of wood burning as a home heating practice, I can see one possible problem arising in the future. That is the practice of garbage burning. Homeowners may know that burning trash in a stove or fireplace is detrimental to their flue, but I am sure many people do it anyway. Because of the chemically complex nature of America's trash, I am sure this practice puts many dangerous toxins into the air. If garbage is used to start or revive a fire, certain chemicals may be incompletely combusted. Low temperature combustion of some common substances might yield dioxin, a chemical that is deadly even in small concentrations.

The prospect of garbage burning raises an interesting dilemma for public officials like yourself and the other governmental bodies you are associated with. There is a conflict between the primary strategies for reducing solid waste disposal and the need to reduce wood stove emissions.

Many cities now face a severe shortage of suitable landfill space, and long distance shipment of trash is becoming more common in all regions of the country. Some cities facing the expense of shipping garbage, such as Seattle, have introduced intensive programs to promote voluntary recycling. These have succeeded, but they are not enough.

Economic measures are an obvious way to discourage excessive garbage production. The Oregon bottle bill is a model of this approach, in that it requires the consumer to pay a deposit on beverage containers that must be returned to a collection center for reuse or recycling. Another example is the Bush Administration's proposal for taxes on industrial consumption of virgin natural resources--these taxes will give an extra incentive for the collection of recyclable materials that would otherwise end up as garbage.

A more general economic factor that discourages trash production is the hauler's pick-up charge. This charge is often politically regulated and adjusted to promote social goals. I anticipate that garbage hauling fees will eventually be based more on the amount of trash produced than the cost of getting the garbage truck to the house. I realize that this is not now the case--those who fill their 90 gallon can to the brim are allowed to produce trash at a much cheaper rate per pound than the person who reduces their output to a half-full 30 gallon can. But this will change.

The limiting factor in reforming the hauler's rate structure is the possibility of evasion of the charges. I would suggest that the likelihood of evasion is not primarily related to the number of people with shovels and large back yards, nor is it due to the number of supermarkets with unlocked dumpsters in the neighborhood. It is more likely related to the number of people with wood stoves in their house.

To be completely assured that poisonous garbage is never burnt, we would either have to put a "big brother" device in every house, or make sure garbage pickup is as cheap as possible. We don't want to do either. Source reduction is a much better strategy for lowering dangerous emissions. Let's try to reduce the sale of flammable things that would produce dioxins or other poisons if burned in a wood stove.

I have enclosed a recent news article on the subject of garbage source reduction. Although the headline laments a decline of interest in this strategy, the article gives many reasons why renewed interest in source reduction is likely. There are many justifications for economic or regulatory measures in order to achieve source reduction, such as trash volume, biodegradibility, and toxicity in the landfill. LRAPA should be concerned with the safety of emissions from garbage materials that are likely to be burned in wood stoves, under the probable combustion conditions.

Source reduction at the manufacturing or wholesale level is an unlikely strategy for cities or counties, because most products are not manufactured locally. However, local source reduction measures could be introduced at the retail level. Most people don't want to travel out of area to purchase throw-away

goods. Economic measures are better than "command and compel" regulation, because they satisfy the consumer's demand for free choice, albeit with an extra charge for bad choices. The best targets for these economic measures are dangerous products that have existing or emerging alternatives. Imposing a charge on the undesireable products allows free market competition to accomplish the transition to safer consumption patterns. Some examples of products that should be subject to economic source reduction measures include: diapers--disposible vs. purchased or rented cloth, milk jugs--waxed paper vs. reuseable glass, and printing inks--petrochemically based vs. soy based.

Source reduction by economic means at the consumer level is no more difficult than selling lottery tickets. Any good business forms printer can produce the tax stamps that will be sold to retailers and affixed to the targeted products, similar to the U.S. government's alcohol tax stamps. Although many public officials are reluctant to propose any type of tax on retail sales, and prefer invisible taxation, environmental protection is a popular cause, expecially if it does not conflict with the principle of consumer choice. I suggest enforcement by the same means as your mandatory burn curtailment program--ordinary citizens would report any retailer's failure to collect the source reduction fees. Enforcement authorities would then respond and levy fines on the violators.

The economic approach to source reduction does not preclude the need for any compulsory measures. Some things are so dangerous or unnecessary that they should be banned outright. However, the difficulties encountered by advocates of a styrofoam ban in Portland make an argument for more gentle, transitional measures.

I ask that LRAPA's State Implementation Plan for PM-10 include a recommendation that local governments adopt source reduction strategies for home-combusted toxic products. This will encourage local governments to give greater consideration to this approach in dealing with a variety of pollution problems. Elimination of combustible toxic garbage will also assure persons like myself that if a bit of brown haze must be tolerated around here during the winter months, at least it is non-toxic.

Thank you for your consideration of this proposal.

Sincerely,

Randy Prince

Randy Prince

cc: Shawn Boles
Freeman Holmer
Jerry Rust

FORUM

Good rhetoric, no reality

Garbage source reduction idea lauded, then disappears

By ROBERT BOTTLIEB and LOUIS BLUMBERG

Reducing garbage at the source: Most everybody loves it, but hardly anybody does it.

Cities, counties and states all swear by source reduction, claiming it occupies top priority in their garbage-management plans. But, despite the rhetoric and hoopla, it remains a waste-management stepchild, a strategy that policy-makers and environmental groups have done little to implement or rally around in specific terms.

Why the contrast between the rhetoric and reality? The idea behind the source reduction after all is quite simple: Don't make as much trash in the first place.

But source reduction on some level may also require public input about what gets produced — a taboo subject especially for industries such as plastics and packaging that have become central to the problem and resistant to certain solutions.

Packaging, for example, accounts for a third of all garbage generated, and plastic packaging is the fastest growing and least available for reusing or recycling packaging components. Yet these two industries conspicuously omit any mention of source reduction when talking about garbage management solutions. Instead, they thrive on developing new products, such as the squeezable plastic ketchup bottle, which is essentially tantamount to creating more rather than less garbage.

The concept of source reduction is not a new one. Twenty years ago, the packagers and plastics industry representatives held a conference aimed at heading off calls for government intervention as the first signs on our current landfill crisis began to appear. Ten years ago, a high-level presidential work group issued a report, "Choices for Conservation," exploring a range of possible garbage reduction programs, though the group also failed to reach consensus, given the continuing opposition of industry.

Today, source reduction is making a strong comeback, as garbage disposal problems become more difficult and widespread. Politicians and other policy-makers have been forced to include source-reduction proposals in the debates over what to do with the garbage.

The most visible and contentious of these proposals involve the banning of certain products. As environmentalist Barry Commoner has noted, banning a particular product such as DDT or lead in gasoline can produce the most direct and substantive results in improving the environment. Today, communities around the country have initiated product bans, from polystyrene-foam, fast-food containers to the plastic can.

A second set of proposals involve regulatory programs. Ordinances designed to regulate the size and make-up of packages, the first one of which was developed by the state of Minnesota, can become a key tool in attempting to reduce the amount of garbage generated. Bottle bills, especially those that directly seek to make possible the reuse of bottles, are another form of waste-reduction regulation.

The third area of reduction-oriented proposals involve various financial policies, particularly those that discourage the use of virgin (as opposed to recycled) materials.

The threat of source reduction, particularly product bans and product regulations, have led to new initiatives on the part of industry to forestall yet more extensive intervention.

Procter & Gamble, the world's largest consumer products company, has begun to market in Europe, but not yet in the United States, a new form of packaging for its liquid fabric softener that could reduce its packaging content by 85 percent. This approach involves a "refill pouch" of liquid concentrate that consumers would then dilute to create the final product.

This kind of innovation is a direct response to source-reduction proposals that seek to reduce the amount of packaging that exists today. Procter & Gamble in fact has admitted that the packaging industry could achieve a 30 percent reduction in packaging content, which would make a major dent in the garbage problem.

Source reduction necessarily raises that larger issue of whether there should be public input about what kinds of products get produced, with the potential additional garbage they could represent. Industry interests still remain wedded to the design of new, waste-generating products and more packaging.

The source-reduction approach requires a re-evaluation of that perspective, forcing all of us to address not only what we dispose, but where it comes from and what we can do about it.

NED LEVINE/Los Angeles Times Syndicate

Robert Gottlieb, coordinator of the Environmental Analysis and Policy area at the UCLA Urban Planning Program, and Louis Blumberg are the authors of "War on Waste: Can America Win its Battle with Garbage," just released by Island Press.

Wood Stove Ordinance

Spring 1990

Air quality in the Klamath Urban Growth Boundary during winter continues to present a potential health problem due to excessive levels of wood smoke. This exists despite a voluntary program of wood stove use curtailment during "red days." This petition asks the Klamath County Commissioners and the Klamath Falls City council to pass mandatory ordinances controlling the burning of wood in wood stoves and fireplaces; the burning of used oil in service stations and businesses; and the burning of green wood. Since there is a concern for low income families, we suggest the inclusion of an exemptions program. The ordinance should include a registration of stoves, inserts and fireplaces for a one-time-only fee not to exceed $10.00. We, the undersigned are registered voters and residents of the Klamath Falls Urban Growth Boundary.

Name(print please)	Address	Signature
[illegible]	1250 Lakeshore Dr.	E. Eng[illegible]
[illegible]	1304 Worden	[illegible]
Alice Kilham KILHAM	Harriman Rt Box 8	Alice Kilham
Norma Jean Cummings	7315 Homedale Rd K Falls (97603)	Norma Jean Cummings
Lee E. [illegible]	1680 Ridgecrest Klamath Falls	
LANA BLAIR Lana Blair	1915 Dawn Ct. Klamath Falls	Lana Blair
Cindy Bastianelli	1020 Hanks St Klamath Falls	Cindy Bastianelli
Ron FRENCH	3510 CANNON Ave K. Falls	[illegible]

Petitions may be returned to Terry Wagstaff, 680 Conger Ave, Klamath Falls, Or. 97601 prior to May 31, 1990. They will be forwarded to the County Commissioners & City Council.

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March 1990

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Name(print please)	Address	Signature
Byron T. Sagunsky	1873 Benson	Byron T. Sagunsky
K R Woodruff	P.O Box L Merrill	K R Woodruff
Michael T. Battis	1918 Carlson Dr KF	Michael Tony Battis
Howard A. Snow	1521 Sargent	Howard A. Snow
Barbara S. Dehlinger	5425 Valleywood Dr	Barbara S. Dehlinger
Grant W. Daugherty	6733 Beckstead KF	Grant W. Daugherty
[illegible]	[illegible]	[illegible]

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Name(print please)	Address	Signature
~~Lee Strieby~~		
LEE STRIEBY	2425 SUMMERS LN	Lee Strieby
Bob STRIEBY	" "	Bob Strieby
Joyce Miller	6402 Bryant Av. K. Falls 97603	
Jane PICKETT	2002 WATSON KF 97603	Jane Pickett
Ray Anderson	2919 Eberlein Ave K.F.	Ray Anderson
Don Forrand	3809 Thicket Ct KF	Don Forrand
William L Johnson	511 Pacific Terrace	
Mary Johnston	2430 Applegate	M. Johnston
~~Lawrence H.~~ Rowena Horn	1120 Ridgecrest Dr	Rowena W. Horn
Kelly Alsing	3528 Montavilla	
Larry Behrenz	5483 glenwood	Behrenz, Larry
MELVIN L. TERRY	1711 WINONA WAY K.F.	Melvin L Terry

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Name(print please)	Address	Signature
Laurie Kenfield	235 N. 4th	Laurie Kenfield
Sheri Dates	230 N. 8th	Sheri Dates
Bonnie Hay	Tulelake	Bonnie Hay
Bob Boyle	7840 Hwy 140	Bob Boyle
Lashell Gordon	3918 Bristol	LaShell Gordon
Nancy Mark	2614 Clover ST	Nancy Mark

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Name(print please)	Address	Signature
ELIZABETH ANDERSON	2340 WATSON ST.	Elizabeth D Anderson
Carol McClure	132 Mt. View	Carol McClure
RICHARD GARBUTT	1540 PACIFIC TERR.	
Katherine L. Sagurski	1823 Berson	Katherine Sagurski
Sue Graves	218 Lincoln KF	Sue Graves
H Anne Ordway	219 South 11th #303 KF	H. Anne Ordway
Karl Wenner	Rt 5 Box 1300 KE	
JIM Huber	POB 2001 KF	Jim Huber
ELAINE DEUTSCHMAN	455 HILLSIDE KF	Elaine D. Deutschman
SUSAN WALDMAN	2233 RECLAMATION	S. Waldman
Steve Campbell	210 Grant	Steve Campbell

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Name(print please)	Address	Signature
GARY BURT	4009 HOMEDALE Rd.	Gary Burt
CHARLIE CREECH	1937 PAINTER	Charles Creech
Teri Woodke	1024 Nasler St.	Teri Woodke
David A. Young	2660 S Nasta Way	David A. Young
Jeanine L Stork	3027 Altamont	Jeanine L. Stork
Martha Merhoff	RT 5 Box 1419	Martha Merhoff
Craig Merhoff	2850 Daggett	Craig Merhoff

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Wood Stove Ordinance
Spring 1990

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Name(print please)	Address	Signature
RICHARD CZARNOTA	3660 SWAN LAKE	R Czarnota
O.C. Webb-Bowen	2114 WATSON ST. - KL. Falls Ore.	O.C. Webb-Bowen
Elsie Rush	2328 DARROW	Elsie L. Rush
Carla Cummins	1920 Arthur # 39 K-Falls	Carla Cummins
Linda Rust	4009 Homedale Rd. K.F.	Linda Rust
MaryAnn Gabrielson	3210 Patterson #7	MaryAnn Gabrielson
Rebecca A. Robertson	4434 Peck Dr, KFO	Rebecca A. Robertson

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Name(print please)	Address	Signature
DAVID ELLIOTT	616 CONGER	David Elliott
CLARK PEDERSON	235 RIDGECREST DR	Clark Pederson
RICHARD S. LEDGERWOOD	1895 ARLINGTON	[illegible]
GARY MOCATORE	405 CEDAR	Gary B. Mocatore
JULIA S. McKINNIS	3915 Hwy 39	Julia S. McKinnis
Michelle Tyree	4501 Meadows	Michelle Tyree
Patricia Timmons	1919 MELROSE	Patricia Timmons
Cindy Morris	1078A Woods Rd	Cynthia Morris
Katie [illegible]	1011 Carlyle	[illegible]
CAROL SHAW	611 Loma Linda	Carol Shaw
JULIE ROKES	2315 Orchard Ave	[illegible]
Nina Jensen	6544 Climax	Nina V. Jensen
Billie Hinton	11200 [illegible]	Billie Hinton

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Name(print please)	Address	Signature
Cynthia Prince	3461 Denver Pk. K.F. 97603	Cynthia Prince
Marvin Prince	3461 Denver PK KF097603	Marvin Prince
Holly Dozois	1820 Birch St K. Falls	Holly Dozois
Jak Kosteliski	4789 Onyx Drive	Jak Kosteliski

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9am

Wood Stove Ordinance

March 1990

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Name(print please)	Address	Signature
Tom Patterson	2257 Vine	Tom Patterson
Ray Whaley	1900 Lancaster	Ray H. Whaley
Patricia Henderson	2041 VanNess	Patricia Henderson
Elwyn Jacobson	1972 Earle	Elwyn Jacobson
Yvonne Gillette	1717 Tiffany St.	Yvonne Gillette
Chris Hellner	4816 Driftwood Dr.	Chris Hellner
Rebecca Stoaks	3428 Shasta Way	Rebecca Stoaks
Maureen Breck	2205 Kiln St	Maureen Breck
Dan Connors	1728 Logan St	Dan Connors
Sandy Connors	Same	SANDY CONNORS
Paul Bentley	4514 Summers Ln	Paul Bentley
Gay Salzer	1698 Portland St	GAY SALZER
Alicia Nieto	1749 Summers lane	Alicia Nieto
Sue Cogley	6210 Cherry Way	Sue Cogley
Tom Cogley	2310 Radcliffe Av. 01	Thomas Cogley

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Wood Stove Ordinance

Spring 1990

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Name(print please)	Address	Signature
Marsha Pisan	1421 Pacific Terrace	Marsha K. Pisan
DONALD F. LARSON	3006 VALE ROAD	Donald F. Larson
Bill Starrall	1234 Algoma	
Jason Viehdorfer		
John Doe	1328 Pacific	
Jerome Ulen	3641 Altamont	Jerome Ulen
Rand Hale	1812 Calhoun	
John Justice	5332 Harlan Dr.	John Justice
Elizabeth Braun	2151 Union St.	
Douglas E. Tofell	4268 Gary	Douglas E. Tofell
Debra Lepley	4437 Onyx	Debra Lepley
KAREN GENEST	1121 MERRIMAN	Karen Genest
Robert Benton	227 A Crater Lake OR	97604 Robert Benton
Christine Bennett	3950 Homedale Rd. #6	K. Falls, Or. 97603
Cris Hamilton	3431 Small Ct.	K. Falls, Or. 97603

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Name(print please)	Address	Signature
Shirley Voight	4179 Old Midland Rd	Shirley Voight
Gary Voight	" "	Gary Voight
Julie M. Cunningham	5081 Laurelwood Dr. K Falls	Julie M Cunningham
Jesi Lipe	1015 Tamera Dr.	Jesi Lipe
Rebecca G. Bocchi	2245 Hughes K. Falls	Rebecca G Bocchi
William K. Templer	4485 Daggett St K. Falls	William K. Templer
Shirley Ross	2626 Campus K. Falls	Shirley Ross
John D. Bell	2009 Tulane Ave K Falls Or	John D Bell
DC Le Sueur	572 Conger K. Falls Or	DC Le Sueur

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Name(print please)	Address	Signature
JACK L. DEMPSEY	1857 Portland St	Jack L. Dempsey
A. F. Leistikow	1600 Crosby	A. F. Leistikow
Lola Truax	1540 Division	Lola Truax
CHESter and Retis Lee	Russell	
JOHN W. INSLEY	4232 LOMBARD Dr	John W. Insley
E. M. MacBeth	605 Division	E. M. MacBeth
EARL & LORRAINE BUCK	4539 Clinton	Lorraine Buck
MARY A SMART	RT 5 BOX 1339 K FALLS	Mary A Smart
WALTER TORRES	4461 DAY DR	Sheryl Torres
HAROLD GRESDEL	4505 SHASTA WAY KLAMATH FALLS ORE	
Steven [illegible]	Malin OR	
Anita Banks	1622 MADISON #2 K FALLS OR 9760[illegible]	
Roberta Johns	4522 El Cerrito Way K. Falls 97603	
[illegible]	605 Division K Falls 97603	
[illegible]	1443 [illegible] K Fall 97603	
[illegible]	450 N. [illegible] KFO 97601	
Pamela McDowell	2680 Uhrman Rd KFO 97601	
[illegible]	2680 Uhrman Rd KF 97601	
Wanda Young	5420 Valleywood KFalls 97603	
Terry [illegible]	5482 Glenwood KF 97603	
[illegible]	2029 FAIRMONT KF #97601	
[illegible]		

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Name(print please)	Address	Signature
David G. Weber	227 Jefferson	David G. Weber
Janice Shortt	720 Buena Vista	Janice Shortt
Paul Altorfer	1564 Watson	Paul W. Altorfer
Lila Morobin	2530 Reclamation	Lila Morobin
Nancy Leary	1910 Vardess	Nancy Leary
Joande Bucholz	3724 Lamasada	Joande Bucholz
Mary L Kranenburg	1720 Arlington	Mary Lou Kranenburg

Nancy Leary

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Name(print please)	Address	Signature
Paul Daley	Kimberly Dr KFO	Paul Daley

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Name(print please)	Address	Signature
Thalia Jewel	910 Newcastle	Thalia Jewel
Carol Wylie	1937 Portland	Carol L. Wylie
Vicki Davenport	1426 Crescent	Vicki Davenport
Vicki L. Peña	1505 Madison #43	Vicki L. Peña
Eugene R Moore	1527 Derby	Eugene R Moore
Bonnie Lawson	P.O. Box 232 Davis	Bonnie Lawson
Debra Mullendore	5520 Sterling	Debra J. Mullendore
Suzanne Abram	1258 Buck Island Dr	Suzanne Abram
Kimberly Abram	1258 Buck Island Dr.	Kimberly Abram

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Name(print please)	Address	Signature
DONELLE BREITENSTEIN	2110 FAIRMONT	Donelle Breitenstein
Ralph BREITENSTEIN	2110 FAIRMONT	Ralph Breitenstein
JOHN ZEGGERT	1660 OLD FORT RD	J Zeggert
Jerri Wheeler	2717 Lakeview	Jerri Wheeler
Sharon Zeggert	1660 Old Fort Rd	Sharon Zeggert
Bunton Dail	1945 DEL MORO	Bunton Dail
Thomas M Featherston	7116 Verda Vista Pl.	Thomas M. Featherston
NELLA B. MEADE	4462 SYCAMORE DR	Nella B Meade
Geo A Scheller	R.R. 1-730	Bonanza
BEA CARTER	HC 30 BOX 127H-97624	
BARBARA STUART	CHILOQUIN, OR. 805 Hillside Rd	Barbara Stuart
JOHN M ANDERSON	1321 JOHNSON ST	John M Anderson
KENNETH A. MEADE	4462 SYCAMORE	Kenneth A Meade
Monte Dellinger	11417 Hill Rd	Monte Dellinger
Elaine Stiles	4423 El Cerrito	Elaine Stiles
Albert F Elliott	5468 Shasta	Albert F Elliott
Wilbur F Scott	3902 Mazama Dr	W. Scott
GARY PENNY	1518 IVORY ST	Gary Penny
Mary Cameron	705 Riverside	Mary Cameron

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Name(print please)	Address	Signature
Doris A. Johnson	1946 Manzanita	Doris A. Johnson
FRANK W JOHNSON	1946 MANZANITA	Frank W Johnson
ROY O. JOHNSON	1996 Manzanita	Roy O. Johnson
Bonnie J. Bruce	4240 Myrtlewood Dr.	Bonnie J Bruce

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Name(print please)	Address	Signature
David J. Ditto	3723 La Mirada Way	David J. Ditto
Nancy M. Ditto	3723 La Mirada Way	Nancy M. Ditto
Carol Jones	1911 Eldorado	Carol Jones
[illegible]	417 Merrist K Falls	
Marian Faithorn	1940 Tiffany	"
BEVERLY McClung	3933 Rio Vista K. Falls,	Beverly McClung
SCOT FRITZ	933 HIGH ST #1 K. FALLS	

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Name(print please)	Address	Signature
Karen Rogers	3222 Sunshine Pl K.F.	Karen B. Rogers
Steven W. Hubler	1328 Carlson Dr, K.F.	Steven W. Hubler
~~Grant W. Dougherty 6733 Beckton K.F.~~		
Grant W. Dougherty, 6733 Beckton K.F.		Grant W. Dougherty
Judy Bickett	1530 Hope St. K.F.	Judy Bickett
Donna J. Hunt	5721 Delaware K.Falls, Ore	Donna J. Hunt
Bertha L. Doshier	6170 S. 6th Klamath Falls OR	Bertha L. Doshier
Larry Woodwick	800 Carlson Klamath Falls, Or	Larry Woodwick
Sharon Snoozy	2111 Unity, Klamath Falls, Or.	Sharon Snoozy
Jerry M. Anderson	3207 Raymond St, Klamath Falls, Or	Jerry M. Anderson
Jan Berg	5721 Burnett Klamath Falls Or.	Jan Berg
Kristin A. Berg	1200 Crife Terrace KFalls Or	Kristin A. Berg

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Name(print please)	Address	Signature
CAROL S. TRUNNELL	PO BOX 7700 K FALL	Carol S Trunnell
Gary T Blair	329 Washington	Gary Blair
Charles W [illegible]	1158 Red Is Dr	
Laurie Kenfield	235 N. 4th St. K Falls	Laurie Kenfield
Sandy Kurth	1115 Maple	Sandra Kurth
Melinda Pollock	4609 Villa Dr.	Melinda Pollock
STEVE VICK	4264 DRIFTWOOD	Steve Vick
Eileen O'Kennedy	3938 La Marada Way	Eileen M O'Kennedy
~~Linda [illegible]~~	~~HC 30 Box 44A Chiloquin~~	
Yvonne Gillette	1717 Tiffany St.	Yvonne Gillette
Jean Nelson	2036 LEROY ST. #5	Jean Nelson
Ken Spencer	518 Doty St. K. Falls	[illegible]
Cindy Thompson	925 Main St K Falls	Cindy Thompson
[illegible] Halvorsen	3942 La Manda K.F. OR 97603	[illegible] Halvorsen
JIM Huber	POB 2001 K.F. 97601	Jim Huber

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Name(print please)	Address	Signature
SUSAN R. DREW	933 HIGH ST. #3	Susan R. Drew
GARY J. NASETH	1702 WORDEN AV	Gary J. Naseth
Kathleen N. Miller	6516 Valhalla	Kathleen N. Miller
Lois Scheick	944 Hanks T.	LOIS Scheick
Renée R. Hernandez	316 W Oregon Ave.	Renée R. Hernandez
Deborah Dingman	5[illegible] PACIFIC TERR	D. Dingman
KATHY NEIER	715 MAIN, KFO	Kathy Neier
Jamie Blecha	210 Lakeport #2	Jamie Blecha
Bill Steffenhagen	7622 Skyline Dr.	Wm Steffenhagen
Saundra Colich	7017 Rosalia Pl.	Saundra Colich
Denise Steffenhagen	7622 Skyline DR	Denise Steffenhagen
Marilyn Stenberg	1910 Park Ave	Marilyn Stenberg
MARCA EDGE	6436 Climax	Marca B. Edge
Shayleen T. Allen	2810 Montelius	Shayleen T. Allen
Roger R. JOHNSON	3710 Sautter	Roger R. Johnson
Mary J. Johnson	" "	Mary J. Johnson

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Name(print please)	Address	Signature
JESS H. HOUSE	706 Conger Ave	
LUCY H. WRIGHT	6320 HARLAN DR.	
O.E. THOMPSON, JR.	2856 RIO VISTA WAY	
YVETTE M. MOLTONE	2325 LINDA VISTA	
Myline V. Michael	1805 Birch	
Elsie L. Bush	2328 DARROW	
JAMES NOVAK	2543 LAKESHORE DR	
LARI W. MILLARD	428 Pacific Terrace KF 97601	
R A Millard	428 Pacific Terrace KF 97601	
Ed Otterson	1919 LOWELL K.F.	
Dorothy McElhiny	4949 GATEWOOD DR	
Deb White	2066 Alameda St.	
Cheryl Carlisle	2112 Dawn Dr.	
Lorraine Rodgers	2909 Ao Poe Valley Rd.	
John Botha	1926 Arthur	
Vicki Brant	1140 Madison	
Ray Kolb, Jr. (Particleboard)	2853 Homedale Rd	
MARIE V. KOLB	2853 Homedale	
Audrey B. Ziegler	4230 South 6th St.	
Janet G. Houston	1961 Painter	
DAYNNE T. LEBLANC	5487 Villa Dr	
DAVID L. LEBLANC	5487 VILLA DR	

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EOPLE'S PETITION

We the undersigned are registered voters and residents of the Klamath Falls Urban Growth Boundary. We are petitioning both the Klamath County Commissioners and the Klamath Falls City Council to pass mandatory ordinances controlling the burning of wood in wood stoves and fireplaces; the burning of used oil in service stations and businesses; and the burning of green wood. Since there is a concern for low income families, we suggest the inclusion of an exemptions program. The ordinance should include a registration of stoves, inserts and fireplaces for a one-time-only fee.

NAME (print please)	ADDRESS	SIGNATURE
Joni Johnson	1938 Huron KFO	Joni L Johnson
Deborah Brainard	P.O. Box 644 Keno	Deborah Brainard
Sharon Beller	5707 Bryant KF Ore	Sharon Beller
Rick Zwartverwer no	1984 Terrace KF	(Rick Zwartverwer)
Charles LaBarre	429 N 4th KK	Charles LaB
Terry Wraggett	680 Conger KF	[illegible]
Linda Hess	446 Riverside Dr. KF, OR	Linda J. Hess
Donna Elliott	3535 Hwy 39 KF 97603	Donna G. Elliott
John Wilson	2315 Mtn View KF 97601	J Wilson no
Ursula Gailis	531 Pacific Terrace K Falls, Ore.	Ursula Gails
Teresa Renner	601 Conger ave, K Fall OR.	
Cheri L. Sykes	615 Calif Ave K Falls, OR	

PEOPLE'S PETITION

We the undersigned are registered voters and residents of the Klamath Falls Urban Growth Boundary. We are petitioning both the Klamath County Commissioners and the Klamath Falls City Council to pass mandatory ordinances controlling the burning of wood in wood stoves and fireplaces; the burning of used oil in service stations and businesses; and the burning of green wood. Since there is a concern for low income families, we suggest the inclusion of an exemptions program. The ordinance should include a registration of stoves, inserts and fireplaces for a one-time-only fee.

Jeri - could you please leave an extra petition at Marcus' cubby? Thanks!

NAME (print please)	ADDRESS	SIGNATURE
Marilyn Gran-Moravec	921-Vista Way	Mgran-Moravec
Katie Arndt	1800 Miller Isl Rd	Katie Arndt
Teresa Wilson	Rt. 5 Box 1420	Teresa J. Wilson

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NAME (print please) ADDRESS SIGNATURE

Roy [illegible] [illegible] Auburn [illegible] Roy [illegible]
Theodore [illegible] [illegible] Lowell KF [illegible]
[illegible] 323 Main Klamath Falls Or
Bob [illegible] Box 1033 KFO [illegible]
Elizabeth Van Meter 1828 LeRoy Elizabeth Van Meter
Cheryl Pauling Grant Box 542 Keno Cheryl Pauling Grant
Stephen Drabik 636 Nosler KFO [illegible]
[illegible] 1935 Lowell Klamath Falls
[illegible] Verstoeg 4446 Sicamore K-Falls
Sheryl Della-Rose 1012 Newcastle K Falls
[illegible] Monroe 776 W. Oregon Klamath Falls
[illegible] 245 Pacific Terrace K Falls Ore [illegible]
[illegible] 2727 [illegible] KFO [illegible]
[illegible] Laurent Box N 914 K Falls
[illegible] 7040 [illegible] K Falls
[illegible] Mannix 2510 Link K Falls 97601
Carole Orendorff 215 S Rogers KF Carole Orendorff
[illegible] Brandsness 411 Pine KFO 97601
Martha E Christensen 2635 Darrow KF Martha E Christensen
Richard [illegible] Christensen 2635 Darrow KF Richard Christensen
[illegible] 2117 Kimberly Dr Klamath Falls Or 97603
[illegible] 2047 Del Prado Klamath Falls 97601 Carol Bankowski
[illegible] 1916 [illegible] Court Klamath Falls 97603
[illegible] 1910 [illegible] Klamath Falls 97603
[illegible] 321 N 3rd St [illegible] K Falls 97601
[illegible] 5044 Valinda Way K Fall 97603

Wood Stove Ordinance

March 1990

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Name(print please)	Address	Signature
Thomas F. Della-Rose	1842 Newcastle	[illegible]
Evelyn G. Della-Rose	1834 Benson	Evelyn G. Della-Rose
[illegible]	2034 Fremont	Cameron F. Wogan
Astrid Todd	1030 Newcastle	Astrid Todd
Inge Pedersen	104 Washington	Inge Pedersen
Farrell Pedersen	104 Washington	[illegible]
Thomas J Connors	1833 Fremont	Thomas J Connors
* [illegible]	12560 Pearson Butte Trail	D. Korzan
Ron Swisher	327 Mesa St.	Ron Swisher
Gaye Lee Caleb	1400 N. Eldorado	Gaye Lee Caleb
Yottie Garbrecht	1540 Pacific Terr	Yottie Garbrecht
Bill Leary	1910 Van Ness	[illegible]
Mary Schilstrom	6250 Winema	Mary Schilstrom
[illegible]	1320 Pacific Terr	Neil G Smith
Marci Wainer	858 Homedale	Marci J Wainer
Richard C. Whitlock	122 N. Williams	[illegible]
Rick Belcher	917 Washburn Way	[illegible]
Roxanne Osborne	1243 Front	Roxanne Osborne
Philip Stukenberg	234 Ewauna	Philip S[illegible]
Bradford J Aspell	727 Hillside AV	Brad [illegible]
Shirley Hamil	Hwy 39	Shirley Hamil
Linda Lindahl (LINDA LUNDAHL)	4980 Lakeshore	Linda Lindahl

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Name(print please)	Address	Signature
Sherman Anderson	11120 HWY 66	Sherman Anderson
Stephanie Hakanson	4514 Selma St.	Stephanie Hakanson
Helena Clark	1411 Worden St	Helena Clark
Barbara Taylor	5615 Miller Ave	Barbara Taylor
Carol Patrowsky	1222 Eldorado	Carol Patrowsky
Ed Rosario	1111 Merryman	Ed Rosario
Paul T. Jongman	542 Pacific	Paul T. Jongman
Martha F. Christensen	2635 Darrow	Martha F. Christensen
William M. Wood	4643 Peck Dr.	William M. Wood
Mark L. Putt	2606 Crest St.	Mark L. Putt
Charles Lonergan	1079 Erie St #2	Charles Lonergan
Dave Mariman	HCR 59980 Homer, AK 99603	Dave Mariman
Linette Ellis	P.O Box 1387	Linette Ellis
Mike (Mr. Hugh)	737 Main	
V. Scott Senter	1818 Birch St.	V. Scott Senter
Judy Hubler	1328 Carlson	Judy Hubler
Peggy Stalper	1158 Arrowhead	Peggy Stalper
William L. Osborn	844 N. Eldorado	William L. Osborn
John Stalper	1158 Arrowhead	John Stalper
Lee Juelet	1929 Esplanade	Lee Juelet
Pei-Lan Yu (Pei-Lin-Yu)	419 Torrey	Pei-Lan Yu
Susan Aspell	727 Hillside	Susan Aspell

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Name(print please)	Address	Signature
Ernest Casey	1855 Lowell	E J Casey
JACK N MARTIN	1841 Lowell	[signature]
LOIS E MARTIN	1841 Lowell	Lois E Martin
NELLE KILLION	1831 LOWELL	Nell Killion
CHARLES BAILEY	1850 Lowell	Charles Bailey
Patricia Bailey	1850 Lowell	Patricia Bailey
Dolores Howard	1864 Lowell	Dolores Howard
Blanche Casey	1855 Lowell	BLANCHE CASEY
LORRAINE KOCHEVAR	220 CONGER	Lorraine B Kochevar
CAROLE M ALDRICH	~~422~~ 1401 WILD PLUM CT.	Carole M Aldrich
Charles R. Dunbar	764 W. Oregon AV	Charles R. Dunbar
Sue Graves	218 Lincoln	Sue Graves
Sharon Anderson	1245 El Dorado	Sharon K Anderson
Peter Grant	Box 542	Peter Grant
Sandra C. Cheyne	Box 74, Midland	Sandra C. Cheyne
Diane Cheyne	1111 Lower Klamath L. Rd.	Diane Cheyne
[illegible] T. Arndt	1800 Miller ~~R~~ Rd; W. ~~E~~ Glen	Arndt
Lisa Kent	6523 Alva Av	Lisa C Kent
Betty Andrews	11120 Hwy 66/KF	Betty C Andrews
[illegible]	4574 Selma St	[signature]
Susan Scorzo	9610 Hill Rd.	Susan Scorzo
Margaret Huntley	925 Newcastle	Margaret A. Huntley

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Name(print please)	Address	Signature
Laurie Gigstead	1836 Sargent Avenue KFO 97601	Laurie Gigstead
DAVID MANNIX	2510 Link KFO 97601	[illegible]
ALDEN B. GLIDDEN	1800 FAIRMONT KFO	[illegible]
Brenda Hartman	1050 Kane St 97603	Brenda Hartman
Barbara S. Battis	1918 Carlson KFO	Barbara S Battis
Marita Kunkel	1940 Painter St	Marita Kunkel
Laurie Dean	1936 Eldorado	Laurie J Dean
[illegible]	1000 Pacific Terrace	[illegible]
[illegible]	2042 Melrose	[illegible]
S. Ryk Arthur	"	[illegible]
TED DOBSON	1940 PAINTER ST	[illegible]
Lisa LeGault	215 Hawthorne	Lisa LeGault
Kelly Freeland (Kelly Freeland)	132 Eulalona Ct.	Kelly Freeland
Jo Ann Hannigan	2011 Fairmount	Jo Ann Hannigan
Bonnie Eismann	705 Hillside	Bonnie Eismann
MARGARET LYON	1011 Vista WAY	Margaret Lyon
Kathryn C. Davis	726 Loma Linda Dr	Kathryn C. Davis
Carolyn Forbes	1000 Pacific Terrace	Carolyn Forbes
Suzanne Stewart	1603 Eldorado	Suzanne J Stewart
Sharon [illegible]	1956 Huron	[illegible]
Norma Mathis	4794 Onyx Dr.	Klamath Falls, Or 97603
Holly Card	914 Lomalinda Dr	" 97601

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Name(print please)	Address	Signature
PATRICIA A. GARRETT	2330 MARINA	Patricia A Garrett
Sheryl Coe	2330 Linda Vista Dr.	Sheryl Coe
Erik A. Peterson	1045 Newcastle	
Carolyn L. Peterson	1045 Newcastle	Carolyn L. Peterson
Jim Crismon	2039 Fremont	Jim Crismon
Susan N Crismon	2039 Fremont	Susan Crismon
FRANK DELLA-ROSE	1834 BENSON	Frank Della-Rose
Karen Creason	2000 Eldorado	Karen Creason
Kenny Kranenburg	1726 ARLINGTON ST	Kenny Kranenburg
Linda Shifter	5009 Altamont Dr	Linda Shifter
Ella Jennings	5011 Altamont Dr	Kit. Ella Jennings
Jeanne Jandrum	2366 Linda Vista Dr.	Jeanne Jandrum
Rolland C. Bailey	122 Ridge Crest	Rolland Bailey
LAYNE Creason	2000 Eldorado	Layne Creason
Pam Biggs	725 Pacific Terrace	Pam Biggs
Christine A Ledgerwood	1895 Carlington	Christine A Ledgerwood
Carol M. Wendt	3120 Fairmount St.	Carol M. Wendt
Oliver R. Spencer	924 Mountain View	Oliver R. Spencer
Claudia N. Newton	1841 Painter 97601	Claudia N. Newton
Pamela K Garrick	1863 Laverne 97601	Pamela K Garrick
Kathy Ward	1335 PACIFIC TERRACE 97601	Kathy Ward
Bonnie Bright	1917 Watson	Bonnie Bright

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Name(print please)	Address	Signature
Monte Dehlinger	11417 Hill Rd.	MONTE DEHLINGER
[illegible]	1431 Pacific Terrace	[illegible]
Jane Hamlin	3001 Summers Lane	Jane Hamlin
Mark Greif	1233 Prescott	Mark Greif
Barbara Headlten	5804 Sturdivant	Barbara Headlten
Twila Metler	7143 Reeder Rd.	Twila Metler
Linda Webb-Bowen	4812 Denver	Linda Webb-Bowen
Winnie DeWitt	4128 Meadows	Winnie DeWitt
John Oman	318 N. 2nd	John Oman
Larry P. Lund	10588 Buesing Rd.	Larry P. Lund
PATRICK WARD	1335 PACIFIC TERRACE	Patrick Ward
Michael Kay	5044 Barry	[illegible]
Patricia A. Maxwell	6713 Amber	Patricia A. Maxwell
Linda Warner	935 Newcastle	Linda Warner
Susan Lawrie	3540 Montecello	Susan Lawrie
Mike K. O'Boyle	5241 Bryant	Mike K. O'Boyle
MARY LOU BAILEY	2036 LEROY	Mary Lou Bailey
Patricia Ricker	1400 Arthur St Apt E	Patricia L Ricker
Kimberly K Kambak	1862 LeRoy	[illegible]
DONALD W. Lentz	4262 Selma	[illegible]

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NAME (print please)	ADDRESS	SIGNATURE
Christine Fay	2318 Linda Vista Dr.	Christine Fay
MARCIA L. HALE	1812 CALHOUN ST.	Marcia L. Hale
Debra Lockrem	2312 Linda Vista	Debra Lockrem
Diane E Spires	224 Mtn View Blvd.	Diane E Spires
Mark Fay	2318 Linda Vista Dr	Mark Fay
MIKE LOCKREM	2312 LINDA VISTA	Mike Lockrem
Jerry Mylatore	2325 Linda Vista	Jerry Mylatore
YVETTE MOLATORE	2325 LINDA VISTA	Yvette M Molatore
DONNA P NAGY	745 PACIFIC TER. KF	Donna P Nagy
Robbie Mogan	1955 Pol Mtn	Robbie Mogan
Jennifer Patterson	530 Hillside Ave	Jennifer Patterson
Nancy Wakkuri	152 Peach St.	Nancy Wakkuri
Linda Pahler	1935 Manzanita	Linda M. Pahler
Monica Tillman	511 Pacific Terrace	Monica Tillman
Sandy Rowan	449 Laguna	Sandy Rowan
Neoma Womer	1424 Eldorado	Neoma Womer
Milo Waldin	1989 Terrace Ave	Milo Waldin
Daniel O. Beason	3015 Front St	[illegible]
Linda J. Patton	2446 WIARD St.	Linda J. Patton
Susan Long	827 Eldorado	Susan M Long
Rebecca G Bosch	3345 Hughes	Rebecca G Bosch

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Name(print please)	Address	Signature
George Hanson	210 W. Oregon Ave	George Hanson
Pamela Stout	5216 Shasta Ct	Pamela Stout
Karen Genest	1121 Merryman Dr	Karen Genest
Linda LeFever	4706 Simmers Ln	Linda LeFever
Marian Jensen	7845 Donegal	Marian Jensen
Andrea Simonson	5362 Valleywood Dr.	Andrea Simonson
Gloria Nelson	4330 Lombard	Gloria Nelson
Bob Baert	3924 So 6th	Bob Baert
Patrick Noonan	3928 S. St.	
Eleanore Beets	4439 Winter	Eleanore Beets
Fred Beets	" "	Fred Beets
Doyle M. Kelly	1506 Ivory	Doyle M. Kelly
Sharon Neis	627 Shasta Way	Sharon Neis

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Name(print please)	Address	Signature
Gloria Dougherty	6733 Beckton Ave	Gloria Dougherty
Edward Rommerdahl	4536 Onyx Ave	Edward Rommerdahl
Janet MacKrell	6315 Bryant Ave.	Janet MacKrell
Linda M. Schell	7020 Verda Vista Pl.	Linda M. Schell
Donald Buckingham	1408 Arthur	Don Buckingham
Pam J Connors	2400 Hawkins	Pam J Connors
Marcella Crawford	1903 Crest st.	Marcella Crawford

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Name(print please)	Address	Signature
Michael J. Nilsser	327 Alameda	
Kathryn S. Nilsser	327 ALAMEDA	
RICHARD CONCANNON	4637 BOARDMAN AVE.	

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Name(print please)	Address	Signature
Patricia A Seiler	234 Ewauna St. KF	Patricia A. Seiler
Michael C. Miller	601 Main St Suite 210	Michael C. Miller
Ken Austin	4140 Adelaide Apt B	[illegible]
[illegible]	1804 Worden	[illegible]
Beth K. Henison	1941 Del Moro	[illegible]
Karla J. Kilieps	607 Roseway Dr	Klamath Falls OR 97601
Gregg Lamm	1936 Oregon Avenue KF	Gregg T. Lamm
Cheryl Tampien	4885 Sunset Ridge Rd	Cheryl Tampien
Vernon Gearhard	Rt 1 Box 6356 KF	[illegible]
Ed Blaydon	2204 Kimberly Drive, KF	Edwin A. Blaydon
Mary Miller	324 Pinnacle Dr	[illegible] 97601
[illegible]	4430 Lakerne	97603
Philip M Sheridan	2894 Rio Vista Way	[illegible]
Stacy Murray	3205 Bailey Ave	Stacy Murray
R M Holland	428 Pacific Terrace	R M Holland
[illegible]		
Ralph W. Almeter Jr	731 Prescott	[illegible]
Raoul VanHall	Box 1150 KFO	R VanHall
Ron Pribble	1361 Wild Plum Ct	R Pribble
Kenneth W. Smith	1134 North 9th St.	KFO

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Name(print please)	Address	Signature
Carol Yarbrough	3434 Jana Dr K.F. OR. 97603	Carol Yarbrough
John Yarbrough	3434 Jana Dr KF Or 97603	John Yarbrough
Amy D. Butler	913 Oak Ave KF OR 97601	Amy D. Butler
Diana Yancey	1405 Arthur St E KFO 97603	Diana Yancey

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Name(print please)	Address	Signature
RICHARD CZARAPATA	3660 SWAN LAKE	R Czarapata
O.C. Webb-Bowen	2114 WATSON ST. - Kl. Falls Ore.	O.C. Webb-Bowen
Elsie Bush	2328 DARROW	Elsie L. Bush
Carla Crumrine	1920 Arthur #39 K-Falls	Carla Crumrine
Ruth Burt	4009 Homedale Rd. KF	Ruth Burt
MaryAnn Gabrielson	3310 Patterson #7	MaryAnn Gabrielson
Rebecca A. Robertson	4434 Peck Dr, KFO	Rebecca A. Robertson

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Name(print please)	Address	Signature
DAVID ELLIOTT	616 CONGER	David Elliott
CLARK PEDERSON	235 RIDGECREST DR	Clark Pederson
RICHARD S. LEDGERWOOD	1895 ARLINGTON	[illegible]
GARY MOCATORE	405 CEDAR	Gary B. Mocatore
JULIA S. McKINNIS	3915 Hwy 39	Julia S. McKinnis
Michelle Tyree	4501 Meadows	Michelle Tyree
Patrice Timmons	1919 MELROSE	Patrice Timmons
Cindy Morris	1073A Washburn Rd	Cynthia Morris
Katie Dennis	1011 Cally	Katie Dennis
CAROL SHAW	611 Loma Linda	Carol Shaw
JULIE ROKES	2315 Orchard Ave	[illegible]
Nina Jensen	6544 Climax	Nina V. Jensen
Billie Hinton	11200 [illegible]	Billie Hinton

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Air quality in the Klamath Urban Growth Boundary during winter continues to present a potential health problem due to excessive levels of wood smoke. This exists despite a voluntary program of wood stove use curtailment during "red days." This petition asks the Klamath County Commissioners and the Klamath Falls City council to pass mandatory ordinances controlling the burning of wood in wood stoves and fireplaces; the burning of used oil in service stations and businesses; and the burning of green wood. Since there is a concern for low income families, we suggest the inclusion of an exemptions program. The ordinance should include a registration of stoves, inserts and fireplaces for a one-time-only fee. We, the undersigned are registered voters and residents of the Klamath Falls Urban Growth Boundary.

Name(print please)	Address	Signature
Cynthia Prince	3461 Denver Pk. KF097603	Cynthia Prince
Marvin Prince	3461 Denver PK KF097603	Marvin Prince
Holly Dodds	1820 Birch St K. Falls	Holly Dodds
Lyle Kozeliski	4789 Onyx Drive	Lyle Kozeliski

Petitions may be returned to Terry Wagstaff, 680 Conger Ave. Klamath Falls, Or. 97601. They will be forwarded to the County Commissioners & City Council.

Return to DEQ office

Wood Stove Ordinance

March 1990

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Name(print please)	Address	Signature
Tom Patterson	2257 Vine	Tom Patterson
Dan Wheeler	1900 Crescent	Dan H. Wheeler
Patricia Henderson	2041 VanNess	Patricia E Henderson
Ellyn Jacobson	1972 Earle	Ellyn Jacob
Yvonne Gillette	1717 Tiffany St.	Yvonne Gillette
Chris Bellner	4816 Driftwood Dr.	Chris Bellner
Rebecca Stoaks	3428 Shasta Way	Rebecca Stoaks
Maureen Breck	2205 Kiln St	Maureen Breck
Dan Connor	[redacted] 1778 Cognan St	Dan Connor
Sandy Connors	Same	Sandy Connors
Paul Bentley	4511 Summers Ln	Paul Bentley
Gay Salzer	1698 Portland St	Gay Salzer
Alicia Nieto	1749 Summers Lane	Alicia Nieto
Sue Cooley	6210 Cherry Way	Sue Cooley
Tom Cooley	2310 Radcliffe Av. 01	Thomas D Cooley

Petitions may be returned to Terry Wagstaff, 680 Conger Ave, Klamath Falls, Or. 97601 They will be forwarded to the County Commissioners & City Council.

DEQ
Air Quality Division
811 SW Sixth Ave.
Portland, OR 97204

9/14/90

Dear PM10 Hearings Officer(s):

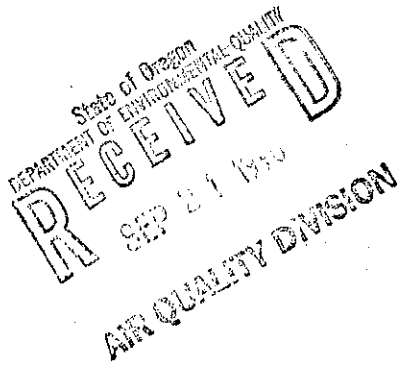
The Oregon Chapter of the Sierra Club supports the proposed PM10 SIP for Grants Pass. We do not support the proposed PM10 SIP's for Medford or Klamath Falls as they are both inadequate.

Sincerely,

Bob Palzer

Bob Palzer
Air Quality Coordinator

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
SEP 18 1990
AIR QUALITY DIVISION



Comments on
Klamath Falls State Implementation Plan

September 20, 1990

Presented by
Paul Wyntergreen
Oregon Environmental Council
utilizing the Coalition to Improve Air Quality's
comments on the draft SIP as a basis

I appreciate the opportunity to respond to your State Implementation Plan (SIP) for Particulate Matter for the Klamath Falls, Oregon Nonattainment Area.

I support your call for a mandatory curtailment program in Klamath Falls. My primary concern regards the political reality of getting the most control measures into place as soon as possible, however.

The need for a mandatory curtailment program is obvious and immediate, and a 90% reduction on worst days looks great on paper; however, that attainment demonstration will only occur on paper unless political and economic concerns are factored into this plan. Those concerns are very great as individuals in Klamath Falls are faced with a curtailment period that effects approximately one-third of their heating season.

The pursuit of fuel conservation, fuel switching alternatives and their attendant funding should be a primary objective of the SIP. It is the first recommended strategy in the EPA Guidance Document for Residential Wood Combustion Emission Control Measures and, accordingly, should be given priority in Klamath Falls.

Connecting a mandatory curtailment ordinance to such fuel conservation and fuel switching alternatives seems to be the most saleable and realistic approach to achieving healthful air with the least injury to the wood dependant home heater.

Fuel switching in Klamath Falls means switching away from wood, or at least, ensuring alternative heating for curtailment days. Even if all stoves are upgraded to certified, Klamath Falls would still not meet standards. Therefore, a massive search for viable alternatives is all important making curtailment work and needs to be part of the SIP considerations.

Klamath Falls' geothermal resource must be intensely reevaluated as the solution of preference. While such energy planning is not required under SIP guidelines, it is essential to making this plan work.

Geothermal has all the potential of becoming a beneficial community cooperation effort between economic development interests and a unique residential "quality of life" promotion, while providing on-going lowest-cost heating for those who must switch fuels. With the impending failure of the Salt Caves economic development, those energies could be redirected to such a mutual solution. The potential public perception and community spirit gains are tremendous with such a common approach.

Also, since this plan is predicated upon ordinances that do not currently exist, I would like to propose several additional control elements that need to be added to the plan.

Performance Gains

Aside from fuel switching and a mandatory woodstove curtailment program, the SIP mentions another basic approach to reducing woodsmoke but very little is done to develop this idea. That complementary approach is the improvement of year around performance. The SIP needs a greater elaboration on the potential reductions from such performance measures, in micrograms per cubic meter or percentages.

Then, after those calculations, there needs to be a spelling out and enactment of weatherization requirements, year-round opacity standards, bans on the installation of non-certified woodstoves, and drywood seasoning requirements. Currently, there is no discussion in the SIP as to how the promotion of firewood seasoning ordinances or heating season-long open burning controls will occur. Nor when the bans on installation of non-certified stoves will be in place. How is the 5% assumption on replacement with certified stoves derived?

There are many, often small, but important steps that can be taken immediately that are listed in the SIP as contingency measures. This is an inverted prioritization. While, individually, these efforts may not solve the worst day pollution, and, theoretically, a curtailment program may solve the annual violations, the air pollution problem in Klamath Falls is so far out of line and subject to so many variables that all avenues must be addressed. With the political climate in Klamath Falls being what it is, as many measures as possible need to be enacted immediately.

Additional Concerns

There is insufficient airshed mapping of the Klamath Falls problem area, and greater monitoring resources need to be concentrated on more accurately determining the non-attainment boundaries, so that contributing sources such as Weyerhauser and others are not artificially excluded from controls.

For the sake of both clean air and equity, additional controls are necessary for transportation, slash, backyard burning, industry, and growth.

It was once assumed that Klamath Falls' problem was all rural uncontrollable fugitive dust. This myth has since been dispelled, but broad assumptions are still the foundation of the source contribution estimates. Dispersion modeling is not appropriate, as there is not adequate meteorological data. The source profiles that are used are primarily from Medford. Even Multiple Linear Regression Analysis cannot be applied to receptor modeling, "since industrial emissions cannot be identified by any single aerosol component, industry contributions cannot be reliably estimated using this approach". So it all comes down to an emissions inventory, with a 6.6% industrial contribution, and receptor modeling, which shows no contribution at all from hogfuel (with an 11% margin of error).

The emissions inventory has its drawbacks. Many of the veneer driers have never been source tested and present monitoring methods on most industrial sources are woefully inadequate. Industrial fugitives, which can exceed stack emissions in the wood products industry, have not been quantified. To assume that prior industrial emissions were at or below PSEL's is naive.

In calculating PSEL's, the DEQ also does not take into account the increased wood-waste boiler emissions that occur during moist, foggy periods of winter. In the Medford-Ashland SIP, it states that "Wood products industry emissions are assumed to be about 20% higher on worst case days during the winter months due to colder ambient temperatures, colder and damper fuel and raw materials, etc. The worst case day emissions for each source are based on the annual average emissions multiplied by the ratio of the pound/hour plant site emission limits (PSELs) to the annual average PSELs." This makes sense to increase industrial impacts on worse days in the industrial emissions for the reasons stated. This should be done in the Klamath Falls SIP also.

A combination of factors such as these have a tendency to throw a sizeable margin of error into the DEQ's estimates of industrial particulate contributions. The point of these statements being that, due to the vagaries of the assumptions regarding contributions, due to the difficult task of generating public cooperation without a perception of across the board cooperation, and due to the enormous delicacy of the airshed, it is imperative that all sources receive the maximum amount of control on both peak day and an annual basis.

Much work remains to be done in the industrial arena. The "fact" that dispersion precludes industry from contributing to the Klamath Falls problem is assumed much too easily. The Industrial Rules recently adopted for Medford and Grants Pass also need to be adopted for the extremely delicate Klamath Falls' airshed. Since the combination problem of carbon monoxide and particulate exists, BACT should be required for CO and LAER for PM10.

There are gross inequities in the residential versus industrial curtailment programs. Industrial sources are not required to curtail their emission until PM10 levels are 4 times the minimum daily health standard of 150 ug/m3. By contrast, residential woodburning is restricted at a much lower level, which is reasonable. However, the industrial emergency action plan provisions require much too high a threshold before they are enacted.

Unfortunately, Klamath Falls has reached those extremely high thresholds, and yet industry has never been required to curtail. There is even some question as to whether plans have been submitted as to how they would proceed if required to do so. This negligent inequity needs to be corrected.

The Industrial Rules should be modified to require "red day" dual fueling capability by all major industrial sources by a certain deadline, and the threshold requirements for industrial curtailment should be lowered, particularly in Klamath Falls. This will equate peak day controls on major sources, just as an opacity standard for woodstoves will equate annual controls.

Growth

It is unconscionable that industry should be allowed 49.6% growth in emissions (based on PSELs) in a non-attainment area as severe as Klamath Falls. A Klamath County Commissioner has even ventured to state that the forces of industrial economic development are "not aware" that there is an air quality problem in Klamath Falls. This absurdity should be eliminated and emissions reduced below existing levels. That awareness is critical to promoting the cooperation of the entire community in solving the problem. Any production gains should be made through improved technology and offsetting.

Still, growth is an area of major concern where industry does have some controls but woodstoves do not. Correction of this inequity through the use of a woodstove offset system would be of enormous benefit to both maintenance of air quality and improvement of air quality. Placing a cap on the number of woodstoves at existing levels would serve to promote the changeout of older, inefficient stoves as users who can afford the best equipment purchase emission rights from those who could not otherwise afford to upgrade their heating systems.

As with the Medford area, we see a potentially problematic situation arising in Klamath Falls if industry is allowed to buy out woodstove emission rights.

First off, it would not be overly effective unless an emissions cap was also placed upon woodstoves prior to buy-outs commencing.

Secondly, it is fraught with administrative problems as there would be an unfair advantage for savvy industrial representatives who come to low-income wood heaters and offer "deals" to purchase their woodstoves (which would necessitate a neutral third party organization to handle these trades).

Thirdly, there is some question as to the ability of the deed restrictions imposed upon removal of the woodstove to hold up in court.

And lastly, there is the perceptual problem that, after a new heat plant is in place, the home heater is left with the need to pay more for fuel, while industry gains additional profits.

There is a possible alternative to this dilemma of getting the forces of economic development in Klamath Falls to work in favor of air quality. In fact, a possible surrogate for expensive air pollution controls (LAER, etc., not replacing a tightened emissions cap or enforcement, however) might be the requirement for industry to participate in the plumbing of the city with geothermal. A joint venture between industry and community, with critical deadlines imposed, may prove to be the least costly, most timely, and best direction to go.

Open Burning

DEQ should exercise its authority to prohibit all outdoor open burning in the Klamath Falls Urban Growth Boundary during October through March, and offer assistance to provide more composting and chipping, in order to receive reductions in both solid waste and air pollution.

Slash

The SIP mentions a 50% reduction in slash burning by the year 2000 due to the Visibility Protection Program. In 1978, 4.4 million tons of slash were burned. In 1984, 1.6 million tons were burned and this accounted for 43% of all fine particulate in Oregon according to the DEQ/EPA Panoramas Study. By 1988, 3.4 million tons of slash were burned in Oregon according to the latest (1988) Smoke Management Annual Report. Thus, slash burning is increasing, not decreasing in recent years.

Also, the visibility protection program is only in effect during July 4th through Labor day weekends which is not the period of concern in this area. Furthermore, one of the goals of the Visibility Protection Program is to protect visibility without having to limit total amounts of field and slash burning, which in effect means more burning occurs outside of that brief summer window. To the extent that less material is burned during the summer, and more is burned during fall and winter, the VSP, if anything, is worsening the PM10 problem here. In addition, the 50% reduction of slash burning referred to is only in Western Oregon, not Klamath Falls.

What are the voluntary agreements referred to? And why must we wait until it is proven that they fail to protect the non-attainment area before revising the Smoke Management Plan to include Klamath Falls? In light of the massive contribution of particulate from slash burning, we should be mandating significant reductions now, rather than waiting for future voluntary arrangements to fail.

In view of relative uncertainties of air dispersal forecasts and the potential for significant adverse impact of winter slash burning, this practice should be prohibited throughout the entire vulnerable period of October through February. It is unacceptable to only limit slash burning on mandatory woodstove curtailment periods, due to the duration of burn and potential forecasting problems. There should be total curtailment from October through March in Jackson, Josephine, and Klamath counties at a very minimum since each of these contiguous counties have a severe PM10 non-attainment problem.

A much more stringent Smoke Management Program should be an integral part of this SIP.

Other Topics

There also seem to be voluntary agreements regarding agricultural burning on "red days". Again, voluntary is inadequate to the scope of Klamath Falls' problem. The majority of cereal grain fields appear to already be treated by alternate means rather than burning; these alternates should be mandated for all agriculture within at least 30 miles of the non-attainment area.

Also, there is no discussion of Trackout controls, which is particularly important in an agricultural area.

An essential additional step in transportation control is the enforcement of the visual opacity standard for diesels that is already on the books. However, as the old mandatory curtailment ordinances in Medford and Jackson County will attest to, just because a law is on books, does not mean that it is actively enforced.

Enforceability as a whole is touched upon much too lightly. There are many related questions about enforcement that are essential to Air Quality Maintenance.

Finally, as regards Air Quality Maintenance, if health levels are achieved, controls must be retained, not loosened.

I thank you for this opportunity to respond to the draft State Implementation Plan.

Respectfully submitted by,

Paul Wyntergreen
Regional Director
Oregon Environmental Council

State of Oregon August 7, 1990

Department of Environmental Quality

Air Quality Division

Sirs:

I am opposed to a wood stove ordinance for the Klamath Falls urban area. I strongly object to attempts by the Department of Environmental Quality to coerce the government officials of Klamath Falls and Klamath County into the adoption of a wood stove ordinance.

The reasons for my opposition are:

(1) A wood stove ordinance is a gross overreaction to the air quality problems of our community. According to official statistics, there has been an average of 42 days per year when the PM-10 count in the Klamath Falls area was out of compliance with federal clean air standards. Any action to criminalize the wood burner is not justifiable by a 42 day a year problem. The official statistics clearly show that air quality in the Klamath Falls urban area is in compliance with federal clean air regulations on 88 per cent of the days during the year. Why does the DEQ ignore this proven record of compliance with federal clean air regulations in the Klamath Falls area?

(2) There has been considerable publicity suggesting that respiratory ailments are caused by wood stove emissions. I do agree with the position that poor air quality during wintertime temperature inversions causes considerable suffering to the people of our community.

I do not believe that wood stove emissions are the only cause or even the primary cause of this suffering. The same temperature inversion that confines wood stove emissions also confines the massive exhaust emissions of thousands of cars and trucks. The toxic effects of automobile emissions such as Nitric Oxide, Nitrogen Dioxide, Carbon Monoxide, Carbon Dioxide, Sulphur Dioxide, and Ozone are well documented.

The documented effects of Nitric Oxide on humans are: irritation of eyes, nose and throat, drowsiness, and unconsciousness.

The documented effects of Nitrogen Dioxide on humans are: bronchial irritation, moist wheezes, sporadic cough with expectoration, pulmonary disfunction with decreased vital capacity, and probable cause of emphysema.

The documented effects of Carbon Monoxide on humans are: headache, dizziness, drowsiness, nausea, vomiting, collapse, coma, and death.

The documented effects of Carbon Dioxide on humans are: simple asphyxiant, shortness of breath, and headache.

The documented effects of Sulphur Dioxide on humans are: particular irritation to mucous membranes of upper respiratory tract, rhinitis, dryness of throat, cough, and symptoms of bronchitis.

The documented effects of Ozone on humans are: dryness of upper respiratory system, irritation of nose and throat, choking, coughing, bronchial irritation, and severe fatigue.

Car and truck emissions are a major cause, probably the primary cause, of the respiratory ailments suffered by Klamath people during wintertime temperature inversions. Why does the DEQ ignore this proven hazard? Why has there been no effort to criminalize the car driver as well as the wood burner?

(3) A wood stove ordinance in the Klamath Falls area would be extremely difficult to administer. The weather patterns and air quality can change literally in minutes. This can lead to the mislabeling of no burn days. In the 89-90 heating season there was a total of 68 red days. 29 of these red days, 42 per cent, occurred when the PM-10 count was less than the federal clean air compliance level of 150 parts per million. 10 days were labeled red when the PM-10 count was 70 parts per million or less. In this situation, enforcement of a wood stove ordinance would be a legal nightmare.

(4) A wood stove ordinance in the Klamath Falls area would be a major source of conflict in our community. It is certainly possible that wood stove enforcement efforts could cause violent incidents. Many people of the Klamath Falls area will object to having wood burning restrictions forced upon them by the government. Yet, most of those same people would be willing to restrict themselves when they are made to understand the health consequences of wintertime temperature inversions.

All efforts to establish a wood stove ordinance for the Klamath Falls urban area should be abandoned.

I recommend that the voluntary wood stove program be expanded to address automobile exhaust emissions. There should be a major effort to curtail all nonessential running of automobile engines during wintertime temperature inversions. Particularly offensive is the practice of long idling to warm the passenger compartment of the vehicle. Industries should be asked to curtail their air contaminant discharges during wintertime temperature inversions. A comprehensive voluntary air quality program makes sense for the Klamath Falls area.

This headlong rush for a wood stove ordinance makes no sense!

Lord Maitreya
5721 Delaware Ave.
Klamath Falls, Or.
97603

Lord Maitreya

JFR

MODOC LUMBER CO.

MANUFACTURERS OF OLD GROWTH - SOFT TEXTURE
PONDEROSA PINE LUMBER
TRUE FIRS - DOUGLAS FIR

P. O. BOX 257 KLAMATH FALLS, ORE. 97601

THOMAS J. SHAW
PRESIDENT

J. GILLIS HANNIGAN
EXECUTIVE VICE-PRESIDENT

LAURENCE L. SHAW
CHAIRMAN

April 9, 1990

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
APR 11 1990
AIR QUALITY CONTROL

Nick Nikkila
Administrator, Air Quality Division
Department of Environmental Quality
811 S.W. Sixth Avenue
Portland, OR 97204-1390

Dear Mr. Nikkila:

Thank you for the opportunity to review the Draft PM 10 plan.

We would like to make a few preliminary comments at this time.

How the new federal clean air bill in Congress will impact if at all with the **State Implementation Plan For Klamath Falls PM 10 Nonattainment Area** should be reviewed, particularly the possible time schedules.

Modoc Energy Products agrees with the several comments in the drafts that pellet stoves should be a major asset in the goal of 90% improvement in the wood burning curtailment, strategy element.

For the conversion from wood stoves to pellet stoves it will be necessary for the pellet stove to be permitted to operate on "Red" advisory days. On page 48 of your draft, paragraph three, it is not clear in your definitions if pellet stoves are allowed or not to operate?

Page 54, section 4.12.3.4 **Emission Offsets and Banking,** should have encluded both the approximate dollar cost and type of control technology required to be installed by industry to obtain 100 tons per year reduction by existing wood-fired boilers.

Thank you.

Yours truly,

Kurt Schmidt
Asst. Mgr. Operations
Modoc Lumber Co.

KS:hlg

Weyerhaeuser

P.O. Box 9
Klamath Falls, Oregon 97601
Tel (503) 884 2241

April 23, 1990

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
APR 25 1990
AIR QUALITY CONTROL

Mr. Nick Nikkila
Administrator
Air Quality Division
Department of Environmental Quality
811 SW Sixth Avenue
Portland, OR 97204

Re: Draft PM_{10} Implementation Plan - Klamath Falls

Dear Mr. Nikkila:

Thank you for forwarding the subject plan to me for advance review. I have read the plan and would make the following inputs:

1. Based upon recent events in the woods products businesses and a lack of progress on Project Juniper, the transportation growth of 1.5%/year and the 5,000 person population growth probably will not be seen. I would predict a 1% transportation decrease and a decrease in population or at best a static level by 1992. Likewise, woodburning emissions may decrease rather than increase at 1% per year.

2. The projection of industrial emission increases most likely will not be seen. It will be very optimistic to think of any increase at all. The tables may need to be adjusted to reflect potential decreases.

3. The CMB model while of same benefit on large area analysis may have high sample variation on local levels. The results as extrapolated from these samples may lead to erroneous **Draft PM_{10} conclusions when viewing industrial PM_{10} sources.**

4. The background PM_{10} levels are estimated to be similar to Medford, however, the winter climates are very dissimilar. During the past four winters snowfall and precipitation in general have been much lower than normal. The vegetative cover and dust sources in Klamath Falls are drastically different than the Dodge Road area.

5. Slash burning while being a very minor contributor to any PM_{10} level in Klamath County is certainly visible. The timing of most burns are before or after critical nonattainment times. The real impact is very very minor season wide. In any event higher utilization standards for chip and fiber needs will reduce slash burning even further over the next four years.

6. We support the certification of higher efficiency woodstoves.

7. The city of Longview, Washington and Weyerhaeuser Company had developed a mutually acceptable street sweeping program that helped both the City and Company remove fugitive dust emissions. Perhaps D.E.Q., Klamath County, and industry could work for benefit of all in a similar manner.

8. Regarding the mandatory curtailment of woodstoves, we feel it would better serve everyone's purpose to continue with voluntary curtailment along the program lines set forth by Klamath County.

Sincerely,

WEYERHAEUSER COMPANY
Klamath Falls Operations

John D. Monfore
Land Use Manager

JDM:ch

JFK
JTG

NEIL GOLDSCHMIDT
GOVERNOR

Department of Transportation
HIGHWAY DIVISION
2557 Altamont Drive
Klamath Falls, Oregon 97603
Phone: 883-5662

RECEIVED
MAR 26 1990
AIR QUALITY CONTROL

In Reply Refer to
File No.:

March 22, 1990

Dept. of Environmental Quality
Nick Nikkila, Administrator
Air Quality Division
811 SW Sixth Ave.
Portland, OR 97204-1334

Re: Comments on Draft PM10 State Implementation Plan

Dear Nick:

Just a couple of comments:

Page 50, final paragraph, line 6: Oregon Department of Transportation does not have any jurisdiction on Shasta Way.

Washburn Way is actually maintained by all three governmental jurisdictions as follows:

Washburn Way from North to South

Alameda Bypass (Hwy 50) to South 6th St. - City
South 6th St. to Laverne Ave. - State Highway
Laverne Ave. and South - County.

Sincerely,

DON THURSTON
District Maintenance Supervisor

DT:ml

Oregon

ENVIRONMENTAL
QUALITY
COMMISSION

REQUEST FOR EQC ACTION

Meeting Date: January 31, 1991
Agenda Item: D
Division: Air Quality
Section: Planning & Development

SUBJECT:

PM_{10} Air Pollution Control Strategies for the Eugene-Springfield, Medford-Ashland and Klamath Falls Areas.

PURPOSE:

Adopt the PM_{10} control strategies for these three areas as revisions to the State Implementation Plan (SIP).

ACTION REQUESTED:

___ Authorize Rulemaking Hearing
_X_ Adopt Rules

Proposed Rules	Attachment A
Rulemaking Statements	Attachment B
Fiscal and Economic Impact Statement	Attachment C
Public Notice	Attachment D

DESCRIPTION OF REQUESTED ACTION:

The Environmental Quality Commission (EQC, Commission) is requested to adopt the proposed PM_{10} control strategies as SIP revisions.

The proposed control strategies describe the State of Oregon's plan to meet federal Clean Air Act requirements to attain compliance with the annual and 24-hour PM_{10} standards in the Eugene-Springfield, Medford-Ashland, and Klamath Falls areas and maintain compliance with the PM_{10} standards in these areas through at least the year 2000.

811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696

The control strategy documents are proposed as revisions to the State Implementation Plan (OAR 340-20-047). This action will: (1) identify the control strategy elements necessary to attain and maintain compliance with PM_{10} air quality standards; and (2) make individual control strategy elements related to industry, woodstoves and fireplaces, open burning, road dust, and slash burning, which have already been adopted through either state rules or local ordinances (or a local PM_{10} plan, in the case of the Eugene-Springfield plan adopted by the Lane Regional Air Pollution Authority (LRAPA)) federally enforceable.

The proposed control strategies represent partial PM_{10} plans since they fulfill to varying degrees the requirements of the Clean Air Act. Additional work will be needed on all three strategies to meet new requirements of the recently amended Clean Air Act signed by the President on November 15, 1990 (e.g., reasonable further progress reporting, contingency plans with enforceable commitments, and other requirements which EPA will identify in the months to come). In addition, enforceable woodburning curtailment programs are needed in Klamath Falls and Central Point.

The Department of Environmental Quality (Department) is proposing these three control strategies for adoption as SIP revisions, even though they do not completely fulfill the Clean Air Act requirements, in order to: (1) demonstrate to the U.S. Environmental Protection Agency (EPA) that a good faith effort and reasonable progress have been made in developing PM_{10} control strategies; (2) provide firm guidance to the public, local governments and industries on what control strategy elements are necessary to attain and maintain compliance with PM_{10} standards; (3) guard against backsliding on industrial or residential elements of the strategies; and (4) improve air quality to healthful levels as soon as possible.

Mandatory programs to curtail woodburning emissions during pollution episodes are essential to each of the PM_{10} control strategies. .The legal frameworks for the mandatory curtailment programs are in various stages of development in the three areas: (1) In the Eugene-Springfield area, Lane County and the cities of Eugene and Springfield recently adopted the necessary ordinances; (2) In the Medford-Ashland area, Jackson County and the cities of Medford and Central Point adopted the necessary ordinances but Central Point voters recently repealed its ordinance; (3) In Klamath Falls, Klamath County and the city of Klamath Falls have not yet adopted ordinances.

Additional details on the proposals are outlined in the executive summaries of the PM_{10} control strategy documents (Attachment A).

AUTHORITY/NEED FOR ACTION:

___	Required by Statute: _____ Enactment Date: _____	Attachment ___
X	Statutory Authority: ORS 468.305	Attachment E
___	Pursuant to Rule: _____	Attachment ___
___	Pursuant to Federal Law/Rule: _____	Attachment ___
X	Time Constraints:	

Under the 1977 Clean Air Act, adopted PM_{10} control strategies were due to EPA as SIP revisions by May 1988, but none of the States were able to meet this deadline; PM_{10} air quality standards were to be met by September 1, 1991.

The Department and EPA Region 10 agreed to a November 1990 PM_{10} SIP submittal date which was incorporated into the FY91 State/EPA Agreement. The Grants Pass SIP revision was adopted on schedule but the other SIP revisions were delayed due to problems or delays with local ordinances.

The Sierra Club sued EPA for failure to require States nationally to submit PM_{10} plans according to the 1977 Clean Air Act schedule. This suit is expected to be set aside due to the 1990 Clean Air Act.

The Clean Air Act of 1990 requires that PM_{10} plans be submitted and PM_{10} standards be met as expeditiously as practicable, but provides for extensions of the deadlines for PM_{10} SIP submittals (to November 1991) and attainment of PM_{10} standards (to December 1994) if necessary.

EPA prefers that the PM_{10} plans be submitted in their present form as soon as possible so that the major PM_{10} responsibilities of the state, including state rules and the overall evaluation of the PM_{10} problems and control strategies, will be met. In addition, adoption of the plans in their current form will guard against backsliding by providing federal enforceability of the currently adopted control measures.

DEVELOPMENTAL BACKGROUND:

X	Advisory Committee Report/Recommendation	Attachment F
X	Hearing Officer's Report/Recommendations	Attachment G

The major issues raised during the public hearing process included the following:

1. Some of the Medford-Ashland testimony expressed concern that the proposed plan would not fully meet health standards and stressed that the plan should be more comprehensive, balanced and equitable with stricter requirements on industry, slash burning, agricultural burning, open burning, and woodstoves.

2. Some of the testimony in all three areas argued against mandatory curtailment of woodstoves during pollution episodes.

3. Some of the Klamath Falls and Medford-Ashland testimony claimed that the Department had overestimated the PM_{10} impact from residential woodburning emissions.

_X_ Response to Testimony/Comments Attachment _H_

The following statements correspond to the major public hearing issues and summarize the Department's responses:

1. The Department has drafted potential contingency measures for the proposed Medford-Ashland plan that would be pursued if a shortfall occurs in the control strategy. The Department and LRAPA intend to finalize contingency measures for each of the areas by November 1991 as part of the final SIP strategy.

2. Mandatory curtailment of woodstoves during pollution episodes is critical to the success of the control strategies in each of the three areas. Other state and local agencies in other western states with similar PM_{10} problems and EPA have come to the same conclusion.

3. Residential woodsmoke is clearly the dominant contributor to PM_{10} problems in Oregon based on emission inventories, dispersion modeling, chemical fingerprinting, seasonal patterns, and intensive ambient monitoring. EPA has reviewed the Oregon data and concurred with the Department's assessment. Other state and local agencies in other western states with similar PM_{10} problems have come to the same conclusion.

_X_ Prior EQC Agenda Items: Attachment _I_
___ Other Related Reports/Rules/Statutes: Attachment ___
___ Supplemental Background Information Attachment ___

REGULATED/AFFECTED COMMUNITY CONSTRAINTS/CONSIDERATIONS:

Implementation of the PM_{10} control strategy involves residents, industries, local governments, and state and federal agencies. The two groups most affected by the proposed PM_{10} control strategies are residents with woodstoves and fireplaces and owners/operators of wood products industries. The economic impacts from the state industrial rules and local woodburning ordinances which have already been adopted are outlined in Attachment C.

Wood products industry emissions in the Medford-Ashland area will be reduced by additional control requirements on veneer driers and large wood-fired boilers at plywood plants, more extensive source testing and continuous emission monitoring in order to maximize performance of pollution control equipment, and more restrictive emission offset requirements to insure a net air quality benefit from any new or expanded industries. Industrial PM_{10} rules to implement these requirements were adopted by the Commission in September 1989.

Woodstove and fireplace emissions must be substantially reduced in all three areas in order to achieve the PM_{10} health standards. This will be accomplished by implementation of an expanded public information program (all areas), areawide mandatory woodburning curtailment program (needed in all areas, but not all ordinances are in place yet), the Oregon woodstove certification program (statewide), financial assistance programs for replacement of existing woodstoves with cleaner burning units (Medford-Ashland and Klamath Falls, and also in other areas if the Comprehensive Emission Fee Bill is passed by Legislature) and weatherization of homes, a ban on installation of non-certified woodstoves (some areas), and continued improvements in firewood seasoning and woodstove operation (expected in all areas).

PROGRAM CONSIDERATIONS:

The new industrial emission control and monitoring requirements are requiring some additional plan reviews, tax credit reviews, inspections, monitoring report reviews, monitoring equipment audits, and other compliance assurance activities by Department staff. This additional work is being done by shifting existing resources, resulting in less attention to lower priority sources and an increased backlog in some permit or inspection activities.

The Department and LRAPA must rely on local governments to adopt mandatory woodburning curtailment programs since the Department and LRAPA do not have the statutory authority to adopt such programs. The Department will continue to work with local governments and the Legislature to develop enforceable mandatory programs where still needed by the November 1991 deadline (for final plan submittals) of the new Clean Air Act.

The daily decision on woodburning curtailment programs is based on air quality and meteorological information from the Department's and LRAPA's existing air monitoring networks and from the National Weather Service. The daily woodburning decision (red, yellow, green call) in the Eugene-Springfield area is made by LRAPA, in Medford-Ashland area by the Jackson County Health and Human Services Department, and in Klamath Falls by the Klamath County Health Department.

Under recently adopted local ordinances, the compliance assurance surveys and enforcement activities for the woodburning curtailment programs and opacity limits will be conducted by LRAPA in the Eugene-Springfield area, and by Jackson County and the cities of Medford and Ashland in the Medford-Ashland area. Central Point voters repealed the city's mandatory curtailment ordinance on November 1990, and Klamath County has not yet adopted a mandatory curtailment ordinance. The Department is pursuing financial assistance through the Comprehensive Emission Fee Bill (legislative concept) for local governments to operate woodsmoke control programs.

ALTERNATIVES CONSIDERED BY THE DEPARTMENT:

The major alternatives are:

1. Proceed with adoption now of the three PM_{10} control strategies as revisions to the State Implementation Plan as partial fulfillment of Clean Air Act requirements, and complete the remaining Act requirements by November 1991;

2. Delay submittal of the PM_{10} control strategies, and request extensions from EPA on the plan submittal schedule and/or attainment date in order to complete development of enforceable woodburning curtailment programs and also the new requirements of the 1990 Clean Air Act; or

3. Not adopt a PM_{10} State Implementation Plan and allow EPA

to impose sanctions or develop and implement a Federal Implementation Plan for the PM_{10} problem area(s).

The following additions to the PM_{10} control strategies are required by November 1991:

Eugene-Springfield: Additional sections to meet new requirements of the 1990 Clean Air Act (e.g., reasonable further progress reporting, contingency plans with enforceable commitments, and other requirements which EPA will identify in the months to come).

Medford-Ashland: Same as Eugene-Springfield, plus additional control measure(s) to fix the shortfall caused by the repeal of the Central Point woodburning curtailment ordinance. The Department will also use data from an expanded monitoring program this winter to further reconcile differences between dispersion modeling and ambient monitoring. This will provide a mid-course reassessment of the adequacy of the control strategy prior to final plan adoption in November 1991.

Klamath Falls: Same as Eugene-Springfield, plus the adoption of an enforceable woodburning curtailment program.

The 1990 Clean Air Act requires attainment of PM_{10} standards to be demonstrated as expeditiously as practicable but not later than the end of 1994. Delaying adoption of the PM_{10} control strategies could result in delaying achievement of healthful air quality for the public.

DEPARTMENT RECOMMENDATION FOR ACTION, WITH RATIONALE:

The Department recommends that the Commission adopt the proposed PM_{10} control strategies as revisions to the State Implementation Plan (Alternative 1). The Department believes that the proposed strategies are balanced and reasonable combinations of emission reduction elements that will be adequate to attain and maintain the PM_{10} health and welfare standards in the three areas.

While the legal framework for mandatory curtailment programs is not completely in place, and some additional requirements of the 1990 Clean Air Act still need to be completed, the Department believes it is in the best interest of the public to adopt the PM_{10} control strategies now as partial fulfillment of Clean Air Act requirements for the following reasons:

1. It would demonstrate a good faith effort by the state to fulfill as many of its responsibilities as soon as possible;

2. It will help insure that the existing industrial rules and residential ordinances are implemented as adopted and guard against potential backsliding by providing federal backup enforcement authority; and

3. Most importantly, it will bring about healthful air quality as soon as possible by guarding against backsliding and providing a formal position of EPA and the state on the needed strategies to accomplish this goal.

CONSISTENCY WITH STRATEGIC PLAN, AGENCY POLICY, LEGISLATIVE POLICY:

The proposed PM_{10} control strategies are consistent with Goals 2, 3, 4, and 5 of the Strategic Plan.

ISSUES FOR COMMISSION TO RESOLVE:

Without the critical Central Point and Klamath Falls ordinances, should the remainder of the control strategies and adequacy demonstrations be adopted now to provide federal enforcement authority backup and help prevent backsliding on other local ordinances or state rules?

INTENDED FOLLOWUP ACTIONS:

1. Work with local governments in Klamath Falls and Central Point and the Legislature to develop the necessary legal framework for enforceable programs to curtail woodburning emissions during pollution episodes.

2. Support the Comprehensive Emission Fee bill in the 1991 Legislative Session which would provide financial incentives to reduce and prevent air pollution, particularly from residential woodheating, provide additional needed Department resources to implement industrial control programs, and provide financial support for local woodsmoke control programs.

3. Complete the additional PM_{10} SIP requirements of the 1990 Clean Air Act as soon as possible.

4. Reassess the adequacy of the overall Medford-Ashland PM_{10} control strategy based on the 1990-91 winter

results of the expanded monitoring network and revise the final SIP as necessary.

5. At least annually, track progress to meet the annual and daily PM_{10} health standards and initiate contingency plans if necessary.

Approved:

Section: _____

Division: _____

Director: _____

Report Prepared By: Merlyn Hough
Phone: 229-6446
Date Prepared: January 15, 1991

MLH:a
PLAN\AH11813
1/15/91

Attachment A

Following this page are:

1. Introduction of Eugene-Springfield PM_{10} Control Strategy;
2. Executive Summary of Medford-Ashland PM_{10} Control Strategy;
3. Executive Summary of Klamath Falls PM_{10} Control Strategy.

COMPLETE COPIES OF THE PM_{10} CONTROL STRATEGIES HAVE BEEN PROVIDED TO THE ENVIRONMENTAL QUALITY COMMISSION AND ARE AVAILABLE FOR REVIEW AT THE FOLLOWING LOCATIONS:

Copies of all of the PM_{10} control strategies:

DEQ Air Quality Division
811 S.W. Sixth Avenue
Portland, Oregon 97204

Copy of the Eugene-Springfield PM_{10} control strategy:

Lane Regional Air Pollution Authority
225 W. 5th, Suite 501
Springfield, Oregon 97477

Copy of the Klamath Falls PM_{10} control strategy:

Klamath County Air Quality
403 Pine Street
Klamath Falls, Oregon 97601

DEQ Central Region Office
2146 N.E. Fourth
Bend, Oregon 97701

Copy of the Medford-Ashland PM_{10} control strategy:

DEQ Southwest Region Office
201 W. Main Street, Suite 2-D
Medford, Oregon 97501

Proposed State Implementation Plan

for Particulate Matter

Eugene-Springfield, Oregon
Nonattainment Area

A Plan for Attaining and Maintaining the National Ambient Air Quality Standard for PM_{10}

State of Oregon
Department of Environmental Quality
Air Quality Division

January 1991

LANE REGIONAL AIR POLLUTION AUTHORITY

PM10 STATE IMPLEMENTATION PLAN

MARCH, 1990

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INTRODUCTION

I. INTRODUCTION

BACKGROUND

On July 1, 1987, the U.S. Environmental Protection Agency (EPA) adopted revisions to the National Ambient Air Quality Standards for Particulate Matter which become effective on July 31, 1987. This action included:

1. Replacing total suspended particulate (TSP) as the indicator for particulate matter with a new indicator that includes only those particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM10).
2. Replacing the 24-hour primary standard for TSP with a PM10 standard of 150 $\mu g/m^3$ with no more than one expected exceedance per year (generally based on three consecutive years of data).
3. Replacing the annual primary TSP standard with a PM10 standard of 50 $\mu g/m^3$ (expected annual arithmetic mean generally based on the previous three calendar years).
4. Replacing the secondary TSP standards with PM10 standards that are identical with the primary standards.

Section 110 of the Federal Clean Air Act requires every State to submit to EPA a State Implementation Plan (SIP) which provides for implementation, maintenance, and enforcement of a new standard within 9 months of promulgation. The SIP must provide for attaining the standard as expeditiously as practicable, but no later than 3 years after the SIP has been approved by the EPA. Under certain conditions, an extension of up to 2 years can granted by the EPA.

For developing PM10 SIP's, the EPA categorized areas of concern into three different groups. Group I areas were those for which there was at least a 95% certainty of noncompliance with the standard. Group II areas were those having a 20% to 95% probability of noncompliance. The remaining areas below 20% probability were classed as Group III. In general, the most stringent requirements were placed on the Group I areas.

Based upon the available ambient data, the Eugene-Springfield Urban Growth Area (UGA) was classified by EPA as a PM10 Group I Area. The UGA was chosen as the area for study for a number of reasons: it is already defined as an AQMA for SIP purposes; most, if not all, of the sub-areas of potential non-attainment appear to be within the UGA. Three general purpose local governments have jurisdiction within the UGA; they include the cities of Eugene and Springfield, and Lane County.

The Lane Regional Air Pollution Authority (LRAPA) has the responsibility locally for developing and implementing plans for insuring that the air quality of Lane County complies with all relevant ambient air quality standards. Work on developing the PM10 SIP began in August, 1987. The LRAPA Citizens Advisory Committee was asked by the LRAPA Board of Directors to develop recommendations on how the Eugene-Springfield area should achieve compliance with the new PM10 standards. After a lengthy period of evaluating the problem, the committee completed its work in October, 1989, providing recommendations to the LRAPA Board of Directors. After a public hearing (held on January 30, 1990) the Board acted to adopt the SIP and forwarded it to the State of Oregon Environmental Quality Commission (EQC) for their action. Upon EQC approval the document will be sent to EPA Region 10 for approval.

AMBIENT PM10 DATA

Monitoring for PM10 in Lane County began in March, 1984, with 2 sites in Eugene sampling on an every sixth day schedule. A third daily sampling site was located at Key Bank in West Eugene in November, 1985. The Key Bank Site was identified by the dispersion model used in the 1978 TSP SIP as having the potential for the highest TSP levels. Two additional sites sampling on a sixth day schedule have subsequently been located within the Eugene-Springfield Urban Growth Area (see Figure 1). All sites were equipped with Sierra Anderson Model 1200 reference method samplers. The data is summarized in Table 1 and shows that exceedances of the 24-hour PM10 Standard were measured on 14 dates from the start of sampling through December, 1988. No violations of the annual arithmetic mean standard have been recorded. The highest annual average over the past three years was 39 $\mu g/m^3$ at the Key Bank Site, well below the annual standard of 50 $\mu g/m^3$.

All of the 24-hour PM10 standard exceedances have occurred during the winter months. Twelve of the 14 exceedance dates were in December of 1985. This was a period of extensive poor ventilation with no precipitation, cold temperatures (average daily temperatures near 0 degrees centigrade) and light winds (average daily wind speed of 1 to 2 meters per second). A summary of the historical Air Stagnation Advisories issued for Eugene-Springfield by the National Weather Service (NWS) is presented in Table 2. This shows that although the number of stagnation days was large that winter, it was not unusual. What was unusual for December, 1985 was the cold. There were 983 degree days (65 degree base) recorded that month at the NWS site at the Eugene Airport. This is higher than

FIGURE 1

URBAN GROWTH AREA WITH HISTORICAL MONITORING SITES

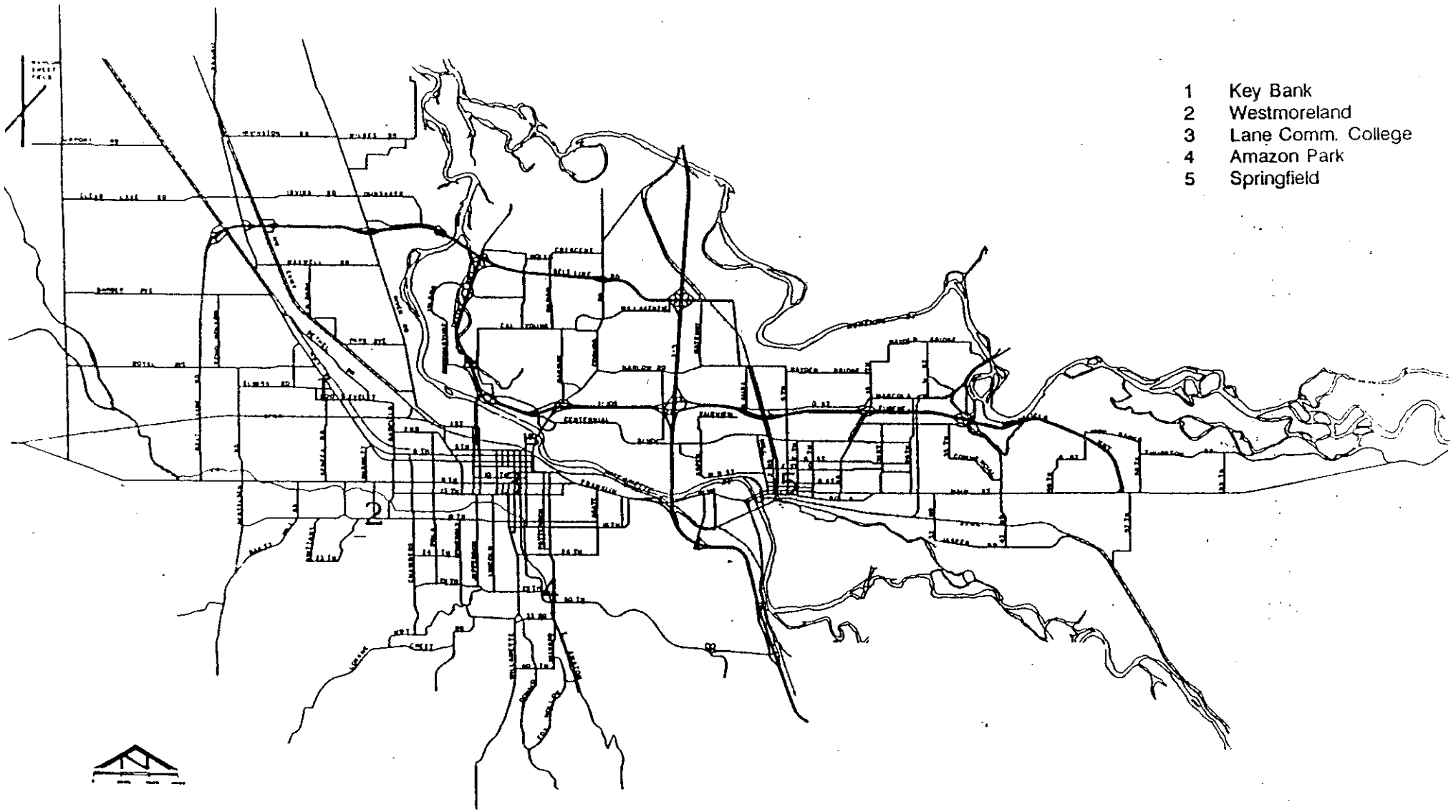


TABLE 1

MAXIMUM AMBIENT PM10 LEVELS

Eugene-Springfield Urban Growth Area

SITE IDENTIFICATION	1985			1986			1987			1988		
	A	B	C	A	B	C	A	B	C	A	B	C
LCC	37	197	3	31	85	0	37	129	0	29	72	0
Key Bank	--	267	12	39	151	0	43	175	2	37	129	0
Amazon Park	34	189	2	27	118	0	32	122	0	26	95	0
Springfield	--	80	0	--	57	0	35	104	0	34	75	0
Westmoreland	--	---	--	--	---	-	--	---	-	30	76	0

Key:
- A Annual Arithmetic Mean
- B Highest 24-Hour Concentration
- C Number of Days Exceeding 154 $\mu g/m^3$ (standard exceedance)
- -- Insufficient Data or Site Not in Operation

TABLE 2

NATIONAL WEATHER SERVICE AIR STAGNATION ADVISORIES

EUGENE-SPRINGFIELD

NOVEMBER THROUGH FEBRUARY

WINTER SEASON	NUMBER OF ASA DAYS
1979 - 1980	16
1980 - 1981	19
1981 - 1982	10
1982 - 1983	11
1983 - 1984	0
1984 - 1985	19
1985 - 1986	15
1986 - 1987	8
1987 - 1988	0
1988 - 1989	6

any December total over the past 30 years, which has a 30 year mean of 735 degree days for December (Table 3 depicts the past 19 years).

If PM10 monitoring data from the past three calendar years (1986-1988) is reviewed using EPA adopted Appendix K rounding criteria (round to the nearest 10), only 2 exceedances of the standard are recorded. This would imply compliance with the 24-hour standard. However, two critical questions arise:

1. Are the existing sampling sites representative of the highest locations in the area?
2. The fact that only two exceedances have occurred since a voluntary home wood heating curtailment program was instituted in November, 1986, could be coincidental or could be the result of actual reduced home wood heating emissions. What assurance is there that exceedances will not occur in future years?

These questions are addressed as part of the analysis in this SIP.

AREA OF APPLICABILITY

The area of applicability for this SIP is the Eugene-Springfield Urban Growth Area (UGA). This is an area of approximately 200 km^2 located at the upper (southern) end of the Willamette Valley in Western Oregon (see Figure 2). The area is at the confluence of two major rivers (Willamette and Mckenzie) and is bounded on the East, South and West by elevated terrain, which frequently restricts atmospheric ventilation. The current population of the area is estimated to be 190,000 with a projected increase to 290,000 by 2010 (Lane Council of Governments).

TABLE 3

DECEMBER METEOROLOGY

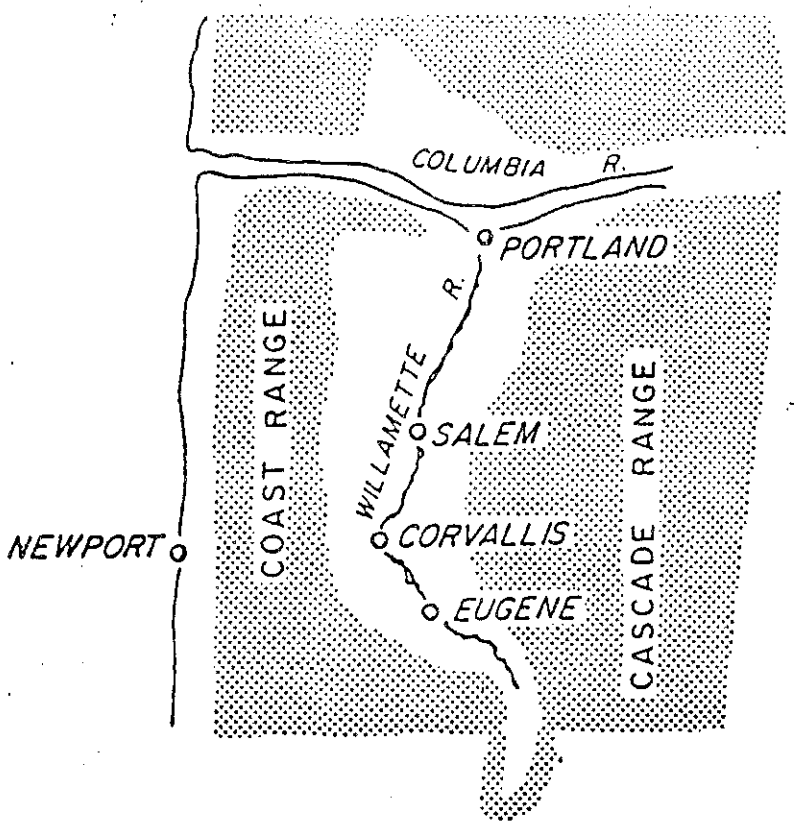
EUGENE

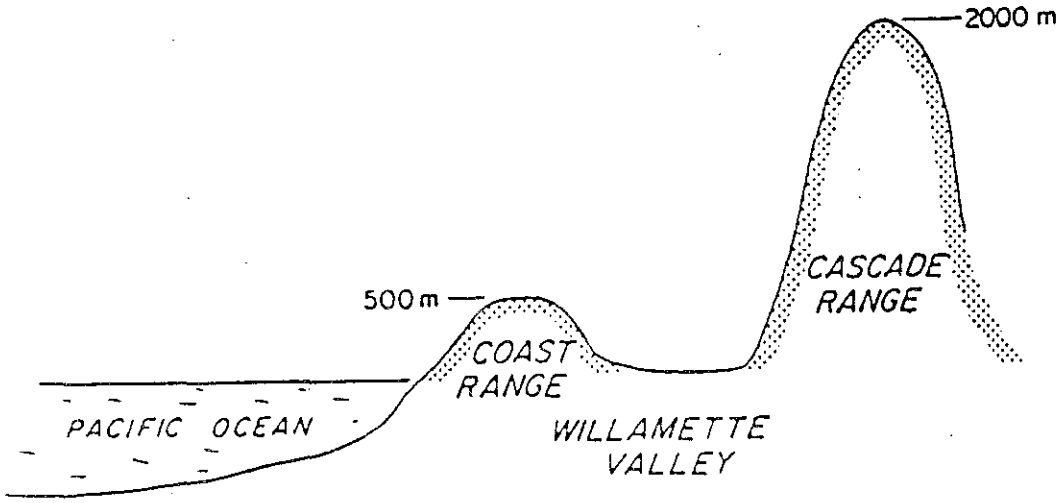
NATIONAL WEATHER SERVICE - AIRPORT

YEAR	DEGREE DAYS	TOTAL PRECIPITATION (INCHES)	DAYS WITH MEASURABLE PRECIPITATION
1970	769	11.57	20
1971	811	9.46	19
1972	945	10.78	21
1973	666	11.82	25
1974	589	9.26	23
1975	676	7.12	23
1976	840	1.24	7
1977	675	14.60	22
1978	919	2.86	15
1979	671	7.38	15
1980	697	14.73	15
1981	710	17.63	22
1982	791	13.53	20
1983	879	7.47	21
1984	851	4.56	16
1985	983	3.51	8
1986	773	3.30	12
1987	774	15.40	21
1988	749	5.18	11
MEAN	777	9.02	18

FIGURE 2

WILLAMETTE VALLEY





The Urban Growth Boundary, which circumscribes the Urban Growth Area, includes the cities of Eugene and Springfield, the major unincorporated areas of River Road and Santa Clara, and those adjacent areas zoned by Lane County for future development. This is the boundary used by local governmental planning organizations to project future development in the area. A legal description can be found in the Metropolitan Plan.

As shown in the Problem Analysis chapter of this SIP, the major sources impacting the area are emissions from home wood heating and industrial sources (primarily wood products). The wood heating emissions are ubiquitous throughout the area while the industrial emissions have localized concentrations in west Eugene and east Springfield.

As shown earlier (see Table 1), exceedances of the 24-hour standard have been recorded at several of the current monitoring sites. In addition, the results of the dispersion modelling analysis and the Saturation Monitoring Study (see Problem Analysis Chapter) indicate that elevated levels of PM10 can be expected to occur throughout the Urban Growth Area, with standard exceedances probable in areas currently not monitored.

All of these factors combine to indicate that the Urban Growth Area includes all existing and potential locations of noncompliance with the standard, and is therefore the logical choice as the area of applicability.

Proposed State Implementation Plan

for Particulate Matter

Medford-Ashland, Oregon
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A Plan for Attaining and Maintaining the National Ambient Air Quality Standard for PM_{10}

State of Oregon
Department of Environmental Quality
Air Quality Division

January 1991

Preface

Significant changes have occurred since the initial air quality analysis of this PM_{10} control strategy and the proposal as a revision to the State Implementation Plan:

1. The Central Point ordinance for curtailment of woodburning during air pollution episodes was repealed by voters in November 1990; and

2. The 1990 Clean Air Act was passed by Congress and signed by the President on November 15, 1990.

As a result, several additions to this plan are needed to fully meet the 1990 Clean Air Act requirements. The shortfall caused by the repeal of the Central Point ordinance must be corrected. Sections must be added or expanded to identify an enforceable contingency plan, reasonable further progress reporting, and possibly other provisions of the 1990 Clean Air Act to be clarified by the U.S. Environmental Protection Agency in the months ahead. These additions are expected by November 15, 1991, as required by the 1990 Clean Air Act.

The 1990 Clean Air Act also requires that PM_{10} air quality standards be attained by December 31, 1994.

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Appendices

* Available upon request.
** Included with SIP revision.

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Executive Summary

The U.S. Environmental Protection Agency (EPA) adopted new particulate National Ambient Air Quality Standards (NAAQS) for PM_{10} on July 1, 1987. PM_{10} particulate is less than 10 micrometers in aerodynamic diameter or about one-tenth of the diameter of a human hair. The Clean Air Act requires that States develop and adopt State Implementation Plan (SIP) revisions to assure that areas which exceed the PM_{10} standards are brought into attainment within the time frames prescribed by the Clean Air Act (September 1991). This document describes the State of Oregon plan to attain the PM_{10} standards in the Medford-Ashland Air Quality Maintenance Area (AQMA).

High exposure to particulate matter is of concern because of human health effects such as changes in lung functions and increased respiratory symptoms, aggravation of existing respiratory and cardiovascular disease, alternation in the body's defense system against foreign materials, damage to lung tissue, increased risk of cancer and, in extreme cases, premature death. Most sensitive to the effects of particulate matter are people with chronic obstructive pulmonary cardiovascular disease and those with influenza, asthmatics, the elderly, children and mouth-breathers.

Air quality measurements taken in Medford have determined that the 24-hour PM_{10} health standard was exceeded an average of about 20 days per year during the winter months in 1984-86. In addition,the annual average concentration of PM_{10} exceeded the annual PM_{10} health standard.

The PM_{10} standards adopted by the EPA, and subsequently adopted by the Oregon Environmental Quality Commission, were established to protect public health and welfare. The 24-hour PM_{10} standard is 150 micrograms per cubic meter of air ($\mu g/m^3$). The maximum 24-hour concentration of PM_{10} measured in Medford was over 300 $\mu g/m^3$. The 24-hour standard cannot be exceeded more than an average of one day per year. The annual average PM_{10} concentration in Medford is about 58 to 68 $\mu g/m^3$ in the peak areas compared to the average annual PM_{10} standard of 50 $\mu g/m^3$.

An inventory of PM_{10} emissions developed for the Medford-Ashland Air Quality Maintenance Area (AQMA) indicates that the major sources of particulate emissions are residential wood combustion, industry, and soil and road dust. Annual average and worst day PM_{10} emissions during the baseline period (1985-86) are compared in the following table.

Source Category	Annual PM_{10} Emissions (%)	Worst Day PM_{10} Emissions (%)
Residential woodsmoke	38	60
Wood products industry	27	18
Soil and road dust	22	18
Other	13	4
Total	100	100

The air pollution impacts from these PM_{10} emissions have been measured, calculated and verified at various locations within the AQMA through the combination of the air monitoring network (PM_{10} measurement stations), dispersion modeling (mathematical modeling of diffusion in the atmosphere), and receptor modeling (chemical fingerprinting) techniques.

PM_{10} design values are those 24-hour worst case and annual average concentrations from which reductions must be made to achieve compliance with the standards. The 24-hour design value represents the fourth highest daily concentration measured in a 3-year period; the annual design value represents the 3-year average concentration.

The design values were determined with the following considerations. The eight highest 24-hour PM_{10} concentrations during 1984-86 occurred during December 1985 so the December 1985 meteorology was used for the worst-case-day dispersion modeling. The 1984-86 period had the highest 3-year PM_{10} average concentration since monitoring began so this period was used for the annual-average analysis; the most precise wind data was available during July 1985 to June 1986 and this 12-month period had average concentrations similar to the 1984-86 average so the annual-average dispersion modeling was done with the July 1985 to June 1986 meteorology. The highest PM_{10} concentrations were measured in the area between the Jackson County Courthouse at Oakdale/Main and McAndrews Road (monitors located near Oakdale/Main, Haven/Holly, Oak/Taft, and Welch/Jackson).

Analysis of the dispersion modeling results for 1985-86 and all of the available PM_{10} air quality data from 1984-1986 indicates a 24-hour design value of 266 to 309 $\mu g/m^3$ (Oakdale/Main and Oak/Taft, respectively) and an annual average design value of 58 to 68 $\mu g/m^3$ (Oakdale/Main and Oak/Taft, respectively) depending on the location within the peak problem area. In addition to the peak impact site (Oak/Taft), the impact analysis is also summarized for the Courthouse site (Oakdale/Main) since most of the historical particulate data (20+ years) and chemical fingerprinting data (10+ years) has been collected at the Courthouse. These specific design values are based on the dispersion modeling results but they agree very closely with the actual ambient monitoring data at these sites.

Control strategies included in this plan have been designed to reduce 24-hour concentrations of PM_{10} by at least 159 $\mu g/m^3$ (309-150 $\mu g/m^3$) and the annual average by at least 18 $\mu g/m^3$ (68-50 $\mu g/m^3$) by 1992.

Control measures adopted in this plan must be legally enforceable, demonstrated to be adequate to achieve the needed air quality improvements, and designed to attain the standards within the time frames provided by the Clean Air Act.

The principal means of achieving these air quality improvements within the 3-year period allowed by the Clean Air Act is through PM_{10} emission reductions from woodstoves and fireplaces (RWC), the wood products industries, open burning of debris, and road dust. Additional reductions are expected from statewide efforts to reduce slash burning smoke.

Residential Wood Combustion Strategies

The residential woodsmoke reduction strategies are closely patterned after the December 1987 recommendations of the Jackson County Wood burning Task Force. Woodstove and fireplace emissions will be reduced by an expanded public information program, an areawide mandatory wood burning curtailment program (75% compliance rate needed to meet standards at the Courthouse, but 85% compliance rate needed to meet standards at Oak/Taft), the Oregon woodstove certification program, financial assistance programs for replacement of existing woodstoves with cleaner burning units and weatherization of homes, a ban on installation of non-certified woodstoves, and continued improvements in firewood seasoning and woodstove operation.

Wood Products Industry Strategies

Wood products industry emissions will be reduced by additional control requirements on veneer driers and large wood-fired boilers at plywood plants, more extensive source testing and continuous emission monitoring in order to maximize performance of pollution control equipment, and more restrictive emission offset requirements to insure a net air quality benefit from any new or expanded industries.

Open Burning Strategies

Open burning emissions will be reduced during the critical November to February period by local ordinances banning open burning during these months. Annual open burning emissions will be reduced by a year around ban within Medford and more restrictive ventilation criteria and shorter burn seasons in unincorporated areas of Jackson County and in Central Point.

Road Dust Strategies

Road dust emissions will be reduced by continuing programs to pave unpaved roads, to curb and gutter shoulders on paved roads, and to control mud and dirt trackout from industrial, construction and agricultural operations.

Other Strategies

Slash burning emissions will be reduced in western Oregon by about 20% between 1984 and the year 2000 as part of the Oregon Visibility Protection Plan. These emission reductions will further insure that background PM_{10} concentrations will not increase in future years.

In addition, forestry slash burning impacts on the nonattainment area will be minimized through voluntary agreements among forest land managers. This program will help assure that forestry open burning does not adversely affect Medford-Ashland AQMA air quality on winter wood heating curtailment days.

Implementation of all of the elements of the overall PM_{10} control strategy will require the efforts of residents and industries within the Medford-Ashland AQMA, Jackson County, the cities within the AQMA, the Oregon Department of Environmental Quality, the State Forestry Department, U.S. Forest Service and Bureau of Land Management.

Strategy Emission Reduction - 24 Hour Worst Case Day

Attainment of the 24-hour PM_{10} standards by 1992 will require up to a 51% reduction in ambient PM_{10} concentrations depending on the location within the AQMA. This reduction will be accomplished by the previously described strategies. The PM_{10} impacts at the Jackson County Courthouse from the major source categories are compared in the following table for the 1985-86 base period and the 1992 attainment year. The PM_{10} impacts are in micrograms per cubic meter ($\mu g/m^3$). (NC indicates No Change.)

Site: Jackson County Courthouse

Source Category	24-Hour PM_{10} Impact ($\mu g/m^3$) Worst Day 1985-86	Worst Day 1992	Change
Residential woodsmoke	195.0	26.4	-86%
Wood products industry	29.2	20.3	-30%
Soil and road dust	27.6	27.6	NC
Other	10.6	11.6	+9%
Local sources	262.4	85.9	-67%
Background	44.0	44.0	NC
Total	306.4	129.9	-58%

Source Category	Design Day 1985-86	Design Day 1992	Change
Residential woodsmoke	156.2	23.1	-85%
Wood products industry	22.6	14.6	-35%
Soil and road dust	32.1	32.1	NC
Other	11.6	12.6	+9%
Local sources	222.5	82.4	-63%
Background	44.0	44.0	NC
Total	266.5	126.4	-53%

The Courthouse monitoring site is of special interest since it is the site of the longest historical particulate monitoring in the AQMA and it is located in the general area of highest particulate levels. However, the Oak and Taft monitoring site in Medford has recorded and projects slightly higher PM_{10} levels which are summarized in the following table.

Site: Medford Oak and Taft

Source Category	24-Hour PM_{10} Impact ($\mu g/m^3$) Worst Day 1985-86	Worst Day 1992	Change
Residential woodsmoke	182.2	24.5	-87%
Wood products industry	77.8	55.1	-26%
Soil and road dust	28.7	28.7	NC
Other	9.5	10.3	+9%
Local sources	298.2	118.6	-60%
Background	44.0	44.0	NC
Total	342.2	162.6	-52%

Source Category	24-Hour PM_{10} Impact ($\mu g/m^3$) Design Day 1985-86	Design Day 1992	Change
Residential woodsmoke	167.3	22.3	-87%
Wood products industry	58.8	42.0	-29%
Soil and road dust	29.8	29.8	NC
Other	9.5	10.3	+9%
Local sources	265.3	104.4	-61%
Background	44.0	44.0	NC
Total	309.3	148.4	-52%

These 24-hour PM_{10} impacts represent the worst day and design day during the 1985-86 baseline period. The design value is based on the fourth highest day during a 3-year period. For the Oak/Taft site the modeled fourth highest day after implementation of the control strategy in 1992 is 148 $\mu g/m^3$ which would be in compliance with the 24-hour health standard of 150 $\mu g/m^3$.

Other areas of the AQMA had been measured in violation of the 24-hour or annual standards, notably the White City and Central Point areas, but the dispersion modeling also indicated compliance in those areas, with 1992 concentrations lower than at Oak/Taft.

Strategy Emission Reduction - Annual Average Case

Attainment of the annual average PM_{10} standards by 1992 will require up to a 26% reduction in ambient PM_{10} concentrations depending on the location within the AQMA. This reduction will be accomplished by the previously described strategies. The PM_{10} impacts at the Jackson County Courthouse from the major source categories are compared in the following table for the 1985-86 base period and the 1992 attainment year. Again, the PM_{10} impacts are in micrograms per cubic meter ($\mu g/m^3$).

Site: Jackson County Courthouse

Source Category	Annual PM_{10} Impact ($\mu g/m^3$) 1985-86	1992	Change
Residential woodsmoke	28.8	16.6	-42%
Wood products industry	7.2	4.3	-40%
Soil and road dust	6.9	6.9	NC
Other	2.7	3.0	+9%
Local sources	45.6	30.8	-32%
Background	13.1	13.1	NC
Total	58.7	43.9	-25%

The Oak and Taft monitoring site in Medford recorded slightly higher annual PM_{10} levels than the Courthouse. The Oak and Taft PM_{10} levels are summarized in the following table.

Site: Medford Oak and Taft

Source Category	Annual PM_{10} Impact ($\mu g/m^3$) 1985-86	1992	Change
Residential woodsmoke	28.2	16.2	-43%
Wood products industry	17.9	11.3	-37%
Soil and road dust	6.6	6.6	NC
Other	2.3	2.5	+9%
Local sources	55.0	36.6	-33%
Background	13.1	13.1	NC
Total	68.1	49.7	-27%

The annual average PM_{10} levels at both the Courthouse and Oak and Taft sites are projected to be in compliance with the annual PM_{10} health standard of 50 $\mu g/m^3$ after implementation of the control strategy in 1992.

The dispersion modeling projected potential PM_{10} problems in two other one-kilometer grids north of the Oak & Taft grid but the 1985 Medford particulate gradient study and the 1989 mobile nephelometer surveys indicated that PM_{10} levels at the DeHague & Howard and McAndrews & Court sites were not as high as at the Oak & Taft site. The Department will conduct additional monitoring in the two potential problem grids by 1991 to determine the actual PM_{10} concentrations as the control strategy is implemented. If the ambient data confirms a nonattainment problem that the control strategy will not bring into attainment by 1992, then the control strategy will be modified as necessary to assure that attainment will be reached.

Air Quality Standard Maintenance

Subsequent to attainment and by the year 2000, a net decrease in emissions is projected to occur as a result of continuation of the attainment strategies, offsetting increases in fugitive dust and transportation emissions. Both the 24-hour and annual standards are projected to be maintained to the year 2000 at which time worst case day PM_{10} and the annual average PM_{10} are projected to be 146 and 48 $\mu g/m^3$, respectively, at Oak and Taft.

Enforceability

The Clean Air Act requires SIP control strategies to be enforceable. The necessary state rules and local ordinances have

been adopted and are included in the appendix for this plan. The 1984 Oregon woodstove certification program and the 1989 industrial rules have been submitted to EPA previously.

Several existing strategy elements to reduce residential woodsmoke will be continued or expanded including: comprehensive public information programs on proper woodstove operation, firewood seasoning, and home weatherization; financial assistance programs to replace existing woodstoves with cleaner burning units and provide home weatherization (CLEAR, SOLVE and ACCESS programs); voluntary firewood moisture certification programs; daily woodburning advisory program (for areas outside the critical PM_{10} control area); and the woodstove certification program.

The major new residential wood combustion strategies in this plan are the mandatory wood burning curtailment programs and the bans on installation of non-certified woodstoves. The mandatory curtailment programs adopted by the cities of Medford and Central Point and Jackson County and the ban on installation of non-certified stoves adopted by the City of Ashland and Jackson County are included in the appendix. Also included are local ordinances on opacity limits, what can be burned in woodstoves, and sale of seasoned firewood.

The new industrial strategies are more stringent control requirements on veneer dryers and large wood-fired boilers, more extensive source testing and continuous emission monitoring, and more restrictive emission offset requirements for new or expanded industries. These rules were adopted by the Environmental Quality Commission on September 8, 1989, and are included in the appendix. The new industrial rules are in addition to the industrial rules for the Medford-Ashland area adopted in 1978 and 1983.

The current local ordinances that regulate open burning and trackout are included in the appendix. Also included is a progress report on paving of unpaved roads and curbing of shoulders on paved roads within the city of Medford.

Proposed State Implementation Plan

for Particulate Matter

Klamath Falls, Oregon
Nonattainment Area

A Plan for Attaining and Maintaining the National Ambient Air Quality Standard for PM_{10}

State of Oregon
Department of Environmental Quality
Air Quality Division

January 1991

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Executive Summary

The US Environmental Protection Agency (EPA) adopted a new particulate National Ambient Air Quality Standard (NAAQS) for PM_{10} on July 1, 1987. PM_{10} particulate is less than 10 micrometers in aerodynamic diameter or about one-tenth of the diameter of a human hair. The NAAQS adopted by the US Environmental Protection Agency were established to protect public health and welfare. The Clean Air Act requires that states develop and adopt State Implementation Plan (SIP) revisions to assure that areas which exceed the PM_{10} NAAQS are brought into attainment within the time frames prescribed by the Clean Air Act (September, 1991). This document describes the State of Oregon's plan to attain the PM_{10} standard in Klamath Falls.

High exposure to particulate matter is of concern because of human health effects such as changes in lung functions and increased respiratory symptoms, aggravation of existing respiratory and cardiovascular disease, alteration in the body's defense system against foreign materials, damage to lung tissue, increased risk of cancer and, in extreme cases, premature death. Most sensitive to the effects of particulate matter are people with chronic obstructive pulmonary cardiovascular disease and those with influenza, asthmatics, the elderly, children and mouth-breathers.

Air quality measurements taken in Klamath Falls have indicated that the 24-hour PM_{10} health NAAQS was exceeded on average 47 days per year during the winter months during the period of mid-1986 to mid-1989. The annual average concentration of PM_{10} during the years 1986-1989 of 75 $\mu g/m^3$ also exceeds the annual average PM_{10} NAAQS of 50 $\mu g/m^3$.

The 24-hour PM_{10} NAAQS is 150 micrograms per cubic meter of air ($\mu g/m^3$), not to be exceeded more than three times averaged over three calendar years. Winter 24-hour concentrations of PM_{10} in Klamath Falls are among the highest recorded anywhere in the nation with maximum concentrations reaching as high as 792 $\mu g/m^3$ on January 25, 1988.

An inventory of PM_{10} emissions developed for the Klamath Falls Urban Growth Boundary indicates that the major sources of particulate emissions during 1986 winter periods of worst-case 24-hour PM_{10} concentrations are residential wood combustion (81%), industrial emissions (7 %) and soil dust (9 %). On an annual basis, these sources contribute 61 %, 10 % and 12 %, respectively. Emission inventory information representative of worst-case 24-hour conditions has been verified through receptor modeling techniques which actually measure source contributions to ambient air quality on the basis of their chemical "fingerprints".

Extensive air monitoring surveys have been completed which clearly demonstrate that the south suburban area of Klamath Falls, which comprises about 54 % of the population within the UGB, has the highest winter PM_{10} concentrations within the airshed. Based on these surveys, ambient air monitoring conducted at Peterson School have been shown to generally represent the highest PM_{10} levels within the Urban Growth Boundary. Development of a SIP which assures attainment and maintenance of the NAAQS at the Peterson School site should therefore be adequate to demonstrate attainment of the NAAQS anywhere within the airshed.

PM_{10} design values are those representative 24-hour worst case and annual average concentrations from which reductions must be made to achieve the NAAQS. Analysis of all of the available PM_{10} air quality data over the period of mid-1986 to mid-1989 (the largest available database) indicates 1986 24-hour and annual design values of 550 $\mu g/m^3$ and 75 $\mu g/m^3$, respectively. The design values adjusted for expected or potential emission changes during the 1986-1992 period are 592 $\mu g/m^3$ and 73 $\mu g/m^3$, respectively. Control strategies included in this plan have been designed to reduce projected 24-hour concentrations of PM_{10} by 442 $\mu g/m^3$ (592 - 150 $\mu g/m^3$) and the annual average by 23 $\mu g/m^3$ (73 - 50 $\mu g/m^3$). To achieve these 24 hour and annual average air quality improvements will require a 76 % reduction in 24 hour worst case day emissions and a 40 % reduction in annual emissions within the Urban Growth Boundary.

The control strategies needed to assure attainment of the PM_{10} National Ambient Air Quality Standards focus on control of residential wood combustion and road sanding emission. Other strategies includes stringent management of future growth in industrial emissions and restrictions on residential and forestry open burning.

Residential Wood Combustion Strategies

The principal means of achieving the needed reductions is through an effective wood burning curtailment and emission reduction programs. At least a 90 % reduction in wood smoke emissions is needed on poor ventilation days to attain the 24 hour NAAQS. This reduction will have to come from most of Klamath Falls' estimated 10,000 wood burning households which will have to forego use of their woodstoves during air stagnation episodes. Additional reductions throughout the heating season from the phase in of certified woodstoves will help achieve attainment of the annual standard. A strong public education program is an essential element of the strategy.

The strategy is implemented through the Klamath County Air Quality Compliance Development Plan and the Department's woodstove certification program. Another strategy element that will help assure maintenance of the NAAQS includes a county ordinance requiring certification that commercially sold firewood is

properly seasoned. Contingency strategies include financial assistance to low income households to upgrade their heating systems, enforcement of a wood smoke opacity limit and home weatherization programs to reduce wood heating requirements of poorly insulated homes.

Winter Road Sanding Strategies

A 60 % reduction in winter road sanding emissions through the use of liquid road deicing techniques in lieu of rock aggregate, application of less road sanding material and rapid cleanup of used road sanding aggregate will achieve fugitive dust emissions reductions needed to assure attainment of the annual standard. The road sanding strategy is implemented through a Memorandum of Understanding with the Oregon Department of Transportation Highway Division.

Other Strategies

Additional enforceable strategies include new rules designed to tightly manage industrial emission growth through reduction in the significant emission rate increase that triggers emission offset requirements. The significant emission rate was reduced from 15 to 5 tons per year. The rule was adopted to assure that industrial emission growth beyond the current Plant Site Emission Limits does not jeopardize emission reductions gained through other strategy elements.

Prohibitions on issuance of fire permits for residential, land clearing and agricultural open burning during winter woodstove curtailment periods are implemented through the State Fire Marshal's office and local Board of Fire Chiefs. Slash burning emission reductions included in the Oregon Visibility Protection Plan for Western Oregon of 50 % relative to 1978-79 emissions will be achieved by the year 2000, providing further assurance that background PM_{10} concentrations will not increase.

In addition, forestry slash burning impacts on the nonattainment area will be minimized through voluntary agreements among forest land managers. This program will help assure that forestry open burning does not adversely affect Klamath Falls air quality on winter wood heating curtailment days.

Strategy Emission Reduction - 24 Hour Worst Case Day

Attainment of the 24 hour NAAQS in 1992 will require a 76 % reduction in worst case day emissions equalling a reduction of 18,486 pounds per day. The needed reduction is achieved through the strategy elements listed below.

Summary of 24 Hour Emission Reductions
To Be Achieved by 1992

Strategy Element	Credit	Emission Reduction
New Road Deicing Practices	60 %	1,308 Pounds/Day
Wood Burning Strategies:		
- Wood Burning Curtailment	90%	17,171 Pounds/Day
- Certification of Woodstoves	20%	336 Pounds/Day
- Fuel Wood Certification	2%	27 Pounds/Day
Woodstove Strategies, Total		17,736 Pounds/Day

Total reduction from all strategies....19,044 Pounds/Day
Required emission reduction .....18,486 Pounds/Day

(Note: Because emission reductions are calculated on a declining balance basis, the product of percentage credits and total reduction (17,736 pounds/day) will not yield the individual element emission reductions shown. See Appendix 9)

No credits have been taken for the Klamath County public education programs.

Strategy Emission Reduction - Annual Average Case

Attainment of the annual average NAAQS in 1992 will require a 40 % reduction in annual emissions or a reduction of 756 tons per year. Although the entire needed emission reduction is achieved through the wood burning curtailment program, emission reductions obtained from the road deicing and other elements of the wood burning emission reduction programs are also included since they will occur as a result of implementing the 24 hour strategy. The needed reductions are achieved through the strategy elements listed below.

Summary of Annual Average Emission Reductions
To be Achieved by 1992

Strategy Element	Credit	Emission Reduction
New Road Deicing Practices	60 %	18 Tons/Year
Wood Burning Strategies:		
- Wood Burning Curtailment	74% *	756 Tons/Year
- Woodstove Certification	21%	48 Tons/Year
- Fuel Wood Certification	2%	4 Tons/Year
Woodstove Strategies, Total		808 Tons/Year

Total reduction from all strategies..... 826 Tons/Year *
Total required emission reduction..... 756 Tons/Year

* Note: On an annual basis, the wood burning curtailment program will result in a 18 % reduction in annual wood smoke emissions This, however, is not reflective of annual air quality benefits the program since the restricted ventilation during the curtailment periods compounds the benefits of the emission reductions. The effective or equivalent reduction is calculated based on a 90 % curtailment program operating on 47 days per year indicating a reduction of the annual average PM_{10} concentration from 75 to 50.2 $\mu g/m^3$. As a result, the wood burning curtailment program alone, implemented on 47 days per year, will provide sufficient benefits to assure that the annual NAAQS is achieved. Additional strategy elements are claimed as a result of reductions achieved through the 24 hour strategy. See Section 4.12.3.3.

Air Quality Standard Maintenance

During the eight year period following attainment of the NAAQS, a net decrease in emissions is projected to occur as a result of attainment strategies and the replacement of older conventional stoves with certified cord wood and pellet stoves, offsetting increases in fugitive dust and transportation emissions. Both the 24 hour and annual NAAQS are projected to be maintained to the year 2000 at which time worst case day and the annual average PM_{10} air quality is projected to be 134 and 48 $\mu g/m^3$, respectively.

Enforceability

The Clean Air Act requires SIP control strategies to be enforceable. Based on EPA guidance, a woodstove curtailment program requiring more than a 30 % credit must be based on enforceable measures in order for the SIP to be approved by EPA. Klamath County has developed a voluntary curtailment program with an objective of achieving a 20 % compliance rate in the 1988-89 heating season, 46-52 % compliance in the 1989-90 heating season and a 85-92 % compliance goal in the 1990-91 season. Based on infrared curtailment survey results, the actual compliance rate on days surveyed during the 1989-90 season was 45 %. Compliance on any single curtailment day varies from zero to 65 %. None of the survey have documented curtailment compliance rates approaching that required to attain the 24 hour NAAQS. As a result, the 24 hour NAAQS was exceeded on 39 days during the 1989-90 heating season.

(Note: The following text will be revised to described the Klamath County mandatory curtailment ordinance following its adoption)

A mandatory, enforceable wood burning curtailment ordinance will need to be adopted by the Klamath County Board of Commissions prior to the Environmental Quality Commission's adoption of this SIP revision in November, 1990. This requirement is based on the following:

- Public participation in the Klamath Falls voluntary curtailment program has not met the objective of the Klamath County program nor the level of curtailment compliance needed to achieve the 24 hour NAAQS. No other community in the country been able to continually demonstrate the 90 % compliance rate needed with voluntary curtailment programs;

- Other communities, most recently the Medford area, have nearly achieved the required level of curtailment compliance through mandatory curtailment programs;

- At the level of curtailment needed in Klamath Falls, EPA requires a mandatory, enforceable curtailment program.

A county ordinances requiring the commercial sale of seasoned firewood should also be adopted to help assure maintenance of the NAAQS to the year 2000.

The road deicing program is implemented through commitments provided by the Oregon Department of Transportation; residential open burning restrictions on curtailment days is implemented through the State Fire Marshall Fire Protection Statutes (ORS 478.960 (2)) and through agreements among the local fire districts. The Department's open burning rules (OAR 340-23-042(4)) are enforced by the Department. Restrictions to forestry slash burning are implemented and enforced through the Oregon Smoke Management Program (OAR 629-43-043).

Implementation of the above control strategies will assure that attainment of the PM_{10} NAAQS is achieved by September 1, 1991 and maintained through the year 2000.

STATEMENT OF NEED FOR PROPOSED RULE AMENDMENTS

Pursuant to ORS 183.335(2), the following statement provides information on the proposed action to amend Oregon's Revised State Implementation Plan (SIP) for Particulate Matter for the Eugene/Springfield Air Quality Maintenance Area.

Legal Authority

ORS 183, 468.535 and the Federal Clean Air Act Amendments of 1977 (PL 95-95).

Need for Amendments

The federal government adopted a new standard for particulate matter which took effect July 31, 1987, replacing total suspended particulate as an indicator for particulate matter with a new indicator for particles with an aerodynamic diamter less than 10 micrometers (PM10). The federal Clean Air Act requires that areas which do not meet National Ambient Air Quality Standards develop and implement a control program to attain the standards. Eugene-Springfield has been designated by EPA as a Group I attainment area for PM10, which means there is a 95% probability that the area violates the PM10 National Ambient Air Quality Standard. LRAPA has responsibility for developing and implementing the required plan to attain and maintain compliance with the standards. These proposed amendments to the SIP provide the necessary control strategy description and attainment demonstration. They provide some rules rquired by EPA. They do not provide the ordinances enacting the enforcement elements.

Principal Documents Relied Upon

1. Draft State Implementation Plan Revision, Eugene/Springfield AQMA
2. Recommendations of LRAPA Advisory Committee, October 18, 1989
3. LRAPA Staff Report to LRAPA Board of Directors, December 12, 1989
4. Clean Air Act Amendments of 1977 (PL 95-95)
5. ORS 468, et. seq.

FISCAL AND ECONOMIC IMPACT STATEMENT

Impact on State Agencies: None.

Impact on Local Agencies: There would be some cost involved in public education efforts and enforcment of the home wood heating curtailment program which is the main element of the plan.

Impact on Public: Little if any. Owners of home wood heating devices would be subject to the same voluntary wood heating curtailment program which has been in effect since 1986, until November of 1991, at which time curtailment periods would become enforceable. Economic impact for individual households using wood heating devices would be any difference in cost to use conventional heating appliances for space heating during periods of air stagnation when wood heating is curtailed or prohibited.

LAND USE CONSISTENCY STATEMENT

The proposed rule amendments are consistent with land use as described in applicable land use plans in Lane County.

RULEMAKING STATEMENTS FOR THE PROPOSED MEDFORD-ASHLAND PM_{10} CONTROL STRATEGY AS A REVISION TO THE STATE IMPLEMENTATION PLAN

STATEMENT OF NEED FOR RULEMAKING

Pursuant to ORS 183.335(7), this statement provides information on the intended action to amend a rule.

(1) Legal Authority

This proposal amends Oregon Administrative Rules (OAR) 340-20-047. It is proposed under authority of Oregon Revised Statutes (ORS) Chapter 468.

(2) Need for these Rules

The Medford-Ashland area has a serious PM_{10} air pollution problem. PM_{10} refers to particulate matter ten micrometers or smaller in diameter. PM_{10} particles are considered a risk to human health due to the body's inability to effectively filter out particles of this size.

The federal Clean Air Act requires that States develop and adopt State Implementation Plan (SIP) revisions to assure that areas which violate the PM_{10} health and welfare standards are brought into attainment with those standards within prescribed time frames. The proposed control strategy document describes the State of Oregon plan to attain and maintain the annual and 24-hour PM_{10} standards in the Medford-Ashland Air Quality Maintenance Area (AQMA).

The principal means of achieving the necessary air quality improvements is through PM_{10} emission reductions from woodstoves and fireplaces, the wood products industries, open burning of debris, and road dust. Additional reductions are expected from statewide efforts to reduce slash burning smoke.

(3) Principal Documents Relied Upon

PM_{10} SIP Development Guideline, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park NC, June 1987, EPA-450/2-86-001.

Report of the Jackson County Woodburning Task Force, December 1987, Jackson County Department of Planning and Development, Medford, Oregon.

Previous staff reports to the Environmental Quality Commission (EQC):

Agenda Item D, January 22, 1988, EQC Meeting, Informational Report: New Federal Ambient Air Quality Standard for Particulate Matter (PM_{10}) and Its Effects on Oregon's Air Quality Program.

Agenda Item H, November 4, 1988, EQC Meeting, Request for Authorization to Conduct Public Hearings on New Industrial Rules for PM_{10} Emission Control in the Medford-Ashland AQMA and Grants Pass and Klamath Falls Urban Growth Areas (Amendments to OAR 340, Divisions 20 and 30).

Agenda Item E, September 8, 1989, EQC Meeting, Industrial PM_{10} Rules for Medford-Ashland and Grants Pass: Adoption of New Industrial Rules That Were Taken to Public Hearings in January 1989.

Guidance Document for Residential Wood Combustion Emission Control Measures, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park NC, September 1989, EPA-450/2-89-015.

All documents referenced may be inspected at the Department of Environmental Quality, Air Quality Division, 811 S.W. 6th Avenue, Portland, Oregon, during normal business hours.

LAND USE CONSISTENCY STATEMENT

The proposed rule changes appear to affect land use as defined in the Department's coordination program with DLCD, but appear to be consistent with the Statewide Planning Goals.

With regard to Goal 6, (air, water, and land resources quality), the proposed changes are designed to enhance and preserve air quality in the State and are considered consistent with the goal. The proposed rule changes do not appear to conflict with the other Goals.

Public comment on any land use issue involved is welcome and may be submitted in the same fashion as indicated for other testimony on these rules.

It is requested that local, state, and federal agencies review the proposed action and comment on possible conflicts with their programs affecting land use and with Statewide Planning Goals within their expertise and jurisdiction.

The Department of Environmental Quality intends to ask the Department of Land Conservation and Development to mediate any appropriate conflicts brought to our attention by local, state, or federal authorities.

MLH:a
PLAN\AH8095 (5/90)

Attachment B

RULEMAKING STATEMENTS FOR PROPOSED KLAMATH FALLS PM_{10} CONTROL STRATEGY AS A REVISION TO THE STATE OF OREGON CLEAN AIR ACT IMPLEMENTATION PLAN

STATEMENT OF NEED FOR RULEMAKING

Pursuant to ORS 183.335(7), this statement provides information on the intended action to amend a rule.

(1) Legal Authority

This proposal amends Oregon Administrative Rules (OAR) 340-20-047. It is proposed under authority of Oregon Revised Statutes (ORS) Chapter 468.

(2) Need for these Rules

The Klamath Falls Basin has a serious PM_{10} air pollution problem. PM_{10} refers to particulate matter ten micrometers or smaller in diameter. PM_{10} particles are considered a risk to human health due to the body's inability to effectively filter out particles of this size.

The federal Clean Air Act requires that States develop and adopt State Implementation Plan (SIP) revisions to assure that areas which violate the PM_{10} health and welfare standards are brought into attainment with those standards within prescribed time frames. The proposed control strategy document describes the State of Oregon plan to attain and maintain the annual and 24-hour PM_{10} standards in the Klamath Falls Nonattainment Area.

The principal means of achieving the necessary air quality improvements is through PM_{10} emission reductions from woodstoves, fireplaces and winter road sanding. Emission offset requirements for wood products industry emission increases are also included as are reductions expected from statewide efforts to reduce slash burning smoke.

(3) Principal Documents Relied Upon

PM_{10} SIP Development Guideline, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park NC, June 1987, EPA-450/2-86-001.

STATEMENT OF NEED FOR PROPOSED RULE AMENDMENTS

Pursuant to ORS 183.335(2), the following statement provides information on the proposed action to amend Oregon's Revised State Implementation Plan (SIP) for Particulate Matter for the Eugene/Springfield Air Quality Maintenance Area.

Legal Authority

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Need for Amendments

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Principal Documents Relied Upon

1. Draft State Implementation Plan Revision, Eugene/Springfield AQMA
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3. LRAPA Staff Report to LRAPA Board of Directors, December 12, 1989
4. Clean Air Act Amendments of 1977 (PL 95-95)
5. ORS 468, et. seq.

FISCAL AND ECONOMIC IMPACT STATEMENT

Impact on State Agencies: None.

Impact on Local Agencies: There would be some cost involved in public education efforts and enforcment of the home wood heating curtailment program which is the main element of the plan.

Impact on Public: Little if any. Owners of home wood heating devices would be subject to the same voluntary wood heating curtailment program which has been in effect since 1986, until November of 1991, at which time curtailment periods would become enforceable. Economic impact for individual households using wood heating devices would be any difference in cost to use conventional heating appliances for space heating during periods of air stagnation when wood heating is curtailed or prohibited.

LAND USE CONSISTENCY STATEMENT

The proposed rule amendments are consistent with land use as described in applicable land use plans in Lane County.

DRA/MJD
12/12/89

FISCAL AND ECONOMIC IMPACT STATEMENT FOR PROPOSED MEDFORD-ASHLAND PM_{10} CONTROL STRATEGY AS A REVISION TO THE STATE IMPLEMENTATION PLAN

PROPOSAL SUMMARY

The Medford-Ashland area has a serious PM_{10} air pollution problem. PM_{10} refers to particulate matter ten micrometers or smaller in diameter. PM_{10} particles are considered a risk to human health due to the body's inability to effectively filter out particles of this size.

The federal Clean Air Act requires that States develop and adopt State Implementation Plan (SIP) revisions to assure that areas which violate the PM_{10} health and welfare standards are brought into attainment with those standards within prescribed time frames. The proposed control strategy document describes the State of Oregon plan to attain and maintain the annual and 24-hour PM_{10} standards in the Medford-Ashland Air Quality Maintenance Area (AQMA).

The principal means of achieving the necessary air quality improvements is through PM_{10} emission reductions from woodstoves and fireplaces, the wood products industries, open burning of debris, and road dust. Additional reductions are expected from statewide efforts to reduce slash burning smoke.

The implementation of the PM_{10} control strategy involves residents, industries, local governments, and state and federal agencies. The two groups most affected by the proposed PM_{10} control strategy for the Medford-Ashland area are the owners/operators of wood products industries and residents with woodstoves or fireplaces.

COSTS TO WOOD PRODUCTS INDUSTRIES

Wood products industry emissions will be reduced by additional control requirements on veneer driers and large wood-fired boilers at plywood plants, more extensive source testing and continuous emission monitoring in order to maximize performance of pollution control equipment, and more restrictive emission offset requirements to insure a net air quality benefit from any new or expanded industries. The new industrial emission control and monitoring requirements will result in estimated capital costs of about $6-10 million; there will also be related increases in maintenance costs but those costs are more difficult to quantify. Industrial PM_{10} rules to implement these requirements were adopted by the Environmental Quality Commission in September 1989.

COSTS TO RESIDENTS WITH WOODSTOVES OR FIREPLACES

The residential woodsmoke reduction strategies are closely patterned after the December 1987 recommendations of the Jackson County Wood burning Task Force. Woodstove and fireplace emissions will be reduced by an expanded public information program, an areawide local mandatory woodburning curtailment program, the Oregon woodstove certification program, financial assistance programs for replacement of existing woodstoves with cleaner burning units and weatherization of homes, a ban on installation of non-certified woodstoves, and continued improvements in firewood seasoning and woodstove operation.

The typical cost of woodburning curtailment (under the local ordinances adopted between November 1989 and May 1990) is estimated at $2-4 per curtailment day per woodburning home, depending primarily on the type of alternative heat, amount of weatherization, and size of home. Economic, sole-source and certified-stove exemptions are available to qualifying households. Up to 12,000 homes in the critical PM_{10} control area would be affected about 22 red days and 14 yellow days per year (five-year average, 1985-1990).

The CLEAR (Coordinated Local Effort for Air Resources) Project of the Housing Authority of Jackson County and ACCESS, Inc. are providing assistance to low-income families for home weatherization and replacement of existing woodstoves with cleaner burning units. Approximately $1.7 million of funding has been secured thus far through Community Development Block Grants, Regional Strategies Funds, Oil Overcharge Settlement Funds, and utility company rebates. The City of Ashland has budgeted $64,494 for the first year of the SOLVE (Save Our Liveability, View and Environment) Program to replace existing woodstoves and weatherize homes.

COSTS TO STATE AND LOCAL GOVERNMENT AGENCIES

The new industrial emission control and monitoring requirements will require additional plan reviews, inspections, monitoring report reviews, and other compliance assurance activities by Department of Environmental Quality staff. This additional work will be done by shifting existing resources and seeking additional revenue to fund deferred work.

The daily decision on woodburning curtailment programs will be based on air quality information from the Department's existing air monitoring network and meteorological information from the National Weather Service. The daily woodburning decision (red, yellow, green call) will be made by the Jackson County Health Department. Public information programs will be done by Jackson County and cities within the AQMA with DEQ or subcontractor assistance. The compliance assurance surveys, exemption permitting and enforcement activities for the woodburning curtailment programs will be conducted by local government staff of Jackson County and the cities of Medford and Central Point. Some EPA grant funds may be available to help support these activities.

Jackson County has budgeted $152,856 for the next year for a full-time air quality coordinator, three part-time technicians, one part-time clerical assistant, and the public information program. The City of Medford spent $17,967 on its air quality program between December 1, 1989, and February 28, 1990, and will probably spend about $24,000 during the next heating season. The City of Ashland has budgeted $64,494 for the first year of the SOLVE Program. These local governments, and other cities within the AQMA, will also shift existing resources as necessary to handle the workload associated with the air quality programs.

HEALTH BENEFITS

The health benefits of PM_{10} controls cannot be accurately quantified but they are expected to be substantial. Testimony during the public hearing on the industrial rules indicated that the expected health benefits of industrial and residential pollution controls may be greater than the pollution control costs.

MLH:a
PLAN\AH8096 (6/90)

Attachment C

FISCAL AND ECONOMIC IMPACT STATEMENT FOR PROPOSED KLAMATH FALLS PM_{10} CONTROL STRATEGY AS A REVISION TO THE STATE IMPLEMENTATION PLAN

PROPOSAL SUMMARY

The Klamath Falls area has a serious PM_{10} air pollution problem. PM_{10} refers to particulate matter ten micrometers or smaller in diameter. PM_{10} particles are considered a risk to human health due to the body's inability to effectively filter out particles of this size.

The federal Clean Air Act requires that States develop and adopt State Implementation Plan (SIP) revisions to assure that areas which violate the PM_{10} health and welfare standards are brought into attainment with those standards within prescribed time frames. The proposed control strategy document describes the State of Oregon plan to attain and maintain the annual and 24-hour PM_{10} standards within the Klamath Falls Urban Growth Boundary.

The principal means of achieving the necessary air quality improvements is through PM_{10} emission reductions from woodstoves and fireplaces and winter road sanding emissions. Additional reductions are expected from statewide efforts to reduce slash burning smoke and restrictions on open burning on wood burning curtailment days. Restrictions requiring offsets of future industrial emission growth will help assure future maintenance of air quality standards.

The implementation of the PM_{10} control strategy involves residents, industries, local governments, and state and federal agencies. The group most affected by the proposed PM_{10} control strategy for the Klamath Falls Nonattainment are residents with woodstoves or fireplaces, public works agencies responsible for winter road sanding and wood products industries subject to the emission offset requirements of the strategy.

COSTS TO WOOD PRODUCTS INDUSTRIES

Industrial rules which lower the emission offset requirements for new or modified sources from 15 to 5 tons per year of PM_{10} are included in the strategy to assure that industrial emission increases do not interfere with emission reduction achieved by the wood burning and winter road sanding control strategies. Based on recent or proposed pollution control equipment for wood products industries in the Medford area, the estimated increased capital costs associated with the Klamath Falls industrial emission offset program could range from $5,000 to $15,000 per ton of annual particulate emissions. The increased operation and maintenance costs could range from $500 to $1,000 per ton of particulate

collected. The maximum cost impact of the offset rule for new or expanded sources with potential particulate emissions of 15 or more tons per year could be increased capital costs of $50,000 to $150,000 and increased annual operations and maintenance costs of $5,000 to $10,000. Rules to implement the offset requirements were adopted by the Environmental Quality Commission in June, 1989.

COSTS TO RESIDENTS WITH WOODSTOVES OR FIREPLACES

Woodstove and fireplace emissions will be reduced by a public information program, an areawide local mandatory woodburning curtailment program, the Oregon woodstove certification program, financial assistance programs for replacement of existing woodstoves with cleaner burning units and weatherization of homes, a ban on installation of non-certified woodstoves and adoption of a fuelwood certification ordinance.

The typical cost of woodburning curtailment is estimated at about $2-$5 per curtailment day per woodburning home, depending primarily on the type of alternative heat, amount of weatherization and size of home. Economic, sole-source and certified-stove exemptions are available to qualifying households. Up to 10,000 homes in the critical PM_{10} control area would be affected about 50 red days and 20 yellow days per year (two year average, 1988-1990). All wood burning (except pellet stoves) is curtailed on red days whereas only noncertified wood stoves are curtailed on yellow days.

The woodstove replacement-home weatherization program administered by Klamath County provides assistance by replacing existing woodstoves with cleaner burning units in low-income households who use woodstoves as their only source of heat. Approximately $550,000 in funding has been secured thus far through Community Development Block Grants.

COSTS TO STATE AND LOCAL GOVERNMENT AGENCIES

The daily decision on woodburning curtailment programs will be based on air quality information from the Department's existing air monitoring network and meteorological information from the National Weather Service. The daily woodburning decision (red, yellow, green calls) will be made by the Klamath County Health Department which also conducts public information programs. Enforcement activities associated with the woodburning curtailment programs will also be conducted by Klamath County staff. Some EPA grant funds may be available to help support these activities.

Klamath County has budgeted $85,000 for the next year for a full-time air quality coordinator, one full-time clerical assistant, and a full-time compliance coordinator during the heating season. These funds also support the public education, curtailment forecasting and other elements of the air quality program. In addition, the County will also shift existing resources as

necessary to handle the workload associated with the air quality programs. Additional funding may be provided by the Department to assist Klamath County's program.

OREGON BULLETIN

VOLUME 29, No.13
Issue Date: January 1, 1990

This issue contains Administrative Rule Orders and Notices of Proposed Rulemaking officially filed **December 6, 1989, 8:00 a.m. through December 18, 1989, 5:00 p.m.**

Published by
BARBARA ROBERTS
Secretary of State

NOTICE OF PROPOSED RULEMAKING HEARING

(Statement of Need and Fiscal Impact must accompany this form)

AGENCY: Oregon Housing Agency (Department)

The above named agency gives notice of hearing.

HEARINGS TO BE HELD:

Date	Time:	Location:
January [illegible], 1990	10:00-11:00	Department of Transportation 300 E. Summer, Room 122 Salem, Oregon 97310

Hearings Officer(s): Lynn Schoessler

Pursuant to the statutory authority of ORS 456.210 through 458.240, specifically ORS 458.235

Chapter(s) (Chapter 1030), Oregon Laws 19 89 or

House Bill(s) (HB 3285) or Senate Bill(s) _____, 19 89 Legislature

The following action is proposed:

ADOPT: OAR 813-47-001 through 813-47-025

AMEND: _____

REPEAL: _____

☐ Prior Notice Given; Hearing Requested by Interested Persons ☒ No Prior Notice Given

SUMMARY: Adopt permanent rules to implement the Community Development Corporation program. Implementation of the Community Development Corporation (CDC) program will [illegible] available to nonprofit housing providers, grants and other assistance in providing housing for low-income persons. Funds may be used to leverage other public or private financial assistance or expand CDC organizational capacity. Use of the program will encourage the development of housing which will benefit low-income persons or families who will occupy the housing.

Interested persons may comment on the proposed rules orally or in writing at the hearing. Written comments received by January [illegible], 1990 will also be considered. Written comments should be sent to and copies of the proposed rulemaking may be obtained from:

AGENCY: Oregon Housing Agency
ADDRESS: 1600 State St., Suite 100
Salem, Oregon 97310

ATTN: Diane Kolb
PHONE: 373-1625

Sheila E. Baker
Signature

Sheila E. Baker
Administrator

Date

SED 424
(Rev. 10/1/87)

NOTICE OF PROPOSED RULEMAKING HEARING

(Statement of Need and Fiscal Impact must accompany this form)

D-12

AGENCY: Lane Regional Air Pollution Authority (Department)

The above named agency gives notice of hearing.

HEARING TO BE HELD:

Date: 01/30/90 Time: 7:00 p.m. Location: City Council Chambers
Eugene City Hall
777 Pearl Street
Eugene, OR

Hearings Officers: Donald R. Arkell

Pursuant to the statutory authority of ORS 183 and 468, the following action is proposed:

AMEND: Oregon's Revised State Implementation Plan for Particulate Matter for the Eugene-Springfield Air Quality Maintenance Area

X Prior Notice Given: Hearing Requested by Interested Persons ___ No Prior Notice Given

SUMMARY: The federal government adopted a new standard for particulate matter which took effect July 31, 1987, replacing total suspended particulate as an indicator for particulate matter with a new indicator for particles with an aerodynamic diameter less than 10 micrometers (PM10). The federal Clean Air Act requires that areas which do not meet National Ambient Air Quality Standards develop and implement a control program to attain the standards. Eugene-Springfield has been designated by EPA as a Group I attainment area for PM10, which means there is a 95% probability that the area violates the PM10 National Ambient Air Quality Standard. LRAPA has responsibility for developing and implementing the required plan to attain and maintain compliance with the standards. These proposed amendments to the SIP provide the necessary control strategy description and attainment demonstration. They provide some rules required by EPA. They do not provide the ordinances enacting the enforcement elements.

Interested persons may comment on the proposed rules orally or in writing at the hearing. Written comments received by January 29, 1990 will also be considered. Written comments should be sent to and copies of the proposed rulemaking may be obtained from:

AGENCY: Lane Regional Air Pollution Authority
ADDRESS: 225 North 5th, Suite 501
Springfield, OR 97477

ATTN: Donald R. Arkell, Director
PHONE: (503) 726-2514

Signature

12-12-89
Date

Oregon Department of Environmental Quality

Attachment D

A CHANCE TO COMMENT ON...

PM_{10} CONTROL STRATEGY FOR MEDFORD-ASHLAND AREA
NOTICE OF PUBLIC HEARING

Hearing Date: August 6, 1990
Comments Due: August 9, 1990

WHO IS AFFECTED: Residents, local governments and industries in the Medford-Ashland Air Quality Maintenance Area.

WHAT IS PROPOSED: The Department of Environmental Quality is proposing to amend OAR 340-20-047, the State of Oregon Clean Air Act Implementation Plan.

WHAT ARE THE HIGHLIGHTS:

1) The Medford-Ashland area has a serious PM_{10} air pollution problem. (PM_{10} refers to particulate matter ten micrometers or smaller in diameter.) PM_{10} particles are considered a risk to human health due to the body's inability to effectively filter out particles of this size.

2) The proposed control strategy document describes the overall plan to attain compliance with the annual and 24-hour PM_{10} health and welfare standards in the Medford-Ashland Air Quality Maintenance Area by September 1991 and maintain compliance with the PM_{10} standards through at least the year 2000.

3) The principal means of achieving the necessary air quality improvements is through PM_{10} emission reductions from woodstoves and fireplaces, the wood products industries, open burning of debris, and road dust. State industrial rules and local residential ordinances have been adopted to achieve these reductions. Additional reductions are expected from statewide efforts to reduce slash burning smoke.

HOW TO COMMENT: Copies of the complete proposed rule package may be obtained from: Air Quality Division, Department of Environmental Quality, 811 S.W. Sixth Avenue, Portland, OR 97204 or the regional office nearest you. For further information contact Merlyn Hough at (503) 229-6446.

A public hearing will be held before a hearings officer at:

7:00 p.m.
August 6, 1990
Smullin Center Auditorium
Rogue Valley Medical Center
2825 Barnett Road
Medford, Oregon

811 S.W. 6th Avenue
Portland, OR 97204

11/1/86

FOR FURTHER INFORMATION:

Contact the person or division identified in the public notice by calling 229-5696 in the Portland area. To avoid long distance charges from other parts of the state, call 1-800-452-4011.

Oral and written comments will be accepted at the public hearing. Written comments may be sent to the DEQ, but must be received by no later than August 9, 1990.

WHAT IS THE NEXT STEP: After public hearing the Environmental Quality Commission may adopt rule amendments identical to the proposed amendments, adopt modified rule amendments on the same subject matter, or decline to act. The adopted rules will be submitted to the U.S. Environmental Protection Agency as part of the State Clean Air Act Implementation Plan. The Commission's deliberation should come in November 1990 as part of the agenda of a regularly scheduled Commission meeting.

A Statement of Need, Fiscal and Economic Impact Statement, and Land Use Consistency Statement are attached to this notice.

MLH:a
PLAN\AH8097

Oregon Department of Environmental Quality

A CHANCE TO COMMENT ON...

PM_{10} CONTROL STRATEGY FOR THE KLAMATH FALLS NONATTAINMENT AREA
NOTICE OF PUBLIC HEARING

Hearing Date: August 7, 1990
Comments Due: August 10, 1990

WHO IS AFFECTED: Residents, local governments and industries within the Klamath Falls Urban Growth Boundary.

WHAT IS PROPOSED: The Department of Environmental Quality is proposing to amend OAR 340-20-047, the State of Oregon Clean Air Act Implementation Plan.

WHAT ARE THE HIGHLIGHTS:

1) The Klamath Falls Basin has a serious PM_{10} air pollution problem. (PM_{10} refers to particulate matter ten micrometers or smaller in diameter.) PM_{10} particles are considered a risk to human health due to the body's inability to effectively filter out particles of this size.

2) The proposed control strategy document describes the overall plan to attain and maintain the annual and 24-hour PM_{10} health and welfare standards in the Klamath Falls Nonattainment Area.

3) The principal means of achieving the necessary air quality improvements is through PM_{10} emission reductions from woodstoves, fireplaces and winter road sanding. Additional reductions are expected from statewide efforts to reduce slash burning smoke. Restrictions requiring emission offsets for wood products industry emission growth are also included.

4) The proposed control strategies will assure attainment of air quality health standards by September, 1992 and maintenance of the standards through the year 2000. Environmental Quality Commission adoption of the strategy is contingent upon local government adoption of mandatory curtailment ordinances and enforcement programs prior to November, 1990.

HOW TO COMMENT: Copies of the complete proposed rule package may be obtained from: Air Quality Division, Department of Environmental Quality, 811 S.W. Sixth Avenue, Portland, OR 97204 or the regional office nearest you. For further information contact John Core at (503) 229-5380.

811 S.W. 6th Avenue
Portland, OR 97204

11/1/86

FOR FURTHER INFORMATION:

Contact the person or division identified in the public notice by calling 229-5696 in the Portland area. To avoid long distance charges from other parts of the state, call 1-800-452-4011.

A public hearing will be held before a hearings officer at:

7:00 p.m.
August 7, 1990
Commissioner's Hearing Room
Klamath County Courthouse Annex
305 Main Street
Klamath Falls, Oregon

Oral and written comments will be accepted at the public hearing. Written comments may be sent to the DEQ, but must be received by no later than August 10, 1990.

WHAT IS THE NEXT STEP:

After public hearing the Environmental Quality Commission may adopt rule amendments identical to the proposed amendments, adopt modified rule amendments on the same subject matter, or decline to act. The adopted rules will be submitted to the U.S. Environmental Protection Agency as part of the State Clean Air Act Implementation Plan. The Commission's deliberation should come in November 1990 as part of the agenda of a regularly scheduled Commission meeting.

A Statement of Need, Fiscal and Economic Impact Statement, and Land Use Consistency Statement are attached to this notice.

JEC:a
PLAN\AH10034

(2) In determining air purity standards, the commission shall consider the following factors:

(a) The quality or characteristics of air contaminants or the duration of their presence in the atmosphere which may cause air pollution in the particular area of the state;

(b) Existing physical conditions and topography;

(c) Prevailing wind directions and velocities;

(d) Temperatures and temperature inversion periods, humidity, and other atmospheric conditions;

(e) Possible chemical reactions between air contaminants or between such air contaminants and air gases, moisture or sunlight;

(f) The predominant character of development of the area of the state, such as residential, highly developed industrial area, commercial or other characteristics;

(g) Availability of air-cleaning devices;

(h) Economic feasibility of air-cleaning devices;

(i) Effect on normal human health of particular air contaminants;

(j) Effect on efficiency of industrial operation resulting from use of air-cleaning devices;

(k) Extent of danger to property in the area reasonably to be expected from any particular air contaminants;

(L) Interference with reasonable enjoyment of life by persons in the area which can reasonably be expected to be affected by the air contaminants;

(m) The volume of air contaminants emitted from a particular class of air contamination source;

(n) The economic and industrial development of the state and continuance of public enjoyment of the state's natural resources; and

(o) Other factors which the commission may find applicable.

(3) The commission may establish air quality standards including emission standards for the entire state or an area of the state. The standards shall set forth the maximum amount of air pollution permissible in various categories of air contaminants and may differentiate between different areas of the state, different air contaminants and different air contamination sources or classes thereof. [Formerly 449.785]

468.300 When liability for violation not applicable. The several liabilities which may be imposed pursuant to ORS 443.305, 454.010 to 454.040, 454.205 to 454.255, 454.405, 454.425, 454.505 to 454.535, 454.605 to 454.745 and this chapter upon persons violating the provisions of any rule, standard or order of the commission pertaining to air pollution shall not be so construed as to include any violation which was caused by an act of God, war, strife, riot or other condition as to which any negligence or wilful misconduct on the part of such person was not the proximate cause. [Formerly 449.825]

468.305 General comprehensive plan. Subject to policy direction by the commission, the department shall prepare and develop a general comprehensive plan for the control or abatement of existing air pollution and for the control or prevention of new air pollution in any area of the state in which air pollution is found already existing or in danger of existing. The plan shall recognize varying requirements for different areas of the state. [Formerly 449.782]

468.310 Permits. By rule the commission may require permits for air contamination sources classified by type of air contaminants, by type of air contamination source or by area of the state. The permits shall be issued as provided in ORS 468.065. [Formerly 449.727]

468.315 Activities prohibited without permit; limit on activities with permit. (1) Without first obtaining a permit pursuant to ORS 468.065, no person shall:

(a) Discharge, emit or allow to be discharged or emitted any air contaminant for which a permit is required under ORS 468.310 into the outdoor atmosphere from any air contamination source.

(b) Construct, install, establish, develop, modify, enlarge or operate any air contamination source for which a permit is required under ORS 468.310.

(2) No person shall increase in volume or strength discharges or emissions from any air contamination source for which a permit is required under ORS 468.310 in excess of the permissive discharges or emission specified under an existing permit. [Formerly 449.731]

468.320 Classification of air contamination sources; registration and reporting of sources. (1) By rule the commission may classify air contamination sources according to levels and types of emissions and other characteristics which cause or tend to cause or contribute to air pollution and may require registration or reporting or both for any such class or classes.

(2) Any person in control of an air contamination source of any class for which registration and reporting is required under subsection (1) of this section shall register

REPORT OF
JACKSON COUNTY WOODBURNING TASK FORCE

DECEMBER 21, 1987

EXECUTIVE SUMMARY

The Medford-Ashland Air Quality Maintenance Area has a serious particulate air pollution problem. Particulate concentrations violate national health standards, both the annual average standard (50 micrograms per cubic meter) and the peak day standard (150 micrograms per cubic meter). The peak day standard will be the more difficult standard to meet in the Medford, White City, and Central Point areas. The inhalable particulate, called PM_{10} because it represents particulate matter that is less than 10 micrometers in diameter, is of greatest health concern. Annual average PM_{10} concentrations must be reduced by 20% and peak day concentrations must be reduced by 50% to meet health standards.

The peak particulate concentrations generally occur during air stagnation periods in December and January. About 65-70% of the peak day inhalable particulate is due to residential woodsmoke from stoves and fireplaces. On an annual basis, about 40% of the inhalable particulate is from residential woodsmoke.

The Jackson County Commissioners appointed the Woodburning Task Force in May 1987 to evaluate the particulate problem and recommend corrective measures. The Task Force has reviewed the air quality data, the relative source contributions to the problem, past efforts to reduce pollution, and the available alternatives to reduce particulate pollution from woodburning. The Task Force has considered the relative costs and benefits (economic, energy, safety, environmental, and health) of the alternatives in making its recommendations.

The Task Force recommends the following measures be included in the woodsmoke reduction strategy for the portion of Jackson County and the cities within the Medford-Ashland Air Quality Maintenance Area:

1. Mandatory curtailment of woodstove/fireplace use during air stagnation;
2. Comprehensive public education program;
3. Clean air utility rates for electricity and natural gas;
4. Financial incentives/subsidies for cleaner woodburning units; and
5. Ban on installation of non-certified woodstoves.

This package of measures represents strategy options C, D, or E outlined in the full report. The differences between these strategy options are the amount of financial incentives provided and the number of cleaner heating units installed. This in turn affects the number of curtailment days and the amount of room in the airshed for additional growth.

Differences in Options	Option: C	D	E
Subsidy in $ million	1.7	2.9	6.0
Curtailment days per year	15-20	10-15	0-10
Airshed space in tons per year	None	100-200	200-400

Additional details are included in the full report and appendices.

6. The LRAPA staff should define seasoned wood. A voluntary certification program should be implemented that shows proof of the commercial fire wood dealer's knowledge and concern for selling seasoned wood and training the public on proper burning techniques.

7. Public education should be a major, ongoing part of this program. The LRAPA staff should evaluate the following ideas:

   a. Develop a cartoon-type figure or mascot for use in print materials and for school presentations.

   b. Develop an educational video/public service announcement to support the program.

8. To assist in funding this program, LRAPA should pursue increased funding from local cities and Lane County and an increase in the federal grant. The staff should also pursue the possibility of community block grants for the low income households to fund the establishment of alternative heating sources.

Klamath County Resolution #89-148

KLAMATH COUNTY AIR QUALITY COMPLIANCE DEVELOPMENT PLAN
FOR THE KLAMATH FALLS CITY & URBAN GROWTH BOUNDARY

ADOPTED BY THE KLAMATH COUNTY COMMISSIONERS, MAY, 1988

COMMISSIONERS:
ROGER HAMILTON, CHAIRMAN OF THE BOARD
TED LINDOW
JIM ROGERS

Adopted in response to a need to resolve violation of federal air quality standards. Content is based upon input from the public hearing process and the two appointed citizen task forces. The first task force meeting in October, 1987, and the second in March, 1988.

Implementation assigned the Klamath County Board of Health and Public Health Department per Resolution No. 89-116 on August 31, 1988.

The Klamath County Board of Health and Public Health Department's 18-point program management plan was heard by commissioners Jan. 18, 1989, and adopted officially for inclusion into the Klamath County Air Quality Plan on April 5, 1989.

COMMISSIONERS:

Officially signed and adopted 4/19/89, all commissioners

By _____
Ted Lindow, Chairman

By _____
Harry Fredrick, Commissioner

By: _____
Roger Hamilton, Commissioner

KLAMATH COUNTY VOLUNTARY AIR QUALITY PLAN
KLAMATH FALLS CITY & URBAN GROWTH BOUNDARY

W. LOUELLYN KELLY, Klamath County Department of Health Services,
Klamath Falls, Oregon

Air Quality Advisory Committee:

HARRY FREDRICKS, Klamath County Commissioner
BOB FREIRICH, Klamath County Schools
KURT SCHMIDT, RON LOVELESS, MODOC Lumber Company
BUD HART, Klamath Falls City Council, OIT
STEVE SOUNDER, Pacific Power & Light
JAMES GILLAN, Ash Bros. Chimney Sweep
MARIE WALKER, Royal Hearth & Patio
JOE RIKER, City Planning
DON CROWNOVER, Klamath Falls Fire Department
DR. RICK ZWARTVERWER, Pediatrician
ANN RUDD, Concerned Citizen

Adopted in response to a need to resolve violation of federal air quality standards. Content is based upon input from the public hearing process and the two appointed citizen task forces. The first task force meeting in October, 1987, and the second in March, 1988.

Implementation assigned the Klamath County Board of Health and Public Health Department per Resolution No. 88-11a on August 31, 1988.

The Klamath County Board of Health and Public Health Department's initial 18-point program management plan was heard by commissioners Jan. 18, 1989, and adopted officially as the Klamath County Air Quality Plan on April 5, 1989.

COMMISSIONERS:

Officially signed and adopted 4/19/89, all commissioners

TED LINDOW, CHAIRMAN OF THE BOARD

ROGER HAMILTON

HARRY FREDRICKS

1989/90 WOODHEATING SEASON GOALS: (June, 1989, to June, 1990)

1. 46% to 52% Compliance
2. Infrared surveying - five areas
3. Ongoing media relations
4. Ongoing public speaking
5. Finalize road advisory signs
6. Develop volunteers to change signs
7. Promote wood moisture meters heavily
8. Finalize survey or drop
9. Continue networking
10. Critique operating plan and update
11. Operation paycheck underway & education programs
12. Develop health symposiums on television
13. Problem specific brochure development
14. Woodburning advisory promotion
15. Health studies finalization or drop
16. Airshed studies development
17. Curriculum & programs for schools
18. "Earth Day" Fair development
19. Ongoing Advisory Committee
20. Begin development burn video
21. Certified wood program to vendors w/posters
22. Exemptions program
23. OCDBB application
24. Increase public participation
25. Organize group to pursue compliance activity
26. Neighborhood meetings

1990/1991 WOODHEATING SEASON GOALS: (June, 1990, to June, 1991)

1. 85% to 92% Compliance
2. Infrared surveying - target zones
3. Ongoing media relations
4. Ongoing pubic speaking
5. Woodburning road and telephone advisory program
6. Larger VOLUNTEERS FOR COMPLIANCE program
7. Ongoing wood moisture meters promotion
8. Ordinances (See Plan: 28, 29, 30, 31)
9. Ongoing networking
10. Critique operating plan and update
11. Ongoing operation paycheck & education program
12. Develop health symposiums in schools
13. Reprints of broader based materials
14. Health studies ongoing
15. Airshed studies ongoing
16. "Earth Day" Fair
17. Ongoing Advisory Committee
18. Neighborhood meetings
19. Operation Compliance Push
20. Public Speaking program
21. Burn video usage
22. Increase public participation
23. Certified wood program to vendors
24. OCDBB application

1991/1992 WOODHEATING SEASON GOALS: (June, 1991, to June, 1992)

Maintain program according to ongoing plan

KLAMATH COUNTY IMPLEMENTATION PLAN 1989-1991

I. PLAN DEVELOPMENT

A. BASIC ANALYSIS: VOLUNTARY COMPLIANCE HISTORICALLY

In developing a voluntary plan, we felt it was important to learn about the occurrences in other out-of-attainment communities to see how they handled their voluntary phases of pollution management. We found no one cohesive resource for this information. So we began researching individually the varied areas in the U.S., mostly out of an aversion for reinventing the wheel.

We observed through this research, that most or none of the communities designated by the EPA as being out-of-attainment ever had the luxury of trading information or sharing project concepts. These communities did however, share the commonality of going through a process of anger. Further observations were that they had all concluded that community education was the key to a voluntary program. But, in the actual process of program development, many of the communities pursued a minimally energized effort in education campaigns. The best seems to have been Boise and Missoula. We are sure that money and time constraints played a large part in the efforts - plus, many were blazing the trail for dealing with this problem and our kind

STATEMENT OF PROBLEM

In 1987, the federal government issued a new air quality standard limiting the amount of particulate matter, 10 microns and smaller, in the air. This standard, called PM-10, is designed to protect the public from fine particulate pollution replacing the TSP).

Particulate matter, the tiny 10 micron sized particles in smoke and dust, is a serious health concern for all area residents due to the heavy concentrations recorded.

The major source of the PM-10 particles in Klamath Falls, according to nephelometer, emissions inventory and chemical analysis by the Oregon State Department of Environmental Quality, is wood stove contributions. DEQ monitoring shows that during winter months, particulate concentrations in the Klamath Falls area violates federal health standards about 40 days each year on the average. The highest readings ever recorded in the state were recorded in Klamath Falls during the 1987/1988 woodheating season - more than four times the national health standard. STEPS MUST BE TAKEN TO REDUCE THIS POLLUTION.

The geography and meteorology are a part of the problem creating inversions that trap pollutants in stagnant air. The major catch basin for the Klamath Falls Urban Growth Boundary, where the highest concentrations of PM-10s accumulate, is in the Peterson area in the suburbs.

STATEMENT OF BROAD PLAN TO REDUCE PARTICULATES IN THE KLAMATH FALLS CITY & URBAN GROWTH BOUNDARY

In order for the Klamath Falls City and Urban Growth Boundary to meet EPA standards of 150 PM-10 daily average and 50 PM-10 annual average, an 85% to 93% compliance is estimated by DEQ as needed.

A number of strategies under the general heading of "EDUCATION" appears to be the key to developing a voluntary compliance program in the Klamath County Klamath Falls City and Urban Growth Boundary. In addition, an education plan that is pursued with great vigor of purpose may potentially be successful where others have failed.

Each element developed and added in the future to this plan must at all times address the ability of the community to carry out, effect, community need & adding to understanding of problem, appropriateness of action and if it fits the direction/scope of program.

COMPLIANCE PROGRAM STRATEGIES:

1. Accepting of GREEN, YELLOW AND RED as woodburning advisory signals for the public because of their ease of understanding.
2. Public forums and hearings such as lectures, slide presentations, panel discussions, public neighborhood meetings to get the message out.
3. Involvement of media in informing the pubic.
4. Brochures distributed through large employers in paychecks, county offices and library, city offices, extension service, Chamber of Commerce, OIT and private business.
5. Public speaking programs through local service, business and fraternal organizations.
6. Encourage conversion from non-approved wood stoves to state of the art heating devises.
7. Gaining support from DEQ to measure year-round.
8. Survey homes to determine number of woodstove/heat users.

OPERATING PLAN GOAL STATEMENT

1988/1989 WOODHEATING SEASON GOALS: (October, 1988 to June, 1989)

1. 20% Compliance
2. Hold health symposium - October, 1988
3. Set up woodburning advisory telephone, answering machine and recorder to register number of calls
4. Enlist news media involvement and concern, develop promotion of woodburning advisory number
5. Order moisture meters, provide training and set a program
6. Develop a citizen action advisory committee of varied community expertise
7. Format public speaking program, begin process in March
8. Write and record radio promotions of woodburning advisory
9. Infrared surveying in four target neighborhoods, develop and train teams from OIT Engineering program
10. Begin development of house-to-house surveying
11. Begin development of road advisory signs
12. Set up neighborhood meetings in targeted survey zones, distribute materials house-to-house - set up for April & May
13. Develop networking with other out-of-attainment areas and set up information bank to examine methodologies and comparisons of techniques: what works vs. what doesn't work
14. Explore development of a health study

concepts were the only strategies that properly addressed our needs. The strategy selected was: AIDA - an actual direct mail technique that we broadened to incorporate bandwagon (emphasis on peer pressure) propaganda as a main component.

A = Attention
I = Interest
D = Desire
A = Action

Our final remaining question was "Is the success of a voluntary program possible?" Who knows? But, belief was a need and the program as a whole had to be as innovative as possible. Enough projects had to be developed and included in order to address all of the five areas of concern on an ongoing basis. In addition, each project had to be responsive to the needs of the strategy: AIDA (does it create ATTENTION, does it create INTEREST, etc.).

E. RATING FOR SUCCESS

A success number of 100% was assigned the plan as a whole with rating levels of up to 10 attached to a given project with these rating concerns: (1) each portion of the AIDA, (2) energy output to make each project happen, (3) assigned benefits that would be given individual projects, (4) each of the five areas of community concern and (5) each year's goal. With the latter rating, this meant the formula would constantly be changing. THEN AND ONLY THEN, THE FLESHING OUT OF INDIVIDUAL PROJECTS TO RESPOND TO THE REQUIREMENTS OF THE PLAN WAS BEGUN ALONG WITH DEVELOPMENT OF YEAR-BY-YEAR DETAILED GOALS. The beginning result was an 18-point project plan which ran shy mathematically of adding up to 100% success. This meant that we needed to devise a lot more projects. As we went along in our first heating season, some of the projects - which had low to no ratings anyway - proved worthless fluff and fill, so that they were dumped. We feel it is extremely important to be self-effacing on the project and its effectiveness. We also feel it is important not to do "feel good" projects - things that make us feel good or those we work for feel good for the sake of the "feel good."

II. PLAN PROJECTS

1. WOODBURNING TELEPHONE ADVISORY PROGRAM

a. 2nd Year of Program Do Calls Locally
   (1) Two calls daily
      (a) Satisfy needs of community
   (2) Provide program information
      (a) Push neighborhood meetings

6 points
Timeline: Through life of program
Benefit: Public Awareness, lowering PM-10 levels

2. HEALTH SYMPOSIUMS

a. Convert symposiums to television

Time Line: Near end of 2nd year
Benefit: Broader audience opportunity, impact

3. XEDAR SURVEYING/COMPLIANCE EVALUATION

a. Continue API/Wood Burning Advisory Telephone
   (1) Use automatic counter to register calls
b. Select Comparison Areas For Compliance
   (1) Develop Population Samples
      (a) Inversion areas
      (b) Clear areas
   (2) Survey GREEN & RED days
      (a) Compare data
c. Increase Public Information If Comparisons Poor
   (1) Take Commissioners on one survey
   (2) Take news media on survey

2 points
Benefit: Ready method of determining public involvement in compliance program, effectiveness understanding, public impact by doing
Time Line: Heating seasons of 1989 & 1990 & 1991 & 1992

F-

sight is always better than anyone else's foresight! The results of the various programs were that a basic awareness did develop within the communities about the causes of pollution and the resultant potential and/or real health problems. Research has also shown that invariably, most communities develop in the first few years of nonattainment small vocal groups that ... licly doubt the information and testing methods, thus causing difficulties in convincing the public of curtailment reacs (reinforcing what they believed). None were successful with voluntary compliance.

The following chart outlines voluntary pursuits:

	YEARS OUT-OF-COMPLIANCE	VOLUNTARY PROGRAM	MANDATORY
Albuquerque, NW Carbon Monoxide exceedance	12	5	2
Yakima, WA	?	1	1
Lakewood, CO	5+	No	3
Boise, ID	14	3	4***
Jackson Co, OR	10yrs+	2	No
Medford, OR	10yrs+	2?	Yes**
Missoula, MT	10?	5	3***
Washoe, NV	10?	6	3
Juneau, AS	?	1	4***
Klamath Falls, OR	3	2	No
Provo, UT	10+	No	No

* Source: Wood Heating Alliance
** No enforcement effort
*** Meeting standards presently

B. CONCLUSIONS REACHED

As a result of the research, we concluded that it appears that the first year of any program is spent mollifying the community anger before any real strides are made. With this observation, it was also concluded that a portion of any program design should be aimed specifically at reducing this anger, while on the other hand, a portion of the program should be aimed at getting the health affected portion of the community mobilized and more vocal to develop a peer pressure within neighborhoods.

C. LOCAL ANALYSIS AND DEVELOPMENT

With these understandings and a specific analysis of this community's personality, it was decided that the Klamath Falls Urban Growth Boundary Implementation Plan needed a stronger more varied strategy in order to
1) combat community anger,
2) mobilize health affected individuals,
3) develop hard-core community awareness,
4) diffuse splinter nay-saying groups that were showing signs of developing and
5) adequately address the higher levels of pollution that we experience as compared to other out-of-attainment areas in U.S..

D. LONG RANGE STRATEGY

In searching for a strong strategy, we knew that the requirement would have to be an energetic program with a multitude of on-going ever-expanding complimentary projects if we were going to see any successes. It was found that commercial advertising

concepts were the only strategies that properly addressed our needs. The strategy selected was: AIDA - an actual direct mail technique that we broadened to incorporate bandwagon (emphasis on peer pressure) propaganda as a main component.

A = Attention
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D = Desire
A = Action

Our final remaining question was "Is the success of a voluntary program possible?" Who knows? But, belief was a need and the program as a whole had to be as innovative as possible. Enough projects had to be developed and included in order to address all of the five areas of concern on an ongoing basis. In addition, each project had to be responsive to the needs of the strategy: AIDA (does it create ATTENTION, does it create INTEREST, etc.).

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Timeline: Through life of program
Benefit: Public Awareness, lowering PM-10 levels

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c. Increase Public Information If Comparisons Poor
   (1) Take Commissioners on one survey
   (2) Take news media on survey

2 points
Benefit: Ready method of determining public involvement in compliance program, effectiveness understanding, public impact by doing
Time Line: Heating seasons of 1989 & 1990 & 1991 & 1992

4. NETWORK WITH OTHER AREAS/LIAISON

a. DEQ
b. EPA
c. Areas with working programs
d. Areas just setting up programs

No points
Benefit: Broaden Coordinators Knowledge, Adds New thinking for More Projects
Time Line: Now to end of program

5. BURNING CLEAN & SMART: MOISTURE METERS (Householder, Wood Vendors and Certified Wood)

a. Purchase Wood Moisture Meters
b. Set Up Checking Stations
   (1) Fire Departments
c. Area Residents Can Have Woodpiles Checked
   (1) Publicize and encourage
d. Public Information Program
e. Certified Wood
   (1) Notify all vendors
   (2) Offer posters
   (3) Certify wood
      (a) Check moisture

2 points
Benefit: Allows Public the Opportunity to Burn Cleaner
Time Line: Order/set up in 88/89 season by end of Jan. 89. Begin p.i. as soon as meters arrive. Continue through life of program.

6. MEDIA INVOLVEMENT

a. Public Service Announcements
   (1) Promote Wood Burning Advisory Number
      (a) Involve electronic media in process
      (b) Develop spots & record
      (c) Daily announcement in newspaper
   (2) Promote Moisture Meters & Certified Wood
      (a) Through all media
b. Newspaper Involvement
   (1) Provide interesting interview resource people
   (2) Gather research materials for articles
c. Develop Information Interviews - Electronic Media

6 points
Time Line: Ongoing throughout life of program
Benefit: Broaden information base within community

7. OPERATION PAYCHECK

a. Insert Voluntary Compliance Information
   (1) Use to help establish neighborhood meetings
      (a) Wood seasoning
      (b) How to burn
      (c) Volunteer program
      (d) Certified woodstoves
      (e) Health effects
      (f) API information
      (g) Economic effects

b. Do Brochure That Covers OUR Needs
   (1) Use Particulate Matters theme
   (2) Promote advisory phone number
   (3) Neighborhood meeting promotion
c. Contact local employers
   (1) County
   (2) Industry
   (3) City
   (4) Other larger employers
      (a) Enlist cooperation

4 points
Time Line: 89/90 season and through life of program
Benefit: Broaden public information base

8. ADVISORY COMPLIANCE COMMITTEE & VOLUNTEERS

a. Committee Composition
   (1) Committee of Health Board
   (2) Experts needed
      (a) PP&L Weatherization Specialist
      (b) CP National Weatherization Specialist
      (c) Klamath Basin Solid Fuel Assn. members
      (d) Others as identified

No points
Time Line: Through life of program
Benefit: Assists coordinator in gaining better information and understanding of public needs.

b. Public Information Volunteers
   (1) Advisory signs
   (2) Take part in forums
   (3) Get visuals/brochures out to public

2 points
Time Line: 1990 and ongoing throughout life of program, beginning immediately
Benefit: Involvement actively in the program by public will encourage compliance; broadens scope of program in public being better informed.

9. NEIGHBORHOOD MEETINGS

a. Worst API Areas First
b. Ideal: In Homes
   (1) Check TV schedules for popular shows/specials
c. Use Industrial Employees As Base
d. Hands-on Sessions
   (1) Visuals and graphs
   (2) Handout materials
   (3) Cover all issues
e. End of each season
   (1) Notify in survey neighborhoods

5 points
Time Line: 2/15/89 through life of program
Benefit: Broadens information dissemination and develops volunteers to help in the Program.

10. WOOD BURNING ADVISORY ROAD SIGNS

a. Signs Change According to Air Quality
   (1) Specialized sign design needed
      (a) Green, yellow, red advisories
      (b) Ease of recognition/promotion value
b. Signs Changed by Volunteers
c. In Place For 90/91 Season
   (1) Permission of placement needed:
      (a) State, County, City
         1. Adjust to conditions
d. Promotion of Project
e. Project "Red Daze" Will Compliment Program

9 points
Time Line: Begin design work by 1/31/89' approvals by 1990 in place by 10/1/90; ongoing throughout remainder of project. throughout life of project
Benefit: Quickens Process of Getting Advisory Out to the Greatest Number in the Shortest Amount of Time.

11. PUBLIC SPEAKING PROGRAM

a. Develop list of organizations
   (1) Make engagements appointments
b. Develop visuals & handouts
c. Prepare speech materials
   (1) Health issues
   (2) How to burn
   (3) Weatherization
   (4) API
   (5) Financial issues
   (6) Suit to audience

2 points
Time Line: Ongoing throughout life of program, beginning immediately
Benefits: Broaden Range of Information to Community

12. COMPLIANCE VOLUNTEERS - SCHOOLS

a. Set Approval for Presentations Through Administration
b. Develop "Fun" Programs
c. Use Smoky the Bear
   (1) Include Fire Prevention
   (2) Include Pollution
d. Emphasize Health Information
e. Wood Burning Advisory Information
f. Wood Seasoning/Storage/Burning
g. Explain Compliance Programs
h. Develop Newspaper for Completion of Project
   (1) Children write & design

4 points
Time Line: Fall 1990: 1991
Benefit: Reaches broader audience range.

13. "EARTH DAY" FAIR (FOR SCHOOLS)

a. Develop Parameters of Fair
   (1) Involve schools in planning
   (2) Approve through administration
b. Projects & Awards
c. Enlist help from local groups

5 points
Time Line: Begin process with schools 1990; for 90/91 school year; program content selection March 1990.
Benefit: Furthers Involvement in the Process

14. RESEARCH PROJECT: SPIROMETRY TESTING

a. Interest Researcher In Local Inversions
   (1) Show uniqueness of area for project
      (a) Intermittent, overly high API during inversions
b. Research Peterson Students vs. A Control School
   1. 3, 4, 5, 6 grades
c. Send Home Health Charts For Parents To Fill Out
   (1) Heavy respiratory ailments emphasis
d. Include Public Health Nurses In Program

1 point for public information
Time Line: Set up beginning for Fall 1989
Benefit: Tracks actual health effects in long term study

15. VISUAL EDUCATION TOOLS, BROCHURE, POSTER, BILLBOARDS

a. Develop "A Primer in Particulate Matters"
   (1) Include: "Everything you ever wanted to know about woodsmoke but didn't have the breath to ask!
b. Develop "Particulate Matters" Poster
   (1) To promote voluntary compliance
   (2) To promote wood burning advisory number
c. Consider Placemats for Restaurants
d. Billboards to emphasize program

5 points
Time Line: Poster development 1/13/89; new design assessment for 89/90 season or same - assess August, 1989; Brochure development analyze content 2/15/89; develop for autumn 89 beginning dissemination; volunteers distribute Sept/Oct 89, 90, etc. throughout life of program. Billboards October 1989, 1990; placemat Fall 1990
Benefit: Broadens Public Information

16. GRANTS DEVELOPMENT/FAMILIES AT RISK

a. Identify families at risk through grant
b. ID woodstoves as primary heat source
c. ID alt/main heat sources or provide replacement
d. Income levels to determine risk
e. Time lived in area
f. ID respiratory problems
g. Attitudes on voluntary compliance
h. Cost of utilities
i. Cover insulation/window types

5 points on publicity/5 points effect
Time Line: Apply 1990
Benefit: Accurately identifies families at risk from block grant and other sources.

23. SLASH BURNING VOLUNTARY PROGRAM

a. Line up participants
   (1) Forestry
      (a) State
      (b) Federal
   (2) BLM
   (3) Farmers/Ranches
   (4) Contract burners/industrial
   (5) State Highway Division
   (6) Interest DEQ
b. Set up program
   (1) Establish base

2 points
Time Line: 1990
Benefit: Area impact odd burn times, perception

24. EXEMPTIONS PROGRAM

a. To develop concept of hardship and sole source

No points
Time Line: 1990 only
Benefit: Community perception

25. GREEN WOOD BAN

a. Develop ordinance to end selling of green wood
   (1) Require wood certification with vendors
   (2) Moisture meter checks
   (3) Encourage covering wood

6 points
Time Line: Fall 1990
Benefit: Reduction of PM-10s

26. FUGITIVE DUST VOLUNTEER PROGRAM

a. Alternate to rocking
   (1) Harder aggregate or other
   (2) Highway Division, County Roads and City

3 points
Time Line: 1989/1990 heating season
Benefit: PM-10 reduction

27. EDUCATION SEMINARS/FORUMS

a. Use Impact Programming
b. Present "Other Towns" Programs
c. Include All Informational Materials
   (1) Wood seasoning
   (2) How to burn
   (3) Wood burning advisory
   (4) Health risks
   (5) Economic risks
   (6) Other information
d. Make As Hands-on As Possible

3 points
Time Line: Development of 10 specific programs, establish need and benefit - Spring 1990; ongoing throughout life of program.
Benefit: Broadens understandings to move into cooperation on compliance

F-1

28. USED OIL BURNING BAN ORDINANCE

a. Reduce heavy dioxins airshed PM-10 emissions
b. Reduce creation of dioxins
c. Reduce sulphur emissions

4 points
Time Line: By October 1990
Benefit: Reduced airshed effects/education effect

29. USED WOODSTOVE SALES BAN ORDINANCE

a. Both sales & installation
   (1) Including private party sales
b. To reduce PM-10 emissions
c. To get rid of conventional non-certified stoves

2 points
Time Line: By October 1990
Benefit: Reduced airshed effect/education effect

30. LIMIT OUTDOOR BURN ORDINANCE

a. Permitting of burns
   (1) No stagnate air days year-round
   (2) Identified as larger than 2" x 2" pile
      (a) Must be fire safety attended
   (3) Within 1 mile of KF UGB
b. Reduce impact on air quality
c. Reduce PM-10 effect

2 points
Time Line: By October, 1990
Benefit: Reduced airshed effect/education effect

31. BAN OF BURNING TOXIC MATERIALS ORDINANCE

a. Particle board
b. Plastics/parafin coated products
c. Indoors and outdoors

2 points
Time Line: October 1990
Benefit: Cleaner air effect, elimination of dioxins and other harmful materials from air

32. OPERATION COMPLIANCE PUSH

a. Fair, September 15, 1990
b. Demonstrations
c. 1990 wood & pellet stoves
d. Health materials
e. Fire/flue safety

2 points
Time Line: September 1990
Benefit: Further education, prepare community for compliance

Klamath County Department of Health Services

3300 VANDENBERG ROAD
KLAMATH FALLS, OREGON 97603

PUBLIC HEALTH
503 / 882-8846
Administration
Nursing Services
Vital Statistics
WIC - Nutritional

ENVIRONMENTAL HEALTH
503 / 883-1122
Food Service
DEQ
Tourist & Travelers
Water Programs

Dear Resident of _____:

WE NEED YOUR HELP. We need you to personally involve yourself and your family in the Klamath County Air Quality Voluntary Compliance Program. We ARE TRYING to preserve your ability to burn wood as a heating resource.

While our air quality crews were out the other day doing opacity surveys, they made note of the fact that you were burning on a RED DAY. Are you aware that Klamath County has an Air Quality Woodburning Advisory telephone? The number is 883-7449. The advisory keeps people informed of whether we are getting air inversions or not - the culprit that helps the pollution you and I are creating stay on the ground.

Our airshed is limited in the amount of smoke particulates it can hold. We have outgrown the airshed because of all the things we burn and dump into the air. Unfortunately, THERE'S NO STORE WHERE WE CAN BUY A BIGGER AIRSHED -- THIS IS IT. As a result, we either have to start caring about ourselves, our quality of life, what we are breathing and at the same time, caring about our friends and neighbors or we will have to accept the responsibility for adversely affecting ours and our neighbors health. OUR AIR GETS THAT BAD!

We must reduce the effects of woodsmoke within our airshed in the Klamath Falls Urban Growth Boundary.

Each year thousands of people (particularly the elderly and the young) in this area (many of them in your neighborhood) are directly affected health-wise by high counts of woodsmoke. Asthmatics and individuals with Angina are particularly hard hit, among others. At times we even request the schools to curtail physical activity - so this is no joking matter.

EQUAL OPPORTUNITY EMPLOYER

YOUR INVOLVEMENT CAN MAKE THE DIFFERENCE!!! If you have sole source heat, please consider getting a backup heating system. If you have backup heating, please take part as a volunteer and use it to help battle our particulate problem. A number of people have said "Until somebody makes me do it, I'll burn my woodstove when I want to." The point here is THAT YOU ARE BREATHING THIS JUNK TOO. As a member of an urban area YOU HAVE THE RESPONSIBILITY TO CARE ENOUGH TO HELP CLEAN UP THE AIR.

PLEASE INVOLVE YOUR NEIGHBORS AND FRIENDS IN THE EFFORT. WE CAN make great strides in solving THIS PROBLEM THIS YEAR IF EVERYONE WILL GET INVOLVED. Or, we can do it all the hard way with mandatory compliance as the solution with potential fines of up to $250 being given to some very, otherwise nice people. ISN'T THAT A BIT NEGLIGENT ON OUR PART?

We have an expanded voluntary compliance program as of Nov. 22, with agriculture, ranching, outdoor burning and forestry now involved. We will be developing an expanded plan for dealing with some of the other causes of this problem.

We are out-of-attainment according to the U.S. Environmental Protection Agency and the Federal Clean Air Act on PARTICULATES (PM-10) and carbon monoxide. Pollution has an exact thumb print to track "what' has caused it. Contrary to what people wish to think, laboratory testing shows <u>both</u> are caused by too much smoke from <u>woodstoves</u> (84%) (not industry, not slash burning). Therefore, SOMETHING MUST BE DONE. SO LETS DO IT AS CARING RESPONSIBLE PEOPLE.

GET INVOLVED AND CARE.

PERRY RICKARD
Health Department Director

W.LOUELLYN KELLY
Air Quality Program

P.S. Yes, you are welcome to call LouEllyn to discuss this at 882-8846!

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Water Programs

Dear Resident of_____:

You were again observed burning wood on a red night.

Did you know that within a six to eight block area of your home there are individuals with respiratory and/or heart problems? All of these people are affected in someway by our poor winter air quality which is choked by woodsmoke, some with terrible results. Your failure to participate in the air quality program may add to their health problems.

YOU HAVE TO CHOOSE, but your following a reduced burning schedule would help greatly....particularly if you would cease burning after 7:30 or 8 p.m. when you have warmed your house up on red nights. We of course would prefer that you NOT BURN on red nights (or on yellow nights if you do not have a DEQ/EPA certified woodstove).

The voluntary woodburning compliance program is scheduled to go through the 1990/91 winter heating season. If the needed compliance cannot be developed from this program, a reevaluation will be made. Wouldn't it be better to have compliance because we want to instead of through a mandatory program that fines and enforces? In many communities, woodstoves have to be licensed annually and if you do not have a certified stove, you are forced to get rid of it. Why do we have to go to these extremes? All we are doing is asking that you take part in the voluntary program and burn with consideration for others.

THANK YOU FOR YOUR PARTICIPATION.

Perry Rickard
Health Services Administrator

W. LouEllyn Kelly
Air Quality Program

ATTACHMENT 1

LANE REGIONAL AIR POLLUTION AUTHORITY

SUMMARY OF HEARING

Subject: PM10 STATE IMPLEMENTATION PLAN
Date: January 30, 1990
Place: Eugene City Council Chambers
Time: 7:00 p.m.

BACKGROUND

LRAPA board chair Emily Schue explained that the reason for this public hearing was to receive comments from the public regarding the proposed PM10 State Implementation Plan for Eugene-Springfield. She advised those present that LRAPA had been designated as hearings officer for the Oregon Environmental Quality Commission, and this was a concurrent LRAPA/EQC public hearing. Schue entered into the record affidavits of publication of notice of the hearing in the Eugene Register-Guard, the Springfield News and the Cottage Grove Sentinel. The proposed plan had also undergone area-wide and state clearinghouse reviews and had fulfilled all notice of rulemaking requirements. Schue indicated that the record of this hearing would remain open until 5:00 p.m. on February 13 to allow opportunity for written comments following this meeting. The matter was to be placed on the March 13, 1990 LRAPA board agenda for possible action. She asked Ralph Johnston of LRAPA staff to give a brief overview of the proposal prior to opening the public hearing.

Johnston explained that the proposed plan had been developed in response to the July 1987 adoption by the federal government of a health-related standard for particles smaller than 10 microns in diameter (PM10). He said this area had been designated as a Group I area, meaning that there was a 95 percent or better chance that the area would violate the new standard. The area did violate the standard, and was required to develop a plan to bring Eugene-Springfield into attainment with the standard. The LRAPA Board of Directors then charged the LRAPA Advisory Committee with the task of developing a plan. Johnston described the process employed by the advisory committee over the past two years to develop the proposed plan. He said that, following the public hearing and LRAPA board adoption of the plan, it would be forwarded to the state Environmental Quality Commission for its approval and then to the U. S. Environmental Protection Agency for its review and approval.

Johnston described the meteorological conditions and emissions sources which cause Eugene-Springfield to be in nonattainment. The exceedances of the standard occurred in the wintertime in residential areas, and computer modeling results showed that substantial reductions in emissions from home heating would result in attainment of the standard. For that reason, the plan's sole attainment strategy was to achieve a 70 percent reduction in home

heating emissions. The plan would change the curtailment program which had been in place in Eugene-Springfield for the past four years from voluntary to mandatory. Staff would continue to evaluate the effectiveness of the voluntary program through the remainder of the current heating season and through the 1990/91 season. If there are exceedances of the standard during that period, the program would be made mandatory for the 1991/92 heating season. The plan also contains provision for a certification program for firewood dealers to help ensure that only well-seasoned wood is sold. Public education is also a big component of the plan, including production of a public service announcement. Another provision of the plan is additional air quality monitoring. The curtailment program would be structured to provide exemptions for people who have no other source of heat, and possibly for low-income households and certified stoves. The program would affect Eugene-Springfield and the River Road-Santa Clara area.

Enforcement of the mandatory curtailment program would depend either on a change in the state statutes, which would allow LRAPA to adopt the necessary rules, or on ordinances adopted by the cities and Lane County. The rules or ordinances would be developed in the next year and put into place so that, if exceedances occur, LRAPA will have the ability to deal with them quickly. Johnston stressed that a curtailment program, whether voluntary or mandatory, would involve only a few days a year when the air is stagnant and pollution levels approach the standard.

SUMMARY OF ORAL TESTIMONY

Ron Crasilneck, 3091 Hendricks Hill, Springfield, (National Steelcrafters/ Breckwell/Craft Stove Center/Wood Heating Alliance)

Crasilneck stated that, in his various capacities with the above-referenced groups, he has been involved with this issue on the national, regional, state and local levels. He felt that he could give a well-balanced, informed opinion regarding LRAPA's recommendations. He had attended all of the LRAPA Advisory Committee meetings. He believes that clean air is important, but does not want to see expensive, restrictive and unnecessary regulations. While he agreed, generally, with the proposal, there were several parts to which he and those he represented were strongly opposed.

The industry could not support any curtailment plan which does not include an exemption for people who had made a financial commitment to clean air by replacing a dirty stove with a cleaner-burning one. The industry supports the voluntary program which has been in place for several years and which does contain such an exemption. They feel it has been working well.

Crasilneck explained why the industry believes an exemption for certified stoves is necessary. In 1983, DEQ established a long-term strategy to clean up woodstove emissions. This was followed by a national strategy adopted by EPA. Many people had purchased woodstoves in the 1970's which were guaranteed to last a lifetime or had 25-year guarantees. Those people need more of an incentive than clean air to be induced to abandon those stoves for newer, cleaner-burning stoves. The woodstove industry has developed stoves which are much more efficient, burn cleaner and look better than the old ones. Exemption from a mandatory curtailment program would be an additional incentive to purchase the newer technology. The industry feels that government agencies must not offer disincentives by not including the exemption.

Crasilneck stated that LRAPA has created the impression that someone will come into people's homes and pull out their woodstoves. People are afraid that it is LRAPA's intention to completely eliminate all home wood heating in Lane County. Crasilneck asked whether it is LRAPA's intention to force people to be dependent on utility or gas companies, and to pay whatever rates are necessary to build new facilities; or is it LRAPA's intention to clean up the air while allowing people the freedom to heat their homes in their own way. He said that exempting certified stoves and pellet stoves would not be promoting the sale of woodstoves: it would be eliminating a disincentive for people to make a commitment to local clean air.

Crasilneck also disagreed with LRAPA's contention that there is no evidence to show that the new stoves actually provide emissions reductions when in home use. He presented a report from Bonneville Power Administration and one from U. S. EPA which show that the newer stoves have three to four-and-a-half times

less particulate emissions as old stoves. He added that there have been many improvements in the technology since these studies were done, and the reductions in emissions are probably even greater by now. He indicated that the new pellet stoves reduce emissions by 20 to 40 times and that they are so user-friendly that it is impossible for an owner to interfere with their proper operation. He feels that the woodstove industry is being "attacked" for not providing technology to clean up the air, even though they have made great strides toward that goal.

Another subject which, Crasilneck said, has woodstove manufacturers worried is the "Best" program developed by DEQ, based on the premise that the new woodstoves don't perform well in the field. Crasilneck said he feels the DEQ has used tax dollars to get into the woodstove development business and that, eventually, the LRAPA board will be asked to exempt only "Best" stoves, thus endorsing DEQ as woodstove designers and setting up a de facto new regulation for the industry to meet.

Crasilneck strongly recommended that any curtailment program include an exemption for 1988 DEQ-certified and 1990 EPA-certified woodstoves and all pellet stoves that are either certified or exempted by EPA. He went on to say that the industry feels that a mandatory program may not be necessary because there are fewer people using wood for heat than there were in 1985. He said people are becoming accustomed to higher heating bills; many have been scared away from wood heating by LRAPA publicity; and many are just tired of all the work involved in heating with wood. He cited Willamette national Forest statistics that firewood permits were down 48 percent in 1989 from 1985. Crasilneck said that many of the old stoves have been replaced with new-technology stoves since 1985, and he feels that the conditions for the worst-case scenario of 1985, upon which the attainment plan is based, no longer exist.

Enforcement of a mandatory program would require additional effort on the part of LRAPA staff. Crasilneck wondered how tax payers would feel about paying for special smoke police for violations occurring maybe once or twice a year. He said the board must distinguish between what could be viewed as a self-serving proposal by LRAPA and one that deals with a real crisis. Crasilneck said that, while it has been stated that EPA will not accept a plan that has a voluntary curtailment program, there is no evidence that EPA would reject a plan that says: "LRAPA will operate the existing voluntary curtailment program indefinitely or until, over a three- or five-year period, there is clear evidence that air, with respect to home heating, is worsening. In that case, a mandatory curtailment program will be implemented." He said the way the proposed plan is written, implementation of a mandatory plan is totally dependent on one year's experience, but trends take more than one year to show up.

Crasilneck maintained that, if the woodstove industry is allowed to do its job of developing clean-burning technology and getting people to replace older

stoves, there will be no need for even a voluntary curtailment program. His final recommendations were:

1. Combine Numbers 1 and 5 of Appendix I of the plan to state that LRAPA will operate a voluntary emissions curtailment program indefinitely, or if over a five-year period, there is clear evidence that air quality is worsening, then implement a mandatory plan, as proposed.

2. Support Numbers 2 and 3 dealing with firewood dealers.

3. Support Number 4, the public service announcement, although the regulations should explicitly state that industry will be involved in its development.

4. Regarding public education, the woodstove industry should also be used as a resource and as a conduit to get the word out to people.

5. In Number 6, the exemption should be explicitly stated, for DEQ- and EPA-certified stoves and all pellet stoves either certified or exempted by EPA.

6. Support Number 7 because, if there is a mandatory program, he agrees that LRAPA should enforce it.

7. Support Number 8, prohibition of the sale of used woodstoves, although he feels it should be a prohibition of the installation of used stoves, rather than sales. He would like to see a legal outlet for used stoves when people purchase new ones. These stoves would be sold only to people from areas outside the Eugene-Springfield nonattainment area.

In summary, Crasilneck said he would encourage the board to spend tax payers' money wisely, to recognize the value of today's wood-burning technology and to recognize that the voluntary program is working. He said LRAPA and the woodstove industry should work together and not against each other.

Michael Copely, 1415 Skyline Park Loop, Eugene.

Copely stated that, in general, he supported the proposal, although he felt that it was not strong enough. He said he is aware of the pressures placed on public agencies when considering regulations such as these; however, he said that regulation of home heating emissions is necessary. He said it seemed ironic to him that an area such as Eugene, which prides itself on its environmental quality, is capable of tolerating such an offensive level of air pollution during the winter months. Regarding the expense involved in the new stove technology, Copely said that, on the other side of that argument, there are medical bills from the effects of smoke on individuals. Because some members of his family have asthma, he must maintain an expensive electronic air cleaning system in his home, as well as having a house which is basically

hermetically sealed from the outside air. He resents not being able to open his windows during the winter for several weeks. He said this is a function of our unique topography, and as long as we are stuck with it, we must contend with it in a responsible manner. Copely said that, based on his observation around town on Yellow days watching smoke pour out of chimneys of houses, fall to the ground around the houses and lay there like a dirty puddle of water, he feels the agency should consider mandatory curtailment on the Yellow days. In this way, he said, Red days might be avoided altogether. Copely recognizes that wood heating is pleasant and comfortable and aesthetically appealing; however, it creates pollution problems because the area is in a valley, blocked in by hills on three sides. He feels the proposed plan should be regarded only as a first step.

Verne Reinmuth, 600 Kingswood Avenue, Eugene

Reinmuth moved to Eugene when he retired, partially because of the good air quality in the area. He uses a very efficient woodstove and burns only well seasoned wood. He worked for the electric utility industry for 38 years and raised some questions regarding the effects of curtailing--or eliminating--wood heating. If the wood is not burned for heat, it must be taken to a landfill. If wood burning is not allowed, there will increased demand for other kinds of energy, from coal or nuclear or hydro or some other source. Coal causes significant pollution problems. When temperatures get down below 40 degrees, wood heating becomes most beneficial and takes a part of the load off the electric generation plants. The electric companies use their most efficient equipment during normal conditions, and when there is added demand during cold weather, they must put into use older, less efficient equipment which is more expensive to operate. The electricity costs more money to generate, so it is more expensive to the consumer. Gas companies operate the same way. Reinmuth contended that curtailing wood heating greatly increases the cost of electric and gas energy. He asked that the board not cut out wood burning unless it is really necessary.

William M. Ward, 2367 Emerald Street, Eugene

Ward has depended on wood heat for approximately eight years. He feels that people should be allowed to use their woodstoves but that there should be some controls. He feels the proposed plan does not go far enough, to the extent that at least 80 to 90 percent of the houses in the area that we're concerned with that have existing functional heating systems besides wood heat. Wood heat is not a necessity for most people in this area--it is a luxury, and luxuries come at a price. Unfortunately, the person who uses this particular luxury is not the only one who has to pay the price. Everyone pays with ill effects on their health. He understands that people want to be able to use their woodstoves, and that there would be some problems enforcing this type of program.

Ward things that there should be a permit system for persons wishing to use woodstoves, and that the fee for the permits should increase every year for five years. People would have time to foresee what was happening and review their expenses to see if it would be cost-effective at the end of five years to keep heating with wood, or if they should switch to some other heat source. He said there should be two classes of permits: Class A would be for people who have no other source of heat and should be allowed to use woodstoves on any day; Class B would be for people who have other heat sources available and for whom wood heating is a "luxury." Class B permits would allow use of wood heating on Green days, only, and would impose fines for any burning done on Yellow or Red days. The permits would be color-coded, and recipients would be required to post the permits in a window and leave it there, like with a building permit. It would be easily enforced through citizen complaints. He suggested that, if a person did not pay a fine within a given time limit, LRAPA could attach the individual's vehicle registration or some such mechanism. He feels that wood heat is a luxury and that people who use it should pay for the privilege. People who don't heat with wood should not have to pay for other people's use with their health.

Ellen Maddex, 2570 Van Ness, Eugene

Maddex does not feel that she and her family should have to pay with their health and well being for their neighbors' bad habits. She feels that burning wood on a Yellow day, when you have another heat source, is socially irresponsible and selfish. She also thinks the proposed plan is not strong enough, and that this weak stance puts Eugene-Springfield in an awkward position when trying to register complaints against pollution from outside sources such as field and slash burning. People keep telling her that wood heat is cheap, but she disagrees. It is not cheap when you consider the social and medical consequences to your neighbors. She would recommend much stricter mandatory regulations. She sympathizes with people in the woodstove industry; however, the airshed is too fragile to continue to allow excessive wood smoke for fear that it might hurt a few local industries, such as the woodstove industry.

Howard Robinson, Eugene (pellet stove dealer)

Robinson sells pellet stoves and believes that use of pellet stoves is a responsible way to heat because of the low emissions from this type of stove (.4 grams/hour as compared with some airtight stoves which produce as much as 60 grams/hour). He commended the woodstove industry for its voluntary efforts to help produce clean-burning technology. He sees the pollution problem being due to the fact that there are a lot of old stoves out there and not very many pellet stoves. He suggested a tax credit to a homeowner for removing an old stove and installing a new one. This would justifiably spread some of the cost of switching stoves to everyone, since everyone would benefit from it. He also suggested that any ordinances which are considered contain exemptions for clean-burning pellet stoves.

Jim Krupp

Krupp was in the woodstove business and hopes to re-enter the business soon. He said people need to understand that there are clean-burning stoves out there. The old stoves need to be taken out because they are dangerous.

Son Schneider

Schneider said that, with all due respect to the people who are producing clean-burning stoves, he thinks that LRAPA's efforts should be tied also to projected population increases in the area. He believes that, within a finite area, you cannot continually increase the number of stoves, no matter how efficient they are, without ultimately maxing out the airshed.

There were no further comments. Schue reiterated the fact that the record would remain open until February 13 and encouraged submittal of written comments. Action on this proposal is scheduled for the March meeting of the LRAPA Board of Directors.

Attachment G

STATE OF OREGON
DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE MEMORANDUM

DATE: November 7, 1990

TO: Environmental Quality Commission

FROM: Merlyn Hough, Hearing Officer

SUBJECT: Hearing Report:

Proposed PM_{10} Control Strategy for the Medford-Ashland Air Quality Maintenance Area as a Revision to the State Implementation Plan.

Schedule and Procedures

Public hearings were held at the Smullin Center Auditorium, Rogue Valley Medical Center, in Medford on August 6 and September 12, 1990. Public notices included the following:

- The Secretary of State published a Notice of Proposed Rulemaking Hearing, Statement of Need for Rulemaking, Land Use Consistency Statement, and Fiscal and Economic Impact Statement on July 1, 1990;
- The Department of Environmental Quality (Department) provided a news release dated July 31, 1990, on the public hearings;
- The State Clearinghouse initiated the 45-day intergovernmental review process on August 3, 1990;
- The Ashland Daily Tidings published a news article on August 4, 1990, announcing the August 6 public hearing;
- The Medford Mail Tribune published a news article on August 5, 1990, summarizing the proposal and announcing the public hearings; and
- The Medford Mail Tribune published a Notice of Public Hearing on Proposed Air Quality Rule Amendments (paid advertisement by the Department) on August 10, 1990.

Verbal testimony was provided by 19 of the 51 persons that attended the August 6 hearing and 13 of the 23 persons that attended the September 12 hearing. Written testimony was provided by 36 persons (some people provided both verbal and written testimony). All of the written materials have been photocopied and provided to each member of the Environmental Quality Commission.

Summary of Testimony

Most of the testimony followed a similar theme: the proposed plan is a good start but much more needs to be done to reduce air pollution and ensure that health standards will be met on schedule. Much of the testimony stressed the need for a comprehensive, balanced and equitable approach to reducing pollution from all of the significant sources.

There were several major issues in the testimony:

1. Many people indicated the current air quality situation is unacceptable and stressed the health concerns associated with the PM_{10} (i.e., particulate matter ten microns or smaller) concentrations measured in the Medford area. They also expressed concern that the proposed plan will not be adequate to fully meet health standards.

2. Many people stressed the importance of reducing all sources of PM_{10}, not just the residential woodheating and industrial sources; other sources such as open burning, slash burning, fugitive dust, and car and truck exhaust also need to be controlled. Total bans on open burning and slash burning during October (or November) through February were recommended by some.

3. Several people recommended more stringent industrial requirements, including dual-fueling requirements on large wood-fired boilers (with natural gas to be used instead of wood during periods of poor ventilation).

4. Many people expressed the need for tight enforcement of air pollution requirements on all sources, especially industry, and the need for extensive continuous emission monitoring of industrial processes.

5. Some people recommended additional air monitors, including the re-establishment of a background monitoring station on Dodge Road.

6. Several people stressed the need to establish quantifiable milestones and carefully track progress periodically with woodheating surveys, emission inventory updates, stack test and continuous monitoring data reviews, and air quality data analysis.

7. Several people recommended a contingency plan with additional control measures that would be implemented if necessary to keep the projected air quality improvements on schedule.

8. Several people expressed concern that the proposed plan does not adequately address the future growth of the region.

MEDFORD PUBLIC HEARING TESTIMONY

No.	Written	Name	Affiliation	Major Issues Raised
1.	A	Vera Morrell	Coalition to Improve AQ	1,2,3,4,5,6,7,8
2.	B	Maxwell Foster		1,2,3,5,6,7,8
3.	C	Gary K. Stevens	Jackson County	2,4,5,6,7,8
4.	C	Paula G. Fields	Jackson County	2,4,5,6,7,8
5.	D	Sean Downey		2,4
6.	E,O	Robert J. Palzer, PhD	Coalition to Improve AQ	1,2,3,4,5,6,7,8
7.	F,P,T	Wally Skyrman	American Lung Association	1,2,4,8
8.	G	Myra Erwin	Rogue Group Sierra Club	1,2,4,6,7
9.	H	Liz Vesecky		1
10.	I	Paul Wyntergreen	Oregon Environ. Council	1,2,3,4,5,6,7,8
11.	J	Herschel King, MD	Coalition to Improve AQ	1,2,4,5
12.	K	Joe C.A. Eckhardt, MD		1,2,4
13.	L	Teresa Giacomini	Friends of Greensprings	1,2,4,6,7,8
14.	M	Christi Courian		1,4,6,7
15.	N	Stephen Boyd		4
16.	P	Jan Young	Medford Better Breathers	1,2,4
17.	P	Harold Thurston	Medford Better Breathers	1,2,4
18.	P	Margaret Wylie	Medford Better Breathers	1,2,4
19.	P	James Weir	Medford Better Breathers	1,2,4
20.	P	Ethel Shuck	Medford Better Breathers	1,2,4
21.	P	Glenn E. Smith	Medford Better Breathers	1,2,4
22.	P	Lois H. Alfhill	Medford Better Breathers	1,2,4
23.	P	Les Calvert	Medford Better Breathers	1,2,4
24.	P	Norm Barrett	Medford Better Breathers	1,2,4
25.	P	Marge Faske	Medford Better Breathers	1,2,4
26.	P	Doug Faske	Medford Better Breathers	1,2,4
27.	P	Anne Hesek	Medford Better Breathers	1,2,4
28.	P	Bernice Fischer	Medford Better Breathers	1,2,4
29.	P	Donald L. Fischer	Medford Better Breathers	1,2,4
30.	P	Anne Gattschalb	Medford Better Breathers	1,2,4
31.	P	Mae E. Lacey	Medford Better Breathers	1,2,4
32.	Q	Frank H. Hirst	Ashland LWV, Audubon Soc.	1,2,4
33.	R	Patricia Kuhn		1,2,4
34.	S	Patricia D. Kauffman	Rogue Valley Manor	1
35.	U,V	Harvey Caine		1,2,3,4,7
36.	W	Bob Palzer	Oregon Chapter Sierra Club	1
37.	No	Jeff Golden	Jackson County Commission	1,2,4
38.	No	Marc Prevost		2,3,4
39.	No	Bob Karl		1,2
40.	No	Jameson Selleck		2
41.	No	Anna DeSpain		2
42.	No	Alden Moffatt		1,2

MEDFORD PUBLIC HEARING TESTIMONY (continued)

No.	Written	Name	Affiliation	Major Issues Raised
43.	No	James Shute		1,2,4,6
44.	No	Marty Main		1,2
45.	No	Gary Clarida		2
46.	No	Otis Swisher		1,2,3,4,5,6,7,8
47.	No	James Dodson	(opposed to the local woodburning ordinances)	2
48.	No	Marciel Mizerak		2,4
49.	No	Jan Young		2,4
50.	No	David Bassett	Medford Building Official	2
51.	No	Charles Skupeen		1,2,4
52.	No	Erik Wallbank		1,2

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STATE OF OREGON Attachment G

DEPARTMENT OF ENVIRONMENTAL QUALITY INTEROFFICE MEMORANDUM

DATE: September 26, 1990

TO: Environmental Quality Commission

FROM: John Core, Hearing Officer

SUBJECT: Hearing Report for September 18, 1990 in Klamath Falls

Proposed Particulate Matter (PM_{10}) Control Strategy for the Klamath Falls Nonattainment Area

Schedule and Procedure

A public hearing was held at the Klamath County Courthouse Annex, Commissioner's Hearing Room, on September 18, 1990. A public notice was published in the Secretary of State's Bulletin and in the Klamath Falls Herald and News 30 days prior to the hearing. John Core was the Hearing Officer.

Of the 45 persons attending, oral testimony was given by 13 people. Written testimony was received from 6 persons.

Primary Positions

Of the 19 persons that gave oral or written testimony, 13 persons were primarily opposed, one person was in favor and 5 persons did not state a position with regard to adoption of the Strategy. A listing describing the persons affiliation and primary position of persons providing testimony is attached. A petition signed by 500 persons in support of Klamath County adoption of a mandatory wood burning curtailment ordinance was submitted as part of the hearing record.

Major Issues

A common theme among those that testified in opposition to the proposed PM_{10} control strategy was that mandatory wood burning curtailment ordinances would place an unreasonable economic burden on homeowners, especially those on low or fixed incomes that cannot afford other means of heating their homes and that voluntary programs are adequate. A number of persons testified regarding health effects of toxic compounds emitted by the Bio-Medical incinerator at Keno, Oregon. Summaries of the testimony are provided below.

Testimony in Favor of Strategy Adoption

One person testified in support of adoption. Terry Wagstaff testified regarding the adverse health effects of woodsmoke and the need for the Department of Environmental Quality to take the necessary steps to restore healthful air quality to Klamath Falls. She stressed the need for economic assistance to the community to help homeowners install alternative forms of space heating in their homes. She submitted copies of a petition containing about 500 signatures of Klamath Basin residents that would support a mandatory wood heating curtailment ordinance.

Testimony in Opposition to Strategy Adoption

Thirteen persons testified in opposition to adoption.

Harry Fredricks, Klamath County Board of Commissioners, testified that the Commission would not consider a mandatory wood burning curtailment ordinance until the spring of 1991, completing the third year of the voluntary program. He noted the success of the voluntary program in reducing wood smoke levels, the County's need for economic assistance to help low income homeowners switch to other forms of home heating. Commissioner Fredricks said he would support a mandatory curtailment ordinance after completing three years of voluntary curtailment if economic assistance is provided.

Paul Wyntergreen, Oregon Environmental Council (OEC), opposed adoption on the basis that the control strategies were not sufficient to assure that air quality standards will be met. Mr. Wyntergreen's written testimony comments that:

1. Fuel switching to geothermal resources should be a major thrust of the strategy;

2. Home weatherization, a year-around stove opacity standard, a ban on installation of non-certified stoves and firewood seasoning requirements need to be added to the strategy;

3. Air monitoring information is insufficient to determining nonattainment area boundaries and contributions from the Weyerhauser mill; the technical analysis of source contributions is inadequate and emission inventory estimates for industrial sources are incorrect.

4. Because of the uncertainties in the Department's analysis, OEC believes that industrial emission rules recently adopted for Medford should also be adopted in Klamath Falls. These restrictions should be expanded to include curtailment of industrial emissions during wood burning curtailment periods.

5. Emission growth allowed under the current industry Plant Site Emission Limits (PSELs) are far too great; a cap needs to be placed on woodstove emissions and open burning should be prohibited during October to March.

6. Slash burning emissions need to be reduced and the Klamath Basin set aside as a designated area under the Oregon Dept. Forestry smoke management plan. Agricultural burning should be prohibited within 30 miles of Klamath Falls.

Bob Palzer, Coalition to Improve Air Quality, provided written testimony that the Oregon Chapter of the Sierra Club is opposed to the strategy because it is inadequate to assure that air quality standards will be met.

Lord Maitreya, Roy Birdsong, Dorothy Chiero, Doss Decker, Nancy Roeder, Robert Sweet, Donna Hunt, William Conklin and George Nurnberger provided written or oral testimony in opposition to strategy adoption, citing their opposition to a mandatory curtailment ordinance and belief that if adopted by the Klamath County Commissions, the ordinance would be immediately repealed through referendum. They also noted that other sources including cars, trucks and industry caused the high pollution levels, not wood burning; that the Department should enforce its regulations on industry and leave those that choose to burn wood alone. Several persons commented that restrictions on wood burning are discriminatory and the only means of heating their homes within their economic means. They commented that wood smoke is not a health hazard but that other sources do emit pollutants that the Department should be more concerned about (e.g., carbon monoxide from cars).

Cheryl Endicott, Carol Yarbrough, Jeff Anderson, George Nurnberger and Nancy Roeder testified that emissions from the Bio-medical incinerator at Keno, Oregon are far more toxic that emissions from woodstoves and that requirements for mandatory woodburning ordinances cannot be justified in light of Department's approval of the Air Contaminant Discharge Permit

for the incinerator. Several of the speakers noted the toxic effects of dioxins on people and wildlife as well as perceived inequities in the Department's management of air toxic issues in Klamath Falls; the need to recycle plastics being burned in the incinerator and health effects caused by incinerator emissions.

John Monfore of Weyerhauser Company in written testimony questioned the 1.5% growth rate included in the strategy analysis and the likelihood that the industrial emissions projected will ever been seen in reality. He also questioned if the Department technical analysis of source impacts was correct and if background PM_{10} levels referenced in the SIP are reasonable. Mr. Monfore testified that slash burning impacts on PM_{10} levels in Klamath Falls are very minor and his support for a continuing voluntary curtailment program.

Other Testimony

Kurt Schmidt of Modoc Lumber submitted written testimony questioning the potential impact of a new Clean Air Act on the strategy adoption process, operation of pellet stoves during curtailment periods and wording of the Emission Offset and Banking section of the strategy. He took no position on adoption of the strategy.

Don Thurston of the Oregon Department of Transportation Highway Division submitted comments regarding roadways that are ODOT's responsibility for winter road sanding. He took no position on adoption of the strategy.

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Attachment

Klamath Falls PM_{10} Control Strategy Hearing Testimony
September 18, 1990

-Testimony-				-Position-	
Written	Oral	Name	Affiliation	Support	Oppose
X		Kurt Schmidt	Modoc Lumber	No Position	
X		Don Thurston	Oregon Highway Div.	No Position	
X		Lord Maitreya	Public		X
X		Bob Palzer	Coalition to Improve Air Quality		X
X		Paul Wyntergreen	Ore.Environ. Council		X
X		John Monfore	Weyerhauser Co.		X
X	X	Harry Fredricks	Klamath County Comm.		X
	X	Roy Birdsong	Public		X
	X	Dorothy Chiero	Public		X
	X	Doss Decker	Public		X
	X	Nancy Roeder	League of Women Voters		X
	X	Robert Sweet	Public		X
	X	Donna Hunt	Public		X
	X	Cheryl Endicott	Public	No Position*	
	X	William Conklin	Public		X
	X	Carol Yarbrough	Citizens for Quality Living	No Position*	
	X	Jeff Anderson	Movement to Expose Corrupt Environmental Politics	No Position*	
	X	George Nurnberger	Public		X*
	X	Terry Wagstaff	Public	X	

* Note: Testimony comments on toxic air pollution emissions from the Bio-Medical incinerator at Keno, Oregon.

LANE REGIONAL

AIR POLLUTION AUTHORITY

(503) 726-2514
225 North 5th, Suite 501, Springfield, OR 97477

Donald R. Arkell, Director

To: Oregon Environmental Quality Commission

From: Donald R. Arkell, Hearings Officer

Subject: Hearings Officer's Report of Public Hearing, January 30, 1990
Eugene-Springfield State Implementation Plan for PM10

Summary of Procedure

Pursuant to public notice, a public hearing was convened by the Board of Directors of the Lane Regional Air Pollution Authority at 7:00 p.m. on January 30, 1990 in the Eugene City Council Chamber at 777 Pearl, Eugene. LRAPA received designation from the DEQ Director as hearings officer for the Oregon Environmental Quality Commission, and this was a concurrent EQC/LRAPA hearing. The purpose of the hearing was to receive testimony concerning the proposed PM10 SIP for the Eugene-Springfield metropolitan area. There were approximately 40 people in attendance, and 9 citizens presented oral testimony at the hearing. The hearing was held open until February 13, 1990, and written testimony was received from 8 individuals during that time (see Attachment I).

Summary of Testimony

There was general consensus in the testimony that an air quality problem exists, and that home wood heating emissions are a primary cause of the problem. There were, of course, differing ideas as to how the problem should be addressed. These generally fell into two basic groups. One group felt that the proposed home wood heating curtailment program was not restrictive enough. In this regard, several stated that burning should be restricted under conditions now defined only as "yellow" advisories. The other group (largely representing the woodstove industry) felt that, if a mandatory program were implemented, exemptions from restricted burning days were needed for EPA- and DEQ-certified stoves.

There were no comments requiring staff responses at this time. Since the SIP provides for the future evaluation of the home wood heating curtailment program and for changes to be implemented as needed, citizen concerns can be addressed at that time.

Action of the LRAPA Board of Directors

Based on the information presented, the board voted unanimously to adopt the SIP as presented. In order to enforce the plan, Lane County and the cities of Eugene and Springfield will be asked to adopt ordinances restricting home wood heating during periods of air stagnation. In addition, LRAPA will attempt to achieve state legislation removing the home heating exemption from LRAPA and DEQ jurisdiction.

DRA/MJD

RESPONSE TO TESTIMONY RECEIVED AT THE PUBLIC HEARINGS ON THE PROPOSED PM_{10} CONTROL STRATEGIES FOR THE MEDFORD-ASHLAND AIR QUALITY MAINTENANCE AREA

Issue No. 1: Many people indicated the current air quality situation is unacceptable and stressed the health concerns associated with the PM_{10} (i.e., particulate matter ten microns or smaller) concentrations. They also expressed concern that the proposed plan will not be adequate to fully meet health standards.

Response: The Department concurs that the current air quality situation is unacceptable and of serious health concern. The PM_{10} concentrations measured in Medford and Klamath Falls substantially violate both the annual and 24-hour PM_{10} ambient air quality standards. These standards are based on a thorough evaluation of health effects by the U.S. Environmental Protection Agency (EPA) and the Clean Air Scientific Advisory Committee (CASAC). CASAC is a panel of eleven nationally recognized non-EPA experts that reviews health effects information and recommends appropriate air quality standards to the EPA Administrator. PM_{10} concentrations measured in Medford and Klamath Falls are of special health concern because the smoke particles that are a dominant part of the aerosol in both airsheds are small enough to be easily inhaled and lodged in the lungs.

The Department recognizes that it will be difficult to meet the PM_{10} health standards in Medford and Klamath Falls. In addition to the ambitious control measures identified in the proposed PM_{10} control strategies, the Department is working with other agencies to develop appropriate contingency plans that would be implemented if shortfalls occur. It should be recognized, however, that the contingency measures will generally be more expensive and more difficult to implement than the proposed PM_{10} control strategies.

Issue No. 2: Many people stressed the importance of reducing all sources of PM_{10}, not just the residential woodheating and industrial sources; other sources such as open burning, slash burning, fugitive dust, and car and truck exhaust also need to be controlled. Total bans on open burning and slash burning during October (or November) through February were recommended by some.

Response: The Department agrees in general that the PM_{10} control strategies should be as broad-based as possible. However, it is important to consider the potential emission reductions and air quality benefits, the relative cost-effectiveness, and the technical feasibility in selecting the appropriate combination of control measures. The combination of the proposed control strategies and the contingency plans

should result in a comprehensive approach that not only focuses on the most effective and efficient emission reductions possible but also is broad-based enough to insure that health standards are met.

Residential woodsmoke is clearly the dominant contributor to PM_{10} problems in Oregon based on emission inventories, dispersion modeling, chemical fingerprinting, seasonal patterns, and intensive ambient monitoring. EPA has reviewed the Oregon data and concurred with the Department's assessment. Other state and local agencies in other western states with similar PM_{10} problems have come to the same conclusion. A few examples help illustrate this:

a. The PM_{10} plans for Juneau in Alaska, Olympia and Yakima in Washington, Boise in Idaho, and Eugene-Springfield, Grants Pass, Medford-Ashland, Klamath Falls in Oregon involved seven different air pollution agencies and used several different analytical techniques to apportion the sources contributing to the PM_{10} problems. But the results were similar: Residential woodsmoke was identified as the major PM_{10} contributor, especially on worst winter days.

b. The Medford-Ashland and Grants Pass PM_{10} plans have the most significant industrial emission reduction components in the Pacific Northwest. The non-Oregon areas listed above (Juneau, Boise, Olympia, and Yakima) have relied almost solely on woodsmoke reduction strategies to meet PM_{10} standards.

c. During 1985-87, the Department and LRAPA conducted woodheating surveys in Portland, Eugene-Springfield, Medford-Ashland, and Klamath Falls. The Department and LRAPA also operate extensive particulate monitoring in each of these areas. The highest particulate concentrations were measured in the areas with the highest reliance on woodheating as shown in Figure 1.

d. The long-term particulate trend in Medford indicates that winter particulate concentrations worsened during 1969-85 even though summer particulate concentrations improved over this period as shown in Figure 2. The summer improvement is attributed to progressively better control of industrial, road dust and open burning emissions. The winter worsening is attributed to increased residential woodheating due to the mid-1970s energy crisis. Winter particulate concentrations have improved since 1985 due to woodburning curtailment

programs (voluntary beginning in November 1985, mandatory since November 1989), the Oregon woodstove certification program (affecting new woodstoves sold since July 1986), and other programs.

e. Mandatory woodburning curtailment programs have made a difference in several PM_{10} problem areas. The Juneau program has eliminated the peak PM_{10} problem days that, prior to curtailment, were worse than ever measured in Medford. The magnitude and frequency of PM_{10} violations have been substantially reduced (almost eliminated) in Olympia and Yakima since the implementation of mandatory curtailment programs. Partial implementation of mandatory curtailment in the Medford area in December 1989 substantially reduced the peak day PM_{10} concentrations as shown in Figure 3.

Issue No. 3: **Several people recommended more stringent industrial requirements, including dual-fueling requirements on large wood-fired boilers (with natural gas to be used instead of wood during periods of poor ventilation).**

Response: The Department has included these recommended additional industrial control requirements among the potential contingency measures. The overall contingency plan is discussed under Issue No. 7.

Issue No. 4: **Many people expressed the need for tight enforcement of air pollution requirements on all sources, especially industry, and the need for extensive continuous emission monitoring of industrial processes.**

Response: The new industrial rules adopted in September 1989 will not only reduce emissions from veneer dryers and boilers by an additional 40% but will also provide continuous emission monitoring and more extensive source testing on major industrial sources. These additional monitoring requirements are expected to improve operation and maintenance of the pollution control equipment and increase the Department's enforcement capability.

Issue No. 5: **Some people recommended additional air monitors, including the re-establishment of a background monitoring station on Dodge Road.**

Response: The Department is doing additional monitoring this winter as committed in the proposed control strategy. The Department has re-established the Dodge Road background site.

Issue No. 6: **Several people stressed the need to establish quantifiable milestones and carefully track progress periodically with woodheating surveys, emission inventory updates, stack test and continuous monitoring data reviews, and air quality data analysis.**

Response: The Department concurs. The Department intends to formalize these procedures as part of the reasonable further progress reporting under the 1990 Clean Air Act requirements.

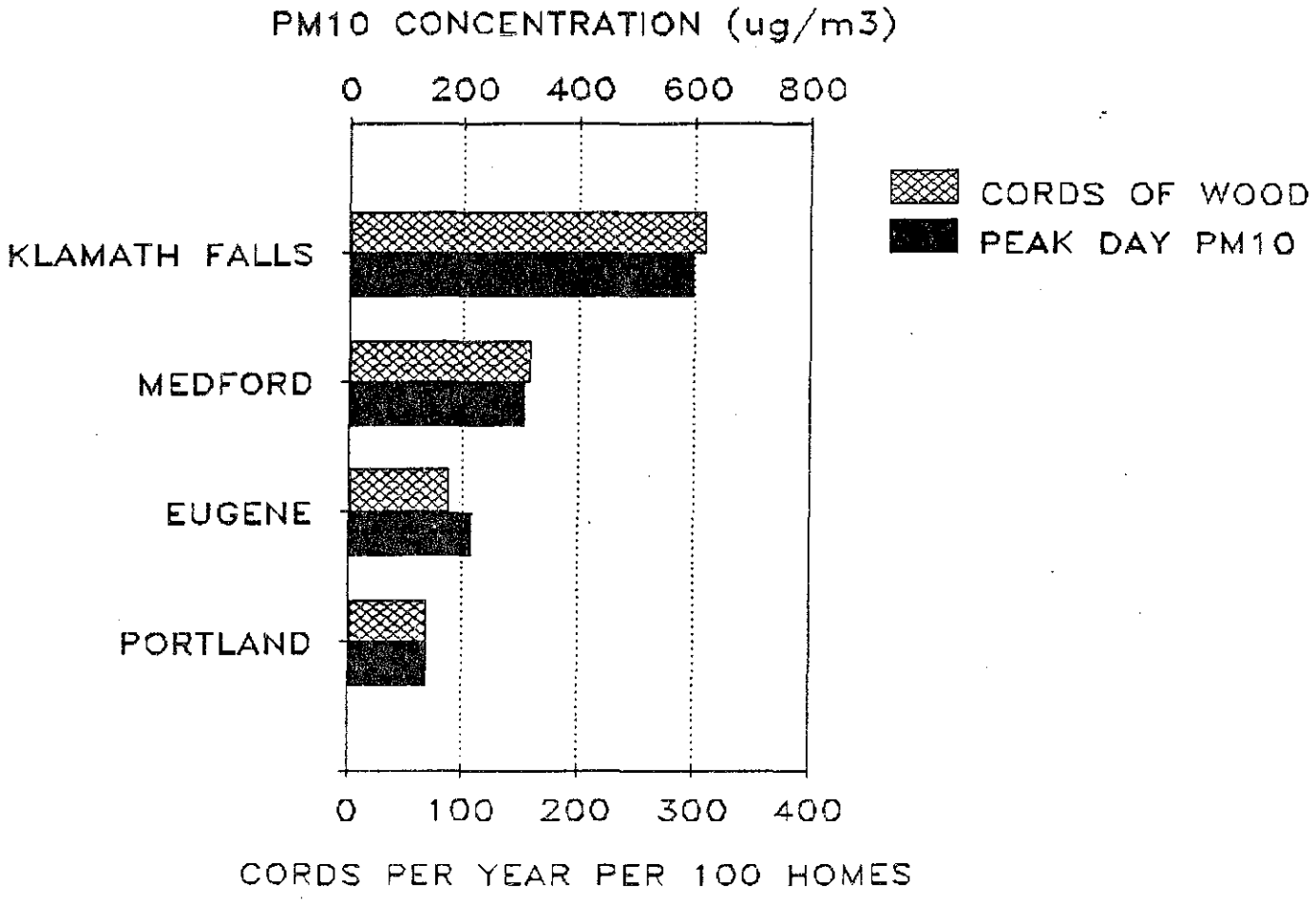
Issue No. 7: **Several people recommended a contingency plan with additional control measures that would be implemented if necessary to keep the projected air quality improvements on schedule.**

Response: The Department concurs. The Department has identified several potential contingency measures that could provide additional emission reductions from industries, residential woodburning, open burning, and slash burning. The Department intends to propose specific contingency measures, discuss them with the affected and other interested parties, and finalize the contingency plan by November 1991.

Issue No. 8: **Several people expressed concern that the proposed plan does not adequately address the future growth of the region.**

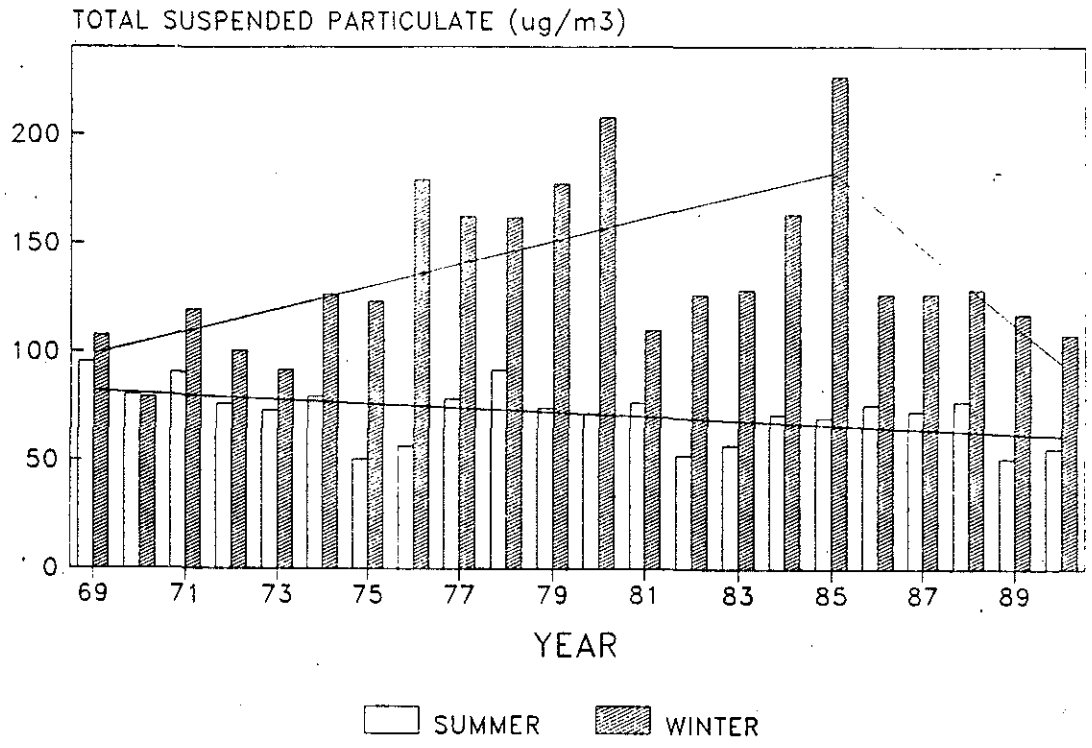
Response: The growth projections are consistent with accepted practice. The proposed plan is based on the traffic and population growth projections by the responsible local and state agencies. Industry emission are based on plant site emission limits adjusted downward due to the more restrictive emission requirements adopted September 1989.

Figure 1. Firewood use and peak day PM_{10} concentrations from 1985-87 DEQ/LRAPA woodheating surveys and ambient PM_{10} data.



Notes: The highest particulate concentrations were measured in the areas with the highest reliance on woodheating.

Figure 2. The long-term (1969-90) particulate trend in Medford at the Jackson County Courthouse.

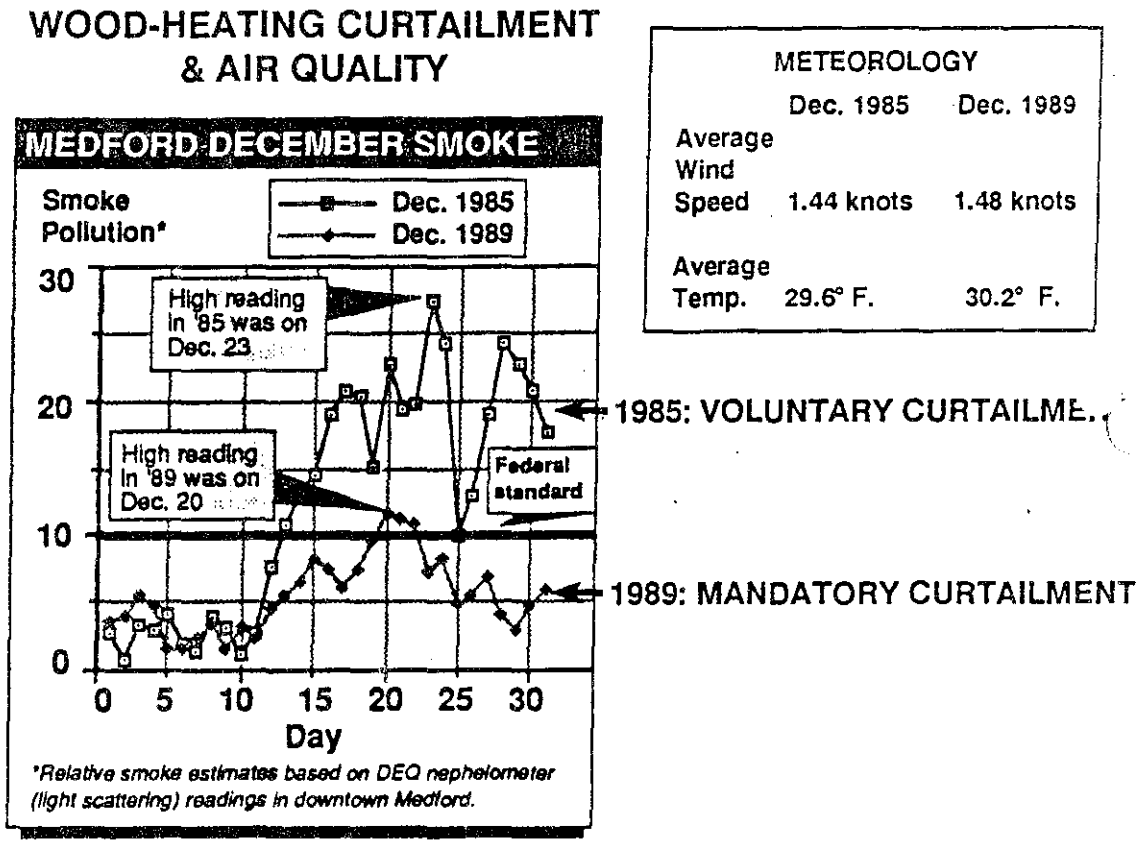


Notes: Winter particulate concentrations worsened during 1969-85 even though summer particulate concentrations improved over this period. The 1969-85 summer improvement is attributed to progressively better control of industrial, road dust and open burning emissions.

The 1969-85 winter worsening is attributed to increased residential woodheating due to the mid-1970s energy crisis.

Winter particulate concentrations have improved since 1985 due to woodburning curtailment programs (voluntary beginning in November 1985, mandatory since November 1989), the Oregon woodstove certification program (affecting new woodstoves sold since July 1986), and other programs.

Figure 3. Comparison of relative smoke concentrations in Medford during December 1985 and December 1989.



Graph – Medford Mail Tribune, Jan. 11, 1990.

Notes: Partial implementation of mandatory curtailment in the Medford area in December 1989 substantially reduced the peak day smoke (and PM_{10}) concentrations.

EQC\RESPONSE

RESPONSE TO TESTIMONY RECEIVED AT THE KLAMATH FALLS PUBLIC HEARING ON PM_{10} REVISIONS TO THE STATE IMPLEMENTATION PLAN

The major issues identified in the public hearing testimony are summarized and discussed in this report. The issues are grouped into the following categories: Air Toxics, Economic Impact on the Public and the Adequacy of the Control Strategies.

AIR TOXICS

Issue No. 1: Emissions of air toxics from the Biowaste Incinerator at Keno, Oregon present a greater public health risk than woodstove smoke.

Response: This issue is only indirectly related to the draft Klamath Falls PM_{10} SIP proposed by the Department. The Department has, however, estimated emission of dioxins from the Biowaste Incinerator and those from woodstoves located within the Klamath Falls PM_{10} nonattainment area. Based on published emission factors and assuming that 3,500 tons of waste are burned in the incinerator and that an average of 3 tons of wood are burned per year from each of the 10,000 woodstove in the airshed, dioxin emissions from woodstoves have been estimated to be about three times greater those emitted from the incinerator. In addition, the incinerator is located about five miles south of the PM_{10} nonattainment area. Based on this information, the fact that the highest population density is coincident with the areas of greatest woodsmoke concentration, and the known public health effects associated with woodsmoke, the Department believes that woodstove smoke is a far greater threat to public health than dioxin emissions from the Biowaste Incinerator at Keno.

ECONOMIC IMPACTS ON THE PUBLIC

Issue No. 2: Adoption of mandatory wood burning curtailment ordinances by local governments would impose an unreasonable economic burden on low income homeowners that cannot afford to heat their homes by other means.

Response: Any ordinance adopted by local governments will include exemptions for low income, sole source homeowners that heat exclusively with wood. An exemption for low income households will probably also be considered. These exemptions will likely be phased out over a period of several years. Those homeowners that do not qualify for an exemption may have increased heating costs if they have relied, in the past, exclusively on wood heat. The amount of the increase

depends on the form of space heating chosen, if the home is weatherized and the size of the home. A typical cost, however, is estimated at $2 to $4 per curtailment day per woodburning home. At 50 curtailment days per winter, the cost per household would be from $100 to $200 per year.

ADEQUACY OF THE CONTROL STRATEGIES

Issue No. 3: The proposed control strategy is not sufficient to assure attainment of the National Ambient Air Quality Standard (NAAQS).

Response: The technical analysis of the control strategy elements and the methodology for calculation of the emission reduction benefits of each element are based on technical guidance developed by the US Environmental Protection Agency. The Demonstration of Attainment section of the draft PM_{10} SIP indicates that the annual and 24-hour NAAQS can be attained and maintained if a rigorously managed and enforced mandatory curtailment program is adopted by local governments. In addition, the Clean Air Act Amendments of 1990 require States to adopt contingency measures to be enacted in the event of a failure of the control strategy to attain NAAQS. Contingency measures to backup the Klamath Falls strategy need to be adopted by November 1991.

Issue No. 4: Additional restrictions on woodburning, slash and agricultural burning and industrial emissions are needed to assure attainment of standards.

Response: Restrictions on residential wood and agricultural burning beyond those now included in the strategy are being considered as elements of a Klamath County ordinance. The additional restrictions on wood burning may include such elements as a ban on installation of used woodstoves, a mandatory seasoned fuel wood certification program and required removal of uncertified woodstoves upon sale of a home. The ordinance may also include a prohibition or other restrictions on agricultural burning within the nonattainment area. The Department is also working with the Oregon Department of Forestry on including Klamath Falls as a Designated Area under the Oregon Smoke Management Plan and expanding the Plan's Restricted Area to include forest lands adjacent to the nonattainment area. These and/or other measures may be included in the control strategy either as elements of the basic strategy or as contingency measures to be implemented in the event that NAAQS are not attained.

Issue No. 5: The technical analysis of PM_{10} source contributions is inadequate. Specifically, the impact of emissions from the Weyerhauser mill is underestimated.

Response: The Department has undertaken several studies of the distribution of PM_{10} concentrations within the Klamath Basin, including saturation studies conducted in November, 1985 and mobile nephelometer studies in January of 1989. In addition, chemical fingerprinting studies have been completed within the nonattainment area. These studies have shown that industrial sources impacts, as a percentage of PM_{10} mass, are consistent with airshed emission inventories which exclude Weyerhauser. DEQ has, however, made a commitment to conduct a screening model analysis of Weyerhauser's emissions. We have further agreed with EPA to revise the SIP, if necessary, to assure compliance with NAAQS.

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PRIOR EQC AGENDA ITEMS

Agenda Item D, January 22, 1988, EQC Meeting, Informational Report: New Federal Ambient Air Quality Standard for Particulate Matter (PM_{10}) and Its Effects on Oregon's Air Quality Program.

Agenda Item M, June 10, 1988, EQC Meeting, Informational Report: Implementation Status of the Total Suspended Particulate Air Pollution Control Strategy in the Medford-Ashland Air Quality Maintenance Area.

Agenda Item H, November 4, 1988, EQC Meeting, Request for Authorization to Conduct Public Hearings on New Industrial Rules for PM_{10} Emission Control in the Medford-Ashland AQMA and Grants Pass and Klamath Falls Urban Growth Areas (Amendments to OAR 340, Divisions 20 and 30).

December 8, 1988, EQC Work Session, Status Report on Medford PM_{10} Issues.

Agenda Item E, September 8, 1989, EQC Meeting, Industrial PM_{10} Rules for Medford-Ashland and Grants Pass: Adoption of New Industrial Rules That Were Taken to Public Hearings in January 1989.

Agenda Item F, June 29, 1990, EQC Meeting, Proposed Particulate Matter (PM_{10}) Control Strategy for the Klamath Falls Urban Area: Request for Authorization to Conduct Public Hearings.

Agenda Item G, June 29, 1990, EQC Meeting, Proposed Particulate Matter (PM_{10}) Control Strategy for the Medford-Ashland AQMA: Request for Authorization to Conduct Public Hearings.

Agenda Item L, December 14, 1990, EQC Meeting, Shortfall in Medford-Ashland PM_{10} Control Strategy Caused by Repeal of Central Point Ordinance: Informational Report.

I recommend that the voluntary wood stove program be expanded to address automobile exhaust emissions. There should be a major effort to curtail all nonessential running of automobile engines during wintertime temperature inversions. Particularly offensive is the practice of long idling to warm the passenger compartment of the vehicle. Industries should be asked to curtail their air contaminant discharges during wintertime temperature inversions. A comprehensive voluntary air quality program makes sense for the Klamath Falls area.

This headlong rush for a wood stove ordinance makes no sense!

Lord Maitreya
5721 Delaware Ave.
Klamath Falls, Or.
97603

Lord Maitreya

Proposed State Implementation Plan for Particulate Matter

Klamath Falls, Oregon Nonattainment Area

A Plan for Attaining and Maintaining the National Ambient Air Quality Standard for PM_{10}

State of Oregon
Department of Environmental Quality
Air Quality Division

January 1991

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Executive Summary

The US Environmental Protection Agency (EPA) adopted a new particulate National Ambient Air Quality Standard (NAAQS) for PM_{10} on July 1, 1987. PM_{10} particulate is less than 10 micrometers in aerodynamic diameter or about one-tenth of the diameter of a human hair. The NAAQS adopted by the US Environmental Protection Agency were established to protect public health and welfare. The Clean Air Act requires that states develop and adopt State Implementation Plan (SIP) revisions to assure that areas which exceed the PM_{10} NAAQS are brought into attainment within the time frames prescribed by the Clean Air Act (September, 1991). This document describes the State of Oregon's plan to attain the PM_{10} standard in Klamath Falls.

High exposure to particulate matter is of concern because of human health effects such as changes in lung functions and increased respiratory symptoms, aggravation of existing respiratory and cardiovascular disease, alteration in the body's defense system against foreign materials, damage to lung tissue, increased risk of cancer and, in extreme cases, premature death. Most sensitive to the effects of particulate matter are people with chronic obstructive pulmonary cardiovascular disease and those with influenza, asthmatics, the elderly, children and mouth-breathers.

Air quality measurements taken in Klamath Falls have indicated that the 24-hour PM_{10} health NAAQS was exceeded on average 47 days per year during the winter months during the period of mid-1986 to mid-1989. The annual average concentration of PM_{10} during the years 1986-1989 of 75 $\mu g/m^3$ also exceeds the annual average PM_{10} NAAQS of 50 $\mu g/m^3$.

The 24-hour PM_{10} NAAQS is 150 micrograms per cubic meter of air ($\mu g/m^3$), not to be exceeded more than three times averaged over three calendar years. Winter 24-hour concentrations of PM_{10} in Klamath Falls are among the highest recorded anywhere in the nation with maximum concentrations reaching as high as 792 $\mu g/m^3$ on January 25, 1988.

An inventory of PM_{10} emissions developed for the Klamath Falls Urban Growth Boundary indicates that the major sources of particulate emissions during 1986 winter periods of worst-case 24-hour PM_{10} concentrations are residential wood combustion (81%), industrial emissions (7 %) and soil dust (9 %). On an annual basis, these sources contribute 61 %, 10 % and 12 %, respectively. Emission inventory information representative of worst-case 24-hour conditions has been verified through receptor modeling techniques which actually measure source contributions to ambient air quality on the basis of their chemical "fingerprints".

Extensive air monitoring surveys have been completed which clearly demonstrate that the south suburban area of Klamath Falls, which comprises about 54 % of the population within the UGB, has the highest winter PM_{10} concentrations within the airshed. Based on these surveys, ambient air monitoring conducted at Peterson School have been shown to generally represent the highest PM_{10} levels within the Urban Growth Boundary. Development of a SIP which assures attainment and maintenance of the NAAQS at the Peterson School site should therefore be adequate to demonstrate attainment of the NAAQS anywhere within the airshed.

PM_{10} design values are those representative 24-hour worst case and annual average concentrations from which reductions must be made to achieve the NAAQS. Analysis of all of the available PM_{10} air quality data over the period of mid-1986 to mid-1989 (the largest available database) indicates 1986 24-hour and annual design values of 550 $\mu g/m^3$ and 75 $\mu g/m^3$, respectively. The design values adjusted for expected or potential emission changes during the 1986-1992 period are 592 $\mu g/m^3$ and 73 $\mu g/m^3$, respectively. Control strategies included in this plan have been designed to reduce projected 24-hour concentrations of PM_{10} by 442 $\mu g/m^3$ (592 - 150 $\mu g/m^3$) and the annual average by 23 $\mu g/m^3$ (73 - 50 $\mu g/m^3$). To achieve these 24 hour and annual average air quality improvements will require a 76 % reduction in 24 hour worst case day emissions and a 40 % reduction in annual emissions within the Urban Growth Boundary.

The control strategies needed to assure attainment of the PM_{10} National Ambient Air Quality Standards focus on control of residential wood combustion and road sanding emission. Other strategies includes stringent management of future growth in industrial emissions and restrictions on residential and forestry open burning.

Residential Wood Combustion Strategies

The principal means of achieving the needed reductions is through an effective wood burning curtailment and emission reduction programs. At least a 90 % reduction in wood smoke emissions is needed on poor ventilation days to attain the 24 hour NAAQS. This reduction will have to come from most of Klamath Falls' estimated 10,000 wood burning households which will have to forego use of their woodstoves during air stagnation episodes. Additional reductions throughout the heating season from the phase in of certified woodstoves will help achieve attainment of the annual standard. A strong public education program is an essential element of the strategy.

The strategy is implemented through the Klamath County Air Quality Compliance Development Plan and the Department's woodstove certification program. Another strategy element that will help assure maintenance of the NAAQS includes a county ordinance requiring certification that commercially sold firewood is

properly seasoned. Contingency strategies include financial assistance to low income households to upgrade their heating systems, enforcement of a wood smoke opacity limit and home weatherization programs to reduce wood heating requirements of poorly insulated homes.

Winter Road Sanding Strategies

A 60 % reduction in winter road sanding emissions through the use of liquid road deicing techniques in lieu of rock aggregate, application of less road sanding material and rapid cleanup of used road sanding aggregate will achieve fugitive dust emissions reductions needed to assure attainment of the annual standard. The road sanding strategy is implemented through a Memorandum of Understanding with the Oregon Department of Transportation Highway Division.

Other Strategies

Additional enforceable strategies include new rules designed to tightly manage industrial emission growth through reduction in the significant emission rate increase that triggers emission offset requirements. The significant emission rate was reduced from 15 to 5 tons per year. The rule was adopted to assure that industrial emission growth beyond the current Plant Site Emission Limits does not jeopardize emission reductions gained through other strategy elements.

Prohibitions on issuance of fire permits for residential, land clearing and agricultural open burning during winter woodstove curtailment periods are implemented through the State Fire Marshal's office and local Board of Fire Chiefs. Slash burning emission reductions included in the Oregon Visibility Protection Plan for Western Oregon of 50 % relative to 1978-79 emissions will be achieved by the year 2000, providing further assurance that background PM_{10} concentrations will not increase.

In addition, forestry slash burning impacts on the nonattainment area will be minimized through voluntary agreements among forest land managers. This program will help assure that forestry open burning does not adversely affect Klamath Falls air quality on winter wood heating curtailment days.

Strategy Emission Reduction - 24 Hour Worst Case Day

Attainment of the 24 hour NAAQS in 1992 will require a 76 % reduction in worst case day emissions equalling a reduction of 18,486 pounds per day. The needed reduction is achieved through the strategy elements listed below.

Summary of 24 Hour Emission Reductions
To Be Achieved by 1992

Strategy Element	Credit	Emission Reduction
New Road Deicing Practices	60 %	1,308 Pounds/Day
Wood Burning Strategies:		
- Wood Burning Curtailment	90%	17,171 Pounds/Day
- Certification of Woodstoves	20%	336 Pounds/Day
- Fuel Wood Certification	2%	27 Pounds/Day
Woodstove Strategies, Total		17,736 Pounds/Day

Total reduction from all strategies....19,044 Pounds/Day
Required emission reduction .....18,486 Pounds/Day

(Note: Because emission reductions are calculated on a declining balance basis, the product of percentage credits and total reduction (17,736 pounds/day) will not yield the individual element emission reductions shown. See Appendix 9)

No credits have been taken for the Klamath County public education programs.

Strategy Emission Reduction - Annual Average Case

Attainment of the annual average NAAQS in 1992 will require a 40 % reduction in annual emissions or a reduction of 756 tons per year. Although the entire needed emission reduction is achieved through the wood burning curtailment program, emission reductions obtained from the road deicing and other elements of the wood burning emission reduction programs are also included since they will occur as a result of implementing the 24 hour strategy. The needed reductions are achieved through the strategy elements listed below.

Summary of Annual Average Emission Reductions
To be Achieved by 1992

Strategy Element	Credit	Emission Reduction
New Road Deicing Practices	60 %	18 Tons/Year
Wood Burning Strategies:		
- Wood Burning Curtailment	74% *	756 Tons/Year
- Woodstove Certification	21%	48 Tons/Year
- Fuel Wood Certification	2%	4 Tons/Year
Woodstove Strategies, Total		808 Tons/Year

Total reduction from all strategies..... 826 Tons/Year *
Total required emission reduction..... 756 Tons/Year

* Note: On an annual basis, the wood burning curtailment program will result in a 18 % reduction in annual wood smoke emissions. This, however, is not reflective of annual air quality benefits of the program since the restricted ventilation during the curtailment periods compounds the benefits of the emission reductions. The effective or equivalent reduction is calculated based on a 90 % curtailment program operating on 47 days per year indicating a reduction of the annual average PM_{10} concentration from 75 to 50.2 $\mu g/m^3$. As a result, the wood burning curtailment program alone, implemented on 47 days per year, will provide sufficient benefits to assure that the annual NAAQS is achieved. Additional strategy elements are claimed as a result of reductions achieved through the 24 hour strategy. See Section 4.12.3.3.

Air Quality Standard Maintenance

During the eight year period following attainment of the NAAQS, a net decrease in emissions is projected to occur as a result of attainment strategies and the replacement of older conventional stoves with certified cord wood and pellet stoves, offsetting increases in fugitive dust and transportation emissions. Both the 24 hour and annual NAAQS are projected to be maintained to the year 2000 at which time worst case day and the annual average PM_{10} air quality is projected to be 134 and 48 $\mu g/m^3$, respectively.

Enforceability

The Clean Air Act requires SIP control strategies to be enforceable. Based on EPA guidance, a woodstove curtailment program requiring more than a 30 % credit must be based on enforceable measures in order for the SIP to be approved by EPA. Klamath County has developed a voluntary curtailment program with an objective of achieving a 20 % compliance rate in the 1988-89 heating season, 46-52 % compliance in the 1989-90 heating season and a 85-92 % compliance goal in the 1990-91 season. Based on infrared curtailment survey results, the actual compliance rate on days surveyed during the 1989-90 season was 45 %. Compliance on any single curtailment day varies from zero to 65 %. None of the survey have documented curtailment compliance rates approaching that required to attain the 24 hour NAAQS. As a result, the 24 hour NAAQS was exceeded on 39 days during the 1989-90 heating season.

(Note: The following text will be revised to described the Klamath County mandatory curtailment ordinance following its adoption)

A mandatory, enforceable wood burning curtailment ordinance will need to be adopted by the Klamath County Board of Commissions prior to the Environmental Quality Commission's adoption of this SIP revision in November, 1990. This requirement is based on the following:

- Public participation in the Klamath Falls voluntary curtailment program has not met the objective of the Klamath County program nor the level of curtailment compliance needed to achieve the 24 hour NAAQS. No other community in the country been able to continually demonstrate the 90 % compliance rate needed with voluntary curtailment programs;

- Other communities, most recently the Medford area, have nearly achieved the required level of curtailment compliance through mandatory curtailment programs;

- At the level of curtailment needed in Klamath Falls, EPA requires a mandatory, enforceable curtailment program.

A county ordinances requiring the commercial sale of seasoned firewood should also be adopted to help assure maintenance of the NAAQS to the year 2000.

The road deicing program is implemented through commitments provided by the Oregon Department of Transportation; residential open burning restrictions on curtailment days is implemented through the State Fire Marshall Fire Protection Statutes (ORS 478.960 (2)) and through agreements among the local fire districts. The Department's open burning rules (OAR 340-23-042(4)) are enforced by the Department. Restrictions to forestry slash burning are implemented and enforced through the Oregon Smoke Management Program (OAR 629-43-043).

Implementation of the above control strategies will assure that attainment of the PM_{10} NAAQS is achieved by September 1, 1991 and maintained through the year 2000.

4.12.0 State Implementation Plan for Klamath Falls PM_{10} Nonattainment Area

4.12.0.1 Introduction

On July 1, 1987, the Environmental Protection Agency promulgated new federal ambient air quality standards for particles less than or equal to 10 micrometers in aerodynamic diameter (PM_{10}) to replace the Total Suspended Particulate (TSP) standard[1]. The standard became effective 30 days later on July 31, 1987. On August 7, 1987, EPA classified Klamath Falls as a Group I PM_{10} nonattainment area (52 FR 29383). Group 1 areas are those which have a greater than 95 percent probability of exceeding the PM_{10} NAAQS. Subsequent air monitoring has shown that air quality within the Klamath Falls Urban Grown Boundary far exceeds the PM_{10} National Ambient Air Quality Standards (NAAQS).

Section 110 of the Federal Clean Air Act requires states to adopt and submit plans (State Implementation Plans or SIPs) to EPA within nine months after the effective date of the standard. The Clean Air Act allows EPA four months to approve or disapprove the plan. The plan must provide for attainment of the standard as expeditiously as practicable but no later than three years from the date of EPA approval of the SIP[2]. Hence, attainment theoretically must be reached by September 1, 1991.

The Air Quality Division of the Department of Environmental Quality has developed this plan in consultation with officials of the City and County of Klamath Falls, the Oregon Department of Transportation and the US EPA. The plan was prepared in accordance with the regulations and requirements of the Federal Clean Air Act and the US EPA. The Department believes that the PM_{10} plan can achieve attainment of the NAAQS within the time frame required by the Act.

4.12.0.2 SIP Overview

This revision to the State Implementation Plan (SIP) has five sections. The first (4.12.1) provides a description of PM_{10} ambient air quality in Klamath Falls; Section 4.12.2 describes the PM_{10} air quality problem within the Klamath Falls Nonattainment Area; Section 4.12.3 describes emission reductions needed to attain NAAQS; Section 4.12.4 describes implementation of the control strategies and Section 5 described public involvement.

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[1] A micrometer (μm) is a unit of length equal to about 1/25,000 of an inch. For comparison, the thickness of a human hair is about 100 to 200 micrometers.

[2] Clean Air Act Section 110 (a)(1).

4.12.0.3 Area Description

Klamath Falls is located in south central Oregon at an elevation of 4,105 feet. The area is typified by its semi-arid, high desert climate where annual rainfall is only 14.3 inches. The population of south suburban Klamath Falls within which the highest PM_{10} concentrations are found is about 19,300 (1980 census) while the population with in the Klamath Falls urban area is 36,500. About 13,600 households are located within the Urban Growth Boundary.

The Klamath basin is a relatively flat area of some several thousand square miles of old lake bed which is drained by the Klamath River. Upper Klamath Lake covers 132 square miles and has a surface elevation of 4140 ft above sea level. The Lower Klamath Lake area is a very large flat somewhat marshy region with an elevation of about 4100 ft above sea level. The region is punctuated by occasional hills and a system of elongated ridges aligned with a northwest-southeast orientation. These ridges may rise up to 2,000 ft above the basin floor. Two such ridges form a narrow opening at the out fall of Upper Klamath Lake.

The central business district of Klamath Falls is situated in this narrow opening at the southern end of Upper Klamath Lake where the elevation changes between the Upper and Lower Klamath Lake areas. Most of the Klamath Falls residential area, especially the south suburban area, is located on the lower elevation area. Thus it may be seen that the Klamath Falls area is confined by high terrain to the east and west. To the north is large expanse of Upper Klamath Lake and the flat terrain stretches for a number of miles to the south.

Figure 4.12.0-1 shows the boundaries of the Klamath Falls Urban Growth Boundary which was adopted as the nonattainment area boundary by the Environmental Quality Commission on June 2, 1989 (OAR 340-20-225 (22)). The criteria for selection of the UGB as the nonattainment area are as follows:

1. The nonattainment boundary must include the geographical area within which national ambient air quality standards are currently being exceeded. Air Sampling studies completed in November, 1985, March, 1988 and January, 1989 have consistently show that minor day-to-day variations in the pattern of PM_{10} levels exist depending on wind direction and the time of day of the survey. All surveys indicate a consistent pattern of maximum concentrations near Peterson School extending outward toward the downtown district, south toward Kingsley Field and westerly toward Green Springs Junction. The PM_{10} levels appear to follow local topography with concentrations decreasing with increases in elevation. They also appear to follow the emission density of homes (woodstoves) in the area.

2. The nonattainment boundary must include the area within which air standards may be exceeded in the future. EPA requires that SIP control strategies consider future population, transportation, housing and industrial growth to assure that air standards will be attained and maintained. Development of a strategy to assure maintenance of air standards therefore requires that the nonattainment area boundary be consistent with the regional planning boundary for which community growth projections are available.

3. The nonattainment area must be a legally defined boundary recognized by local governments. A legal definition is required for rule making purposes. Additionally, some component of the control strategy may need to be implemented through county land use planning ordinances tied to the Urban Growth Boundary.

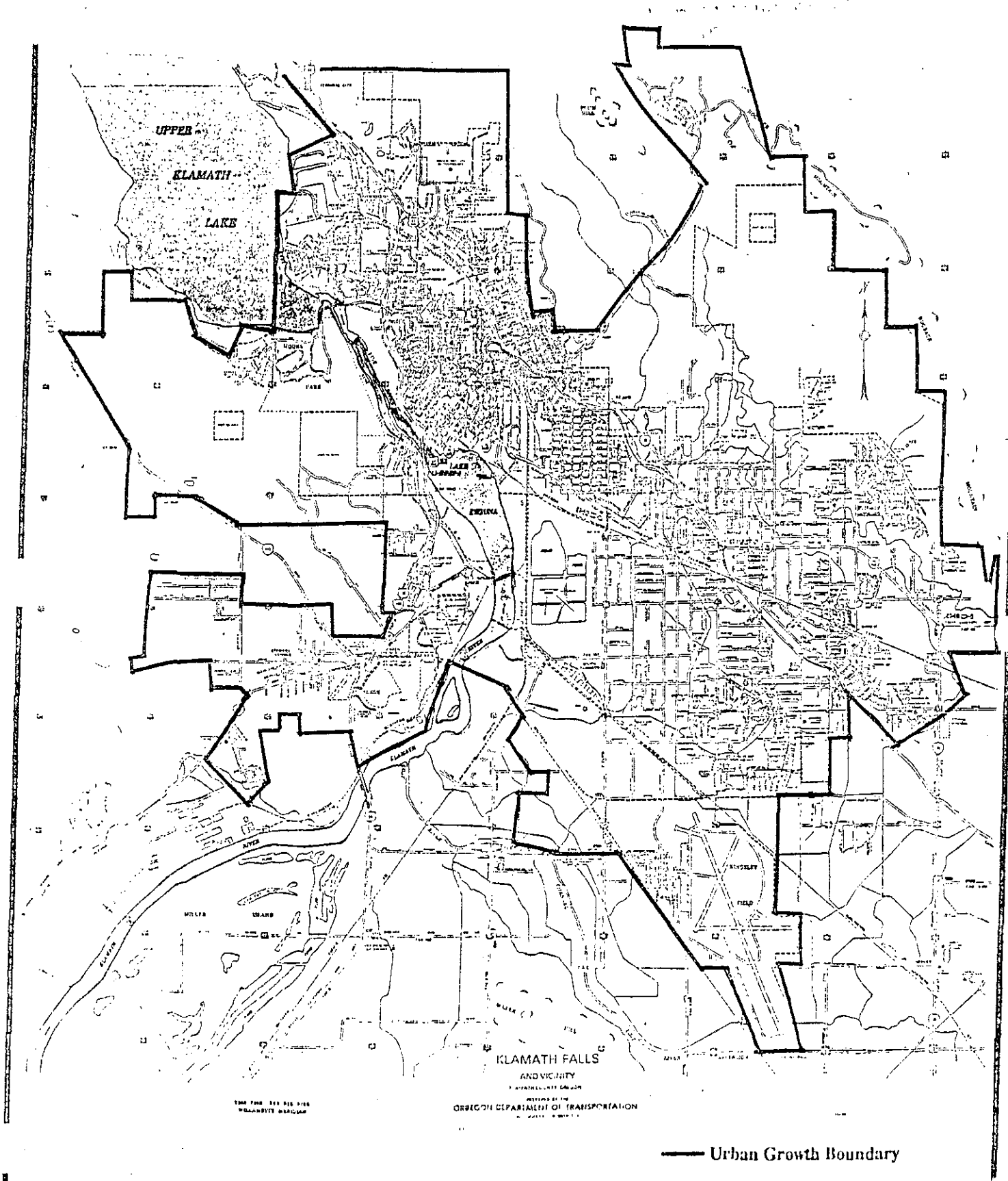
Designation of the Urban Growth Boundary as the nonattainment area is the only legally defined boundary that meets all of the above criteria (Note: a legal definition of the UGB will be needed prior to SIP adoption).

4.12.0.4 Klamath Falls Meteorology

Because of it's elevation, dry climate and low frequency of cloud cover, Klamath Falls experiences very strong and shallow night time winter radiation inversions which break up with day time solar heating. In winter time, frigid arctic air masses frequently invade the Klamath Basin. Temperatures can remain well below freezing for several weeks at a time. Upper Klamath Lake often freezes over and 6 to 10 inches or more of snow may cover the ground.

Winter nights are commonly clear and cool in the Klamath Basin. Under these conditions, strong nocturnal radiation inversions occur as a result of the snow covered surface and frozen lake, creating extreme inversions over the south suburban area of Klamath Falls. These inversions are confined and maintained by the surrounding terrain. Inversions of as much as 10 °F have been observed within 60 ft of the surface, creating an impenetrable barrier to smoke from wood stoves and fireplaces. The highest smoke concentrations of any place in the State have been recorded in the Klamath Falls residential areas under these intense, shallow inversions.

Figure 4.12.0-1: Nonattainment Area Map



4.12.0.5 Health Effects of PM_{10} and Wood Smoke

Particulate matter measuring less than or equal to 10 micrometers is considered a risk to human health due to the body's inability to effectively filter out particles of this size. These particles deeply penetrate and become lodged in the alveolar regions of the respiratory system for days, weeks or even years where they trigger biochemical and morphological changes in the lungs[3].

For example, constriction of air passages (i.e., reduced air flow) occurs rapidly upon exposure to PM_{10}. Episodic and continuous exposure aggravates chronic respiratory diseases such as asthma, bronchitis, and emphysema which in turn restrict the lung's ability to transfer oxygen into the bloodstream. Traditionally, children, the elderly, and cigarette smokers are the most susceptible to lung dysfunctions and are therefore at greatest risk from PM_{10} exposure.[4] Episodic exposure can also cause changes in the activity of the lung's mucous secretions and accelerates the mucociliary action to sweep the particulates out of the lungs. This results in increased symptoms of cough, phlegm, and dyspnea (difficulty in breathing). Continuous exposure can inhibit this defense mechanism by introducing new particles into the lungs and redistributing those being swept out. This slows the clearance of the bronchial system thus increasing susceptibility to acute bacterial and viral infections.

The increased stress on the pulmonary system caused by PM_{10} exposure is usually tolerable for those with healthy respiratory systems, however, it can lead to irreversible or fatal damage in people already suffering from cardiopulmonary disease, typically children, the elderly, the ill, and cigarette smokers.[4] Another group that falls into the high risk category are people who breathe through their mouths.[4] This group includes a wide range of people from chronic mouth-breathers to anyone involved in outdoor exercise and heavy labor. During mouth-breathing, particulate matter is breathed more directly into the lungs since it bypasses the filtering systems of the nasal passages.

Among the sources of PM_{10} emissions, wood smoke is of particular concern in Klamath County because it accounts for a majority of the small particulate matter measured in the nonattainment area. A description of emission sources is found in

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[3]J. Koenig, T.V. Larson, P. Jenkins, D. Calvert, N. Maykut and W. Pierson, "Wood Smoke: Health Effects and Legislation," Health Effects of Woodsmoke, Northwest Center for Occupational Health and Safety, January 20, 1988.

[4]U.S. Environmental Protection Agency, Second Addendum to Air Quality Criteria for Particulate Matter and Sulfur Oxides (1982: Assessment of Newly Available Health Effects. EPA 600/8-86-020.

Section 4.12.2.2. These particles are less than 1 μm in diameter and remain suspended in the air for long periods of time. Because of their small size and their ability to remain airborne, they are easily inhaled and lodged in the alveolar region of the lungs. These particles can also act as carriers for toxic chemicals which are transported deep into the respiratory system. Some of these toxics are then absorbed into the bloodstream.

Wood smoke contains at least fourteen carcinogenic compounds including benzo(a)pyrene, benzo(a)anthracene, and other polycyclic organic materials.[5] Additionally, wood smoke contains several other hazardous compounds such as aldehydes, phenols, carbon monoxide and volatile organic vapors. These compounds can cause or contribute to illness ranging from neurological dysfunctions and headaches to lung cancer.3 Many of the components of wood smoke are also found in cigarette smoke and coke oven emissions and can affect the cilia in a similar manner making it difficult for the body to expel the particulate matter. Because wood smoke concentrations are highest in residential areas, a large segment of the population is routinely exposed to wood smoke pollution in the winter months. Additionally, it is those people who are most sensitive, children, the elderly, and the ill, who spend the most time in their homes, thereby increasing their risk [5].

4.12.1 Ambient Air Quality

Particulate ambient air quality monitoring for Total Suspended Particulate (TSP) began in Klamath Falls in November of 1969 at the Broad and Wall Street Fire Station. During the period of 1970 to 1986, annual average TSP concentrations averaged 66 $\mu g/m^3$ with maximum 24 hour TSP concentrations (which have occurred exclusively within the winter months) reaching 295 $\mu g/m^3$ in 1973. While these levels were over the TSP NAAQS, it was thought that rural fugitive dust (considered uncontrollable and not a health hazard by EPA) was the principal contributing source. To determine those areas that had a high probability of exceeding the PM_{10} NAAQS, the US Environmental Protection Agency completed an analysis of historical Klamath Falls TSP data. The results of the analysis indicated a better than 95% probability that Klamath Falls PM_{10} levels would exceed the NAAQS. Based on these findings, EPA classified Klamath Falls as a Group I area. EPA regulations requires that daily PM_{10} air quality monitoring must be conducted in all Group I areas.

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[5]P.G. Jenkins, Washington Wood Smoke: Emissions, Impacts and Reduction Strategies, Washington Department of Ecology, Olympia, Washington. December, 1986.

PM_{10} air quality monitoring began in November, 1985 following completion of an area-wide survey designed to characterize the spacial distribution of PM_{10} concentrations[6]. Results from the study demonstrated that the Broad and Wall Street monitoring site was not representative of the highest levels of PM_{10} in the airshed and that levels recorded at the Peterson School site in south suburban Klamath Falls better represented worst case levels within the area. The PM_{10} concentration contours shown in Figure 4.12.1-1 were developed from the survey. The Figure also shows the location of the Peterson School site. A review of the area encompassed by the 150 $\mu g/m^3$ (the 24-hour NAAQS) contour shows that it best approximates the Urban Growth Boundary.

In February of 1987, monitoring at the Broad and Wall Street site was discontinued. PM_{10} monitoring at the Peterson School site began in February, 1986. Additional PM_{10} data was gathered during the November 1988 to April, 1989 period at Sixth and Hope Streets as additional verification of the extent of the high levels measured in the south suburban area.

In March of 1988 and February, 1989, the Department conducted evening mobile nephelometer surveys to further verify the spacial distribution of PM_{10} concentrations. Figure 4.12.1-1 shows a typical distribution of concentrations measured during these surveys. Although the distributions of particulate mass vary slightly from day to day depending on wind directions and mixing height, the surveys are basically consistent with the findings of the February, 1985 particulate survey that identified the Peterson School area as the location of the highest concentrations. The surveys also provide evidence that the major sources of PM_{10} are found within the residential area of south suburban Klamath Falls where the wood stove emission density is greatest.

4.12.1.1 Air Monitoring Methods

Several sampling methods have been used to measure PM_{10} concentrations in Klamath Falls:

Integrating Nephelometer measurements of light scattering (a surrogate for PM_{10}) have been conducted during the winter months of highest PM_{10} concentrations at the Peterson School site. This method provides hourly light scattering averages which are highly correlated to PM_{10} concentrations measured using the high volume samplers equipped with size selective inlets (HV-SSI).

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[6]Special Study Report: Klamath Falls Particulate Survey. Report 87-7. Program Planning & Development Section, Air Quality Division, State of Oregon Department of Environmental Quality. June, 1987.

The PM_{10} Medium-Vol. sampler collects PM_{10} aerosol using a 12 port, 47 mm filter sequencing system that is programmed to collect 24-hour samples. The sampler pulls ambient air at a 4 CFM flow rate through a 10 μm Sierra-Anderson 254 inlet providing a PM_{10} cut point. A dual-port system capable simultaneously collecting aerosol on both Teflon and quartz filter substrate is used to allow complete chemical analysis for Chemical Mass Balance receptor modeling purposes. Because of the excellent agreement between PM_{10} concentrations measured by the Medium-Vol and the HV-SSI reference method, EPA has designated the Medium-Vol sampler as an acceptable equivalent method.

The PM_{10} High Volume Size Selective Inlet (HV-SSI) is a High Volume air sampler equipped with a Sierra-Anderson SA321A, SA321B or SA1200 PM_{10} cut-point inlet. This method has been designated by EPA as a reference method to be used to judge attainment with the NAAQS. Sampling occurs every 6th day.

The High Volume air sampler collects samples of Total Suspended Particulate (TSP). The method uses pre-weighted 8" X 10" filters through which air is drawn at 50 CFM over a 24 hour period. Because these samplers are not equipped with a size selective inlet, the upper limit of particle size captured on the filter may reach 100 μm. Prior to EPA's adoption of the PM_{10} NAAQS, this method was the standard reference method for measurement of airborne particulate matter at the Broad & Wall Street site but has now been discontinued.

All of the data discussed herein was collected at the Peterson School site in south suburban Klamath Falls. Table 4.12.1-1 lists monitoring data collection periods by measurement method.

Table 4.12.1-1: Data Collection Periods by Method
Peterson School

Measurement Method	Began	Terminated
Integrating Nephelometer (Light Scattering or Bscat)	Jan. 30, 1985	Apr. 24, 1986
	Jan. 23, 1986	Apr. 15, 1986
	Oct. 23, 1986	Apr. 7, 1987
	Nov. 3, 1987	Apr. 20, 1988
	Nov. 1, 1988	Current
PM_{10} Medium-Vol.(MV) * (Daily Sampling)	Jan. 2, 1987	Apr. 3, 1987
	Nov. 30, 1987	Current
PM_{10} HV-SSI (SSI) (Every 6th Day)	Jan. 3, 1987	Current
High-Volume TSP (TSP)	Jan. 24, 1986	Oct. 6, 1987

* Both Teflon and Quartz filter substrate are used.

4.12.1.2 PM_{10} Air Quality in Klamath Falls

Figure 4.12.1-2 illustrates the hourly and seasonal variations in PM_{10} concentrations in Klamath Falls. As seen in the Figure, the highest 24-hour concentrations occur during the winter space heating season when PM_{10} concentrations have reached levels as high as 792 $\mu g/m^3$. This exceeds the EPA Significant Harm level (the level at which an imminent and substantial risk to public health exists) of 600 $\mu g/m^3$. Peak 24-hour concentrations decrease dramatically during the spring months and reach a low of about 50 $\mu g/m^3$ during the summer months. Concentrations then raise again in the fall months as woodstove use increases and atmospheric dispersion decreases.

Review of PM_{10} Concentrations

The four highest concentrations of PM_{10} mass measured in Klamath Falls during the past 3 years are listed in Table 4.12.1-2, below.

Table 4.12.1-2: PM_{10} Maximum Concentrations, 24 hour Averages

	$\mu g/m^3$	Date	Method
Highest Value	792	880125	Medium-Vol.
Second High	723	880203	SA321B HV-SSI
Third High	507	880122	SA321B HV-SSI
Fourth High	502	890120	Nephelometer Est.

Table 4.12.1-3 summarizes PM_{10} monitoring data for the mid-1986 to mid-1989 period over which the design values were calculated. Appendix 1 contains a tabulation of daily PM_{10} concentrations over the period of July 1, 1986 to June 30, 1989.

Table 4.12.1-3: Summary PM_{10} Data
($\mu g/m^3$)

	All Data	1986*	1987	1988	1989+
No. Days Sampled	1191	343	365	303	180
Arithmetic Mean **	--	77	73	71	---
Maximum Value	792 (880125)		330	792	502
Second High	723 (880203)		298	723	482
No.Days > 150	134	40	38	29	27

* For period January 23 to December 31, 1986.
+ For period January 1 to June 30, 1989.
** Annual average values computed as prescribed in 40CFR52 Appendix K.

Hourly Variability

Hourly variations in PM_{10} levels on worst-case winter days can be seen in the diurnal variations of light scattering measurements from the Peterson School site (Figure 4.12.1-2). Particulate concentrations begin increasing from a mid-day low, peak during the 11 PM to 1 AM period and then steadily decrease until 8-9 AM at which time the levels again reach mid-day concentrations. The early morning peak at 6 AM is believed to be associated with early morning wood stove start up by Klamath Falls residents.

Worst Case Day Characteristics

During the mid-1986 to mid-1989 period, the 24 hour NAAQS was exceeded an average of 47 days per year, exclusively during the months of late October to April. During these periods, residential wood heating reaches it's peak and atmospheric dispersion is at it's poorest. Worst case winter days typically have daily average temperatures of 10 ^{o}F (55 degree heating days), snow cover, intense, extremely shallow temperature inversions as low as 50 feet and extended periods of calm winds. These conditions occur during periods when snow producing storm systems are followed by stable high pressure systems. The spacial distribution of PM_{10} concentrations during worst case day conditions is shown in Figure 4.12.1-1 [7].

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[7] J.E. Core, "Distribution of PM_{10} Within the Klamath Falls Nonattainment Area: Mobil Nephelometer Surveys of January, 1989," State of Oregon Department of Environmental Quality, Air Quality Division. Report 89-1. February, 1989.

Impacts from Sources External to the Urban Growth Boundry

The largest industrial sources within Klamath County located outside of the UGB is the Weyerhauser plant which emits a total of 631 tons of PM_{10} per year, largely from hog fuel boilers used to generate steam for the plant. In spite of the magnitude of these emissions and the proximity of the plant to the Urban Growth Boundry, the Department does not believe that emissions from the plant have a significant impact on the nonattainment area. This is based on findings from two field measurement programs and receptor modeling analysis.

The spatial distribution of PM_{10} levels measured during the mobil nephelometer surveys of January, 1989 indicated that concentration fell as the distance from the plant increased. These findings were confirmed by the saturation survey conducted in the Fall of 1985. If the plant had a major impact on the nonattainment area, concentrations should have increased as the distance from the plant decreased.

Receptor modeling analysis of source impacts at the Peterson School site confirm that hog fuel boiler impacts are small. This is based on studies indicating that the Chemical Mass Balance receptor model is able to quantify hog fuel boiler impacts at levels of 2 $\mu g/m^3$ or greater impact with relative uncertainties of +- 20 %.[8]

These findings are consistent with the hypothesis that emissions from Weyerhauser's hog fuel boiler are emitted, on worst case winter days, above the very shallow inversions that form within the Klamath Basin. As a result, their ground level impacts would be expected to be small.

Background Air Quality

PM_{10} aerosols from sources external to the UGB collectively contribute to background air quality or the concentration of PM_{10} in the air mass as it is transported into the Klamath Falls Basin. The closest background monitoring site is located in the Quartz Creek Valley (elevation 5,390 ft) at the Quartz Mountain Gold Project 50 miles east of Klamath Falls [9].

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[8] Pacific Northwest Source Profile Library: Volume 2 Final Project Report. J. Core, Editor. Department of Environmental Quality. September, 1989.

[9] Quartz Mountain Gold Project Environmental Impact Statement. Prepared for the Fremont National Forest by Air Sciences, Inc. Lakewood, Colorado. February, 1989.

The Quartz Mountain data was collected by a Air Sciences, Inc. of Lakewood, Colorado under contract to the Quartz Mountain mining project. The data was collected pursuant to Federal EIS requirements imposed by the US Forest Service, Bly District. The data was collected persuant to standard EPA quality assurance requirements.

The Quartz Mountain background data during worst case winter days is representative of the Klamath Falls UGB for the following reasons:

1. The site is located in a remote area not influenced by sources within the Klamath Falls UGB yet not located at such distance that it would clearly not be representative of the regional air mass. Even if the site were located at the edge of the Growth Boundry, little change in the data would be expected because of the fact that lands immediately beyond the UGB are sparcely inhabited and largely of a wilderness nature.

2. A worst case winter day background of 7 $\mu g/m^3$ is reasonable considering that the Quartz Mountain site is above the very shallow mixing height found in the nonattainment area, that snow cover eliminates windblown fugitive dust emissions and that there are no wildfires or slash burning emissions during the winter months. It is common to encounter long range visibility conditions at elevations of only a few hundred feet above the basin floor where the highest PM_{10} concentrations are found.

On an annual basis, there is little differences between the background levels at Medford's Dodge Road site (12 $\mu g/m^3$) and Quartz Mountain (13 $\mu g/m^3$), supporting the Department's belief that neither site are being unduly impacted by nearby sources; that the annual distribution of the data is not being unduly bias by high winter worst case concentrations and that both sites are representative of regional background.

PM_{10} monitoring at the Quartz Mountain site was based on GMW 2310 samplers with GMW 321-B inlets was conducted during the November, 1987 to November, 1988 period (108 observations) on a 6th day schedule. The annual arithmetic average was 12 $\mu g/m^3$ while the worst case winter (November-March) observation was 7 $\mu g/m^3$. The maximum observed value (86 $\mu g/m^3$) occurred on September 4th, 1988 when several forest fires were active in the area. The sources contributing to background PM_{10} concentrations are regional and global in nature.

The Quartz Mountain background air quality values used in the annual and 24 hour winter worst case control strategy calculations are 15 $\mu g/^3$ annual arithmetic average and 7 $\mu g/m^3$ 24 hour average, respectively.

Aerosol Chemistry

Chemically, Klamath Falls winter-season PM_{10} aerosol is composed of organic carbon (37%), elemental carbon or soot (6%), crustal elements (5%), other trace elements (2%) and secondary sulfate and nitrates (3%). The balance is associated oxygen, hydrogen, water and ammonium. While the winter season aerosol is chemically very similar to the composition of woodsmoke with small amounts of soil elements, the composition of the aerosol during the summer months is quite different and is largely composed of crustal elements (Al,Si,Ca and Fe). Lead concentrations are very low, averaging 0.1 $\mu g/m^3$, 24-hour average. The aerosol composition cannot be used to directly infer source contributions.

4.12.2 Nonattainment Area Analysis

This section describes the Department's analysis of PM_{10} air quality in Klamath Falls as it related to the National Ambient Air Quality Standards. Source contributions to the airshed's PM_{10} air quality are discussed both in terms of emission strengths and source contributions to air quality as measured at the Peterson School site.

4.12.2.1 Design Values Determination

Attainment of the annual NAAQS requires that a control strategy be adopted which will reduce ambient concentrations from the 1992 design value to below the NAAQS; specifically that the expected number of exceedances of the 24-hour NAAQS not exceed 150 $\mu g/m^3$ more than once per year averaged over three years.

The EPA PM_{10} Development Guidelines specify that the preferred approach for estimating a design value is through the use of an applicable dispersion model corroborated by receptor models.[10] If there is no applicable dispersion model and at least one complete year of PM_{10} data is available, then the PM_{10} data should be used to estimate the design value. This is the case for Klamath Falls.

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[10] PM_{10} SIP Development Guidelines. US Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, N.C. June, 1987. EPA-450/2-86-001.

EPA specifies that the annual design value should be calculated as arithmetic average of 3 years of PM_{10} monitoring data and that the 24-hour design concentration should be estimated using the empirical frequency distribution for the largest available data base. Both the annual and 24-hour design concentrations must then be adjusted to compensate for emission changes that will occur as a result of emission growth and control strategy affects likely to occur by 1992, the year in which attainment must be demonstrated.

The current design values are based on PM_{10} data collected between mid-1986 and mid-1989. The information used to calculate design values is a composite of data collected over the year using a number of different PM_{10} measurement methods in accordance with agreements reached with EPA Region X staff in December, 1989. As a result, a hierarchy of daily measurements has been used to build a composite data set. Reference method Medium-Vol. samples were selected first. Where these measurements were not available, reference method SSI data was used. If neither were available, non-reference method Medium Vol. data was used and if none of the above data was available, non-reference SSI data adjusted to a Medium-Vol. sampler equivalent value was used. If only integrating nephelometer scattering coefficient measurements were available, they were adjusted to medium-vol. equivalent values. This approach (1) greatly expands the database available for analysis; (2) provides a design value that is consistent with the measurement method that the Department will be using to determine NAAQS attainment and (3) assures that future receptor modeling analysis of PM_{10} source contributions are consistent with control strategy design considerations. This approach is described further in Appendix 2.

Table 4.12.2-1: Design Values Summary

24-Hour Design Value, Graphical Procedure	550 $\mu g/m^3$
Annual Design Value	75 $\mu g/m^3$

4.12.2.2 Emission Inventory

Introduction

Emission inventories provide information on the relative strength of sources within an airshed and provide a basis for control strategy evaluation. In addition, emission inventories provide a basis for tracking emission reductions and growth. PM_{10} emissions (usually expressed in tons of particulate per year or TPY) are calculated from emission factors and source activity records. Emission factors are the weight of pollutant emitted per unit weight of material processed such as grams of PM_{10} emitted per pound of cord wood burned; pounds of road dust emitted per vehicle mile driven or pounds of particulate emitted per unit area

of plywood veneer processed. Emission factors used in this analysis are principally from the Environmental Protection Agency's compilation of emission factors AP-42.[11]

Source activity information on the amount of cord wood burned by residents, vehicle miles driven or veneer production volumes are obtained from a variety of sources including industrial air contaminant discharge permits, public mail surveys and data gathered from other government agencies.

Estimation of seasonal or worst-case day PM_{10} emissions requires development a of source operating schedule which describes the percent of annual emission that occur during specific seasons, months or 24-hour periods.

Base Year Emission Inventory

PM_{10} emissions for the 1986 base year within the Urban Growth Boundary (UGB) were estimated for industrial sources, residential heating (gas, oil and wood), commercial space heating, residential open burning, agricultural field burning, paved and unpaved roads, construction and agricultural dust as well as transportation sources (cars,trucks railroads and aircraft). The basis of the emission estimates for the most significant sources are described below:

Industrial Sources: 189 TPY PM_{10}. These emissions are principally from the wood products industry wood-fired boilers and material handling. Twelve point sources, principally wood products, are included in the inventory. The largest source emits 100 tons per year of PM_{10}. The 1986 annual emissions are those that actually occurred during the year.

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[11] Compilation of Emission Factors, U.S. Environmental Protection Agency AP-42 Fourth Edition and subsequent supplements. US EPA Office of Air Quality Planning and Standards. Research Triangle Park, N.C. 27711.

Figure 4.12.1-1: Klamath Falls PM_{10} Distribution

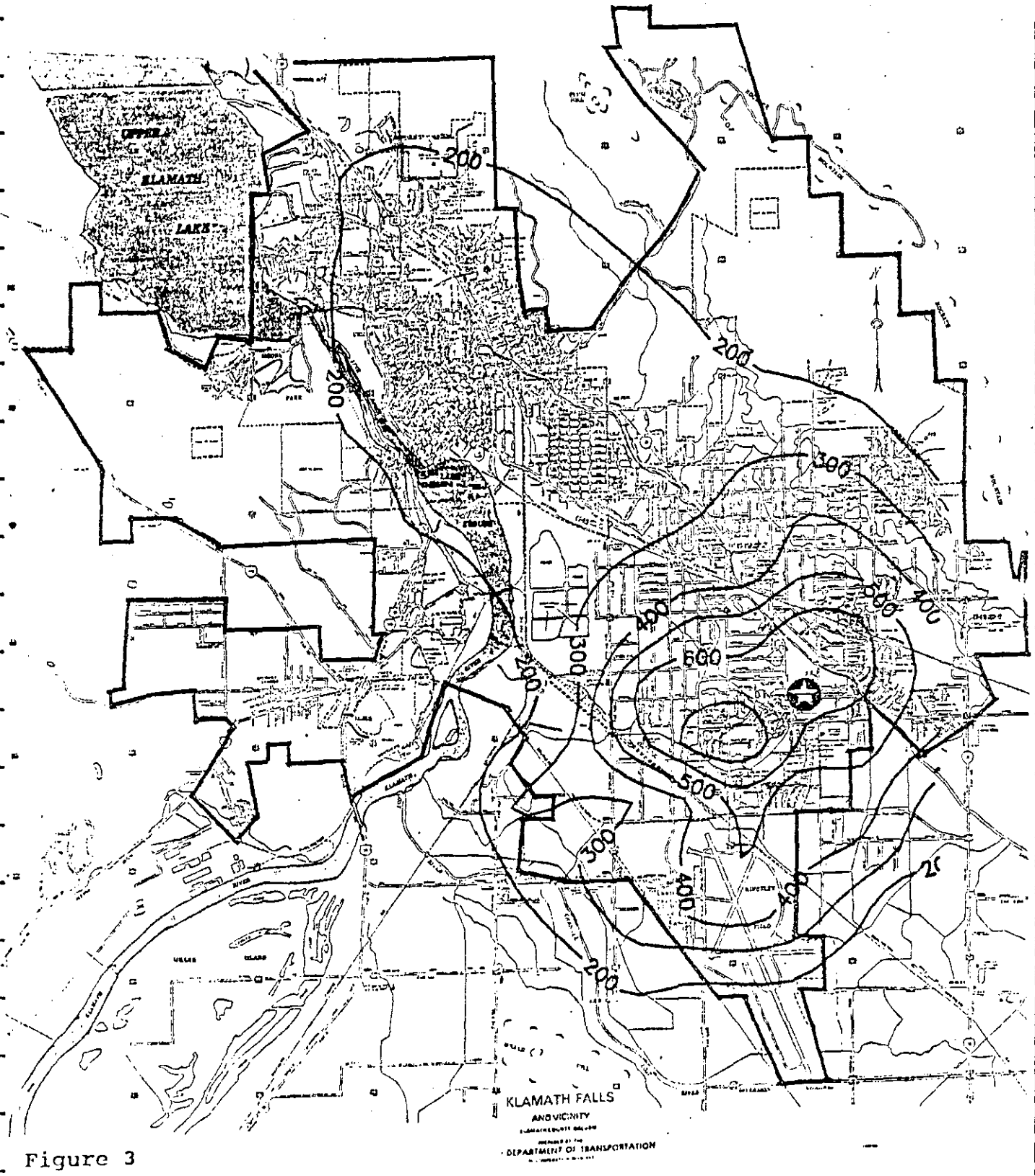


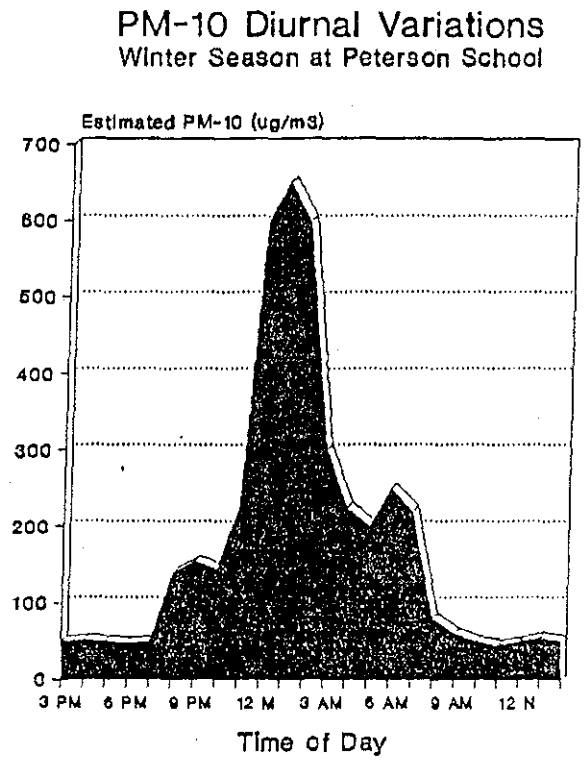
Figure 3

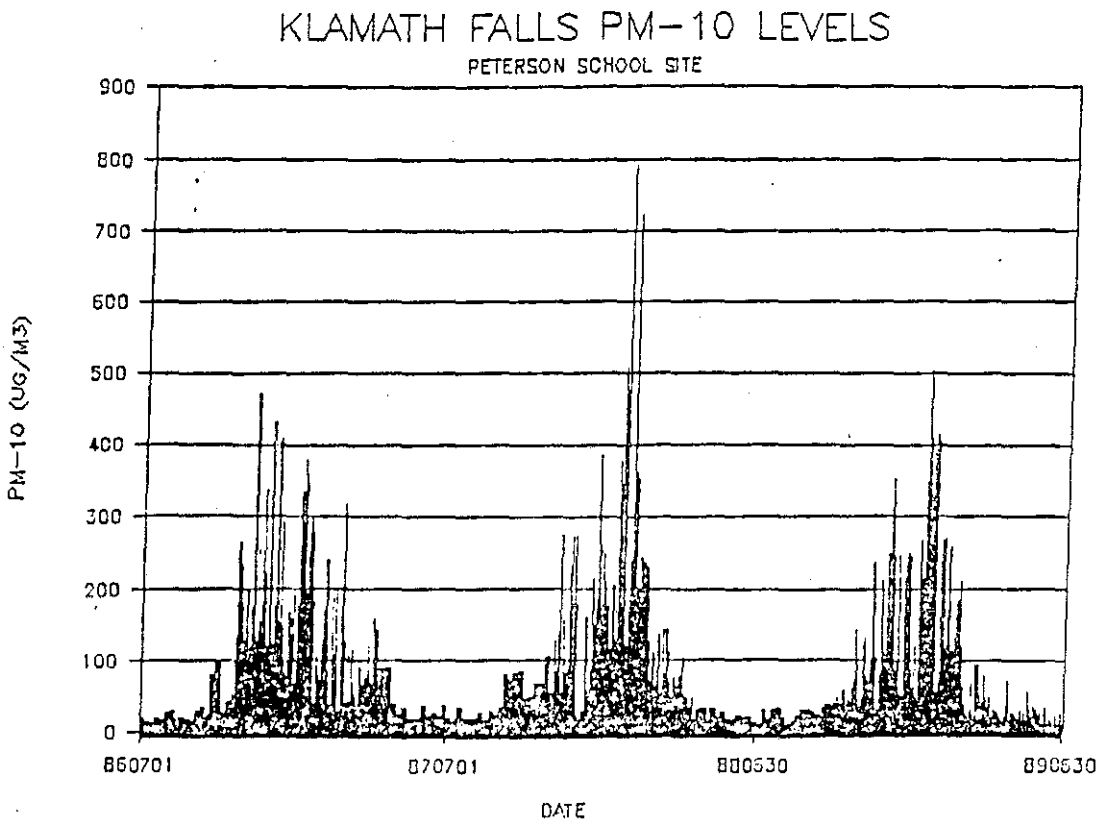
Klamath Falls Nephelometer Survey
January 25, 1989 at 7 AM
($\mu g/m^3$ PM_{10}, 5 Minute Averages)

Urban Growth Boundary

Peterson School A-26

Figure 4.12.1-2: Diurnal & Seasonal Variations in PM_{10} Levels





Residential Wood Heating: 1,202 TPY PM_{10}. Information obtained from the Department's 1987 wood heating survey[12] and the County of Klamath Falls indicates that 13,600[13] single family housing units are located within the UGB and that 73% of the housing units use wood burning devices. Approximately 75% of the devices are woodstoves while the remainder are fireplaces. The survey indicates that, on average, residents burn 4.1 cords/year of firewood in their woodstoves and 2.7 cords/year in fireplaces. At 39.9 pounds of PM_{10} emitted per ton of wood burned in a woodstove, 1,076 tons of PM_{10} are emitted per year. Fireplace emissions at 26.6 pounds per ton of wood burned total 126 TPY for a total 1202 tons per year.

Based on the survey, about 12% of the woodstoves are DEQ-certified models. Forty six percent of those surveyed indicated that wood was the main source of heat in their home. Wood is the only source of heat in 4-5% of Klamath Falls homes.

Backyard and Agricultural Burning: 172 TPY PM_{10}. Approximately 3,380 tons of backyard debris is burned each year generating 26 TPY of PM_{10}. This estimate assumes that 183 pounds of combustible material (principally yard debris) is burned per person each year during the months of March through November. Each ton of debris burned is assumed to emit 15.3 pounds of PM_{10} particulate. Although (for purposes of the emission inventory) no backyard burning is assumed to occur during the months of December through February, local observations have confirmed that some burning is occurring on woodstove curtailment days. Agricultural burning also occurs within the UGB and, in early November, 1989 was occurring during wood heating curtailment periods. Agricultural Extension Service estimates that about 30% of the 8,000 acres of cereal grain fields within the UGB are burned annually. Assuming 3.8 tons of straw per acre, approximately 146 TPY of PM_{10} would be generated by this source during the late summer and early fall. Other agricultural burning is know to occur outside of the UGB, but no reliable information is available to estimate emissions.

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[12] Oregon Wood Heating Survey for 1987: Klamath Falls Area. State of Oregon Department of Environmental Quality, Air Quality Division. February, 1987.

[13] Klamath County Planning Department Correspondence of May 4, 1990.

Fugitive Dust Emissions: 230 TPY PM_{10}. The principal sources of dust within the UGB on an annual basis are paved and unpaved road dust (112 and 53 TPY, respectively) and emissions from winter road sanding (27 TPY). Paved and unpaved road dust estimates are based on a 1985 estimate of 414,800 vehicles miles per day and an assumed PM_{10}/TSP ratio of 24 %. There are 127 miles of dirt road and 68 miles of gravel road within the UGB.

Transportation Sources: 131 TPY PM_{10}. Highway vehicles (autos and trucks) emit 97 TPY PM_{10} in tailpipe and tire wear particulate; off highway vehicles 12 TPY and railroad diesel engines, 19 TPY. Aircraft emissions are 3 TPY.

Table 4.12.2-2 and Figure 4.12.2-1 summarize annual PM_{10} emissions within the UGB.

Table 4.12.2-2: 1986 UGB Annual Emission Inventory

Source	Tons/Year PM_{10}	Percent
Industry	189	10 %
Residential Wood Burning	1200	62 %
Commercial Space Heating	3	0 %
Solid Waste Disposal	174	9 %
Fugitive Dust	230	12 %
Transportation	131	7 %
Other Sources	9	0 %
Totals	1936	100 %

24-Hour Worst Case Day Inventory

Development of an inventory representative of emissions during 24 hour periods when PM_{10} ambient air concentrations reach their highest levels is important to understanding the sources that cause winter season episodes. The relative proportion of emissions during these periods is expected to be quite different than those reflected in the annual emission inventory because some sources (such as agricultural burning) are not active while others (such as residential wood heating) are much stronger.

The 24-hour worst case inventory for the UGB is based on the following information and assumptions:

Industrial and Transportation Source. The 1986 worst case day industrial emissions are based on 1986 annual emissions increased by the ratio of the 1992 daily Plant

Site Emission Limit (PSEL) (pounds/hour PSEL over 24 hours) to the 1992 annual PSEL emissions.

Residential Wood Burning emissions are assumed to be proportional to the coolness of the weather as reflected in the degree heating days statistic tabulated by the National Weather Service. During the period of October, 1986 to October, 1987, the coldest day (January 9, 1986) had 47 degree heating days. Since the total degree heating days for this period was 6,109, this represents 0.76 % of the annual total or 9.2 tons of PM_{10} emission.

Winter Road Sanding emissions peak during periods when several inches of snow covers the area. During these periods, as much as 70 cubic yards per day of aggregate are spread on roads within the UGB. Because snow covers the roadways and landscape, essentially all of the fugitive dust emissions are assumed to originate from road sanding. Chemical analysis of PM_{10} samples collected on days exceeding the 24-hour NAAQS indicated that 9 % of the PM_{10} mass was soil dust. Road sanding emission were therefore estimated to be of similar magnitude in the inventory or about 2,000 lbs/day during the 27 days per year when road sanding occurs. The worst case day emission estimates provide the basis for the annual emission estimate for road sanding.

As noted, road sanding emissions were based on chemical mass balance analysis of PM_{10} samples, not on the basis of emission factors. This was done for several reasons:

(1) the CMB model can very accurately apportion soil dust impacts on actual worst case days. Even with the best possible emission factors, estimates of fugitive emissions are highly uncertain;

(2) Paved road dust emission factors are not appropriate since road surfaces are covered with packed snow;

(3) Initial calculations of emissions assuming unpaved road dust emission factors and the silt content of the aggregate used in road samding resulted in unrealistic emission estimates far greater that the sum of all other air shed sources.

New information on winter road sanding emissions will be used to confirm the CMB derived estimate as it becomes available.

Table 4.12.2-3: 24-Hour Worst Case Emission Inventory 1986 Base Year Period.

Source	Tons PM_{10}	Percent
Industry	0.75	6.6 %
Residential Wood Burning	9.2	80.7 %
Commercial Space Heating	0.03	0.2 %
Fugitive Dust	1.0	8.8 %
Transportation	0.4	3.4 %
Other Sources	0.03	0.3 %
Totals	11.4	100 %

Appendix 3 provides a detailed annual and worst case 24-hour emission inventory listing.

Growth Factors

PM_{10} emission growth factors are used to estimate future year emission inventories and source category impacts. Key indicators used to estimate emissions in 1992 include population growth, increases in transportation (vehicle miles traveled) and Plant Site Emission Limits (PSELs) for industrial sources.

Transportation Growth, estimated at 1.5 % per year is used to estimate increases in vehicular and road dust emissions.[14]

Population Growth data indicates that the number of people living within the Klamath Falls Urban Growth Boundary will increase by 1.1 % per year from 37,000 to 39,500 by the year 1992.[15] Population growth is used to proportionally increase residential open burning emission and woodstove use. The population growth rate used herein is consistent with those used by the Klamath County Planning Department.

Woodburning Emission Growth from wood stoves is expected to increase by 1 % per year (6 % total) by the year 1992 as a result of an increased amount of firewood burned and fireplace emissions are expected to decrease by 2 % per year. The one percent growth rate is based on energy projections and fuel cost modeling performed to estimate future woodburning emission growth in the

[14]State of Oregon Department of Transportation Highway Division Planning Section estimate. February 22, 1989.

[15] Klamath Basin Wastewater Facilities Plan Update for the North Suburban Area of the City of Klamath Falls, Klamath County, Oregon. June, 1987.

Pacific Northwest. [16] These projections do not account for emission reductions that will occur as a result of woodstove certification programs as these reductions are explicitly accounted for in the Section 4.12.3.2, Evaluation of Potential Control Measures.

Industrial Emission Growth has been projected to increase to the maximum permitted within their current Plant Site Emission Limits (PSELs). The 24-hour worst case growth factor is calculated as the increase from the 1986 actual hourly emissions to their hourly maximum PSEL emission rate over a 24 hour period.

Projected Emissions, 1986 to 1992

The 1986 annual and 24-hour emission and design value estimates must be adjusted to account for emission growth or decreases that may occur within the airshed during the six year period of 1986-1992. Estimates are based on the emission growth factors described above. The information presented in Table 4.12.2-4 provides a basis for the future year source impact estimates (Section 4.12.3.1) which, in turn, provided the basis for the control strategy analysis.

Table 4.12.2-4: 1992 Estimated Emissions

	-Annual- 1992		-24-Hr Worst Case- 1992	
Source Category	Tons	%	Tons	%
Industry	265	13 %	1.1	9 %
Residential Wood Burning	1028	55 %	9.5	78 %
Fugitive Dust	211	10 %	1.1	9 %
Solid Waste Disposal	185	10 %	0.0	0 %
Transportation	141	8 %	0.4	3 %
Other	59	4 %	0.1	1 %
Totals	1888	100 %	12.2	100 %

Projected Emissions Beyond 1992

Analysis of the ability of the attainment strategies to maintain the NAAQS during the period 1992 to the year 2000 requires development of a third set of emission estimates. The growth rates assumed for the maintenance analysis are based on the 1992 inventory adjusted to reflect the attainment strategy emission reductions:

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[16] U.S. Environmental Protection Agency, Region X "Residential Wood Combustion Study, Task 3, Fuel Wood Use Projections", EPA 910/9-82-089 (1984).

- Population growth rate of 1.1% per year to residential oil, gas and wood combustion emissions; solid waste incineration emissions and structural fires;

- Transportation growth rate of 1.5 % per year to transportation sources and paved, unpaved and construction dust as well as street sanding emissions;

- Industrial emissions are held constant at the annual and 24 hour PSEL emission rates shown in the 1992 emission inventory;

The projected residential wood combustion emissions, following application of a 1.1 % per year growth rate, were adjusted to reflect emission reduction credits associated with the woodstove certification program. Information from the Klamath County Building Department indicates that approximately 100% of the new woodstoves being installed in new construction homes are certified and 20 % of these are pellet stoves.[17] Additional information from manufacturers suggests that certified pellet stoves sales should expand to a larger share of the market in future years. This may be, in part, supported by the fact that pellet stoves owners have not been asked to curtail burning during cord wood stove curtailment periods.[18] Therefore, during the period 1992 to 1996, it is assumed that 80 % of newly installed stoves are cord wood and 20 % are pellet stoves. During the period 1996 to 2000, it is assumed that 50 % are cord wood and 50% are pellet stoves.

Actual and projected annual emissions during 1992 to the year 2000 are tabulated in Table 4.12.2-5. Projected 24 Hour Worst Case emissions are summarized in Table 4.12.2-6. Figure 4.12.2-2 shows changes in emission inventories during the period 1986 to the year 2000. The year 2000 annual and 24 hour projected emissions were reduced from 1986 levels by 888 tons per year and 17,400 pounds per day, respectively, through the implementation of mandatory curtailment; the woodstove certification program, fuel wood certification and road deicing programs.

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[17] Correspondence from Klamath County Building Department of February 14, 1990.

[18] Personal communications with the Chairman, Association of Pellet Fuel Industries, Sparks, Nevada. February 22, 1990.

Table 4.12.2-5: 1992 to Year 2000 Annual Emissions
Tons Per Year

Source Category	1992	1994	1996	1998	2000
Industry	264	264	264	264	264
Residential Wood Burning	220	212	201	189	177
Fugitive Dust	192	197	204	209	215
Solid Waste Disposal	185	166	166	167	167
Transportation	141	144	147	151	155
Other	59	62	65	67	71
Totals	1062	1045	1046	1047	1049

Table 4.12.2-6: 1992 to Year 2000 24 Hour Worst Case Emissions
Pounds Per Day

Source Category	1992	1994	1996	1998	2000
Industry	2246	2246	2246	2246	2246
Residential Wood Burning	1344	1290	1174	1103	1045
Fugitive Dust	875	898	925	953	981
Solid Waste Disposal	0	0	0	0	0
Transportation	832	853	875	898	921
Other	130	133	136	139	142
Totals	5425	5418	5350	5330	5322

4.12.2.3 Source Contributions to PM_{10}

Development of strategies designed to attain and maintain the PM_{10} NAAQS requires an accurate knowledge of contributions that sources make to the measured PM_{10} aerosol mass. Two approaches are commonly used to estimate source contributions (1) atmospheric dispersion modeling and (2) receptor model analysis based on the properties of the aerosol measured at the receptor.

The Environmental Protection Agency PM_{10} SIP Development Guidelines Section 4.4 describes procedures to be used by the states for using receptor models to estimate source contributions to PM_{10} concentrations. These guidelines support the use of receptor models as an important element of the SIP strategy development process. Receptor modeling (specifically Chemical Mass Balance or CMB) is especially appropriate in Klamath Falls where severe air stagnation and complex terrain conditions likely make dispersion modeling inappropriate. The specific application of the

CMB Receptor Model to PM_{10} source apportionment in Oregon's Group 1 areas is described elsewhere.[19]

Chemical Mass Balance (CMB) is a form of receptor modeling based upon regression analysis of aerosol features such as trace element concentrations. The model attempts to find the most likely combination of source contribution estimates (SCE's) by minimizing the difference between the measured and model-predicted concentration of aerosol features. Values for the ambient aerosol matrix are obtained through chemical analysis of PM_{10} filters taken at the Peterson School sites while the source "fingerprint" values are obtained through analysis of stack emissions. The CMB modeling protocol applied follows EPA guidance.[20] All of the CMB modelling has been conducted using EPA's Version 7.0 CMB program.[21]

Ambient Aerosol & Source Emission Analysis

Thirty eight PM_{10} samples from the Peterson School site have been chemically analyzed for CMB analysis. Fourteen of the samples exceeded 150 $\mu g/m^3$, all of which were collected during the winter months. The highest sample analyzed was 417 $\mu g/m^3$ on January 19, 1989. Chemical characterization of the samples includes 19 trace elements analyzed by x-ray fluorescence, 3 anions and elemental/organic carbon, providing a data set that is compatible with the source emission profiles. Analytical uncertainties for each values are routinely reported and included in the CMB calculations.

PM_{10} source profiles representing all major emission groups within the airshed were used in the modeling. All of the profiles were obtained from the Pacific Northwest Source Profile Project.[22] A list of the sources included in the analysis is presented below:

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[19] PM_{10} Receptor Modeling for Oregon's Group I Areas: Medford, Grants Pass and Klamath Falls. State of Oregon Department of Environmental Quality, Air Quality Division. February, 1990.

[20] Protocol for Reconciling Differences Among Receptor and Dispersion Models. US EPA 450/4-87-008. March, 1987.

[21] Receptor Model Technical Series, Volume III (Revised): CMB User's Manual (Version 6.0) US EPA 450/4-83-014R. May, 1987.

[22] Pacific Northwest Source Profile Library Project, Final Report Prepared by the State of Oregon Department of Environmental Quality, Air Quality Division. J. Core, Ed. September, 1989.

Table 4.12.2-7: Source Profiles

No.	Acronym	Description
1	KFSOIL	Resuspended soil dust from Klamath Falls
2	SLASH	Forestry slash broadcast burning (Also may be vegetative burning such as yard debris)
3	RWC MED	Residential wood combustion profile for Medford
4	LD AUTO	Light duty autos (leaded gasoline)
5	HOGFUEL	Hogfuel boiler burning plywood trim in the fuel
6	WOOD	Wood fiber including sander dust
7	HDDIESEL	Diesel exhaust (Fed. Test Cycle)
8	SECSO4	Secondary sulfate estimated as ammonium sulfate
9	SECNO3	Secondary nitrate estimated as ammonium nitrate
10	SECNH4	Secondary Ammonium ion
11	SALT	Road salt applied during the winter months
12	CONST	Construction dust - Medford Aerosol Study
13	VENEER	Steam heated veneer drier emissions

Receptor Model Source Contribution Estimates

24 Hour Exceedance Days

Table 4.12.2-8 is a summary of the source contribution obtained for the 14 samples that exceeded the 24 hour NAAQS. All samples were collected during the winter months. Figure 4.12.2-3 illustrates the results in graphical form.

Table 4.12.2-8: Average Winter Exceedance Day PM_{10} Source Contribution Estimates

Source	PM_{10} ($\mu g/m^3$)	% PM_{10}
Soil Dust	27.4	10.9 %
Wood Smoke	219.0	82.0 %
Transportation	0.2	0.1 %
Sec. Aerosol	10.7	3.2 %
Others	11.7	4.3 %
	269 $\mu g/m^3$	100 %

Other sources noted in Table 4.12.2-8 include water associated with the aerosol; minor contributions and uncertainties in the apportionment. Studies recently conducted in Los Angeles suggest that as much as 7 % of the PM_{10} mass is water.[23]

[23] S. Witz, R. Eden, C. Liu and M. Wadley, "Water Content of Collected Aerosols in the Los Angeles Basin," Presented at the Pacific Conference on Chemistry and Spectroscopy, Irvine, CA. October, 1987.

Figure 4.12.2-1: Klamath Falls PM_{10} Emission Inventories

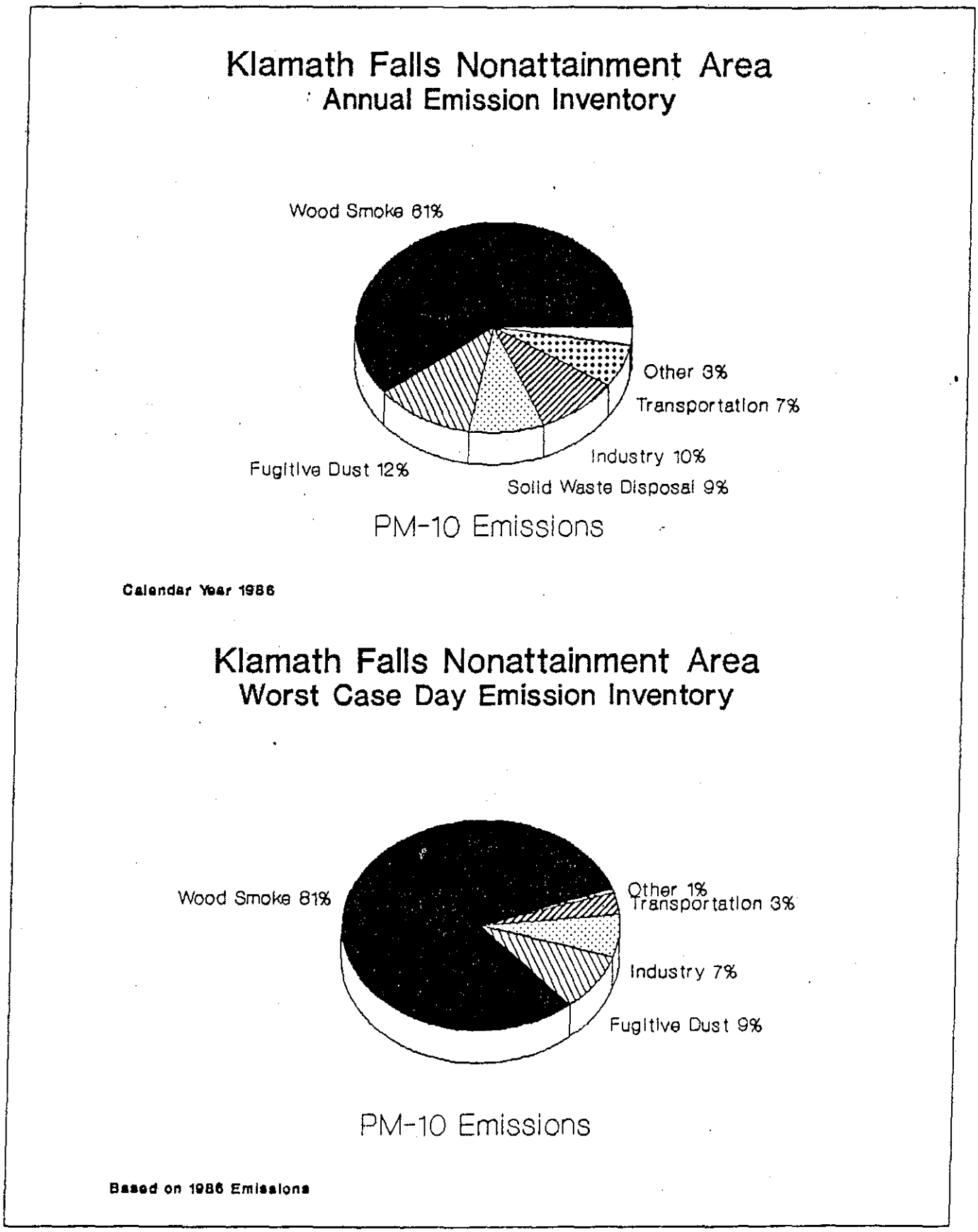
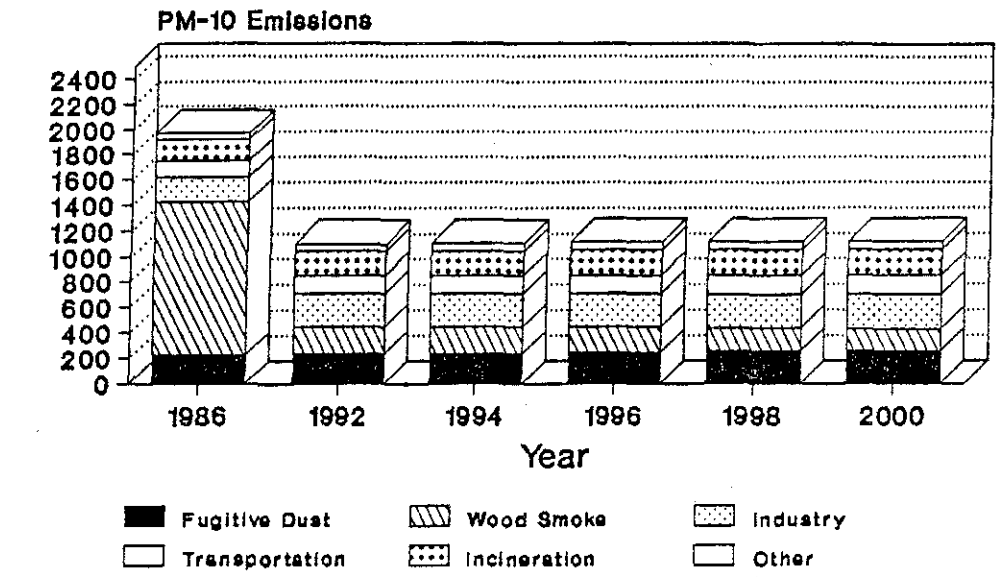
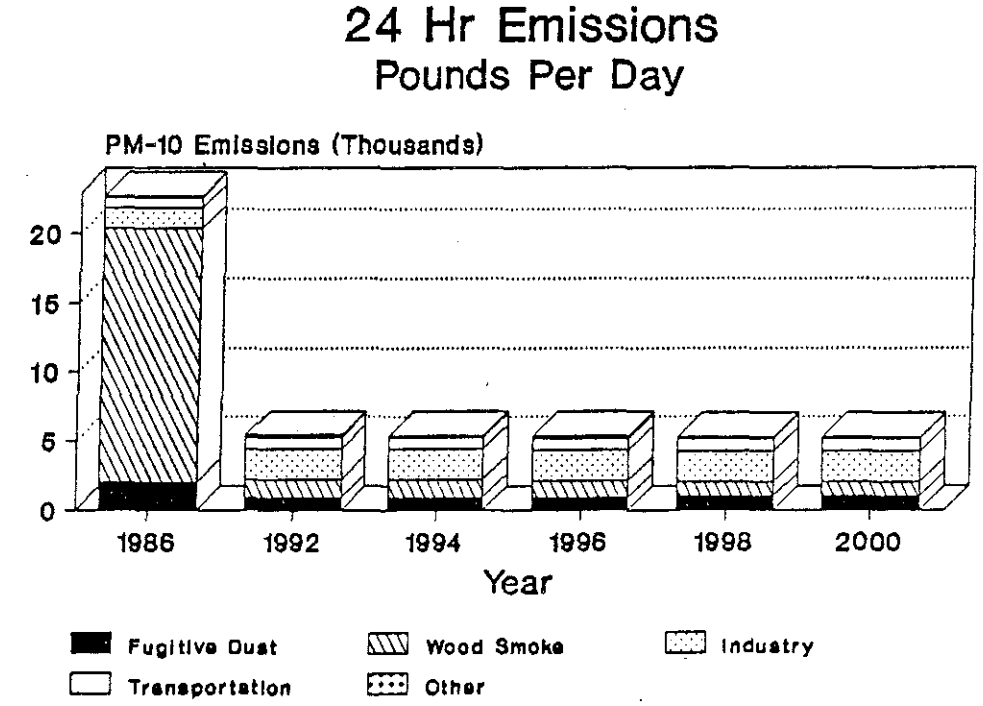


Figure 4.12.2-2: 1986 to 2000 Emission Projections



Tons Per Year (Revised)



No contribution from hogged fuel boilers was detected on these exceedance days. US EPA Chemical Mass Balance guidance specifies that the apportionment should account for at least 80 % of the measured aerosol mass. Ninety-six percent of the mass has been apportioned in the above table. Average source contribution uncertainties (relative percent of mass) are 18 % for wood smoke, 11 % for hog fuel boilers and 8 % for soil dust.

Annual Average Contributions

The annual average source contribution estimates noted in Table 4.12.2-9 were estimated from CMB analysis of PM_{10} samples with mass loadings that approximate monthly average mass loadings. No data was available for September or November. The average mass loading of the analyzed filters is 77 $\mu g/m^3$ as compared to an actual annual arithmetic mean of 75 $\mu g/m^3$. Since the source contributions shown are based on a limited number of samples, the annual averages shown are only approximations of the true annual source contributions.

Table 4.12.2-9: Annual Average PM_{10} SCE's

Source	PM_{10} ($\mu g/m^3$)	% PM_{10}
Soil Dust	12.9	17.0 %
Wood Smoke	55.4	72.9 %
Industry	0.9	1.1 %
Burning *	1.4	1.8 %
Transportation	0.1	0.1 %
Sec. Aerosol	1.5	1.9 %
Others	3.8	5.0 %
	76 $\mu g/m^3$	100 %

* Burning includes slash and field burning, land clearing and residential open burning.

Multiple Linear Regression Analysis

A second receptor modeling method of apportioning source contributions is multiple linear regression wherein the source contributions are estimated from variability in the aerosol chemistry. The MLR analysis was completed to determine the degree to which PM_{10} mass concentrations could be predicted from the aerosol chemistry and as a second independent check on the CMB source apportionment. Based on 49 observations, 90 % (R-Sq = 0.95) of the PM_{10} mass variability can be accounted for on the basis of the aluminum (a tracer for soil dust), sulfate (a secondary aerosol) and organic and elemental carbon (from wood burning). The relative standard errors for the coefficients are 53%, 45%, 5% and 40%, respectively. The results indicating that the PM_{10} mass can

reasonably be estimated from organic carbon measurements. The regression equation is:

$$PM_{10}\ (\mu g/m^3) = 7.3(Al) + 6.4(SO_4) + 1.9(OC) + 1.0(EC) + 26$$

Source apportionment based on MLR analysis indicate that on typical winter days exceeding the 24-hour NAAQS 5.3 % of the mass is soil dust, 7.7 % is sulfate and 67 % is wood smoke. These findings support the emission inventory and receptor modeling conclusions that soil dust and woodburning are significant contributors to Klamath Falls PM_{10} levels during winter 24-hour worst case episodes. Since industrial emissions cannot be identified by any single aerosol component, industry contributions cannot be reliably estimated using this approach.

Analysis of Impacts by Source Categories

Receptor modeling of samples collected on days exceeding the NAAQS clearly show that residential wood smoke is the predominant source; that wood smoke varies from 69 % to nearly all of the PM_{10} mass and that these impacts are consistent with the aerosol chemistry observed within the airshed. These finding are also generally consistent with diurnal and seasonal variations in Klamath Falls PM_{10} concentrations (Figure 4.12.1-2).

Comparisons between emission inventory and receptor modeling results has been used to provide a qualitative assessment of the relative significance of source categories. The source contribution estimates by these two methods for the winter 24-hour worst case and annual average periods are shown in Tables 4.12.2-11 and -12. They illustrate the generally close agreement between the source categories. The wood products industry contributions as estimated by emission inventory are higher than that estimated by receptor modeling because dispersion of the emissions is not considered. Transportation emissions are also somewhat higher than indicated by receptor modeling.

Background PM_{10} Air Quality

Annual average background PM_{10} air quality being transported into the Klamath Basin is estimated to be similar to background levels at the Medford Dodge Road monitoring site, about 15 $\mu g/m^3$ (see Section 4.12.1.2). This is similar to annual average background of 12 $\mu g/m^3$ measured at the Quartz Mountain PM_{10} site southeast of Klamath Falls. The 24-hour average exceedance day background of 7 $\mu g/m^3$ apportionment is based on the percentage contributions found at the Peterson School site with very low PM_{10} concentrations (11 $\mu g/m^3$) likely to reflect background sources.

Table 4.12.2-10: Background PM_{10} Source Contributions

Source	Annual Ave. PM_{10} ($\mu g/m^3$)		24-Hr Ave. Exceedance Day	
Soil Dust	4.6	30.6 %	4.3	62 %
Industry	0.7	4.5 %	0.0	0 %
Wood Smoke	7.2	48.0 %	1.9	27 %
Sec. Aerosol	1.4	9.3 %	0.6	8 %
Others	1.0	6.6 %	0.2	3 %
	15 $\mu g/m^3$		7 $\mu g/m^3$	

Estimation of "Local" Air Quality Impacts

Estimation of the impact of emission sources within the UGB requires that background components listed in Table 4.12.2-10 be subtracted from the source contributions listed in Table 4.12.2-8 and 9. The difference between these two sets of estimates is the contribution of "local" sources identified in the emission inventories. Table 4.12.2-11 and 12 lists the "local" source contribution estimates (SCEs) to PM_{10} mass average winter days which exceed the NAAQS and annual PM_{10} mass loading, respectively.

Table 4.12.2-11: Average Exceedance Day "Local" PM_{10} SCE's

Source	PM_{10} ($\mu g/m^3$)	% PM_{10}	Emission Inventory
Soil Dust	23.1	8.8 %	9 %
Industry	0.0	0.0 %	7 %
Wood Smoke	217.1	82.8 %	81 %
Sec. Aerosol	10.1	3.8 %	----
Others	11.5	4.3 %	3 %
	262 $\mu g/m^3$	100 %	100 %

Table 4.12.2-12: Annual Average "Local" PM_{10} SCE's

Source	PM_{10} ($\mu g/m^3$)	% PM_{10}	Emission Inventory
Soil Dust	8.3	13.6 %	10 %
Industry	0.9	1.4 %	10 %
Wood Smoke	48.2	79.0 %	71 % **
Burning *	1.4	2.2 %	-----
Sec. Aerosol	0.1	0.1 %	-----
Transportation	0.1	0.1 %	7 %
Others	2.0	3.2 %	2 %
	61 $\mu g/m^3$	100 %	100 %

Table 4.12.2-12 Notes:

* Includes smoke from open burning occurring outside of the winter space heating season.

** Includes residential wood burning and solid waste disposal open burning.

The above analysis demonstrates that the 1986 emission inventory and receptor modeling analysis results are reasonably comparable. The validated emission inventories support the use of the 1992 emission inventory projection as the basis for the emission rollback calculations used in the attainment demonstration.

4.12.3 Emission Reduction Analysis

This section describes the emission reductions necessary to attain the NAAQS (4.12.3.1), a review of potential control measures that may be applied in Klamath Falls (4.12.3.2) and an assessment of the adequacy of the control measures to attain the NAAQS within the time limits specified by Section 110 (a) of the Clean Air Act (4.12.3.3).

4.12.3.1 Emission Reduction Necessary for Attainment

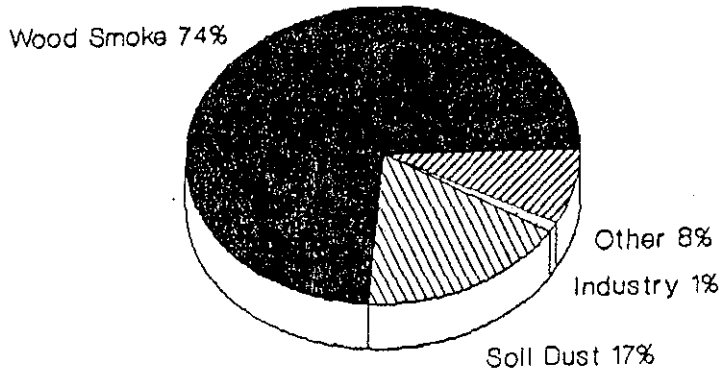
The EPA PM_{10} SIP Development Guidelines specify that a proportioning method should be used to estimate the control strategy requirements of the SIP. In the analysis below, the contribution of emission sources to the 1992 design values have been apportioned based on the 1992 annual and 24-hour worst case emission inventory estimates. Emission growth rates between 1986 and 1992 were first applied to each emission inventory source category. The sum of the 1992 source impacts plus background provide the 1992 24-hour worst case design value. A similar approach is taken to estimate 1992 annual emission reduction requirements.

Projected 24-Hour Source Impacts in Future Years

Table 4.12.3-1 lists 1992 source contribution estimates for the 24-hour worst case scenario. Source contributions at the 1992 design level were apportioned using the 1986 24-hour worst case day emission inventory percentages applied to the "local" PM_{10} air quality level of 543 $\mu g/m^3$ (550 $\mu g/m^3$ design value less the 7 $\mu g/m^3$ background).

Figure 4.12.2-3: Klamath Falls PM_{10} Source Contributions

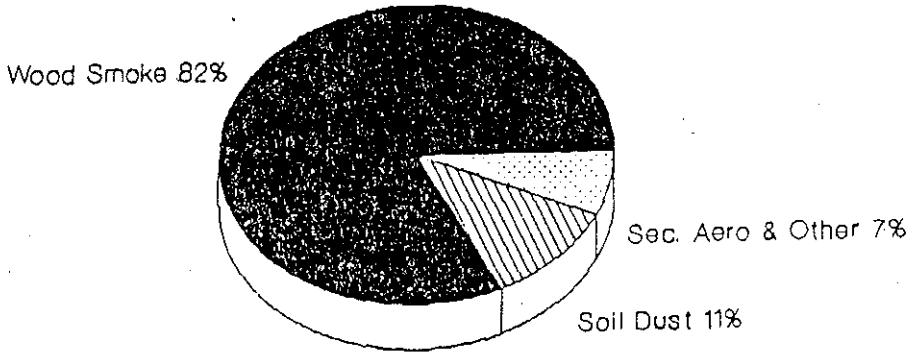
Klamath Falls Annual Source Impacts
Chemical Mass Balance Estimates



Peterson School

Dec. 1987 - Jan. 1989

Klamath Falls PM-10
Typical Winter Worst Case Day



Peterson School

(Samples Greater Than 150 Ug/m3)

Table 4.12.3-1: Projected Future Source Category Impacts (24-Hr Worst Case)

Source	1986 Worst Day EI	"Local" Design ($\mu g/m^3$)	1986-92 Growth (%)	1992 $\mu g/m^3$	1992 % "Local" PM_{10}
Wood Stoves	72 %	392	6.0 %	416	70.2 %
Fireplaces	9 %	46	-12.0 %	40	6.8 %
Industry	7 %	36	49.6 %	54	9.1 %
Fugitive Dust	9 %	48	9.0 %	52	8.8 %
Transportation	3 %	18	8.3 %	20	3.3 %
Other Sources	1 %	3	6.6 %	3	0.5 %
Subtotals		543		585 $\mu g/m^3$	
Background				7 $\mu g/m^3$	
Total				592 $\mu g/m^3$	

Air quality improvement needed = 442 $\mu g/m^3$ (592-150 $\mu g/m^3$) or a 75.5 % (442/593) reduction in worst case day emissions equivalent to 18,486 pounds per day.

The control strategy must be comprised of a mix of individual source reduction measures such that the sum of the reductions equal or exceed the total reduction requirement. Adopted control strategies must be shown through a demonstration of attainment (Section 4.12.3.3) to attain and maintain the NAAQS by reducing emissions such that an overall reduction in PM_{10} 24 hour worst case concentrations is at least 442 $\mu g/m^3$.

Projected Annual Source Impacts in 1992

Table 4.12.3-2 lists 1992 source contribution estimates for the annual scenario. Source contributions at the 1992 annual design level were apportioned using the 1992 annual emission inventory percentages applied to the "local" PM_{10} air quality level of 60 $\mu g/m^3$ (75 $\mu g/m^3$ design value less the 15 $\mu g/m^3$ background).

Table 4.12.3-2: Projected Annual Source Category Impacts

Source	1986 Annual EI	"Local" Design ($\mu g/m^3$)	1986-92 Annual Growth	1992 Annual $\mu g/m^3$	1992 % "Local" PM_{10}
Wood Stoves	55 %	33	-15 %	28	48 %
Fireplaces	6 %	4	-11 %	4	7 %
Industry	10 %	6	41 %	8	14 %
Fugitive Dust	10 %	6	4 %	6	10 %
Transportation	7 %	4	8 %	4	7 %
Open Burning	9 %	5	7 %	6	10 %
Other Sources	3 %	2	9 %	2	3 %
Sub Totals		60		58 $\mu g/m^3$	
Background				15 $\mu g/m^3$	
Total				73 $\mu g/m^3$	

Air quality improvement needed = 23 $\mu g/m^3$ (73-50 $\mu g/m^3$) or a 40 % (23/66) reduction in 1992 annual emissions. This is equivalent to a reduction of 756 tons per year.

4.12.3.2 Evaluation of Potential Control Measures

The PM_{10} control strategy for the Klamath Falls UGB focus on residential wood burning and winter road sanding fugitive emission dust control measures. Public education programs and on-going restrictions on open burning, forest slash burning emissions reductions and management of industrial point source emission growth are supplemental elements of the attainment strategy.

PM_{10} Control Strategy Elements

The following control strategy elements have been set in place to assure attainment of the annual and 24-hour PM_{10} NAAQS. Emission reduction credits associated with each element are listed and discussed. A PM_{10} emission reduction credit is a measure of the reduction in PM_{10} emissions that would be accomplished through adoption and implementation of the program element. The strategy elements and credits are further described in Section 4.12.3.3.

Table 4.12.3-3 PM_{10} Control Strategies Elements

Element	Strategy	Emission Reduction Credits by 1992 24-Hr.	Annual
Attainment Strategies (Required)			
1	Woodstove Certification Program	20 %	20 %
2	Woodstove Curtailment Programs	90 %	74 % *
3	Fuel Wood Certification Program	2 %	2 %
4	New Road Deicing Controls	60 %	60 %
5	Public Education Programs	No Credit Taken	
6	Industrial Significant Emission Rate Offset Restrictions	No Credit Taken	
7	Forestry Slash Burning Emission Reductions & Restrictions	No Credit Taken	

* Equivalent Emission Reduction Credit - See Text

Residential Wood Smoke Control Elements

There are two basic approaches to reducing woodsmoke from stoves and fireplaces: (1) improving the performance of the wood heating systems such as through a certified woodstove program; and (2) burning less wood through woodstove curtailment programs. Some strategies have multiple advantages. Certified woodstoves, for example, improve emission performance by reducing the amount of woodsmoke per cord of wood burned while improving energy efficiency, thus reducing the amount of wood burned. Other examples are well designed public information, energy conservation, or firewood seasoning programs that result in better combustion (lower emissions) and better energy efficiency (less fuel burned). The key elements of the residential wood smoke control program are described below.

The Woodstove Certification Program

In 1983, the Oregon Legislature directed the Department to require that all new woodstoves sold in the state be laboratory tested for emissions and efficiency to assure compliance with established woodstove emission standards. As a result, stoves sold after July, 1986 were required to emit 50% less emissions than conventional woodstoves. After July 1988 new woodstoves were required to emit 70% less emissions.

Subsequent to the adoption of Oregon's emission standards, the Environmental Protection Agency adopted a slightly more restrictive national certification program which will become effective in July, 1990. In March, 1990, the Department completed rulemaking to modify the Oregon Woodstove Certification Rules

(OAR 340 Division 21) to assure consistency with EPA's national program.

In-home studies of first generation certified woodstoves have indicated that they actually reduce emissions by about 30%. Second generation certified woodstoves have been shown to reduce emissions by about 50%. Their lesser than expected performance has to a large extent been due to durability problems with critical stove components. The majority of the stoves certified by the Department and sold in Oregon have been second generation stoves.

Second generation catalytic stove designs have incorporated new advancements in combustor technology which in part accounts for the stoves increased effectiveness. First generation catalytic stoves incorporated less effective catalytic elements which are currently reaching the end of their useful life. When replaced with new generation catalysts, the first generation catalytic stoves will provide effective emissions reductions approaching that of second generation stoves. These improved first generation stoves will make up in part the stove population in 1992.

Recent in-home studies have also shown that woodstove designs which met experimental durability criteria have demonstrated emission reductions averaging 79%. Durability criteria are those design features, and methods of construction which will help ensure that the initial emission performance achieved by a stove is maintained over it's usable life. Some of these units will also make up the woodstove population in 1992.

Additionally, sales of pellet stoves in non-attainment areas, as well as statewide, are reported to have significantly increased and are expected to accelerate in the foreseeable future. Pellet stoves provide a 90% reduction in emissions and are expected to become a significant segment of the woodstove population in non-attainment areas where they have typically been exempted from curtailment programs. Therefore, the Department is using a 50% emission reduction credit overall for the stove population of 1992.

RESIDENTIAL WOODBURNING

WOODSTOVES:

Residential woodstove emissions constitute 89.5% (1075 tons) of the 1986 RWC base line emission inventory. Growth of residential woodstove use was estimated by comparing a study of projected firewood use, conducted by Del Green Associates, and actual wood heating surveys conducted by the department from 1981 through 1987. The Del Green projections can be used to estimate wood use growth from 1986 to 1992 at a 1% per year increase. This projection is conservative compared to the actual firewood use trends projected from the 1981 and 1987 woodheating surveys.

FIREPLACES:

Fireplace emissions in Klamath Falls represent 10.5% (126 tons) of the 1986 base line RWC emission inventory. The emission impact from fireplaces has been separated from woodstove use in calculating the emission reduction benefit derived from the woodstove certification program. The Del Green projections for wood use trends in fireplaces estimates a 2% per year decrease in fireplace use from 1986 through 1992. This estimate is also conservative when compared to the actual firewood use trends for fireplaces from the 1981 and 1987 woodheating surveys.

PELLET STOVES

Residential pellet stoves are included as part of the 1986 baseline woodstove EI, and are expected to grow at a significantly accelerated rate in the near future. A conservative estimate of pellet stove growth is to assume a growth rate equivalent to cord wood stoves.

The following calculations are included in Appendix 8.

RESIDENTIAL WOODSTOVES

Basis for a 19.7 % Woodstove Certification Program Credit

As noted above, firewood use in residential woodstoves is projected to increase by 1 % per year over the 6 year period from 1986 to 1992. This is the basis of the growth factor used in calculating projected 1992 wood smoke emissions. Therefore, in the absence of any certification program, emission would increase by:

1 % per year x 6 years = + 6 %

Building permit authorities in Klamath County indicate that essentially all permitted installations are certified stoves and that about 20 % of these are pellet stoves. A 5 % per year replacement rate for removal of conventional stoves and installation of certified stoves is also assumed.

(1) For new certified cord wood stoves emitting 50 % of conventional stoves, emissions would be expected to decrease over the period 1986-1992 by :

(a) Assuming 80% are new or replacement cord wood stoves:

80% x ([6% x (100%-50%)] x BL86 + [5%/Yr. x 6 Yrs x (100-50%)] x BL86) = 14.4%(BL86)[tons]

Where BL86 = Baseline emissions in 1986

(2) For new certified pellet stoves emitting 10 % of conventional stove, emissions would be expected to decrease over the period 1986-1992 by :

(a) Assuming 20 % are new or replacement pellet stoves:

20% x {[6% x (100%-10%)] x BL86 + [5%/Yr. x 6 Yrs x (100-10%)] x BL86} = 6.48%(BL86)[tons]

(3) The total emission reduction as a function of the 1992 uncontrolled woodstove emissions is:

$$\{14.4(BL86) + 6.48(BL86)\}/BL92 = \frac{20.88(BL86)}{1.06(BL86)} = 19.7\%$$

Where: BL92 = 1.06 x BL86

Therefore, the woodstove certification program alone provides a 19.7 % credit by 1992.

RESIDENTIAL FIREPLACE EMISSION PROJECTION

Emissions from residential fireplaces are expected to decrease 2% per year from 1986 to 1992.

NET BENEFIT OF CERTIFICATION PROGRAM AND FIREPLACE TRENDS

Woodstove and Pellet Stove Replacement:

Assuming 80% of replacement stoves to be certified cord-wood stoves, and 20% pellet stoves; the net emission reduction from the 1986 base line will be 31.2 tons per year. This yearly reduction is applied consistently (not compounded) each year from 1986 to 1992.

[80% x(5%/yr x .5)] + [20% x (5%/yr x .9)] = 2.9%/yr reduction.

1986 woodstove baseline [1076] x .029 = 31.2 tons/yr.

New Woodstoves and New Pellet Stoves:

Assuming 80% of new certified stoves to be cord-wood stoves, and 20% to be pellet stoves; the net emission increase due to growth will be 4.5 tons/yr. This yearly increase is applied consistently (not compounded) from 1986 to 1992.

[80% x (1%/yr x .5)] + [20% x (1%/yr x .1)] = 0.42%/yr increase.
1986 woodstove baseline [1076] x .0042 = 4.5 tons/yr.

Residential Fireplace Trend:

Residential Fireplace use is projected to decrease by 2% each year. This means a constant reduction of 2.5 tons per year, (not compounded) from the 1986 fireplace emission baseline. [126 t/yr x .02] = 2.5 tons/yr.

Source Category	ANNUAL EMISSIONS BY YEAR (Tons) 1986	1987	1988	1989	1990	1991	1992
Existing Stoves	1076	1045	1014	982	951	920	889
New Stoves	0	5	9	14	18	23	27
Old & New Fireplaces	126	124	121	119	116	113	112
TOTAL	1202	1174	1144	1115	1085	1056	1028

The net reduction due to the woodstove certification program, and fireplace usage trends (from the projected 1992 uncontrolled RWC emissions of 1252 tons) becomes 18.0% :

$$1 - \frac{[1992\ \text{controlled}]\quad 1028\ \text{tons}}{[1992\ \text{uncontrolled}]\ 1252\ \text{tons}} = 18.0\%\ \text{reduction}$$

Maintenance Credits Beyond 1992

The credits claimed for the certification program beyond 1992 follow the same approach but are based on the fact that pellet stoves are likely to be an increasing proportion of the new stoves being installed. During the period 1992-1996, an 80% - 20% cord-wood/pellet stove mix is assumed increasing to a 50% - 50% mix during the period 1996 to year 2000. Growth in new stoves is expected to increase to 1.1% per year, reflecting the projected population growth rate.

The stove replacement is expected to remain 5% per year, and fireplace use trends will continue at a 2.0% per year reduction. The calculated net benefits adjusted for emission growth provide a 98 ton reduction during the 1992-96 period, and an additional 113 ton reduction during the period of 1996 to 2000.

Maintenance Period 1992 through 1996

Replacement: Woodstoves and Pellet Stoves

[80% x (5%/yr x .5)] + [20% x (5%/yr x .9)] = 2.9%/yr

BL1992 [916 tons] x .0029/yr = 26.6 ton/yr reduction.

New: Woodstoves and Pellet Stoves:

[80% x (1.1%/yr x .5)] + [20% x (1.1% x .1)] = 0.46%/yr

BL1992 [916 tons] x .0046/yr = 4.2 tons/yr increase.

Fireplace: continue at -2%/yr. from the 1992BL.[112] x .02/yr] = 2.24 tons/yr decrease.

	1992	1993	1994	1995	1996
Existing Stoves	889	862	836	809	783
New Stoves	27	31	35	40	44
Fireplaces	112	110	108	105	103
TOTAL	1028	1003	979	954	930

Net Emission Benefit for 1992 - 1996:

[1028 - 930] = 98.0 ton reduction

Maintenance Period 1996 through 2000

Replacement: Woodstoves and Pellet Stoves

[50% x (5%/yr x .5)] + [50% x (5%/yr x .9)] = 3.5%/yr

BL1996 [827tons] x .035/yr = 28.9 ton/yr reduction.

New: Woodstoves and Pellet Stoves:

[50% x (1.1%/yr x .5)] + [50% x (1.1% x .1)] = 0.33%/yr

BL1996 [827 tons] x .0033/yr = 2.73 ton/yr increase.

Fireplace: continues at -2%/yr. from the 1996BL.([103] x .02/yr) = 2.06 tons/yr decrease.

	1996	1997	1998	1999	2000
Existing Stoves	783	754	725	696	667
New Stoves	44	47	50	52	55
Fireplaces	103	101	99	97	95
TOTAL	930	902	874	845	817

Net Emission Benefit for 1996 - 2000:

[930 - 817] = 113.0 ton reduction.

The Klamath County Air Quality Program

Resolution 89-116, adopted August 31, 1988 by the Klamath County Board of Commissions established Klamath County's Air Quality Program under the direction of the County Health Department. The program was established to implement the Klamath County Air Quality Compliance Development Plan for the Klamath Falls City and Urban Growth Boundary which was adopted as Resolution 89-148 on April 19, 1989. The program is funded by Klamath County at a level of $64,000 per year (FY 89) and employs one full time Air Quality Coordinator. Additional special project funds are provided by the Department to support major capital outlay and other one-time program needs. The Klamath County Program is found in Appendix 4. Key elements of the County program are described below.

1. Public Information Programs.

A comprehensive, professional, and well-financed public information program is essential for public cooperation and support in reducing woodsmoke emissions. The program clearly describes the need for the public's cooperation, the health-safety-energy-economic benefits to individuals and the community, and precisely what individuals can do to help. Key elements include: home weatherization, firewood seasoning, cleaner burning practices, proper stove installation and sizing, maintenance of woodburning systems and most importantly curtailment of woodburning during poor ventilation episodes. Although no emission reduction credits are taken for the public information program, it is critical to the success of all of the other woodsmoke reduction elements.

The Klamath Falls Air Quality Compliance Development Plan education program fulfills all of these criteria. Key element of this aggressive program include:

- Television and radio public service announcements;
- Billboards, posters, brochures and road side signs;
- Neighborhood and house-to-house meetings promoting clean air and proper wood heating practices;
- Newspaper articles on clean air issues, Air Pollution Index (API) trends and wood burning curtailment calls;
- Advertising in newspapers and on radio;
- Wood smoke health effects studies and symposiums;
- Public classes and forums on proper burning methods;
- A voluntary firewood moisture certification program for fuel wood dealers;
- Coordination with advisory committees, woodstove dealers environmental and governmental groups;
- Operation of the Klamath County Burning Advisory telephone system which, during the 1988-89 heating season, answered 23,118 public call. An additional 1,120 calls were handled by the Klamath County Air Quality staff.

EPA's Guidance Document for Residential Wood Combustion Emission Control Measures recognizes public education programs as an essential element of any residential wood burning control strategy. The highest level education program described by EPA is based on a comprehensive, aggressive program that includes all of the elements found in the Klamath County program described above. Although EPA recognizes public education programs as an essential element of wood burning control programs, no emission reduction credits can be assigned to the program without further technical justification.[24]

2. Home Weatherization and Stove Replacement Program

In May, 1990, the City and County of Klamath Falls received an award of $548,000 from the State of Oregon Community Block Grant funds for a home weatherization and wood stove replacement program similar to the Medford CLEAR Project. Wood stoves in

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[24] US EPA, "Guidance Document for Residential Wood Combustion Emission Control Measures," EPA-450/2-89-015 (1989).

approximately 140 low income, sole source homes will be replaced by natural gas or electrical furnaces or pellet stoves and weatherized with grant funds. Award of the funds will decrease the number of households exempt from mandatory curtailment to 2.5 % and require that a 92 % compliance rate be acheived by the remaining households. Additional funding would eliminate exemptions to the curtailment program.

3. Curtailment During Poor Ventilation Episodes.

A Voluntary Woodburning Curtailment Program has been operated by Klamath County since 1988 during the months of November through March of each year. The program strategy in 1988 was designed to limit the use of woodstoves and fireplaces during periods likely to exceed the 24-hour NAAQS.

Woodburning curtailment forecasts are made twice daily at 7 AM and 4 PM during the wood heating season by the County Health Department. The forecasts are made daily between November 1st and April 1st. A "Yellow" forecast is issued if the 6 AM to 6 PM levels are forecast to be greater than 4.0 but less than 7.0 Bscat (equivalent to 81-150 $\mu g/m^3$ PM_{10})[25]. A "Red" forecast is issued if the 6AM-6PM forecast is for Bscat levels greater than 7.0 or 150 $\mu g/m^3$. The curtailment calls are based on criteria provided by the Department and are based on a forecast algorithm using National Weather Service upper air and barometric pressure data, forecasts of synoptic meteorology; surface temperatures and wind speed/direction. Nephelometer measurements of hourly light scattering and local observations of air quality conditions are also used. A detailed discussion of the curtailment methodology is found in Appendix 7.

Wood burning curtailment advisories are issued at three levels:

"Green" advisories are issued for periods during which NAAQS violations are unlikely. Woodburning is unrestricted during these periods but the public is asked to follow good woodburning practices. "Green" advisories are issued when PM_{10} levels are expected to be less than 80 $\mu g/m^3$, 12 hour average from 6 AM to 6 PM.

"Yellow" advisories are issued for periods approaching exceedance of the NAAQS. Under a "Yellow" curtailment, the public is asked to curtail all unnecessary woodburning, excepting only pellet stoves, certified woodstoves and those that use wood as their sole source of heat

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[25] Bscat measured by integrating nephelometer in units of 10^{-4} M^{-1}.

"Red" advisories are issued for periods of severely restricted ventilation during which PM_{10} levels are expected to exceed the NAAQS. Only households in which woodburning is the sole source of heat are permitted to burn during these periods.

Based on the past three years of air monitoring data, about 47 curtailment days are expected to occur during the space heating season.

Compliance with the advisories is determined through evening surveys of woodburning activity during "Green", "Yellow" and "Red" curtailment periods using infrared cameras. Surveys are conducted in four residential areas of Klamath Falls, totalling 735 homes.[26] Data from the surveys is used to direct the public education program, evaluate progress toward achieving program goals and in evaluating trends in PM_{10} concentrations.

The goal of the Klamath Falls Woodburning Advisory Program has been to reduce wood use by 85% to 90% on the 40-50 days per year on which violations of the PM_{10} health standard would be expected. Compliance with the advisory during the 1988-89 season was 27 % (as compared to a goal of 20 %), thereby achieving about fifteen percent of the compliance level needed to attain the PM_{10} air quality standard.[27] Actual compliance with the 1989-90 curtailment advisories averaged 45% on the days surveyed has ranged on a daily basis from 0 to 63%. The goals for the 1989-90 and 1990-91 heating seasons are, 46% to 52%, and 85% to 92% compliance, respectively.

The Klamath Falls compliance rate during the first year of the program was expected to be similar to that reported for other voluntary curtailment programs such as the ones operated in Medford, Oregon (25 % compliance per year for the last 4 years), and Missoula, Montana (30 %).

The Medford area implemented a mandatory curtailment program for the 1989-90 heating season and is showing a marked increase in compliance, about 85% during the first months of the program.

Note: The following bracketed text will be deleted following adoption of a mandatory curtailment ordinance by the Klamath County Board of Commissioners.

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[26] Klamath Falls Wood Stove Curtailment Program Evaluation Methodology. Department of Environmental Quality. February, 1989.

[27] Klamath County Woodstove Curtailment Program Evaluation for the 1988-89 Heating Season. Department of Environmental Quality, Air Quality Division. April, 1989.

[The Clean Air Act requires that control strategies be enforceable. EPA has advised the Department that curtailment program must be mandatory, if they require an emission reducion of greater than 30%. Although the Klamath Falls voluntary curtailment program is not meeting the 90 % compliance level needed, it has achieved compliance rates greater than other voluntary programs around the country. The Klamath Falls area will need a mandatory curtailment program provision.]

[Therefore, the Department will work with the Klamath County Board of Commissioners to support their adoption of a mandatory curtailment program ordinance by the time the SIP is adopted by the Environmental Quality Commission in November 1990.]

[This timetable is consistent with the Klamath County Commission's periodic review of the Voluntary Curtailment Program. The mandatory ordinance would have to include provisions for implementation and effectiveness monitoring as well as periodic review of the program.]

RESERVED FOR DISCUSSION OF MANDATORY CURTAILMENT PROGRAM

Long-Term Wood Heating Control Strategy

Wood heating curtailment is viewed as a short-range control strategy to allow rapid attainment of the short-term (24-hour) PM_{10} air quality standard. The Department of Environmental Quality is committed to pursue permanent reductions in wood heating emissions as a long-range strategy to reduce and even eliminate the reliance on curtailment and to provide significant improvement in annual PM_{10} air quality.

At least the following measures will be pursued to reduce permanently wood heating emissions:

- Public education activities will include more specific information on the true cost of wood heating in relation to other alternative cleaner heating sources. The major goal of this effort is to pursuade those households that are spending more money to heat with wood than with conventional fuels, such as natural gas, to convert from wood heat.

- Further information and studies on the toxicity, health effects and other detrimental effects of woodsmoke will be pursued and heavily publicized in a continuing effort to convince more people that they should reduce wood burning.

- In home emission control performance of certified stoves will be improved through promotion of durable design criteria and development of a stress test which will aid in identifying durable certified stoves.

- Financial incentive programs will be pursued through the Oregon Legislature and other avenues to promote replacement of conventional wood heating appliances with less polluting systems. These programs could include tax credits, low interest loans and total buyouts for low income households. An objective would be to graduate these incentives in proportion to the emission reduction potential of the alternative heating systems, with electric and gas systems qualifying for the largest financial incentives followed by pellet stoves, durable certified woodstoves and finally, other certified woodstoves.

Basis for Wood Burning Curtailment Credits (Worst Case Day)

The highest reported compliance rates have been for mandatory curtailment programs in Washoe County, Nevada (90%), Juneau, Alaska (80-90%), Yakima, Washington (80%), and Missoula, Montana (70%). In the Medford area a 80% to 85% compliance rate was achieved in the first year of mandatory curtailment. The 90% emission reduction credit for Klamath Falls attainment is based on the above compliance rates, Klamath County's commitment to achieve the National Ambient Air Quality Standards, adoption of a mandatory wood burning curtailment ordinance, and achievements in the Medford area mandatory curtailment program.

Basis for Wood Burning Curtailment Credits (Annual Emissions)

Annual emission credits taken for reductions made on the 47 curtailment days that occur, on average, each year have been estimated by two methods:

Reductions Based on Degree Heating Days were calculated by summing the product of the number of degree heating days that occurred on the 47 coldest days (most of which exceeded the 24 hour NAAQS) during the winter months, generally curtailment days (December, 1987 to March, 1989) and the total number of degree heating days per year to obtain the fraction of annual degree days that occurred on the 47 coldest days of the winter. This fraction (0.31) was then applied to the 1992 annual woodburning emission estimate of 1274 tons per year to obtain the total tons of emissions on curtailment days (398 tons). If emissions are reduced by 90 % on curtailment days, than emissions should be reduced by 358 tons (90 % of 398 tons) which represents 28 % of the 1992 annual emissions. The curtailment program will therefore provide, at minimum, a 28 % credit on an annual basis. However if the fact that reductions occur during poor ventilation conditions is considered, much greater benefits are apparent:

Annual Air Quality Improvements of Curtailment are believed to be much greater than the above emission reduction credit would estimate because the emission reductions are occurring during the worst atmospheric ventilation periods of the year. To estimate the true annual air quality benefits of curtailment, actual PM_{10} concentrations on winter days with PM_{10} levels greater than 150 $\mu g/m^3$ (mid-1986 to mid-1989) were used to estimate daily PM_{10} concentrations that would occur on curtailment days given the following: (1) a background PM_{10} level of 7 $\mu g/m^3$; (2) 83 % of non-background PM_{10} is wood smoke and (3) the curtailment program will reduce woodsmoke concentrations by 90 %. These PM_{10} estimates were then used to recalculate the three year, annual average. Given these assumptions, the design value annual average of 75 $\mu g/m^3$ was reduced to 50.2 $\mu g/m^3$. Since the emission inventory rollback model estimates that a 756 ton per year emission reduction is needed to attain the annual NAAQS and given that the curtailment program alone will attain the annual NAAQS, the curtailment program will provide an equivalent emission reduction credit of 74 % (756 TPY/1028 TPY). This is the basis for the 74% "comparable" emission reduction credit noted in Table 4.12.3-3.

Basis for Fuel Wood Certification Credit of 2% Per Year

EPA provides for a 5 % credit for an enforced fuel wood certification program to assure that firewood is properly seasoned prior to sale. Since only one half of the firewood burned in Klamath Falls is purchased, a 2 % credit is claimed in the attainment and maintenance analysis. (NOTE: This discussion will be expanded to include a description of the Klamath County certification program following adoption of a county ordinance)

Fugitive Dust Control Element

A 60 % reduction in emissions from winter road sanding is required to attain the 24-hour NAAQS on worst-case winter days. Sanding materials used in the Klamath Falls area are obtained from a gravel pit located near Merrill, Oregon where volcanic cinders, pea gavels, silts and clays have been deposited. Nearly all of the aggregate used within the UGB is applied by the Oregon Department of Transportation Highway Division, mostly on US 97, South Sixth Street, Alameda Bypass and the South Side Bypass. The City, County and State all maintain sections of Washburn Way and other streets in South suburban Klamath Falls. The City maintains streets within the Central Business District. Approximately 2,000 cubic yards of aggregate are applied each year by the Highway Division. The County and City use very little sanding material.

Three control options were evaluated: (1) processing of aggregate from the Merrill pit to remove silts and clays thereby reducing the amount of material to be entrained by traffic; (2) substitution of the Merrill aggregate with crushed gravel from hard rock sources located in the area or (3) use of a deicing slurry in lieu of road sanding and improved road sanding practices to minimize use of the aggregate consistent with public safety standards.

Basis for 60 % Credit for the Winter Road Sanding Control Program

The specifics of the winter road sanding control strategy are contained in correspondence form the Oregon State Highway Division (Appendix 5). The 60 % credit is based on the Highway Division's commitment to reduce winter road sanding by 60 % through (a) replacement of aggregate with a deicing slurry; (b) reduction in the amount of aggregate used by maintenance crews and (c) rapid cleanup using street washing or sweeping of road sanding materials used on major thoroughfares. Streets included in the program are South Sixth Street, Alameda Bypass, Washburn Way, South Side Bypass and portions of US 97. During worst case winter days, a 1,300 pound per day emission reduction will occur. On an annual basis, road sanding emissions will be reduced by 18 tons per year.

Since all of the heavily traveled roads in the Klamath Falls UGB are paved, reductions in resuspended road dust from paved streets may also be considered should additional emission reductions be required. Other methods of control include the addition of asphalt shoulders and curbs to major paved streets thereby eliminating trackout from the edge of the pavement into the traffic lanes. The paving of unpaved roads and control of mud trackout from construction sites are additional strategies that may be useful.

Other Strategies

The following additional elements have been developed to help assure the success of the attainment strategy. Restrictions to open burning and the prescribed burning are not included in the attainment strategy as insufficient information is available to estimate impacts of these sources on current PM_{10} air quality.

Restrictions on Open Burning.

In correspondence dated November 27, 1989 (Appendix 6), the Department requested that the State Fire Marshal direct the local fire districts not to issue open burning permits during periods when "Yellow" or "Red" wood burning advisories are issues by the Klamath County Health Department. A cooperative agreement between the Klamath County Board of Fire Cheifs and the Klamath County Health Department restricting open burning has also been adopted. The Department has further requested that land clearing and agricultural burning permits not be issued within approximately 30

miles of the Urban Growth Boundary during poor air quality days. Those wishing to open burn are advised of air quality conditions through telephone recordings. These restrictions will help assure that open burning during worst case air quality conditions will no longer occur. An additional emission reduction of 6 tons per year could be obtained by banning residential open burning within the UGB during the months of November through March. (NOTE: THIS DISCUSSION WILL BE EXPANDED IF KLAMATH COUNTY ADOPTS AN ORDINANCE RESTRICTING OPEN BURNING).

Forestry Slash Burning

The Visibility Protection Program incorporated as Section 5.2 of the Oregon State Implementation Plan was adopted October 24, 1986. The visibility program long term control strategy includes as a goal a 50 % reduction in western Oregon PM_{10} prescribed burning emissions relative to the 1978-79 baseline emissions. These emission reductions are to be achieved in a reasonably linear manner over by the year 2000. Reductions are to be achieved through increases in wood waste utilization, rescheduling burning to spring-like fuel moisture conditions, application of mass ignition burning techniques, reductions in acres burned and accelerated mop-up of smoldering units. Although the emission reductions will occur west of the Cascades, the strategy will reduce impacts from forestry burning that may be transported into the Urban Growth Boundary from units burned on the Rogue River and Umpqua National Forests and BLM's Medford District.

In addition, forest land owners surrounding Klamath basin are developing a voluntary smoke management program to minimize slash smoke intrusions into the nonattainment area. The voluntary program will be developed by March, 1990 and implemented immediately thereafter. Since forestry burning on lands east of the Cascades are not currently regulated on a day-to-day basis under the Oregon Department of Forestry's Smoke Management Program, failure of the voluntary effort to protect the nonattainment area will require revision of the Smoke Management Program rules to set aside the Klamath basin as a mandatory, designated area under program.

Industrial Emission Growth Management

In June, 1989, the Department amended OAR 340-20-225 Significant Emission Rate provisions for industrial sources. The significant emission rate for new or expanding industrial emission was revised from 15 to 5 tons per year to assure that even relatively small increases in industrial emissions would be offset by compensating emission reductions of an equal or greater amount. The tightened offset requirement assures that future industrial emission growth will not offset emission reductions achieved through elements of the attainment strategy.

4.12.3.3 Demonstration of Attainment

This section describes the application of emission reduction credits described in Section 4.12.3.2. in demonstrating attainment of the NAAQS. The calculations are based on proportional rollback of 1992 emission estimates. Appendix 8 contains the detailed calculations that support the following text.

Summary of 24 Hour Emission Reductions To Be Achieved by 1992

Strategy Element	Credit	Emission Reduction
New Road Deicing Practices	60 %	1,308 Pounds/Day
Wood Burning Strategies:		
- Wood Burning Curtailment	90%	17,171 Pounds/Day
- Certification of Woodstoves	20%	336 Pounds/Day
- Fuel Wood Certification	2%	27 Pounds/Day
Woodstove Strategies, Total		17,736 Pounds/Day

Total reduction from all strategies....19,044 Pounds/Day
Required emission reduction .....18,486 Pounds/Day

No credits have been taken for the Klamath County public education programs.

Strategy Emission Reduction - Annual Average Case

Attainment of the annual average NAAQS in 1992 will require a 40 % reduction in annual emissions or a reduction of 756 tons per year. Although the entire needed emission reduction is achieved through the wood burning curtailment program, emission reductions obtained from the road deicing and other elements of the wood burning emission reduction programs are also included since they will occur as a result of implementing the 24 hour strategy. The needed reductions are achieved through the strategy elements listed below.

Summary of Annual Average Emission Reductions
To be Achieved by 1992

Strategy Element	Credit	Emission Reduction	
New Road Deicing Practices	60 %	18	Tons/Year
Wood Burning Strategies:			
- Wood Burning Curtailment	74%	756	Tons/Year
- Woodstove Certification	21%	40	Tons/Year
- Fuel Wood Certification	2%	3	Tons/Year
Woodstove Strategies, Total		845	Tons/Year
Total reduction from all strategies.....		863	Tons/Year *
Total required emission reduction.....		756	Tons/Year

* Note: On an annual basis, the wood burning curtailment program will result in a 28 % reduction in annual wood smoke emissions. This, however, is not reflective of annual air quality benefits of the program since the restricted ventilation during the curtailment periods compounds the benefits of the emission reductions. The effective or equivalent reduction is calculated based on a 90 % curtailment program operating on 47 days per year indicating a reduction of the annual average PM_{10} concentration from 75 to 50.2 $\mu g/m^3$. As a result, the wood burning curtailment program alone, implemented on 47 days per year, will provide sufficient benefits to assure that the annual NAAQS is achieved. Additional strategy elements are claimed as a result of reductions achieved through the 24 hour strategy. See Section 4.12.3.3.

4.12.3.4 Emission Offsets and Banking

Although the control strategy does not formally incorporate provisions for growth in industrial emissions through an emission offset and banking provisions, there is considerable growth margin for increases in industrial emissions within the current plant permits. The difference between the 1986 actual and the 1992 projected industrial emission projections is 77 tons per year in annual and 745 pounds per day in PM_{10} emissions.

OAR 340-20-225 (22) requires that new or modified industrial sources that emit more than 5 tons per year of PM_{10} emissions must obtain emission reductions from other sources to offset their emissions. The emission offsets may be obtained by reducing emissions within the facility to be modified, from other industrial sources or from external sources, including woodstove emissions from sole source, low income households. The Department estimates that an additional 100 tons per year could be obtained by reducing existing wood-fired boiler emissions by 70-85% to 0.03 grains per standard cubic foot and veneer driers by 42-70 % to

0.3-0.45 pounds per thousand square feet of veneer (3/8" basis). In addition, at least 175 tons per year of PM_{10} emission offset is available by replacing conventional woodstoves in sole source, low income households with natural gas or electrical heating systems.[28]

The emissions margins and sources of offsets will help assure continued maintenance of the NAAQS beyond 1992.

4.12.3.5 Demonstration of Maintenance

Emission reductions achieved through the adoption of a county ordinance banning the installation of non-certified woodstoves will assure that emission growth associated with fugitive dust and transportation sources will not cause the NAAQS to be exceeded by the year 2000. Appendix 8 lists emission projections for the eight year period following attainment in 1992.

4.12.3.6 Emergency Action Plan Provisions

OAR 340 Division 27 describes Oregon's Emergency Action Plan. The rule is intended to prevent the excessive accumulation of air contaminants during periods of air stagnation which, if unchecked, could result in concentrations of pollutants which could cause significant harm to the public health. The rules establish criteria for identifying and declaring air pollution episodes below the significant harm level and were adopted pursuant to requirements of the Clean Air Act. The action levels found in the Plan were established by the Environmental Protection Agency and subsequently adopted by the Department.

The significant harm level for PM_{10} particulate matter of 600 $\mu g/m^3$, 24 hour average (adopted by the Environmental Quality Commission April, 1988) was exceeded twice in Klamath Falls; on January 25, 1988 (792 $\mu g/m^3$) and on February 3, 1988 (723 $\mu g/m^3$). At the time of these events, the significant harm level was 1,000 $\mu g/m^3$ of Total Suspended Particulate, a level which was not exceeded.

The PM_{10} "Alert" level is 350 $\mu g/m^3$; the "Warning" level is 420 $\mu g/m^3$ and the "Emergency" level is 500 $\mu g/m^3$, 24 hour average. These levels must be coupled with meteorological forecasts for continuing air stagnation to trigger the Action Plan.

Authority for the Department to regulate air pollution sources during emergency episodes is provided under ORS 468, including emissions from woodstoves. When there is an imminent and

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[28] Response to testimony received at the Klamath Falls public hearing on proposed changes to industrial rules. Attachment E to staff report prepared for the June 2, 1989 Environmental Quality Commission, Agenda Item H.

substantial endangerment to public health (the significant harm level), ORS 468.115 authorizes the Department, at the direction of the Governor, to enforce orders requiring any person to cease and desist actions causing the pollution. State and local police are directed to cooperate in the enforcement of such orders.

4.12.4 Implementation of the Control Strategy

All of the elements of the attainment strategy will be adopted prior to Environmental Quality Commission adoption in November, 1990. Specific elements of the strategy were implemented as noted below.

4.12.4.1 Schedule for Implementation

The Oregon Woodstove Certification Program became effective June 30, 1986; the Klamath County Air Quality and voluntary wood burning curtailment programs were implemented on August 31, 1988 and the road sanding control strategy commitments were received from the Oregon Department of Transportation on December 11, 1989 and will be implemented during the winter of 1989-1990. Open burning restrictions implemented through the Oregon State Fire Marshal's office and local Board of Fire Chiefs began in November, 1989. The Department's Significant Emission Rate rules became effective on the date of adoption, June 2, 1989. Implementation of a mandatory wood burning curtailment program will occur prior to the 1991-92 heating season following adoption of a County ordinance prior to November, 1990.

4.12.4.2 Rules, Regulations and Commitments

The following rules and commitments have been adopted to assure the enforceability of the control strategies.

State of Oregon Rules

Woodstove Certification Program	OAR 340 Division 21
Klamath Falls Significant Emission Rate Rule	OAR 340-20-225

Klamath County Ordinances

Klamath County Air Quality Program	Resolution 89-116
Klamath County Air Quality Compliance Development Plan for the Klamath Falls City and Urban Growth Boundary	Resolution 89-148

Regulations Yet to be Adopted

Klamath County Mandatory Curtailment Ordinance	By Oct. 1990
Klamath County Open Burning Ordinance	By Oct. 1990
Klamath County Fuel Wood Certification Ordinance	By Oct. 1990

Interagency Commitments

Winter Road Sanding Program, Oregon Department of Transportation Highway Division Memorandum of Understanding.

Oregon Dept. of Forestry Smoke Management Plan OAR 629-43-043
State Fire Marshall's Office Open Burning Statute ORS 478.960

4.12.5 Public Involvement

Development of the Klamath Falls PM_{10} control strategy included several areas of public involvement including a continuing Citizen Advisory Committees, public participation at hearing on proposed industrial source rules and attendance at hearings conducted by the Klamath County Board of Commissioners.

Proposed industrial rules to reduce the significant emission rate for new or modified industrial sources within the Klamath Falls Urban Growth Boundary were approved by the Environmental Quality Commission on November 4, 1988. A public hearing on the proposal to reduce the significant emission offset from 15 to 5 tons per year PM_{10} was held in Klamath Falls on February 15, 1988. The rule was adopted at the Environmental Quality Commission's April, 1989 meeting.

4.12.5.1 Citizen Advisory Committee

The Klamath County Board of Commissions appointed members to the Klamath County Air Quality Task Force in November of 1987 to assist the County and the Department in the development of control programs for the Klamath Falls Nonattainment Area. The 14 member committee was advised of the requirements of the Clean Air Act and State Implementation Plan. The Task Force considered alternative control strategies and provided recommendation to the Board in November, 1988. On January 26th and February 3rd, 1988, the Board of Commissioners held public hearings on a proposed county mandatory curtailment ordinance designed to achieve the degree of woodsmoke emission reduction required. Following the hearings, the ordinance was dropped from further consideration and a second 15 member Task Force (New Citizens Air Quality Committee) was appointed to consider other options, including development of a voluntary curtailment program. In May of 1988, the Committee submitted an outline for a voluntary curtailment program to the Department and the Klamath County Board of Commissioners and, in April, 1989, the Board adopted the Klamath County Voluntary Woodburning Compliance Program. The Program is enclosed as Appendix 4.

4.12.5.2 Public Notice

Public notice of proposed rule revisions is done through mailing lists maintained by the Department, through notifications published in local newspapers and through Department press releases.

4.12.5.3 Public Hearings

As noted above, public hearings on the Klamath County Plan were held on January 26 and February 3, 1988. A hearing on revisions to the industrial rules on significant offset emission rates was held February 15, 1988 and public hearings on proposed woodstove legislation were held before the Senate Agriculture and Natural Resources Committee on several occasions in February and March, 1989.

4.12.5.4 Intergovernmental Review

Public hearing notices regarding adoption of this revision to the State Implementation Plan will be distributed for local and state agency review through the A-95 State Clearinghouse process forty-five days prior to adoption by the Environmental Quality Commission.

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Draft State Implementation Plan

for Particulate Matter

Medford-Ashland, Oregon
Nonattainment Area

A Plan for Attaining and Maintaining the National Ambient Air Quality Standard for PM_{10}

State of Oregon
Department of Environmental Quality
Air Quality Division

June 1990

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Appendices

* Available upon request.
** Included with SIP revision.

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Executive Summary

The U.S. Environmental Protection Agency (EPA) adopted new particulate National Ambient Air Quality Standards (NAAQS) for PM_{10} on July 1, 1987. PM_{10} particulate is less than 10 micrometers in aerodynamic diameter or about one-tenth of the diameter of a human hair. The Clean Air Act requires that States develop and adopt State Implementation Plan (SIP) revisions to assure that areas which exceed the PM_{10} standards are brought into attainment within the time frames prescribed by the Clean Air Act (September 1991). This document describes the State of Oregon plan to attain the PM_{10} standards in the Medford-Ashland Air Quality Maintenance Area (AQMA).

High exposure to particulate matter is of concern because of human health effects such as changes in lung functions and increased respiratory symptoms, aggravation of existing respiratory and cardiovascular disease, alternation in the body's defense system against foreign materials, damage to lung tissue, increased risk of cancer and, in extreme cases, premature death. Most sensitive to the effects of particulate matter are people with chronic obstructive pulmonary cardiovascular disease and those with influenza, asthmatics, the elderly, children and mouth-breathers.

Air quality measurements taken in Medford have determined that the 24-hour PM_{10} health standard was exceeded an average of about 20 days per year during the winter months in 1984-86. In addition,the annual average concentration of PM_{10} exceeded the annual PM_{10} health standard.

The PM_{10} standards adopted by the EPA, and subsequently adopted by the Oregon Environmental Quality Commission, were established to protect public health and welfare. The 24-hour PM_{10} standard is 150 micrograms per cubic meter of air ($\mu g/m^3$). The maximum 24-hour concentration of PM_{10} measured in Medford was over 300 $\mu g/m^3$. The 24-hour standard cannot be exceeded more than an average of one day per year. The annual average PM_{10} concentration in Medford is about 58 to 68 $\mu g/m^3$ in the peak areas compared to the average annual PM_{10} standard of 50 $\mu g/m^3$.

An inventory of PM_{10} emissions developed for the Medford-Ashland Air Quality Maintenance Area (AQMA) indicates that the major sources of particulate emissions are residential wood combustion, industry, and soil and road dust. Annual average and worst day PM_{10} emissions during the baseline period (1985-86) are compared in the following table.

Source Category	Annual PM_{10} Emissions (%)	Worst Day PM_{10} Emissions (%)
Residential woodsmoke	38	60
Wood products industry	27	18
Soil and road dust	22	18
Other	13	4
Total	100	100

The air pollution impacts from these PM_{10} emissions have been measured, calculated and verified at various locations within the AQMA through the combination of the air monitoring network (PM_{10} measurement stations), dispersion modeling (mathematical modeling of diffusion in the atmosphere), and receptor modeling (chemical fingerprinting) techniques.

PM_{10} design values are those 24-hour worst case and annual average concentrations from which reductions must be made to achieve compliance with the standards. The 24-hour design value represents the fourth highest daily concentration measured in a 3-year period; the annual design value represents the 3-year average concentration.

The design values were determined with the following considerations. The eight highest 24-hour PM_{10} concentrations during 1984-86 occurred during December 1985 so the December 1985 meteorology was used for the worst-case-day dispersion modeling. The 1984-86 period had the highest 3-year PM_{10} average concentration since monitoring began so this period was used for the annual-average analysis; the most precise wind data was available during July 1985 to June 1986 and this 12-month period had average concentrations similar to the 1984-86 average so the annual-average dispersion modeling was done with the July 1985 to June 1986 meteorology. The highest PM_{10} concentrations were measured in the area between the Jackson County Courthouse at Oakdale/Main and McAndrews Road (monitors located near Oakdale/Main, Haven/Holly, Oak/Taft, and Welch/Jackson).

Analysis of the dispersion modeling results for 1985-86 and all of the available PM_{10} air quality data from 1984-1986 indicates a 24-hour design value of 266 to 309 $\mu g/m^3$ (Oakdale/Main and Oak/Taft, respectively) and an annual average design value of 58 to 68 $\mu g/m^3$ (Oakdale/Main and Oak/Taft, respectively) depending on the location within the peak problem area. In addition to the peak impact site (Oak/Taft), the impact analysis is also summarized for the Courthouse site (Oakdale/Main) since most of the historical particulate data (20+ years) and chemical fingerprinting data (10+ years) has been collected at the Courthouse. These specific design values are based on the dispersion modeling results but they agree very closely with the actual ambient monitoring data at these sites.

Control strategies included in this plan have been designed to reduce 24-hour concentrations of PM_{10} by at least 159 $\mu g/m^3$ (309-150 $\mu g/m^3$) and the annual average by at least 18 $\mu g/m^3$ (68-50 $\mu g/m^3$) by 1992.

Control measures adopted in this plan must be legally enforceable, demonstrated to be adequate to achieve the needed air quality improvements, and designed to attain the standards within the time frames provided by the Clean Air Act.

The principal means of achieving these air quality improvements within the 3-year period allowed by the Clean Air Act is through PM_{10} emission reductions from woodstoves and fireplaces (RWC), the wood products industries, open burning of debris, and road dust. Additional reductions are expected from statewide efforts to reduce slash burning smoke.

Residential Wood Combustion Strategies

The residential woodsmoke reduction strategies are closely patterned after the December 1987 recommendations of the Jackson County Wood burning Task Force. Woodstove and fireplace emissions will be reduced by an expanded public information program, an areawide mandatory wood burning curtailment program (75% compliance rate needed to meet standards at the Courthouse, but 85% compliance rate needed to meet standards at Oak/Taft), the Oregon woodstove certification program, financial assistance programs for replacement of existing woodstoves with cleaner burning units and weatherization of homes, a ban on installation of non-certified woodstoves, and continued improvements in firewood seasoning and woodstove operation.

Wood Products Industry Strategies

Wood products industry emissions will be reduced by additional control requirements on veneer driers and large wood-fired boilers at plywood plants, more extensive source testing and continuous emission monitoring in order to maximize performance of pollution control equipment, and more restrictive emission offset requirements to insure a net air quality benefit from any new or expanded industries.

Open Burning Strategies

Open burning emissions will be reduced during the critical November to February period by local ordinances banning open burning during these months. Annual open burning emissions will be reduced by a year around ban within Medford and more restrictive ventilation criteria and shorter burn seasons in unincorporated areas of Jackson County and in Central Point.

Road Dust Strategies

Road dust emissions will be reduced by continuing programs to pave unpaved roads, to curb and gutter shoulders on paved roads, and to control mud and dirt trackout from industrial, construction and agricultural operations.

Other Strategies

Slash burning emissions will be reduced in western Oregon by about 20% between 1984 and the year 2000 as part of the Oregon Visibility Protection Plan. These emission reductions will further insure that background PM_{10} concentrations will not increase in future years.

In addition, forestry slash burning impacts on the nonattainment area will be minimized through voluntary agreements among forest land managers. This program will help assure that forestry open burning does not adversely affect Medford-Ashland AQMA air quality on winter wood heating curtailment days.

Implementation of all of the elements of the overall PM_{10} control strategy will require the efforts of residents and industries within the Medford-Ashland AQMA, Jackson County, the cities within the AQMA, the Oregon Department of Environmental Quality, the State Forestry Department, U.S. Forest Service and Bureau of Land Management.

Strategy Emission Reduction - 24 Hour Worst Case Day

Attainment of the 24-hour PM_{10} standards by 1992 will require up to a 51% reduction in ambient PM_{10} concentrations depending on the location within the AQMA. This reduction will be accomplished by the previously described strategies. The PM_{10} impacts at the Jackson County Courthouse from the major source categories are compared in the following table for the 1985-86 base period and the 1992 attainment year. The PM_{10} impacts are in micrograms per cubic meter ($\mu g/m^3$). (NC indicates No Change.)

Site: Jackson County Courthouse

Source Category	24-Hour PM_{10} Impact ($\mu g/m^3$) Worst Day 1985-86	Worst Day 1992	Change
Residential woodsmoke	195.0	26.4	-86%
Wood products industry	29.2	20.3	-30%
Soil and road dust	27.6	27.6	NC
Other	10.6	11.6	+9%
Local sources	262.4	85.9	-67%
Background	44.0	44.0	NC
Total	306.4	129.9	-58%

Source Category	Design Day 1985-86	Design Day 1992	Change
Residential woodsmoke	156.2	23.1	-85%
Wood products industry	22.6	14.6	-35%
Soil and road dust	32.1	32.1	NC
Other	11.6	12.6	+9%
Local sources	222.5	82.4	-63%
Background	44.0	44.0	NC
Total	266.5	126.4	-53%

The Courthouse monitoring site is of special interest since it is the site of the longest historical particulate monitoring in the AQMA and it is located in the general area of highest particulate levels. However, the Oak and Taft monitoring site in Medford has recorded and projects slightly higher PM_{10} levels which are summarized in the following table.

Site: Medford Oak and Taft

Source Category	24-Hour PM_{10} Impact ($\mu g/m^3$) Worst Day 1985-86	Worst Day 1992	Change
Residential woodsmoke	182.2	24.5	-87%
Wood products industry	77.8	55.1	-26%
Soil and road dust	28.7	28.7	NC
Other	9.5	10.3	+9%
Local sources	298.2	118.6	-60%
Background	44.0	44.0	NC
Total	342.2	162.6	-52%

Source Category	24-Hour PM_{10} Impact ($\mu g/m^3$) Design Day 1985-86	Design Day 1992	Change
Residential woodsmoke	167.3	22.3	-87%
Wood products industry	58.8	42.0	-29%
Soil and road dust	29.8	29.8	NC
Other	9.5	10.3	+9%
Local sources	265.3	104.4	-61%
Background	44.0	44.0	NC
Total	309.3	148.4	-52%

These 24-hour PM_{10} impacts represent the worst day and design day during the 1985-86 baseline period. The design value is based on the fourth highest day during a 3-year period. For the Oak/Taft site the modeled fourth highest day after implementation of the control strategy in 1992 is 148 $\mu g/m^3$ which would be in compliance with the 24-hour health standard of 150 $\mu g/m^3$.

Other areas of the AQMA had been measured in violation of the 24-hour or annual standards, notably the White City and Central Point areas, but the dispersion modeling also indicated compliance in those areas, with 1992 concentrations lower than at Oak/Taft.

Strategy Emission Reduction - Annual Average Case

Attainment of the annual average PM_{10} standards by 1992 will require up to a 26% reduction in ambient PM_{10} concentrations depending on the location within the AQMA. This reduction will be accomplished by the previously described strategies. The PM_{10} impacts at the Jackson County Courthouse from the major source categories are compared in the following table for the 1985-86 base period and the 1992 attainment year. Again, the PM_{10} impacts are in micrograms per cubic meter ($\mu g/m^3$).

Site: Jackson County Courthouse

Source Category	Annual PM_{10} Impact ($\mu g/m^3$) 1985-86	1992	Change
Residential woodsmoke	28.8	16.6	-42%
Wood products industry	7.2	4.3	-40%
Soil and road dust	6.9	6.9	NC
Other	2.7	3.0	+9%
Local sources	45.6	30.8	-32%
Background	13.1	13.1	NC
Total	58.7	43.9	-25%

The Oak and Taft monitoring site in Medford recorded slightly higher annual PM_{10} levels than the Courthouse. The Oak and Taft PM_{10} levels are summarized in the following table.

Site: Medford Oak and Taft

Source Category	Annual PM_{10} Impact ($\mu g/m^3$) 1985-86	1992	Change
Residential woodsmoke	28.2	16.2	-43%
Wood products industry	17.9	11.3	-37%
Soil and road dust	6.6	6.6	NC
Other	2.3	2.5	+9%
Local sources	55.0	36.6	-33%
Background	13.1	13.1	NC
Total	68.1	49.7	-27%

The annual average PM_{10} levels at both the Courthouse and Oak and Taft sites are projected to be in compliance with the annual PM_{10} health standard of 50 $\mu g/m^3$ after implementation of the control strategy in 1992.

The dispersion modeling projected potential PM_{10} problems in two other one-kilometer grids north of the Oak & Taft grid but the 1985 Medford particulate gradient study and the 1989 mobile nephelometer surveys indicated that PM_{10} levels at the DeHague & Howard and McAndrews & Court sites were not as high as at the Oak & Taft site. The Department will conduct additional monitoring in the two potential problem grids by 1991 to determine the actual PM_{10} concentrations as the control strategy is implemented. If the ambient data confirms a nonattainment problem that the control strategy will not bring into attainment by 1992, then the control strategy will be modified as necessary to assure that attainment will be reached.

Air Quality Standard Maintenance

Subsequent to attainment and by the year 2000, a net decrease in emissions is projected to occur as a result of continuation of the attainment strategies, offsetting increases in fugitive dust and transportation emissions. Both the 24-hour and annual standards are projected to be maintained to the year 2000 at which time worst case day PM_{10} and the annual average PM_{10} are projected to be 146 and 48 $\mu g/m^3$, respectively, at Oak and Taft.

Enforceability

The Clean Air Act requires SIP control strategies to be enforceable. The necessary state rules and local ordinances have

been adopted and are included in the appendix for this plan. The 1984 Oregon woodstove certification program and the 1989 industrial rules have been submitted to EPA previously.

Several existing strategy elements to reduce residential woodsmoke will be continued or expanded including: comprehensive public information programs on proper woodstove operation, firewood seasoning, and home weatherization; financial assistance programs to replace existing woodstoves with cleaner burning units and provide home weatherization (CLEAR, SOLVE and ACCESS programs); voluntary firewood moisture certification programs; daily woodburning advisory program (for areas outside the critical PM_{10} control area); and the woodstove certification program.

The major new residential wood combustion strategies in this plan are the mandatory wood burning curtailment programs and the bans on installation of non-certified woodstoves. The mandatory curtailment programs adopted by the cities of Medford and Central Point and Jackson County and the ban on installation of non-certified stoves adopted by the City of Ashland and Jackson County are included in the appendix. Also included are local ordinances on opacity limits, what can be burned in woodstoves, and sale of seasoned firewood.

The new industrial strategies are more stringent control requirements on veneer dryers and large wood-fired boilers, more extensive source testing and continuous emission monitoring, and more restrictive emission offset requirements for new or expanded industries. These rules were adopted by the Environmental Quality Commission on September 8, 1989, and are included in the appendix. The new industrial rules are in addition to the industrial rules for the Medford-Ashland area adopted in 1978 and 1983.

The current local ordinances that regulate open burning and trackout are included in the appendix. Also included is a progress report on paving of unpaved roads and curbing of shoulders on paved roads within the city of Medford.

4.14.0 State Implementation Plan for the Medford-Ashland AQMA PM_{10} Nonattainment Area

4.14.0.1 Introduction

On July 1, 1987, the U.S. Environmental Protection Agency (EPA) promulgated new federal ambient air quality standards for particles less than or equal to 10 micrometers in aerodynamic diameter (PM_{10}) to replace the Total Suspended Particulate (TSP) standard[1]. The standard became effective 30 days later on July 31, 1987. On August 7, 1987, EPA classified the Medford-Ashland Air Quality Maintenance Area as a Group I PM_{10} nonattainment area (52 FR 29383). Group I areas are those which have a greater than 95 percent probability of exceeding the PM_{10} National Ambient Air Quality Standards (NAAQS). Air monitoring has shown that air quality within the Medford-Ashland AQMA exceeds the PM_{10} standards (NAAQS).

Section 110 of the Federal Clean Air Act requires States to adopt and submit plans (State Implementation Plans or SIPs) to EPA within nine months after the effective date of the standard. The Clean Air Act allows EPA four months to approve or disapprove the plan. The plan must provide for attainment of the standard as expeditiously as practicable but no later than three years from the date of EPA approval of the SIP[2]. Hence, attainment theoretically must be reached by September 1, 1991.

The Air Quality Division of the Department of Environmental Quality (subsequently referred to as the Department) has developed this plan in consultation with officials of Jackson County, the cities within the Medford-Ashland AQMA, the Oregon Departments of Transportation and Forestry, and EPA. The plan was prepared in accordance with the regulations and requirements of the Federal Clean Air Act and the EPA. The Department believes that the PM_{10} plan can achieve attainment of the NAAQS within the time frame required by the Act and maintain attainment at least through the year 2000.

4.14.0.2 SIP Overview

This revision to the State Implementation Plan (SIP) has five sections. Section 4.14.1 provides a description of PM_{10} ambient air quality in Medford-Ashland AQMA; Section 4.14.2 describes the PM_{10} air quality problem within the Medford-Ashland AQMA; Section

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[1] A micrometer (μm) is a unit of length equal to about 1/25,000 of an inch. For comparison, the thickness of a human hair is about 100 to 200 micrometers.

[2] Clean Air Act Section 110 (a)(1).

4.14.3 describes emission reductions needed to attain NAAQS; Section 4.14.4 describes implementation of the control strategies; and Section 4.14.5 describes public involvement.

4.14.0.3 Area Description

The following description of the topography is from the annual climatological summary for the Medford area prepared by the National Weather Service.[3]

> Medford is located in a mountain valley formed by the Rogue River and one of its tributaries, Bear Creek. The major portion of the valley ranges in elevation from 1,300 to 1,400 feet above sea level. Mountains surround the valley on all sides: to the east, the Cascades, ranging up to 9,500 feet; to the south, the Siskiyous, ranging up to 7,600 feet; and to the west and north, the Coast Range and Umpqua Divide, ranging up to 5,500 feet above sea level. The valley exits to the ocean 80 miles westward through the narrow canyon of the Rogue River.

The Medford-Ashland Air Quality Maintenance Area (AQMA) is outlined in Figure 4.14.0-1. The AQMA covers about 228 square miles and approximates the Bear Creek Basin. The AQMA boundary is the PM_{10} nonattainment area for the purposes of this plan.

At a minimum, the PM_{10} nonattainment area must be large enough to include all of the local geographical areas that violate the ambient PM_{10} standards. The ambient monitoring network and dispersion modeling indicate that the PM_{10} violation areas are located within the AQMA and include the Medford, Central Point, White City, Phoenix, and Talent areas.

The boundary must also be large enough to include potential future PM_{10} problem areas resulting from residential, industrial or transportation growth. The AQMA includes about 80% of the Jackson County population. The 1988 population was estimated to be 143,400 in Jackson County[4] and 115,000 in the AQMA. All of the major industries in Jackson County are located within the Medford-Ashland AQMA. Most of the traffic (vehicle-miles-traveled or VMT) in Medford is from vehicles registered within the AQMA (about 88% of the VMT).

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[3]"Local Climatological Data, 1987 Annual Summary with Comparative Data, Medford, Oregon," National Oceanic and Atmospheric Administration, National Climatic Data Center, Ashville, North Carolina.

[4]Center for Population Research and Census, School of Urban and Public Affairs, Portland State University

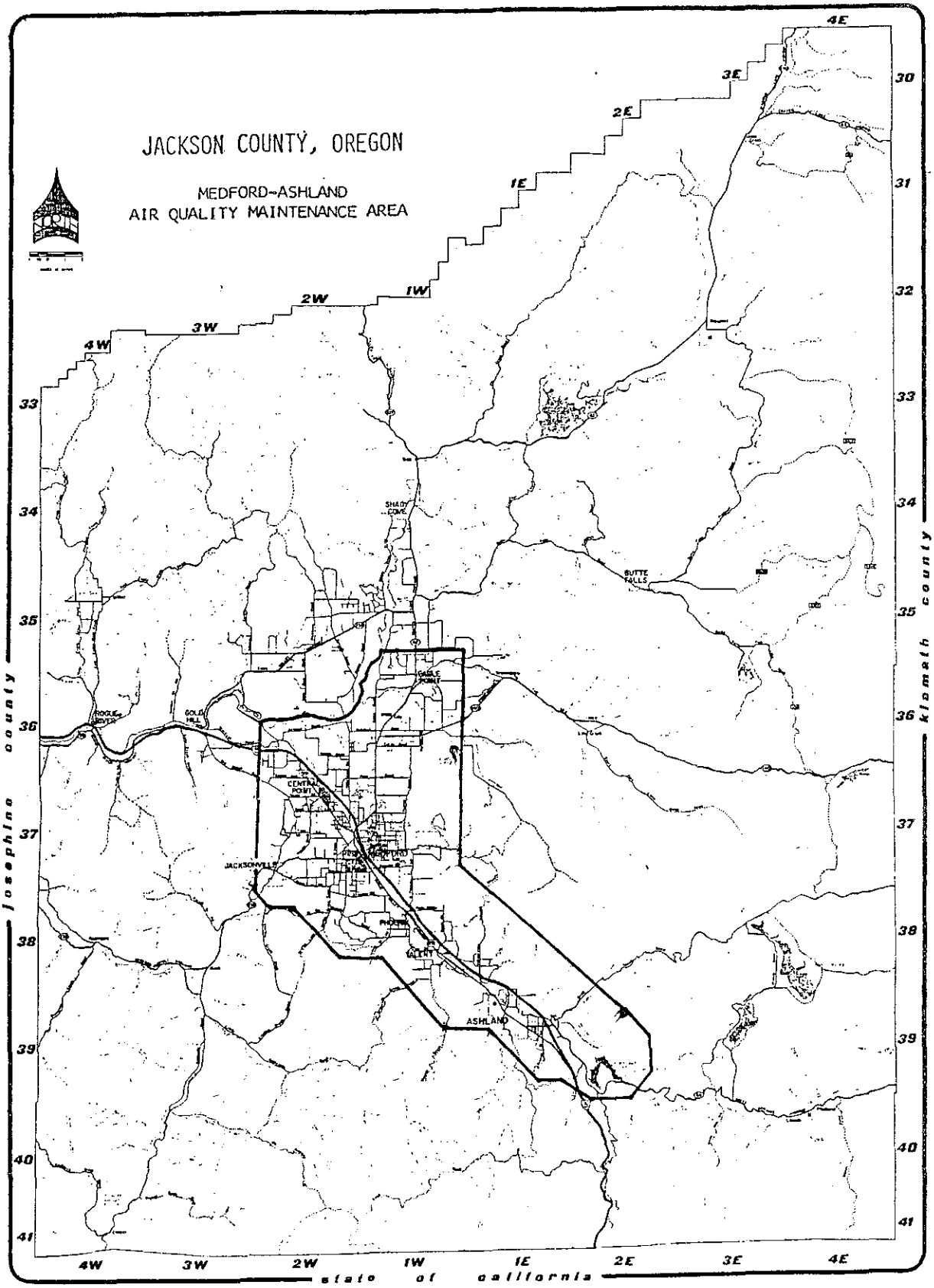

Figure 4.14.0-1: Map of Medford-Ashland AQMA

The AQMA boundary has been used for the special industrial air pollution control rules adopted in 1978, 1983 and 1989.

The Department of Environmental Quality and Jackson County Health Department have also identified an area within the AQMA that is referred to as the critical PM_{10} control area outlined in Figure 4.14.0-2. This area includes the PM_{10} problem areas, most of the AQMA population (about 90,000 of the 115,000 AQMA population), and all of the major industries.

4.14.0.4 Medford-Ashland Meteorology

The following description of climate and meteorology in the Medford-Ashland area is from the annual climatological summary prepared by the National Weather Service.[5]

> Medford has a moderate climate of marked seasonal characteristics. Late fall, winter, and early spring months are damp, cloudy, and cool under the influence of marine air. Late spring, summer, and early fall are warm, dry, and sunny, due to the dry continental nature of the prevailing winds aloft that cross this area.
>
> The rain shadow afforded by the Siskiyous and Coast Range results in a relatively light annual rainfall, most of which falls during the winter season. Summertime rainfall is brought by thunderstorm activity. Snowfall is quite heavy in the surrounding mountains during the winter. Valley snowfall is light. Individual accumulations of snow seldom last more than 24 hours and present little hindrance to transportation on the valley floor.
>
> Few extremes of temperatures occur. High temperatures in the summer months average slightly below 90 degrees. High temperatures are always accompanied by low humidity, and hot days give way to cold nights as cool air drains down the mountain slopes into the valley. The length of the growing season is 170 days, from late April to mid-October. The last date of 32 degrees in the spring normally occurs in mid-June and the first date of 32 degrees in the fall occurs in mid-September.
>
> Valley winds are usually very light, prevailing from the north or northwest much of the year. Winds exceeding 10 mph during the winter months nearly always come from the southerly quadrant. Highest velocities are reached when a

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[5]"Local Climatological Data, 1987 Annual Summary with Comparative Data, Medford, Oregon," National Oceanic and Atmospheric Administration, National Climatic Data Center, Ashville, North Carolina.

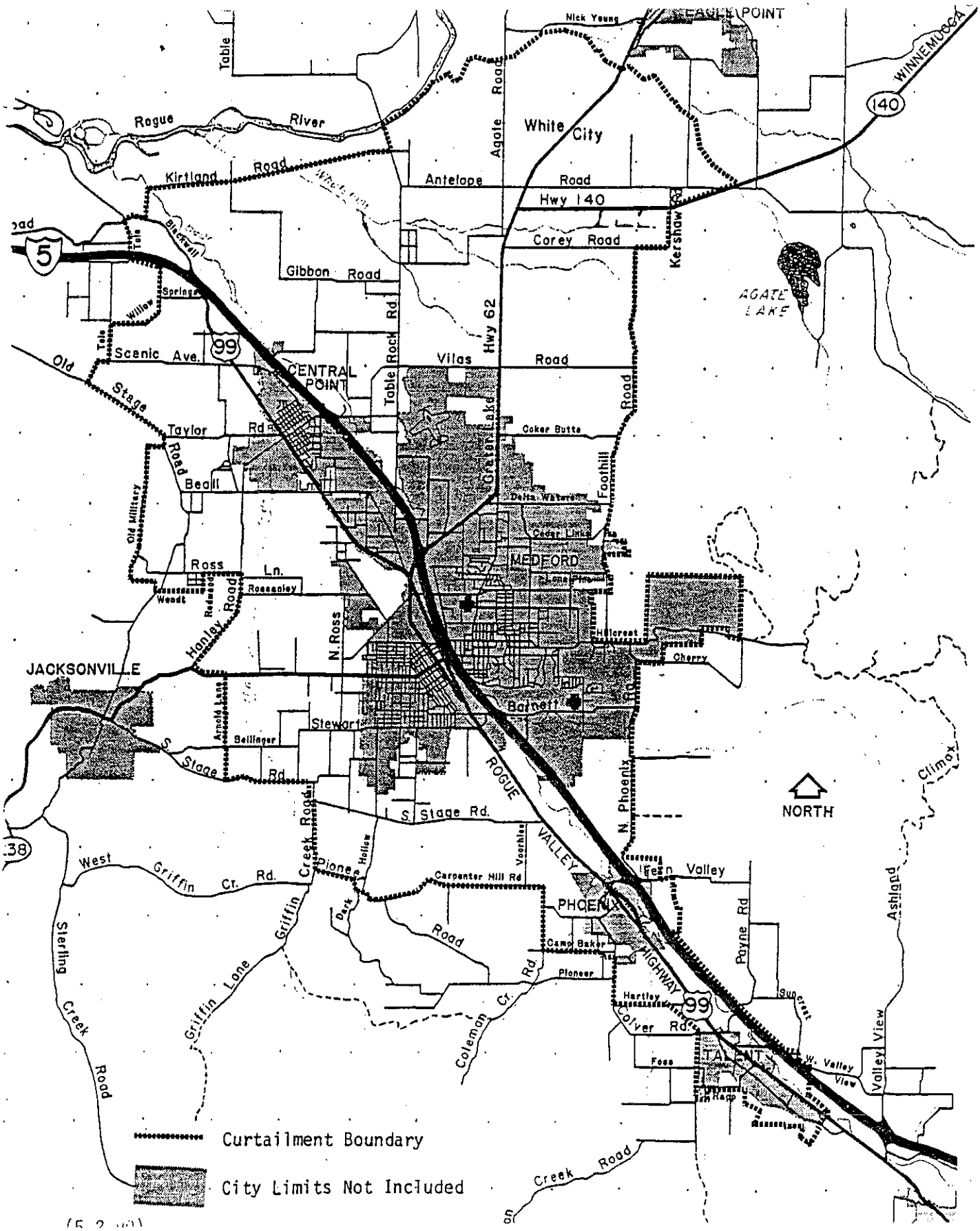

Figure 4.14.0-2: Map of Critical PM_{10} Control Area.

well developed storm off the northern California coast causes a foehn or chinook wind off the Siskiyou Mountains to the south; speeds to 50 mph are common and gusts to 70 mph have been recorded occasionally. Summer thunderstorms produce gusty winds to 40 or 50 mph which may come from any direction.

Fog often fills the lower portion of the valley during the winter and early spring months, when rapid clearing of the sky after a storm allows nocturnal cooling of the entrapped moist air to the saturation point. Duration of the fog is seldom more than three days. Geographical and meteorological conditions contribute to a smoke problem during the fall, winter, and early spring months. Smoke from local sources occasionally reduces visibility to 1 to 3 miles under stable conditions.

The particulate air pollution problems in the Medford-Ashland area are caused by the combination of poor ventilation, especially during the fall and winter months, and particulate emissions from various sources. A national study of weather patterns indicated that the interior valleys of southwest Oregon had among the poorest atmospheric ventilation in the country.[6] This comparison of national ventilation data is summarized in Figure 4.14.0-3 from the Oregon Environmental Atlas.[7]

4.14.0.5 Health Effects of PM_{10} and Woodsmoke

National ambient air quality standards are established by the U.S. Environmental Protection Agency (EPA) following extensive review by the public and the Clean Air Scientific Advisory Committee. The Clean Air Scientific Advisory Committee is a group of non-EPA scientists and engineers that reviews health effects information and recommends appropriate air quality standards for protection of public health. The Committee during the deliberations on the PM_{10} standards was a panel of eleven nationally recognized experts chaired by Dr. Morton Lippman, Professor of Medicine at the New York University Medical Center.

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[6]G.C. Holzworth, Mixing Heights, Wind Speeds, and Potential for Urban Air Pollution Throughout the Contiguous United States, U.S. Environmental Protection Agency, Office of Air Programs, Publication No. AP-101, January 1972.

[7]Department of Environmental Quality and Portland State University, Oregon Environmental Atlas, Portland, Oregon, 1988.

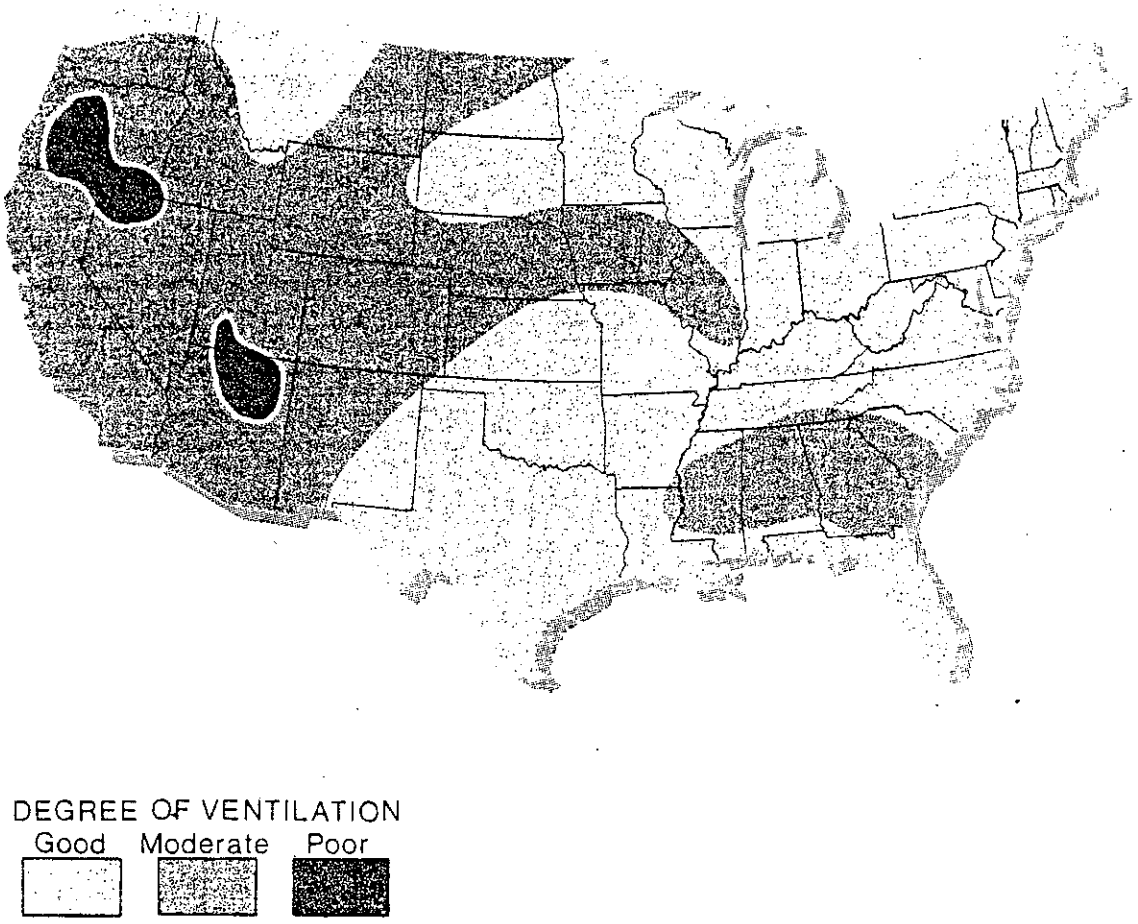

Figure 4.14.0-3: Comparison of Atmospheric Ventilation in U.S.

The health effects information that forms the basis of the PM_{10} standards was compiled in 1982 and updated in 1986. The members of the Clean Air Scientific Advisory Committee and other peer-reviewers of the PM_{10} health effects information are listed in the document.[8]

Particulate matter measuring less than or equal to 10 micrometers (μm) is considered a risk to human health due to the body's inability to effectively filter out particles of this size. These particles can become lodged in the alveolar regions of the respiratory system where they trigger biochemical and morphological changes in the lungs.[9]

For example, constriction of air passages (i.e., reduced air flow) occurs rapidly upon exposure to PM_{10}. Episodic and continuous exposure aggravates chronic respiratory diseases such as asthma, bronchitis, and emphysema which in turn restrict the lung's ability to transfer oxygen into the bloodstream. Traditionally, children, the elderly, and cigarette smokers are the most susceptible to lung dysfunctions and are, therefore, at greatest risk from PM_{10} exposure.[8] Episodic exposure can also cause changes in the activity of the lung's mucous secretions and accelerates the mucociliary action in an attempt to sweep the particulates out of the lungs. This results in increased symptoms of cough, phlegm, and dyspnea (difficulty in breathing). Continuous exposure can inhibit this defense mechanism by introducing new particles into the lungs and redistributing those being swept out. This slows the clearance of the bronchial system thus increasing susceptibility to acute bacterial and viral infections.

The increased stress on the pulmonary system caused by PM_{10} exposure is usually tolerable for those with healthy respiratory systems, however, it can lead to irreversible or fatal damage in people already suffering from cardiopulmonary disease, typically children, the elderly, the ill, and cigarette smokers.[8] Another group that falls into the high risk category are people who breathe through their mouths.[8] This group includes a wide range of people from chronic mouth-breathers to anyone involved in outdoor exercise and heavy labor. During mouth-breathing,

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[8]U.S. Environmental Protection Agency, Second Addendum to Air Quality Criteria for Particulate Matter and Sulfur Oxides (1982: Assessment of Newly Available Health Effects. EPA 600/8-86-020-F. NTIS # PB-87-176574.

[9]J. Koenig, T.V. Larson, P. Jenkins, D. Calvert, N. Maykut and W. Pierson, "Wood Smoke: Health Effects and Legislation," Health Effects of Woodsmoke, Northwest Center for Occupational Health and Safety, January 20, 1988.

particulate matter is breathed more directly into the lungs since it bypasses the filtering systems of the nasal passages.

Among the sources of PM_{10} emissions, woodsmoke is of particular concern in the Medford-Ashland AQMA because it accounts for a majority of the small particulate matter measured in the nonattainment area. These particles are less than 1 μm in diameter and remain suspended in the air for long periods of time. Because of their small size and their ability to remain airborne, they are easily inhaled and lodged in the alveolar region of the lungs. These particles can also act as carriers for toxic chemicals which are transported deep into the respiratory system. Some of these toxic substances are then absorbed into the bloodstream.

Woodsmoke contains fourteen carcinogenic compounds including benzo(a)pyrene, benzo(a)anthracene, and other polycyclic organic materials.[10] Additionally, woodsmoke contains several other hazardous compounds such as aldehydes, phenols, carbon monoxide and volatile organic vapors. These compounds can cause or contribute to illness ranging from neurological dysfunctions and headaches to lung cancer. Many of the components of woodsmoke are also found in cigarette smoke and coke oven emissions and can affect the cilia in a similar manner making it difficult for the body to expel the particulate matter. Because woodsmoke concentrations are highest in residential areas, a large segment of the population is routinely exposed to woodsmoke pollution in the winter months. Additionally, it is those people who are most sensitive, children, the elderly, and the ill, who spend the most time in their homes, thereby increasing their risk.[10]

Because of these health concerns, a number of symposiums on woodsmoke health effects have been held in the Pacific Northwest. The University of Washington Department of Environmental Health and several other organizations sponsored a conference called "Health Effects of Woodsmoke" in January 1988, the Klamath County Health Department sponsored the "Symposium on Health Concerns of Woodsmoke" in October 1989, and the Jackson County Medical Society and Jackson County Health Department co-sponsored "Woodsmoke and Your Health" in February 1989.

4.14.1 Ambient Air Quality

Particulate ambient air quality monitoring for Total Suspended Particulate (TSP) began in Medford in 1969 at the Jackson County Courthouse near Oakdale/Main Streets. TSP monitoring in White City near Agate Road began in 1977.

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[10] P.G. Jenkins, Washington Wood Smoke: Emissions, Impacts and Reduction Strategies, Washington Department of Ecology, Olympia, Washington. December, 1986.

The Medford Aerosol Characterization Study (MACS) was conducted during 1979-81 in order to determine the sources contributing to the TSP and respirable particulate (particles smaller than 2 μm) problems in the Medford and White City areas. MACS included both dispersion modeling (climatological dispersion model, or CDM) and receptor modeling (chemical mass balance, or CMB).

An automated particulate monitor (APM) was installed in 1978 in Medford at the Brophy Building at Central/Main Streets. An integrating nephelometer was added at Central/Main in 1980. The APM and nephelometer provide hourly average data that can be used to estimate particulate concentrations. These instruments have been used to report the daily particulate subindex for the Air Pollution Index since 1978.

PM_{10} monitoring began in Medford in 1983 and in White City in 1985. Based on measured violations of the PM_{10} standards during 1983-86, the Medford - White City area was identified as a Group I PM_{10} area in August 1987. During 1984-86, the PM_{10} concentrations on worst days were over 300 micrograms per cubic meter ($\mu g/m^3$), or over twice the 24-hour PM_{10} standard of 150 $\mu g/m^3$, and the annual average was over 60 $\mu g/m^3$, or about 20% above the annual PM_{10} standard of 50 $\mu g/m^3$.

A Medford particulate gradient study was conducted from September 1985 to February 1986 in order to characterize the TSP and PM_{10} gradients and determine if additional monitoring sites should be established. This gradient study included the extended air stagnation episode of December 1985 which resulted in the highest PM_{10} levels measured to date in the Medford area. TSP levels were generally higher at the Oak/Taft and Haven/Holly gradient study sites than at the historical monitoring site at Oakdale/Main; but PM_{10} levels were similarly high during December 1985 at the historical monitoring site at Oakdale/Main and the special monitoring sites at Oak/Taft and Haven/Holly. As a result of this study, an additional PM_{10} monitoring site was established at the Oak/Taft site (1985-88) and the Welch/Jackson site (1989 on) in order to insure that the monitoring network included the site of maximum impact.

Ambient PM_{10} data for various locations in the Medford-Ashland AQMA are discussed in more detail in Section 4.14.1.2.

4.14.1.1 Air Monitoring Methods

Several sampling methods have been used to measure TSP or PM_{10} concentrations in Medford:

> The TSP High-Volume air sampler collects TSP samples on pre-weighed 8" X 10" filters through which air is drawn at 50 cubic feet per minute (CFM) over a 24-hour period.

Because these samplers are not equipped with a size selective inlet, the upper limit of particle size captured on the filter may reach 100 μm. Prior to EPA's adoption of the PM_{10} NAAQS, this method was the standard reference method for measurement of airborne particulate matter.

The PM_{10} Medium-Volume (MV) sampler collects PM_{10} aerosol using a 12 port, 47 mm filter sequencing system that is programmed to collect 24-hour samples. The sampler pulls ambient air at a 4 CFM flow rate through a 10 μm Sierra-Anderson 254 inlet providing a PM_{10} cut point. A dual-port system capable of simultaneously collecting aerosol on both Teflon and quartz filter substrate is used to allow complete chemical analysis for CMB receptor modeling purposes. EPA has designated the MV sampler as a reference method. Sampling typically occurs every day during the winter months and every sixth day during the remainder of the year.

The PM_{10} High-Volume Size-Selective-Inlet (HV-SSI) is a sampler equipped with a Sierra-Anderson SA321A, SA321B or SA1200 PM_{10} cut-point inlet. This method (except for the SA321A) has been designated by EPA as a reference method. Sampling typically occurs every sixth day.

Integrating Nephelometer measurements of light scattering (a surrogate for PM_{10}) have been conducted at Central/Main. This method provides hourly light scattering averages which are highly correlated to PM_{10} concentrations measured using the MV or HV-SSI reference methods.

Table 4.14.1-1: Data Collection Periods/Methods at Jackson County Courthouse (Oakdale/Main) or Brophy Building (Central/Main).

Measurement Method	Began	Terminated
TSP High-Volume (TSP)	Jan-69	Current
Automated Particulate Monitor (APM)	Apr-78	Aug-88
Integrating Nephelometer	Apr-80	Current
PM_{10} Dichotomous Virtual Impactor (VI)	May-83	Sep-87
PM_{10} High-Volume (SSI)	May-83	Oct-89
PM_{10} Medium-Volume (MV)*	Dec-87	Current

* Both Teflon and quartz filter substrate are used.

PM_{10} concentrations in a given 24-hour period can vary by about +/-10% depending on the monitoring method used. The differences between methods have decreased over time as the sampler manufacturers have improved the units; as a result, several units have recently been designated as reference methods by EPA. The reference methods include the following units that have been used in Medford: the Medium-Volume PM_{10} samplers, the High-Volume SSI samplers (Models SA321B and SA1200), and similar but not identical Low-Volume Dichotomous VI samplers.

Because of the differences in monitoring methods, especially in the period prior to designation of reference methods, PM_{10} data in the following sections is sometimes referred to as PM_{10}MV, PM_{10}SSI, or PM_{10}VI to indicate the monitoring method used to collect the data. EPA guidance[11] indicates that: non-reference PM_{10}SSI data prior to August 1988 should be multiplied by a factor of 0.8-1.0 in order to reflect the "grey-zone" around true PM_{10} concentrations (i.e., the PM_{10}SSI data is biased high relative to the other PM_{10} monitoring methods); and non-reference PM_{10}VI data prior to August 1988 should be taken at face value, since the VI samplers had excellent performance in the EPA intercomparison studies. DEQ intercomparisons between the SSI, VI and MV samplers indicated that the MV method produced results in between the SSI and VI methods (i.e., lower than the SSI but higher than the VI).

The composite of all available particulate data was used to calculate everyday PM_{10}VI and PM_{10}SSI values for 1984-86.[12] Since most of the recent and future PM_{10} data will be collected as PM_{10}MV, and in order to properly compare future PM_{10} levels with the historical PM_{10} levels, the historical PM_{10} data has been converted to the PM_{10}MV-equivalent using the following formula based on the Department's intercomparison studies:

$$PM_{10}MV = 1.044\ (PM_{10}VI) + 5.38$$

The PM_{10}MV data results in only slightly higher PM_{10} values than using PM_{10}VI data at face value (about 6% higher at the 24-hour design value). More importantly, the PM_{10}MV agrees quite closely with the dispersion modeling results and provides the measured mass data for the chemical fingerprinting analysis in recent and future years.

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[11]Revision to Policy on the Use of PM_{10} Measurement Data, November 21, 1988.

[12]M.L.Hough, Estimation of Everyday PM_{10} Concentrations Using Non-reference Monitoring Methods, In Transactions, PM_{10}: Implementation of Standards, Edited by C.V.Mathai and D.H. Stonefield, TR-13, APCA, Pittsburgh, PA (1988).

4.14.1.2 PM_{10} Air Quality in Medford and White City

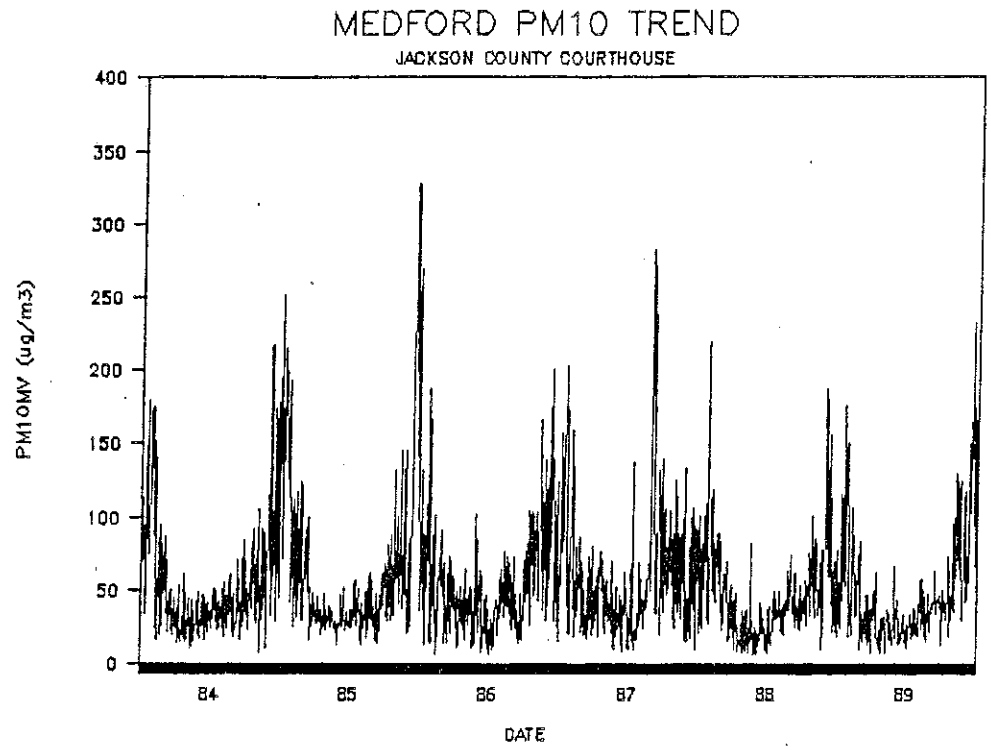
The PM_{10}MV-equivalent data from the Courthouse and White City Post Office for the 1984-89 period are plotted in Figure 4.14.1-2. Peak PM_{10} concentrations typically occur during December and January. This is due to poorer ventilation and increased woodheating emissions during these months. The peak PM_{10} levels measured or calculated during 1984-89, other than the forest fire smoke impacts in September 1987, are summarized in Table 4.14.1-2.

Table 4.14.1-2: Peak Days PM_{10}MV and PM_{10}VI Levels ($\mu g/m^3$) During 1984 to 1989 in the Medford-Ashland AQMA.

Rank	PM_{10}MV	PM_{10}VI	Date	Location
Highest Value	327	308	851217	Courthouse
Second Highest	326	308	851223	Courthouse
Third Highest	295	277	851218	Courthouse
Fourth Highest	283	266	851220	Courthouse
Fifth Highest	269	253	851229	Courthouse
Highest Value	363	NA	851217	Oak & Taft
Second Highest	340	NA	851219	Oak & Taft
Third Highest	330	NA	851223	Oak & Taft
Fourth Highest	297	NA	851220	Oak & Taft
Fifth Highest	295	NA	851218	Oak & Taft
Highest Value	329	NA	851229	White City
Second Highest	302	NA	851224	White City
Third Highest	272	NA	851219	White City
Fourth Highest	268	NA	851227	White City
Fifth Highest	250	NA	851226	White City

During 1984-89, the most severe air stagnation episodes occurred in January 1985, December 1985, and December 1989. The peak PM_{10} concentrations in the previous table occurred during the December 1985 episode.

The highest annual average PM_{10} concentrations during 1984-89 at the Jackson County Courthouse (the site with the longest historical particulate monitoring record) were measured during 1985 with annual average concentrations of 60 $\mu g/m^3$ to 74 $\mu g/m^3$, depending on the PM_{10} monitoring method used.



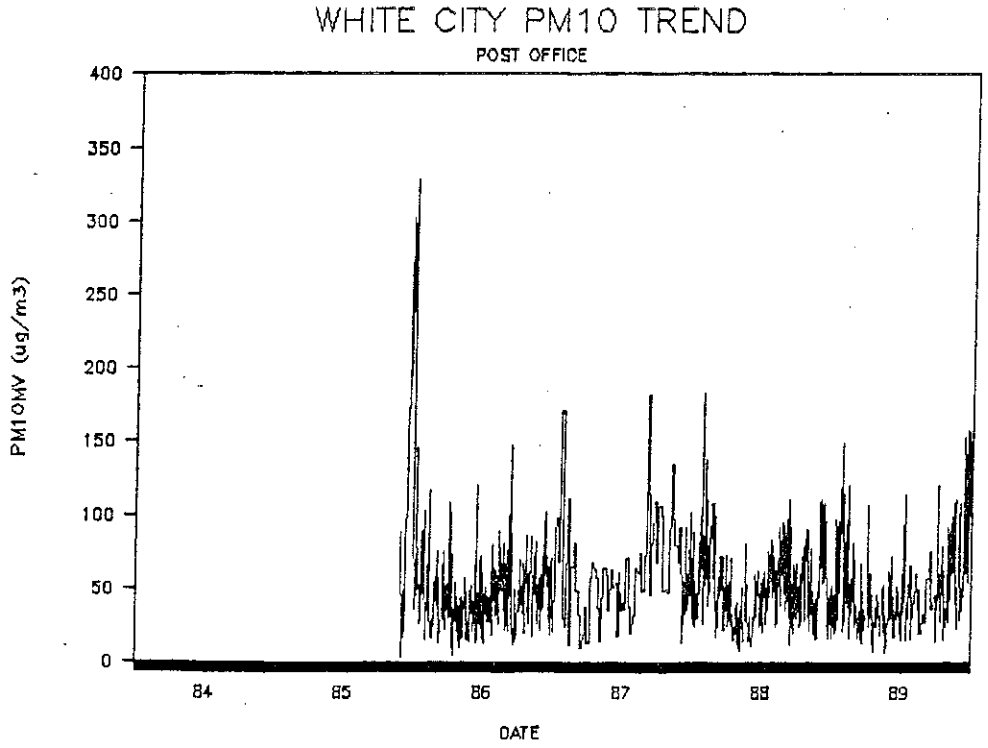


Figure 4.14.1-2: PM_{10}MV Concentrations Measured or Estimated at the Jackson County Courthouse and White City Post Office During 1984-89.

Particulate gradient studies were completed in Medford and White City during 1985. The maximum Medford PM_{10} impacts occurred in the Oak & Taft and Haven & Holly areas. The maximum White City PM_{10} impacts occurred in the Post Office area on Antelope Road. New PM_{10} monitors were established at the peak PM_{10} impact sites prior to the December 1985 episode in Medford (Oak & Taft from November 1985 to October 1989, Welch & Jackson from July 1989 to present) and White City (Post Office from November 1985 to present).

EPA reference samplers were installed at all of the PM_{10} monitoring sites in the Medford and White City areas by December 1987. This reduced the uncertainty of 1988-forward PM_{10} data. The 1989 PM_{10} data, which is the most recent year of data and includes data during an extended air stagnation episode in December 1989 similar to the December 1985 episode, is summarized in Table 4.14.1-3.

Table 4.14.1-3: Peak Days and Annual Average PM_{10}MV Levels ($\mu g/m^3$) During 1989 in the Medford-Ashland AQMA.

Rank	PM_{10}MV	Date	Location
Highest Value	232	891221	Courthouse
Second Highest	229	891222	Courthouse
Third Highest	176	890119	Courthouse
Fourth Highest	166	891227	Courthouse
Fifth Highest	165	891215	Courthouse
Annual Average	50	1989	Courthouse
Highest Value	246	891221	Welch & J*
Second Highest	210	891223	Welch & J*
Third Highest	198	891227	Welch & J*
Fourth Highest	170	891214	Welch & J*
Fifth Highest	161	891226	Welch & J*
Annual Average	60	1989	Welch & J*
Highest Value	158	891220	White City
Second Highest	157	891223	White City
Third Highest	154	891223	White City
Fourth Highest	150	891227	White City
Fifth Highest	149	890130	White City
Annual Average	52	1989	White City

* Welch & Jackson data combined with Oak & Taft data for 1989.

The recent PM_{10} data indicate that the Oak & Taft (Welch & Jackson) site and the Courthouse site have the most severe violations of the 24-hour PM_{10} standard and the Oak & Taft (Welch & Jackson) site has the most severe violations of the annual average PM_{10} standard.

Background Air Quality

PM_{10} aerosols from sources external to the AQMA collectively contribute to background air quality or the concentration of PM_{10} in the airmass as it is transported into the Medford Basin. Sources such as wildfires, slash and agricultural burning, wind entrained soil and secondary aerosols are believed to be the principal contributors to background air quality. A background monitoring site was operated by the Department on Dodge Road in Sams Valley during 1979-87. The annual average PM_{10} concentrations at the Dodge Road site were about 14.8 $\mu g/m^3$. Dispersion modeling indicates that about 1.7 $\mu g/m^3$ of the annual measured at Dodge Road during 1985-86 was from sources in the Medford-Ashland AQMA. Therefore the true background at Dodge Road is estimated at about 13.1 $\mu g/m^3$ (14.8-1.7 $\mu g/m^3$). This is very similar to the 12 $\mu g/m^3$ annual average concentration measured during 1987-88 in the Quartz Creek Valley which is also located in southern Oregon (about 50 miles east of Klamath Falls).

The highest concentration measured at Dodge Road was 44 $\mu g/m^3$ during the winter months. Sampling was on an every-sixth-day schedule, thus providing a good estimate of annual average total PM_{10} measured at the background site but a weaker estimate of peak day total PM_{10} impact at the background site. It is possible that the peak day total impact was slightly higher than the 44 $\mu g/m^3$ measured. Because of this uncertainty, the full 44 $\mu g/m^3$, instead of 44 $\mu g/m^3$ minus the dispersion modeled impact, was used as the more conservative estimated background level on worst case days.

4.14.2 Nonattainment Area Analysis

This section describes the Department's analysis of PM_{10} air quality in Medford as it related to the National Ambient Air Quality Standards. Source contributions to the airshed PM_{10} air quality is discussed both in terms of emission strengths and source contributions to air quality as measured at the Jackson County Courthouse and other monitoring sites in the AQMA.

4.14.2.1 Design Values Determination

Attainment of the annual NAAQS requires that a control strategy be adopted which will reduce ambient concentrations from the design value to below the NAAQS; specifically that the expected number

of exceedances of the 24-hour NAAQS be less than or equal to one per year, and the annual average over a period of three or more years be less than or equal to the annual NAAQS.

The EPA PM_{10} SIP Development Guideline specifies that the preferred approach for estimating a design value is through the use of an applicable dispersion model corroborated by receptor models.[13] This approach was used for the Medford-Ashland AQMA.

EPA has not yet approved a guideline dispersion model for valley stagnation conditions such as occur in Medford on the peak days. Therefore the Department evaluated two non-guideline dispersion models (GRID and WYNDvalley) designed for valley stagnation conditions and one guideline dispersion model (ISCST) not designed for valley stagnation conditions. The time period selected for dispersion modeling was mid-1985 to mid-1986. The most precise meteorological data (McAndrews/Riverside meteorological station with lower wind speed threshold than the National Weather Service anemometer) was available for July 1985 to June 1986 as part of the Medford particulate gradient study. This time period included the highest several days on record (during December 1985), and the 12-month average was similar to the overall 1984-86 average.

The dispersion model results were corroborated with the chemical mass balance (CMB) receptor model (Version 7.0). CMB filters were analyzed for 88 days during 1984-89. The Department used the ambient monitoring data (1984-89) and dispersion model data (1985-86) to estimate the annual and 24-hour design values.

The ISCST dispersion model consistently underpredicted impacts on the worst case days of December 1985. Both the GRID and WYNDvalley dispersion models performed well, providing results similar to the ambient PM_{10} measured at the Jackson County Courthouse. GRID gave slightly better results and was selected as the model for additional analyses. The dispersion modeling detailed results and methodology are outlined in the appendix.

The dispersion model output was compared to the ambient PM_{10} monitoring data from the Courthouse and Oak & Taft sites. The results of these comparisons are outlined in Table 4.14.2-1. The Oak & Taft monitor was not installed until late in 1985 so a 12-month average was not available (NA) for that site. On average, the GRID dispersion model slightly overpredicted at the Oak & Taft site and slightly underpredicted at the Courthouse site.

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[13] PM_{10} SIP Development Guideline. US Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, N.C. June, 1987. EPA-450/2-86-001.

Table 4.14.2-1: Comparison of Ambient PM_{10}MV and GRID Dispersion Model Results ($\mu g/m^3$) for July 1985 to June 1986.

Rank	PM_{10}MV	GRID	Location
Highest Value	327	307	Courthouse
Second Highest	326	304	Courthouse
Third Highest	295	281	Courthouse
Fourth Highest	283	266	Courthouse
Fifth Highest	269	252	Courthouse
Annual Average	58	59	Courthouse
Highest Value	363	342	Oak & Taft
Second Highest	340	331	Oak & Taft
Third Highest	330	318	Oak & Taft
Fourth Highest	297	309	Oak & Taft
Fifth Highest	295	296	Oak & Taft
Annual Average	NA	68	Oak & Taft

The GRID dispersion model was used to calculate the 24-hour (based on the fourth highest day) and annual design values. The Oak & Taft site was the most critical site and the Courthouse was the reference site for reconciliation with the receptor modeling. The design values are summarized in Table 4.14.2-2.

Table 4.14.2-2: Summary of Design Values at the Critical Sites Within the Medford-Ashland AQMA.

Time Period	Design Value	Location
24-Hour	309	Oak & Taft
24-Hour	266	Courthouse
Annual	68	Oak & Taft
Annual	59	Courthouse

4.14.2.2 Emission Inventory

Introduction

Emission inventories provide information on the relative strength of sources within an airshed and provide a basis for control strategy evaluation. In addition, emission inventories provide a basis for tracking emission reductions and growth. They cannot, however, in some cases estimate with certainty the impact of a source, or group of sources, at a specific location. Atmospheric dispersion caused by wind movements within the airshed and transport of pollutants into the airshed from exterior sources (i.e., wildfires, slash burning smoke and secondary aerosols) must generally be considered.

PM_{10} emissions (usually expressed in tons of particulate per year or TPY) are calculated from emission factors and source activity records. Emission factors are the weight of pollutant emitted per unit weight of material processed such as grams of PM_{10} emitted per pound of cord wood burned; pounds of road dust emitted per vehicle mile driven or pounds of particulate emitted per unit area of plywood veneer processed. Emission factors used in this analysis are principally from the Environmental Protection Agency's compilation of emission factors AP-42.[14]

Source activity information on the amount of cord wood burned by residents, vehicle miles driven or veneer production volumes are obtained from a variety of sources including industrial air contaminant discharge permit reports on source testing and production rates, public mail surveys, census data, and population and traffic data gathered from other government agencies.

Estimation of seasonal or worst-case day PM_{10} emissions requires development a of source operating schedule which describes the percent of annual emission that occur during specific seasons, months, or 24-hour periods.

Base Year Emission Inventory

PM_{10} emissions for the 1985-86 base year within the AQMA were estimated for industrial sources, residential heating (gas, oil and wood), commercial space heating, residential open burning, burning for agriculture and forestry, paved and unpaved roads, construction and agricultural dust and transportation sources (cars, trucks, railroads and aircraft). The basis of the emission estimates for the most significant sources are described below:

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[14] Compilation of Emission Factors, U.S. Environmental Protection Agency AP-42 Fourth Edition and subsequent supplements. US EPA Office of Air Quality Planning and Standards. Research Triangle Park, N.C. 27711.

Wood Products Industry Sources: 1275 TPY PM_{10}. Almost all (1275 of 1303 TPY) of the industrial emissions are from the wood products industry, and include wood-fired boilers, veneer dryers, particle dryers, fiber dryers, charcoal furnace, and air conveying systems for sawdust and sanderdust. Other industry emissions (28 TPY) are listed below under other sources.

Residential Wood Heating: 1777 TPY PM_{10}. Information obtained from the Department's 1985 and 1987 wood heating surveys[15] in Medford was combined with population estimates to project emissions from woodheating appliances in the AQMA. Approximately 43,350 housing units (1985-86 estimate) were located within the AQMA, and approximately 16,470 housing units used woodstoves and 8,670 used fireplaces. The 1985 survey indicated that, on average, residents burn 2.7 cords/year of firewood in their woodstoves and 1.2 cords/year in fireplaces. At 40 pounds of PM_{10} emitted per ton of wood burned in a woodstove, 1543 tons of PM_{10} are emitted per year. Fireplace emissions at 27 pounds per ton of wood burned total 234 TPY. By 1987 about 12% of the woodstoves were DEQ-certified models.

Fugitive Dust Emissions: 1008 TPY PM_{10}. The principal sources of dust within the AQMA are paved and unpaved road dust (430 and 489 TPY, respectively). Paved and unpaved road dust estimates are based on a 1986 estimate of 1,475,745 vehicles miles per day. Paved road dust PM-10 emissions were calculated using a 0.7 gram/mile emission factor derived from CMB data collected in Medford and Klamath Falls. Unpaved road dust PM-10 emissions were estimated by adjusting 1980 MACS results using differences in VMT and rainfall from 1980 to 1986 and assuming a PM_{10}/TSP ratio of 36%.

Backyard and Agricultural Burning: 83 TPY PM_{10}. Approximately 10,100 tons of backyard debris is burned each year generating 77 TPY of PM_{10}. This estimate is based on an average of 183 pounds of combustible material (principally yard debris) burned per person per year during the months of March through November. Each ton of debris burned is assumed to emit 15.3 pounds of PM_{10} particulate. The Oregon State University Experimental Station in Medford estimates that about 50 of the 1,800 acres of cereal grain fields and 35 of the 300 acres of grass seed fields within the AQMA are burned annually. At four tons of straw per acre, approximately 6

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[15] Oregon Woodheating Survey for 1987: Medford Area. State of Oregon Department of Environmental Quality, Air Quality Division. February, 1987.

TPY of PM_{10} would be generated by this source during the late summer and early fall. Backyard and agricultural burning emissions are combined with other sources in the following summary tables.

Transportation Sources: 290 TPY PM_{10}. Highway vehicles (autos and trucks) emit 225 TPY PM_{10} in tailpipe and tire wear particulate; off-highway vehicles emit 58 TPY; and railroad diesel engines and aircraft emit the remainder. Transportation emissions are combined with other sources in the following summary tables.

Other Sources: 241 TPY PM_{10}. Industries other than the wood products industries emit about 28 TPY. Residential and commercial space heating with fuels other than wood contribute 83 TPY. Structural fires contribute about 28 TPY. Slash burning and forest wildfires within the AQMA boundaries contribute about 75 TPY and 34 TPY, respectively, but these sources are of more interest for emissions outside the AQMA that contribute to the background PM_{10} entering the AQMA.

Table 4.14.2-2 summarizes annual PM_{10} emissions within the AQMA for 1985-86.

Table 4.14.2-2: PM_{10} Emission Inventory for 1985-86 Base Year in Medford-Ashland AQMA (July 1985 to June 1986).

Source Category	Tons/Year	Percent
Wood Products Industry	1275	27%
Residential Wood Burning	1777	38%
Fugitive Dust	1008	22%
Other	614	13%
Total	4674	100%

24-Hour Worst Case Inventory

Development of an inventory representative of emissions during a 24-hour period when PM_{10} ambient air concentrations reach their highest levels is important to understanding the sources that cause winter season episodes in the Medford-Ashland AQMA. The relative proportion of emissions during these periods is expected to be quite different than those reflected in the annual emission inventory, because some sources (such as open burning) are not as active, while others (such as residential wood heating) are much more active.

The 24-hour winter worst case inventory for the AQMA is based on the following information and assumptions:

Wood Products Industry emissions are assumed to be about 20% higher on worst case days during the winter months due to colder ambient temperatures, colder and damper fuel and raw materials, etc. The worst case day emissions for each industrial source that operates during the winter months are based on the annual average emissions multiplied by the ratio of the pound/hour plant site emission limits (PSELs) to the annual average PSELs.

Transportation Source emissions are based on the average daily traffic (ADT). The December ADT was 101% of the annual ADT in 1985 and 99% of the annual ADT in 1986. Therefore, the worst case day inventory is based on 1/365 of the annual transportation emissions.

Residential Wood Burning emissions are assumed to be proportional to the coolness of the weather as reflected in the degree heating days statistic calculated by the Department using maximum and minimum temperatures recorded in Medford and reported by the National Weather Service. The highest winter time PM10 concentrations recorded in Medford occurred during December 1985 when ambient temperatures averaged about 30 degrees Fahrenheit. The average heating-degree-day (HDD) during this period (35 HDD) was used to determine the worst case emission rate.

Table 4.14.2-3 summarizes the 24-hour worst case emissions for 1985-86. Figure 4.14.2-1 illustrates the percent contribution from each major source group for both annual and 24-hour worst case periods.

Table 4.14.2-3: PM_{10} Emission Inventory for 1985-86 Base Year in Medford-Ashland AQMA (July 1985 to June 1986).

Source Category	Pounds/Day	Percent
Wood Products Industry	8601	18%
Residential Wood Burning	29098	60%
Fugitive Dust	8652	18%
Other	2129	4%
Total	48480	100%

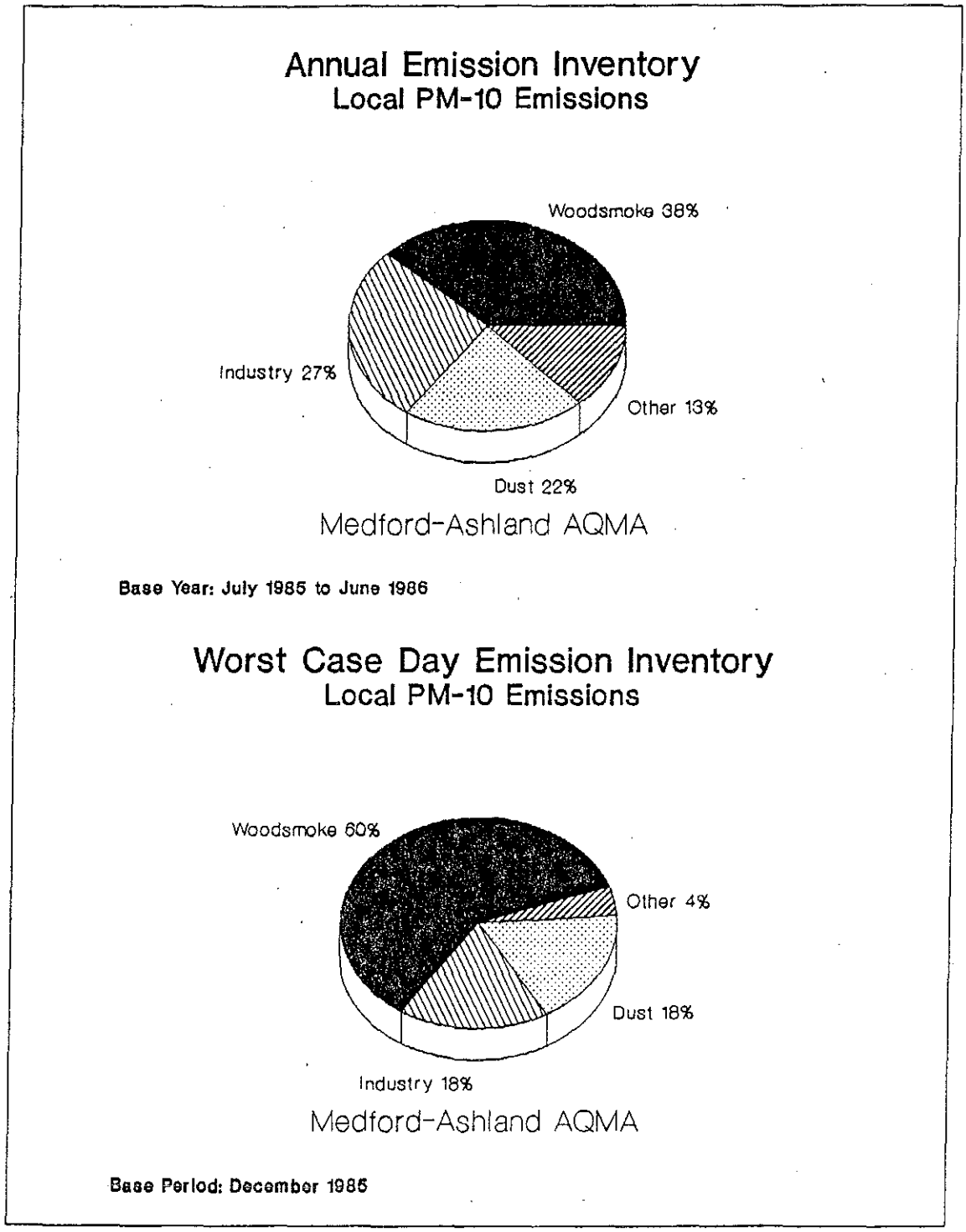

Figure 4.14.2-1: Medford-Ashland AQMA PM_{10} Emission Inventories.

A more detailed summary of the annual and worst case day emission inventories are included in the appendix.

Growth Factors

PM_{10} emission growth factors are used to estimate future year emission inventories and source category impacts. Key indicators used to estimate emissions in 1992 include population growth, increases in transportation (vehicle-miles-traveled, or VMT) and Plant Site Emission Limits (PSELs) for industrial sources.

Transportation Growth, estimated at 2.0% per year is used to estimate increases in vehicular and road dust emissions.[16] Road dust reductions from the paving of unpaved roads and the curbing of unpaved shoulders and trackout control have resulted in a net decrease in coarse fraction PM_{10} and road dust impacts in Medford during 1984-87 despite a higher than average traffic growth rate. Continuation of these programs is expected to reduce road dust emissions and continue to offset the effect of traffic growth during 1986-92.

Population Growth data indicates that the number of people living within the Medford-Ashland AQMA will increase by 1.6% per year between 1986 and 1992.[17] Population growth is used to proportionally increase residential open burning emission and woodstove use. The population growth rate used herein is consistent with those used by the Jackson County Planning Department.

Residential Firewood Use in woodstoves is expected to increase by 1% per year (6% total) and in fireplaces is expected to decrease by about 2% per year (12% total) between 1986 and 1992. These rates of change in firewood use are based on energy projections and fuel cost modeling performed to estimate future firewood use in the Pacific Northwest.[18]

On the emission reduction side, annual wood burning emissions are expected to decrease by about 26% due to replacement of existing

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[16]Oregon Department of Transportation, Highway Division Planning Section. State Implementation Plan, Appendix 4.9-15, September 1985.

[17]Center for Population Research and Census, School of Urban and Public Affairs, Portland State University.

[18] U.S. Environmental Protection Agency, Region X "Residential Wood Combustion Study, Task 3, Fuel Wood Use Projections", EPA 910/9-82-089 (1984).

woodstoves with cleaner burning units (woodstove certification program, Project CLEAR, SOLVE Program), home weatherization, improved firewood seasoning and woodstove operation. The mandatory wood burning curtailment program is expected to reduce worst day woodburning emissions by up to 85% and annual average wood burning emissions by 20%.

The net result (growth minus annual and worst day emission reductions) is a projected 42% decrease in annual wood burning emissions and an 85% reduction on worst case days within the mandatory curtailment area and slightly smaller percentage reductions (35% annual and 75% worst day) over the entire AQMA.

Industrial Emissions have been projected as the maximum permitted within their current Plant Site Emission Limits (PSELs). The base year emission inventories and the dispersion and receptor modeling indicate that industry emissions were close to the PSELs during 1985-86. The 24-hour emissions in 1992 are calculated as the current hourly maximum PSEL emission rate over a 24-hour period minus the required reductions in wood-fired boiler and veneer dryer emissions (and thus the new PSELs) due to the new industrial rules adopted in September 1989. The net result is a 22% reduction in industrial emissions by 1992.

Projected Emissions: 1985-86 to 1992

The 1985-86 annual and 24-hour emission and design value estimates must be adjusted to account for emission growth that may occur within the airshed during the six year period of 1986-1992. Estimates are based on the emission growth factors described above. The information presented in Table 4.14.2-4 provides a basis for the future year source impact estimates (Section 4.14.3.1).

Table 4.14.2-4: PM_{10} Emission Inventory for 1992 in Medford-Ashland AQMA with Growth and Control Strategy Implementation.

Source Category	Annual Tons	Annual δ*	Worst Case Day Pounds	Worst Case Day δ*
Wood Products Industry	995	-22%	6721	-22%
Residential Wood Burning	1155	-35%	7275	-75%
Fugitive Dust	1008	NC	8655	NC
Other	642	+5%	2352	+10%
Total	3800	-19%	25003	-48%

* Change from 1985-86 baseline to 1992 attainment year. NC indicates No Change.

Projected Emissions Beyond 1992

Analysis of the ability of the attainment strategies to maintain the NAAQS during the period 1992 to the year 2000 requires development of a third set of emission estimates. The growth rates assumed for the maintenance analysis are based on the 1992 inventory adjusted to reflect the attainment strategy emission reductions:

Population growth rate of 1.6% per year to residential oil, gas and wood combustion emissions and to structural fires; a decrease of 35% in backyard burning emissions due to Medford year around ban;

Transportation growth rate of 2.0% per year to transportation sources and construction dust as well as street sanding emissions; paved and unpaved road dust growth rate suppressed to 1.0% per year due to ongoing paving, curbing and trackout control program;

Industrial emissions are held constant at the annual and 24-hour PSEL emission rates shown in the 1992 emission inventory;

The projected residential wood combustion emissions, following application of a 1.6% per year growth rate, were adjusted to reflect continued emission reduction credits associated with the woodstove certification program.

Projected annual emissions during 1992 to the year 2000 are tabulated in Table 4.14.2-5. Figure 4.14.2-2 shows changes in emission inventories during the period 1986 to the year 2000.

Table 4.14.2-5: PM_{10} Emission Inventory for 2000 in Medford-Ashland AQMA with Growth and Control Strategy Implementation.

Source Category	Annual Tons	Annual δ*	Worst Case Day Pounds	Worst Case Day δ*
Wood Products Industry	995	-22%	6721	-22%
Residential Wood Burning	1030	-42%	6400	-78%
Fugitive Dust	1092	+8%	9332	+8%
Other	705	+15%	2703	+27%
Total	3822	-18%	25156	-48%

* Change from 1985-86 baseline to 2000 maintenance year.

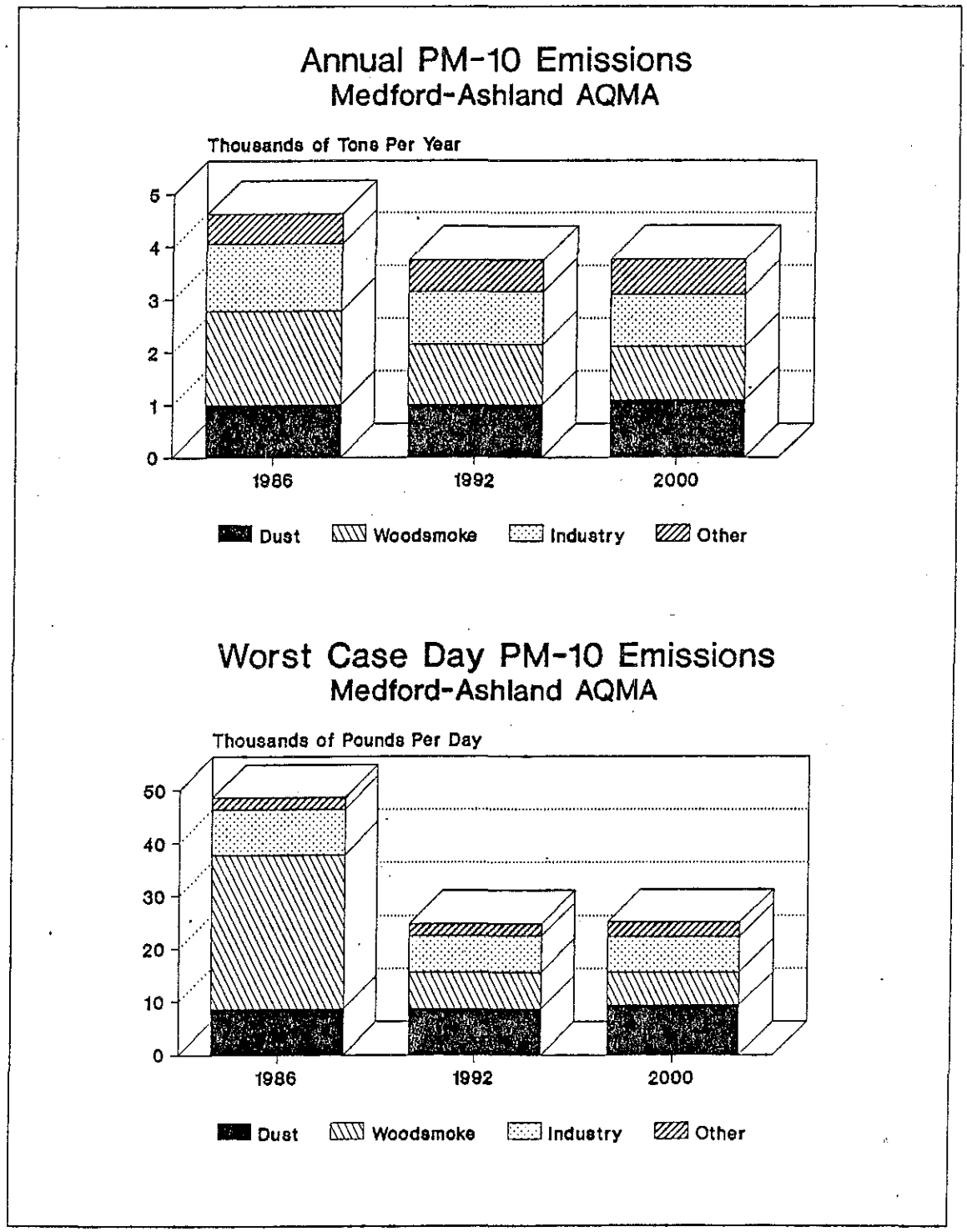

Figure 4.14.2-2: PM_{10} Emission Inventories for 1985-86 to 2000.

4.14.2.3 Source Contributions to PM_{10}

Development of strategies designed to attain and maintain the PM_{10} NAAQS requires an accurate knowledge of contributions that sources make to the measured PM_{10} aerosol mass. Two approaches are commonly used to estimate source contributions are: (1) atmospheric dispersion modeling and (2) receptor model analysis based on the properties of the aerosol measured at the receptor.

Dispersion Modeling

Three atmospheric dispersion models were used to determine source contributions in the Medford-Ashland AQMA. The ISCST model consistently underpredicted the PM_{10} impacts during testing so was set aside. The GRID and WYNDvalley models both performed well within EPA criteria during December 1985 simulations. GRID performed slightly better than WYNDvalley and was more compatible with the Department's mainframe computer so was selected for the annual PM_{10} simulations. GRID also performed very well in the annual PM_{10} simulations.

The GRID dispersion model results for the five highest days in December 1985 are summarized in Table 4.14.2-6. The background PM_{10} concentration of 44 $\mu g/m^3$ is based on the maximum PM_{10} levels measured at Dodge Road during December 1985.

Table 4.14.2-6: PM_{10} Source Contributions Using the GRID Dispersion Model for the Five Highest Days in December 1985.

Source Category	24-Hour PM_{10} Impact ($\mu g/m^3$) 1st	2nd	3rd	4th	5th
Jackson County Courthouse:					
Wood Products Industry	29	28	41	23	13
Residential Wood Burning	195	191	172	156	151
Fugitive Dust	28	30	17	32	34
Other	11	12	6	12	12
Local Sources	262	260	237	223	209
Background	44	44	44	44	44
Total PM_{10}	307	304	281	267	253
Medford Oak and Taft:					
Wood Products Industry	78	62	97	59	44
Residential Wood Burning	182	181	154	167	183
Fugitive Dust	29	33	16	30	19
Other	9	11	6	9	6
Local Sources	298	287	273	265	252
Background	44	44	44	44	44
Total PM_{10}	342	331	317	309	296

The 4th column (4th highest day) is of special interest since this represents the 24-hour PM_{10} design value that must be reduced to 150 $\mu g/m^3$ in order to achieve the 24-hour PM_{10} standard.

The GRID results for the annual average PM_{10} simulation are summarized in Table 4.14.2-7. The time period was July 1985 to June 1986. The ambient PM_{10} concentration measured at Dodge Road during this period averaged 14.8 $\mu g/m^3$ but the GRID dispersion model projected that about 1.7 $\mu g/m^3$ of this was from sources located in the Medford-Ashland AQMA. So the difference (13.1 $\mu g/m^3$) was taken as the true background and combined with the local source contributions to obtain the total PM_{10} impact.

Table 4.14.2-7: Annual Average PM_{10} Source Contributions Using the GRID Dispersion Model for the July 1985 to June 1986 Period.

Source Category	Annual PM_{10} Impact $\mu g/m^3$	Percent
Jackson County Courthouse:		
Wood Products Industry	7.2	12%
Residential Wood Burning	28.8	49%
Fugitive Dust	6.9	12%
Other	2.7	5%
Local Sources	45.6	78%
Background	13.1	22%
Total PM_{10}	58.7	100%
Medford Oak and Taft:		
Wood Products Industry	17.9	26%
Residential Wood Burning	28.2	41%
Fugitive Dust	6.6	10%
Other	2.3	3%
Local Sources	55.0	81%
Background	13.1	19%
Total PM_{10}	68.1	100%

The annual average PM_{10} must be reduced by 27% at the Oak and Taft site and by 15% at the Courthouse in order to meet the annual PM_{10} standard. However, the local PM_{10} must be reduced by 33% and 19% at the Oak and Taft site and the Courthouse, respectively, in order to meet the annual PM_{10} standard if the background PM_{10} of 13.1 $\mu g/m^3$ remains constant.

The annual average and worst case day GRID dispersion modeling results for the 1985-86 baseline period are summarized in Figures 4.14.2-3 (Courthouse) and 4.14.2-4 (Oak and Taft).

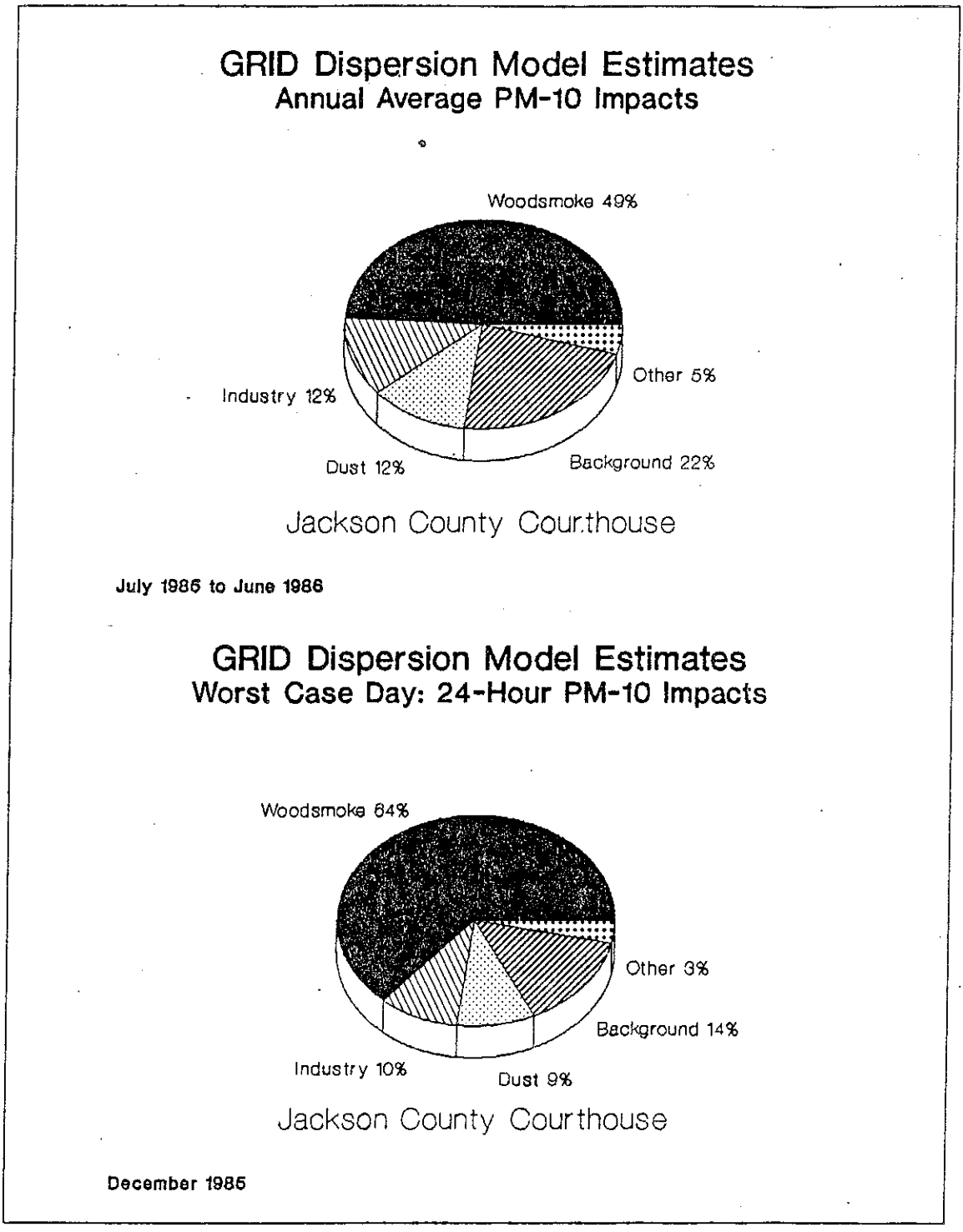

Figure 4.14.2-3: GRID Dispersion Modeling Results at Courthouse.

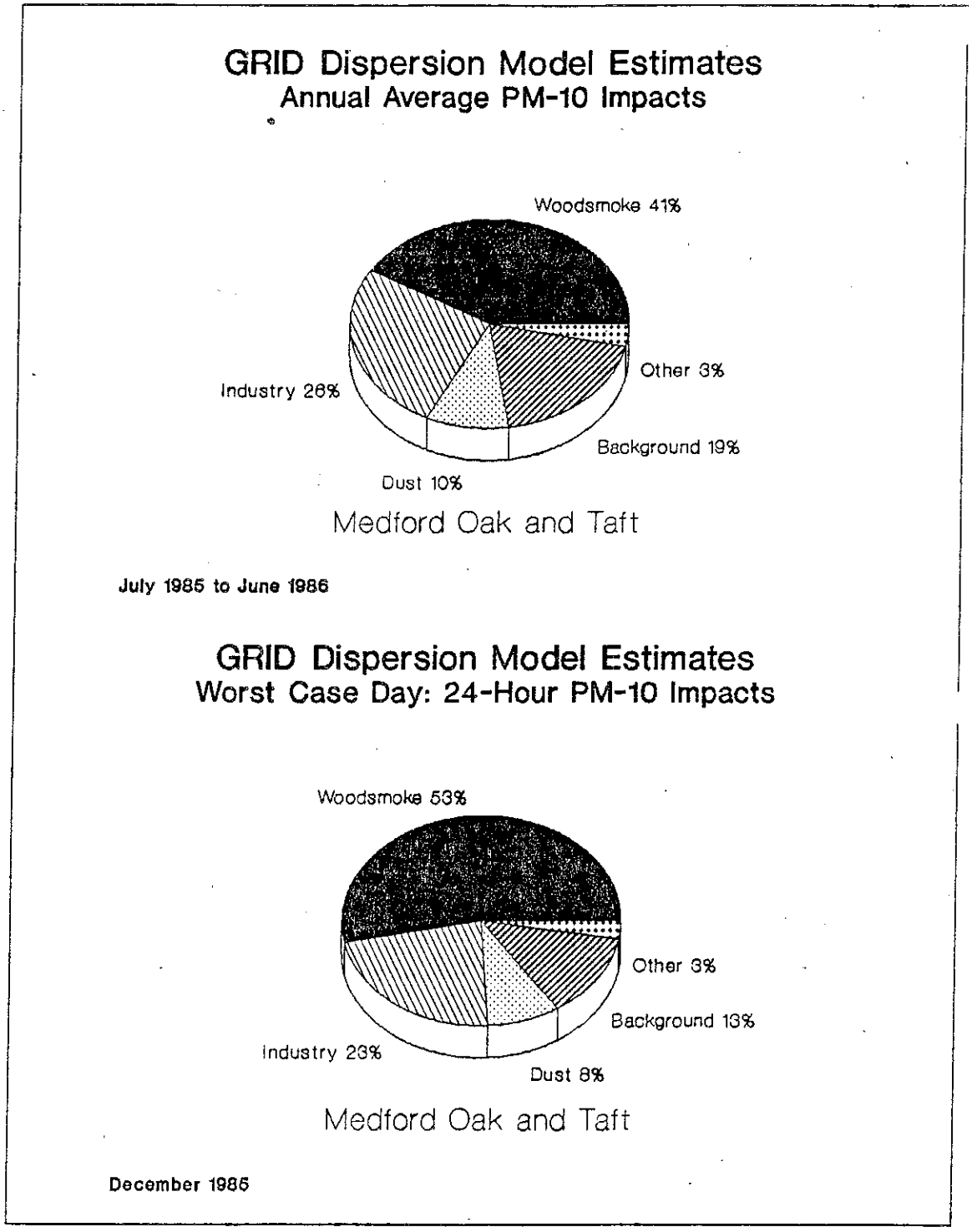

Figure 4.14.2-4: GRID Dispersion Modeling Results at Oak & Taft.

Receptor Modeling

The Environmental Protection Agency PM_{10} SIP Development Guideline Section 4.4 describes procedures to be used by the States for using receptor models to estimate source contributions to PM_{10} concentrations. These guidelines support the use of receptor models as an important element of the SIP strategy development process. Receptor modeling (specifically Chemical Mass Balance or CMB) is especially appropriate in the Medford-Ashland AQMA with severe air stagnation and complex terrain conditions where emission inventories alone may be somewhat misleading and dispersion modeling is more difficult. The specific application of the CMB Receptor Model to PM_{10} source apportionment in the Oregon Group I areas is described elsewhere.[19]

Chemical Mass Balance (CMB) is a form of receptor modeling based upon regression analysis of aerosol features such as trace element concentrations. The model attempts to find the most likely combination of source contribution estimates (SCEs) by minimizing the difference between the measured and model-predicted concentration of aerosol features. Values for the ambient aerosol matrix are obtained through chemical analysis of PM_{10} filters taken at the Jackson County Courthouse site while the source "fingerprint" values are obtained through analysis of stack emissions. The CMB modeling protocol applied follows EPA guidance.[20] All of the CMB modelling has been conducted using EPA's Version 7.0 CMB program.[21]

Ambient Aerosol and Source Emission Analysis

Eighty-eight PM_{10} samples from the Jackson County Courthouse site and 50 PM_{10} samples from the Dodge Road background site have been chemically analyzed for CMB analysis.

The Courthouse CMB analysis included 50 fine and coarse (dichotomous sampler) aerosol samples collected from January 1984 to January 1987 as well as 38 PM_{10} (medium-volume sampler) aerosol samples collected from January 1987 to July 1989. Eleven of the samples exceeded 150 $\mu g/m^3$, all of which were collected during the

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[19] PM_{10} Receptor Modeling for Oregon's Group I Areas: Medford, Grants Pass and Klamath Falls. State of Oregon Department of Environmental Quality, Air Quality Division. February, 1990.

[20] Protocol for Reconciling Differences Among Receptor and Dispersion Models. US EPA 450/4-87-008. March, 1987.

[21] Receptor Model Technical Series, Volume III (Revised): CMB User's Manual (Version 6.0) US EPA 450/4-83-014R. May, 1987.

winter months. The highest sample analyzed was 310 $\mu g/m^3$ on December 2, 1988.

The Dodge Road CMB analysis included 50 fine and coarse samples from the Dodge Road background site collected from January 1984 to December 1986.

Chemical characterization of the samples included 19 trace elements analyzed by x-ray fluorescence, 3 anions and elemental/organic carbon, providing a data set that is compatible with the source emission profiles. Analytical uncertainties for each value are routinely reported and included in the CMB calculations.

PM_{10} source profiles representing all major emission groups within the airshed were used in the modeling. All of the profiles were obtained from the Pacific Northwest Source Profile Project.[22] A list of the sources included in the analysis is presented below:

Table 4.14.2-8: PM_{10} Source Profiles Used in the Medford-Ashland AQMA Chemical Mass Balance Receptor Modeling.

No.	Acronym	Description
1	MEDSOIL	Resuspended soil dust from Medford-Ashland AQMA
2	SLASH	Forestry slash broadcast burning (also may be vegetative burning such as yard debris)
3	RWC MED	Residential wood combustion profile for Medford
4	LD AUTO	Light duty autos (leaded gasoline)
5	HOGFUEL	Hogged fuel boiler burning plywood trim in the fuel
6	WOOD	Wood fiber including sander dust
7	HDDIESEL	Diesel exhaust (Federal Test Cycle)
8	SECSO4	Secondary sulfate estimated as ammonium sulfate
9	SECNO3	Secondary nitrate estimated as ammonium nitrate
10	SECNH4	Secondary ammonium ion
11	CONST	Construction dust - Medford Aerosol Study
12	VENEER	Steam heated veneer drier emissions
13	RESIDOIL	Residual oil combustion

[22] Pacific Northwest Source Profile Library Project, Final Report Prepared by the State of Oregon Department of Environmental Quality, Air Quality Division. J. Core, Ed. September, 1989.

Receptor Model Source Contribution Estimates: 24-Hour Impacts

Table 4.14.2-9 is a summary of the source contribution obtained for the highest CMB sample (310 $\mu g/m^3$ on December 2, 1988). The background data was obtained from the highest sample collected at Dodge Road (43 $\mu g/m^3$ on January 19, 1985). The chemical fingerprints of woodsmoke and veneer dryers are very similar so the dispersion model results from the 1st highest day in Table 4.14.2-7 were used to fill in the veneer dryer and other industry impacts in the second half of the table and subtract the veneer dryer impact from the total woodsmoke impact.

Table 4.14.2-9: Worst Case 24-Hour PM_{10} Source Contributions at the Jackson County Courthouse Using the CMB Receptor Model.

Source Category	24-Hour PM_{10} Impact ($\mu g/m^3$) Total	Background	Local
Before Supplementing with Dispersion Model:			
Wood Products Industry			
Wood-fired Boilers	17.7	3.0	14.7
Veneer Dryers			
Other			
All Woodsmoke	249.7	31.6	218.1
Fugitive Dust	25.2	2.3	22.9
Other	17.4	7.1	10.3
Local Sources			266.0
Background		44.0	
Total PM_{10}	310.0		
After Supplementing with Dispersion Model:			
Wood Products Industry			
Wood-fired Boilers	17.7	3.0	14.7
Veneer Dryers	13.3		13.3
Other	7.3		7.3
Residential Wood Burning	236.4	31.6	204.8
Fugitive Dust	25.2	2.3	22.9
Other	10.1	7.1	3.0
Local Sources			266.0
Background		44.0	
Total PM_{10}	310.0		

The CMB receptor model worst case indicates that residential woodburning contributes about 66% of the PM_{10} measured at the Courthouse (204.8/310). This is very similar to the GRID dispersion model worst case residential woodburning impact of 64% at the Courthouse (195/307) in Table 4.14.2-6.

The CMB receptor model worst case also indicates that the wood products industry contributes about 11% of the PM_{10} measured at the Courthouse (14.7+13.3+7.3)/310). This is very similar to the GRID dispersion model worst case industry impact of 10% at the Courthouse (29.2/307) in Table 4.14.2-6.

Receptor Model Source Contribution Estimates: Annual Impacts

The annual average CMB receptor model results for the Courthouse are summarized in Table 4.14.2-10. The annual average is the composite of 88 CMB samples collected at the Courthouse during 1984-89. The annual average background results are the composite of 50 CMB samples collected at Dodge Road during 1984-87.

Table 4.14.2-10: Annual Average PM_{10} Source Contributions at the Jackson County Courthouse Using the CMB Receptor Model.

Source Category	Annual PM_{10} Impact ($\mu g/m^3$) Total	Background	Local
Before Supplementing with Dispersion Model:			
Wood Products Industry			
Wood-fired Boilers	5.0	0.6	4.4
Veneer Dryers			
Other			
All Woodsmoke	33.2	6.3	26.9
Fugitive Dust	11.9	4.1	7.8
Other	12.8	2.1	10.3
Local Sources			45.3
Background		13.1	
Total PM_{10}	58.4		
After Supplementing with Dispersion Model:			
Wood Products Industry			
Wood-fired Boilers	5.0	0.6	4.4
Veneer Dryers	2.7		2.7
Other	2.1		2.1
Residential Wood Burning	30.5	6.3	24.2
Fugitive Dust	11.9	4.1	7.8
Other	6.2	2.1	4.1
Local Sources			45.3
Background		13.1	
Total PM_{10}	58.4		

The CMB receptor model annual average indicates that residential woodburning contributes about 41% of the PM_{10} measured at the Courthouse (24.2/58.4). This is slightly lower than the GRID dispersion model annual average residential woodburning impact of 49% at the Courthouse (28.7/58.5) in Table 4.14.2-7.

The CMB receptor model annual average also indicates that the wood products industry contributes about 16% of the PM_{10} measured at the Courthouse (4.4+2.7+2.1)/58.4). This is slightly higher than the GRID dispersion model annual average industry impact of 12% at the Courthouse (7.2/58.5) in Table 4.14.2-7.

Overall Comparison of Dispersion and Receptor Modeling

The GRID dispersion model results and the CMB receptor model results are compared in Figures 4.14.2-5 (worst case day impacts) and Figure 4.14.2-6 (annual average impacts). Overall, the comparisons of the GRID dispersion model and the CMB receptor model results indicate quite good agreement on both worst case days and annual average for PM_{10} source contributions at the Jackson County Courthouse.

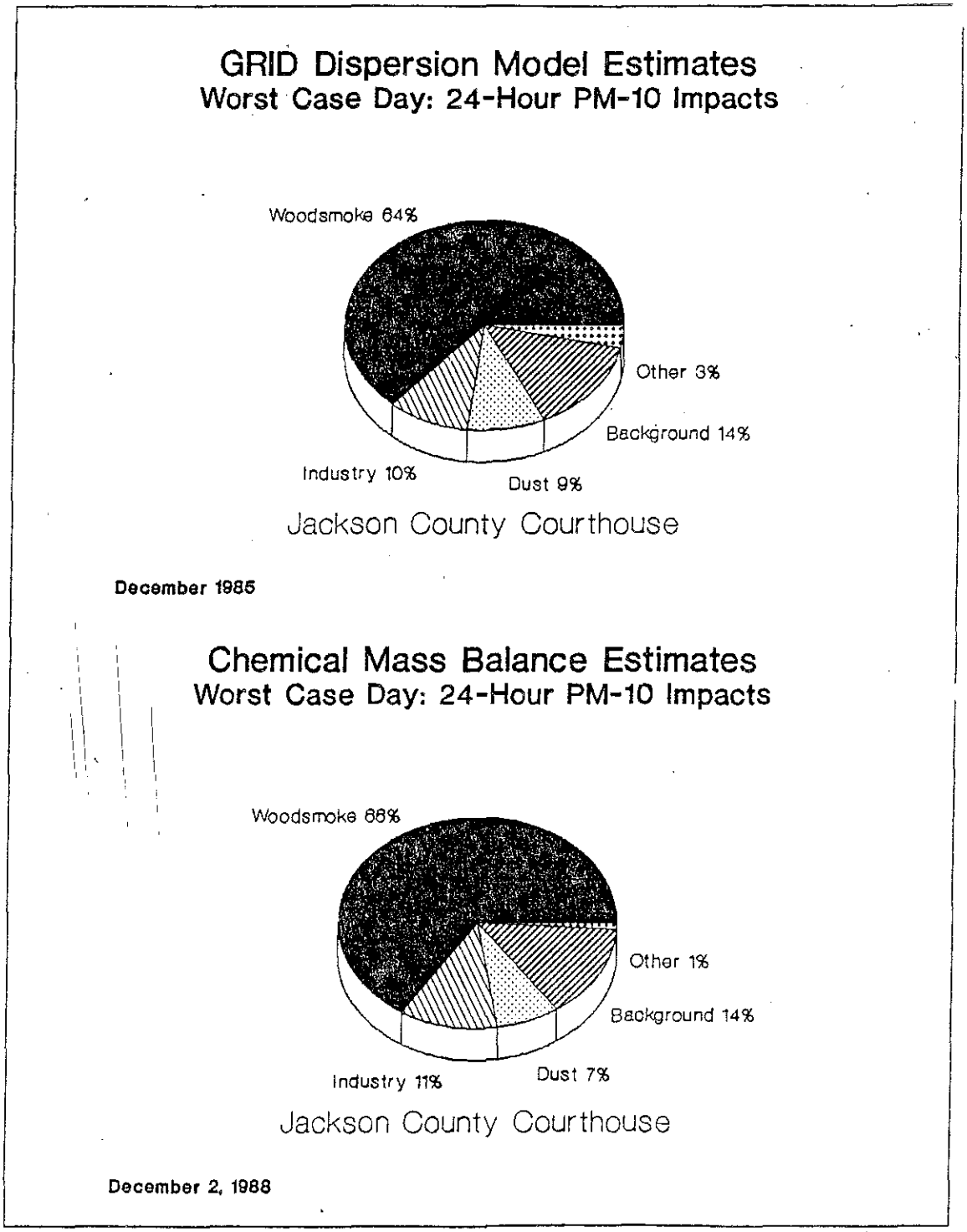

Figure 4.14.2-5: Worst Case Day PM_{10} Impacts at Courthouse

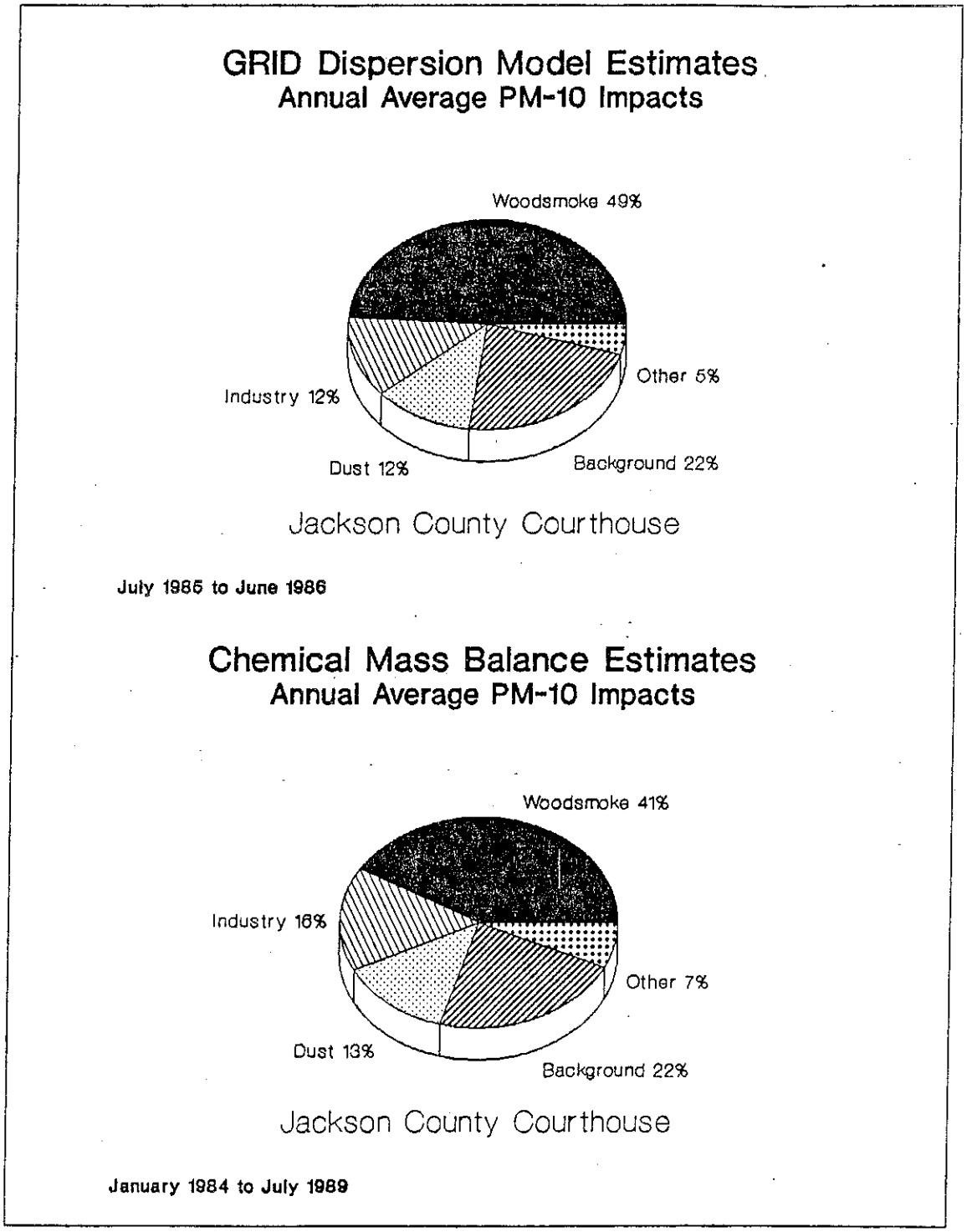

Figure 4.14.2-6: Annual Average PM_{10} Impacts at Courthouse.

4.14.3 Emission Reduction Analysis

This section describes the emission reductions necessary to attain the PM_{10} standards (Section 4.14.3.1), a review of potential control measures that may be applied in Medford-Ashland AQMA (Section 4.14.3.2) and an assessment of the adequacy of the control measures to attain the NAAQS within the time limits specified by Section 110 (a) of the Clean Air Act (Section 4.14.3.3).

4.14.3.1 Emission Reduction Necessary for Attainment

The GRID dispersion model was used to predict 1992 PM_{10} impacts by source category with expected growth but without any emission reductions from the control strategy. This provides the estimate of 1992 air quality if no controls were implemented between the 1985-86 base year and the 1992 required attainment year. The differences between the pre-control 1992 PM_{10} concentrations (24-hour and annual) and the PM_{10} standards (24-hour and annual) represent the PM_{10} reductions needed from the adopted control strategy.

Projected 24-Hour Source Impacts in 1992

The pre-control 1992 projections for the five highest days (using December 1985 meteorology) are summarized in Table 4.14.3-1. These represent the five highest days in the base year (Table 4.14.2-7) factored up for growth expected between the base year and 1992. Industry emissions are projected at the old PSELs, woodstove emissions are increased by 6%, transportation emissions are increased by 12%, and other emissions are factored up by 9%.

Table 4.14.3-1: PM_{10} Source Contributions Using the GRID Dispersion Model for the Five Highest Days in 1992-94 Before Implementation of the PM_{10} Control Strategy.

Source Category	24-Hour PM_{10} Impact ($\mu g/m^3$) 1st	2nd	3rd	4th	5th
Jackson County Courthouse:					
Wood Products Industry	29	28	41	23	13
Residential Wood Burning	207	202	183	166	160
Fugitive Dust	31	34	19	36	38
Other	12	13	7	13	13
Local Sources	278	276	249	237	224
Background	44	44	44	44	44
Total PM_{10}	322	320	293	281	268
Medford Oak and Taft:					
Wood Products Industry	78	62	97	59	44
Residential Wood Burning	193	192	164	177	194
Fugitive Dust	32	37	18	33	21
Other	10	12	6	10	7
Local Sources	313	303	285	280	265
Background	44	44	44	44	44
Total PM_{10}	357	347	329	324	309

The 4th column (4th highest day) is the 1992 design value since it represents the fourth highest day in a 3-year period. At both sites this value must be reduced to no more than 150 $\mu g/m^3$ in order to attain the 24-hour PM_{10} standard by 1992:

Courthouse 24-hour air quality improvement needed = 131 $\mu g/m^3$;
Oak & Taft 24-hour air quality improvement needed = 174 $\mu g/m^3$.

The control strategy must be comprised of a mix of individual source reduction measures such that the sum of the reductions equal or exceed the total reduction requirement. Adopted control strategies must be shown through a demonstration of attainment (Section 4.14.3.3) to attain and maintain the NAAQS by reducing emissions such that an overall reduction in PM_{10} 24-hour concentrations on the fourth highest day meets the above targets.

Projected Annual Source Impacts in 1992

The pre-control 1992 projections for the annual average (using July 1985 to June 1986 meteorology) are summarized in Table 4.14.3-2. These represent the annual average in the base year (Table 4.14.2-8) factored up for growth expected between the base year and 1992. Industry emissions are projected at the old PSELs, woodstove emissions are increased by 6%, transportation emissions are increased by 12%, and other emissions are factored up by 9%.

Table 4.14.3-2: Annual Average PM_{10} Source Contributions Using the GRID Dispersion Model for 1992-94 Before Implementation of the PM_{10} Control Strategy.

Source Category	Annual PM_{10} Impact $\mu g/m^3$	Percent
Jackson County Courthouse:		
Wood Products Industry	7.2	12%
Residential Wood Burning	30.5	50%
Fugitive Dust	7.7	12%
Other	2.9	5%
Local Sources	48.3	79%
Background	13.1	21%
Total PM_{10}	61.4	100%
Medford Oak and Taft:		
Wood Products Industry	17.9	25%
Residential Wood Burning	30.0	42%
Fugitive Dust	7.4	10%
Other	2.5	4%
Local Sources	57.8	81%
Background	13.1	19%
Total PM_{10}	70.9	100%

These annual PM_{10} concentrations are the 1992 annual design values since they represents the annual average in 1992 if no strategy is implemented. At both sites this value must be reduced to no more than 50 $\mu g/m^3$ in order to attain the annual PM_{10} standard by 1992:

Courthouse 24-hour air quality improvement needed = 11.4 $\mu g/m^3$;
Oak & Taft 24-hour air quality improvement needed = 20.9 $\mu g/m^3$.

The control strategy must be comprised of a mix of individual source reduction measures such that the sum of the reductions

The control strategy must be comprised of a mix of individual source reduction measures such that the sum of the reductions equal or exceed the total reduction requirement. Adopted control strategies must be shown through a demonstration of attainment (Section 4.14.3.3) to attain and maintain the NAAQS by reducing emissions such that an overall reduction in annual average PM_{10} concentrations meets the above targets.

4.14.3.2 Evaluation of Potential Control Measures

The PM_{10} control strategy for the Medford-Ashland AQMA focuses on PM_{10} emission reductions from woodstoves and fireplaces (RWC), the wood products industries, open burning of debris, and road dust. Additional reductions are expected from statewide efforts to reduce slash burning smoke.

The following control strategy elements have been set in place to assure attainment of the annual and 24-hour PM_{10} NAAQS. Emission reduction credits associated with each element are listed and discussed. A PM_{10} emission reduction credit is a measure of the reduction in PM_{10} emissions that would be accomplished through adoption and implementation of the program element. The strategy elements and credits are further described in the appendix.

Residential Wood Combustion Strategies

There are two basic approaches to reducing woodsmoke from stoves and fireplaces: (1) improving the performance of the woodheating systems such as through a certified woodstove program; and (2) burning less wood through woodstove curtailment programs. Some strategies have multiple advantages. Certified woodstoves, for example, improve emission performance by reducing the amount of woodsmoke per cord of wood burned while improving energy efficiency, thus reducing the amount of wood burned. Other examples are well designed public information, energy conservation, or firewood seasoning programs that result in better combustion (lower emissions) and better energy efficiency (less fuel burned).

The Jackson County Woodburning Task Force was appointed by the Jackson County Board of Commissioners in May 1987. The Task Force evaluated various control measures for reducing residential woodsmoke and made its recommendations to the Jackson County Board of Commissioners in December 1987. The woodsmoke reduction elements in this plan are closely patterned after the Task Force recommendations. A copy of the Report of the Jackson County Woodburning Task Force is included in the appendix.

Woodstove and fireplace emissions will be reduced by an expanded public information program, an effective mandatory wood burning curtailment program, the Oregon woodstove certification program,

financial assistance programs for replacement of existing woodstoves with cleaner burning units and weatherization of homes, a ban on installation of non-certified woodstoves, and continued improvements in firewood seasoning and woodstove operation.

No direct credit is taken for the public information program but it is considered critical to the success of the other woodburning elements. The woodstove public information program is summarized in the appendix.

Woodstove certification, combined with a ban on the installation of non-certified stoves, is projected to reduce woodstove emissions by about 14% due to existing stove replacements and 3% due to reduced emissions from new stoves between the base year and 1992. Additional reductions of 20% (replacements) and 6% (new) are expected between 1992 and 2000. These reductions will more than offset the projected increases in woodstove firewood use (6% during 1986-1992 and 13% during 1992-2000). Fireplace wood use and emissions are projected to continue to decrease (12% during 1986-1992 and 16% during 1992-2000) but at a slower rate than observed during 1981-1987.

The programs for weatherization combined with replacement of existing woodstoves with cleaner burning units (CLEAR and SOLVE) are expected to reduce woodburning emissions by about 5% by 1992. Other weatherization financial assistance programs, based on current participation rates, are expected to reduce woodburning emissions by about 3% by 1992.

Improved woodstove operation and firewood seasoning, based on trends documented in the biennial woodheating surveys, are expected to reduce woodburning emissions by 2% by 1992.

Mandatory woodburning curtailment programs are expected to reduce curtailment day woodburning emissions by 85% within the cities of Medford and Central Point and about 70% in the remainder of the critical PM_{10} control area. This projected effectiveness is based on comparisons of ambient nephelometer and particulate data between 1985 and 1989, the 1989-90 compliance surveys in the Medford area, feedback from field staff, and the experiences of successful mandatory curtailment programs in other western states. Annual woodburning emissions are expected to be reduced by about 20% based on the average number of curtailment days per year. Voluntary woodburning curtailment is expected to reduce woodburning emissions by 25% on worst days and 6% annual average in the remainder of the AQMA, based on the 1985-89 compliance surveys and the experiences of other voluntary programs in Oregon and other western states.

The net effect of the woodburning strategy elements by 1992 is a 42% reduction in annual woodburning emissions and a 85% reduction in worst day woodburning emissions within the mandatory

Wood Products Industry Strategies

Wood products industry emissions will be reduced by additional control requirements on veneer driers and large wood-fired boilers at plywood plants, more extensive source testing and continuous emission monitoring in order to maximize performance of pollution control equipment, and more restrictive emission offset requirements to insure a net air quality benefit from any new or expanded industries. These industrial emission reductions are in addition to the industrial pollution controls implemented during 1978-1984.

The new industrial rules will reduce industrial emissions by over 20% by the end of 1994, with most of this reduction occurring by 1992.

Open Burning Strategies

Open burning emissions will be reduced during the critical November to February period by local ordinances banning open burning during these months. Annual open burning emissions will be reduced by a year around ban within Medford and more restrictive ventilation criteria and shorter burn seasons in unincorporated areas of Jackson County and in Central Point.

Road Dust Strategies

Road dust emissions will be reduced by continuing programs to pave unpaved roads, to curb and gutter shoulders on paved roads, and to control mud and dirt trackout from industrial, construction and agricultural operations.

During 1984-87, despite an 11% increase in traffic volumes, the coarse PM_{10} fraction and the CMB dust fraction decreased slightly. Based on the apparent effectiveness of the dust control programs, the continuation of these programs is expected to offset the increased dust due to the projected 12% traffic growth between the base year and 1992. Dust is projected to increase by 8% (half the projected traffic growth) between 1992 and 2000 due to the continuation of these dust control programs.

Other Strategies

Slash burning emissions will be reduced in western Oregon by about 20% between 1984 and the year 2000 as part of the Oregon Visibility Protection Plan. These emission reductions will further insure that background PM_{10} concentrations will not increase in future years.

In addition, forestry slash burning impacts on the nonattainment area will be minimized through voluntary agreements among forest land managers. This program will help assure that forestry open burning does not adversely affect Medford-Ashland AQMA air quality on winter wood heating curtailment days.

4.14.3.3 Demonstration of Attainment

The GRID dispersion model was used to predict 1992 PM_{10} impacts by source category with expected growth and with the emission reductions from the control strategy discussed in Section 4.14.3.2. This provides the estimate of 1992 air quality with the implementation of the control strategy between the 1985-86 base year and the 1992 attainment year. The differences between the pre-control 1992 PM_{10} concentrations (24-hour and annual) in the previous Tables 4.14.3-1 and 4.14.3-2 and the following Tables 4.14.3-3 and 4.14.3-4 represent the PM_{10} reductions (24-hour and annual) provided by the adopted control strategy.

Projected 24-Hour Source Impacts in 1992

The 1992 projections for the five highest days (using December 1985 meteorology) are summarized in Table 4.14.3-3. These represent the five highest days in the base year (Table 4.14.2-7) factored up for growth expected between the base year and 1992, and then reduced by the control strategy. Industry emissions are projected at the new PSELs (pounds per hour limits) resulting from the new industrial rules, wood burning emissions are decreased by a net 75%, transportation emissions are increased by 12%, paved and unpaved road dust emissions are kept constant, and other emissions are factored up by 9%.

Table 4.14.3-3: PM_{10} Source Contributions Using the GRID Dispersion Model for the Five Highest Days in 1992-94 After Implementation of the PM_{10} Control Strategy.

Source Category	24-Hour PM_{10} Impact ($\mu g/m^3$) 1st	2nd	3rd	4th	5th
Jackson County Courthouse:					
Wood Products Industry	20	19	25	15	9
Residential Wood Burning	26	27	25	23	22
Fugitive Dust	28	30	17	32	34
Other	12	13	7	13	13
Local Sources	86	89	74	82	78
Background	44	44	44	44	44
Total PM_{10}	130	133	118	126	122
Medford Oak and Taft:					
Wood Products Industry	55	46	65	42	29
Residential Wood Burning	25	23	21	22	24
Fugitive Dust	29	33	16	30	19
Other	10	12	6	10	7
Local Sources	119	114	108	104	78
Background	44	44	44	44	44
Total PM_{10}	163	158	152	148	122

The 4th column (4th highest day) is the 1992 design value since it represents the fourth highest day in a 3-year period. At both sites this value by 1992 is projected to be less than the 24-hour PM_{10} standard (150 $\mu g/m^3$) as a result of the control strategy. The GRID dispersion model indicates that the worst case PM_{10} concentrations in 1992 in White City and Central Point will be lower than at Oak & Taft or the Courthouse.

Projected Annual Source Impacts in 1992

The 1992 projections for the annual average (using July 1985 to June 1986 meteorology) are summarized in Table 4.14.3-4. These represent the annual average in the base year (Table 4.14.2-8) factored up for growth expected between the base year and 1992, and then reduced by the control strategy. Industry emissions are projected at the new PSELs (tons per year limits) resulting from the new industrial rules, wood burning emissions are decreased by a net 35%, transportation emissions are increased by 12%, paved and unpaved road dust emissions are kept constant, and other emissions are factored up by 5%.

Table 4.14.3-4: Annual Average PM_{10} Source Contributions Using the GRID Dispersion Model for 1992-94 After Implementation of the PM_{10} Control Strategy.

Source Category	Annual PM_{10} Impact $\mu g/m^3$	Percent
Jackson County Courthouse:		
Wood Products Industry	4.3	9%
Residential Wood Burning	16.6	40%
Fugitive Dust	6.9	15%
Other	3.0	7%
Local Sources	30.8	71%
Background	13.1	29%
Total PM_{10}	43.9	100%
Medford Oak and Taft:		
Wood Products Industry	11.3	23%
Residential Wood Burning	16.2	32%
Fugitive Dust	6.6	13%
Other	2.5	5%
Local Sources	36.6	73%
Background	13.1	27%
Total PM_{10}	49.7	100%

At both sites the annual average PM_{10} concentration in 1992 is projected to be less than the annual PM_{10} standard (50 $\mu g/m^3$) as a result of the control strategy. On average, the GRID dispersion model slightly overpredicted at the Oak & Taft site so the annual average in 1992 is expected to be lower than indicated for Oak & Taft. The GRID dispersion model indicates that the annual average PM_{10} concentrations in 1992 in White City and Central Point will be lower than at Oak & Taft or the Courthouse.

The dispersion modeling projected potential PM_{10} problems in two other one-kilometer grids north of the Oak & Taft grid but the 1985 Medford particulate gradient study and the 1989 mobile nephelometer surveys indicated that PM_{10} levels at the DeHague & Howard and McAndrews & Court sites were not as high as at the Oak & Taft site. The Department will conduct additional monitoring in the two potential problem grids by 1991 to determine the actual PM_{10} concentrations as the control strategy is implemented. If the ambient data confirms a nonattainment problem that the control strategy will not bring into attainment by 1992, then the control

strategy will be modified as necessary to assure that attainment will be reached.

4.14.3.4 Emission Offsets and Banking

Industries in Oregon must comply with Plant Site Emission Limits (PSELs) as outlined in OAR 340-20-300 to 340-20-345. New industrial rules for the Medford-Ashland AQMA went into effect in September 1989. Industries in the Medford-Ashland AQMA were operating near their old PSELs in 1985-86 and most of these industries are required to reduce their actual emissions to meet the new PSELs by 1992 (possibly 1994 in a few cases where a large wood-fired boiler is not modified prior to 1994).

The Emission Reduction Credit Banking Rules (OAR 340-20-265) require that, to be eligible for banking, emission reduction credits must be in terms of actual emission decreases resulting from permanent continuous control of existing sources. Emission reductions which are required pursuant to adopted rules cannot be banked.

OAR 340-20-225 (22) requires that new or modified industrial sources that would increase emissions by more than 5 tons per year of PM_{10} emissions must obtain emission reductions from other sources to offset their emissions at a 1.2:1 ratio and provide a net air quality benefit. The emission offsets may be obtained by reducing emissions within the facility to be modified, from other industrial sources, or from external sources, including woodstove emissions from sole-source low-income households if the woodstove emission reductions are funded by the industry obtaining the offset.

4.14.3.5 Demonstration of Maintenance

Emission reductions will continue after 1992 as a result of: (1) continued replacement of existing woodstoves with cleaner burning units (certified woodstoves or pellet stoves, or non-woodburning units such as gas, oil or electric units); (2) continued home weatherization; and (3) continued programs to pave unpaved roads and curb unpaved shoulders on paved roads. These emission reductions are projected to offset emission growth associated with fugitive dust and transportation sources and to result in maintenance of the PM_{10} standards through at least the year 2000. Worst case day PM_{10} and the annual average PM_{10} in 2000 are projected to be 146 and 48 $\mu g/m^3$, respectively, at Oak and Taft.

4.14.4 Implementation of the Control Strategy

All of the elements of the attainment strategy will be adopted prior to Environmental Quality Commission adoption (expected

adoption by November 1990). Specific elements of the strategy are being implemented as noted below.

4.14.4.1 Schedule for Implementation

Residential Woodburning Elements

Public Information: Since 1981, increased emphasis has been placed on public information in the Medford-Ashland AQMA regarding proper firewood seasoning (brochures attached to all USFS and BLM firewood cutting permits, voluntary firewood certification program) and proper woodstove operation to maximize efficiency and minimize emissions. The Oregon State University Energy Extension Service has conducted numerous workshops in the area and prepared informational materials on these subjects. The public information program was further expanded by Jackson County in 1988 through contracts with Laurel Communications.

Home Weatherization: Home weatherization incentives (free energy audits, low-interest loans, and rebates) have been available for several years to all homeowners regardless of heat source. ACCESS (the local Community Action Program) has provided free cost-effective weatherization to low-income households. Weatherization of homes prior to installation of a new woodstove has been required by local ordinances of the City of Medford (No. 4732) and Jackson County (No. 82-6) since 1982.

Woodheating Surveys: The biennial woodheating surveys conducted by the Department indicate that firewood use and firewood emissions decreased slightly between 1981 and 1987, despite population growth, as a result of the above and other programs. For example, the length of firewood seasoning time and the percent of firewood stored under cover both significantly increased between 1981 and 1987.

Woodstove Certification: The Oregon Woodstove Certification Program became effective on July 1, 1986. New stoves sold in Oregon since then must meet specified emission standards. The woodstove emission standards became more restrictive on July 1, 1988. The EPA woodstove certification program, with slightly tighter standards than the 1988 Oregon standards, goes into effect on July 1, 1990. Jackson County (on December 22, 1989) and Ashland (on January 9, 1990) adopted bans on the installation of non-certified woodstoves (to prevent used non-certified stoves from being re-installed). The 1987 woodheating survey indicated that 12% of the woodstoves in the Medford-Ashland AQMA were certified units.

Woodstove Replacements: The Housing Authority of Jackson County began Project CLEAR (Cooperative Local Effort for Air Resources) in 1988 to replace woodstoves with cleaner burning units and provide cost-effective weatherization in low-income homes. About

$1.8 million in funding from various sources has been obtained to date for this project. About 350-400 homes are projected to have woodstoves replaced and weatherization provided with the current funding. The City of Ashland has proposed the SOLVE (Save Our Livability, View and Environment) Program to begin in July 1990 that would provide financial incentives (zero-interest or low-interest loans or rebates) for weatherization and the replacement of existing woodstoves in 400 homes over the next eight years.

Woodburning Curtailment: A voluntary woodburning curtailment program (with daily advisories from November through February) began on November 19, 1985. Jackson County curtailment surveys during 1985-88 indicated an average compliance rate of about 25% under the voluntary program. The City of Medford adopted a mandatory woodburning curtailment program on November 2, 1989. Ambient air monitoring and curtailment surveys within the City of Medford during 1989-90 indicated over 80% compliance in some areas. The City of Central Point adopted a mandatory woodburning curtailment program on December 21, 1989. Jackson County adopted a mandatory woodburning curtailment program on May 2, 1990.

Industrial Elements

The Oregon Environmental Quality Commission adopted specific industrial rules for the wood products industries in the Medford-Ashland AQMA in 1978, 1983 and 1989. The 1978 and 1983 rules included: (1) tighter pollution control requirements for particle dryers, fiber dryers, veneer dryers, large wood-fired boilers, charcoal furnaces, and air conveying systems for sanderdust and sawdust; (2) additional source testing requirements; (3) operation and maintenance plans to prevent or minimize excess emissions; and (4) site-specific fugitive dust control plans. These industrial requirements resulted in a 70% reduction in industrial particulate emissions between 1978 and 1986.

The most recent industrial rules for the Medford-Ashland AQMA were adopted by the Commission on September 8, 1989. These new rules require: (1) tighter emission limits and better pollution control equipment on veneer dryers and large wood-fired boilers; (2) more extensive source testing and continuous emission monitoring; and (3) more restrictive emission offset requirements (1.2:1) for new or expanding industries. These new requirements are projected to reduce industrial PM_{10} emissions by over 20% by the end of 1994, with most of this reduction occurring by 1992.

Road Dust Elements

The City of Medford and other local governments have ongoing programs to control mud and dirt trackout onto roadways. The City of Medford also has an ongoing program using HUD funding and

financial participation by affected landowners to pave unpaved roads and curb unpaved shoulders on paved roads.

4.14.4.2 Rules, Regulations and Commitments

The following rules and commitments have been adopted to assure the enforceability of the control strategies.

State of Oregon Rules

The Oregon Revised Statutes (ORS) 468.020, 468.295 and 468.305 authorize the Oregon Environmental Quality Commission to adopt programs necessary to meet and maintain state and federal standards. The mechanisms for implementing these programs are the Oregon Administrative Rules (OAR).

Specific air pollution rules applicable to the Medford-Ashland AQMA (OAR 340-30-005 to 070) are included in Section 3.1 of the Oregon State Implementation Plan.

OAR	Subject
340-30-005	Purposes and Application
340-30-015	Wood Waste Boilers
340-30-021	Veneer Dryer Emission Limitations
340-30-025	Air Conveying Systems
340-30-040	Charcoal Producing Plants
340-30-043	Control of Fugitive Emissions
340-30-044	Operation and Maintenance Plans
340-30-046	Compliance Schedules
340-30-050	Continuous Monitoring
340-30-055	Source Testing
340-30-065	New Sources
340-30-067	Rebuilt Sources
340-30-111	Emission Offsets

Additional rules applicable statewide include:

OAR	Subject
340-20-220 to 275	New Source Review
340-20-300 to 320	Plant Site Emission Limits
340-21-100 to 190	Woodstove Certification Program
340-27-005 to 035	Air Pollution Emergencies

Jackson County Ordinances and Orders

Air Quality Ordinance, Chapter 1810 of the Codified Ordinances of Jackson County, amended December 22, 1989

Air Quality Improvement Plan, Order No. 364-88, adopted November 30, 1988

Amendment to Air Quality Ordinance, Chapter 1810, Restriction on Woodburning on High Pollution Days, Ordinance No. 90-4, adopted May 2, 1990

City of Ashland Ordinances

Ban on Installation of Non-certified Solid Fuel Burning Devices, Ordinance No. 2552, adopted January 9, 1990

Regulation on What Can Be Burned in Woodstoves and the Sale of Seasoned Wood, Ordinance No. 2555, adopted February 8, 1990

Controls on Open Burning, Ordinance No. 2535, adopted November 21, 1989

City of Medford Ordinances and Resolutions

Control Strategies for Particulate Air Pollution, Ordinance No. 4740, adopted November 11, 1982, Section 4 repealed February 17, 1984

Outside Burning Ordinance, No. 4732, adopted October 21, 1982

Air Quality Improvement Plan, Resolution No. 6253, adopted December 1, 1988

Woodburning Restrictions, Ordinance No. 6484, adopted November 2, 1989

City of Central Point Ordinances and Resolutions

Air Quality Improvement Plan, Resolution No. 509, adopted December 1, 1988

Regulations and Permit Process for Outside Burning, Ordinance No. 1624, adopted October 19, 1989

Ordinance for Regulating Woodstoves and Other Solid Fuel Burning Devices for the Purpose of Reducing Health Hazards, Ordinance No. 1629, adopted December 21, 1989

Interagency Commitments

Oregon Department of Forestry Smoke Management Plan, OAR 629-43-043

4.14.4.3 Emergency Action Plan Provisions

OAR 340 Division 27 describes Oregon's Emergency Action Plan. The rule is intended to prevent the excessive accumulation of air contaminants during periods of air stagnation which, if unchecked, could result in concentrations of pollutants which could cause significant harm to public health. The rules establish criteria for identifying and declaring air pollution episodes below the significant harm level and were adopted pursuant to requirements of the Clean Air Act. The action levels found in the Plan were established by the Environmental Protection Agency and subsequently adopted by the Department.

The 24-hour average emergency action levels for PM_{10} (adopted by the Environmental Quality Commission April 29, 1988) are as follows: significant harm level of 600 $\mu g/m^3$, emergency level of 500 $\mu g/m^3$; warning level of 420 $\mu g/m^3$; and alert level of 350 $\mu g/m^3$. These PM_{10} levels, coupled with meteorological forecasts for continuing air stagnation, trigger the Emergency Action Plan. PM_{10} concentrations have never been measured at the warning, emergency or significant harm level in the Medford-Ashland AQMA. Alert levels were measured during a severe air stagnation episode in December 1985 and during wildfire impacts in September 1987. Authority for the Department to regulate air pollution sources during emergency episodes is provided under Oregon Revised Statutes (ORS) Chapter 468, including emissions from woodstoves. When there is an imminent and substantial endangerment to public health, ORS 468.115 authorizes the Department, at the direction of the Governor, to enforce orders requiring any person to cease and desist actions causing the pollution. State and local police are directed to cooperate in the enforcement of such orders.

4.14.5 Public Involvement

Development of the Medford-Ashland AQMA PM_{10} control strategy included several areas of public involvement including a citizen advisory committee, public participation at hearings on proposed industrial source rules, and attendance at hearings conducted by the Jackson County Board of Commissioners and cities within the AQMA.

4.14.5.1 Citizen Advisory Committee

The Jackson County Board of Commissions appointed members to the Jackson County Woodburning Task Force in May 1987 to assist the County, cities within the AQMA, and the Department in the development of control programs for the Medford-Ashland AQMA. The Task Force considered alternative control strategies and provided recommendations to the Board in December 1987. The Report of the Jackson County Woodburning Task Force is included in the appendix.

4.14.5.2 Public Notice

Public notice of proposed rule revisions is done through mailing lists maintained by the Department, through notifications published in local newspapers, and through Department press releases.

4.14.5.3 Public Hearings

Public hearings on the new industrial rules for the Medford-Ashland AQMA were held on January 10 and 12, 1989. Local public hearings were held on the local ordinances in accordance with the public notice and hearing requirements of the city or county involved.

4.14.5.4 Intergovernmental Review

Public hearing notices regarding adoption of this revision to the State Implementation Plan will be distributed for local and state agency review through the A-95 State Clearinghouse process forty-five days prior to adoption by the Environmental Quality Commission.

RULEMAKING STATEMENTS FOR THE PROPOSED MEDFORD-ASHLAND PM_{10} CONTROL STRATEGY AS A REVISION TO THE STATE IMPLEMENTATION PLAN

STATEMENT OF NEED FOR RULEMAKING

Pursuant to ORS 183.335(7), this statement provides information on the intended action to amend a rule.

(1) Legal Authority

This proposal amends Oregon Administrative Rules (OAR) 340-20-047. It is proposed under authority of Oregon Revised Statutes (ORS) Chapter 468.

(2) Need for these Rules

The Medford-Ashland area has a serious PM_{10} air pollution problem. PM_{10} refers to particulate matter ten micrometers or smaller in diameter. PM_{10} particles are considered a risk to human health due to the body's inability to effectively filter out particles of this size.

The federal Clean Air Act requires that States develop and adopt State Implementation Plan (SIP) revisions to assure that areas which violate the PM_{10} health and welfare standards are brought into attainment with those standards within prescribed time frames. The proposed control strategy document describes the State of Oregon plan to attain and maintain the annual and 24-hour PM_{10} standards in the Medford-Ashland Air Quality Maintenance Area (AQMA).

The principal means of achieving the necessary air quality improvements is through PM_{10} emission reductions from woodstoves and fireplaces, the wood products industries, open burning of debris, and road dust. Additional reductions are expected from statewide efforts to reduce slash burning smoke.

(3) Principal Documents Relied Upon

PM_{10} SIP Development Guideline, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park NC, June 1987, EPA-450/2-86-001.

Report of the Jackson County Woodburning Task Force, December 1987, Jackson County Department of Planning and Development, Medford, Oregon.

Previous staff reports to the Environmental Quality Commission (EQC):

Agenda Item D, January 22, 1988, EQC Meeting, Informational Report: New Federal Ambient Air Quality Standard for Particulate Matter (PM_{10}) and Its Effects on Oregon's Air Quality Program.

Agenda Item H, November 4, 1988, EQC Meeting, Request for Authorization to Conduct Public Hearings on New Industrial Rules for PM_{10} Emission Control in the Medford-Ashland AQMA and Grants Pass and Klamath Falls Urban Growth Areas (Amendments to OAR 340, Divisions 20 and 30).

Agenda Item E, September 8, 1989, EQC Meeting, Industrial PM_{10} Rules for Medford-Ashland and Grants Pass: Adoption of New Industrial Rules That Were Taken to Public Hearings in January 1989.

Guidance Document for Residential Wood Combustion Emission Control Measures, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park NC, September 1989, EPA-450/2-89-015.

All documents referenced may be inspected at the Department of Environmental Quality, Air Quality Division, 811 S.W. 6th Avenue, Portland, Oregon, during normal business hours.

LAND USE CONSISTENCY STATEMENT

The proposed rule changes appear to affect land use as defined in the Department's coordination program with DLCD, but appear to be consistent with the Statewide Planning Goals.

With regard to Goal 6, (air, water, and land resources quality), the proposed changes are designed to enhance and preserve air quality in the State and are considered consistent with the goal. The proposed rule changes do not appear to conflict with the other Goals.

Public comment on any land use issue involved is welcome and may be submitted in the same fashion as indicated for other testimony on these rules.

It is requested that local, state, and federal agencies review the proposed action and comment on possible conflicts with their programs affecting land use and with Statewide Planning Goals within their expertise and jurisdiction.

The Department of Environmental Quality intends to ask the Department of Land Conservation and Development to mediate any appropriate conflicts brought to our attention by local, state, or federal authorities.

MLH:a
PLAN\AH8095 (5/90)

FISCAL AND ECONOMIC IMPACT STATEMENT FOR PROPOSED MEDFORD-ASHLAND PM_{10} CONTROL STRATEGY AS A REVISION TO THE STATE IMPLEMENTATION PLAN

PROPOSAL SUMMARY

The Medford-Ashland area has a serious PM_{10} air pollution problem. PM_{10} refers to particulate matter ten micrometers or smaller in diameter. PM_{10} particles are considered a risk to human health due to the body's inability to effectively filter out particles of this size.

The federal Clean Air Act requires that States develop and adopt State Implementation Plan (SIP) revisions to assure that areas which violate the PM_{10} health and welfare standards are brought into attainment with those standards within prescribed time frames. The proposed control strategy document describes the State of Oregon plan to attain and maintain the annual and 24-hour PM_{10} standards in the Medford-Ashland Air Quality Maintenance Area (AQMA).

The principal means of achieving the necessary air quality improvements is through PM_{10} emission reductions from woodstoves and fireplaces, the wood products industries, open burning of debris, and road dust. Additional reductions are expected from statewide efforts to reduce slash burning smoke.

The implementation of the PM_{10} control strategy involves residents, industries, local governments, and state and federal agencies. The two groups most affected by the proposed PM_{10} control strategy for the Medford-Ashland area are the owners/operators of wood products industries and residents with woodstoves or fireplaces.

COSTS TO WOOD PRODUCTS INDUSTRIES

Wood products industry emissions will be reduced by additional control requirements on veneer driers and large wood-fired boilers at plywood plants, more extensive source testing and continuous emission monitoring in order to maximize performance of pollution control equipment, and more restrictive emission offset requirements to insure a net air quality benefit from any new or expanded industries. The new industrial emission control and monitoring requirements will result in estimated capital costs of about $6-10 million; there will also be related increases in maintenance costs but those costs are more difficult to quantify. Industrial PM_{10} rules to implement these requirements were adopted by the Environmental Quality Commission in September 1989.

COSTS TO RESIDENTS WITH WOODSTOVES OR FIREPLACES

The residential woodsmoke reduction strategies are closely patterned after the December 1987 recommendations of the Jackson County Wood burning Task Force. Woodstove and fireplace emissions will be reduced by an expanded public information program, an areawide local mandatory woodburning curtailment program, the Oregon woodstove certification program, financial assistance programs for replacement of existing woodstoves with cleaner burning units and weatherization of homes, a ban on installation of non-certified woodstoves, and continued improvements in firewood seasoning and woodstove operation.

The typical cost of woodburning curtailment (under the local ordinances adopted between November 1989 and May 1990) is estimated at $2-4 per curtailment day per woodburning home, depending primarily on the type of alternative heat, amount of weatherization, and size of home. Economic, sole-source and certified-stove exemptions are available to qualifying households. Up to 12,000 homes in the critical PM_{10} control area would be affected about 22 red days and 14 yellow days per year (five-year average, 1985-1990).

The CLEAR (Coordinated Local Effort for Air Resources) Project of the Housing Authority of Jackson County and ACCESS, Inc. are providing assistance to low-income families for home weatherization and replacement of existing woodstoves with cleaner burning units. Approximately $1.7 million of funding has been secured thus far through Community Development Block Grants, Regional Strategies Funds, Oil Overcharge Settlement Funds, and utility company rebates. The City of Ashland has budgeted $64,494 for the first year of the SOLVE (Save Our Liveability, View and Environment) Program to replace existing woodstoves and weatherize homes.

COSTS TO STATE AND LOCAL GOVERNMENT AGENCIES

The new industrial emission control and monitoring requirements will require additional plan reviews, inspections, monitoring report reviews, and other compliance assurance activities by Department of Environmental Quality staff. This additional work will be done by shifting existing resources and seeking additional revenue to fund deferred work.

The daily decision on woodburning curtailment programs will be based on air quality information from the Department's existing air monitoring network and meteorological information from the National Weather Service. The daily woodburning decision (red, yellow, green call) will be made by the Jackson County Health Department. Public information programs will be done by Jackson County and cities within the AQMA with DEQ or subcontractor assistance. The compliance assurance surveys, exemption permitting and enforcement activities for the woodburning curtailment programs will be conducted by local government staff of Jackson County and the cities of Medford and Central Point. Some EPA grant funds may be available to help support these activities.

Jackson County has budgeted $152,856 for the next year for a full-time air quality coordinator, three part-time technicians, one part-time clerical assistant, and the public information program. The City of Medford spent $17,967 on its air quality program between December 1, 1989, and February 28, 1990, and will probably spend about $24,000 during the next heating season. The City of Ashland has budgeted $64,494 for the first year of the SOLVE Program. These local governments, and other cities within the AQMA, will also shift existing resources as necessary to handle the workload associated with the air quality programs.

HEALTH BENEFITS

The health benefits of PM_{10} controls cannot be accurately quantified but they are expected to be substantial. Testimony during the public hearing on the industrial rules indicated that the expected health benefits of industrial and residential pollution controls may be greater than the pollution control costs.

MLH:a
PLAN\AH8096 (6/90)

Oregon Department of Environmental Quality

Attachment D

A CHANCE TO COMMENT ON...

PM_{10} CONTROL STRATEGY FOR MEDFORD-ASHLAND AREA
NOTICE OF PUBLIC HEARING

Hearing Date: August 6, 1990
Comments Due: August 9, 1990

WHO IS AFFECTED: Residents, local governments and industries in the Medford-Ashland Air Quality Maintenance Area.

WHAT IS PROPOSED: The Department of Environmental Quality is proposing to amend OAR 340-20-047, the State of Oregon Clean Air Act Implementation Plan.

WHAT ARE THE HIGHLIGHTS:

1) The Medford-Ashland area has a serious PM_{10} air pollution problem. (PM_{10} refers to particulate matter ten micrometers or smaller in diameter.) PM_{10} particles are considered a risk to human health due to the body's inability to effectively filter out particles of this size.

2) The proposed control strategy document describes the overall plan to attain compliance with the annual and 24-hour PM_{10} health and welfare standards in the Medford-Ashland Air Quality Maintenance Area by September 1991 and maintain compliance with the PM_{10} standards through at least the year 2000.

3) The principal means of achieving the necessary air quality improvements is through PM_{10} emission reductions from woodstoves and fireplaces, the wood products industries, open burning of debris, and road dust. State industrial rules and local residential ordinances have been adopted to achieve these reductions. Additional reductions are expected from statewide efforts to reduce slash burning smoke.

HOW TO COMMENT: Copies of the complete proposed rule package may be obtained from: Air Quality Division, Department of Environmental Quality, 811 S.W. Sixth Avenue, Portland, OR 97204 or the regional office nearest you. For further information contact Merlyn Hough at (503) 229-6446.

A public hearing will be held before a hearings officer at:

7:00 p.m.
August 6, 1990
Smullin Center Auditorium
Rogue Valley Medical Center
2825 Barnett Road
Medford, Oregon

811 S.W. 6th Avenue
Portland, OR 97204

FOR FURTHER INFORMATION:

Contact the person or division identified in the public notice by calling 229-5696 in the Portland area. To avoid long distance charges from other parts of the state, call 1-800-452-4011.

Oral and written comments will be accepted at the public hearing. Written comments may be sent to the DEQ, but must be received by no later than August 9, 1990.

WHAT IS THE NEXT STEP: After public hearing the Environmental Quality Commission may adopt rule amendments identical to the proposed amendments, adopt modified rule amendments on the same subject matter, or decline to act. The adopted rules will be submitted to the U.S. Environmental Protection Agency as part of the State Clean Air Act Implementation Plan. The Commission's deliberation should come in November 1990 as part of the agenda of a regularly scheduled Commission meeting.

A Statement of Need, Fiscal and Economic Impact Statement, and Land Use Consistency Statement are attached to this notice.

MLH:a
PLAN\AH8097

Proposed State Implementation Plan for Particulate Matter

Eugene-Springfield, Oregon Nonattainment Area

A Plan for Attaining and Maintaining the National Ambient Air Quality Standard for PM_{10}

State of Oregon
Department of Environmental Quality
Air Quality Division

January 1991

LANE REGIONAL AIR POLLUTION AUTHORITY

PM10 STATE IMPLEMENTATION PLAN

MARCH, 1990

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INTRODUCTION

I. INTRODUCTION

BACKGROUND

On July 1, 1987, the U.S. Environmental Protection Agency (EPA) adopted revisions to the National Ambient Air Quality Standards for Particulate Matter which become effective on July 31, 1987. This action included:

1. Replacing total suspended particulate (TSP) as the indicator for particulate matter with a new indicator that includes only those particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM10).
2. Replacing the 24-hour primary standard for TSP with a PM10 standard of 150 $\mu g/m^3$ with no more than one expected exceedance per year (generally based on three consecutive years of data).
3. Replacing the annual primary TSP standard with a PM10 standard of 50 $\mu g/m^3$ (expected annual arithmetic mean generally based on the previous three calendar years).
4. Replacing the secondary TSP standards with PM10 standards that are identical with the primary standards.

Section 110 of the Federal Clean Air Act requires every State to submit to EPA a State Implementation Plan (SIP) which provides for implementation, maintenance, and enforcement of a new standard within 9 months of promulgation. The SIP must provide for attaining the standard as expeditiously as practicable, but no later than 3 years after the SIP has been approved by the EPA. Under certain conditions, an extension of up to 2 years can granted by the EPA.

For developing PM10 SIP's, the EPA categorized areas of concern into three different groups. Group I areas were those for which there was at least a 95% certainty of noncompliance with the standard. Group II areas were those having a 20% to 95% probability of noncompliance. The remaining areas below 20% probability were classed as Group III. In general, the most stringent requirements were placed on the Group I areas.

Based upon the available ambient data, the Eugene-Springfield Urban Growth Area (UGA) was classified by EPA as a PM10 Group I Area. The UGA was chosen as the area for study for a number of reasons: it is already defined as an AQMA for SIP purposes; most, if not all, of the sub-areas of potential non-attainment appear to be within the UGA. Three general purpose local governments have jurisdiction within the UGA; they include the cities of Eugene and Springfield, and Lane County.

The Lane Regional Air Pollution Authority (LRAPA) has the responsibility locally for developing and implementing plans for insuring that the air quality of Lane County complies with all relevant ambient air quality standards. Work on developing the PM10 SIP began in August, 1987. The LRAPA Citizens Advisory Committee was asked by the LRAPA Board of Directors to develop recommendations on how the Eugene-Springfield area should achieve compliance with the new PM10 standards. After a lengthy period of evaluating the problem, the committee completed its work in October, 1989, providing recommendations to the LRAPA Board of Directors. After a public hearing (held on January 30, 1990) the Board acted to adopt the SIP and forwarded it to the State of Oregon Environmental Quality Commission (EQC) for their action. Upon EQC approval the document will be sent to EPA Region 10 for approval.

AMBIENT PM10 DATA

Monitoring for PM10 in Lane County began in March, 1984, with 2 sites in Eugene sampling on an every sixth day schedule. A third daily sampling site was located at Key Bank in West Eugene in November, 1985. The Key Bank Site was identified by the dispersion model used in the 1978 TSP SIP as having the potential for the highest TSP levels. Two additional sites sampling on a sixth day schedule have subsequently been located within the Eugene-Springfield Urban Growth Area (see Figure 1). All sites were equipped with Sierra Anderson Model 1200 reference method samplers. The data is summarized in Table 1 and shows that exceedances of the 24-hour PM10 Standard were measured on 14 dates from the start of sampling through December, 1988. No violations of the annual arithmetic mean standard have been recorded. The highest annual average over the past three years was 39 $\mu g/m^3$ at the Key Bank Site, well below the annual standard of 50 $\mu g/m^3$.

All of the 24-hour PM10 standard exceedances have occurred during the winter months. Twelve of the 14 exceedance dates were in December of 1985. This was a period of extensive poor ventilation with no precipitation, cold temperatures (average daily temperatures near 0 degrees centigrade) and light winds (average daily wind speed of 1 to 2 meters per second). A summary of the historical Air Stagnation Advisories issued for Eugene-Springfield by the National Weather Service (NWS) is presented in Table 2. This shows that although the number of stagnation days was large that winter, it was not unusual. What was unusual for December, 1985 was the cold. There were 983 degree days (65 degree base) recorded that month at the NWS site at the Eugene Airport. This is higher than

FIGURE 1

URBAN GROWTH AREA WITH HISTORICAL MONITORING SITES

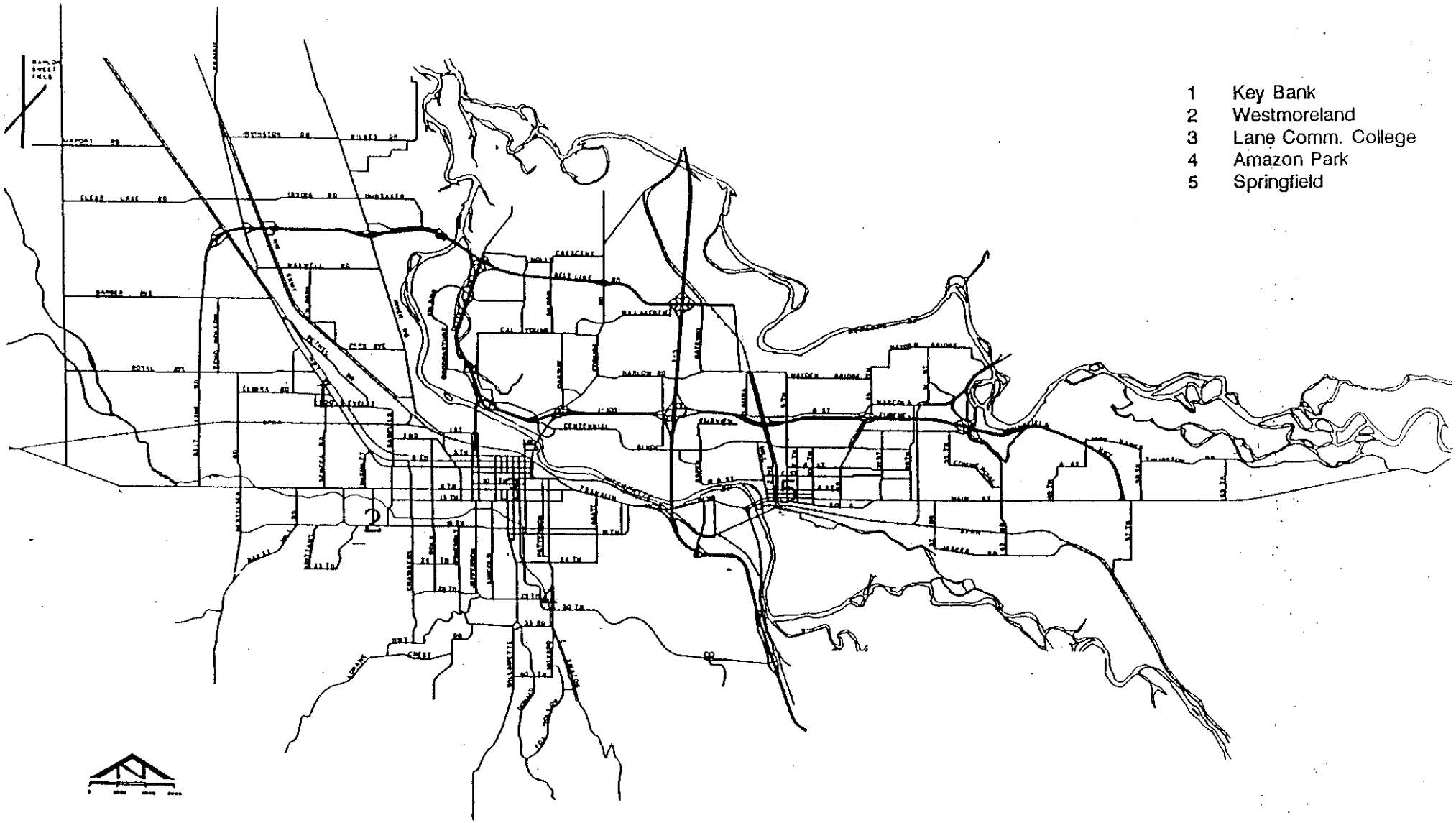


TABLE 1

MAXIMUM AMBIENT PM10 LEVELS

Eugene-Springfield Urban Growth Area

SITE IDENTIFICATION	1985			1986			1987			1988		
	A	B	C	A	B	C	A	B	C	A	B	C
LCC	37	197	3	31	85	0	37	129	0	29	72	0
Key Bank	--	267	12	39	151	0	43	175	2	37	129	0
Amazon Park	34	189	2	27	118	0	32	122	0	26	95	0
Springfield	--	80	0	--	57	0	35	104	0	34	75	0
Westmoreland	--	---	--	--	---	-	--	---	-	30	76	0

Key:
- A Annual Arithmetic Mean
- B Highest 24-Hour Concentration
- C Number of Days Exceeding 154 $\mu g/m^3$ (standard exceedance)
- -- Insufficient Data or Site Not in Operation

TABLE 2

NATIONAL WEATHER SERVICE AIR STAGNATION ADVISORIES

EUGENE-SPRINGFIELD

NOVEMBER THROUGH FEBRUARY

WINTER SEASON	NUMBER OF ASA DAYS
1979 - 1980	16
1980 - 1981	19
1981 - 1982	10
1982 - 1983	11
1983 - 1984	0
1984 - 1985	19
1985 - 1986	15
1986 - 1987	8
1987 - 1988	0
1988 - 1989	6

any December total over the past 30 years, which has a 30 year mean of 735 degree days for December (Table 3 depicts the past 19 years).

If PM10 monitoring data from the past three calendar years (1986-1988) is reviewed using EPA adopted Appendix K rounding criteria (round to the nearest 10), only 2 exceedances of the standard are recorded. This would imply compliance with the 24-hour standard. However, two critical questions arise:

1. Are the existing sampling sites representative of the highest locations in the area?
2. The fact that only two exceedances have occurred since a voluntary home wood heating curtailment program was instituted in November, 1986, could be coincidental or could be the result of actual reduced home wood heating emissions. What assurance is there that exceedances will not occur in future years?

These questions are addressed as part of the analysis in this SIP.

AREA OF APPLICABILITY

The area of applicability for this SIP is the Eugene-Springfield Urban Growth Area (UGA). This is an area of approximately 200 km^2 located at the upper (southern) end of the Willamette Valley in Western Oregon (see Figure 2). The area is at the confluence of two major rivers (Willamette and Mckenzie) and is bounded on the East, South and West by elevated terrain, which frequently restricts atmospheric ventilation. The current population of the area is estimated to be 190,000 with a projected increase to 290,000 by 2010 (Lane Council of Governments).

TABLE 3

DECEMBER METEOROLOGY

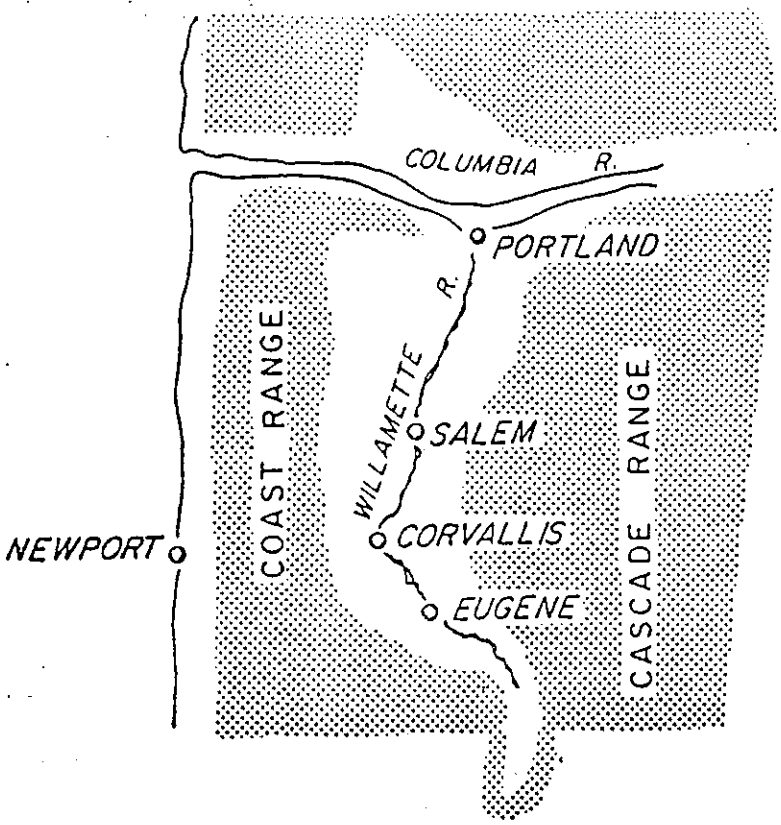
EUGENE

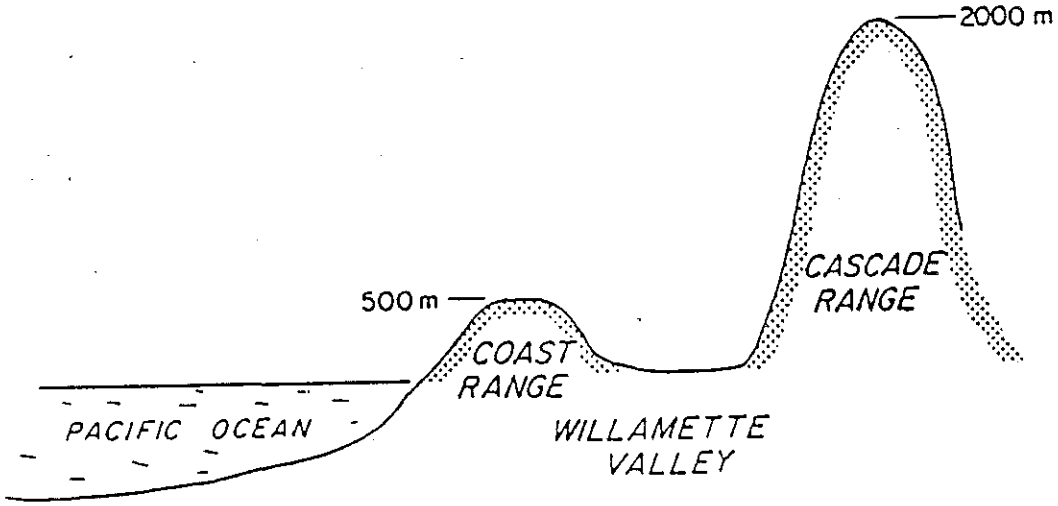
NATIONAL WEATHER SERVICE - AIRPORT

YEAR	DEGREE DAYS	TOTAL PRECIPITATION (INCHES)	DAYS WITH MEASURABLE PRECIPITATION
1970	769	11.57	20
1971	811	9.46	19
1972	945	10.78	21
1973	666	11.82	25
1974	589	9.26	23
1975	676	7.12	23
1976	840	1.24	7
1977	675	14.60	22
1978	919	2.86	15
1979	671	7.38	15
1980	697	14.73	15
1981	710	17.63	22
1982	791	13.53	20
1983	879	7.47	21
1984	851	4.56	16
1985	983	3.51	8
1986	773	3.30	12
1987	774	15.40	21
1988	749	5.18	11
MEAN	777	9.02	18

FIGURE 2

WILLAMETTE VALLEY





The Urban Growth Boundary, which circumscribes the Urban Growth Area, includes the cities of Eugene and Springfield, the major unincorporated areas of River Road and Santa Clara, and those adjacent areas zoned by Lane County for future development. This is the boundary used by local governmental planning organizations to project future development in the area. A legal description can be found in the Metropolitan Plan.

As shown in the Problem Analysis chapter of this SIP, the major sources impacting the area are emissions from home wood heating and industrial sources (primarily wood products). The wood heating emissions are ubiquitous throughout the area while the industrial emissions have localized concentrations in west Eugene and east Springfield.

As shown earlier (see Table 1), exceedances of the 24-hour standard have been recorded at several of the current monitoring sites. In addition, the results of the dispersion modelling analysis and the Saturation Monitoring Study (see Problem Analysis Chapter) indicate that elevated levels of PM10 can be expected to occur throughout the Urban Growth Area, with standard exceedances probable in areas currently not monitored.

All of these factors combine to indicate that the Urban Growth Area includes all existing and potential locations of noncompliance with the standard, and is therefore the logical choice as the area of applicability.

PROBLEM

ANALYSIS

II. PROBLEM ANALYSIS

EMISSIONS INVENTORY

A critical part of the analysis of the PM10 problem is the development of an emissions inventory (EI). This data serves primarily as input to modelling exercises which attempt to identify the sources impacting the air quality and the relative magnitude of impact from each source category.

The base year used for analysis was 1985, during which 12 of the 14 standard exceedances were recorded in the past 4 years. This represents a true "worst case" scenario which can be expected to occur at some time in the future. Historical TSP emissions were used as a data base to develop the PM10 EI. For the point sources, actual emission test results were used where they were available. When test data was not available, appropriate emission factors (using EPA AP42 guidelines) based upon the quantity of material processed were used to estimate emissions. For the ubiquitous area sources such as home wood heating and motor vehicles, emission factors were applied to the appropriate parameters such as amount of wood burned or vehicle miles traveled. For input into the computer simulation model, the area source emissions were tabulated for 1 km^2 units covering the entire Urban Growth Area (UGA).

A brief description of how the EI was developed for each major source category follows:

1. Point Sources

The historical TSP EI was used as the data base for developing the PM10 EI. The source listings were reviewed by the LRAPA staff for completeness and the

source parameters were edited to reflect the best available data. This included a review by the Advisory Committee and representatives from the individual point sources.

The base year 1985 EI represents the best available estimate of winter emissions in December, 1985 (the period being modeled).

A future year (design year) EI was also developed. This represents what emissions would be if all sources were operating at their maximum permitted limits, often referred to as plant site emission limits or PSEL. The metropolitan planning organization (Lane Council of Governments or LCOG) is projecting level employment in the wood products industry (the primary industry in this area) through 1992 and a slight reduction in employment by 2000. As a result, with no anticipated area-wide cumulative growth in industrial emissions, the current PSEL-based inventory represents the worst case point source emission scenario.

A detailed spread sheet of the point source EI and associated parameters appears in Appendix A.

2. Home Wood Heating

Developing an emission inventory for this source category was not a simple task. The emission factor estimates are crude at best, with scant in-home "real world" test results available such as frequency of use, quantity of wood fuel consumed, and fuel quality. In addition, other factors were developed from surveys which may have some subjective elements. Nonetheless, the data used here is the best available at this time.

The assumptions that were used to develop the home wood heating emission inventory were as follows:

a. 53.1% of the households in the UGA burn wood[1].

b. Woodstove and fireplace insert households burn 2.35 cords of wood annually and fireplace households burn 0.79 cords annually[2].

c. 48% of the woodburning households use a woodstove or fireplace insert[3].

d. Wood burning devices are used from October through April[4].

e. The average life of a woodstove is 15 years[5].

f. The PM10 emission factor for the conventional woodstove is 20 g/kg and for the fireplace it is 14 g/kg[6].

g. The 1986 and 1988 DEQ certified stoves achieve an emission reduction of 30% from conventional stoves[7].

h. The 1990 EPA certified stoves achieve an emission reduction of 45% from conventional stoves[8].

---

[1]From 1987 LRAPA Survey.

[2]Ibid.

[3]Ibid.

[4]From 1985 LRAPA Survey.

[5]Commonly accepted number by industry and regulators.

[6]AP42, Environmental Protection Agency, September, 1988.

[7]Estimate based on available home use data from DEQ (May 8, 1989, communication from DEQ).

[8]Conservative estimate based upon EPA Guidance Document, April, 1989; and May 8, 1989, communication with Oregon Department of Environmental Quality.

i. Worst Case Day emissions are calculated on a degree day basis (65°F base)[9].

Combining these assumptions with the population and household data from the Lane Council of Governments results in the emission estimates used in this analysis (see Table 4).

3. Motor Vehicle Emissions and Road Dust

The motor vehicle PM10 emissions estimates were developed from EPA AP42 emission factors including tailpipe emissions as well as airborne particulate from brake and tire wear factors. Incorporating the vehicle mix provided by LCOG (97% LDV and 3% HDV) results in an emission factor of 0.103572 g/vmt. LCOG estimates 3,188,829 vehicle miles traveled (VMT) within the UGA which results in a total of 727 lbs/day.

The data supporting the available emission factors for road dust emissions is not consistent, creating a large uncertainty in these results. Therefore, a better method using locally generated elemental chemical analysis of ambient filters was used. Chemical analysis performed by the Oregon Department of Environmental Quality on local samples collected during 1985 results in the following:

a. the silicon content of local soils is 25.942%.

b. the lead content of motor vehicle emissions is 8.834%.

c. the ambient ratio of soils impact to motor vehicle emissions is 3.516.

If it is conservatively assumed that the soils all come from road dust, then applying a simple ratio formula equating the ratio of the road dust emission factor with the motor vehicle emission factor to the ratio of the soils mass on

[9]Best available parameter for estimating heating needs.

TABLE 4

HOME WOODHEATING PM10 EMISSION CALCULATIONS

EUGENE-SPRINGFIELD

YEAR	POPULATION	TOTAL NO. HOUSEHOLDS WITH WOODSTOVES	TOTAL NO. HOUSEHOLDS WITH FIREPLACES	TOTAL NO. CORDS BURNED	COMPOSITE WEIGHTED EMISSION FACTOR	TOTAL EMISSIONS (TONS)
1985	185,000	20,791	22,533	66,660	18.38 g/kg	2,429
1992	215,436	24,212	26,240	77,628	15.69 g/kg	2,415
2000	250,220	28,121	30,477	90,161	12.12 g/kg	2,166

the filters to the motor vehicle emissions mass on the filters the road dust emission factor can be calculated. The equation is as follows:

EFrd = EFmv * Ms/Mmv

EFrd = 0.103572 g/vmt * 3.516

EFrd = 0.364 g/vmt

where: EFrd = road dust emission factor

EFmv = motor vehicle emission factor

Ms = mass of soils on filters

Mmv = mass of motor vehicle emissions on filters

Using the LCOG estimated daily VMT for the UGA results in an estimated 1.28 tons/day of road dust emissions. LCOG also provided a detailed breakout of VMT by 1 km^2 grid for the UGA. With this data, grid-by-grid estimates of emissions were made to input into the model.

4. Other Minor Sources

Several minor source categories were also inventoried as part of this analysis. These included emissions from non-wood space heating (oil and gas fired devices), railroads, aircraft, agricultural tilling, field burning, and residential open burning. Except for field burning, which used local test data from the DEQ, the emissions were estimated using EPA AP42 emission factors. The agricultural tilling, field burning, and residential open burning emissions are not included in the modelling analysis since these emissions do not occur or are prohibited during the periods of standard exceedance.

The results of these emission estimates for a worst case winter day are summarized in Table 5 for the base year (1985), design year (1992), and maintenance demonstration year (2000). Although the Eugene-Springfield area does not exceed the annual standard, an annual EI was developed and appears in Table 6.

DISPERSION MODEL DEVELOPMENT AND RESULTS

Federal regulations (Section 51.12 of 40 CFR) require that the adequacy of a control strategy for attainment and maintenance of a national ambient air quality standard be demonstrated by means of a dispersion model or other procedure which is shown to be adequate and appropriate for this purpose. In the "PM10 SIP Development Guideline" (6/87), the EPA recommends three possible options for estimating the air quality impact of PM10 emissions using models:

1. Use a receptor and dispersion model in combination.
2. Use a dispersion model alone.
3. Use two receptor models, with control strategy developed using a proportional model (if no applicable dispersion model is available).

Since the necessary data is not available for applying a receptor model, only a dispersion model was selected to perform the analysis. The process for selecting the appropriate model followed the EPA "Protocol for Determining the Best Performing Model (9/87)." This process was necessary since winds were very light and mixing heights very low during the periods of non-compliance (see Tables 7 and 8). These are conditions under which the EPA Guideline Models are not designed to work. As a result, two non-guideline models (Oregon Grid

TABLE 5

WORST CASE WINTER DAY

PM10 EMISSIONS ESTIMATES IN TONS/DAY - ALL SOURCES

EUGENE-SPRINGFIELD URBAN GROWTH AREA

SOURCE CATEGORY	1985 BASE YEAR	1992 DESIGN YEAR	2000
Home Wood Heating	21.2	21.1	18.9
Large Hog Fuel Boilers	6.0	7.9	7.9
Pulp Mill Operation	0.7	4.6	4.6
Road Dust	1.2	1.4	1.6
Particleboard Operations	1.0	0.6	0.6
Motor Vehicle Exhaust	0.4	0.5	0.7
Charcoal Manufacturing	0.2	0.4	0.4
Wood Fired Veneer Dryers	0.1	0.3	0.3
Small Hog Fuel Boilers	0.2	0.3	0.3
Home Oil Heating	0.2	0.2	0.3
Home Gas Heating	0.1	0.1	0.1
Railroads/Airport	0.1	0.1	0.1

TABLE 6

ANNUAL BASE YEAR 1985 PM10 EI ESTIMATES - ALL SOURCES

EUGENE-SPRINGFIELD URBAN GROWTH AREA

TONS/YEAR

SOURCE CATEGORY	EMISSION ESTIMATES
All Point Sources	3,804
Home Wood Heating	2,429
Road Dust	436
Field Burning	157
Motor Vehicle Exhaust	133
Railroads/Airport	37
Agricultural Tilling	19
Home Oil Heating	16
Open Burning	13
Home Gas Heating	7
TOTAL	7,051

TABLE 7

DECEMBER, 1985, PM10 EXCEEDANCE PERIOD

OAKWAY MALL SITE WIND DATA

DATE	NUMBER OF CALM HOURS	DAILY AVERAGE WIND SPEED (M/S)
12	10	3.3
13	7	3.3
14	21	1.6
15	19	2.0
16	19	2.2
17	14	1.5
18	18	1.7
19	20	1.5
20	15	1.3
21	17	2.1
22	16	2.3
23	16	3.2
24	15	1.8
25	7	2.1
26	16	2.5
27	20	2.0
28	13	1.8

Calm wind is defined as speed less than or equal to 1.0 meters per second.

TABLE 8

EUGENE MIXING HEIGHTS

DECEMBER, 1985, EXCEEDANCE PERIOD

NATIONAL WEATHER SERVICE USING SALEM SOUNDING

DATE	4 AM HEIGHT (M)	4 PM HEIGHT (M)
12	60	403
13	191	358
14	127	235
15	184	236
16	49	49
17	74	144
18	39	88
19	31	237
20	123	298
21	115	307
22	138	365
23	128	317
24	36	412
25	110	408
26	130	311
27	168	374
28	160	317

and Wyndvalley) were evaluated with the guideline model ISCST to determine the best performing model (see Appendix B for protocol details). The results of the model comparison indicated that the Oregon Grid Model was the best performing model (see Appendix C for detailed results).

Although the Oregon Grid Model performed well within the EPA approved limits of accuracy, it did give mixed results when compared with actual monitoring data. The model underpredicted levels at the historical high site (Key Bank) and significantly overpredicted levels at the Lane Community College and Amazon Park Sites (see Table 9). However, given the current state of the art of modelling, this is to be expected. According to the "EPA Guideline on Air Quality Models (revised)" (July 1986), even a perfect model will only be accurate to within 50%, and this error estimate does not include the errors in the input data. It is stated in the guideline that " . . . models are more reliable for estimating longer time averaged concentrations than for estimating short term concentrations at specific locations." In addition, it is stated that " . . . estimates of concentrations that occur at a specific time and site, are poorly correlated with actually observed concentrations and are much less reliable."

Given the variance of the model predicted values with the actual measured values and the known inaccuracies in computer simulation models documented by the EPA, extreme care must be taken when trying to use the results of the modelling exercise. The values should not be considered as absolutes but rather as an indicator of what the ambient levels might be.

The results from the modelling exercise for 1985 and 1992 are summarized for selected sites in Table 10. The geographic location of these sites is

TABLE 9

GRID MODEL RESULT COMPARISONS

DECEMBER, 1985

$\mu g/m^3$

DATE	KEY BANK ACTUAL	KEY BANK MODEL ESTIMATE	LCC ACTUAL	LCC MODEL ESTIMATE	AMAZON PARK ACTUAL	AMAZON PARK ESTIMATE
11	144	86				
12	193	133				
13	172	127				
14	222	159				
15	234	131	197	260	189	241
16	267	165				
17	234	201				
18	169	163				
19	188	176				
20	158	170				
21	188	157	156	208	152	193
22	154	141				
23	151	129				
24	135	93				
25	92	90				
26	147	124				
27	170	120	154	231	149	218
28	190	142				

TABLE 10

SELECTED SITES MODELING RESULTS

$\mu g/m^3$

SITE	BASE YEAR PEAK CONCENTRATION	DESIGN YEAR PEAK CONCENTRATION
Depue Street	302	300
S.U.B.	185	184
H Street	323	322
42nd Street	223	221
52nd Street	293	270
Carmel Street	239	237
Scenic Road	335	333
Manzana	312	308
Key Bank	201	196
Wood	201	200
Cross	152	138
14th Street	326	326
Alley	244	244
Hilyard	271	271
High Street	261	261
City Hall	210	208
Amazon	260	260
LCC	260	259
Westmoreland	210	209

depicted in Figure 3. The results indicate that exceedances of the standard can be expected throughout the UGA. The model predicted source impacts at the selected sites are summarized in Table 11 for the base year. These results indicate that home wood heating emissions are clearly the most significant source impacting the air quality of the UGA.

DESIGN VALUE

A critical element in the development of this plan is the determination of the maximum expected level of PM10 (referred to as "design value"). This is the level for which control measures are developed to insure attainment of the standards. According to the EPA "PM10 SIP Development Guideline" (June, 1987), the design concentration for attainment of the 24-hour PM10 standard can be based upon ambient measurements of PM10 or model estimates of ambient concentrations at individual sites during one or more years of stable emissions conditions. This requires modelling 5 years of National Weather Service meteorological data (or at least 1 year of on-site data), or using three years of representative air quality measurements.

Applying the EPA approved statistical distribution using the daily monitoring data from the historically high monitoring site at Key Bank results in a design concentration of 237 $\mu g/m^3$. However, using the results of the 1992 design year modelling exercise, the peak value at another, unmonitored site is 333 $\mu g/m^3$ (see Table 12). The results from the two methods present a large discrepancy, and depending upon which method is chosen, it would affect the stringency of control measures needed to demonstrate attainment.

FIGURE 3

SATURATION STUDY MONITORING SITES

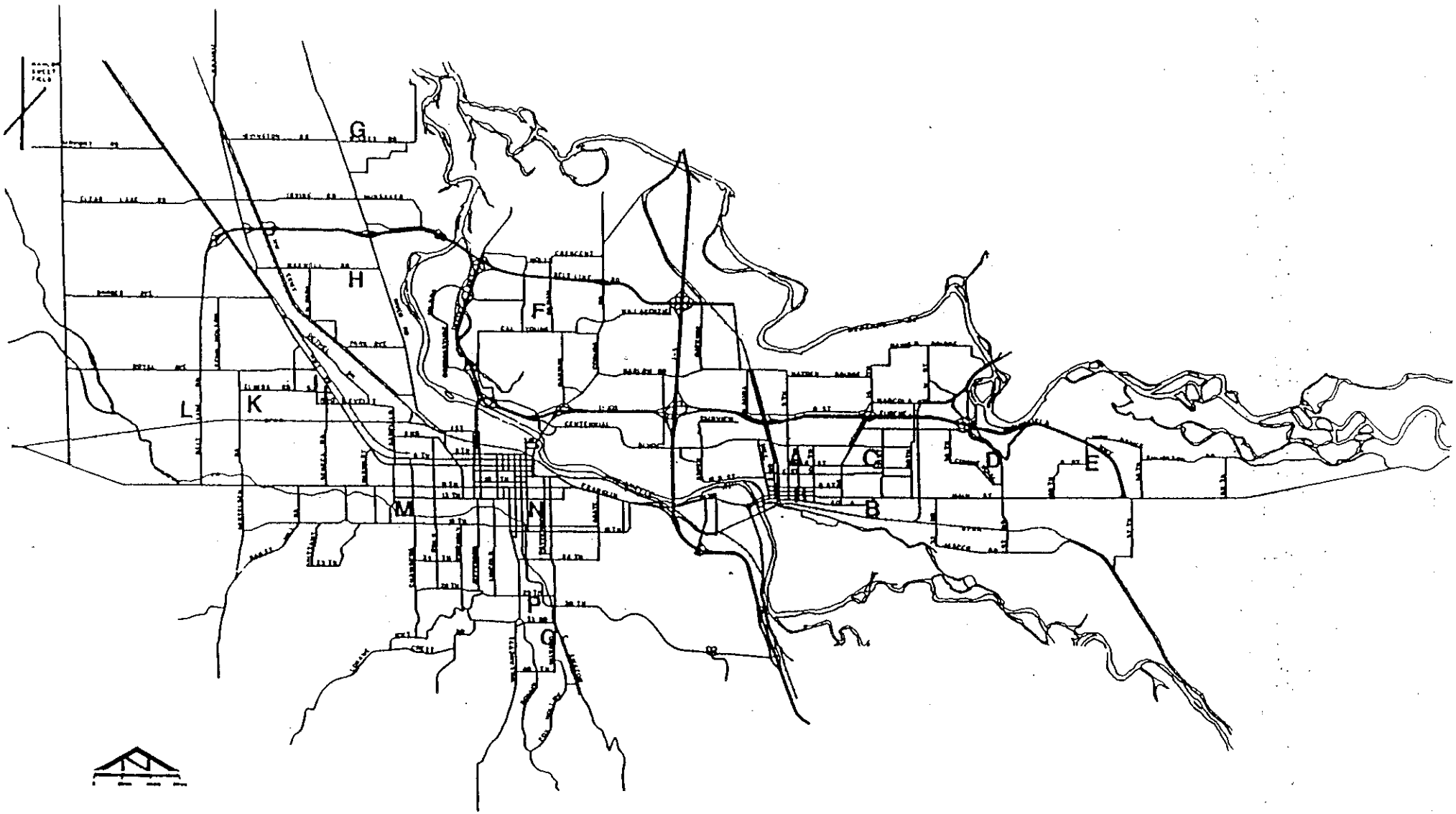


TABLE 11

1985 BASE YEAR MODELING RESULTS

EUGENE-SPRINGFIELD URBAN GROWTH AREA

$\mu g/m^3$

SITE	MAX. CONC.	HOME WOOD HEAT	ROAD DUST	HOGGED FUEL BOILER	VENEER DRYERS	PULP MILL	PART. BOARD	CHAR COAL	BACKGRD & MINOR SOURCES
Depue	302	236	8	3	*	1	2	*	52
S.U.B.	185	122	6	2	*	*	1	*	54
H Street	323	258	6	2	*	2	5	*	50
42nd Street	223	154	5	3	*	3	7	*	51
52nd Street	293	190	4	1	*	2	45	*	51
Carmel	239	173	8	6	*	*	1	*	51
Scenic	335	274	6	3	*	*	*	*	52
Manzana	312	250	6	4	1	*	*	*	51
Key Bank	201	125	12	6	1	*	1	*	55
Wood	201	131	12	4	1	*	1	*	53
Cross	152	69	6	9	1	*	3	*	64
14th Street	326	262	12	1	*	*	*	*	51
Alley	244	181	10	2	*	*	*	*	51
Hilyard	271	214	7	1	*	*	*	*	50
High	261	203	7	1	*	*	*	*	50
City Hall	210	145	8	3	*	*	1	*	54
Amazon	260	199	10	1	*	*	*	*	50
LCC	260	192	14	3	*	*	*	*	51
Westmoreland	210	155	4	1	*	*	*	*	51

* = less than 1 $\mu g/m^3$
BACKGRD = 50 $\mu g/m^3$

TABLE 12

1992 DESIGN YEAR MODELING RESULTS

EUGENE-SPRINGFIELD URBAN GROWTH AREA

$\mu g/m^3$

SITE	MAX. CONC.	HOME WOOD HEAT	ROAD DUST	HOGGED FUEL BOILER	VENEER DRYERS	PULP MILL	PART. BOARD	CHAR COAL	BACKGRD & MINOR SOURCES
Depue	300	234	9	2	*	3	1	*	52
S.U.B.	184	121	7	2	*	1	*	*	53
H Street	322	256	7	1	*	4	3	*	51
42nd Street	221	152	6	2	*	5	4	*	51
52nd Street	270	188	4	*	*	4	23	*	51
Carmel	237	171	10	3	*	1	1	*	51
Scenic	333	272	7	1	*	*	*	*	53
Manzana	308	248	7	1	1	*	*	*	52
Key Bank	196	124	15	3	1	*	*	*	53
Wood	200	130	14	3	1	*	*	*	52
Cross	138	68	7	6	2	*	2	*	54
14th Street	326	260	14	1	*	*	*	*	51
Alley	244	180	12	1	*	*	*	*	51
Hilyard	271	212	8	*	*	*	*	*	50
High	261	201	8	1	*	*	*	*	50
City Hall	208	144	9	2	*	2	1	*	52
Amazon	260	197	11	1	*	*	*	*	50
LCC	259	190	16	2	*	*	*	*	51
Westmoreland	209	153	5	*	*	*	*	*	51

* = less than 1 $\mu g/m^3$
BACKGRD = 50 $\mu g/m^3$

Design value is a very important issue. The discrepancy between highest monitored and modeled values is large enough to substantially change the scope and cost of the attainment demonstration and the timing of implementation. As a result, given the inherent inaccuracy of models and given the limited distribution of PM10 monitoring sites, an effort was made to quickly gather more data. A PM10 saturation monitoring study was conducted by LRAPA (see Appendix D for the full report). For the purposes of SIP development, the objectives were to provide data that would aid in determining the design value and to determine the geographic extent of the area in non-compliance with the standard.

A network of 17 monitoring sites was established throughout the UGA using LRAPA designed portable PM10 monitors. Six of the sites were chosen based on high values predicted by modeling; the remainder provided the needed geographic distribution (see Table 13). The study period ran from January 29, 1989, through February 12, 1989. During this period there were several days of cold temperatures and low wind speeds (historically conducive to high PM10 levels). Over the sampling period, the Key Bank site had the highest mean value overall. Three other sites recorded 24-hour peak levels slightly higher than the peak level at Key Bank. However, no site was statistically higher than Key Bank. The study concluded the following:

1. Elevated levels of PM10 can be expected to occur throughout the UGA, with standard exceedances probable in areas currently not monitored.
2. The model predicted maximum values should not be used for determining the design concentration. The design concentration should be determined based on actual monitored values.

TABLE 13

PM10 SATURATION MONITORING SITE DESCRIPTION

SITE	LOCATION	LAND USE
A*	Springfield - Depue St. north of G St. west of 5th St.	Residential
B	Springfield - Spfld. Utility Board on Main Street	Ind./Comm.
C*	Springfield - H Street at 20th Street	Residential
D	Springfield - 42nd Street south of Olympic Street	Industrial
E*	Springfield - G Street at 52nd Place	Res./Ind.
F	Eugene - Carmel Street at Diane Street	Residential
G*	River Road - Scenic Street north of Wilkes Street	Residential
H*	River Road - Manzana Street south of Howard Street	Residential
I	Eugene - Key Bank on Hwy. 99	Comm./Res.
J	Eugene - Wood Street at Gilbert Street	Residential
K	Eugene - Cross Street east of Bertelsen Street	Ind./Res.
L	Eugene - Danebo Street south of Royal Street	Industrial
M*	Eugene - 14th Street west of Grant Street	Residential
N	Eugene - Alley between Ferry Street and Patterson	Residential
O	Eugene - Hilyard Street at 37th Street	Residential
P	Eugene - High Street south of 29th Street	Residential
Q	Springfield - Springfield City Hall at N. 5th Street	Commercial
R	Springfield - Co-located site with site Q	Commercial

* modeled peak locations

Given the results of the saturation study, with the good correlation of the other sites with Key Bank (see Table 14), it was deemed appropriate by LRAPA to use a date paired standard linear regression technique to estimate design values using the Key Bank monitored value as the independent variable. This would provide the desired geographic distribution for estimating design value, while using monitoring data which has more credibility in absolute values than the modeling results. This method resulted in an estimated design value of 276 $\mu g/m^3$. Upon receiving this data, EPA Region 10 recommended that a two-way regression be performed on ranked paired data limited to levels $\geq$ 60 $\mu g/m^3$, with a minimum number of four pairs. Using this EPA method results in predicted maximum levels closer to the modelled design values (see Table 15). In fact, the peak design value for the Eugene-Springfield Urban Growth Area is predicted to be 345 $\mu g/m^3$.

Although using the EPA regression method results in a significantly higher predicted design value than the standard regression using the full data set, it is still preferred over the modelling results since it uses actual monitored data.

TABLE 14

LINEAR REGRESSION AND CORRELATION ANALYSIS

SITE I (KEY BANK) INDEPENDENT VARIABLE

SITE	MEAN $\mu g/m^3$	STD. DEV. $\mu g/m^3$	TOTAL # OF DATE PAIRED PAIRS	DATE PAIRED CORR. COEFF.	# OF RANKED PAIRED EPA METHOD PAIRS	EPA METHOD RANK PAIRED CORRELATION COEFFICIENT	EPA METHOD RANK PAIRED 2-WAY REGRESSION SLOPE	EPA METHOD RANK PAIRED 2-WAY REGRESSION INTERCEPT	95% CONFIDENCE LIMIT ON ESTIMATE
A	65.4	49.7	16	0.854	9	0.969	1.35	-41.64	13.26
B	30.1	18.7	12	0.932	5	0.950	.57	-4.83	6.55
C	43.3	26.8	12	0.959	5	0.997	.93	-18.33	2.51
D	47.4	28.0	12	0.934	5	0.969	1.02	-22.04	9.17
E	60.5	36.8	16	0.823	9	0.972	1.04	-24.28	9.67
F	43.4	45.2	11	0.904	5	0.972	1.87	-99.61	16.00
G	44.0	40.0	11	0.891	5	0.970	1.61	-74.38	14.35
H	57.3	34.1	15	0.679	9	0.952	.93	-11.18	11.62
I	72.1	43.6	16	-----	-	-----	----	------	-----
J	53.5	28.5	11	0.920	5	0.876	.65	19.47	11.45
K	59.9	24.9	16	0.795	9	0.953	.65	8.84	7.86
L	48.4	16.3	12	0.206	6	0.842	.41	27.97	10.28
M	58.3	46.2	12	0.916	5	0.998	1.59	-45.52	4.01
N	51.0	40.2	11	0.894	5	0.973	1.36	-41.33	11.58
O	35.2	30.0	9	0.880	-	-----	----	------	-----
P	39.5	28.3	11	0.871	4	0.962	.84	-12.74	10.11
Q	45.5	33.2	16	0.935	9	0.948	.83	-17.60	10.43

TABLE 15

PM10 DESIGN VALUE ESTIMATES

EUGENE-SPRINGFIELD URBAN GROWTH AREA

$\mu g/m^3$

SITE	BASE YEAR MAXIMUM VALUE MODEL	MONITORING EPA ANALYSIS METHOD 2-WAY REGRESSION
A - Depue Street	302	278
B - S.U.B.	185	131
C - H Street	324	202
D - 42nd Street	225	219
E - 52nd Place	300	223
F - Carmel Street	239	345
G - Scenic Street	335	307
H - Manzana Street	312	210
I - Key Bank	201	237
J - Wood Street	201	174
K - Cross Street	152	164
M - 14th Street	326	332
N - Ferry St. Alley	244	282
O - Hilyard Street	271	*
P - High Street	261	186
Q - City Hall	211	179

* Insufficient data pairs for analysis.

ATTAINMENT

DEMONSTRATION

IV. ATTAINMENT DEMONSTRATION

POTENTIAL CONTROL MEASURES

Based primarily upon data from the emissions inventory (see Table 5), several source categories were selected for evaluation of possible control measures.

The industrial operations are treated as site specific emissions and are therefore termed "point sources". Those point sources considered for possible control measures are listed in Table 16. The total emissions from these source categories account for over 98% of the total point source emissions (see Appendix A). Also listed in table 16 are the potential emission standards considered for each source category and the resultant estimated emission reductions. The largest point source emitters are hog fuel fired boilers, and several possible control measures were considered for this source category. These ranged in effectiveness from 59% reductions in PM10 emissions for an emission standard of 0.1 grains per standard cubic foot of exhaust (gr/scf) to 93% reduction for a standard of 0.015 gr/scf. The other point source categories evaluated were wood fired veneer dryers, particleboard dryers, charcoal manufacturing, and the pulp mill operation. However, as noted in the table, only emission controls on hog fuel fired boilers would achieve significant emissions reductions in total emissions within the UGA.

A detailed cost analysis was performed for each of the potential point source control measures (see Appendix E). Both capital and annual operating costs were estimated for each of the potential control systems. This results in a range

TABLE 16

POTENTIAL POINT SOURCE CONTROL MEASURES

SOURCE CATEGORY	POTENTIAL EMISSION STANDARD	ESTIMATED % REDUCTION IN SOURCE PM10 EMISSIONS	ESTIMATED % REDUCTION IN TOTAL PM10 EMISSIONS
Hog Fuel Boilers	0.1 gr/scf	59	11
	0.05 gr/scf	64	12
	0.015 gr/scf	93	18
Wood Fired Veneer Dryers	≤ 10% Opacity	24	<1
Particleboard Dryers	1.5 lbs/1,000 ft^2	64	2
Charcoal Manufacturing	≤ 5 lbs/ton char	69	1
Pulp Mill	20% Emission Reduction	20	2

of costs for each potential control measure. For the large hog fuel fired boilers, the total capital cost ranged from $5.0 million to $9.4 million while the total annual operating costs ranged from $200,000 to $650,000.

Those sources in the emissions inventory which are not defined as point sources are treated as area sources. The potential control measures for these sources are listed in Table 17. As noted earlier (see Table 5), home wood heating emissions comprise 56% of the total UGA emissions on a winter day. There were several potential control measures evaluated for this source category. These included mandatory curtailment during air pollution episodes, economic incentives for replacing old stoves, retrofit devices for non-certified stoves, removal or replacement of non-certified stoves upon sale of home, and fuel quality enhancements. In addition, control strategies for residential backyard burning and unpaved road dust were also considered. A detailed cost analysis was performed for each of the potential control measures (see Appendix F). Using data from operational programs in other areas, a range of cost estimates were made. For a mandatory curtailment program, annual operating costs could exceed $70,000. In addition, $30,000 would be needed for capital expenditures.

CONTROL MEASURE SELECTION

The critical question is: which of these strategies are needed to demonstrate attainment with the standard? The answer to this question lies in the results of the dispersion modelling. The modelled area included over 500 one km^2 grids, of which 212 are within the UGA. Of these 212, 185 were projected by the model to have the potential to exceed the 24-hour standard under worst case conditions. An isopleth map of maximum predicted concentrations is

TABLE 17

POTENTIAL AREA SOURCE CONTROL MEASURES

SOURCE CATEGORY	CONTROL MEASURES
1. Home Wood Heating	A. Mandatory Curtailment During Air Pollution Episode
	B. Economic Incentives for Replacing Non-Certified Stoves
	C. Retrofit Devices for Non-Certified Stoves
	D. Removal or Replacement of Non-Certified Stoves Upon Sale of Home
	E. Fuel Quality Enhancements
2. Backyard Burning	A. Year-Round Ban in Urban Growth Area
	B. Shorten Season in Urban Growth Area
3. Unpaved Roads	A. Paving

presented in Figure 4 for the base year and in Figure 5 for the design year. The model indicates that on worst case days exceedances of the standard would be widespread throughout the UGA in both the base year and design year. A summary of modelled concentrations at selected sites is presented in Table 10. As discussed earlier in this document and in the "PM10 Saturation Study Report" (see Appendix D), these sites represent the highest modelled locations and provide for geographic distribution.

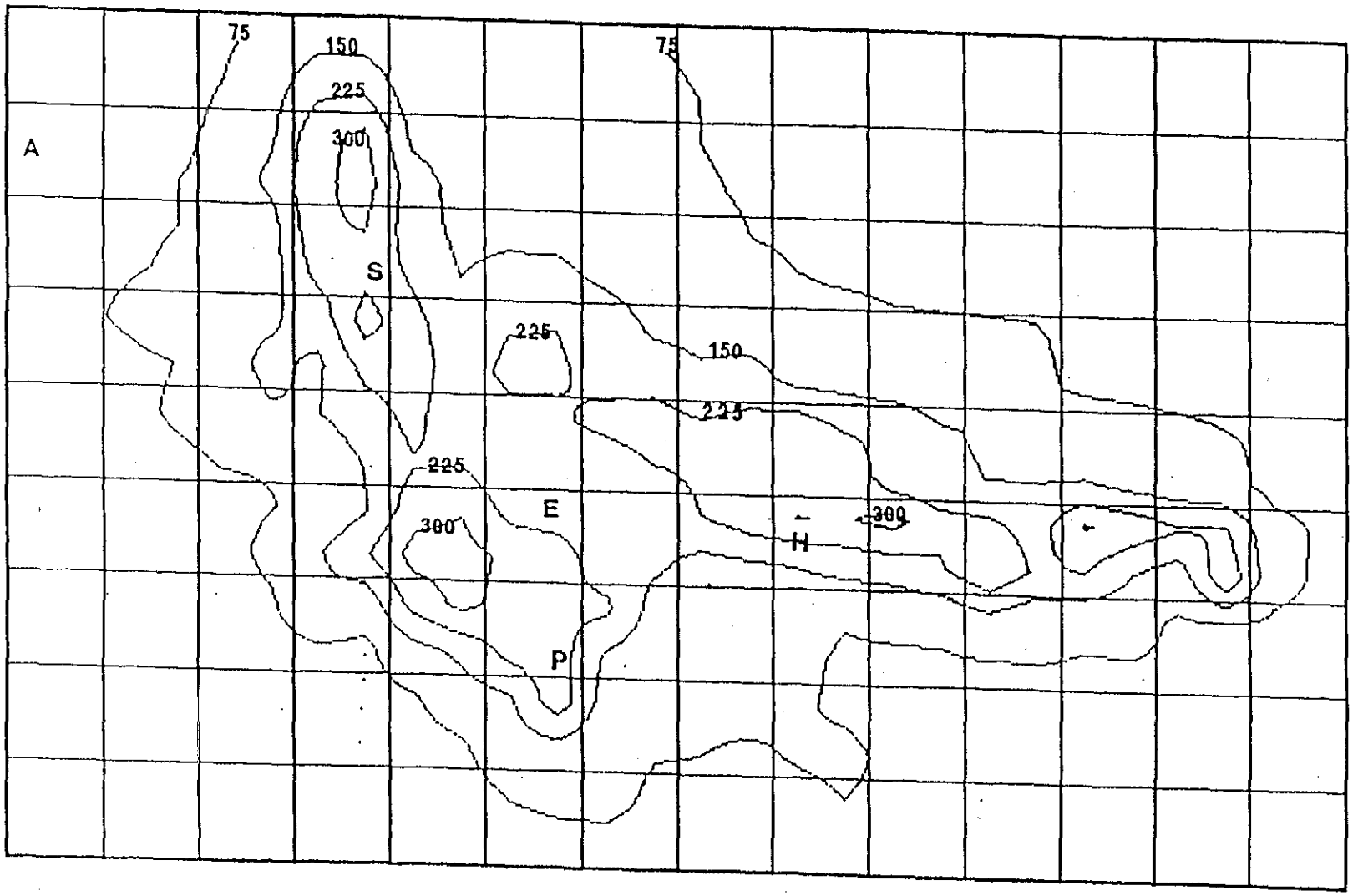
The design value was determined from the monitoring results using the EPA regression method and the modelling was used to determine the relative source impacts. Table 18 presents the estimated source impacts at these selected sites for the base year (1985) and Table 19 presents the design year (1992) impacts. The major difference between these two results are the reduced particleboard plant impacts due to the implementation of additional control measures in 1989. The base year model run depicted actual emissions from plants which were in excess of allowed levels. The plants were on a compliance schedule and demonstrated compliance in 1989.

It is clear from the design year data that home wood heating is by far the most significant source impacting the ambient air quality of the UGA during exceedance periods. This data is convincing to the point that the LRAPA Citizen's Advisory Committee who developed the original recommendation and the LRAPA Board of Directors who adopted the plan were confident in limiting the sources to be addressed in the plan to home wood heating. (For details of the actions of both bodies see Appendix G.)

Using the EPA regression method, the monitoring-based design value is 345 $\mu g/m^3$ and this peak concentration occurs at a location in Eugene (Site F). As noted in Table 20, this will require a reduction of 66% from sources impacting at this site to achieve a concentration under 150 $\mu g/m^3$. The model predicts

FIGURE 4

BASE YEAR 24 HOUR PM10 CONCENTRATIONS, WORST CASE DAY, MODEL PREDICTION



A Airport

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P Amazon Park

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FIGURE 5

DESIGN YEAR 24 HOUR PM10 CONCENTRATIONS, WORST CASE DAY, MODEL PREDICTION

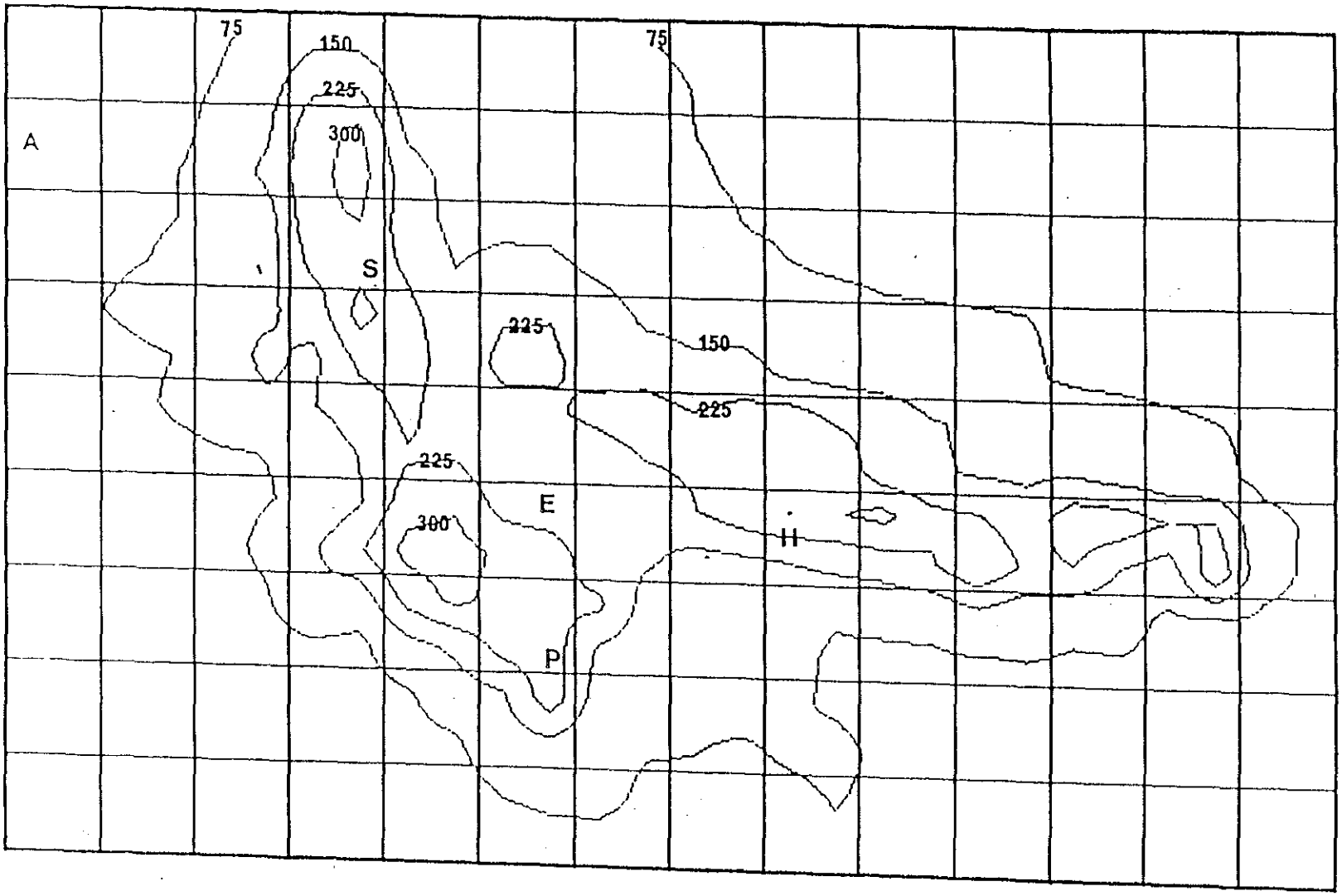

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TABLE 18

BASE YEAR MAXIMUM PM10 CONCENTRATIONS

MODELING PREDICTION

PERCENT OF TOTAL LOCAL SOURCE IMPACTS

SITE	HOME WOOD HEATING	ROAD DUST	HOG FUEL BOILERS	PARTICLE BOARD	PULP MILL	VENEER DRYERS	CHAR COAL	OTHER MINOR SOURCES
A - Depue St.	93.7	3.0	1.3	0.8	0.2	0.0	0.1	0.9
B - S.U.B.	90.1	4.5	1.7	0.7	0.2	0.0	0.1	2.7
C - H Street	94.1	2.2	0.6	2.3	0.6	0.0	0.1	0.1
D - 42nd Street	78.0	2.7	0.9	15.1	2.7	0.0	0.3	0.3
- 52nd Place	76.0	1.4	0.5	20.9	0.8	0.0	0.1	0.3
F - Carmel St.	91.2	4.5	3.2	0.4	0.0	0.1	0.0	0.6
G - Scenic St.	96.1	2.0	1.0	0.1	0.0	0.1	0.0	0.7
H - Manzana St.	95.4	2.2	1.5	0.1	0.0	0.2	0.0	0.6
I - Key Bank	83.0	8.3	4.0	0.7	0.0	0.7	0.0	3.3
J - Wood Street	86.5	7.7	2.9	0.6	0.0	0.4	0.0	1.9
K - Cross St.	67.4	5.8	9.0	2.9	0.0	1.1	0.0	13.9
M - 14th Street	94.9	4.2	0.5	0.0	0.0	0.1	0.0	0.3
N - Alley	93.3	5.1	1.2	0.1	0.0	0.0	0.0	0.3
O - Hilyard St.	96.6	3.0	0.3	0.0	0.0	0.0	0.0	0.1
P - High Street	96.1	3.4	0.3	0.0	0.0	0.0	0.0	0.2
Q - City Hall	90.2	4.7	1.9	0.7	0.2	0.0	0.1	2.2
Amazon Park	94.8	4.5	0.4	0.0	0.0	0.0	0.0	0.3
LCC	91.5	6.6	1.4	0.0	0.0	0.1	0.0	0.4
Westmoreland	96.6	2.6	0.3	0.1	0.0	0.1	0.0	0.3

TABLE 19

DESIGN YEAR 24-HOUR MAXIMUM CONCENTRATIONS

MODELING PREDICTION

ESTIMATED PERCENT OF TOTAL LOCAL SOURCE IMPACTS

SITE	HOME WOOD HEATING	ROAD DUST	HOG FUEL BOILERS	PARTICLE BOARD	PULP MILL	VENEER DRYERS	CHAR COAL	OTHER MINOR SOURCES
A - Depue St.	93.6	3.6	0.8	0.4	1.0	0.0	0.1	0.5
B - S.U.B.	90.2	5.3	1.3	0.3	0.8	0.0	0.1	2.0
C - H Street	93.9	2.5	0.5	1.0	1.6	0.0	0.1	0.4
D - 42nd Street	89.0	3.5	1.4	2.1	3.2	0.0	0.2	0.6
E - 52nd Place	85.5	1.9	0.2	10.4	1.7	0.0	0.1	0.2
F - Carmel St.	91.6	5.3	1.7	0.1	0.4	0.2	0.0	0.7
G - Scenic St.	96.1	2.3	0.4	0.0	0.0	0.1	0.0	1.1
H - Manzana St.	95.8	2.6	0.6	0.0	0.0	0.3	0.0	0.7
I - Key Bank	85.0	10.0	1.9	0.2	0.0	0.8	0.0	2.1
J - Wood Street	86.9	9.1	1.8	0.2	0.0	0.5	0.0	1.5
K - Cross St.	77.8	7.9	6.3	0.8	0.0	2.2	0.0	5.0
M - 14th Street	94.3	4.9	0.4	0.0	0.0	0.1	0.0	0.3
N - Alley	92.8	5.9	0.8	0.0	0.1	0.0	0.0	0.4
O - Hilyard St.	96.1	3.5	0.2	0.0	0.0	0.0	0.0	0.2
P - High Street	95.5	4.0	0.3	0.0	0.0	0.0	0.0	0.2
Q - City Hall	90.7	5.6	1.3	0.3	1.0	0.0	0.1	1.0
Amazon Park	94.1	5.3	0.3	0.0	0.0	0.0	0.0	0.3
LCC	90.9	7.7	0.9	0.0	0.0	0.1	0.0	0.4
Westmoreland	96.2	3.1	0.3	0.0	0.0	0.1	0.0	0.3

TABLE 20

ATTAINMENT DEMONSTRATION ESTIMATES

EUGENE-SPRINGFIELD URBAN GROWTH AREA

SITE	ESTIMATED DESIGN VALUE	LOCAL SOURCE CONTRIBUTION $\mu g/m^3$	% REDUCTION OF LOCAL SOURCE IMPACT NEEDED FOR ATTAINMENT
A - Depue Street	278	228	56
C - H Street	202	223	23
D - 42nd Street	219	169	41
E - 52nd Street	223	173	42
F - Carmel Street	345	295	66
G - Scenic Street	307	257	61
H - Manzana Street	210	160	38
I - Key Bank	237	187	46
J - Wood Street	174	125	19
K - Cross Street	164	114	12
M - 14th Street	332	282	65
N - Ferry St. Alley	282	232	57
P - High Street	186	136	26
Q - City Hall	179	129	22

that home wood heating emissions contribute almost 92% of the local source impact at this site. As a result, a reduction of approximately 70% in home wood heating emissions is needed at this site to achieve attainment with the standard. Table 20 illustrates that significant reductions will be needed throughout the UGA to achieve attainment. An isopleth map of the UGA which depicts the air quality with this magnitude of a reduction in home wood heating emissions is presented in Figure 6. This indicates that, with a 70% reduction in HWH emissions, the entire UGA achieves attainment with the 24-hour standard.

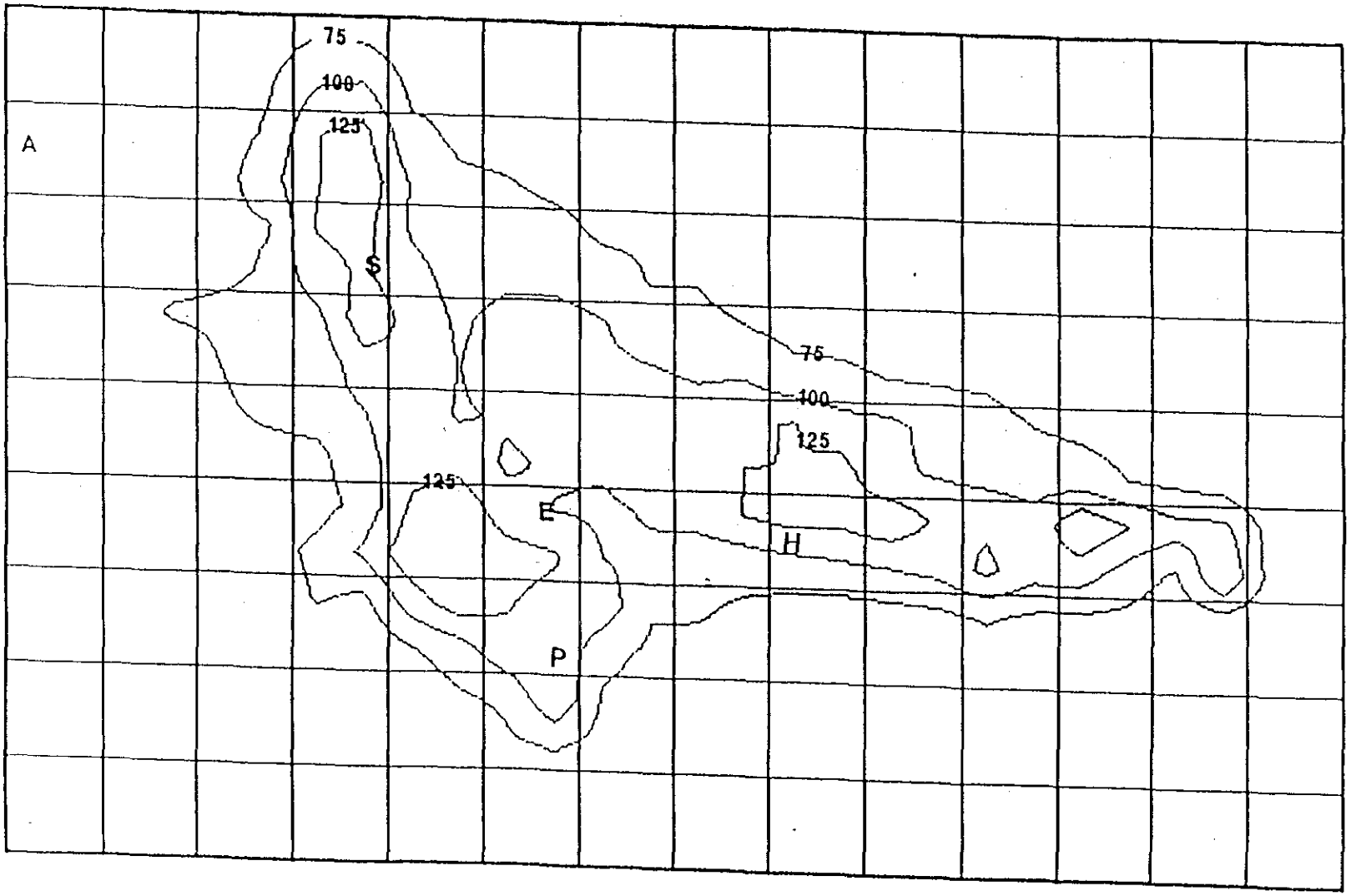
Under the current voluntary curtailment program, only two exceedances of the standard have occurred in the last three heating seasons. This is attributed in part to more favorable meteorological conditions during the last three heating seasons than occurred during the 1985 worst case season. Even so, there have been periods in the past three heating seasons when air stagnation episodes have occurred yet the air pollution levels have not reached those levels experienced during December, 1985. There is also some feeling that practices of wood burning may have changed since 1985, due to better public awareness. Since these factors contribute to uncertainties in the emissions database for home wood heating, they need to be re-examined.

From public testimony it is clear that full implementation of an enforceable episodic curtailment program should be phased in to obtain sufficient public support. In addition, some time is needed to resolve the uncertainties in the emissions database for home wood heating.

As adopted by the Board of Directors (see Appendix I), the home wood heating emissions reduction program provides for continuing a voluntary curtailment program during the next two heating seasons evaluating its effectiveness. November 1, 1991, is the scheduled date to start the mandatory curtailment phase

FIGURE 6

DESIGN YEAR 24 HOUR PM10 CONCENTRATIONS WITH HWH CONTROL MEASURES
MODEL PREDICTION



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P Amazon Park

H Springfield City Hall

of the program.

During the next two heating seasons, there will be additional ambient monitoring, chimney surveys, and another telephone survey of home wood heating practices. This data will determine if the improved air quality since the base year is attributable to changes in wood stove use or operating practices. If this data is substantially different than that used in the base year analysis, there may be cause to re-calculate a design value. In addition, if there are no violations of the standard attributed to home wood heating during this interim period, the need for a mandatory program would be reconsidered and the non-attainment designation evaluated.

By Oregon statute, LRAPA does not have the legal jurisdiction to implement enforceable controls on home wood heating. As a result, ordinances adopted by the local cities and county will be required to provide the legal framework for implementing this program. Copies of the draft ordinances can be found in Appendix H. The mandatory curtailment program can achieve the needed emission reductions; however, there are additional features that will aid in the success of this program (see Appendix I for details). These will include an extensive public education program, which will provide for the development and public dissemination of literature, production of public service announcements, and frequent public contact through various media.

MAINTENANCE DEMONSTRATION

To insure that the UGA will continue to be in attainment of the PM10 24-hour standard, an analysis of the ambient air quality for the year 2000 was performed. Using the population and employment projections of the Lane Council of

Governments developed for the Eugene-Springfield Metropolitan Plan, emissions were projected for the year 2000 (see Table 5). These were then modelled and air quality impacts were estimated. An isopleth map of these impacts is presented in Figure 7. The adopted mandatory curtailment program was then applied to these emissions with the result that the UGA remains in attainment with the standard (see Figure 8).

In order to monitor the attainment status of the UGA, LRAPA will maintain a PM10 monitoring network as outlined in Appendix J. Contingent upon available resources, this network includes the historical high monitoring site as well as three additional permanent sites determined from the modelling results. It will be data from these sites that will determine the actual attainment status of the UGA.

FIGURE 7

2000 24 HOUR PM10 CONCENTRATIONS, WORST CASE DAY, MODEL PREDICTION

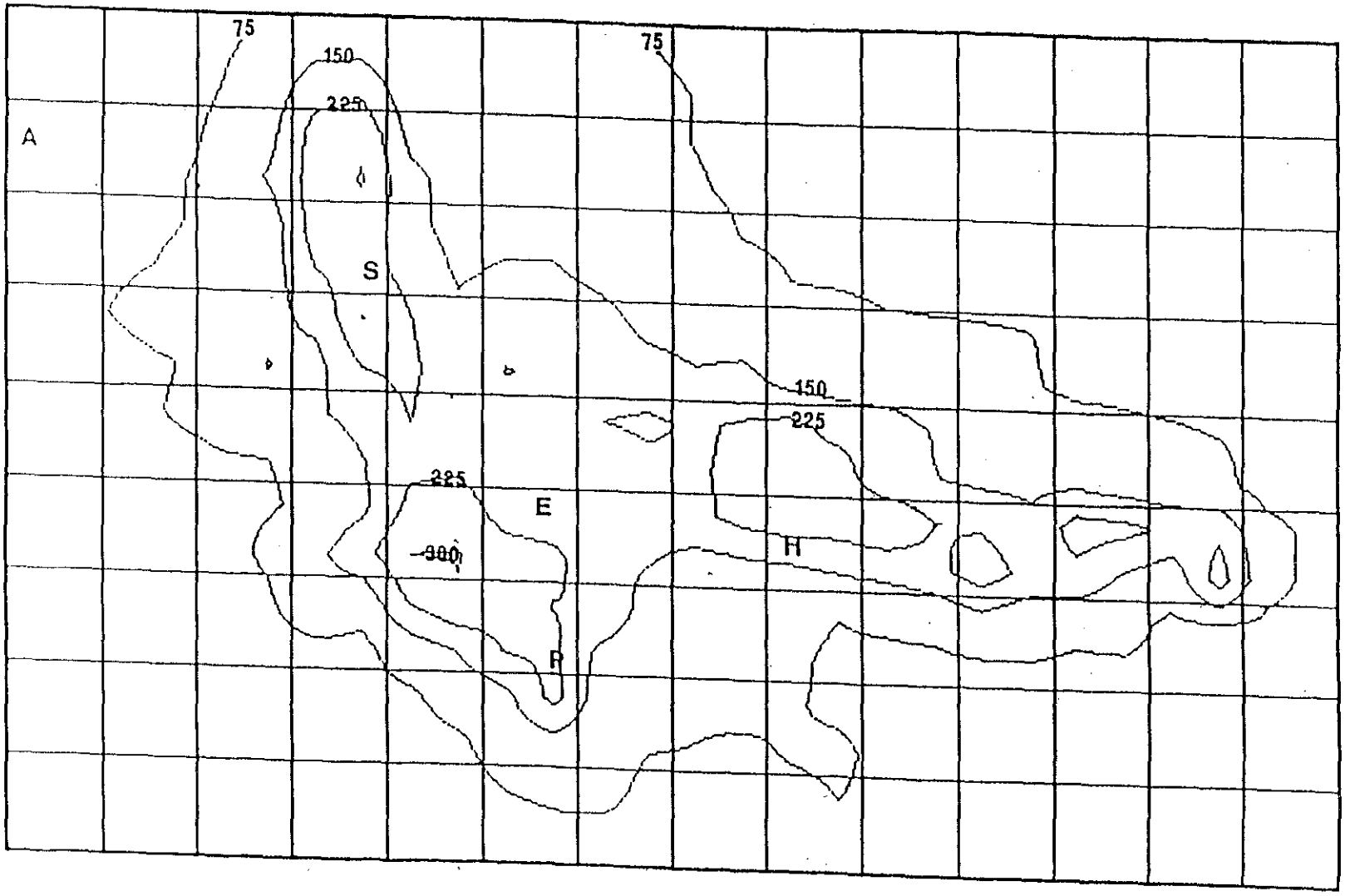

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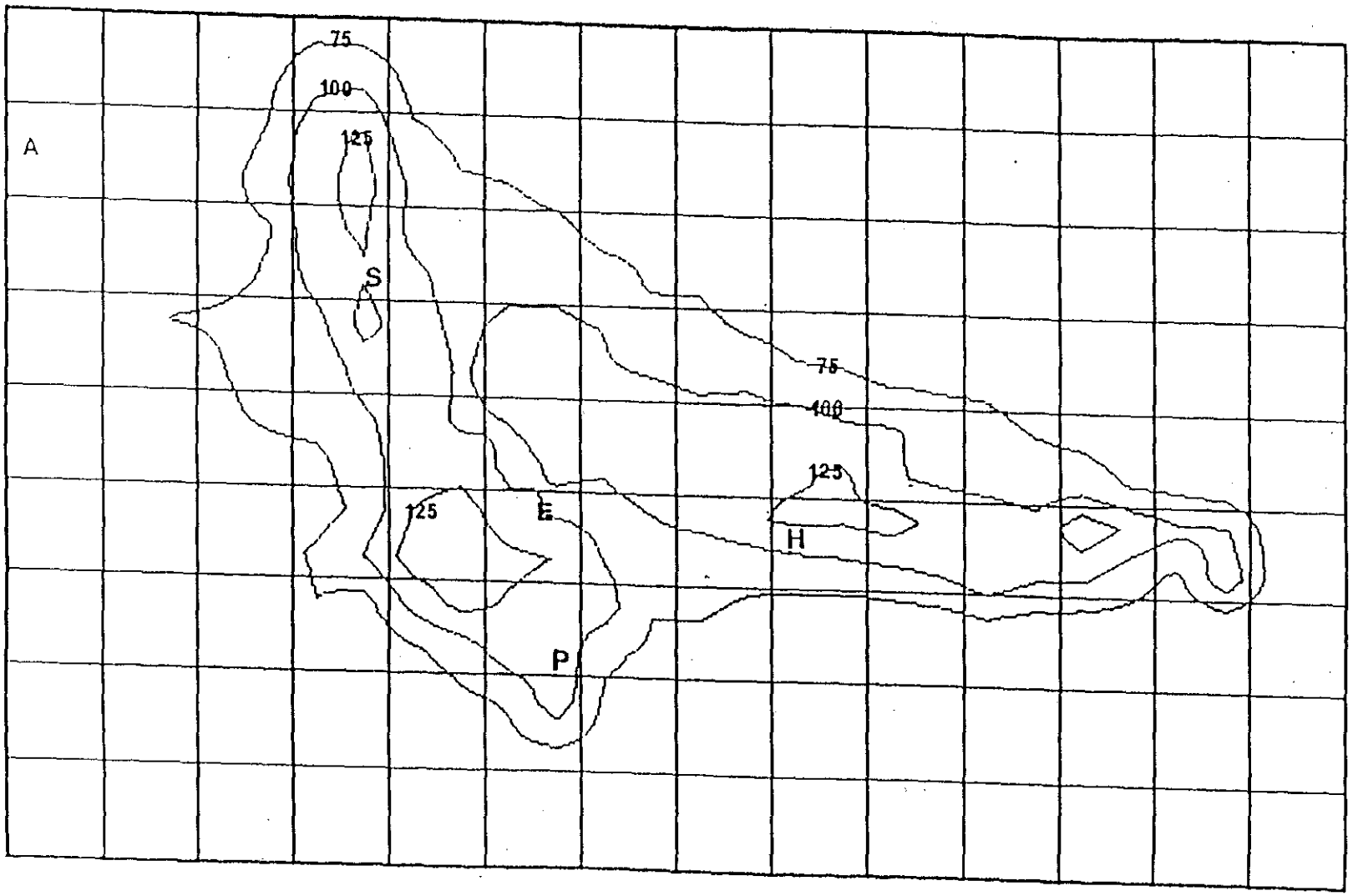
FIGURE 8

2000 24 HOUR PM10 CONCENTRATIONS WITH HWH CONTROL MEASURES
MODEL PREDICTION



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H Springfield City Hall

APPENDIX

H

LOCALLY ADOPTED ORDINANCES

IN THE BOARD OF COUNTY COMMISSIONERS OF LANE COUNTY, OREGON

ORDINANCE NO. 9-90 (ALTERNATIVE 2)	IN THE MATTER OF AMENDING CHAPTER 9 OF LANE CODE TO ADD PROVISIONS PROVIDING A RESTRICTION ON USE OF SOLID FUEL SPACE HEATING DEVICES (LC 9.120 - LC 9.160) AND INCORPORATING PROCEDURES AND PENALTIES FOR ENFORCEMENT, PROVIDING AN EFFECTIVE DATE OF JANUARY 1, 1991 FOR ALL SECTIONS, EXCEPT LC 9.155, WHICH IS TO TAKE EFFECT ON NOVEMBER 1, 1991 (LC 9.990(6))

The Board of County Commissioners of Lane County ordains as follows:

Chapter 9 of Lane Code is hereby amended by removing, adding and substituting the following pages:

REMOVE THESE PAGES	INSERT THESE PAGES
-------	9.120 - 9.125 to 9.145 - 9.160 i.e. 9-9a to 9-9c (a total of three new pages)
9.990(1) - 9.995, i.e. 9-51 (a total of one page)	9.990(1) - 9.995, i.e. 9-51 (a total of one page)

Said pages are attached hereto and incorporated herein by reference. The purpose of these additions and substitutions is to add provisions providing a restriction on use of solid fuel space heating devices (LC 9.120) - LC 9.160) and incorporating procedures and penalties for enforcement, providing an effective date of January 1, 1991 for all sections, except LC 9.155, which is to take effect on November 1, 1991 (LC 9.990(6)).

Enacted this 19th day of December, 1990.

Bill Rogers
Chair, Lane County Board of Commissioners

Judy Haldeman
Recording Secretary for this Meeting of the Board

RECEIVED
DEC 1990
#20026

APPROVED AS TO FORM
DATE 12/20/90 Lane County
OFFICE OF LEGAL COUNSEL

1 - IN THE MATTER OF AMENDING CHAPTER 9 OF LANE CODE TO ADD PROVISIONS PROVIDING A RESTRICTION ON USE OF SOLID FUEL SPACE HEATING DEVICES (LC 9.120) - LC 9.160) AND INCORPORATING PROCEDURES AND PENALTIES FOR ENFORCEMENT, PROVIDING AN EFFECTIVE DATE OF JANUARY 1, 1991 FOR ALL SECTIONS, EXCEPT LC 9.155, WHICH IS TO TAKE EFFECT ON NOVEMBER 1, 1991 (LC 9.990(6)) bcj/4210

RESTRICTION ON USE OF SOLID FUEL SPACE HEATING DEVICES

9.120 Purpose and Findings.

(1) The health, safety and welfare of the citizens of Lane County are adversely affected by the degradation of air quality. Violations of federal ambient air quality standards, as measured by the Lane Regional Air Pollution Authority (LRAPA), occur periodically in Lane County.

(2) Wood and other solid fuel combustion for space heating produces particulate matter and other emissions which are physically harmful and aesthetically unpleasant, and which contribute to the degradation of air quality and the violation of federal ambient air quality standards.

(3) Periodic restriction of the use of solid fuel space heating devices will improve air quality. LRAPA has the expertise to determine when such air quality is at such a level that such restriction is necessary to preserve the health, safety and welfare of the citizens of Lane County.

(4) It is the intent of Lane County that the penalty section of this ordinance not take effect until November 1, 1991.

9.125 Definitions. As used herein, the following words and phrases shall mean:

Lane Regional Air Pollution Authority. A regional air quality control authority established under the provisions of and with the authority and powers derived from Oregon Revised Statutes 468.500 et seq.

Pellet Stove. An enclosed solid fuel space heating device designed and operated to burn manufactured solid fuel and having an air-to-fuel ratio greater than 35-to-1 as determined by the federal test method described in 40 CFR Part 60.534

Person. Any individual, partnership, corporation, association, governmental subdivision or public or private organization of any character.

Person in Charge of Property. An agent, occupant, lessee, tenant, contract purchaser, or other person having possession or control of property.

PM 10. Solid or liquid particulate matter (excluding uncombined water) with an aerodynamic diameter less than or equal to 10 micrometers.

Sole Source of Heat. A solid fuel space heating device which constitutes the only source of heating in a private residence. A solid fuel space heating device shall not be considered to be the sole source of heat if the private residence is equpped with any permanently-installed furnace or heating system utilizing oil, natural gas, electricity or propane.

Solid Fuel Space Heating Device. Any device designed or operated to burn solid fuel for the heating of the interior of a building, including, but not limited to, solid fuel burning stoves, fireplaces or wood stoves of any nature, combination fuel furnaces or boilers used for space heating which can burn solid fuel, and solid fuel burining cooking stoves. "Solid fuel space heating device" does not include natural gas-fired artificial fireplaces.

Stage I Red Advisory. A 24-hour period beginning at 4:00 p.m. when PM 10 levels are forecast by LRAPA to be greater than or equal to 125 micrograms per cubic meter but less than 150 micrograms per cubic meter within the Eugene/Springfield Metropolitan Area General Plan Urban Growth Boundary.

Stage II Red Advisory. A 24-hour period beginning at 4:00 p.m. when PM 10 levels are forecast by LRAPA to be greater than or equal to 150 micrograms per cubic meter within the Eugene/ Springfield Metropolitan Area General Plan Urban Growth Boundary.

Visible Emissions. The reduction in transmission light or the obscuring of the view of an object in the background caused by the air pollutants emitted by the heating device. This does not include the visual distortion caused by the heated air emitted by the heating device.

9.130 Area of Applicability. The Metropolitan Area General Plan Urban Growth Boundary adopted in 1982 as amended through June 1990, excluding the area within the city limits of Eugene and Springfield.

9.135 Prohibitions.

(1) Stage I Red Advisory. No person in charge of property during a Stage I Red Advisory shall operate or allow to be operated a solid fuel space heating device which emits visible emissions into the air outside of the building housing the device unless the person in charge of the property has been granted an exemption to use the device by LRAPA.

(2) Stage II Red Advisory. No person in charge of property during a Stage II Red Adivsory shall operate or allow to be operated a solid fuel space heating device unless the person in charge of the property has been granted an exemption to use the device by LRAPA or unless the person is operating a pellet stove which emits no visible emissions into the air outside of the building housing the device.

9.140 Exemptions. Exemptions from LC 9.135 above for Stage II and/or Stage I Red Advisories may be obtained from LRAPA for the following:

(1) Sole Source of Heat. A person in charge of property who signs a sworn statement that the solid fuel space heating device is the sole source of heat for that person's residence is exempt from LC 9.135 above, for both State I and Stage II Red Advisories. Individual exemptions shall expire on July 1 of each year and must be renewed annually. This exemption shall not be issued by LRAPA after June 30, 1996.

(2) Economic Need. Persons in charge of property who satisfy criteria established under the Low Income Energy Assisance Program as administered by the Lane County Housing Authority and as established by the United States Department of Energy are exempt from LC 9.135 above for both Stage I and Stage II Red Advisories. Individual exemptions shall expire on July 1 of each year and must be renewed annually.

9.145 Enforcement. The Board of County Commissioners designates LRAPA to enforce the probibitions contained herein. The investigation, initiations of proceedings, adjudication of a violation and appeal of such violation shall be regulated by the adopted administrative and hearing procedures of LRAPA set forth in its Rules and Regulations,

The County shall also retain the right to investigate and enforce the terms of this ordinance. Existing citation, complaint or violation procedures applicable to the County may be utilized to prosecute such violations.

9.150 Warnings. Until November 1, 1991, violation of LC 9.135 above shall only result in notification without penalty.

9.155 Penalties. Violation of LC 9.135 above shall be punished by a fine of a minimum of $50 to a maximum of $500 for each day in which such violation occurs. This remedy is cumulative and is in addition to any and all other remedies available to Lane County. This subsection shall be effective November 1, 1991.

9.160 Effective Date. All sections of this ordinance except LC 9.155 above shall take effect on January 19, 1991. LC 9.155 shall take effect on November 1,. 1991.

Violations and Penalties

9.990 Violation.

(1) Violation of any provisions of this Chapter, except LC 9.745, LC 9.120 to 9.160 and those sections enumerated in LC 9.995, constitutes a Class A Infraction and shall be handled in accordance with LC Chapter 5. A violation of LC 9.745 constitutes a Class B Infraction.

(2) Any person may sign County Infraction summonses and complaints for violations of section 9.035.

(3) The Director of the Department of Public Works, or duly authorized representative, may sign County infraction summonses and complaints for violations of LC sections 9.710 and 9.745, the Director of the Department of Community Health and Social Services, or duly authorized representative, may sign County Infraction summonses and complaints for violations of any other LC sections listed in subsection (1) of this section.

(4) Each day in which a violation of sections 9.554, 9.558, 9.560, 9.564, 9.710 or 9.745 continues constitutes a separate infraction.

(5) At the expiration of the period set by the County for correction of any violation of sections 9.310 to 9.370, the County shall again inspect the dwelling. If the violation has not been corrected, the violation shall constitute a County Infraction.

(6) Violation of LC 9.135 shall be subject to the procedures of LC 9.145 to LC 9.150 and the penalty as specified in LC 9.155.

9.995 Penalty. Violation of sections 9.020, 9.030, 9.040, 9.045, 9.050, 9.060, 9.080, 9.085, 9.090, 9.095, 9.100, 9.115 or any of the rules or regulations published under the authority of Lane Code 9.110 shall be deemed to be a misdemeanor and shall be punishable on conviction by a fine of not more than $500 or by imprisonment in the County jail for not more than six months, or both.

20-72; 10.13.72
5-73; 8.4.73
9-73; 8.15.73
10-74; 8.23.74
7-75; 5.16.75
7-84;;7.27.84

9-51

WP 1/co/00021/C/51
REV: 1/cr/00081/C

RESTRICTION ON USE OF SOLID FUEL SPACE HEATING DEVICES

9.120 Purpose and Findings.

(1) The health, safety and welfare of the citizens of Lane County are adversely affected by the degradation of air quality. Violations of federal ambient air quality standards, as measured by the Lane Regional Air Pollution Authority (LRAPA), occur periodically in Lane County.

(2) Wood and other solid fuel combustion for space heating produces particulate matter and other emissions which are physically harmful and aesthetically unpleasant, and which contribute to the degradation of air quality and the violation of federal ambient air quality standards.

(3) Periodic restriction of the use of solid fuel space heating devices will improve air quality. LRAPA has the expertise to determine when such air quality is at such a level that such restriction is necessary to preserve the health, safety and welfare of the citizens of Lane County.

(4) It is the intent of Lane County that the penalty section of this ordinance not take effect until November 1, 1991.

9.125 Definitions. As used herein, the following words and phrases shall mean:

Lane Regional Air Pollution Authority. A regional air quality control authority established under the provisions of and with the authority and powers derived from Oregon Revised Statutes 468.500 et seq.

Pellet Stove. An enclosed solid fuel space heating device designed and operated to burn manufactured solid fuel and having an air-to-fuel ratio greater than 35-to-1 as determined by the federal test method described in 40 CFR Part 60.534

Person. Any individual, partnership, corporation, association, governmental subdivision or public or private organization of any character.

Person in Charge of Property. An agent, occupant, lessee, tenant, contract purchaser, or other person having possession or control of property.

PM 10. Solid or liquid particulate matter (excluding uncombined water) with an aerodynamic diameter less than or equal to 10 micrometers.

Sole Source of Heat. A solid fuel space heating device which constitutes the only source of heating in a private residence. A solid fuel space heating device shall not be considered to be the sole source of heat if the private residence is equpped with any permanently-installed furnace or heating system utilizing oil, natural gas, electricity or propane.

Solid Fuel Space Heating Device. Any device designed or operated to burn solid fuel for the heating of the interior of a building, including, but not limited to, solid fuel burning stoves, fireplaces or wood stoves of any nature, combination fuel furnaces or boilers used for space heating which can burn solid fuel, and solid fuel burining cooking stoves. "Solid fuel space heating device" does not include natural gas-fired artificial fireplaces.

Stage I Red Advisory. A 24-hour period beginning at 4:00 p.m. when PM 10 levels are forecast by LRAPA to be greater than or equal to 125 micrograms per cubic meter but less than 150 micrograms per cubic meter within the Eugene/Springfield Metropolitan Area General Plan Urban Growth Boundary.

Stage II Red Advisory. A 24-hour period beginning at 4:00 p.m. when PM 10 levels are forecast by LRAPA to be greater than or equal to 150 micrograms per cubic meter within the Eugene/Springfield Metropolitan Area General Plan Urban Growth Boundary.

Visible Emissions. The reduction in transmission light or the obscuring of the view of an object in the background caused by the air pollutants emitted by the heating device. This does not include the visual distortion caused by the heated air emitted by the heating device.

9.130 Area of Applicability. The Metropolitan Area General Plan Urban Growth Boundary adopted in 1982 as amended through June 1990, excluding the area within the city limits of Eugene and Springfield.

9.135 Prohibitions.

(1) Stage I Red Advisory. No person in charge of property during a Stage I Red Advisory shall operate or allow to be operated a solid fuel space hearing device which emits visible emissions into the air outside of the building housing the device unless the person in charge of the property has been granted an exemption to use the device by LRAPA.

(2) Stage II Red Advisory. No person in charge of property during a Stage II Red Advisory shall operate or allow to be operated a solid fuel space heating device unless the person in charge of the property has been granted an exemption to use the device by LRAPA or unless the person is operating a pellet stove which emits no visible emissions into the air outside of the building housing the device.

9.140 Exemptions. Exemptions from LC 9.135 above for Stage II and/or Stage I Red Advisories may be obtained from LRAPA for the following:

(1) Sole Source of Heat. A person in charge of property who signs a sworn statement that the solid fuel space heating device is the sole source of heat for that person's residence is exempt from LC 9.135 above, for both State I and Stage II Red Advisories. Individual exemptions shall expire on July 1 of each year and must be renewed annually. This exemption shall not be issued by LRAPA after June 30, 1996.

(2) Economic Need. Persons in charge of property who satisfy criteria established under the Low Income Energy Assisance Program as administered by the Lane County Housing Authority and as established by the United States Department of Energy are exempt from LC 9.135 above for both Stage I and Stage II Red Advisories. Individual exemptions shall expire on July 1 of each year and must be renewed annually.

9.145 Enforcement. The Board of County Commissioners designates LRAPA to enforce the probibitions contained herein. The investigation, initiations of proceedings, adjudication of a violation and appeal of such violation shall be regulated by the adopted administrative and hearing procedures of LRAPA set forth in its Rules and Regulations.

The County shall also retain the right to investigate and enforce the terms of this ordinance. Existing citation, complaint or violation procedures applicable to the County may be utilized to prosecute such violations.

9.150 Warnings. Until November 1, 1991, violation of LC 9.135 above shall only result in notification without penalty.

9.155 Penalties. Violation of LC 9.135 above shall be punished by a fine of a minimum of $50 to a maximum of $500 for each day in which such violation occurs. This remedy is cumulative and is in addition to any and all other remedies available to Lane County. This subsection shall be effective November 1, 1991.

9.160 Effective Date. All sections of this ordinance except LC 9.155 above shall take effect on January 19, 1991. LC 9.155 shall take effect on November 1, 1991.

Violations and Penalties

9.990 Violation.

(1) Violation of any provisions of this Chapter, except LC 9.745, LC 9.120 to 9.160 and those sections enumerated in LC 9.995, constitutes a Class A Infraction and shall be handled in accordance with LC Chapter 5. A violation of LC 9.745 constitutes a Class B Infraction.

(2) Any person may sign County Infraction summonses and complaints for violations of section 9.035.

(3) The Director of the Department of Public Works, or duly authorized representative, may sign County infraction summonses and complaints for violations of LC sections 9.710 and 9.745, the Director of the Department of Community Health and Social Services, or duly authorized representative, may sign County Infraction summonses and complaints for violations of any other LC sections listed in subsection (1) of this section.

(4) Each day in which a violation of sections 9.554, 9.558, 9.560, 9.564, 9.710 or 9.745 continues constitutes a separate infraction.

(5) At the expiration of the period set by the County for correction of any violation of sections 9.310 to 9.370, the County shall again inspect the dwelling. If the violation has not been corrected, the violation shall constitute a County Infraction.

(6) Violation of LC 9.135 shall be subject to the procedures of LC 9.145 to LC 9.150 and the penalty as specified in LC 9.155.

9.995 Penalty. Violation of sections 9.020, 9.030, 9.040, 9.045, 9.050, 9.060, 9.080, 9.085, 9.090, 9.095, 9.100, 9.115 or any of the rules or regulations published under the authority of Lane Code 9.110 shall be deemed to be a misdemeanor and shall be punishable on conviction by a fine of not more than $500 or by imprisonment in the County jail for not more than six months, or both.

20-72; 10.13.72
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9-73; 8.15.73
10-74; 8.23.74
7-75; 5.16.75
7-84;;7.27.84

9-51

WP 1/co/00021/C/51
REV: 1/cr/00080/C

RECEIVED
CITY OF EUGENE
DEC 14

ORDINANCE NO. 19731

AN ORDINANCE RESTRICTING THE USE OF SOLID FUEL SPACE HEATING DEVICES DURING AIR POLLUTION EPISODES; ADDING SECTIONS 6.250, 6.255, 6.260, 6.265 AND 6.270 TO THE EUGENE CODE, 1971; ESTABLISHING PENALTIES; AND DECLARING AN EFFECTIVE DATE.

The City Council of the City of Eugene finds that:

A. The health, safety and welfare of the citizens of Eugene are adversely affected by the degradation of air quality. Violations of federal ambient air quality standards, as measured by the Lane Regional Air Pollution Authority (LRAPA), occur periodically in Eugene.

B. Wood and other solid fuel combustion for space heating produces particulate matter and other emissions which are physically harmful and aesthetically unpleasant, and which contribute to the degradation of air quality and the violation of federal ambient air quality standards.

C. Periodic restriction of the use of solid fuel space heating devices will improve air quality. LRAPA has the expertise to determine when air quality is at such a level that such restriction is necessary to preserve the health, safety and welfare of the citizens of Eugene.

Now, therefore,

THE CITY OF EUGENE DOES ORDAIN AS FOLLOWS:

Section 1. Sections 6.250, 6.255, 6.260, 6.265, and 6.270 are hereby added to the Eugene Code, 1971, to provide:

Solid Fuel Space Heating Devices

6.250 Solid Fuel Space Heating Devices - Definitions. As used in sections 6.255 to 6.270, the following words and phrases mean:

City manager. City manager or designee, including, if the city manager so designates, LRAPA.

LRAPA. Lane Regional Air Pollution Authority, a regional air quality control authority established under the provisions of, and with authority and powers derived from, Oregon Revised Statutes 468.500 et seq.

Person. Any individual, partnership, corporation, association, governmental subdivision or public or private organization of any character.

Person in charge of property. An agent, occupant, lessee, tenant, contract purchaser, or other person having possession or control of property.

PM10. Solid or liquid particulate matter (excluding uncombined water) with an aerodynamic diameter less than or equal to 10 micrometers.

Sole source of heat. A solid fuel space heating device which constitutes the only source of heating in a private residence. A solid fuel space heating device shall not be considered to be the sole source of heat if the private residence is equipped with any permanently installed furnace or heating system utilizing oil, natural gas, electricity or propane.

Solid fuel space heating device. Any device designed or operated to burn solid fuel for the heating of the interior of a building, including, but not limited to, solid fuel burning stoves, fireplaces or woodstoves of any nature, combination fuel furnaces or boilers used for space heating which can burn solid fuel, and solid fuel burning cooking stoves. "Solid fuel space heating device" does not include natural gas fired artificial fireplaces.

Stage I red advisory. A 24-hour period beginning at 4:00 p.m. when PM10 levels are forecast by LRAPA to be greater than or equal to 125 micrograms per cubic meter but less than 150 micrograms per cubic meter within the Eugene-Springfield Metropolitan Area General Plan Urban Growth Boundary.

Stage II red advisory. A 24-hour period beginning at 4:00 p.m. when PM10 levels are forecast by LRAPA to be greater than or equal to 150 micrograms per cubic meter within the Eugene-Springfield Metropolitan Area General Plan Urban Growth Boundary.

Visible emissions. The reduction in transmission of light or the obscuring of the view of an object in the background caused by the air pollutants emitted by the heating device. This does not include the visual distortion caused by the heated air emitted by the heating device.

6.255 Solid Fuel Space Heating Devices - Prohibitions.

(1) No person in charge of property during a Stage I Red Advisory shall operate or allow to be operated a solid fuel space heating device which emits visible emissions into the air outside of the building housing the device.

(2) No person in charge of property during a Stage II Red Advisory shall operate or allow to be operated a solid fuel space heating device.

6.260 Solid Fuel Space Heating Devices - Exemptions. Notwithstanding section 6.255 of this code, a person in charge of property may operate a solid fuel space heating device during a Stage I or Stage II Red Advisory if that person has previously obtained one of the following exemptions from the city manager:

(a) Sole source of heat exemption. A person in charge of property who signs a sworn statement that their solid fuel space heating device is the sole source of heat for their residence. This exemption shall expire on July 1 of each year and must be renewed annually. This exemption shall not be issued after June 30, 1996.

(b) Economic need exemption. Persons in charge of property who satisfy criteria established under the Low Income Energy Assistance Program as administered by the Lane County Housing Authority and as established by the United States Department of Energy. This exemption shall expire on July 1 of each year and must be renewed annually thereafter.

6.265 Solid Fuel Space Heating Devices - Enforcement. In addition to, and not in lieu of any other enforcement mechanism authorized by this code, upon a determination that a person has violated section 6.255 of this code, the city manager may impose upon the violator and any other person in charge of the property, an administrative penalty not greater than $500, as provided by section 2.018 of this code. The city manager also is authorized to designate LRAPA to enforce and administer the provisions of sections 2.655 to 2.670 of this code, including LRAPA's use of administrative and hearing procedures adopted by LRAPA in its duly promulgated regulations.

6.270 Solid Fuel Space Heating Devices - Warnings. Violation of section 6.255 of this code prior to November 1, 1991 shall result only in a warning, and no penalty.

Section 2. On or before the first Council meeting in November, 1991, the City Manager shall provide the Council with a report that will enable the Council to review the performance under the provisions adopted herein.

Section 3. This Ordinance shall become effective on January 1, 1991.

Passed by the City Council this

5th day of November, 1990

City Recorder

Approved by the Mayor this

5th day of November, 1990

Mayor

ORDINANCE NO. 5546 (General)

AN ORDINANCE CONCERNING THE AIR QUALITY OF THE CITY; RESTRICTING THE USE OF SOLID FUEL SPACE HEATING DEVICES DURING AIR POLLUTION EPISODES; ESTABLISHING PENALTIES AND ADDING SECTION 4-8-4 TO THE SPRINGFIELD CITY CODE 1965.

The City Council of the City of Springfield finds that:

A. The health, safety and welfare of the citizens of Springfield are adversely affected by the degradation of air quality. Violations of federal ambient air standards, as measured by the Lane Regional Air Pollution Authority (LRAPA), occur periodically in Springfield.

B. Wood and other solid fuel combustion for space heating produces particulate matter and other emissions which are physically harmful and aesthetically unpleasant; and which contribute to the degradation of air quality and the violation of federal ambient air quality standards.

C. Periodic restriction of the use of solid fuel space heating devices will improve air quality. LRAPA has the expertise to determine when air quality is at such a level that such restriction is necessary to preserve the health, safety and welfare of the citizens of Springfield.

THE CITY OF SPRINGFIELD DOES ORDAIN AS FOLLOWS:

Section 1. Section 4-8-4 of the Springfield Code 1965 is added to provide:

4-8-4 Solid Fuel Space Heating Devices

(1) Definitions. As used herein, the following words and phrases shall mean:

(a) City Manager. City Manager or designee, including, if the city manager so designates, LRAPA.

(b) LRAPA. Lane Regional Air Pollution Authority, a regional air quality control authority established under the provisions of, and with authority and powers derived from, Oregon Revised Statutes 468.500 et seq.

(c) Pellet Stove. An enclosed solid fuel space heating device designed and operated to burn manufactured solid fuel and having an air-to-fuel ratio greater than 35-to-1 as determined by the federal test method described in 40 CFR Part 60.534.

(d) Person. Any individual, partnership, corporation, association, governmental subdivision or public or private organization of any character.

(e) Person in Charge of Property. An agent, occupant, lessee, tenant, contract purchaser or other person having possession or control of property.

(f) PM10. Solid or liquid particulate matter (excluding uncombined water) with an aerodynamic diameter less than or equal to 10 micrometers.

(g) Sole Source of Heat. One or more solid fuel burning devices which constitute the only source of heating in a private residence. No solid fuel burning devices shall be considered to be sole source of heat if the private residence is equipped with any permanently-installed furnace or heating system utilizing oil, natural gas, electricity, or propane.

(h) Solid Fuel Space Heating Device. Any device designed or operated to burn solid fuel for the heating of the interior of a building, including without limitation, solid fuel burning stoves, fireplaces, or woodstoves of any nature, combination fuel furnaces or boilers used for space heating which can burn solid fuel, and solid fuel burning cooking stoves. "Solid fuel burning device" does not include natural gas fired artificial fireplaces.

(i) Stage I Red Advisory. A 24 hour period beginning at 4:00 p.m. when PM10 levels are forecast by LRAPA to be greater than or equal to 125 micrograms per cubic meter but less than 150 micrograms per cubic meter within the Eugene/Springfield Metropolitan Area General Plan Urban Growth Boundary.

(j) Stage II Red advisory. A 24 hour period beginning at 4:00 p.m. when PM10 levels are forecast by LRAPA to be greater than or equal to 150 micrograms per cubic meter within the Eugene/Springfield Metropolitan Area General Plan Urban Growth Boundary.

(k) Visible Emissions. The reduction in transmission of light or the obscuring of the view of an object in the background caused by the air pollutants emitted by the heating device. This does not include the visual distortion caused by the heated air emitted by the heating device.

(2) PROHIBITIONS.

(a) Stage I Red Advisory. No person in charge of property during a Stage I Red Advisory shall operate or allow to be operated a solid fuel space heating device which emits visible emissions into the air outside of the building housing the device unless the person in charge of the property has been granted an exemption to use the device by LRAPA.

(b) Stage II Red Advisory. No person in charge of property during a Stage II Red Advisory shall operate or allow to be operated a solid fuel space heating device unless the person in charge of the property has been granted an exemption to use the device by LRAPA or unless the person is operating a pellet stove which emits no visible emissions into the air outside of the building housing the device.

(3) EXEMPTIONS. A person in charge of property may operate a solid fuel space heating device during a Stage I or Stage II Red Advisory if that person has previously obtained one of the following exemptions from LRAPA.

(a) Sole Source of Heat: A person in charge of property who signs a sworn statement that the solid fuel space heating device is the sole source of heat for that persons residence is exempt from Section 2 above. Individual exemptions shall expire on July 1 of each year and must be renewed annually. This exemption shall not be issued by LRAPA after June 30, 1996.

(b) Economic Need: Persons in charge of property who satisfy criteria established under the Low Income Energy Assistance Program as administered by the Springfield Utility Board and as established by the United States Department of Energy are exempt from the prohibitions established herein. Individual exemptions shall expire on July 1 of each year and must be renewed annually.

(4) ENFORCEMENT. LRAPA is hereby authorized and designated to enforce and administer the process of Section 4-8-4(2) through 4-8-4(5) of the code in accordance with LRAPA Title 14 "Rules of Practice and Procedures" adopted February 13, 1990.

(5) VIOLATIONS. Violations of section 4-8-4(2) through 4-8-4(5) shall be in accordance with applicable Oregon Revised Statutes and LRAPA title in "Rules of Practice and Procedures" adopted February 13, 1990.

(6) WARNINGS. Prior to November 1, 1991, violation of Section 4-8-4(2) of this code shall result only in a warning, and no penalty.

ADOPTED by the Common Council of the City of Springfield this 17th day of December, 1990 by a vote of 4 for and 1 against.

APPROVED by the Mayor this 17th day of December, 1990 .

Bill Morrisette
Mayor

ATTEST:
Kileen Stein

REVIEWED & APPROVED
AS TO FORM
Joseph J Leahy
DATE: 12/10/90
OFFICE OF CITY ATTORNEY
CITY OF SPRINGFIELD

APPENDIX

I

HOME WOOD HEATING CURTAILMENT PROGRAM

APPENDIX I

HOME WOOD HEATING EMISSION REDUCTION PROGRAM

In order to reduce the emissions from home wood heating devices, the following program will be implemented in the Eugene-Springfield Urban Growth Area:

1. The Lane Regional Air Pollution Authority (LRAPA) will operate a voluntary emission curtailment program for home wood heating devices during the 1989-1990 and 1990-1991 heating seasons. The program will begin on November 1 and end on the last day in February for each season. The daily advisory will follow a four stage scenario as follows:

Green: Residents who burn wood are advised to use proper burning techniques to minimize smoke.

Yellow: Air Quality is deteriorating and weather conditions are such that wood burning would be curtailed. You are encouraged to exercise special care to minimize air pollution from woodstoves and fireplaces.

Red I: Air quality is approaching unhealthful levels. Residents are asked to stop wood burning unless you have no other source of heat or unless you are using an Oregon (EPA) certified woodstove or fireplace insert.

Red II: Due to unhealthful air quality, residents are asked to stop use of all wood heating appliances and fireplaces unless this is your only source of heat.

Setting these advisories will involve an evaluation of expected meteorological conditions and wood heating emissions. This effort will initially, of necessity, be subjective, based upon past experience with the program.

During the 1989-1990 season, the relative effectiveness of the voluntary program will be evaluated. This will be done through a series of area surveys estimating the relative number of wood burning devices being operated under the various program stages. By October 1, 1990, after a review of the survey results, any needed program changes to improve the effectiveness for the 1990-1991 season will be made. Additional area surveys will be performed during the 1990-1991 heating season.

2. By June 30, 1990, LRAPA will have developed a definition of seasoned wood.

3. By December 30, 1990, a voluntary certification program for fire wood dealers will have been implemented by LRAPA. This program will demonstrate the dealers knowledge and concern for selling seasoned wood and training the public on proper burning techniques.

4. By December 30, 1990, a public service announcement will have been developed in support of the emission curtailment program.

5. By June 30, 1991, an evaluation of the air quality for the previous two heating seasons will have been performed. If there were violations of the PM10 standard contributed to by home wood heating, then a mandatory home wood heating program will be implemented for the 1991-1992 heating season (which would begin on November 1, 1991). If no PM10 violations contributed to by home wood heating occur during the previous two heating seasons, then a re-evaluation of the home wood heating emission curtailment program will be performed using available data.

6. If a mandatory home wood heating emission curtailment program is implemented, it may have exemptions for specific household categories. The exemption program will be developed by LRAPA by December 30, 1990.

7. If a mandatory home wood heating emission curtailment program is implemented, it will be enforced by LRAPA. The enforcement will entail complaint response and patrols concentrated in areas of high wood burning device usage. This effort will be escalated as necessary to achieve needed emission reductions. A first offense will receive a warning citation with succeeding offenses subject to fines as follows: second offense, $25; third offense, $50; additional offenses, $100.

8. In conjunction with the implementation of a mandatory home wood heating curtailment program, the cities of Eugene, Springfield, and Lane County will institute a prohibition of the installation of non-certified (DEQ or EPA) woodstoves and fireplace inserts within the Urban Growth Area.

State Implementation Plan

for Particulate Matter

Grants Pass, Oregon
Nonattainment Area

A Plan for Attaining and Maintaining the National Ambient Air Quality Standard for PM_{10}

State of Oregon
Department of Environmental Quality
Air Quality Division

November 1990

Preface and Acknowledgements

This document describes the State of Oregon's plan for attaining and maintaining the National Ambient Air Quality Standard (NAAQS) for PM_{10} in Grants Pass, Oregon. The plan is part of the State Implementation Plan (SIP), under OAR 340-20-047, required by the Federal Clean Air Act.

This plan is based on the Grants Pass Clean Air Policy Advisory Committee Report of April 20, 1988. The Committee consisted of eight members, equally divided between appointees of the City of Grants Pass and the Josephine County Commission. The Committee's work was coordinated by the Josephine County Health Department, with technical assistance provided by the Department of Environmental Quality.

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Appendix 5: Grants Pass Detailed Emission Inventory
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Appendix 7: Grants Pass Voluntary Curtailment Program
Appendix 8: Notices of Public Hearings

Note: Appendices are available upon request

Executive Summary

The US Environmental Protection Agency (EPA), in accordance with the provisions of the Clean Air Act, adopted a new particulate national ambient air quality standard (NAAQS), known as PM_{10}, on July 1, 1987. PM_{10} is an abbreviation for particulate matter that is ten (10) micro-meters (microns) or less in aerodynamic diameter. The 10 micron size corresponds roughly to one-tenth of the diameter of a human hair. EPA identified the Grants Pass area as having a strong likelihood of violating the new standard. Subsequent monitoring conducted by the Department of Environmental Quality has confirmed that the Grants Pass area did not meet the standard as of the end of 1988.

The Clean Air Act requires that states develop and adopt State Implementation Plan (SIP) revisions to assure that areas which exceed the PM_{10} NAAQS are brought into attainment within the time frames prescribed by the Clean Air Act (September 1991), and that healthful air quality is maintained. This document describes the State of Oregon's plan to attain the PM_{10} standard in Grants Pass.

High exposure to particulate matter is of concern because of human health effects such as changes in lung functions and increased respiratory symptoms, aggravation of existing respiratory and cardiovascular disease, alternation in the body's defense system against foreign materials, damage to lung tissue, increased risk of cancer and, in extreme cases, premature death. Most sensitive to the effects of particulate matter are people with chronic obstructive pulmonary cardiovascular disease and those with influenza, asthmatics, the elderly, children and mouth-breathers.

Air quality measurements taken in Grants Pass have determined that the 24-hour PM_{10} health NAAQS may potentially be exceeded about 3-4 days per year during an average winter season. The annual average concentration of PM_{10} does not exceed the annual average PM_{10} NAAQS. The NAAQS adopted by the US Environmental Protection Agency were established to protect public health and welfare.

The 24-hour PM_{10} NAAQS is 150 micrograms per cubic meter of air ($\mu g/m^3$). Excluding the pollution episode due to the Silver Complex wildfire which occurred in September, 1987, the maximum concentration of PM_{10} measured at the 11th and K Streets monitor in Grants Pass was 208 $\mu g/m^3$ on January 21, 1987. The 24-hour standard cannot be exceeded more than three times averaged over three calendar years. The annual average PM_{10} concentration in Grants Pass is 42 $\mu g/m^3$ (four years of data) as compared to the average annual PM_{10} NAAQS of 50 $\mu g/m^3$.

An inventory of PM_{10} emissions developed for the Grants Pass Urban Growth Boundary (UGB) indicates that the major sources of particulate emissions during winter periods of worst-case 24-hour PM_{10} concentrations are residential wood combustion (54%), industrial emissions (25%) and soil dust (13%). On an annual basis, these sources contribute 31%, 39%, and 17% respectively. Emission inventory information representative of worst-case 24-hour conditions have been qualitatively confirmed through receptor modeling techniques which apportion source contributions on the basis of their chemical "fingerprints".

An air monitoring survey conducted in October 1985 showed that the PM_{10} problem area in Grants Pass includes the central portion of the urban area (city limits and the urbanized area south of the Rogue River). Based on this survey, ambient air monitoring conducted at 11th & K Streets represents the highest PM_{10} levels within the Urban Growth Boundary.

PM_{10} design values are those 24-hour worst case and annual average concentrations from which reductions must be made to achieve the NAAQS. Analysis of all of the available PM_{10} air quality data over the period of December, 1985 to November, 1989 indicates a 24-hour design value of 171 $\mu g/m^3$. and an annual average design value of 42 $\mu g/m^3$. For the control strategy analysis, these design values were compared to a 1986 base year emission inventory. Control strategies included in this plan have been designed to reduce current 24-hour concentrations of PM_{10} by at least 22 $\mu g/m^3$. The strategy will also reduce the annual average PM_{10} concentration.

The control strategies needed to assure attainment and maintenance of the PM_{10} National Ambient Air Quality Standard focus on control of industrial emissions and residential wood combustion. Additional reductions are expected from statewide efforts to reduce slash burning smoke.

Although residential wood combustion (RWC) emissions are the predominant source contributing to the occasionally high winter 24-hour concentrations found in Grants Pass, industrial controls will contribute substantially (approximately 55%) to the necessary reduction to meet the 24-hour standard. A voluntary curtailment program on woodstove and fireplace use during pollution episodes, coupled with a public information effort and normal phase-in of certified stoves, will provide the balance of control needed to meet the PM_{10} health standard. The Department estimates that 25% of the wood burning households will forego use of their woodstoves during the 3-4 days of voluntary curtailment likely to occur on average each winter. These strategies will bring the area into attainment by the end of 1992 with an ample safety margin at the 11th & K critical monitoring site, which is near the City's industrial area. This safety margin will insure attainment at other non-monitored sites where the source impacts are more oriented toward residential wood combustion. In fact, the wood

heating control strategy alone will be sufficient to achieve attainment in these areas.

With respect to slash burning, those emissions will be reduced in western Oregon by about 50% between 1978 and year 2000 as part of the Oregon Visibility Protection Plan. These emission reductions will further insure that background PM_{10} concentrations will not increase in future years.

Implementation of the PM_{10} control strategy will require the efforts of residents and industries within the Grants Pass UGB, Josephine County, the Oregon Department of Environmental Quality, the State Forestry Department, U.S. Forest Service and Bureau of Land Management.

Maintenance of ambient PM_{10} concentrations below the NAAQS will rely on the same strategies. To demonstrate continued maintenance of the annual and 24-hour NAAQS for PM_{10}, annual and worst case day emissions were projected to the year 2000. For the worst case day, the emissions for each individual source category were forecast, taking into account expected growth and the application of the relevant control strategy element. Individual source impacts were then determined directly from the change in emissions between 1992 and 2000. The projection indicates a worst case day concentration in the year 2000 of 135 $\mu g/m^3$, which is significantly less than the 24-Hour standard of 150 $\mu g/m^3$. To check for continued maintenance of the annual standard, the total annual emissions for 1986 (the base year for which the annual design value was determined to be below the annual standard) and 2000 were compared. Annual emissions are expected to be approximately 18% lower in 2000 than in 1986. Thus, continued maintenance of the annual standard will be achieved.

4.13.0 State Implementation Plan for Grants Pass PM_{10} Nonattainment Area

4.13.0.1 Introduction

On July 1, 1987, the Environmental Protection Agency promulgated new federal ambient air quality standards for particles less than or equal to 10 micrometers in aerodynamic diameter (PM_{10}) to replace the Total Suspended Particulate (TSP) standard.[1] The standard became effective 30 days later on July 31, 1987. On August 7, 1987, EPA designated Grants Pass as a Group 1 PM_{10} nonattainment area (52 FR 29383). Group 1 areas are those which have a greater than 95 percent probability of exceeding the PM_{10} NAAQS. Subsequent air monitoring has shown that air quality within the central area of Grants Pass exceeds the 24-hour PM_{10} NAAQS.

Section 110 of the Federal Clean Air Act requires states to adopt and submit plans (State Implementation Plans or SIPs) to EPA within nine months after the effective date of the standard. The Clean Air Act allows EPA four months to approve or disapprove the plan. The plan must provide for attainment of the standard as expeditiously as practicable but no later than three years from the date of EPA approval of the SIP.[2] Hence, attainment theoretically must be reached by September 1, 1991.

The Air Quality Division of the Department of Environmental Quality has developed this plan in consultation with officials of the City of Grants Pass and Josephine County and the U.S. Environmental Protection Agency. The plan is based on the Grants Pass Clean Air Policy Advisory Committee Report dated April 20, 1988 (Appendix 1). The plan was prepared in accordance with the regulations and requirements of the Federal Clean Air Act and the US EPA. The Department expects the plan to achieve attainment of the NAAQS within the time frame required by the Act and to maintain ambient PM_{10} concentrations below the level of the standards until at least the year 2000.

4.13.0.2 SIP Overview

The State Implementation Plan (SIP) for Grants Pass has five sections. The first (4.13.1) provides a description of PM_{10} ambient air quality. Section 4.13.2 is an analysis of the PM_{10} air quality problem within the Grants Pass Nonattainment Area. Section 4.13.3 provides an analysis of control strategies for

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[1] A micrometer (μm) is a unit of length equal to 1/1,000,000 of a meter, about 1/25,000 of an inch. For comparison, the thickness of a human hair is about 100 to 200 micrometers. Common bacteria are about 1 to 2 micrometers in length.

[2] Clean Air Act Section 110 (a)(1).

attaining the NAAQS. Section 4.13.4 describes implementation of the control strategies and commitments to track the effectiveness of the SIP. Section 4.13.5 discusses public involvement including work with a Citizen Advisory Committee and public hearing participation.

4.13.0.3 Area Description

Grants Pass is located in southwestern Oregon. It lies in the Rouge River Valley at an elevation of 948 feet and is surrounded by the Siskiyou Mountains and the Coast Range. The City of Grants Pass had an incorporated population of 16,290 in 1986, the base year for this analysis. The population within the Urban Growth Boundary was estimated to be 27,650 in 1986.

The Grants Pass PM_{10} problem area is located in the urbanized portion of Grants Pass, including the city limits and the urbanized land outside the city limits. Figure 4.13.0-1 shows the boundaries of the Grants Pass Urban Growth Boundary which was recommended by the Grants Pass Clean Air Policy Advisory Committee as the Nonattainment Area boundary. The criteria for selection of the UGB are as follows:

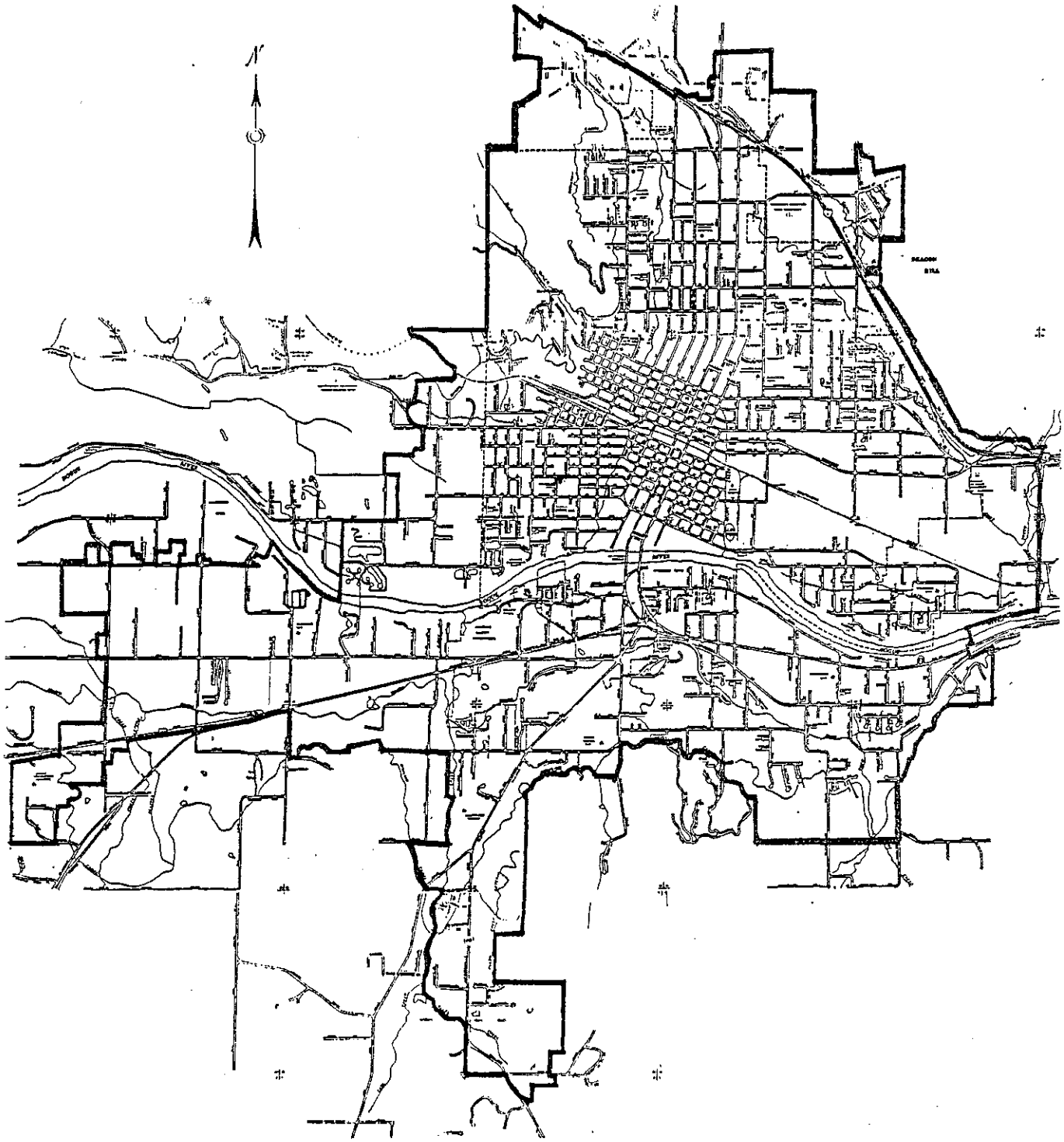
1. The nonattainment area boundary must include the geographical area within which national ambient air quality standards are currently being exceeded. Air Sampling surveys and ongoing monitoring indicate that maximum concentrations are found at the industrial/residential interface, consistent with local topography and the emission density of industrial and residential wood combustion sources.

2. The nonattainment boundary must include the area within which air standards may be exceeded in the future. EPA requires that SIP control strategies consider future population, transportation, housing and industrial growth to assure that air standards will be attained and maintained. Development of a strategy to assure maintenance of air standards therefore requires that the nonattainment area boundary be consistent with the regional planning boundary for which community growth projections are available.

3. The nonattainment area must be a legally defined boundary recognized by local governments. Legal definition is required for rulemaking purposes. Additionally, some component of the control strategy may need to be implemented through county land use planning ordinances tied to the Urban Growth Boundary.

Designation of the Urban Growth Boundary as the nonattainment area is the only legally defined boundary that meets all of the above criteria.

Figure 4.13.0-1: Nonattainment Area Map



4.13.0.4 Grants Pass Meteorology

The climate of the Rogue River Valley is moderate, with marked seasonal changes. The annual rainfall is approximately 32 inches. Winds are fairly light. Surface winds are often channeled to the east, or to the west, in general alignment with the River, which runs through the center of the urbanized area.

The topography of the area restricts natural ventilation of the valley. The combination of low wind speeds, frequent temperature inversions and topography results in a high potential for air pollution. During the winter episodic stagnation conditions may persist for a period of 3 to 4 days, or longer.

4.13.0.5 Health Effects of PM_{10} and Wood Smoke

Particulate matter measuring less than or equal to 10 micrometers is considered a risk to human health due to the body's inability to effectively filter out particles of this size. These particles can become lodged in the alveolar regions of the respiratory system where they trigger biochemical and morphological changes in the lungs.[3]

For example, constriction of air passages (i.e., reduced air flow) occurs rapidly upon exposure to PM_{10}. Episodic and continuous exposure aggravates chronic respiratory diseases such as asthma, bronchitis, and emphysema which in turn restrict the lung's ability to transfer oxygen into the bloodstream. Traditionally, children, the elderly, and cigarette smokers are the most susceptible to lung dysfunctions and are, therefore, at greatest risk from PM_{10} exposure.[4] Episodic exposure can also cause changes in the activity of the lung's mucous secretions and accelerates the mucociliary action in an attempt to sweep the particulates out of the lungs. This results in increased symptoms of cough, phlegm, and dyspnea (difficulty in breathing). Continuous exposure can inhibit this defense mechanism by introducing new particles into the lungs and redistributing those being swept out. This slows the clearance of the bronchial system thus increasing susceptibility to acute bacterial and viral infections.

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[3]J. Koenig, T.V. Larson, P. Jenkins, D. Calvert, N. Maykut and W. Pierson, "Wood Smoke: Health Effects and Legislation," Health Effects of Woodsmoke, Northwest Center for Occupational Health and Safety, January 20, 1988.

[4]U.S. Environmental Protection Agency, Second Addendum to Air Quality Criteria for Particulate Matter and Sulfur Oxides (1982: Assessment of Newly Available Health Effects. EPA 600/8-86-020-F. NTIS # PB-87-176574. 1987b.

The increased stress on the pulmonary system caused by PM_{10} exposure is usually tolerable for those with healthy respiratory systems, however, it can lead to irreversible or fatal damage in people already suffering from cardiopulmonary disease, typically children, the elderly, the ill, and cigarette smokers.[4] Another group that falls into the high risk category are people who breathe through their mouths.[4] This group includes a wide range of people from chronic mouth-breathers to anyone involved in outdoor exercise and heavy labor. During mouth-breathing, particulate matter is breathed more directly into the lungs since it bypasses the filtering systems of the nasal passages.

Among the sources of PM_{10} emissions, wood smoke is of particular concern in Grants Pass because it accounts for a majority of the small particulate matter measured in the nonattainment area. (A description of emission sources in found in Section 4.13.2.2). These particles are less than 1 μm in diameter and remain suspended in the air for long periods of time. Because of their small size and their ability to remain airborne, they are easily inhaled and lodged in the alveolar region of the lungs. These particles can also act as carriers for toxic chemicals which are transported deep into the respiratory system. Some of these toxic substances are then absorbed into the bloodstream.

Wood smoke contains fourteen carcinogenic compounds including benzo(a)pyrene, benzo(a)anthracene, and other polycyclic organic materials.[5] Additionally, wood smoke contains several other hazardous compounds such as aldehydes, phenols, carbon monoxide and volatile organic vapors. These compounds can cause or contribute to illness ranging from neurological dysfunctions and headaches to lung cancer.3 Many of the components of wood smoke are also found in cigarette smoke and coke oven emissions and can affect the cilia in a similar manner making it difficult for the body to expel the particulate matter. Because wood smoke concentrations are highest in residential areas, a large segment of the population is routinely exposed to wood smoke pollution in the winter months. Additionally, it is those people who are most sensitive, children, the elderly, and the ill, who spend the most time in their homes, thereby increasing their risk .[5]

4.13.1 Ambient Air Quality

The historical ambient particulate monitoring site in Grants Pass was located at the Josephine County Courthouse near Sixth and C Streets. Total Suspended Particulate (TSP) was measured at this site year around starting in November 1969. Sampling was

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[5]P.G. Jenkins, Washington Wood Smoke: Emissions, Impacts and Reduction Strategies, Washington Department of Ecology, Olympia, Washington. December, 1986.

conducted on a generally every-sixth-day schedule. Monitoring continued at this site until September 1987, when it was succeeded by monitoring for PM_{10} at a new site located near Eleventh and K Streets.

The concentrations of smoke and dust particles in the central Grants Pass area have occasionally exceeded the old secondary (welfare based) TSP ambient air quality standard in the past. However, TSP levels have generally improved in recent years in the Grants Pass area. This improvement is apparently due to the combination of improved industrial controls and reduced road dust (from paving unpaved roads). The maximum and second highest daily TSP concentrations are shown in Figure 4.13.1-1 for the years 1974 to 1986.

PM_{10} air quality monitoring began in December, 1985 following completion of an area-wide survey designed to characterize the spatial distribution of PM_{10} concentrations (Appendix 2). Sampling was then conducted at the Josephine County Courthouse site and at a new site near 11th and K Streets. Based on the survey, the latter site appeared to be representative of maximum PM_{10} impact in the Grants Pass area. Both Total Suspended Particulate and PM_{10} samplers were operated from December 1985 to March 1986 to obtain comparison data. Since that time, PM_{10} sampling has been conducted at the 11th and K site.

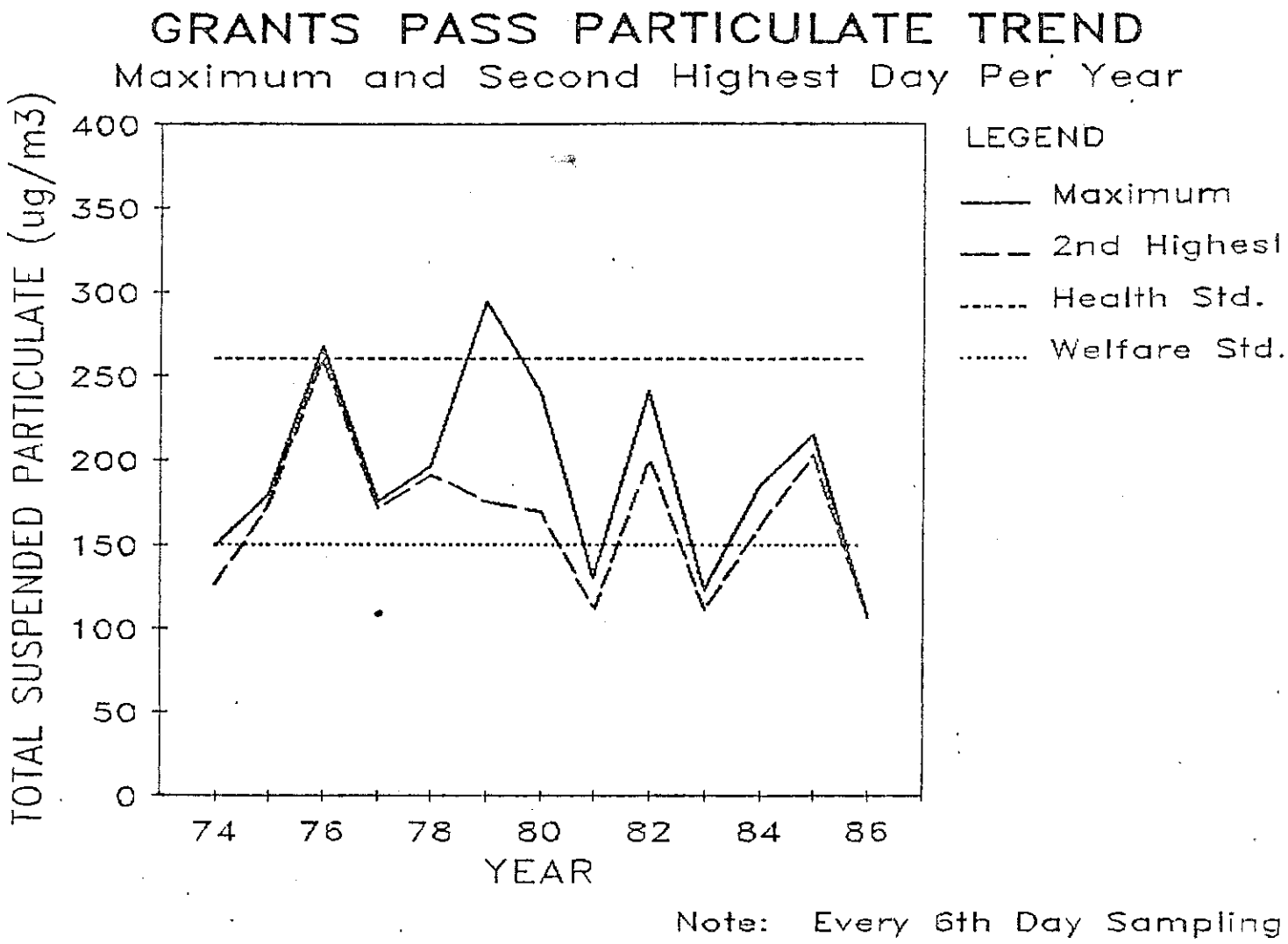
4.13.1.1 Air Monitoring Methods

Several sampling methods have been used to measure suspended ambient particulate concentrations in Grants Pass:

The PM_{10} Medium-Vol. sampler collects PM_{10} aerosol using a 12 port, 47 mm filter sequencing system that is programmed to collect 24-hour samples. The sampler pulls ambient air at a 4 CFM flow rate through a 10 μ Sierra-Anderson 254 inlet providing a PM_{10} cut point. A dual-port system capable simultaneously collecting aerosol on both Teflon and quartz filter substrate is used to allow complete chemical analysis for Chemical Mass Balance receptor modeling purposes. Because of the excellent agreement between PM_{10} concentrations measured by the Medium-Vol and the HV-SSI reference method, EPA has designated the Medium-Vol sampler as an acceptable equivalent method in Oregon.

The PM_{10} High Volume Size Selective Inlet (HV-SSI) is a High Volume air sampler equipped with a Sierra-Anderson SA321A, SA321B or SA1200 PM_{10} cut-point inlet. This method has been designated by EPA as a reference method to be used to judge attainment with the NAAQS. Sampling occurs every 6th day.

Figure 4.13.1-1: Grants Pass Total Suspended Particulate



The High Volume air sampler collects samples of Total Suspended Particulate (TSP). The method uses pre-weighed 8" X 10" filters through which air is drawn at 50 CFM over a 24 hour period. Because these samplers are not equipped with a size selective inlet, the upper limit of particle size captured on the filter may reach 100 μ. Prior to EPA's adoption of the PM_{10} NAAQS, this method was the standard reference method for measurement of airborne particulate matter at the Josephine County Courthouse.

Sampling for total suspended particulate (TSP) had been conducted at the Josephine County Courthouse since 1969. PM_{10} sampling has been conducted at both the Courthouse and 11th & K sites. Table 4.13.1-1 lists the data collection period for each measurement method at these two sites.

Table 4.13.1-1: Data Collection Periods by Method Courthouse and 11th & K

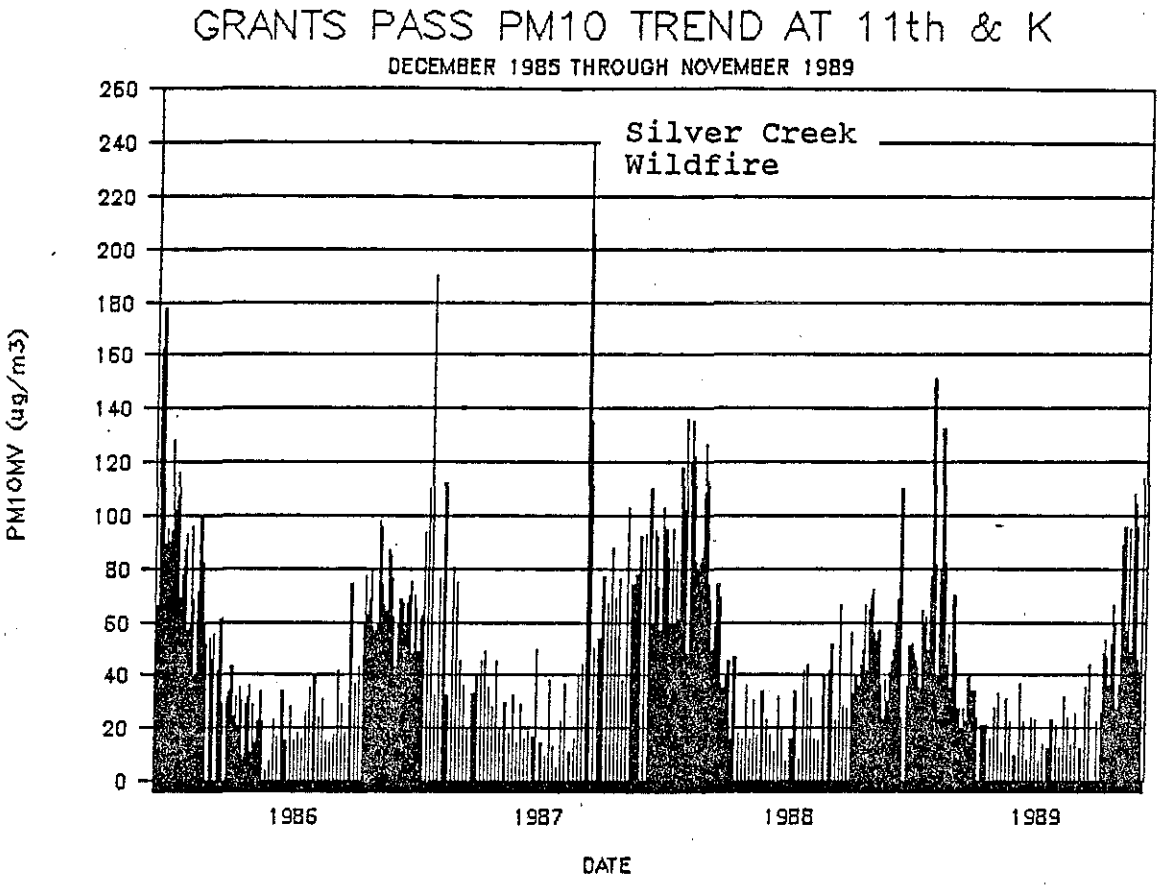
Measurement Method	Began	Terminated
Courthouse		
PM_{10} Medium-Vol.(MV) *	Dec. 1985	Mar. 1986
High-Volume TSP (TSP)	Nov. 1969	Oct. 1987
11th & K Streets		
PM_{10} High-Vol. SSI (SA321B & SA1200 inlets)	Dec. 1985 Sept. 1987	Apr. 1988 (SA321B) Sept. 1989 (SA1200)
PM_{10} Medium-Vol. (MV) *	Dec. 1985	Current
High-Volume TSP (TSP)	Dec. 1985	Jan. 1987

* Both Teflon and Quartz filter substrate are used.

4.13.1.2 PM_{10} Air Quality in Grants Pass

Figure 4.13.1-2 illustrates the seasonal variations in PM_{10} concentrations in Grants Pass. In general the highest 24-hour concentrations occur during the winter space heating season when PM_{10} concentrations have reached levels as high as 208 $\mu g/m^3$ (measured by a High-Volume sampler, January 1987). Peak 24-hour concentrations decrease dramatically during the spring months and reach a low of about 20 to 40 $\mu g/m^3$ during the summer months. Concentrations then rise again in the fall months as woodstove use increases and atmospheric dispersion decreases.

Figure 4.13.1-2: Seasonal Variation in PM_{10} Concentrations



Note: The PM10 trend shown above depicts actual Medium-Volume sampler concentrations, or measurements by other particulate sampling instruments that have been adjusted by formula to equivalent Medium-Volume concentrations. Hence, the previously mentioned January 1987 concentration of 208 $\mu g/m^3$ is roughly equivalent to 190 $\mu g/m^3$, because the High-Volume SSI samplers were determined to measure approximately 10% to 12% higher than the Medium-Volume samplers (refer to Appendix 4).

Review of PM_{10} Concentrations

The maximum and second highest daily concentrations of PM_{10} measured in 1985 through 1989 are summarized in the following table.

Table 4.13.1-2: PM_{10} Maximum Concentrations, 24 Hour Averages

Josephine County Courthouse			11th & K		
	ug/m3			ug/m3	
Year	Max.	2nd High	Year	Max.	2nd High
1985	217	181	1985	200	183
1986	91	79	1986	148	104
			1987	268	230
			1988	136	135

The above listed, relatively high concentrations of PM_{10} for 1987 were measured in early September 1987 and were attributable to the Silver Creek forest fire. Wildfires, such as the Silver Creek fire, are considered to be exceptional events that do not affect the development of plans to meet ambient air quality standards. A complete summary of the PM_{10} monitoring data from 1985 to 1988 is contained in Appendix 3.

Background Air Quality

PM_{10} aerosols from sources external to the UGB collectively contribute to background air quality, which constitutes a portion of locally measured PM_{10}. Sources such as wildfires, slash, agricultural and open burning, wind entrained soil, and secondary aerosols are believed to be the principal contributors to background air quality. PM_{10} concentrations at the Dodge Road site, which is in Sams Valley approximately 18 miles to the southeast of Grants Pass, are considered to be indicative of background concentrations in the Grants Pass urbanized area. Based on the Dodge Road site measurements, the 24-hour background concentration for worst case winter days is estimated to be approximately 44 $\mu g/m^3$.

Aerosol Chemistry

Chemically, Grants Pass winter-season PM_{10} aerosol is principally composed of organic carbon (34%), elemental carbon or soot (0.5%), crustal elements (5%), other trace elements (2%) and secondary sulfate and nitrates (3%). The balance is associated oxygen, hydrogen, water and ammonium. While the winter season aerosol is chemically very similar to the composition of woodsmoke with small amounts of soil elements, the composition of the aerosol during the summer months is quite different and is largely composed of crustal elements (Al, Si, Ca and Fe). Lead concentrations are very low, averaging 0.1 $\mu g/m^3$, 24-hour

average. The aerosol composition for either the summer season or winter cannot be used to directly infer source contributions.

4.13.2 Nonattainment Area Analysis

This section describes the Department's analysis of PM_{10} air quality in Grants Pass as it relates to the National Ambient Air Quality Standards. Source contributions to the airshed's PM_{10} air quality are discussed both in terms of emission strengths and source contributions to air quality as measured at the 11th & K site.

4.13.2.1 Design Values Determination

Attainment of the NAAQS for PM_{10} requires that annual average concentrations not exceed the annual standard of 50 $\mu g/m^3$ and that the expected number of exceedances of the daily standard must be less than or equal to one per year, averaged over a three-year period. Once an area has been identified as exceeding either standard, a PM_{10} design value must be based on concentrations measured during the baseline period. The design value can be used to determine the emission reductions needed to meet the NAAQS. Relative to the daily standard, the 24-hour design value is roughly comparable to the fourth highest measured PM_{10} concentration for the latest three full years of PM_{10} monitoring data. The annual design value is determined by computing the arithmetic average of the latest three full years of data. If the 24-hour design value requires a greater degree of control than the annual design value (as is the case in Grants Pass), then the 24-hour NAAQS becomes the controlling standard for purposes of SIP control strategy development.

The EPA PM_{10} SIP Development Guidelines specify that the preferred approach for estimating a design value is through the use of an applicable dispersion model corroborated by receptor models.[6] If there is no applicable dispersion model and at least one complete year of PM_{10} data is available, then the PM_{10} data should be used to estimate the design value. Because the absence of an adequate meteorological data base prohibits dispersion modeling in Grants Pass, the methodology used by the Department focuses on evaluation of the ambient PM_{10} concentrations. EPA specifies that the annual design value should be calculated as the arithmetic average of 3 years of PM_{10} monitoring data and that the 24-hour design concentration should be estimated using the empirical frequency distribution of at least three years of data. In the event that a full three years of monitoring data are not available, a table look-up procedure is specified. Both of these

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[6] PM_{10} SIP Development Guidelines. US Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, N.C. June, 1987. EPA-450/2-86-001.

procedures have been applied to the Grants Pass data and are described in Appendix 4.

Determination of Annual Design Value

Based on the analysis described in Appendix 4 and summarized below, the Annual Design Value PM_{10} concentration is 42 ug/m3. This calculated concentration indicates that Grants Pass is in compliance with the annual NAAQS of 50 ug/m3.

Determination of the 24-Hour Design Value

For Grants Pass the 24-Hour PM_{10} Design Value is 171 $\mu g/m^3$. This peak-day PM_{10} concentration, calculated for the baseline period, indicates that Grants Pass is not in compliance with the 24-Hour NAAQS of 150 $\mu g/m^3$. This is the starting point for determining the strategy needed to attain the standard in 1992. A description of the method used to calculate this value is also found in Appendix 4.

Table 4.13.2-1: Design Values Summary

Averaging Time	Method	Design Value
24 Hour	Graphical Procedure	171 $\mu g/m^3$
Annual	Quarterly Averaging	42

Once the 24-Hour and Annual design values have been determined, they must both be adjusted for emission changes due to growth and control strategies likely to occur by 1992, the year in which attainment must be demonstrated.

4.13.2.2 Emission Inventory

Introduction

Emission inventories provide useful information on the relative strength of sources within an airshed and provide a basis for control strategy evaluations. In addition, emission inventories provide a basis for tracking emission reductions and growth within an airshed. They cannot, however, estimate with certainty the impact of a source, or group of sources, at a specific location. Atmospheric dispersion caused by wind movements within the airshed and transport of pollutants into the airshed from exterior sources (i.e., wildfires, slash burning smoke and secondary aerosols) must be considered.

PM_{10} emissions (usually expressed in tons of particulate per year or TPY) are calculated from emission factors and source activity records. Emission factors are the weight of pollutant

emitted per unit of material processed such as grams of PM_{10} emitted per pound of cordwood burned; pounds of road dust emitted per vehicle mile driven or pounds of particulate emitted per unit area of plywood veneer processed. Emission factors used in this analysis are principally from the Environmental Protection Agency's compilation of emission factors AP-42.[7]

Information on activities which result in air contaminant emissions, such as the amount of cordwood burned by residents, vehicle miles driven, or veneer production volumes are obtained from a variety of sources. This includes industrial air contaminant discharge permit reports, mail surveys of the public, and data gathered from other government agencies.

Estimation of seasonal or worst-case day PM_{10} emissions requires development of a source operating schedule which describes the percent of annual emissions that occur during specific seasons, months, or 24-hour periods.

Base Year Emission Inventory

PM_{10} emissions for the 1986 base year within the Urban Growth Boundary (UGB) were estimated for industrial sources, residential heating (gas, oil and wood), commercial space heating, residential open burning, burning for agriculture and forestry, paved and unpaved roads, construction and agricultural dust and transportation sources (cars, trucks, railroads and aircraft). The basis of the emission estimates for the most significant sources are described below:

Industrial Sources: 469 TPY PM_{10}. These emissions are principally from the wood products industry, mainly wood-fired boilers and veneer dryers.

Residential Wood Heating: 373 TPY PM_{10}. Information obtained from the Department's 1987 wood heating survey[8] in Medford was combined with locally based population estimates to project emissions from woodheating appliances in the Grants Pass UGB. (Medford woodheating characteristics are considered to be representative of Grants Pass, since Grants Pass is only 29 miles to the west of Medford.) Approximately 11,012 housing units (1986 estimate) were located within the UGB, and

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[7] Compilation of Emission Factors, U.S. Environmental Protection Agency AP-42 Fourth Edition and subsequent supplements. US EPA Office of Air Quality Planning and Standards. Research Triangle Park, N.C. 27711.

[8] Oregon Woodheating Survey for 1987: Medford Area. State of Oregon Department of Environmental Quality, Air Quality Division. February, 1987.

approximately 5,950 housing units used wood burning devices. Approximately 66% of the devices were woodstoves while the remainder were fireplaces. The survey indicated that, on average, residents burn 2.7 cords/year of firewood in their woodstoves and 1.2 cords/year in fireplaces. At 40 pounds of PM_{10} emitted per ton of wood burned in a woodstove, 323 tons of PM_{10} are emitted per year. Fireplace emissions at 27 pounds per ton of wood burned total 50 TPY. About 12% of the woodstoves are DEQ-certified models.

Fugitive Dust Emissions: 206 TPY PM_{10}. The principal sources of dust within the UGB are paved and unpaved road dust (143 and 37 TPY, respectively). These figures are calculated from a 1986 estimate of 613,922 vehicles miles per day and a calculated PM_{10}/TSP ratio of 23.7%. The ratio is based on Department studies conducted for the compilation of base year emission inventories for the state Group I PM_{10} areas (refer to the memorandum in Appendix 5). There are also 158 miles of unpaved roads within the UGB.

Transportation Sources: 134 TPY PM_{10}. Highway vehicles (autos and trucks) emit 130 TPY PM_{10} in tailpipe and tire wear particulate; off highway vehicles 3 TPY and railroad diesel engines 1 TPY.

Other Sources: 14 TPY PM_{10}. Residential and Commercial space heating with fuels other than wood contribute 6 TPY. Approximately 354 tons of backyard debris is burned each year generating 1 TPY of PM_{10}. About an equal amount is generated from solid waste incineration on-site at industrial facilities. There is no significant agricultural burning conducted within the UGB. Structural Fires contribute 6 TPY.

Table 4.13.2-2 summarizes annual PM_{10} emissions within the UGB for 1986 and Table 4.13.2-3 summarizes the 24-hour worst case emissions for 1986. Figure 4.13.2-1 illustrates the percent contribution from each major source group for both annual and 24-hour worst case periods.

Table 4.13.2-2: Grants Pass UGB Annual Emission Inventory for 1986

Source	Tons/Year PM_{10}	Percent
Industry	469	39 %
Residential Wood Burning	373	31
Fugitive Dust	206	17
Transportation	134	11
Other Sources	16	2
Totals	1198	100 %

24-Hour Worst Case Inventory

Development of an inventory representative of emissions during a 24 hour period when PM_{10} ambient air concentrations reach their highest levels is important to understanding the sources that cause winter season, high PM_{10} episodes in Grants Pass. The relative proportion of emissions during these periods is expected to be quite different than those reflected in the annual emission inventory, because some sources (such as open burning) are not as active, while others (such as residential wood heating) are much more active.

The 24-hour worst case inventory for the UGB is based on the following information and assumptions:

Industrial Source emissions were factored to 24-hour values on the basis of the respective ratios from the operating permits of 24-hour PSEL's to the annual PSEL's. The 24-hour PSEL's incorporate shift capacity estimates. To reflect maximum production, the plants were assumed to be operating 350 days per year.

Transportation Source emissions are assumed to be constant throughout the year. The worst case day inventory therefore assumes that 1/365 of the annual emissions from this source occurs during the period.

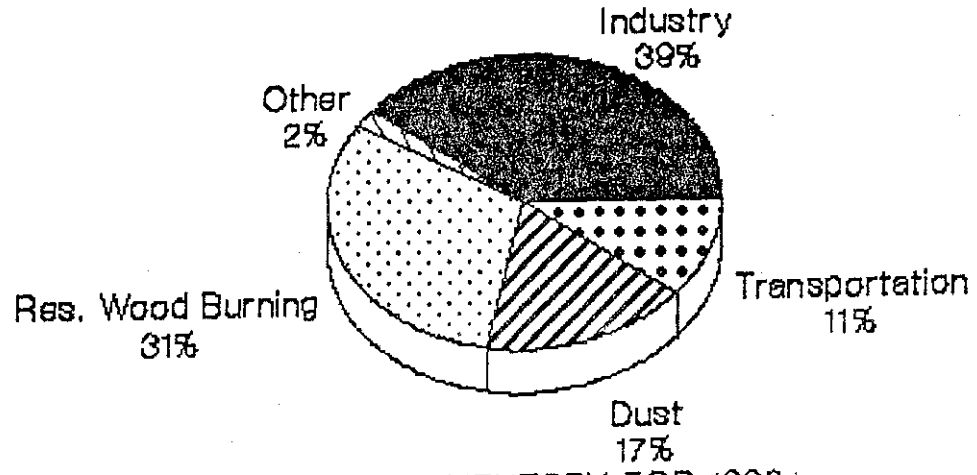
Residential Wood Burning emissions are assumed to be proportional to the coolness of the weather as reflected in the degree heating days statistic calculated by the Department using maximum and minimum temperatures recorded in Grants Pass and reported by the National Weather Service. The highest winter time PM_{10} concentration recorded in Grants Pass through the end of 1988 was 190 ug/m3 (January 21, 1987). The heating degrees for this day (29.0) was used to determine a worst case emission rate.

Table 4.13.2-3: 24-Hour Worst Case 1986 Emission Inventory

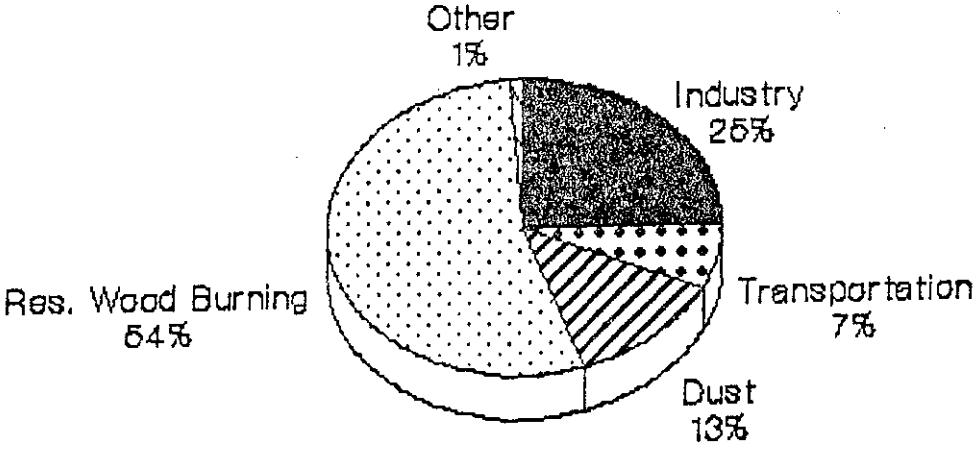
Source	Pounds/Day PM_{10}	Percent
Wood Products Industry	2600	25 %
Residential Wood Burning	5732	54
Fugitive Dust	1346	13
Transportation	774	7
Other Sources	99	2
Totals	10551	100 %

Appendix 5 provides a more detailed summary of the annual and worst case day emission inventory for Grants Pass in 1986.

Figure 4.13.2-1: Grants Pass PM10 Emission Inventories



ANNUAL INVENTORY FOR 1986



24-HR WORST CASE INVENTORY FOR 1986

Growth Factors

PM_{10} emission growth factors were used to estimate future year emission inventories. The primary growth indicator that affects the major area source categories is the population growth rate. For transportation sources, the rate of growth in vehicle miles of travel (VMT) is the primary indicator.

To estimate the industrial component of emission growth, it was assumed that the affected wood products mills will be operating at the Plant Site Emission Limits (PSEL) allowed under the revised Industrial Rules discussed in Section 4.13.3. Furthermore, any major new industrial facilities would be required to secure offsets. Based on these considerations, the emissions for the Wood Products Industry in 1992 could increase for the annual and worst case day by approximately 4 percent over the 1986 level. However, this is not the case, because of the permanent shutdown of a major industrial wood products complex.

The selection of a growth factor for population for the period from 1986 to 1992 was complicated by the fact that actual population growth in the Grants Pass urbanized area during the mid to late 1980's has been lower than the rates that were officially forecast for the Comprehensive Plan. The original forecast expected that population would grow at a rate of approximately 2.4% per year to 1990 and then accelerate to approximately 5.0% per year for the period from 1990 to 1995, based on the upper end of the year 2000 forecasting range for the Urban Growth Boundary (UGB) of 36,000 to 44,800. The actual growth rate between 1984 and 1986 was approximately 1% per year.

With the need for a more realistic population forecast to carry out the planning work for the Grants Pass Carbon Monoxide (CO) section of the State Implementation Plan (Section 4.11), the City of Grants Pass officially revised the 1990 population forecast to 29,742. This had the effect of lowering the original growth rate forecast to a level of 1.7% per year. The sewage treatment Facility Plan (dated 1985) for Grants Pass is predicated on a year 2000 UGB population forecast of 35,300. Use of the 1990 CO SIP population figure and 35,300 for 2000 results in an annual growth rate (compounded) of 1.7%.

Therefore, to project 1992 and 2000 emissions, a growth rate of 1.7% was assumed between 1990 and 2000 for both population and vehicle miles of travel.

Woodburning for woodstoves is expected to increase by 1% per year (6% total) by the year 1992 as a result of an increased amount of firewood burned. At the same time, firewood use in fireplaces is expected to decline by 2% per year. The one percent growth rate for woodstoves, which is lower than the population growth rate, is based on energy projections and fuel cost modeling performed to estimate future woodburning emission growth in the

Pacific Northwest.[9] These projections do not account for emission reductions that will occur as a result of woodstove certification programs, as these reductions are explicitly accounted for in the Section 4.13.3.2, Evaluation of Potential Control Measures.

Projected Emissions in 1992

PM_{10} emissions were projected for the 1992 attainment year. The emissions projections are based on the foregoing growth factors. Table 4.13.2-4 shows both the annual and worst case day PM_{10} emissions for 1992. The Industry category shows lower emissions for 1992 than for 1986 due to the shutdown and subsequent dismantling of the Southern Oregon Plywood mill, which occurred in 1988.

Table 4.13.2-4: Projected 1992 Emission Inventory (No Controls)

Source	--Annual-- Tons	%	-24-Hr Worst Case- Pounds	%
Industry	376	32	2086	20
Residential Wood Burning	386	33	5938	57
Fugitive Dust	230	20	1500	14
Transportation	149	13	864	8
Other Sources	17	2	111	1
Totals	1158		10499	

Projected Emissions Beyond 1992

Analysis of the ability to maintain compliance with the NAAQS during the period 1992 to the year 2000 requires development of a third set of emission estimates. For this maintenance analysis the 1992 inventory must be adjusted to reflect the reductions which are expected to be achieved by the attainment strategy. The growth rates used for the period 1992 to 2000 are [projected to be different from those of the preceding years and their effect on emissions is] described below:

- Population growth rate of 1.7% per year applied to residential oil, gas and wood combustion emissions; solid waste incineration emissions and structural fires;

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[9] U.S. Environmental Protection Agency, Region X, "Residential Wood Combustion Study, Task 3, Fuel Wood Use Projections", EPA 910/9-82-089 (1984).

- Transportation growth rate of 1.7% per year applied to transportation sources and paved, unpaved and construction dust;

- Industrial emissions are held constant at the annual and 24 hour PSEL emission rates shown in the 1992 emission inventory;

The projected residential wood combustion emissions, following application of a 1.7% per year growth rate, were adjusted to reflect emission reduction credits associated with the woodstove certification program resulting in a 7% decline in emissions.

Projected Annual emissions for 1992 before and after implementation of the control strategy, growth factors and estimated Annual emissions for the year 2000 are summarized in Table 4.13.2-5. The 24 Hour Worst Case projected emissions are summarized in Table 4.13.2-6.

Table 4.13.2-5: Projected Annual Emission Inventory for the Year 2000

Source	1992 Before Control (Tons)	1992 After Control* (Tons)	1992-2000 Growth	2000 (Tons)
Industry	376	169	0 %	169
Residential Wood Burning	386	351	-7 %	325
Fugitive Dust	230	230	14 %	263
Transportation	149	149	14 %	169
Other Sources	17	17	14 %	19
Totals	1158	916		945

* See Section 4.13.3.3 for discussion of emission reductions

Table 4.13.2-6: Projected 24 Hour Emission Inventory for the Year 2000

Source	1992 Before Control (lbs)	1992 After Control* (lbs)	1992-2000 Growth	2000 (lbs)
Industry	2086	939	0 %	939
Residential Wood Burning	5939	3851	- 7 %	3578
Fugitive Dust	1500	1500	14 %	1707
Transportation	864	864	14 %	984
Other Sources	111	111	14 %	126
Totals	10499	7265		7334

* See Section 4.13.3.3 for discussion of emission reductions

Comparison of these Tables to Tables 4.13.2-2 and Table 4.13.2-3 shows that the projected total Annual emissions for the year 2000 are reduced from 1986 levels by 253 tons per year and by 3217 pounds per day on the worst case day. Although on an annual basis Dust, Transportation and Other Sources increase, the effect of the Industrial Controls and woodstove certification is a net decrease in total airshed emissions. On the worst case winter day Industrial emissions are still reduced but the most significant reduction occurs in Wood Burning emissions due to the implementation of voluntary curtailment and the other wood smoke control elements.

4.13.2.3 Source Contributions by Receptor Modeling

Introduction

The Environmental Protection Agency PM_{10} SIP Development Guidelines Section 4.4 describes procedures to be used by the states for using receptor models to estimate source contributions to PM_{10} concentrations. These guidelines support the use of receptor models as an important element of the SIP strategy development process. In cases such as Grants Pass, where dispersion modeling cannot be applied because of the absence of meteorological data, receptor modeling (specifically, Chemical Mass Balance or CMB) has been recommended. The specific application of the CMB Receptor Model to PM_{10} source apportionment in Oregon's Group 1 areas is described elsewhere.[10]

[10] PM_{10} Receptor Modeling for Oregon's Group I Areas: Medford, Grants Pass and Klamath Falls. State of Oregon Department of Environmental Quality, Air Quality Division. March, 1989.

Chemical Mass Balance (CMB) is a mathematical/statistical form of receptor modeling which is based upon regression analysis of aerosol chemistry features. The CMB model does not provide an exact solution to the source apportionment problem but instead attempts to find the most likely combination of source contribution estimates (SCE's). This is done by minimizing the difference, or variance, between the measured and model-predicted concentration of aerosol features. Values for the ambient aerosol matrix are obtained through chemical analysis of PM_{10} filters taken at the 11th & K Streets site, while the source "fingerprint" values are obtained through representative analysis of stack emissions. The CMB modeling protocol applied follows EPA guidance.[11] All of the CMB modeling has been conducted using EPA's Version 6.0 CMB program.[12]

Ambient Aerosol & Source Emission Analysis

Nine PM_{10} samples collected between December 7, 1987 and February 10, 1989, were selected for analysis. These samples are composed of the highest concentrations during this two month winter period that were at least 100 ug/m3. Only one 24 hour sample has exceeded the NAAQS of 150 $\mu g/m^3$ since the end of the Silver Creek wildfire episode in early September 1987. Chemical characterization of the samples includes 19 trace elements analyzed by x-ray fluorescence, 3 inorganic anions, and elemental/organic carbon, providing a data set that is compatible with the source emission profiles. Analytical uncertainties for each of the values are routinely reported and included in the CMB calculations.

PM_{10} source profiles (listed in Table 4.13.2-7) representing all major emission groups within the airshed were used in the modeling. All of the profiles were obtained from the Pacific Northwest Source Profile Project.[13] A list of the sources included in the analysis is presented below:

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[11] Protocol for Reconciling Differences Among Receptor and Dispersion Models. US EPA 450/4-87-008. March, 1987.

[12] Receptor Model Technical Series, Volume III (Revised): CMB User's Manual (Version 6.0) US EPA 450/4-83-014R. May, 1987.

[13] Pacific Northwest Source Profile Library Project, Final Report Prepared by the State of Oregon Department of Environmental Quality, Air Quality Division, J. Core, Ed. September, 1989.

Table 4.13.2-7: Source Profile Names

No.	Acronym	Description
1	GPSOIL	Resuspended soil dust from Grants Pass
2	SLASH	Forestry slash broadcast burning (Also may be vegetative burning such as yard debris.)
3	RWC MED	Residential wood combustion profile for Medford
4	LD AUTO	Light duty autos (leaded gasoline)
5	HOGFUEL	Boiler burning plywood trim in the fuel
6	WOOD	Wood Fiber including sander dust
7	HDDIESEL	Diesel Exhaust (Fed. Test Cycle)
8	SECSO4	Secondary Sulfate estimated as ammonium sulfate
9	SECNO3	Secondary Nitrate estimated as ammonium nitrate
10	SECNH4	Secondary Ammonium ion
11	CONST	Construction Dust - Medford Aerosol Study
12	VENEER	Steam heated veneer drier emissions

Receptor Model Source Contribution Estimates

Table 4.13.2-8 is a summary of the average source contributions obtained for the nine worst case winter days that were modeled. Average PM_{10} concentration for these samples was 120 $\mu g/m^3$.

Table 4.13.2-8: Average Winter Worst Case Day Source Contributions

Source	PM_{10}	$\%PM_{10}$
Wood Smoke	82.1 $\mu g/m^3$	68.2 %
Industry	10.2	8.5
Soil Dust	17.2	14.3
Transportation	0.2	0.2
Sec. Aerosol	2.5	2.1
Others	8.1	6.7
Total PM_{10}	120 $\mu g/m^3$	

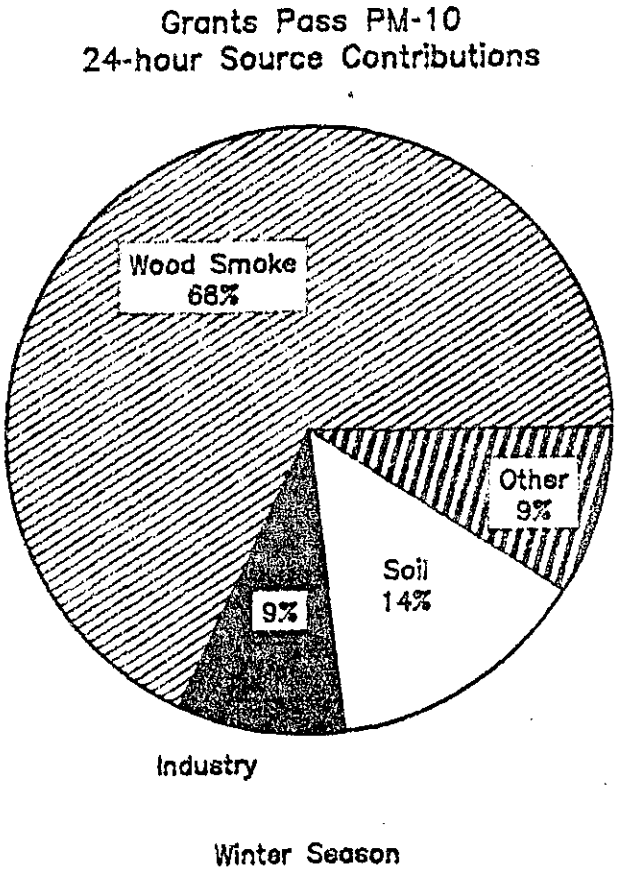
Because of the similarities between source fingerprints for residential wood combustion and veneer driers the apportionment of these two sources cannot be done with CMB alone. The contribution of veneer driers was estimated by applying the 1986 estimated emission rate ratio of Veneer Drier to Hog Fuel Boilers (1,044 lb/day / 760 lb/day) to the HOGFUEL aerosol percentage (3.9 %) which was determined by CMB. Veneer Driers and Hog Fuel Boilers were summed to give the Industrial contribution. The Wood Smoke contribution was then reduced by the percent going to Veneer Driers. Average source contribution uncertainties

(relative percent of mass) vary from 18% for wood smoke, to 11% for hog fuel boilers and 8% for soil dust.

Receptor modeling of these samples collected on high winter days shows that residential wood smoke is the major source of PM_{10}. Of the nine days that were analyzed, the wood smoke contribution ranged from 41% to 98% of the PM_{10} mass. The emissions ratio method of estimating the veneer drier component yields an upper bound estimated industrial source impact of 16%.

Over ninety percent of the aerosol is accounted for in this analysis. The remainder of the PM_{10} includes water associated with the aerosol, contributions from minor sources, and the uncertainty in the apportionment method. Figure 4.13.2-2 illustrates the source contribution estimates determined by the CMB analysis.

Figure 4.13.2-2: Grants Pass PM_{10} Source Contributions by Aerosol Chemistry



Background PM_{10} Air Quality

Receptor modeling of local PM_{10} cannot, however, distinguish between particulate which has been generated within the airshed and particulate which has been transported into the airshed. The control of this "locally" generated particulate requires determination of the local source contributions, which means subtraction of the background contribution. Annual and 24-Hour average background PM_{10} being transported into the Grants Pass UGB is estimated from measurements made at a site in Sam's Valley (Dodge Road). This site is located approximately 18 miles to the northeast of Grants Pass, and the monitored levels are expected to be representative of general background conditions for southwest Oregon. Analysis of the Dodge Road site data indicates that peak day and average PM_{10} concentrations are 44 $\mu g/m^3$ and 15 $\mu g/m^3$, respectively.

Chemical Mass Balance analysis of the sources contributing to this background particulate is needed to be able to subtract the appropriate background value in each source category. Table 4.13.2-9 shows the background source contributions for both Annual and 24-Hour average PM_{10}.

Table 4.13.2-9: Background PM_{10} Source Contributions

Source	Annual Average	24-Hr Average Worst Case
Industry	0.7 $\mu g/m^3$	3.0 $\mu g/m^3$
Wood Smoke	7.1	31.6
Soil Dust	4.6	2.3
Transportation	---	---
Sec. Aerosol	1.4	4.8
Others	1.0	2.3
Total	14.8	44.0

Estimation of "Local" Air Quality Impacts

Estimation of the impact of emission sources within the UGB requires that the background components listed in Table 4.13.2-9 be subtracted from the comparable source contributions listed in Table 4.13.2-8. This difference is presented in Table 4.13.2-10 which lists the "local" source contribution estimates to PM_{10} on average worst case winter days. For comparison the source contributions as determined from the 1986 emission inventory are also shown.

Table 4.13.2-10: Average Worst Case Day "Local" Source PM_{10} Contributions

Source	Receptor Modeling $\mu g/m^3$	Receptor Modeling %	Emission Inventory %
Industry	7.2	9	24
Wood Smoke	50.5	64	54
Soil Dust	14.9	19	13
Transportation	0.2	< 1	7
Sec. Aerosol	0.0	0	--
Others	5.8	7	2
Total	78.6		

The values shown in the last two columns demonstrate that qualitatively the emission inventory and receptor modeling analysis provide roughly comparable results with respect to the contribution of Wood Smoke. Both methods indicate secondary contributions from Industrial and Dust sources. The wood products industry contributions, as estimated by emission inventory, are significantly higher than that estimated by receptor modeling, most likely because dispersion of the emissions are not being considered. Transportation emissions are also higher by the inventory method than indicated by receptor modeling, probably for the same reason. In order to take into account the differences in source contribution estimates, the control strategy analysis was conducted in two ways: 1) rollback was applied to the individual source categories based on the emission inventory relative source strength; 2) rollback was applied to the individual source categories based on the receptor modeling relative source strength.

4.13.3 Emission Reduction Analysis

This section describes the emission reductions necessary to attain the 24-hour PM_{10} standard (4.13.3.1); reviews potential control measures that could be applied in Grants Pass (4.13.3.2); and presents a technical assessment of the adequacy of the control measures to attain the standard within the time limits specified by Section 110(a) of the Clean Air Act (4.13.3.3).

4.13.3.1 Emission Reduction Necessary for Attainment

The EPA PM_{10} SIP Development Guidelines specify that a proportioning method, which separates out the individual source contributions, should be used to estimate the control strategy requirements of the SIP. In the analysis below, the contribution of emission sources to the 1992 design values have been apportioned based on the projected 1992 emission inventories

described in Section 4.13.2.2. The sum of the 1992 source impacts, plus background, provides the 1992 24-Hour worst case day design value.

Projected Source Impacts in Future Years

Table 4.13.3-1 lists 1992 source contribution estimates for the 24-hour worst case scenario. Source contributions at the 1992 design value were apportioned using the 1986 24-hour worst case day emission inventory percentages (see Table 4.13.2-9) applied to the "local" design value of 127 $\mu g/m^3$ (171 $\mu g/m^3$ design value less the background of 44 $\mu g/m^3$).

Table 4.13.3-1: Projected Future Source Category Impacts (Emission Inventory)

Source	1986 Worst Day	"Local" Design ($\mu g/m^3$)	1986-92 Growth (%)	"Local" Design ($\mu g/m^3$)	1992 Worst Day
Wood Smoke	54%	69	6	73	57%
Industry*	24%	30	-20	24	19%
Fugitive Dust	13%	17	11	19	15%
Transportation	7%	9	12	10	8%
Other Sources	2%	2	12	2	1%
Subtotals		127		128 $\mu g/m^3$	
Background				44	
Total				172 $\mu g/m^3$	

* Industrial emissions decrease due to the closing of a major facility in September, 1988.

Air quality improvement needed = 22 $\mu g/m^3$ (172-150 $\mu g/m^3$) or a 17% (22/128) reduction in worst case day emissions. This is equivalent to 1785 pounds per day.

As a crosscheck on the adequacy of the proposed control strategies, a separate rollback calculation was done based on the source contributions determined from the receptor modeling analysis.

Table 4.13.3-2 lists the projected 1992 source category contributions based on the receptor modeling analysis. In this case the 1992 source category contributions were apportioned using the average worst case day percentages derived from Chemical Mass Balance. Again, the percentages are applied to the "local" design value of 127 $\mu g/m^3$.

Table 4.13.3-2: Projected Future Source Category Impacts (Receptor Modeling)

Source	1986 Worst Day	"Local" Design ($\mu g/m^3$)	1986-92 Growth (%)	"Local" Design ($\mu g/m^3$)	1992 Worst Day
Wood Smoke	64%	81	6	86	64%
Industry	9%	11	-20	9	7%
Fugitive Dust	19%	24	11	27	20%
Transportation	<1%	1	12	1	<1%
Other Sources	7%	9	12	10	8%
Subtotals		127		133 $\mu g/m^3$	
Background				44	
Total				177 $\mu g/m^3$	

Air quality improvement needed = 27 $\mu g/m^3$ (177-150 $\mu g/m^3$) or a 20% (27/133) reduction in worst case day concentration.

Both analyses lead to similar reduction requirements. The control strategy selected must be comprised of a mix of individual source reduction measures such that their sum is equal to, or greater than, the total reduction requirement. Adopted control strategies must be shown, through a demonstration of attainment (Section 4.13.3.3), to attain and maintain the NAAQS by reducing emissions such that the 24-Hour worst case PM_{10} concentrations are also reduced.

It should also be noted that since the 24-hour control strategy will reduce all worst case day PM_{10} levels it should result in a reduction in the annual average PM_{10} from the design value as well. Therefore, implementation of strategies to assure attainment of the 24-Hour standard will assure continued compliance with the annual NAAQS. The emission inventory trends described earlier provide confidence that this is true.

4.13.3.2 Evaluation of Potential Control Measures

A number of potential strategies could be used to achieve the required reduction in the 24-hour worst case day PM_{10} concentration. The Grants Pass City Council and the Josephine County Commissioners appointed a citizens committee in December 1987 to evaluate the particulate problem and recommend a strategy that would achieve the health standard consistent with the requirements of the Federal Clean Air Act. The Committee produced a report (Appendix 1) and presented its recommendations to a joint meeting of the City Council and the County Commission on May 21, 1988. The Committee considered a package of control

strategy alternatives, labeled Options A, B and C, which are summarized in Table 4.13.3-3.

Table 4.13.3-3: Potential Control Measures for Grants Pass Urban Growth Boundary

Option A
Firewood Seasoning Education
Voluntary Curtailment During Pollution Episodes (5-10 days/year)
Clean Air Utility Rates
Upgraded Industrial Controls

Option B
Firewood Seasoning Education
Mandatory Curtailment During Pollution Episodes (5-10 days/year)
Clean Air Utility Rates

Option C
Firewood Seasoning Education
Retrofit Subsidy for All Freestanding Stoves
Voluntary Curtailment During Pollution Episodes (5-10 days/year)
Clean Air Utility Rates

Clean Air Utility Rates and Firewood Seasoning Education were common to all three options. One of the main differences between Options A and B was voluntary curtailment versus mandatory curtailment. Also, Option A included upgraded industrial controls, whereas they were not included in Options B and C.

Discussion of Options A, B and C

Option A

The first element of this option consists of a voluntary curtailment program on woodstove and fireplace use that would be activated on an estimated 5 to 10 days during the winter. (Air monitoring data collected through November 1989 indicates that curtailment would be activated less frequently, approximately 3 to 4 days during the heating season.) The curtailment program would be set up to run locally, with assistance from the Department in providing forecasted air quality levels. Firewood seasoning education would be an informational program supported by DEQ materials and tools developed in other areas. Clean Air Utility Rates would be a program of reduced rates applied to baseline consumption levels that would be offered to the customers of utility companies serving the Grants Pass area. The reduced rate program would have to be approved by the Oregon Public Utility Commission. The combination of these measures was estimated to reduce PM_{10} emissions from residential wood combustion by as much as 45%.

The industrial component of this option would require upgraded pollution control equipment for veneer dryers and wood-fired boilers. The upgraded equipment for the boilers would be similar to what has been required in Medford. The upgraded industrial control equipment was estimated to provide an emissions reduction of 56% (refer to the Point Source spread sheets in Appendix 5).

Option B

The sole focus of control under this option would be residential wood combustion. Implementation of this program would require the adoption of local ordinances, including enforcement provisions to carry out a mandatory curtailment program. Again, curtailment would be required approximately 3 to 4 days per winter heating season. Mandatory curtailment was estimated to reduce wood heating emissions (PM_{10}) by approximately 65%--even if sole source heating and a few other exemptions were provided. (Note: Subsequent information developed by the Department indicates that mandatory curtailment could reduce emissions by 80 to 90%.)

Option C

This strategy would also focus on residential wood combustion. Voluntary curtailment would be the same as outlined under Option A. Under this option, existing, high emitting woodstove appliances would be replaced, or retrofitted. The local area would have the primary responsibility for developing funding to support this conversion program. The total cost of retrofits, or replacements is estimated to range between $1 million and $2 million, depending upon the mix of retrofits and replacements. Option C would reduce wood heating emissions by approximately 65%.

Evaluation of Options A, B and C

The three control options have different cost structures. Option A spreads the burden of control between the community (wood heating) and local industry. On a per participating household basis, the additional cost of a voluntary curtailment program would be approximately $2 to 4 for each day of curtailment. The per household cost varies according to the degree of weatherization, the size of the structure and the type of alternative heat. Upgraded industrial pollution control equipment is estimated to have a capital cost of $3 to 4 million.

Because of the much greater participation for a mandatory curtailment program, the overall cost of Option B for the wood heating households would be four times as much as for Option A. There would also be additional costs on local government for enforcement.

Option C costs would depend upon the mix of retrofits and stove replacements. A 100% retrofit program would cost approximately $1.0 million, while a 100% replacement program would cost approximately $2.0 million. The costs to individual households could be reduced through subsidies. Potential sources of subsidy funds could include: Community Development Block Grants (HUD), private foundation grants, state income tax credits, local property tax credits, industry or business contributions, city or county bond issues, state lottery funds, oil overcharge settlement funds, or increased wood cutting fees.

The Committee's deliberations on the options focused mostly on Option A. Given the relatively marginal nature of the PM_{10} problem in Grants Pass, Option B appeared to be too harsh and unpopular. It also would be uneven in its application with a sole focus on residential wood combustion. The major drawback of Option C was the perceived difficulty in securing the necessary funding. The short time frame for implementation also appeared to be a major problem. The Committee thought that an extension for meeting the standard would be needed to implement Option C.

PM_{10} Control Strategy Elements

The Committee recommended Option A as the basic framework for a PM_{10} control strategy in the Grants Pass area. Potential control strategy elements are described below. Emission reduction credits associated with each element are listed and discussed. A PM_{10} emission reduction credit is a measure of the reduction in PM_{10} emissions that would be accomplished through adoption and implementation of the program element. Section 4.13.3.3 demonstrates how the Committee's recommendation will assure attainment of the 24-Hour PM_{10} NAAQS.

Residential Woodsmoke Control Elements

There are two basic approaches to reducing woodsmoke from stoves and fireplaces: (1) improving the performance of the wood heating systems such as through a certified woodstove program; and (2) burning less wood through woodstove curtailment programs. Some strategies have multiple advantages. Certified woodstoves, for example, improve emission performance by reducing the amount of woodsmoke per cord of wood burned while improving energy efficiency, thus reducing the amount of wood burned. Other examples are well designed public information, energy conservation, or firewood seasoning programs that result in better combustion (lower emissions) and better energy efficiency (less fuel burned). The key elements of the residential wood smoke control program are described below.

Woodstove Certification Program

In 1983, the Oregon Legislature directed the Department to require that all new woodstoves sold in the state be certified through laboratory testing of prototypes for emissions and efficiency to assure compliance with established woodstove emission standards. As a result, stoves sold after July, 1986 were required to emit 50% less emissions than conventional woodstoves. After July 1988 new woodstoves were required to emit 70% less emissions.

Subsequent to the adoption of Oregon's emission standards, the Environmental Protection Agency adopted a slightly more restrictive national certification program which will become effective in July, 1990. In December, 1989, the Department began rule making to modify the Oregon Woodstove Certification Rules (OAR 340 Division 21) to assure consistency with EPA's national program. The modified rule is expected to be adopted by March, 1990.

In-home studies of first generation certified woodstoves have indicated that they actually reduce emissions by about 30%. Second generation certified woodstoves have been shown to reduce emissions by about 50%. This lesser than expected performance has to a large extent been due to durability problems with critical stove components. The majority of the stoves certified by the department and sold in Oregon have been second generation stoves.

Second generation catalytic stove designs have incorporated new advancements in combustor technology which in part accounts for the stoves increased effectiveness. First generation catalytic stoves, incorporate less effective catalytic elements which are currently reaching the end of there useful life. When replaced with new generation catalysts, the first generation catalytic stoves will provide effective emissions reductions approaching that of second generation stoves. These improved first generation stoves will make up in part the stove population in 1992.

Recent in-home studies have also shown that woodstove designs which met experimental durability criteria have demonstrated emission reductions averaging 79%. Durability criteria are those design features, and methods of construction which will help ensure that the initial emission performance achieved by a stove is maintained over it's usable life. Some of these units will also make up the woodstove population in 1992.

Additionally, sales of pellet stoves in non-attainment areas, as well as state wide are reported to have significantly increased and are expected to accelerate in the foreseeable future. Pellet stoves are expected to provide a 90% reduction in emissions in the home and are expected to become a significant segment of the woodstove population in non-attainment areas where they have

typically been exempted from curtailment programs. Considering the above factors, the Department is using a conservative 50% emission reduction credit overall for the stove population of 1992.

Basis for Woodstove [10%] Certification Program Credit

As noted in Section 4.13.2.2 on Growth Factors, firewood use is projected to increase by 1% per year over 6 years for woodstoves and decrease by 2% per year for fireplaces. This is the basis of the growth factor used in calculating projected 1992 wood smoke emissions. Therefore, in the absence of any certification program, woodstove emissions would increase by:

1% per year x 6 years = + 6%

With respect to the replacement of stoves, a conservative estimate of the average useful life of woodstoves is 20 years. Therefore, approximately 5% of the stove population will replaced each year.

Building permit authorities in other areas of the state indicate that about 90% of permitted installations are certified stoves. Therefore, if ten percent of the new woodstoves installed are non-certified (i.e., there are no restrictions on the installation of used non-certified woodstoves) and the typical certified woodstove emits 50 % of that emitted from a conventional stove, then 1992 woodstove emissions can be expressed in terms of 1986 woodstove emissions as follows:

$$WS92 = [.06][BL86WS][(0.90)(0.5) + (0.10)(1.0)] + (6\ Yrs)(0.05/Yr)(BL86WS)[(0.90)(0.5) + (0.10)(1.0)] + (BL86WS)[1.0 - (6\ Yrs)(0.05/Yr)]$$

$$= (0.033)(BL86WS) + (0.165)(BL86WS) + (0.70)(BL86WS)$$

$$= (0.898)(BL86WS)$$

Where WS92 = 1992 Woodstove Emissions and

BL86WS = 1986 Baseline Woodstove Emissions

Therefore, the woodstove certification program provides a 10.2% credit ((1. - 0.898) x 100) against the Baseline 1986 woodstove emissions by 1992.

A similar projection was made for determining the effect of the certification program to 2000. The year 2000 woodstove emissions were expressed in terms of a 1992 baseline (refer to calculations in Appendix 5). The certification program results in a 10.3% reduction, or approximately 1% per year after taking into consideration 1.7% annual growth.

Public Information Programs

A comprehensive, professional, and well-financed public information program is essential for public cooperation and support in reducing woodsmoke emissions. The program should describe clearly the need for the public's cooperation, the health-safety-energy-economic benefits to individuals and the community, and precisely what individuals can do to help. Key elements include: home weatherization, firewood seasoning, cleaner burning practices, proper stove installation and sizing, maintenance of woodburning systems and most importantly curtailment of woodburning during poor ventilation episodes. Although no emission reduction credits are taken for the public information program, it is critical to the success of all of the other woodsmoke reduction elements.

EPA's Guidance Document for Residential Wood Combustion Emission Control Measures recognizes public education programs as an essential element of any residential wood burning control strategy. Although EPA recognizes public education programs as an essential element of wood burning control programs, no emission reduction credits can be assigned to the program without further technical justification.[14]

Curtailment During Poor Ventilation Episodes

Woodburning curtailment forecasts can be made twice daily, or whenever PM_{10} air quality levels, as measured by an integrating nephelometer, are forecast to exceed a 24 hour average NAAQS. The advisory is generally based on National Weather Service upper air and barometric pressure data, forecasts of synoptic meteorology, surface temperatures, and wind speed/direction. Nephelometer measurements of hourly light scattering and local observations of air quality conditions are also used.

Woodburning curtailment advisories are generally issued at three levels:

> "Green" advisories are issued for periods during which NAAQS violations are unlikely. Woodburning is unrestricted during these periods but the public is asked to follow good woodburning practices.
>
> "Yellow" advisories are issued for periods approaching exceedence of the NAAQS. The public is asked to curtail all unnecessary woodburning, excepting only pellet stoves, certified woodstoves, and those people that use wood as their sole source of heat.

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[14] US EPA, "Guidance Document for Residential Wood Combustion Emission Control Measures," EPA-450/2-89-015 (1989).

"Red" advisories are issued for periods of severely restricted ventilation during which PM_{10} levels are expected to exceed the NAAQS. Only households in which woodburning is the sole source of heat are permitted to burn during these periods.

Compliance with the advisories can be determined through evening surveys of woodburning activity during "Green", "Yellow" and "Red" curtailment periods using infrared cameras. Data from the surveys is used to direct the public education program, evaluate progress toward achieving program goals, and in evaluating trends in PM_{10} concentrations.

Basis for Woodburning Curtailment Credits (Worst Case Day)

Over the past several heating seasons a number of woodburning communities in Oregon, and other western states, have instituted voluntary woodburning curtailment programs as a means of reducing wood heating emissions. Nearby Medford, Oregon has reported 25% compliance per year for the past 4 years. Klamath Falls, Oregon reported 14% compliance in its first year of voluntary curtailment and 27% in its second year. Missoula, Montana has reported 30% compliance. The goal of the Grants Pass Woodburning Advisory Program is to reduce wood use by 25% on the 1 - 10 days per year on which violations of the PM_{10} health standard would be expected. The goal is to be achieved by the end of the second year of the program. Compliance with the advisory will be based on field surveys. A credit of 25% is justified based on the experience of other communities and Grants Pass' commitment to achieve the National Ambient Air Quality Standards.

Industrial Control Elements

In September, 1988 the Environmental Quality Commission adopted changes to the Industrial Rules (OAR 340-30-005 to 067) specific to Grants Pass and Medford. These rules will significantly reduce PM_{10} emissions from veneer dryers and wood-fired boilers.

The new rules impose emission limits for veneer dryers based on state-of-the-art technology. For dryers using gas, or steam as the heat source, the emission limit is 0.30 pounds per thousand square feet (lb/Msf) of 3/8" veneer dried. For dryers heated directly by combustion gases from wood burning, the emission limit is 0.45 lb/Msf. These emission limits boost the control efficiency from 45% to a minimum of 70%. The upgraded control equipment for veneer dryers is expected to result in an emissions reduction of 99 tons per year, approximately 54% of 1986 emissions.

For existing large, wood-fired boilers (heat-input capacity of greater than 35 million Btu/Hr), the new Rules impose an emission limit of 0.05 grains per standard dry cubic foot (gr/SDCF). The imposition of the reduced emission limit is expected to result in an emissions reduction of 82 tons per year. By the end of 1994, the large wood-fired boiler emission control equipment must meet an emission limit of 0.015 gr/SDCF. However, any such modification, or replacement will be legally limited to 0.030 gr/SDCF. The difference in emissions between 0.030 gr/SDCF and a lower actual emission rate can be banked for offsetting new sources.

The overall industrial PM_{10} emissions reduction is predicted to be 55% between 1986 and 1992.

Long-Term Wood Heating Control Strategy

Wood heating curtailment is viewed as a short-range control strategy to allow rapid attainment of the short-term (24-hour) PM_{10} air quality standard. The Department of Environmental Quality is committed to pursue permanent reductions in wood heating emissions as a long-range strategy to reduce and even eliminate the reliance on curtailment and to provide significant improvement in annual PM_{10} air quality.

At least the following measures will be pursued to reduce permanently wood heating emissions:

- Public education activities will include more specific information on the true cost of wood heating in relation to other alternative cleaner heating sources. The major goal of this effort is to persuade those households that are spending more money to heat with wood than with conventional fuels, such as natural gas, to convert from wood heat.

- Further information and studies on the toxicity, health effects and other detrimental effects of woodsmoke will be pursued and heavily publicized in a continuing effort to convince more people that they should reduce wood burning.

- In home emission control performance of certified stoves will be improved through promotion of durable design criteria and development of a stress test which will aid in identifying durable certified stoves.

- Financial incentive programs will be pursued through the Oregon Legislature and other avenues to promote replacement of conventional wood heating appliances with less polluting systems. These programs could include tax credits, low interest loans and total buy-outs for low income households. An objective would be to graduate these incentives in proportion to the emission reduction potential of the

alternative heating systems, with electric and gas systems qualifying for the largest financial incentives followed by pellet stoves, durable certified woodstoves and finally, other certified woodstoves.

4.13.3.3 Demonstration of Attainment

This section describes the application of emission reduction credits described in Section 4.13.3.2 for demonstrating attainment with the NAAQS. The methodology used is based on a proportional rollback of 1992 emission estimates.

24 Hour Worst Case Day Strategy

Based on the Emission Inventory approach, attainment of the 24 hour NAAQS in 1992 will require a 17% or 1785 pounds of reduction in worst case day emissions. The necessary reduction is achieved through the strategy elements listed below.

Table 4.13.3-4: Summary of 24 Hour Emission Reductions

Strategy Element	Credit	Emission Reduction
Industrial Controls	2086 lbs/d x 55%	1147 lbs/d
Woodstove Strategies		
Certification	4964 lbs/d x 10.2%	506 lbs/d
Curtailment	5134 lbs/d x 25%	1284 lbs/d
	Total Reduction	2937 lbs/d
	Required Reduction	1785
	Excess Reduction Achieved	1152 lbs/d

Especially noteworthy in the above table is the fact that the Woodstove Strategies alone provide sufficient emissions reduction (1790 lbs/d) to meet the standard. This gives a high degree of assurance that the 24 hour NAAQS for PM_{10} will be met in areas within the UGB which are not significantly impacted by industrial sources and where no monitoring data exists. Conversely, the great reduction in emissions within the industrial area from 1986 to 1992 (64%), as a result of the plant shutdown and Industrial Controls, in combination with the Woodstove Strategies provides reasonable assurance that non-monitored areas within and around the industrial area will meet the standard.

The alternative analysis, based on Receptor Modeling, requires a 20% or 27 $\mu g/m^3$ of reduction in worst case day PM_{10} concentrations. This reduction is achievable through the same strategy elements as shown below.

Table 4.13.3-5: Summary of 24 Hour PM_{10} Reductions

Strategy Element	Credit	PM_{10} Reductions
Industrial Controls	55%	5 $\mu g/m^3$
Woodstove Strategies		
Certification	10.2%	8
Curtailment	25%	20
Total Reduction		33 $\mu g/m^3$
Required Reduction		27
Excess Reduction Achieved		6 $\mu g/m^3$

This analysis also demonstrates that the Woodstove Strategies (28 $\mu g/m^3$ reduction) alone are sufficient to meet the 24 hour NAAQS, thus providing a high degree of assurance that the standard will be met everywhere within the UGB.

4.13.3.4 Emission Offsets and Banking

There are no currently banked emissions in the industrial source permits within the Grants Pass UGB.

4.13.3.5 Demonstration of Maintenance

To demonstrate continued maintenance of the annual and 24-hour NAAQS for PM_{10}, annual and worst case day emissions were projected to the year 2000. For the worst case day the emissions for each individual source category were forecast taking into account expected growth and application of the relevant control strategy element to the uncontrolled emissions projected for 1992 (Table 4.13.2-6). Individual source impacts (in $\mu g/m^3$) were determined by applying growth predictions and the application of controls to the values in Table 4.13.3-1.

With the addition of the 44 $\mu g/m^3$ background, the projection indicates a year 2000 worst case day concentration of 135 $\mu g/m^3$, which is less than the 24-hour standard of 150 $\mu g/m^3$. The year 2000 worst case day projections are tabulated below.

Table 4.13.3-6: Grants Pass UGB Worst Case Day Year 2000 Maintenance Analysis

Source	1992 lbs/Day	1992 $\mu g/m^3$	1992-2000 Growth	2000 lbs/Day	2000 $\mu g/m^3$
Industry	939	11	0 %	939	11
Res. Wood Comb.	3851	47	-7 %	3578	44
Fugitive Dust	1500	19	14 %	1707	22
Transportation	864	10	14 %	984	11
Other	111	3	14 %	126	3
Totals	7265	90		7334	91

To check for continued maintenance of the annual standard, the total annual emissions for 1986 and 2000 were compared. Using the same rationale (growth combined with controls) the annual emissions are projected to be approximately 18% lower in 2000 than in 1986, thus indicating continued maintenance of the annual standard (See Table 4.13.2-5).

4.13.4 Implementation of the Control Strategy

4.13.4.1 Schedule for Implementation

The schedule for implementation of the recommended set of measures is shown in Table 4.13.4-1.

Table 4.13.4-1: Control Strategy Implementation

Program Element	Implementation Date	Organization Involved
1. Nephelometer to support voluntary curtailment program	Nov. 1, 1989	EPA/DEQ
2. Volunteer, or appointed Air Quality Coordinator	Nov. 1, 1989	Local Gov.
3. Voluntary Woodheating Curtailment	1990/1991 Heating Season	DEQ/Local Gov.
4. Short Term Public Information	1988/1989 Heating Season	DEQ/Local Gov. & Media
5. Long Term Public Information	1988/1989 Heating Season	DEQ/Local Gov.
6. Updated Woodheating Survey	July 31, 1991	DEQ
7. Industrial Rules	September 30, 1989	DEQ

Discussion of Program Elements

1. Nephelometer: The Department secured Special Project funding from the Environmental Protection Agency for 1989 to install and operate a nephelometer. The funding also covered the installation and operation of meteorological equipment. Nephelometer data collected during the winter of 1989/1990 was regressed against PM_{10} data and exhibited a high degree of correlation. Further regression work was done with meteorological data to develop a PM_{10} forecasting equation for use in making burn/no burn calls on a timely basis. Details on the regression results are contained in Appendix 7.

2. Volunteer Coordinator: The City of Grants Pass and Josephine County in December 1989 jointly appointed Bill Olson (Josephine County Health Department) to serve as the air quality coordinator for Grants Pass.

3. Voluntary Curtailment: The Department worked with local government to set up a voluntary curtailment program. A "red", "yellow", "green" day type of program, similar in operation to the existing program in Medford, was developed. The basic operational aspects of the voluntary curtailment program are summarized below. The announcement of

curtailment calls was anticipated to start on December 1, 1990. Operational details are contained in Appendix 7.

4. Short-Term Public Information: The basic focus of this measure is on future (1990-1991) media contact/Public Service Announcements with respect to voluntary curtailment of woodheating. On a current basis, the Department developed three 30-second Public Service Announcements called "Burning Tips" for the PM_{10} problem areas which were made available to Grants Pass radio stations for the 1988-1989 heating season. Information on voluntary curtailment will be developed for media use to coincide with voluntary curtailment program start-up in 1990.

5. Long-Term Public Information: This program element is focused on written materials, mostly the development and distribution of informational brochures targeted at wood burning households. Several informational brochures have been published by the Department and have been distributed in the PM_{10} problem areas of the State. For the 1989-1990 heating season, the Department developed informational materials around the theme "Burn Smart". The "Burn Smart" brochure includes basic information on the relationship of wood heating to air pollution and tips on energy conservation, woodstove operation and installation. The brochure also has information on proper seasoning of wood that is specific to commonly used wood species.

6. Updated Wood Heating Survey: The residential wood combustion component of the emissions inventories for Grants Pass depended upon statistics that were generated from the Medford Wood Heating Survey conducted in 1987. In order to improve the accuracy of the emissions inventories in the future, the Department will budget for a Grants Pass survey to be conducted by July 1991.

7. Industrial Rules: The Environmental Quality Commission adopted Industrial Rules covering the southern Oregon PM_{10} problem areas in September 1989. Based on the schedule contained in the proposed Rules, upgraded boiler and veneer dryer controls would have to be in place and demonstrate compliance with the Rules by August 1991.

<u>Summary of the Chief Operational Aspects of the Voluntary Woodburning Curtailment Program</u>

Public Awareness	Local media Public Service Announcements (PSA's) have been set up for the 1990-1991 heating season. This will be an ongoing effort. An informational booth was set up at the August 14-18, 1990, Josephine County Fair. The Department of Environmental Quality (DEQ) participated

	in the Jackson County Air Fair week (September 10-15, 1990), which had a regional focus on air quality. The DEQ is committed to participate in future local air quality related fairs.
Prediction of when to call curtailment	B-Scat, wind speed and temperature data from the 11th & K monitoring site will be used in conjunction with upper air temperature data from Medford to make curtailment calls. This will be done on a 9 A.M. to 9 A.M. basis, so calls can be made for the day in question by noon. The prediction formula and operational details are contained in Appendix 7.
Action Point	Curtailment calls have been set at a PM_{10} level of 120 $\mu g/m^3$ for a period from 9:00 A.M. to 9:00 A.M., so that the curtailment announcement can appear in the local evening newspaper (Daily Courier). Based on the design value statistical analysis, the expected number of "red" days will be 3 to 4 during the heating season.
Notifications	Daily calls will be made to the Daily Courier in Grants Pass. The general public will have access to an announcement machine operated by Josephine County.
Exemptions	Households with wood as the only source of heat will be exempt from the curtailment program. Low income households will also be exempt.
Surveillance/Tracking	A surveillance/tracking program will be conducted by local government, with initial program setup assistance by the DEQ. The program details are contained in Appendix 7.

4.13.4.2 Rules, Regulations and Commitments

The Oregon Revised Statutes (ORS) 468.020, 468.295 and 468.305 authorize the Oregon Environmental Quality Commission to adopt programs necessary to meet and maintain state and federal standards. The mechanisms for implementing these programs are the Oregon Administrative Rules (OAR).

Specific air pollution rules applicable to the Grants Pass area (OAR 340-30-005 to 070) are included in Section 3.1 of the Oregon State Implementation Plan.

OAR	Subject
340-30-005 (revised)	Purposes and Application (Adds Grants Pass Urban Growth Boundary Area)
340-30-015 (revised)	Wood Waste Boilers
340-30-021 (added)	Veneer Dryer Emission Limitations
340-30-040 (revised)	Charcoal Producing Plants
340-30-046 (added)	Compliance Schedules
340-30-050 (revised)	Continuous Monitoring
340-30-055 (revised)	Source Testing
340-30-065 (revised)	New Sources
340-30-067 (new)	Rebuilt Sources

Additional rules applicable statewide include:

OAR	Subject
340-20-220 to 275	New Source Review
340-20-300 to 320	Plant Site Emission Limits
340-21-100 to 190	Woodstove Certification Program

On July 18, 1990, the City of Grants Pass passed Ordinance No. 4671, banning open burning on a year-round basis within the city limits of Grants Pass.

Interagency Commitments

Oregon Department of Forestry Smoke Management Plan, OAR 629-43-043

Enforceability

The Clean Air Act requires SIP control strategies to be enforceable. The Industrial Rules cited above provide the means to enforce the industrial control element of the strategy. The Woodstove Certification Program provides enforcement of the residential woodburning control element. Implementation of the voluntary woodstove curtailment strategy element will assure that attainment of the PM_{10} NAAQS is achieved and maintained. This strategy does not need to be enforceable, as the credit of less than 30% is consistent with EPA guidance for such programs.

4.13.4.3 Emergency Action Plan Provisions

OAR 340 Division 27 describes Oregon's Emergency Action Plan. The rule is intended to prevent the excessive accumulation of air contaminants during any periods of air stagnation which, if unchecked, could result in concentrations of pollutants which

could cause significant harm to the public health. The rules establish criteria for identifying and declaring air pollution episodes below the significant harm level, and were adopted pursuant to requirements of the Clean Air Act. The action levels found in the Plan were established by the Environmental Protection Agency and subsequently adopted by the Department.

The "Significant Harm" level for PM_{10} particulate matter is 600 $\mu g/m^3$; the "Alert" level is 350 $\mu g/m^3$; the "Warning" level is 420 $\mu g/m^3$; and the "Emergency" level is 500 $\mu g/m^3$ (all 24 hour averages). These levels were adopted by the Environmental Quality Commission in April, 1988. They must be coupled with meteorological forecasts for continuing air stagnation to trigger the Action Plan.

Authority for the Department to regulate air pollution sources during emergency episodes, including emissions from woodstoves, is provided under ORS 468. When there is an imminent and substantial endangerment to public health (the Significant Harm level) ORS 468.115 authorizes the Department, at the direction of the Governor, to enforce orders requiring any person to cease and desist actions causing the pollution. State and local police are directed to cooperate in the enforcement of such orders.

4.13.5 Public Involvement

Development of the Grants Pass PM_{10} control strategy included several areas of public involvement including Citizen Advisory Committees, public participation at hearings on proposed industrial source rules and meetings with local elected officials.

4.13.5.1 Citizen Advisory Committee

In August 1987 the Department requested that the City of Grants Pass and the Josephine County Commission appoint a citizens committee of eight members with equal representation from the City and the County (four appointments each). The citizen appointments were completed by December 1987. The eight members designated their group the Grants Pass Clean Air Policy Advisory Committee. The main purpose of the Committee was to evaluate the particulate problem in Grants Pass and make recommendations to the City and County on a strategy to meet the PM_{10} standards in Grants Pass.

4.13.5.2 Public Notice

Public notice of proposed rule revisions is done through mailing lists maintained by the Department, through notifications published in local newspapers and through Department press releases.

The public notice for the amendments to Oregon's Industrial Rules affecting the Medford-Ashland and Grants Pass areas was published in the Secretary of State Bulletin on December 15, 1988. The public notice for the entire SIP control strategy was published in the Secretary of State Bulletin on July 1, 1990. Copies of these notices are in Appendix 8 (4.13.5-1). Copies of the notices that were published in the local newspapers are also contained in Appendix 8 (4.13.5-1).

4.13.5.3 Public Hearings

Public hearings on the Industrial Rules were held in Medford on January 10, 1989 and in Grants Pass on January 12, 1989. Public hearings on the entire SIP control strategy were held in Grants Pass on August 2, 1990 and September 13, 1990.

4.13.5.4 Intergovernmental Review

Public hearing notices regarding adoption of this revision to the State Implementation Plan were distributed for local and state agency review through the A-95 State Clearinghouse, 45-day process, which commenced on August 6, 1990. No comments were received through the A-95 review process.

HWH:a
PLAN\AH10915
(10/15/90)

2/6

STATE OF OREGON
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
JAN 31 1991
OFFICE OF THE DIRECTOR

CITIZENS FOR Quality Living
P. O. Box 1868
Klamath Falls, OR 97601

ATTENTION: [redacted] OD

COMPANY: EQC

FROM: CAROL YARBROUGH 882-5406

SUBJECT: SIP Adoption

NO. PAGES: Cover plus 8

FAX NO: 1-229-6124

DATE: 1/31/91

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
JAN 31 1991
OFFICE OF THE DIRECTOR

CITIZENS FOR QUALITY LIVING
P.O. BOX 1888
KLAMATH FALLS, OREGON 97601
(503) 882-5406

January 29, 1991

Environmental Quality Commission
DEQ Conference Room 3a
811 S. W. 6th Avenue
Portland, Oregon

RE: Agenda Item D. Proposed Adoption of Rules for PM10 Control Strategy for Eugene-Springfield (LRAPA Plan), Medford-Ashland, and Klamath Falls.

We would like to thank you for your work on the State Implementation Plan for Klamath County. We acknowledge a serious air pollution problem and are aware of the need for a change in local attitudes and habits that contribute to the pollution. We see the EQC and DEQ as having a broad responsibility in protecting people and the environment from the hazards of pollution.

The Klamath Basin geography and weather patterns occasionally produces two thermal inversions that creates a vacuum effect drawing in air from outside the urban growth boundary. These weather patterns and thermal inversions have been well documented. It is also well documented that fine air borne particles can travel several hundred miles from their original source. One important aspect of fine particles is that they carry into our lungs pollutants that could not otherwise get there. In this sense, fine particles have synergistic effects with other pollutants.

When DEQ states, in the SIP, that "In spite of the magnitude of these emissions and the proximity if the plant to the Urban Growth Boundary, the department (DEQ) does not believe that emissions for the plant (Weyerhaeuser's 631 tons of PM10 particulate) have a significant impact on the non-attainment area", we have to question their intent. Is it to protect Weyerhaeuser or the local population? People simply must question if DEQ considered the meteorology and local wind patterns; that an elementary school is located next door to the PM10 source; that LaWanda Hills, a residential subdivision is located across the highway; that Steward-Lennox residential development, located 1 mile from the source has been annexed into the City of Klamath Falls. The growth boundaries do not stop pollutants from entering, they are simply convenient lines drawn on a map for political purposes and have no bearing on pollution control.

John Core stated in Air Quality and Forestry Burning: Public Policy Issues that "..all of those involved in the issue of air quality and burning must understand the broader land management, air quality, and public policy issues if efforts to deal with these conflicts are to be successful." People in Klamath Country have sufficient and reasonable cause to question DEQ. A question of equity in the plan for OUR AIR SHED is raised. It is your responsibility being called into question. A piece meal plan that trivializes the problem by impermissibly fragmenting does not work for people breathing dirty air. While the Klamath Basin has been cited as having the highest PM10 levels in the Nation the DEQ permitted a regional incinerator that puts dioxins and heavy metals into our air shed, to be attached to existing PM10 particles and carried far and wide by the winds. DEQ knew the pollutants, the wind flows, the proximity to dairy and hay farming operations, yet promoted a serious pollution source. If you would permit the incinerator under these non-attainment conditions, what would you permit if there were less residential smoke? Would our air shed be safeguarded? If the 631 tons of particulates, dispersed in our air shed by Weyerhaeuser, is graded non significant--then what is the grading scale? The bio-medical waste incinerator has five years to reduce the level of particulate they produce. What increase would you allow if the citizens burn less wood?

We also question methods used to delineate the boundaries for this study (SIP), as it does not encompass many of the sources contributing to the air quality problems. It appears that DEQ is focusing only on population density, to the exclusion of other major contributing forces. The DEQ has been assessed by the Oregon Environmental Council in February 1989, as having inadequate implementation resources and an absence of an overall enforcement policy. i.e. inadequate fines; arbitrary compliance standards; inadequate data and record keeping on compliance; inadequate resources for conducting, monitoring and sampling; inadequate resources to conduct its mission; and insufficient chain of command and flow of information. Most monitoring data are supplied by private consultants hired by the regulated industry.

We find that the entire SIP is sprinkled with ambiguous terminology such as: expected to be, relative, we believe, implies, indicated, hypothesis, infer, estimate, assumed, reflected by.

People question DEQ's science when they give quantification of dioxin in incinerator emissions and wood stove smoke without testing for either. The DEQ comparison of incinerator dioxin emissions as compared to wood stove smoke is no more that an ill-educated guess. The amounts of dioxin in the Klamath non-attainment area have never been analytically quantified either for wood stoves or the bio-waste incinerator. In fact, dioxin residues have been identified in only a few wood stoves out of many that have been tested nationwide to date. This fact, coupled with the chemical conditions required for dioxin production strongly

suggests that detectable dioxin formation in wood stoves is dependent on factors other that burning wood; ambient air contamination with chlorophenolic plastics or paper; combustion of treated wood; or metals used for stove fabrication that were contaminated with chlorinated compounds during smelting operations.

The science of DEQ also blatantly ignores the accumulative and synergistic effects resulting from numerous small toxic source emissions (dioxins, heavy metals) adhering to PM10 particles emitted from other sources. They seem only interested in wood stoves to the exclusion of all other sources.

The DEQ also ignores other sources of information and research that may not line up with their ideas. For example, they have continued to ignore the California State Air Resources Board reports, that do quantify dioxin and heavy metal testing and report that bio-medical waste incinerators are the largest dioxin sources in the State of California. Are we to assume that Oregon is immune from the same laws of science that produced the pollution in California?

We acknowledge that residential wood stove smoke presents a serious problem. We are aware of the adverse health effects that PM10 particles present to people. When those effects are added to the dioxin, heavy metal and PM10 synergism, the effects worsen. We also know that Klamath Basin people have a very strong sense of fairness. If attempts to bring industrial sources under control isn't made at the same time as pressures to reduce residential sources, the people will resist. If however, a balanced and honest assessment of the problem is presented, containing monitoring, bio-accumulative testing, and balanced restrictions on both industry and individuals then attainment is possible.

The Department of Environmental Quality is badly in need of an image overhaul in the Klamath Basin and the State of Oregon. Start by doing your science correctly and being honest with the very people your are charged to protect.

We present the following recommendations as a means to start the overhaul process:

1. The Urban Growth Boundary is not suitable for dealing with pollution sources. Other more reasonable, scientifically derived (not politically) boundaries are needed.

2. A testing program that not only deals with PM10 levels but also includes dioxin, heavy metal and other chemical and toxic material be initiated. The tests must include bio-accumulated data. Tests on mammal, bird, fish and human samples must be included as well as food products such as milk, beef, eggs, potatoes and others.

3. All sources must be considered. Industry, slash burning, and residential sources must be reduced, not just private wood stove smoke.

4. Alternative methods to waste incineration, both municipal and bio-medical, at lower costs, are available on commercial scales. They must be brought on line and incineration as the method of choice eliminated.

The economic development opportunities of the Klamath Basin are being seriously challenged by the acute air pollution problems. The DEQ must be a part of the solution not exacerbate the problem with fragmented and incomplete data, leading to local contention and strife.

It is unconscionable that industry should be allowed a 49.6% increase in emissions (PSELs, page 41) in a non-attainment area as severe as Klamath Falls. People from around the state as well as outside Oregon are becoming increasingly aware of the air pollution problem. The Klamath Basin can never attain any significant economic growth if these increases in air pollution are permitted by DEQ.

Thank your for the opportunity to input information to the process. We are expecting a response to the serious and sincere questions that we addressed in this letter.

Sincerely,

Carol Yarbrough, President

NEIL GOLDSCHMIDT
GOVERNOR

Department of Environmental Quality

811 SW SIXTH AVENUE, PORTLAND, OREGON 97204-1390 PHONE (503) 229-5696

September 13, 1990

Commissioner Harry Fredricks
Klamath County
305 Main Street
Klamath Falls, OR 97601

Re: Biowaste

Dear Commissioner Fredricks:

During your last visit to DEQ we had some discussion about the significance of the air emissions from the Biowaste hospital waste incinerator. You asked me to send you any comparative data we may have on the subject. Attached you will find a comparison of air pollutants from the Biowaste incinerator versus woodheating emissions in the Klamath Falls area. Information is a best estimate based on applicable emission factor data.

We understand that most concern has been raised about dioxin emissions. The attached graphic comparison of dioxin emissions indicates that for the most toxic of the dioxins, 2,3,7,8-TCDD, residential woodheating in the Klamath Falls airshed is estimated to emit more than three times the amount of this substance emitted from Biowaste.

The attached tabular comparison of 11 different pollutants indicates that for ten of them, wood heating emissions in the Klamath Falls airshed are more than those of Biowaste. Mercury is the exception. This pollutant is generally unique to solid waste combustion. The ground level impact of mercury from the Biowaste incinerator is estimated to be several thousand times lower than the Occupational Safety and Health Administration acceptable level. There is no EPA standard for Mercury.

Please keep in mind that emission comparisons do not exactly relate to human exposure as dispersion and dilution and other factors affect ground level concentrations. In general low stack height emissions such as those from woodstoves have greater impact per pound of emission than taller industrial stacks like the one at the Biowaste facility.

I hope this information is useful to you.

Sincerely,

John F. Kowalczyk, Manager
Planning & Development
Air Quality Division

JFK:a
PLAN\AH10797
Enclosure: Comparative emission tables and figures.

COMPARISON OF EMISSIONS FROM THE BIOWASTE HOSPITAL WASTE INCINERATOR (HWI) AND RESIDENTIAL WOOD COMBUSTION (RWC)

POLLUTANT	EMISSION FACTOR LBS/TON HWI	EMISSION FACTOR LBS/TON RWC	EMISSION RATE (LBS / YR) HWI	EMISSION RATE (LBS / YR) RWC	TOTAL EMISSIONS (LBS / YR) HWI	TOTAL EMISSIONS (LBS / YR) RWC	EMISSION RATIO RWC/HWI
Particulate	1.2	42	4200	126	4.2E+03	1.3E+06	300
Carbon Monoxide	4.6	260	16100	780	1.6E+04	7.8E+06	480
Nitrogen Oxides	2.1	2.8	7350	8.4	7.4E+03	8.4E+04	11
Sulfur Oxides	1.7	0.4	5950	1.2	6.0E+03	1.2E+04	2
Mercury	0.03	0.00026	105.0	0.00078	1.1E+02	7.8E+00	0.'
Arsenic	0.00039	0.00026	1.4	0.00078	1.4E+00	7.8E+00	o
Chromium	0.00035	0.0018	1.2	0.0054	1.2E+00	5.4E+01	44
Nickel	0.0012	0.0034	4.2	0.0102	4.2E+00	1.0E+02	24
Manganese	0.00005	1	0.2	3.0	1.8E-01	3.0E+04	170000
Benzene	0.015	0.34	52.5	1.0	5.3E+01	1.0E+04	190
2,3,7,8-TCDD	1.1E-07	4.4E-08	3.9E-04	1.3E-07	3.9E-04	1.3E-03	3

EMISSION RATE ASSUMES: BIOWASTE BURNS 3500 TONS OF WASTE (AS FUEL) AND AN AVERAGE WOODSTOVE BURNS 3 TONS OF FUEL PER YEAR

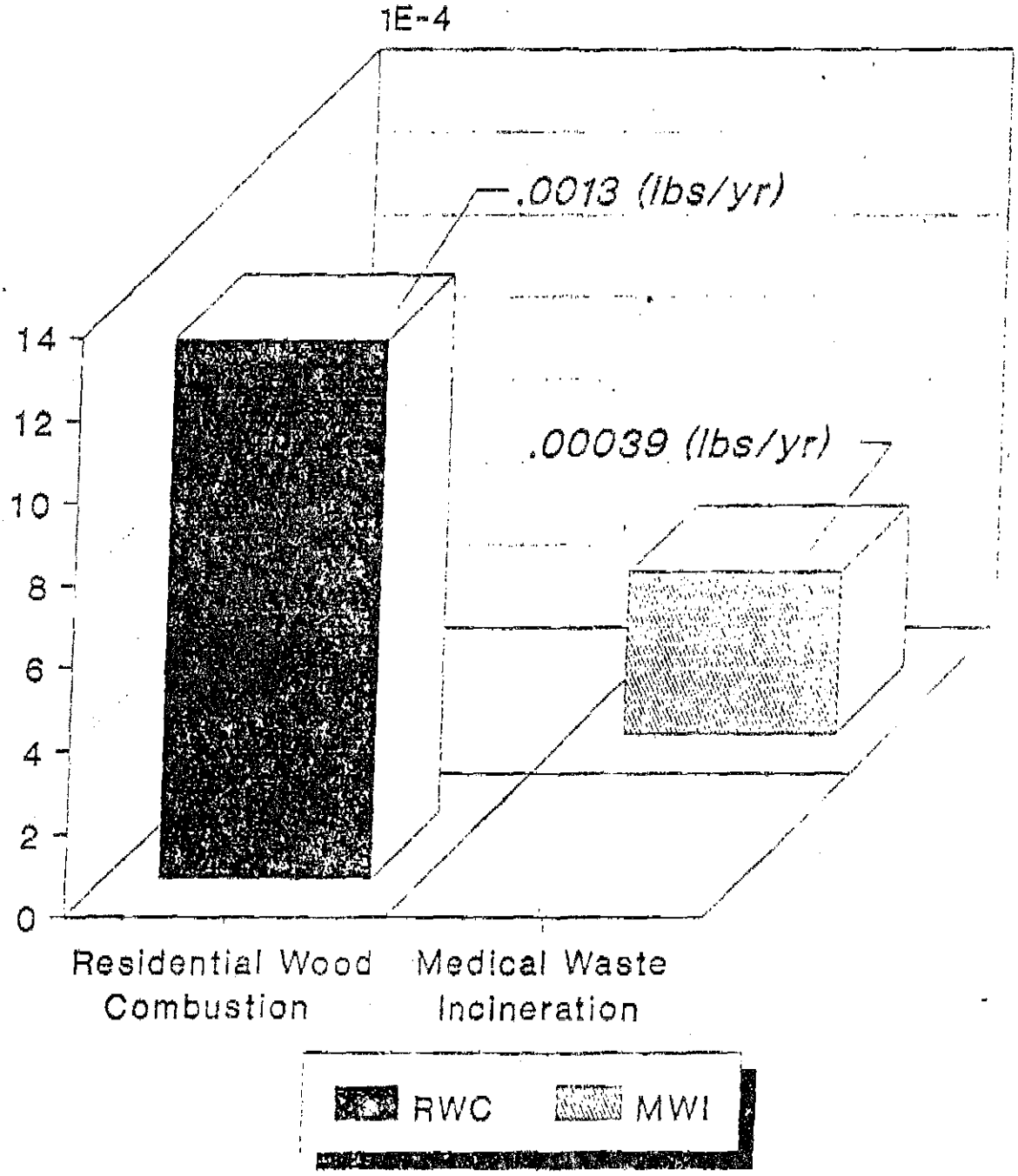
TOTAL EMISSIONS: ANNUAL BIOWASTE EMISSIONS FROM BURNING 3500 TONS OF WASTE
ANNUAL EMISSIONS FROM 10,000 WOODSTOVES IN THE KLAMATH FALLS NON-ATTAINMENT AREA

References: U.S. Environmental Protection Agency, "Compilation of Air Pollution Emission Factors", AP-42 (Third Edition), Jan. 1984
Washington State Dept. of Ecology, "Washington Toxic Air Contaminants Study, Revised Final Report", Radian Corp., Feb. 1985
U.S. Environmental Protection Agency, "Toxic Air Pollutant Emission Factors - A Compilation for Selected Air Toxic Compounds and Sources", Oct. 1988
Radian Corporation, "Hospital Waste Combustion Study - Data Gathering Phase", Oct. 1987

Wood has natural trace elements of chlorine, a precurser for dioxin formation.

Comparison of 2,3,7,8 TCDD Emission

Klamath Falls Residential Wood Heating vs. Bio-Waste Medical Waste Incineration



STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY INTEROFFICE MEMORANDUM

DATE: January 7, 1991

TO: Environmental Quality Commission

FROM: Fred Hansen, Director

SUBJECT: Agenda Item K, January 31, 1991 EQC Meeting

Review of the 1990 Field Burning Report to the Legislature

Background

Chapter 468.470 (e) requires the Department to report annually to the Legislative Committee on Trade and Economic Development on the progress being made in discovering and utilizing alternatives to open field burning and on the effectiveness of the smoke management program.

Attached is a draft of the 1990 Annual Field Burning Report prepared by the Oregon Department of Agriculture and the Department.

The Department of Agriculture prepared the bulk of the 1990 annual report as part of its responsibility of administering the Smoke Management Program. The Department provided nephelometer and meteorological data and prepared the "Enforcement" and "Issues and Trends" sections of the report.

Significant Issues

* Less acreage was registered and open burned in 1990 than in any year since 1979. Acreage burned during 1990 was about 20 percent below average continuing a trend begun in 1988 as more growers included alternatives other than open burning in their operation.

* There has been a trend over the past few years toward increased grower use of alternatives to field burning, particularly in the areas of straw utilization and propane flaming.

* It is clear that under adverse atmospheric conditions, or when done improperly, emissions from

propaning can significantly affect local and regional air quality.

* Overall, burning was concentrated into a very few number of days. There were just 39 days in which some burning occurred compared to 53 days for the seven year average.

* Generally unreliable and inconsistent transport winds contributed to more smoke intrusion hours in 1990 than have occurred since 1984.

* Historically Lebanon and Sweethome receives more smoke impacts than other valley areas because of their geographic location on the east side of the valley and the effects of local terrain on low level winds. Lebanon experienced 5 days with significant intrusions resulting in a total of 24 impact hours, including two hours of heavy concentration.

* A total of 2,959 citizen complaints attributed to all sources were received by the Department in 1990, an increase over 1989 (2,018) and the seven year average of 1,424. The only year registering more complaints than 1990 was in 1988 (3,783).

* 1990 marked the fourth year of implementation of the Oregon Visibility Protection Plan. This plan attempts to improve visibility in Oregon's Class I wilderness areas and Crater Lake National Park by restricting slash and field burning between July 4 and Labor Day. During the 1990 season, restrictions on field burning resulted in improved visibility in the Class I areas.

* Thirty nine notices of noncompliance were issued during the 1990 season resulting in 11 civil penalty referrals compared to 28 NONs and 16 referrals in 1989.

* Registration and burn fees have remained constant since 1975. Due to inflation and other increasing costs, program expenditures could exceed revenue by the end of the 1989-90 biennium.

* The Research and Development Program has been indefinitely postponed since fiscal year 1988-89 due to insufficient funds. Until revenues are identified and appropriated, progress being made through

research of feasible alternatives to open burning is at risk.

Requested Action

The Commission is requested to review the draft report, provide guidance for modification if deemed appropriate, and approve submittal of the final report to the Legislature.

Prepared By: _____

Phone: _____

Date: _____

Approved:

Section: _____

Division: _____