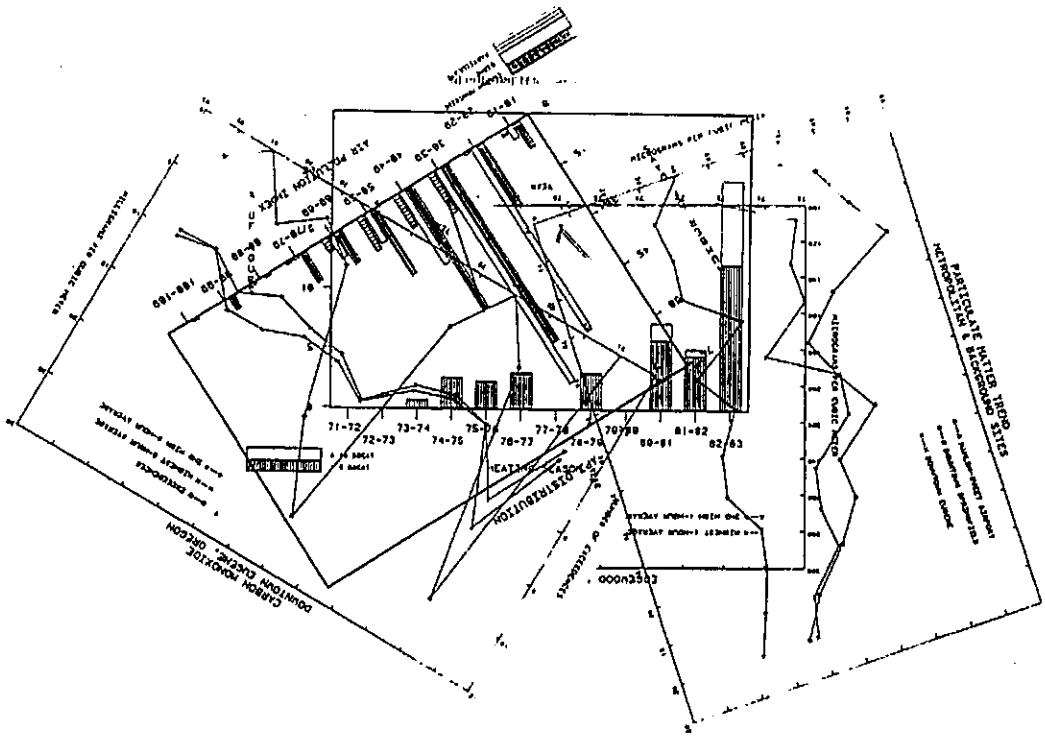
# LANE REGIONAL AIR POLLUTION AUTHORITY



1982 ANNUAL REPORT

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## Board of Directors

## 1982

Bill Whiteman, Chairman.....Cottage Grove
Sandra Rennie, Vice-Chair.....Springfield
Emily Schue.....Eugene
Otto t'Hooft.....Lane County
John Lively.....Springfield
Bill Hamel.....Eugene
Cynthia Wooten.....Eugene

## Advisory Committee

Henry Wohlers, Chairman.....General Public
Darrel Spiesschaert.....Fire Suppression
Dick Nice.....Fire Suppression
Dr. John D. Minor.....Public Health
Marj Gossler.....Agriculture
Tom Hunton.....Agriculture
Owen Brown.....Industry
Harold Babcock.....Industry
Ted Hurd.....Industry
Nate Coleman.....Industry
Sharon Riney.....Industry
Dennis Cuddeback.....Planning
Brian Bauske.....Planning/Gen. Public
C.E. Lynch.....General Public
Marjorie Bassett.....General Public

Donald R. Arkell, Director

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# I MESSAGE from the DIRECTOR

The year 1982 may be noted as a time of rapid change for LRAPA. The Authority, as most other segments of our community, felt the full weight of recession, high unemployment, failing businesses, and relatively scarce financial resources.

In a sense however, the year was also a period of growth. We found that despite funding and personnel reductions, we actually could, with some prior planning, increase efficiencies and continue our mandatory functions of enforcement and monitoring.

The year was also a time to prepare for the future. We were reminded during a few occasions of poor air quality about how fragile our airshed really is, and how quickly it can become loaded with too much air pollution. We found that our overall air quality is marginal, and we could begin to register standard exceedences for several pollutants, even as some measure of economic recovery takes hold in Lane County.

With increased participation in local planning and community development activities, we pursued our goal that air quality should not significantly deteriorate as growth and development occur. As a complement to our involvement in more comprehensive planning activity, we sought better definition of the particular kinds of air pollution problems we will encounter in the future. For example, through an air monitoring study and survey we found that woodstove air pollution is likely to grow in importance and, along with other sources, can reverse the trend toward cleaner air, leaving us to face uncertainties about <u>when</u> and <u>if</u> industrial expansion can occur.

What all of this means is that we are on the threshold of a renewed effort to maintain what we currently have, in terms of air quality. There are serious matters of public health and economics to be resolved. Hopefully, we have the will as well as the creative imagination to do so.

# II LRAPA: A LOCAL AGENCY

The Lane Regional Air Pollution Authority is the only local air quality control agency in Oregon. The Authority has jurisdiction over all air pollution sources in Lane County, except field burning, slash burning, and transportation.

Funding of the Authority is provided by local government contributions, as well as Federal and State grants. Additional revenue sources include permit fees and miscellaneous contracts.

A Board of Directors conducts the official business of the Authority, such as establishing agency policy and adopting rules and regulations. Advising the Board on local air quality issues of concern is the LRAPA Advisory Committee consisting of fifteen representatives from local public and private interests and organizations.

Since its creation in 1968, the Authority has operated on a working policy of cooperation and conciliation; prevention as a positive alternative to after-the-fact correction of an air pollution problem. The success that the Authority has attained over the years is due to that policy, whose basic goal is to minimize pollution in an effective way consistent with the needs of the citizens of Lane County.

# III BOARD of DIRECTORS

The Lane Regional Air Pollution Authority Board of Directors is the policy and rule-making arm of the Authority. The seven-member Board consists of three representatives from Eugene, two from Springfield, and one each from Cottage Grove and Lane County.

The make-up of the Board remained the same as in 1981. Cottage Grove representative Bill Whiteman served as 1982 Board Chair, while Springfield representative Sandra Rennie was elected Vice-Chair. Besides Whiteman and Rennie, the Board consisted of Bill Hamel, Cynthia Wooten, Emily Schue, John Lively, and Otto t'Hooft.

Adoption of three new rules and modification of another occupied nearly half of the Board meetings in 1982. The Board approved rules dealing with Plant Site Emission Limits (PSEL's), New Source Review (NSR), and pulp mill emissions, and modified the rules dealing with air conveying system emissions.

The Plant Site Emission Limit rules, approved by the Board in April, established emission limits for each permitted industrial source in Lane County. This in turn will provide an area-wide emission baseline from which increases or reductions in individual plant emissions can be calculated. The rules require the Authority to limit the total emissions from each plant site based on actual emissions during the baseline year of either 1977 or 1978. The PSEL rules are an important component of a local air quality management system designed to regulate the total pollutant load in the airshed.

The New Source Review rule, also adopted at the April Board meeting, governs the air pollution control requirements for major expansion by existing sources and for major new sources wishing to locate in Lane County. A "major source" is one that emits any of certain pollutants in excess of specified amounts. For example, a major source of particulate matter is considered to be one which emits 25 or more tons per year, while a major carbon monoxide source

is one emitting 100 or more tons of CO per year.

Smaller sources would be subject to less rigorous air quality analyses and would use growth increments before emissions offsets. Offsets are the means by which the emission rates of one or more existing sources are reduced in order to make room for a new or expanded source.

LRAPA's PSEL and NSR rules are patterned after similar rules adopted by the Oregon Environmental Quality Commission in 1982.

LRAPA assumed jurisdiction over the Weyerhaeuser Pulp Mill in Springfield after the Board adopted rules covering Kraft Pulp Mill operations in Lane County. Weyerhaeuser operates the County's only pulp mill. The Board adopted the rules in September, and formally asked the Environmental Quality Commission for exclusive jurisdiction. The EQC granted the request shortly after the LRAPA Board action.

The action enables LRAPA to more properly manage the local airshed, and the Authority will be better able to respond to air pollution complaints that might be registered about that facility.

The Authority also has jurisdiction over the facility's lumber, plywood, and particleboard operations.

Local wood products industries using air conveying systems, such as cyclones, were granted an extension of the deadline to meet LRAPA emission regulations at the Board's September meeting. Instead of having to meet a January 1, 1984 deadline, industries will have until January 1, 1985 to control emissions from those systems.

The one-year extension was unanimously approved by the Board after various industry representatives testified that they would experience severe economic hardship if held to the original deadline. Each cited the financial difficulties they were facing due to depressed market conditions, and the additional financial burden involved if they had to purchase and install necessary control equipment on their air conveying systems.

Also supporting the delay was the Lane County League of Women Voters. In a letter to the Board, the League said that it has "long supported efforts to improve air quality but in this case feel effects of a long recession dictate some flexibility in implementing standards."

The regulation covering air conveying systems is contained in the Eugene/Springfield Air Quality Maintenance Area Control Plan. The plan had to be modified to accomodate the one-year delay, but the Board was assurred that the delay would not jeopardize the area's ability to meet the particulate standard by 1987.

The Board also became involved in the woodstove air pollution issue in 1982, adopting a strategy for controlling that source in August. The strategy, forwarded to the Department of Environmental Quality, emphasized voluntary control programs rather than the development of mandatory regulations. The Board also approved a woodstove public education program in December. Both Board actions were taken after recommendations were made by LRAPA's Advisory Committee. The recommendations are discussed in the Advisory Committee section of this report.

A 1982-83 budget reflecting a 35% reduction in local revenues in addition to anticipated cuts in all other Authority revenue sources was approved by the Board in May. The approved budget amounted to $500,000, down $80,000 from the previous year.

The budget resulted in the layoff of three and a half agency employees, reflecting a 25% reduction in the Authority's staff. Expenditures for capital equipment, materials and services were also sharply reduced. In addition, planned expenditures from the Authority's Capital Reserve Fund were frozen for the year.

Program curtailments resulting from the reduced budget included a reduction in the Authority's monitoring sites, reduced complaint response, a delay in the schedule to develop the Phase III strategies contained in the Eugene/Springfield AQMA Control Plan, and reduced ability to work with industries to prevent excessive air pollution emissions.

# IV ADVISORY COMMITTEE

The Lane Regional Air Pollution Authority Advisory Committee examines various air pollution-related issues of importance to Lane County and makes recommendations to the Authority's Board of Directors. The Committee is composed of representatives from various segments of the community; from public health to public-at-large, from industry and agriculture to fire suppression agencies. Committee members are appointed by the LRAPA Board.

The Advisory Committee became a valuable resource to LRAPA in 1982. It dealt with two issues of major importance to the agency and to Lane County.

The first was a series of recommendations outlining the relationships that the Authority should maintain with local planning agencies. The recommendations included ways to effectively utilize the Authority's technical capabilities to incorporate air quality concerns into other community planning processes. The Authority began to implement the recommendations and established consistent lines of communication with local planning agencies.

The Advisory Committee also examined woodstove air pollution and developed recommendations on a woodstove public education program.

Because woodstoves are viewed as a rapidly growing and uncontrolled source of air pollution in Oregon, the State began examining possible control options last summer, including emission performance labeling on new stoves, tax credits, and emission performance certification allowing only the cleanest burning units to be sold.

The Advisory Committee was asked to examine the control options and report back to the Board. The Committee recommended that the Board adopt a position emphasizing voluntary control programs rather than mandatory regulations. Such voluntary programs could include a financial incentive (such as a tax credit) that could apply statewide on new stoves, approved stove modifications and replacement of

air pollution control equipment. The Committee also felt that more public education is needed concerning woodstove operation and purchase of clean burning units.

In accepting the recommendations, the Board asked the Advisory Committee to determine what should go into a woodstove public education program. The Committee suggested that the program should be centered around citizen cooperation in minimizing woodstove air pollution. Specifically, the Committee said that information material on woodstove operation should be distributed to various local public and private agencies and organizations; that LRAPA should continue to enhance public awareness about the proper operation of woodstoves through the media, at fairs, conferences and seminars; and that LRAPA should encourage woodstove manufacturers and fuel dealer associations to conduct trade shows and seminars dealing with woodstove design and combustion efficiencies.

Following Board approval of the Advisory Committee recommendations, LRAPA staff initiated the woodstove public education program.

# V PROGRAMS

TECHNICAL SERVICES

ENGINEERING SERVICES

PROJECTS & PLANNING

# *TECHNICAL SERVICES*

The Technical Services Program measures the concentrations of certain pollutants in the ambient air by employing a network of monitors located throughout Lane County. Because the pollutants of concern are "people-caused", the majority of the monitors are located in the Eugene-Springfield Metropolitan Area. Figure 1 shows the location of the monitoring network. Table 1 provides a site-by-site description of the network.

This permanent network is, on occasion, augmented by the use of a fully-equipped mobile air pollution monitoring van. The special monitoring projects conducted in 1982 are discussed at the end of this section.

## Monitoring Activities

Technical Services monitors the concentrations of three pollutants for which the Federal Environmental Protection Agency has established standards:

CARBON MONOXIDE is a colorless and odorless, but extremely toxic (in high concentrations) gas which is created by the incomplete combustion of carbon matter. The principal source of carbon monoxide in Lane County is the automobile. However, the growing use of a fireplace or a woodstove for residential space heating is causing this source to become a major wintertime contributor of carbon monoxide to the ambient air. The highest carbon monoxide concentrations have historically been measured during the wintertime.

The Authority has monitored the ambient carbon monoxide concentrations continuously in downtown Eugene (at the corner of 11th and Willamette Streets) since 1971.

The principal Federal Carbon Monoxide Standard is 10 milligrams per cubic meter on an 8-hour average. That is, if the average carbon monoxide concentration were to exceed 10 milligrams per cubic meter in any 8 contiguous hour period of any day, an "exceedence" of the standard is said to have occurred. The Federal Standard allows for

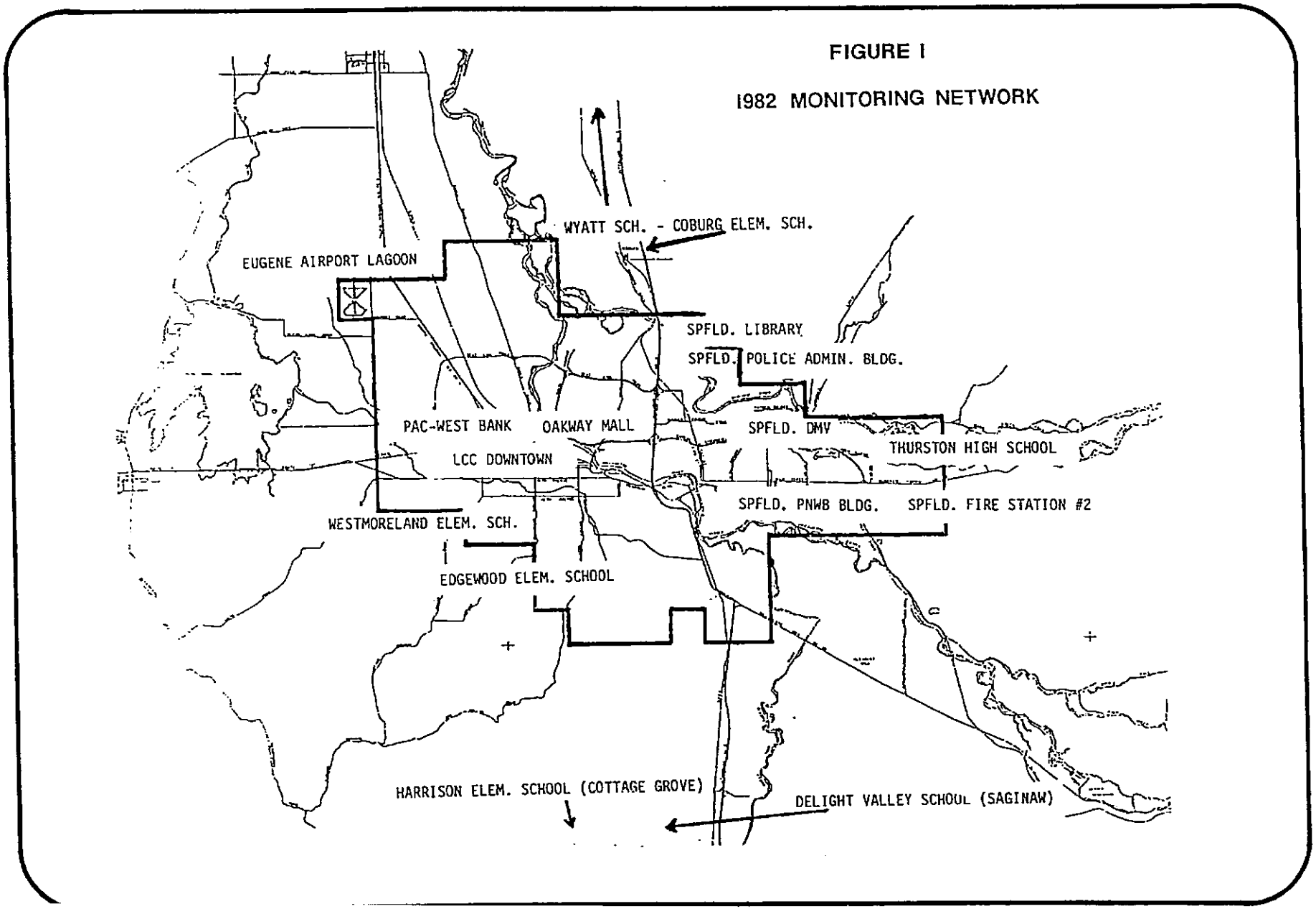


FIGURE I
1982 MONITORING NETWORK
WYATT SCH. - COBURG ELEM. SCH.
EUGENE AIRPORT LAGOON
SPFLD. LIBRARY
SPFLD. POLICE ADMIN. BLDG.
PAC-WEST BANK
OAKWAY MALL
SPFLD. DMV
THURSTON HIGH SCHOOL
LCC DOWNTOWN
SPFLD. PNWB BLDG.
SPFLD. FIRE STATION #2
WESTMORELAND ELEM. SCH.
EDGEWOOD ELEM. SCHOOL
HARRISON ELEM. SCHOOL (COTTAGE GROVE)
DELIGHT VALLEY SCHOOL (SAGINAW)

TABLE I

# 1982 MONITORING NETWORK

| | Period of Operation | PM | IP | Visib. | CO | $O_3$ | Mt. |
|---|---|---|---|---|---|---|---|
| SITES OPERATING FULL YEAR | | | | | | | |
| Lane Comm. College - Downtown | Jan - Dec | X | X | X | X | | |
| Westmoreland Elem. School | Jan - Dec | X | X | | | | X |
| Pacific West. Bank - Hwy. 99 | Jan - Dec | X | X | | | | |
| Spfld. Police Admin. Bldg. | Jan - Dec | X | X | | | | |
| Spfld. Fire Station #2 | Jan - Dec | X | X | | | | |
| Eugene Airport Lagoon | Jan - Dec | X | | | | | |
| Spfld. Library | Jan - Dec | | | X | | | X |
| Edgewood Elem. School | Jan - Dec | | | | | X | |
| Harrison Elem. Sch. (C.G.) | Jan - Dec | X | | | | | |
| Oakway Mall | Jan - Dec | | | | | | X |
| * Coburg Elem. - Wyatt Sch. | Jan - Dec | X | X | X | | | X |
| SITES OPERATING PART YEAR (shut down due to budget cuts) | | | | | | | |
| Spfld. Pacific NW Bell Bldg. | Jan - July | X | X | | | | |
| Spfld. Dept. Motor Vehicles | Jan - July | X | | | | | |
| Thurston High School | Jan - July | X | | | | | |
| ** Delight Valley Sch. (Saginaw) | June - Oct | | | | | X | |

* Coburg Elementary School site was relocated to Wyatt School in July to accomodate the Department of Environmental Quality Field Burning Program.

** Delight Valley School site was in operation only during the peak ozone season.

| | |
|---|---|
| PM | Particulate Matter |
| IP | Inhalable (Fine) Particulate |
| Visibility | Nephelometer Measuring Particulate |
| CO | Carbon Monoxide |
| $O_3$ | Ozone |
| Mt. | Meteorological Site |

one exceedence per calendar year.

OZONE is a bluish gas with a pungent odor. It is not produced directly in significant quantities by any industrial or commercial activity. Instead, the vast majority of the ambient ozone is formed in the air via photochemical reactions between nitrogen oxides, hydrocarbons and oxygen. Since these reactions occur over a several-hour period, maximum ozone concentrations are usually measured several miles downwind from the precursor source. The highest concentrations of ozone have historically been measured during the summer season.

Nitrogen oxides are produced during the combustion process, especially in a high temperature and pressure environment. In Lane County, the automobile engine is the principal source of this precursor. The sources of hydrocarbons are varied and many: plywood veneer drier emissions, evaporation from bulk gasoline storage containers, unburned or partially burned fuel from automobile engines, and naturally from forests and decaying vegetative matter.

The Authority has operated ozone monitors continuously since 1974 at the Edgewood Elementary School in the south hills of Eugene. In 1981, the EPA released new criteria for locating ozone monitoring sites. It was determined that the Edgewood School site did not meet these new criteria. Consequently, a new site which does meet the criteria has been established at the Delight Valley School in Saginaw, Oregon (about 15 miles south of the Eugene-Springfield area). Both ozone monitoring sites are being operated concurrently.

The Federal Standard for Ozone is 235 micrograms per cubic meter on a 1-hour average. This level may not be exceeded more than three times in any continuous three-year period.

PARTICULATE MATTER consists of very small solid or liquid (excluding water) entities which are suspended in the air. The size of the suspended particulate matter that is measured by instruments specified by the EPA ranges from about 0.1 micrometer to about 100 micrometers in diameter. Sources of particulate matter include resuspended dust from both paved and unpaved roads, wood fibers from the forest products manufacturing industries, smoke from industrial/slash/field/open burning, residential woodheating, and emissions

from automobile exhaust. Unlike carbon monoxide and ozone which show marked seasonal variations in their concentrations, high concentrations of particulate matter have been measured throughout the year. Since road dust is a major source of particulate matter, lower concentrations of this pollutant are measured during rainy weather when roads are wet.

The Authority has measured particulate matter concentrations in Lane County since 1970. Because the sources are many and geographically distributed throughout the area, the Authority operates several monitors which are also distributed throughout the area (see Figure 1, Table 1). Unlike carbon monoxide and ozone monitors which measure those pollutants continuously, particulate matter monitors measure an integrated 24-hour concentration. The EPA also requires that the concentrations be measured only on an every-sixth-day schedule. (All monitoring agencies throughout the country operate on the same sixth-day schedule.)

There are both annual and 24-hour Federal standards for particulate matter. The Annual Primary Standard is a geometric mean (of the 24-hour average concentrations) of 75 micrograms per cubic meter; the Annual Secondary Standard is 60 micrograms per cubic meter. The 24-hour Primary Standard is 260 micrograms per cubic meter; the 24-hour Secondary Standard is 150 micrograms per cubic meter. The 24-hour standards may not be exceeded more than once per year.

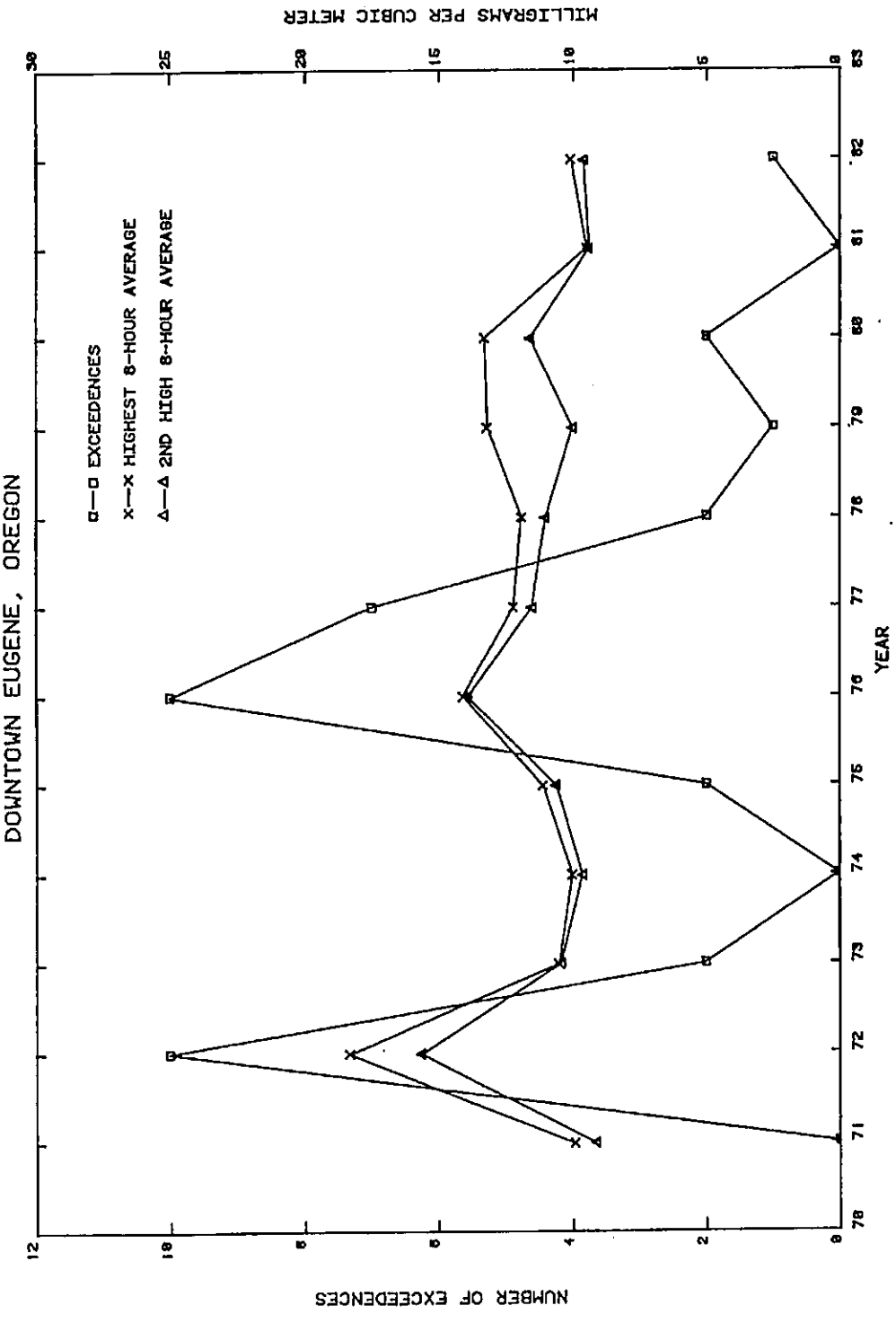
## 1982 Monitoring Results

The CARBON MONOXIDE levels in 1982 were very similar to the previous year. One exceedence of the 8-hour standard was measured: on December 11, the highest 8-hour average was measured at 10.1 milligrams per cubic meter. Since the Federal Standard allows for one exceedence per year, the Eugene-Springfield area is not considered to have violated the Standard in 1982.

The historical carbon monoxide data is depicted in Figure 2. The SQUARES indicate (with the left-side axis scale) the number of days in each year that the 8-hour concentration exceeded 10 milligrams per cubic meter. The CROSSES indicate (with the right-side axis scale) the highest 8-hour average for that year. The TRIANGLES indicate (also with the right-side axis scale) the second highest 8-hour

FIGURE 2

CARBON MONOXIDE
DOWNTOWN EUGENE, OREGON



average for the year. There appears to be a slow decrease in the highest and second highest measured concentrations. The rate of decrease, however, appears to be slowing. This slowing has been attributed to the increased use of woodburning devices for residential space heating (see discussion in Special Monitoring Projects portion of this section).

The OZONE concentrations in 1982 were significantly lower than in 1981. There was no exceedence of the standard at either of the monitoring sites. The historical data for the Edgewood School site is depicted in Figure 3. The decrease in ozone concentration between 1981 and 1982 should not be attributed to any decrease in the emissions of the precursors (hydrocarbons, nitrogen oxides); instead, it must be attributed to meteorological conditions that were unfavorable for the formation of ozone.

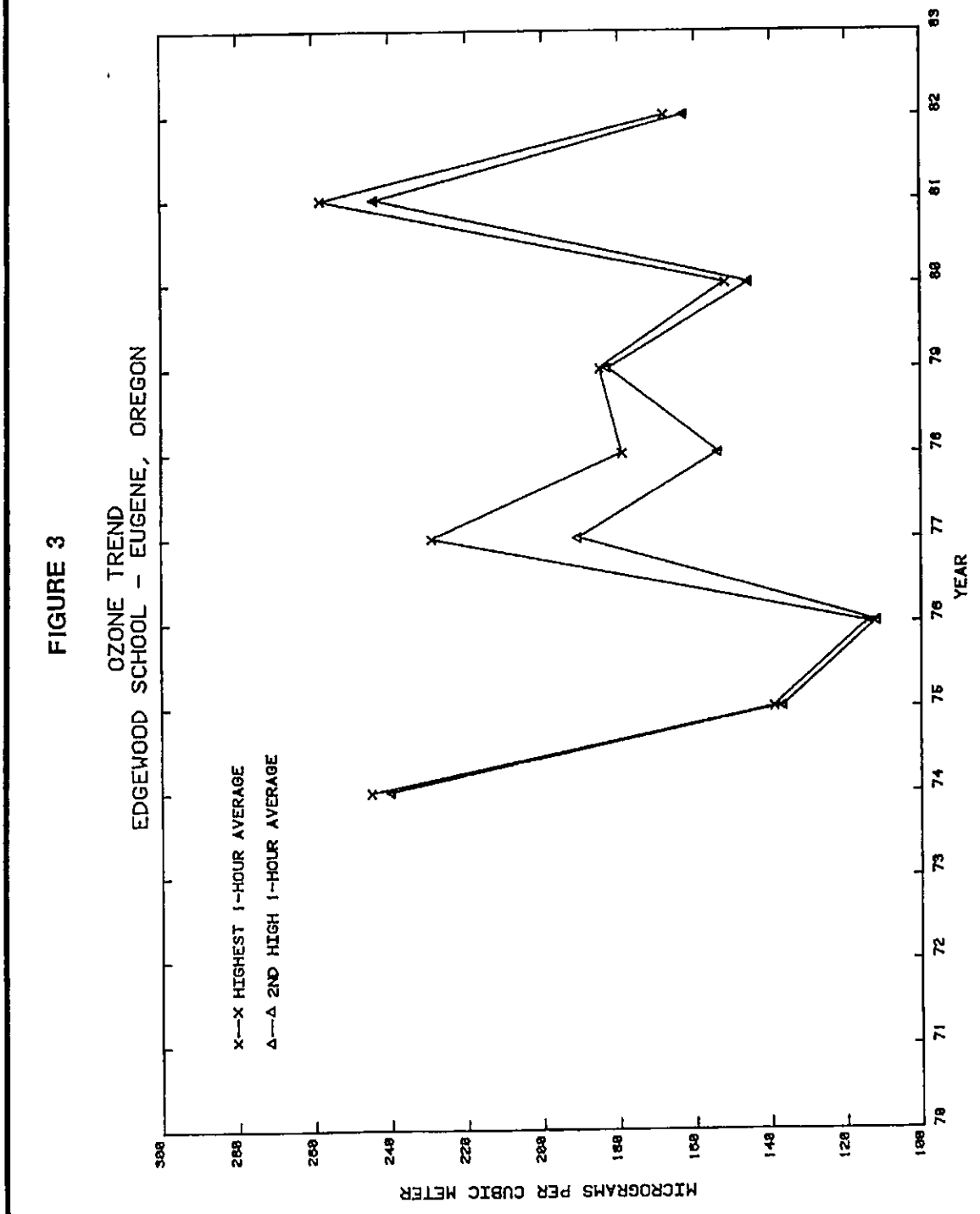
The ozone levels in Saginaw were slightly higher than the levels in south Eugene.

Since the ozone monitoring program was initiated in 1974 there have been only two years in which concentrations in excess of the Federal standard have been measured; two days in 1974 and three days in 1981.

PARTICULATE MATTER concentrations for 1980 through 1982 are summarized in Table 2. There was no monitoring station which measured an exceedence of the annual standards. Six locations recorded exceedences of the secondary 24-hour standard. And the concentration at one location, the Pacific-Western Bank building on Highway 99 in northwest Eugene, exceeded the primary 24-hour standard on one day. This was the first instance since 1978 that an exceedence of the primary 24-hour standard has been measured in the Eugene-Springfield area.

The historical annual particulate matter concentrations at three locations (downtown Eugene, downtown Springfield, and the Eugene Airport) are shown in Figure 4. The downward trend in the two metropolitan monitoring sites, when compared to the Airport (which is a background site), shows the progress that has been made by the communities to improve the local air quality. For the first

FIGURE 3


OZONE TREND
EDGEWOOD SCHOOL - EUGENE, OREGON
X—X HIGHEST 1-HOUR AVERAGE
Δ—Δ 2ND HIGH 1-HOUR AVERAGE
MICROGRAMS PER CUBIC METER
300
280
260
240
220
200
180
160
140
120
100
70
71
72
73
74
75
76
77
78
79
80
81
82
83
YEAR

## TABLE 2

COMPARISON OF TSP VALUES
AT SAMPLING SITES ($ug/M^3$)

1980 - 1982

First Column: Annual Geometric Mean
Second Column: Highest 24-Hour Average
Third Column: 2nd Highest 24-Hour Average
Fourth Column: Number of Standard Exceedences

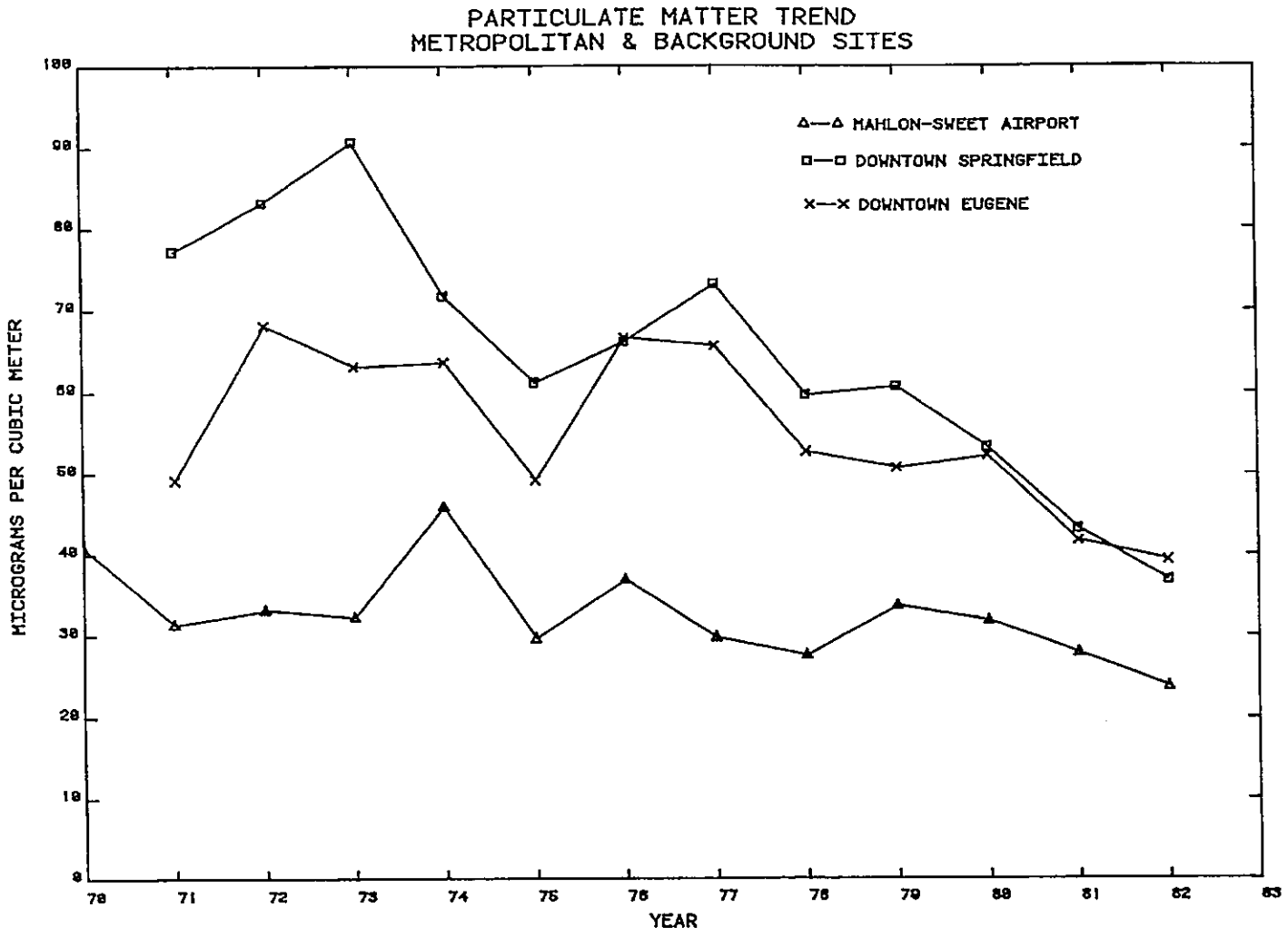
| Site | 1980 | 1981 | 1982 |
|---|---|---|---|
| Eugene Airport | 32/139/108/0 | 31/96/82/0 | 27/115/85/0 |
| Coburg Elem. Sch. | --/114/104/0 | 35/90/81/0 | --/68/53/0 |
| Harrison Elem. Sch. (C.G.) | 59/121/108/0 | 51/82/81/0 | 39/163/145/1 |
| Westmoreland Elem. Sch. | 53/155/154/2 | 51/124/110/0 | 40/226/201/3 |
| LCC Downtown | --/137/136/0 | 49/110/99/0 | 39/206/137/1 |
| Pac-West Bank, Hwy. 99 | --/142/112/0 | 62/172/138/1 | 55/262/252/2 |
| Thurston H.S. | 45/187/164/2 | 45/90/88/0 | --/122/94/0 |
| Spfld. Dept. Motor Veh. | 57/165/115/1 | 55/98/89/0 | --/135/98/0 |
| Spfld. Pac. NW Bell Bldg. | 64/170/119/1 | 61/128/108/0 | --/157/128/1 |
| Spfld. Police Admin. Bldg. | 53/158/144/1 | 48/104/89/0 | 37/160/136/1 |
| Spfld. Fire Station #2 | --/90/82/0 | 52/100/99/0 | 46/211/138/1 |

-- Incomplete Data

Annual Primary Standard: 260 $ug/M^3$
Annual Secondary Standard: 150 $ug/M^3$

24-Hour Primary Standard: 75 $ug/M^3$
24-Hour Secondary Standard: 60 $ug/M^3$

## FIGURE 4


PARTICULATE MATTER TREND
METROPOLITAN & BACKGROUND SITES
MAHLON-SWEET AIRPORT
DOWNTOWN SPRINGFIELD
DOWNTOWN EUGENE
MICROGRAMS PER CUBIC METER
100
90
80
70
60
50
40
30
20
10
0
70
71
72
73
74
75
76
77
78
79
80
81
82
83
YEAR

time since the particulate matter monitoring program was initiated, downtown Springfield has recorded an annual mean that is significantly less than that for downtown Eugene.

An AIR POLLUTION INDEX (API) is calculated daily for the above three pollutants. The pollutant with the highest index is deemed to be the API for that day. Figure 5 shows the frequency distribution of the daily Indexes for 1982. The vast majority of the values are in the GOOD range with the 30 - 39 Index predominating. A summary of the API data is shown in the table below.

**TABLE 3**

| | CO | OZONE | PART | TOTAL |
|---|---|---|---|---|
| GOOD | 72.2% | 89.5% | 61.0% | 78.6% |
| MODERATE | 27.2 | 10.5 | 39.0 | 21.1 |
| UNHEALTHFUL | 0.6 | -- | -- | 0.3 |
| % OF DAYS | 44.4% | 44.4% | 11.2% | 100.0% |

Of the 365 days in 1982, 162 days (44.4%) had carbon monoxide as the API; 162 days (44.4%), ozone; and 31 days (11.2%), particulate matter. Of the 162 days when carbon monoxide was the API, 117 days (72.2%) were in the GOOD category; 44 days (27.2%), MODERATE; and 1 day (0.6%), UNHEALTHFUL.

In addition to the monitors for carbon monoxide, ozone and particulate matter, the Authority also operates monitors which measure the visibility (nephelometers) and the inhalable fraction of the particulate matter.

Nephelometers measure the amount of light scattering particles in the air in units of "back scatter" (bscat). Smoke (from field burning or woodstoves, for example) is an excellent scatterer of light and nephelometer readings have been used as an indicator of the extent of field burning smoke intrusions into populated areas of the Willamette Valley. During the winter of 1982, a significant increase in the concentration of woodburning smoke was observed. Figure 6 shows the historical trend in the number of hours in each heating season when nephelometer readings exceeded 5 (less than 6 miles

**FIGURE 5**

API DISTRIBUTION

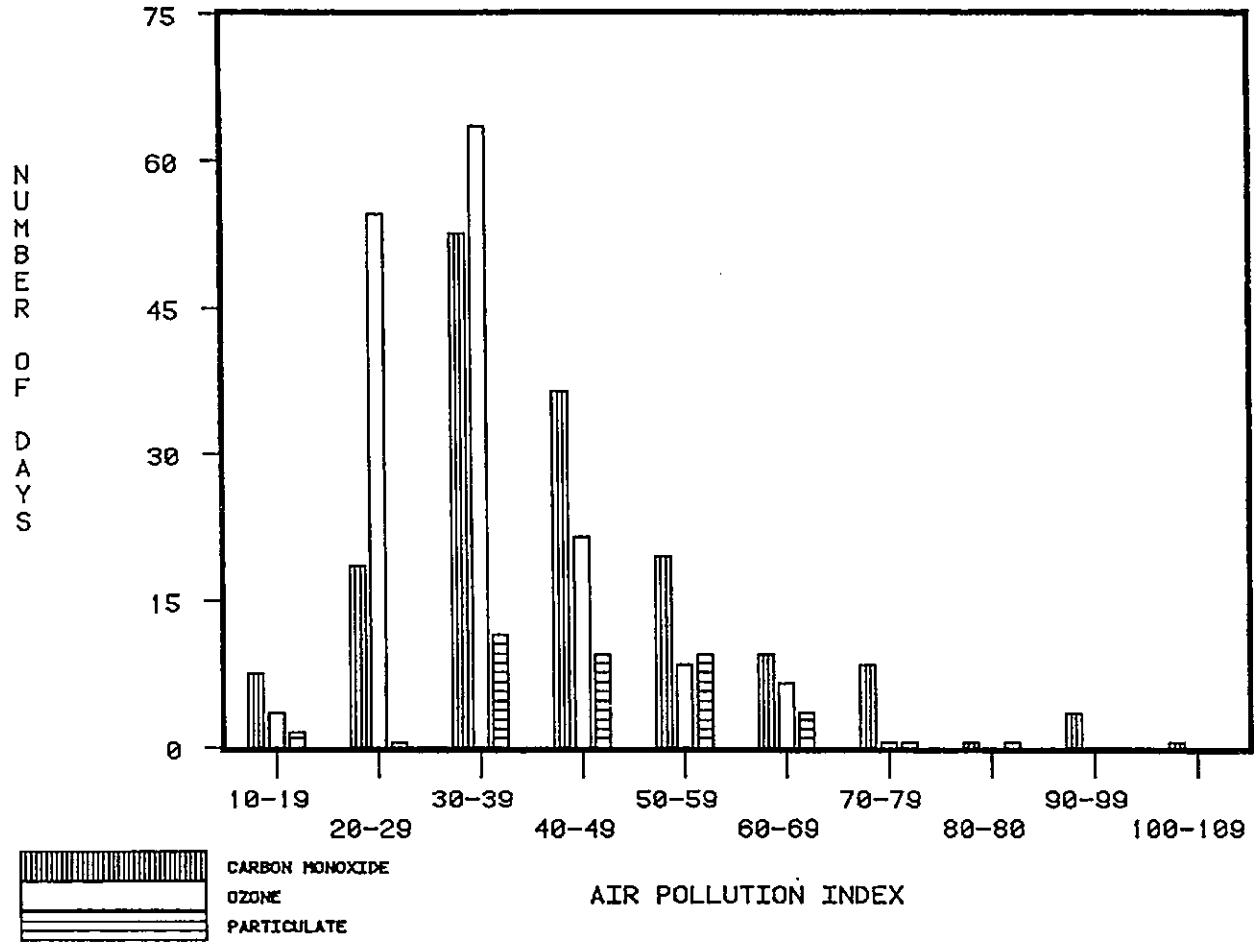
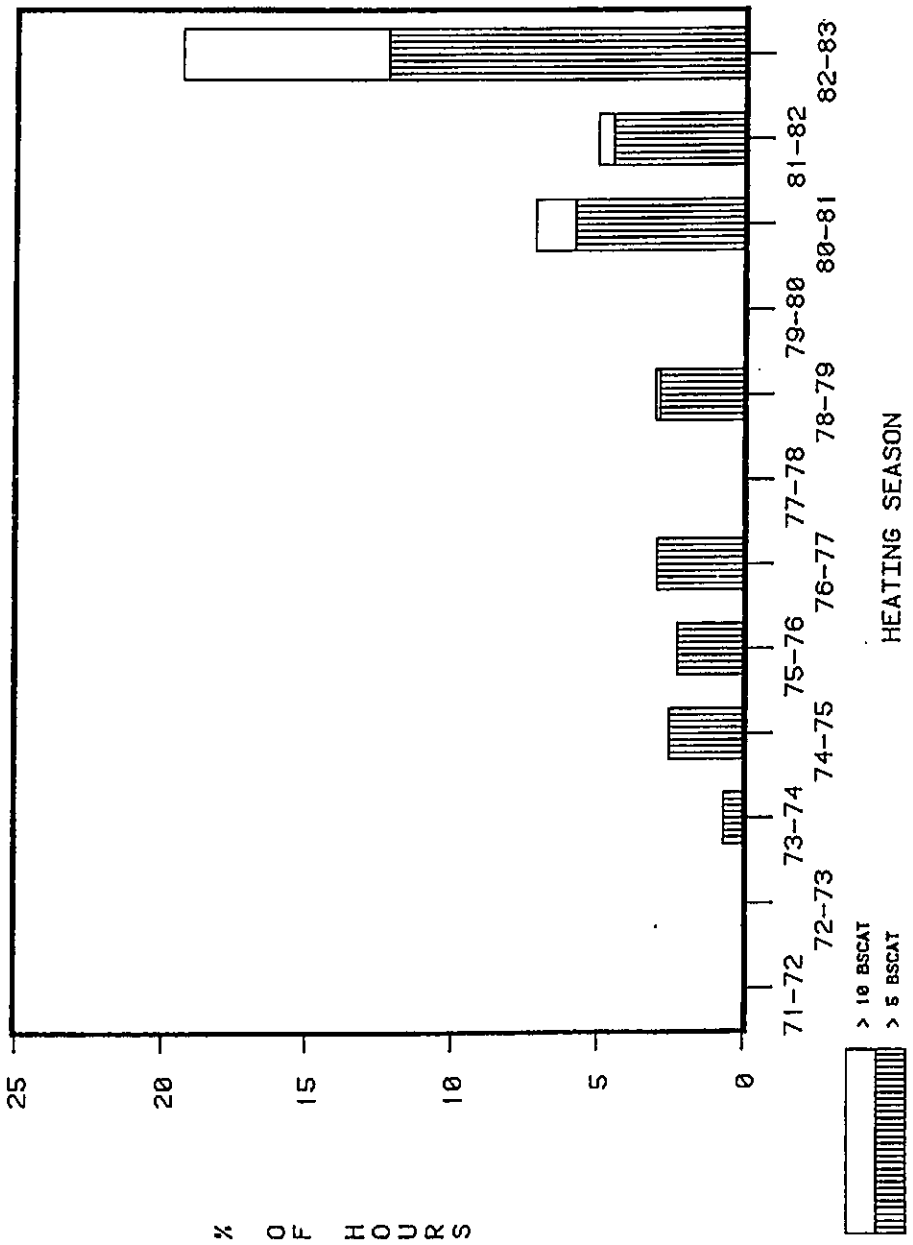


FIGURE 6

NEPHELOMETER TREND



visibility) and 10 (less than 3 miles visibility) bscat. (See discussion concerning the home heating survey in the Projects & Planning section for an indication of the problems that residential woodheating may be causing in Lane County.)

The proposed new Federal inhalable particulate matter standard (called INHALABLE PARTICULATES, or abbreviated, $IP_{10}$) has caused the Authority to initiate a monitoring program for particles of this size fraction. Because the EPA has yet to release the design of the "official" $IP_{10}$ monitor, those monitors that are presently being operated by the Authority are in-house designed. Therefore, the data collected is being used only as an indicator of the potential problem that this area may face when the new standard is finally promulgated. Preliminary indications, based on this monitoring, are that the Eugene-Springfield area could exceed that standard during the wintertime heating season when temperature inversions occur more frequently.

Special Monitoring Projects

* The Impact of Residential Wood Combustion Emissions on Ambient Carbon Monoxide Levels: The growing popularity of residential woodburning has led the Authority to believe that this source may be a significant contributor to the wintertime ambient carbon monoxide concentrations. To verify this hypothesis, the Authority conducted a carbon monoxide monitoring program in a Eugene residential neighborhood where, it was believed, considerable woodburning occurred and traffic counts on nearby streets were low (typical of a residential area).

By using the nephelometer readings as an indicator of the presence of woodburning smoke, correlations were performed on the diurnal pattern of nephelometer readings and carbon monoxide levels at both the residential monitoring site and the regular monitoring site in downtown Eugene. The analysis showed that the source of carbon monoxide in the residential neighborhood was almost entirely residential woodburning.

At the downtown Eugene site, on the other hand, the source of carbon monoxide was principally the automobile. There were periods,

however, when woodburning-caused carbon monoxide was also present in significant amounts.

* Aerosol Characterization Study: The continuing effort to reduce the particulate matter concentrations in the Eugene-Springfield area (as required by the Lane County portion of the State Implementation Plan) has caused the Authority to ask the question: "How much particulate matter from each source category is impacting a monitoring site?" This study was performed to determine the percentage of each major source category that was actually collected by the particulate monitors at each of several sites.

A technique called "Chemical Mass Balance Analysis" was used to compare the chemical compositions of ambient samples of particulate matter with the composition of emissions from known sources. Among the sources included in the analysis were residential woodburning, road dust, automobile exhaust, hogged fuel boiler emissions and wood fibers from the forest products industries.

On cold, dry winter days about 50% of the particulate matter in the air is residential woodburning emissions; 21%, soils; 6%, industrial sources. On warm summer days 38% of the particulate matter is soils; 26%, raw wood fibers; 16%, hogged fuel boiler emissions.

The direct automobile exhaust emissions were consistently less than 4% throughout the year.

# *ENGINEERING SERVICES*

The Engineering Services Program conducts technical engineering evaluations and enforces the Authority's regulations. Specific activities within the program include: inspecting industrial sources; processing air pollution permits; reviewing new industrial process equipment to assure its capability to comply with emission limits; evaluating technical data to determine compliance status; responding to citizen complaints, industrial upset conditions, and special open burning requests; initiating enforcement actions when necessary; and computing and estimating emissions from specific sources.

Due to budget constraints in 1982, the Engineering Services staff was reduced from three to two. At the same time, the program assumed a greater workload when LRAPA was delegated jurisdiction over the Weyerhaeuser pulp mill in Springfield.

## Permit Program/Technical Review

In an effort designed to save time and to generally streamline the program's operation, a major computerization effort was undertaken in 1982, making it possible to automatically generate permit fee invoices and track the administrative activities associated with the permit issuance process. In addition, technical data can now be processed by computer rather than by hand.

Each industrial source issued a regular permit is inspected at least once a year, and more frequently in many instances. Small sources are inspected once every five years, although specific problems may trigger more frequent inspections. All planned inspections were completed during 1982.

New source permits and renewal of existing permits require new permit documents to be issued. Each regular permitted source within the Eugene/Springfield AQMA had new Plant Site Emission Limits (PSELs) incorporated into their permit documents. The PSEL regulations are discussed in the Board of Directors section of this report.

Technical review of major control equipment was conducted in

1982 on two significant industrial sources to assure compliance with design criteria. Both Triangle Veneer and Falcon Plywood installed pollution control equipment on their veneer dryers as the plants were being restarted. Additional routine source construction evaluations were performed on other plants during the year.

Routine technical evaluation of data submitted by industry can now be rapidly performed with the use of the newly-developed computer system. Although personal review is still essential, tedious tasks subject to human error have been eliminated and report turnaround time has been significantly reduced. Routine reports are received from a number of local sources on a monthly basis, in addition to numerous annual report summaries.

Accurate emission estimates are required from all sources to assure that LRAPA is making "Reasonable Further Progress" (RFP) in reducing emissions inside the AQMA. RFP tracking is one of the requirements contained in the AQMA control plan. Each source is reviewed and its emissions are calculated on an annual basis to aid in this determination. The emissions from each source are contained in an Emissions Inventory which allows the Authority to establish reasonable emissions growth increments and aid in projecting future air pollution concentrations.

## Field Activities

In the process of conducting scheduled site inspections, the field engineer performs routine surveillance in assigned geographic areas of Lane County. These inspections have aided in preventing minor air pollution problems from becoming major ones, in addition to providing a "presence" in the field which helps to deter excessive emissions. Field follow-up is also required to investigate reported upsets of operating pollution control equipment. An effort is made to eliminate recurrance of upsets and to maximize the operation of the control equipment. A total of 100 upsets were reported by local industry in 1982.

Individual attention is provided in the investigation of specific complaints. The Authority tries to mitigate these complaints as they

arise. During the course of the year 96 source-specific complaints were processed by the field staff. This is in addition to 63 complaints received on field burning, slash burning, residential wood heating, and general poor air quality.

Although the Authority pursues a conciliatory enforcement approach, specific violations are filed eacy year. A total of 17 administrative warnings, notices of violations, and civil penalties were issued in 1982 for violations of permit conditions, excessive emission discharges, and open burning violations.

During the course of the year the Engineering Services staff considered 14 open burning requests. These requests are to burn waste that is prohibited from being burned without special authorization. Each request requires a field inspection to assess the situation.

Although much was accomplished in the Engineering Services Program in 1982, much remains to be done. New activities planned for 1983 have been designed to further increase the reporting capabilities of the program while providing additional time in the field to work with local sources to further reduce air pollution in Lane County.

# *PROJECTS & PLANNING*

The Projects & Planning Program gained definition in 1982. This program was established in 1981 to, among other things, carry out the AQMA planning effort. Projects & Planning is also where Federal Clean Air Act requirements are integrated with local priorities in Lane County. Finally, this program develops plans to minimize air pollution that will occur from sources other than industry.

The latter function described above becomes extremely important because efforts to foster economic development may be hindered if the air becomes too polluted. The Authority developed closer working relationships with local planning agencies and commissions in 1982 to maintain consideration of air quality goals as part of their plannig recommendations.

Projects & Planning also prepares technical evaluations of unique local air pollution problems. Several special projects were conducted in 1982 to gain a better understanding of Lane County's air pollution situation.

One such project, which examined the effects of woodburning on carbon monoxide levels in residential neighborhoods, is summarized in the Technical Services section of this report.

Another woodburning project involved a survey of Eugene-Springfield residents, undertaken in October. The survey indicated the following: nearly 54% of the residents burn wood each year; the average amount of wood burned per household is 1.7 cords; most people burn between 6 PM and Midnight during the months of October through March; and 50% of those surveyed indicated that they had taken some steps to weatherize or insulate their homes. The results confirmed LRAPA's belief that wood combustion is a very important source of home heating in the Eugene-Springfield area, and that strong local potential exists for severe air quality impacts during wintertime evening hours. The survey will be repeated in future heating seasons, with the anticipation that air pollution from residential woodburning is likely to .

continue its upward climb.

Finally, the Projects & Planning Program was involved in the implementation of the Phase II portion of the AQMA Control Plan for Total Suspended Particulates. The major effort was a continuation of the air quality monitoring program for fine particulate. In addition, Chemical Mass Balance analysis was performed on several filters used to collect total suspended particulate. Both projects are discussed in the Technical Services section of this report. Data from these projects will be used to develop future control strategies for particulate matter.

# VI 1983 & BEYOND

## The Air Quality Impact of Residential Woodburning

Residential woodburning is significantly affecting air quality in the Eugene/Springfield area. Analysis of filters during the winter months in 1980 and 1981 show that, annually, half of the total particulates are fine or respirable particles. In the wintertime this fine particle content increases to over half of the total. Further, smoke from residential woodburning constitutes nearly all of the fine particles collected on the filters.

Air pollution from residential woodburning is projected to increase in future years if this source is not controlled. A 1978 survey conducted by a Portland consulting firm predicted that there will be a 100% increase in local woodburning emissions by 1987; primarily involving fine particulate emissions. Recent and projected increases of woodburning systems involve mostly woodstoves and fireplace inserts, rather than unmodified fireplaces. The 1978 survey estimated 25,000 unmodified fireplaces in use in the Eugene/Springfield area, and 6,800 woodstoves and fireplace inserts combined. A separate survey conducted by LRAPA in 1982 estimated 24,000 unmodified fireplaces and 18,000 woodstoves and fireplace inserts, indicating the dramatic increase in the use of these woodburning units.

Wintertime particulate levels rose significantly in 1982. In fact, one local monitoring site exceeded the primary, or health-related particulate standard; the first such local exceedence in several years.

Aside from the public health impact of residential wood combustion, uncontrolled growth of woodburning emissions will have serious implications on local economic development.

Generally, the Eugene/Springfield area is "marginal" in terms of compliance with two Federal air pollution standards; the secondary suspended particulate standard and the primary carbon monoxide

standard. Federal law requires that these standards are to be attained and maintained, and places restrictions on industrial growth in areas that fail to comply. Such restrictions have not yet been imposed on Eugene/Springfield because of locally-developed control plans for these two pollutants that have been approved by the EPA.

However, there is still reason for concern about possible restrictions on local industry. The EPA is expected to soon adopt a standard for fine particulates, of which residential wood combustion is believed to be a significant, if not the major local source. At this time, existing air quality data indicates that Eugene/Springfield is well within the range of values under consideration for this new standard. This means that high wintertime levels of fine particulate could push the Eugene/Springfield area into primary nonattainment status for fine particulates. In the absence of a means to reduce fine particulates from residential wood combustion, LRAPA may be forced to impose additional controls on existing industry, and the local area may face Federally-imposed industrial growth restrictions until such controls are implemented.

Small towns in Lane County which desire to attract new industry may also feel the weight of these sanctions if, because of residential woodheating, they exceed the fine particulate standard.

Residential woodheating may also be contributing to local carbon monoxide levels. This is important because these emissions are using airshed capacity for transportation and commercial development, such as highways, shopping centers and industrial parks with large parking facilities. Environmental Impact Assessments for Federally-funded roads may be the basis for delaying construction of those roads if Eugene/Springfield continues to exceed the carbon monoxide standard beyond 1985.

Because of the sanction possibilities, control options for residential woodheating emissions must be considered. The challenge will be to choose an option that is palatable, yet effective.