

2006
Oregon Air Quality
Data Summaries



State of Oregon
Department of
Environmental
Quality

Air Quality Division

<http://www.oregon.gov/DEQ>

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Glossary of Air Quality Terms used in this report:

AQI –	Air Quality Index – standardized EPA method of reporting air quality
BScat –	Beta Scattering - a light scattering unit used for visibility
CO –	Carbon monoxide – An odorless, colorless gaseous pollutant
CO ₂ –	Carbon dioxide – Primary greenhouse gas
GHG –	Greenhouse Gas
HAPs –	Hazardous Air Pollutant as defined in Title III of the Clean Air Act
NAAQS –	National Ambient Air Quality Standards – federal air quality standards (Table 4).
NO –	Nitrogen oxide
NO ₂ –	Nitrogen dioxide
NO _x –	Nitrogen oxides – redish brown gaseous pollutant - mainly NO and NO ₂
O ₃ –	Ozone – a gaseous pollutant and a component of smog at ground level
PM _{2.5} –	Particulate Matter 2.5 micrometers diameter and smaller
PM ₁₀ –	Particulate Matter 10 micrometers diameter and smaller
ppm –	Parts per million - air pollutant concentration.
ppb –	Parts per billion - air pollutant concentration.
SO ₂ –	Sulfur dioxide
SO _x –	Sulfur oxides - mainly SO ₂
UFSG –	Unhealthy For Sensitive Groups – an AQI air quality category
µg/m ³ –	Microgram per meters cubed - air pollutant concentration
VOC –	Volatile Organic Compounds
WAQR –	Wildfire Air Quality Rating - wildfire smoke health internet page

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Air Quality Annual Report

DEQ Mission Statement

The Department of Environmental Quality's (DEQ) mission is to be a leader in restoring, maintaining and enhancing the quality of Oregon's air, land and water.

Air Quality Division

The DEQ Air Quality Division is responsible for protecting Oregon's air quality. DEQ monitors air pollution to ensure that communities meet the national ambient air quality health standards (NAAQS), to report hourly health levels to the public, and to protect Oregon's pristine views.

The air pollutants of greatest concern in Oregon are:

- ground-level **ozone**, commonly known as smog
- fine particulate matter (mostly from wood smoke, other combustion sources, cars and dust) known as:
 - **PM₁₀** (10 micrometers and smaller diameter) and
 - **PM_{2.5}** (2.5 micrometers and smaller diameter)
- hazardous air pollutants (also called **Air Toxics**)
- **Carbon monoxide** (mostly from motor vehicles)

DEQ also is concerned about **greenhouse gases** and along with the Oregon Department of Energy (DOE) is working on strategies to mitigate their release. Greenhouse gases cause global warming and according to a DOE report *"The impacts of such changes on Oregon citizens, businesses and environmental values are likely to be extensive and destructive. Coastal and river flooding, snow pack declines, lower summer river flows, impacts to farm and forest productivity, energy cost increases, public health effects, and increased pressures on many fish and wildlife species are some of the effects anticipated by scientists at Oregon and Washington universities."*

The Governor of Oregon is also taking global climate change seriously and has created an advisory group which has come up with a strategy to reduce green house gasses. For this report and more on what the State of Oregon is doing to lower green house gasses go to:

<http://egov.oregon.gov/ENERGY/GBLWRM/Strategy.shtml>

Oregon's Air Quality Status

Oregon's air quality is influenced by pollutant emissions and by the weather. The weather not only impacts ground level air quality by trapping pollutants during inversions it also influences some pollutant emitting activities (e.g. cold days cause more woodstove burning).

Winter –

January, the beginning and end of February, and the end of December were very wet and mild. The middle of February was dry and very cold. March was a cool month throughout Oregon with most areas having close to normal precipitation. The dryer, cool conditions in March lead to some elevated PM_{2.5} levels the state.

Spring –

The end of March into the first half of April was cool and wet. The last two weeks of April were warmer and drier. May was a mild month throughout Oregon with overall near-normal precipitation. The first three weeks of June were warmer than average.

Summer -

During the last week of June, a major short-lived heat wave brought record-setting temperatures to many areas. July was close to normal until the fourth week, when Oregon experienced a significant heat wave. The heat wave had exceptionally high dew point temperatures, leading to uncharacteristically elevated nighttime temperatures. Many places set all-time “high minimum” temperatures. The elevated temperatures contributed to a smog event that exceeded the eight hour average. August was generally dry throughout Oregon, with temperatures close to average overall. The first three weeks of September were mild and dry.

Fall -

The last week of September and all of October were dry and mild months, with warm days and cool nights. November was wet and windy. The first week of December was cold and dry with stagnant conditions. The cold, stagnant weather resulted in elevated PM_{2.5} levels.

Air Quality Index Defined

The Air Quality Index (AQI) reports ambient air quality using current monitoring data. The AQI is posted under the following descriptors:

- *Good* - pollution is less than half of the National Ambient Air Quality Standard (NAAQS) for any of the pollutants measured.
- *Moderate* - unusually sensitive people should limit prolonged outdoor exertion.
- *Oregon Unhealthy for Sensitive Groups (OR-UFSG)* -
 - Particulate – People with heart and lung disease, older adults and children should reduce prolonged or heavy exertion.
Note: The PM_{2.5} standard was lowered from 65ug/m³ to 35ug/m³ but the EPA AQI had not been changed to reflect this lower standard at the time of this report. Oregon created the OR-UFSG to cover the level between the new standard 35ug/m³ and the AQI lower breakpoint for UFSG 40.5ug/m³.
- *Unhealthy for Sensitive Groups (UFSG)* –
 - Ozone - Active children, adults, and people with respiratory disease such as asthma should limit prolonged outdoor exertion.
 - Particulate – People with heart and lung disease, older adults and children should reduce prolonged or heavy exertion.

- *Unhealthy* –

- Ozone - Active children and adults and people with respiratory disease such as asthma should avoid prolonged outdoor exertion. Everyone else, especially children, should limit prolonged or heavy exertion.
- Particulate - People with heart or lung disease, older adults and children should avoid prolonged or heavy exertion. Everyone else should reduce prolonged or heavy exertion.
- *Very Unhealthy* -
 - Ozone - Active children and adults and people with respiratory disease such as asthma should avoid all outdoor exertion. Everyone else, especially children, should limit outdoor exertion.
 - Particulate - People with heart or lung disease, older adults and children should avoid all physical activity outdoors. Everyone else should avoid prolonged or heavy exertion.

Emergency Action Plan

DEQ uses the AQI to trigger its Emergency Action Plan for extreme air pollution episodes. The AQI and associated episode stages are listed in Table 1. The possible actions are:

- 100 AQI - Air Stagnation Advisory may be declared by the National Weather Service if a prolonged inversion is forecast. DEQ may issue public health advisories.
- 200 AQI - DEQ may declare an Air Pollution Alert if the conditions causing the elevated levels are forecast to persist. DEQ may issue public health advisories.
- 300 AQI – DEQ may declare an Air Pollution Warning if the conditions causing the elevated levels are forecast to persist. At the Warning level, specific sources of air pollution (such as industry) may be requested to curtail non-essential operations and additional cautions are issued to the public.
- 400 AQI – DEQ may declare an Air Pollution Emergency and emergency measures may be enacted to prevent serious health impacts to the entire population. At the Emergency levels, many air pollution sources are required to cease or severely curtail operations to alleviate pollution levels.

How the AQI is computed

The AQI is computed hourly using the 24-hour average for PM_{2.5} and the eight hours average for ozone and CO. EPA provides all states with the AQI equation for national uniformity.

The AQI is reported by DEQ or Lane County Regional Air Pollution Authority (LRAPA) for various cities in Oregon. These are Albany, Baker City, Beaverton, Bend, Burns, Cave Junction, Corvallis, Enterprise, Eugene, Grants Pass, Hillsboro, John Day, Klamath Falls, La Grande, Lakeview, Medford, Oakridge, Pendleton, Portland, Riddle (winter), Roseburg, Salem, Shady Cove, Springfield, Sweet Home, The Dalles, and White City. The AQI is also available in the summer for Mt. Hood Wilderness, Mt. Jefferson Wilderness, Crater Lake, and Lyons.

The AQI data is reported prior to validation, so the final data may differ. The PM_{2.5} AQIs are derived from light scattering data.

Table 1. Air Quality Index Ranges and Episode Stages for various pollutant concentrations.

AIR QUALITY INDEX, (AQI) and Episode Stage							
Episode Stage	Within Standard		≥ Standard	Alert	Warning	Emergency	Significant Harm
AQI range	0-50	51-100	101-150	151-200	201-300	301-400	401-500p
AQI Descriptor	<i>Good</i>	<i>Moderate</i>	<i>Unhealthy For Sensitive Groups</i>	<i>Unhealthy</i>	<i>Very Unhealthy</i>	<i>Hazardous</i>	<i>Very Hazardous</i>
PM _{2.5} µg/m ³ (24-hr avg)	0-15.4	15.5-35.4	35.5-40.4 OR-UFG 40.5-65.4 UFG	65.5-150.4	150.5-250.4	250.5-350.4	350.5-500.4
PM ₁₀ µg/m ³ (24-hr avg)	0-54	55-154	155-254	255-354	355-424	425-504	505-604
CO ppm (8-hr avg)	0.0-4.4	4.5-9.4	9.5-12.4	12.5-15.4	15.5-30.4	30.5-40.4	40.5-50.4
Ozone ppm (1-hr avg)	n/a	n/a	0.125-0.164	0.165-0.204	0.205-0.404	0.405-0.504	0.505-0.604
Ozone ppm (8-hr avg)	0.000-0.064	0.065-0.084	0.085-0.104	0.105-0.124	0.125-0.374	use 1hr std	use 1hr std
SO ₂ ppm (24-hr avg)	0.000-0.034	0.035-0.144	0.145-0.224	0.225-0.304	0.305-0.604	0.605-0.804	0.805-1.004
NO ₂ ppm (24-hr avg)	n/a	n/a	n/a	n/a	0.65-1.24	1.25-1.64	1.65-2.04

2006 Oregon Air Quality Indices for Cities with Air Quality Monitors

Figures 1- 28 show the Air Quality Index for cities statewide. The charts will indicate which pollutants were used to calculate the AQI and how many days in each health category.

2006 Albany Air Quality Index
(based on PM2.5)

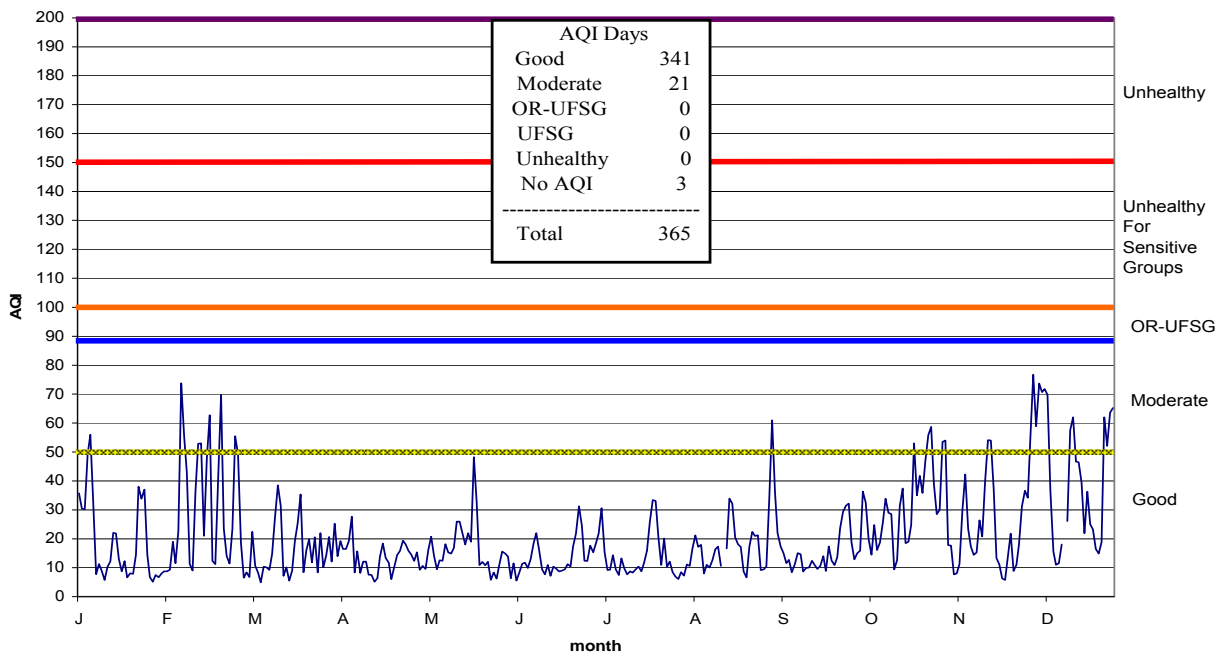


Figure 1. 2006 Albany Air Quality Summary

2006 Applegate Valley Air Quality Index
(based on PM_{2.5})

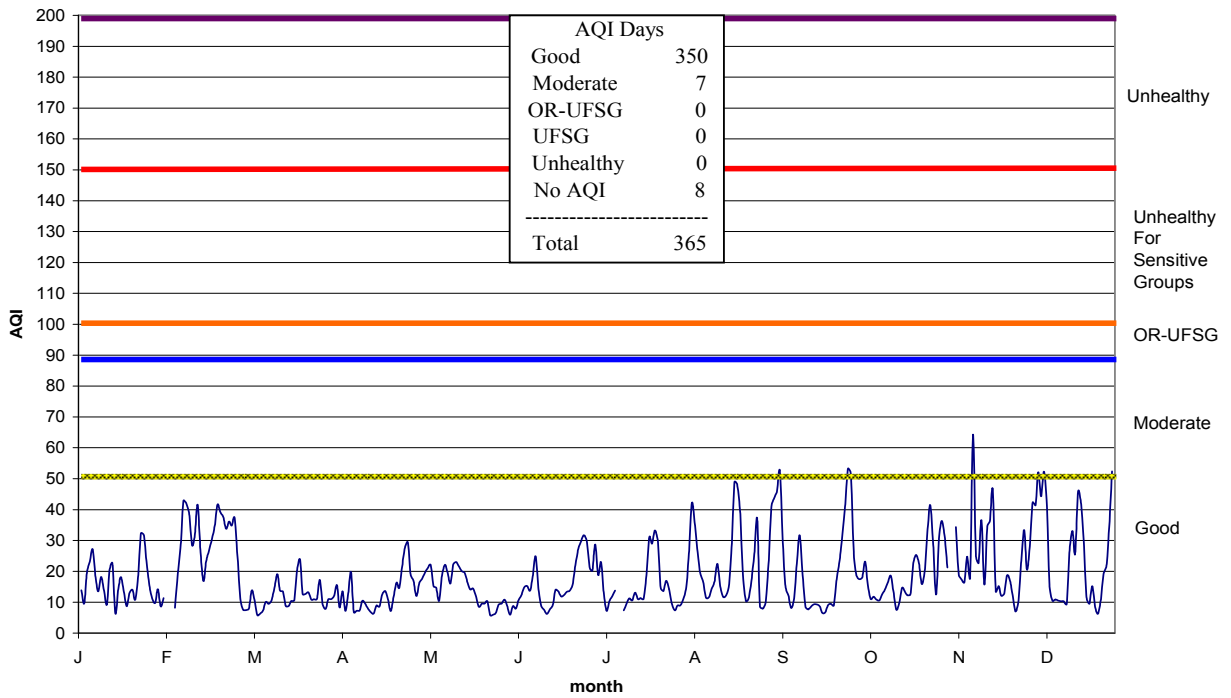


Figure 2. 2006 Applegate Valley Air Quality Summary

2006 Baker City Air Quality Index
(based on PM_{2.5})

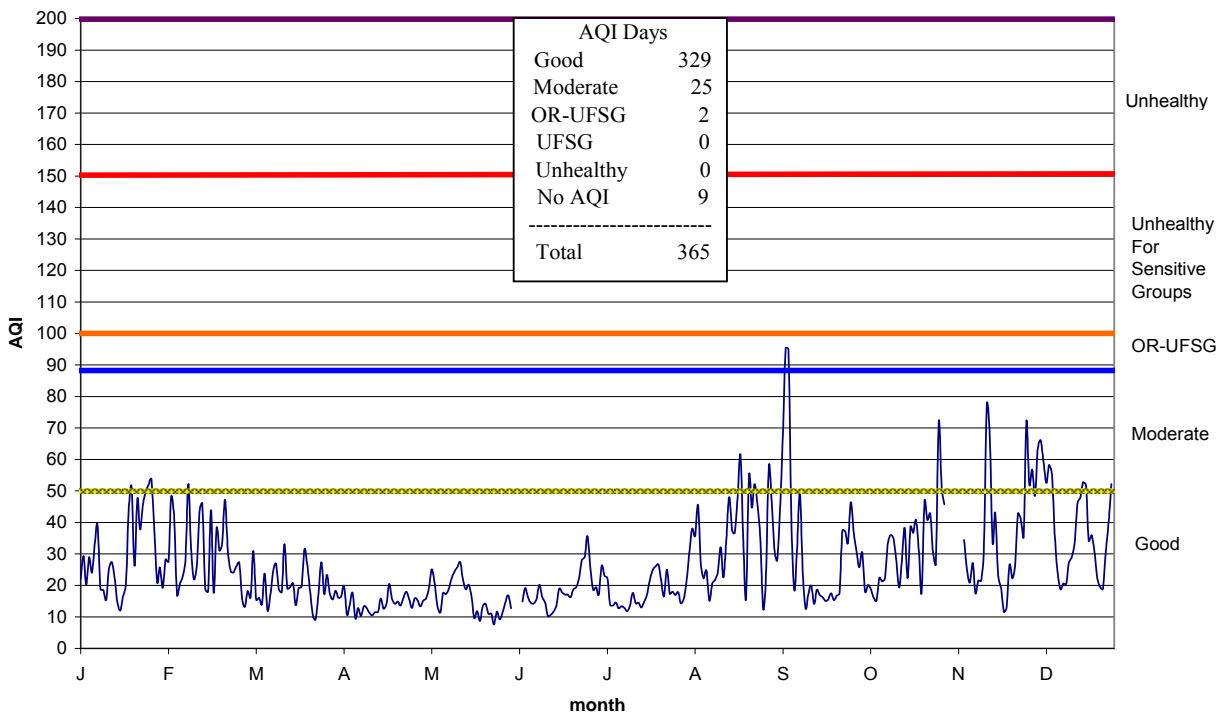


Figure 3. 2006 Baker City Air Quality Summary

2006 Beaverton Air Quality Index
(based on PM_{2.5})

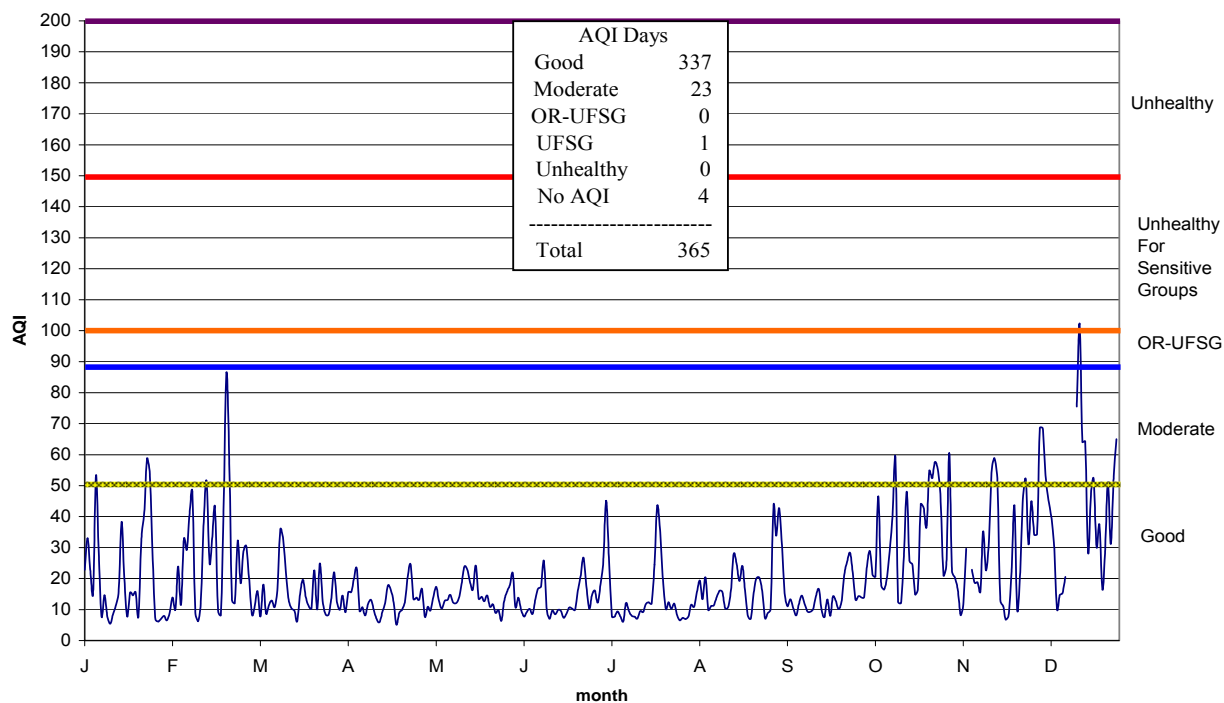


Figure 4. 2006 Beaverton Air Quality Summary

2006 Bend Air Quality Index
(based on PM_{2.5})

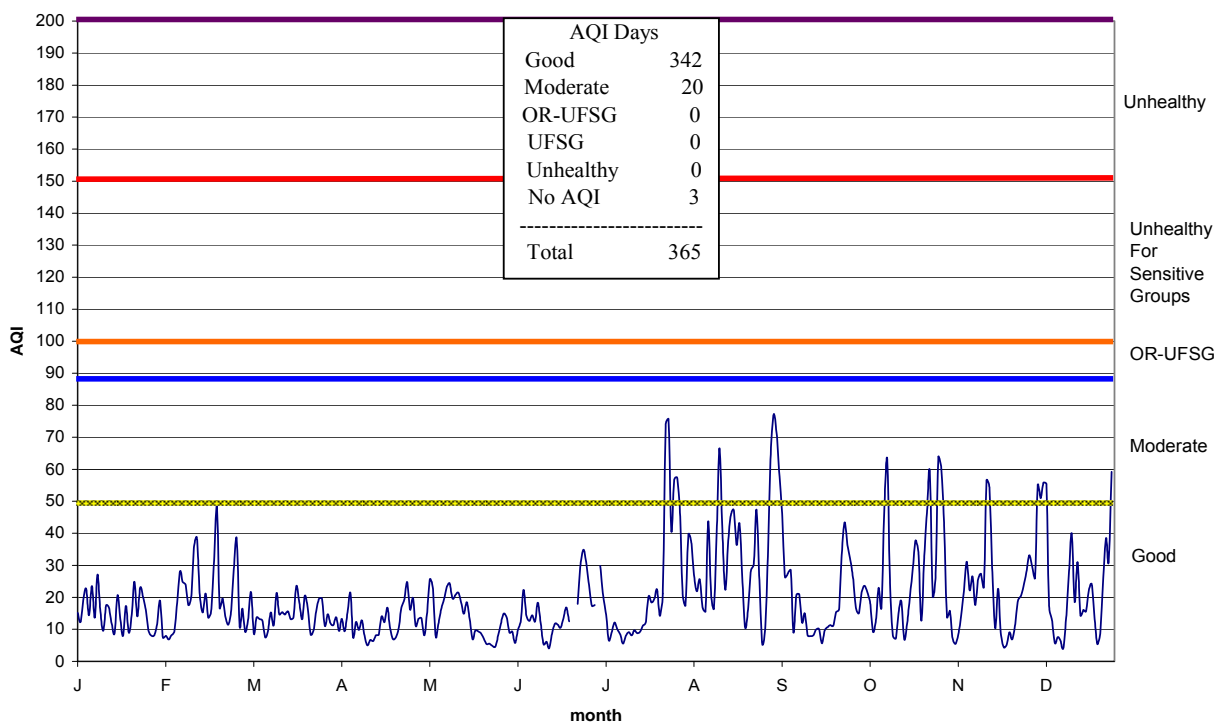


Figure 5. 2006 Bend Air Quality Summary

2006 Burns Air Quality Index
(based on PM_{2.5})

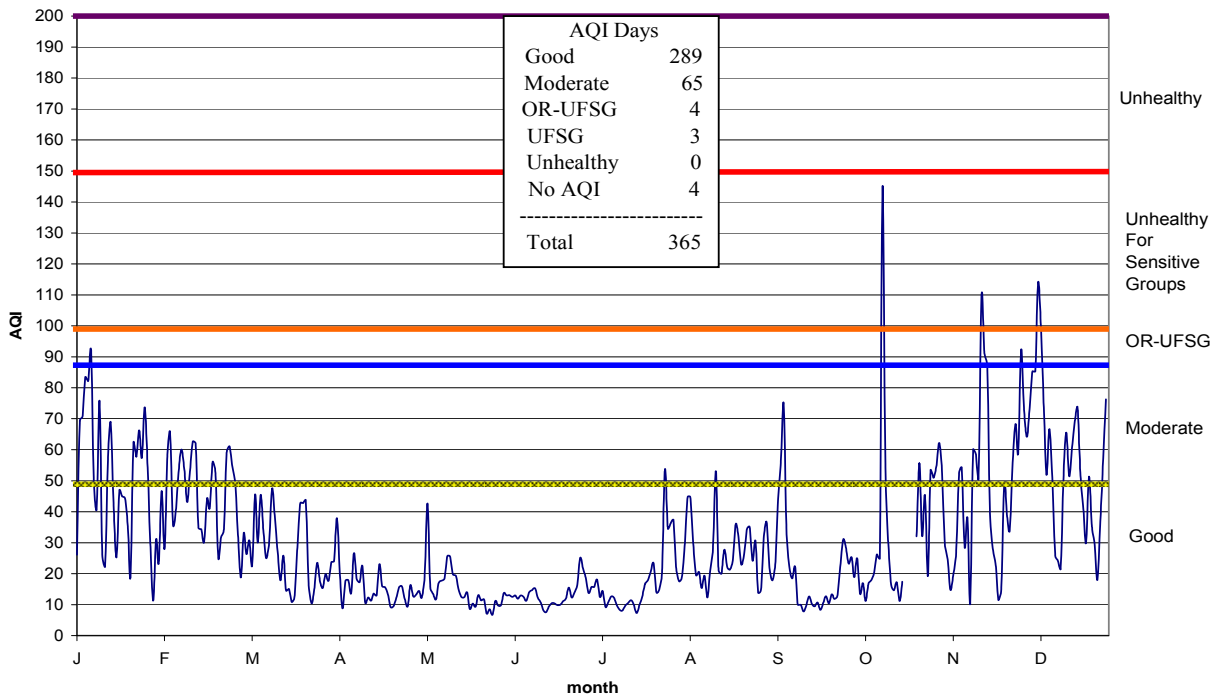


Figure 6. 2006 Burns Air Quality Summary

2006 Cave Junction Air Quality Index
(based on PM_{2.5})

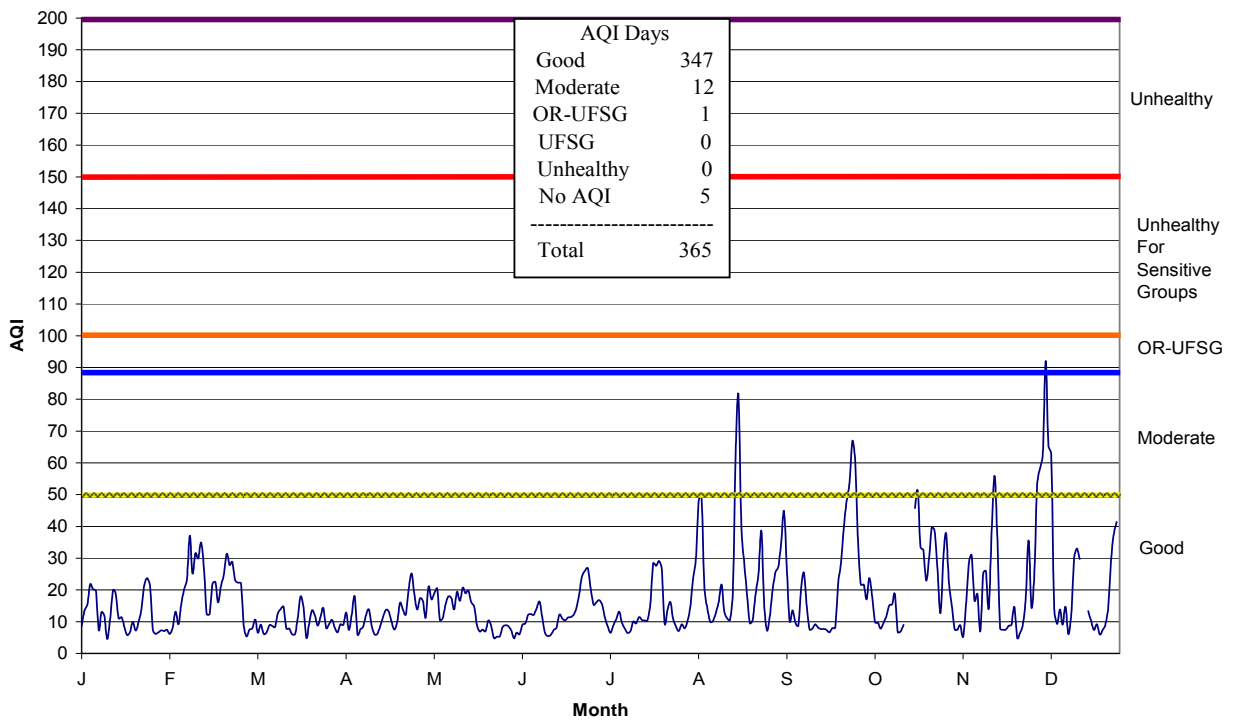


Figure 7. 2006 Cave Junction Air Quality Summary

2006 Corvallis Air Quality Index
(based on PM_{2.5})

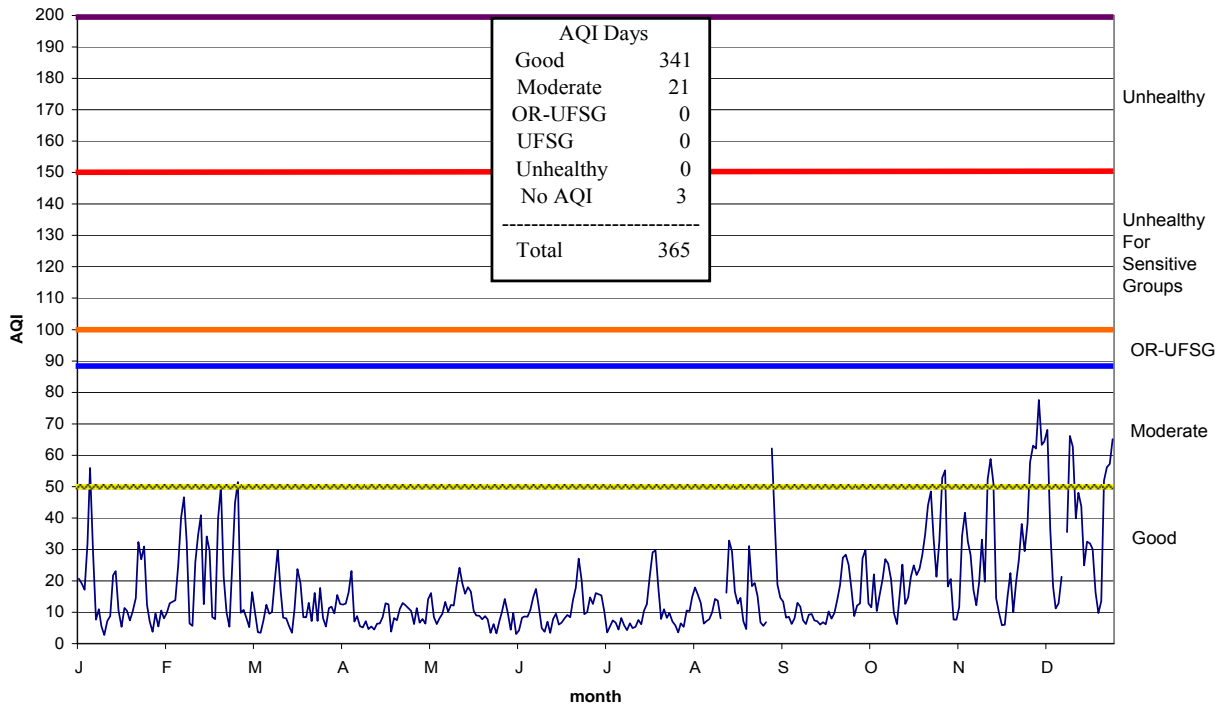


Figure 8. 2006 Corvallis Air Quality Summary

2006 Enterprise Air Quality Index
(based on PM_{2.5})

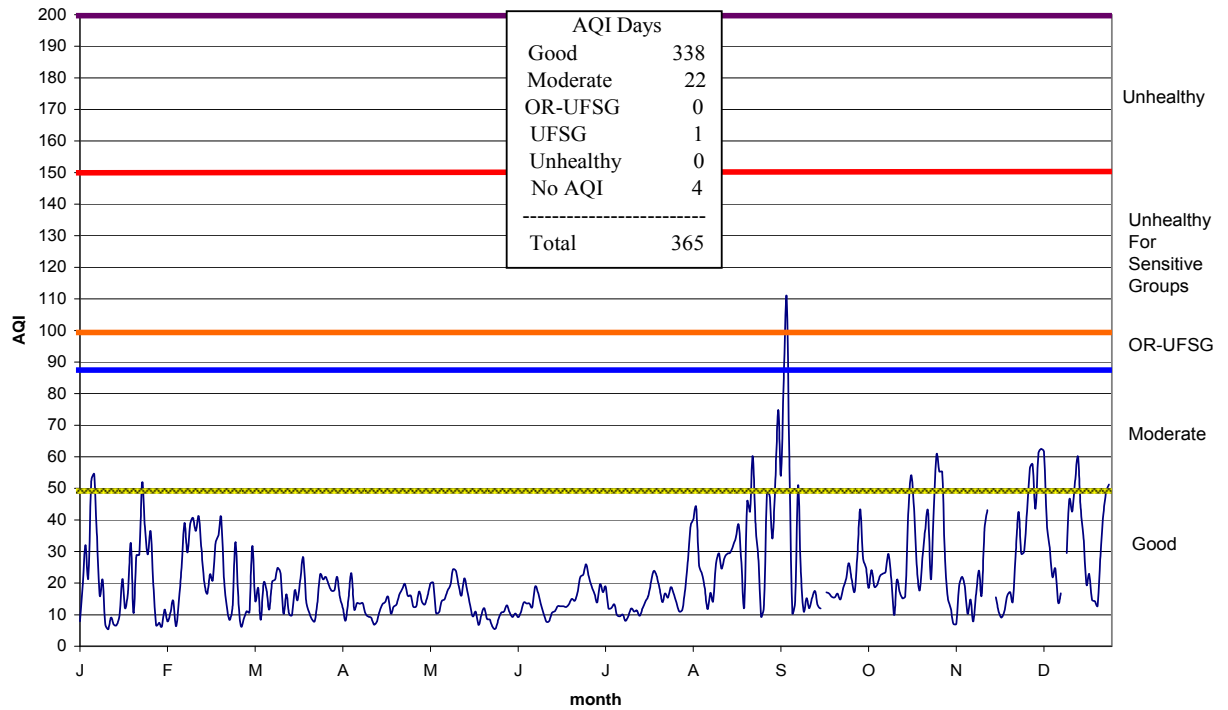


Figure 9. 2006 Enterprise Air Quality Summary

2006 Eugene/Springfield Air Quality Index
(based on PM_{2.5}, Ozone, and CO)

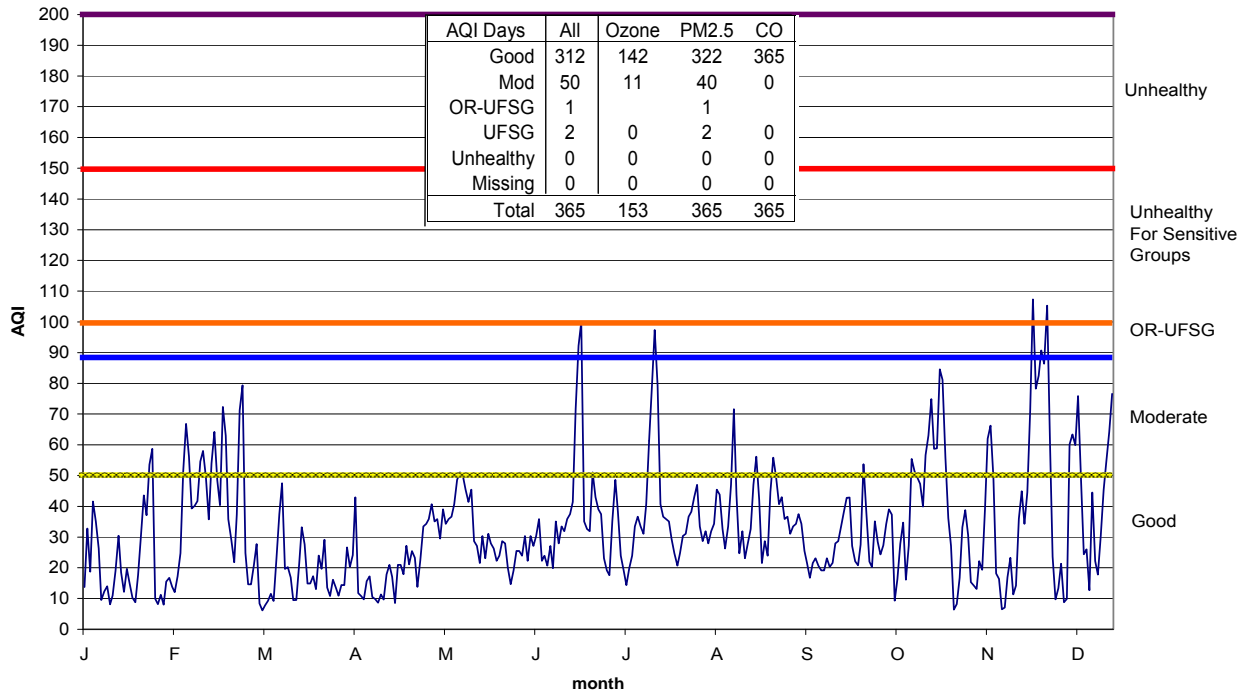


Figure 10. 2006 Eugene/Springfield Air Quality Summary

2006 Grants Pass Air Quality Index
(based on PM_{2.5})

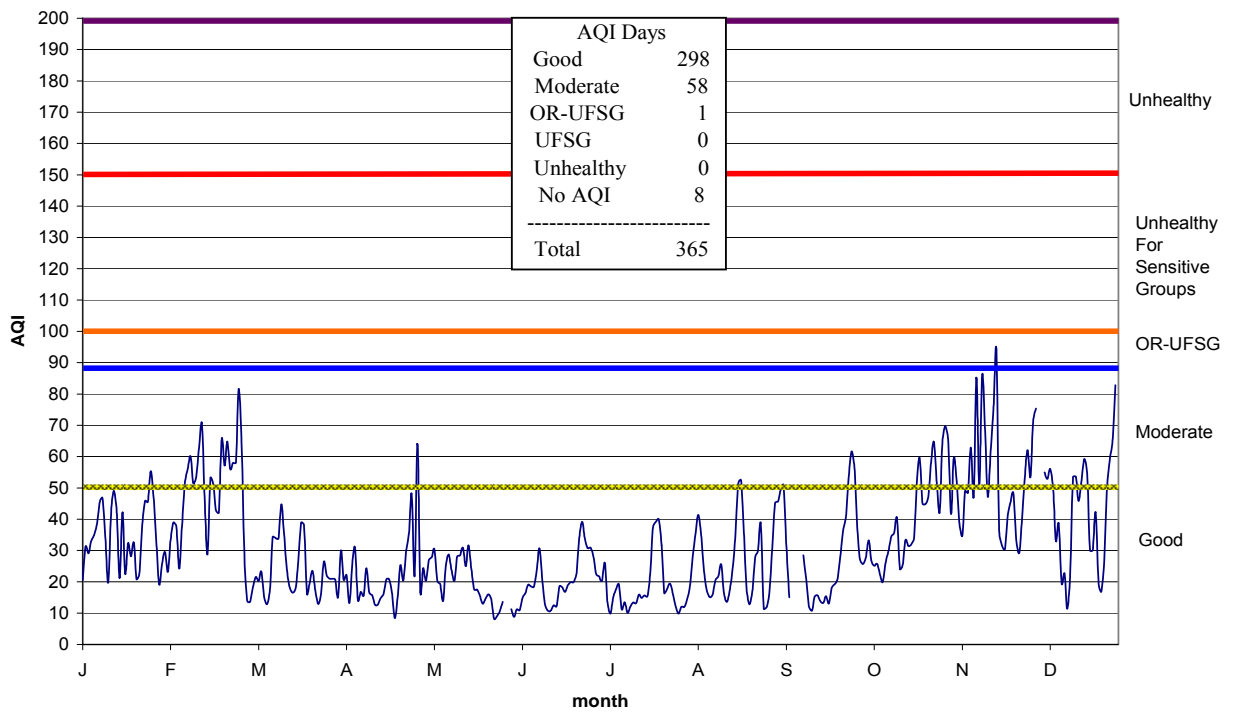


Figure 11. 2006 Grants Pass Air Quality Summary

2006 Hillsboro Air Quality Index
(based on PM_{2.5})

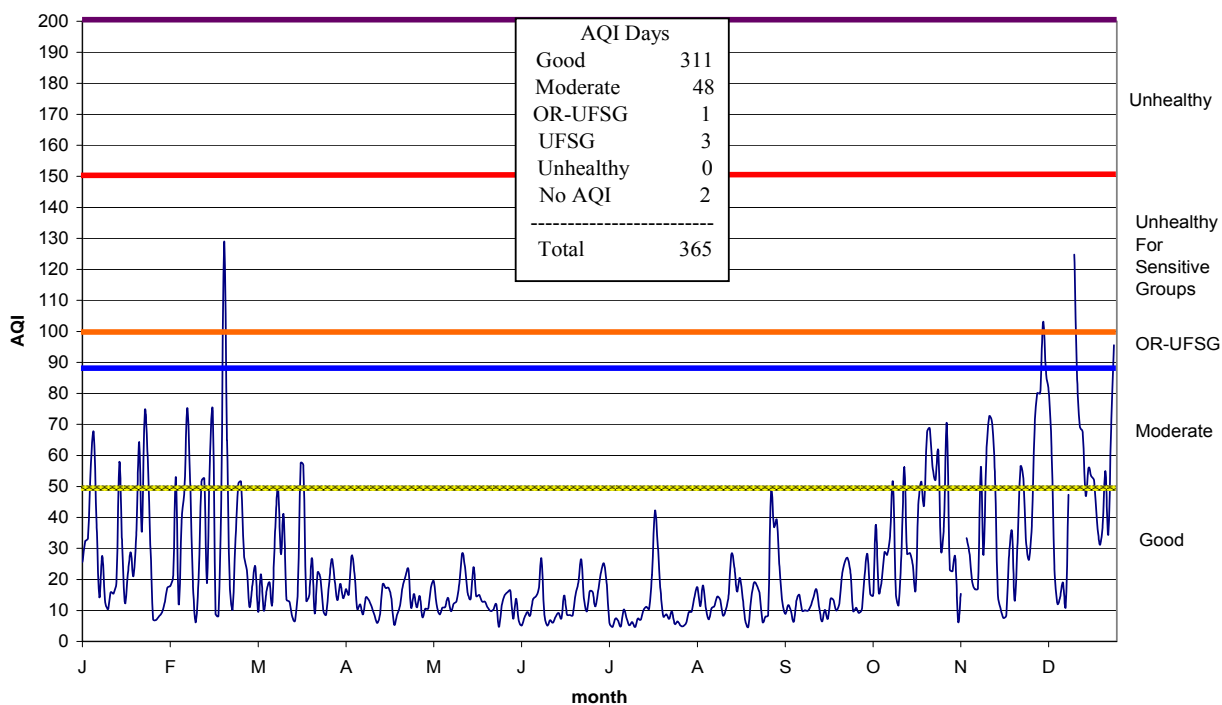


Figure 12. 2006 Hillsboro Air Quality Summary

2006 John Day Air Quality Index
(based on PM_{2.5})

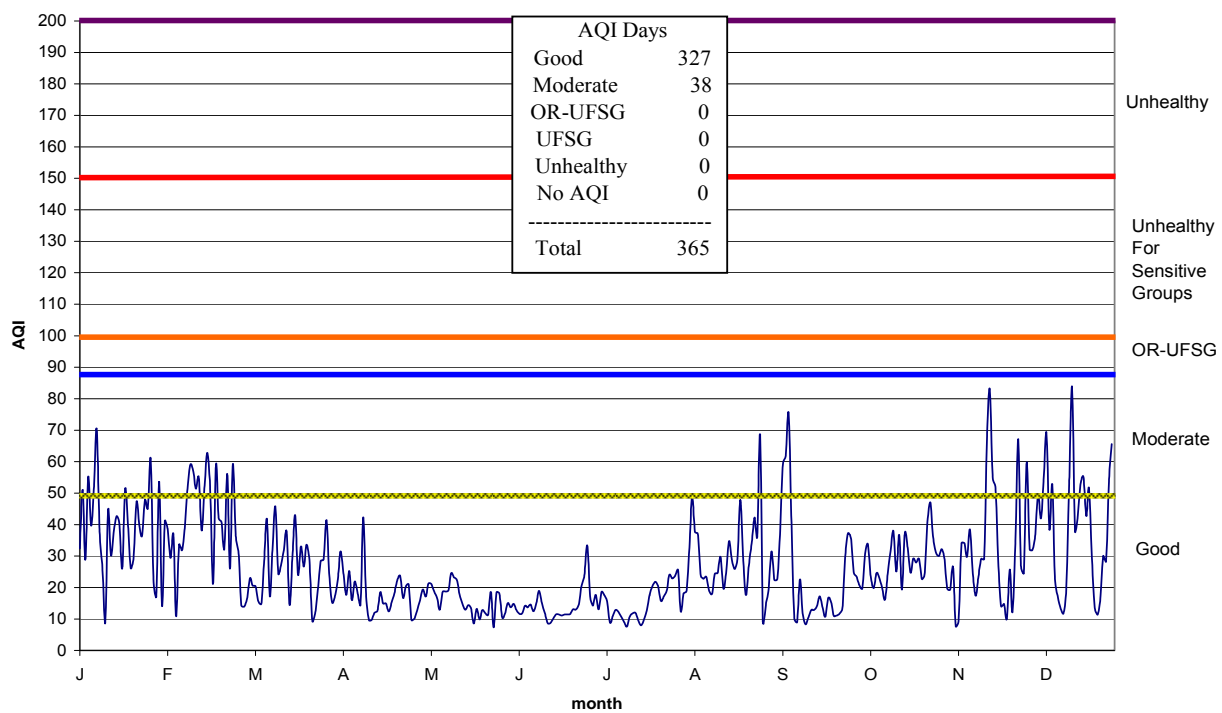


Figure 13. 2006 John Day Air Quality Summary

2006 Klamath Falls Air Quality Index
(based on PM_{2.5})

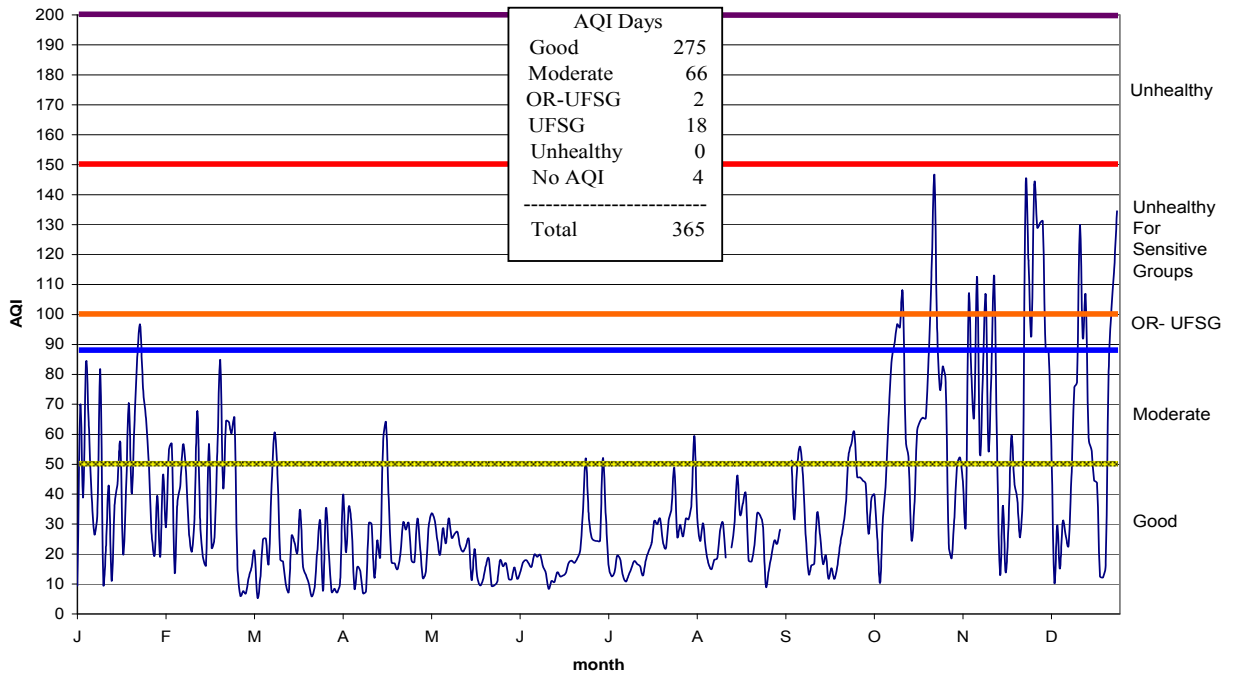


Figure 14. 2006 Klamath Falls Air Quality Summary

2006 La Grande Air Quality Index
(based on PM_{2.5})

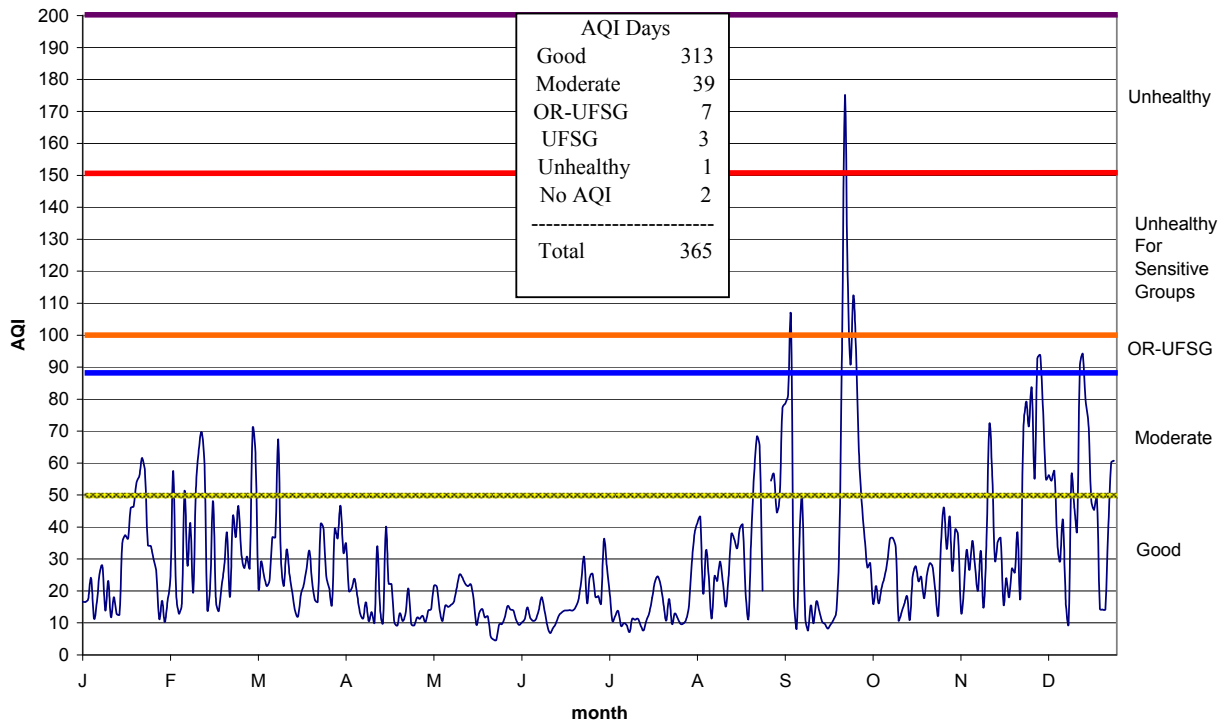


Figure 15. 2006 La Grande Air Quality Summary

2006 Lakeview Air Quality Index
(based on PM_{2.5})

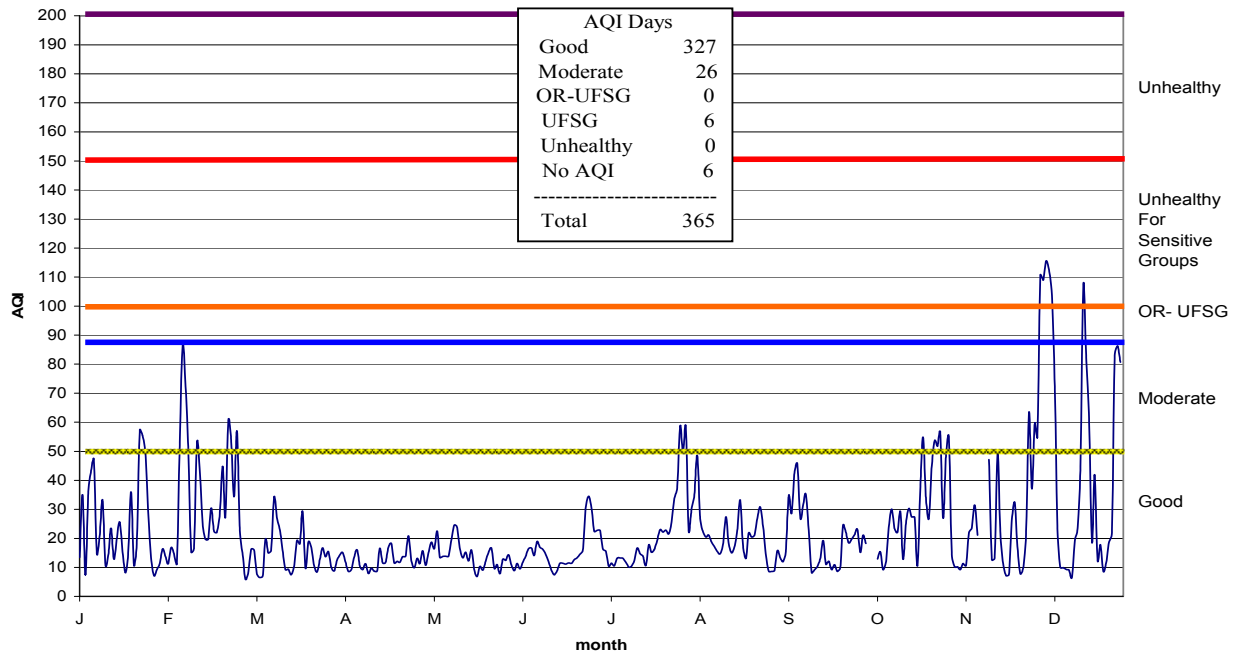


Figure 16. 2006 Lakeview Air Quality Summary

2006 Lyons Air Quality Index (Summer only)
(based on PM_{2.5})

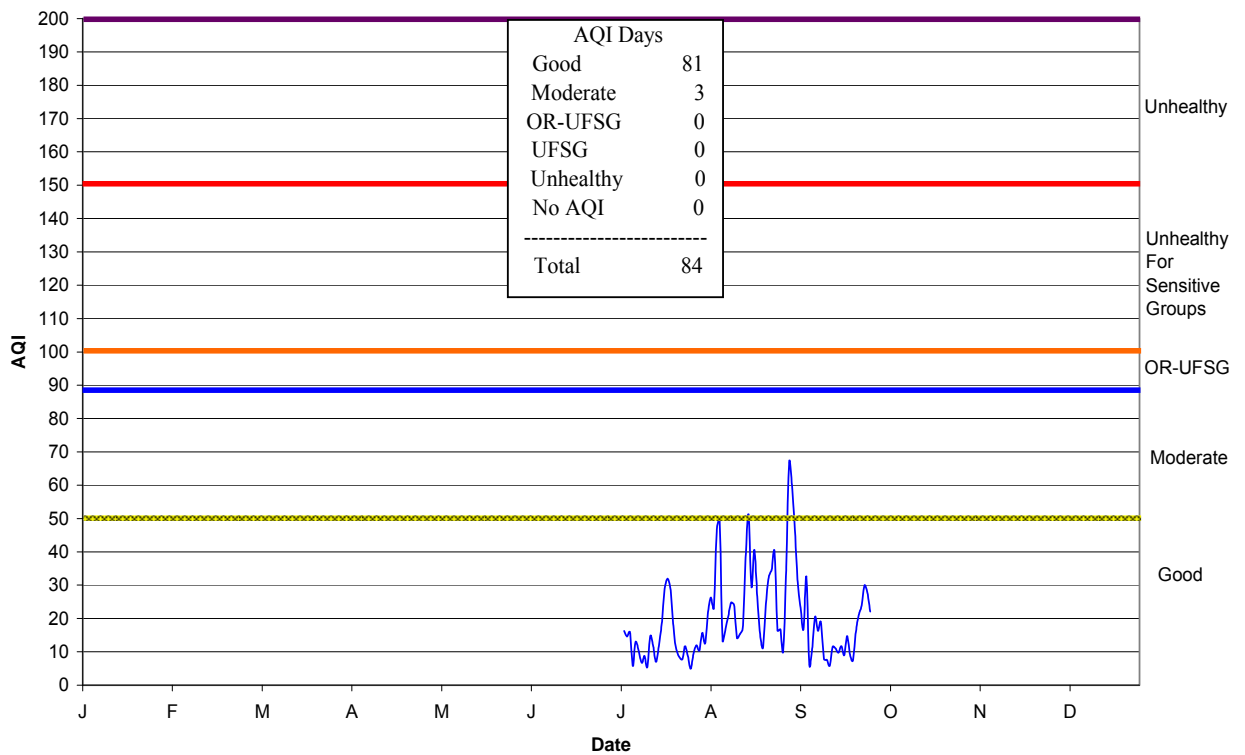


Figure 17. 2006 Lyons Air Quality Summary

2006 Medford Air Quality Index
(based on Ozone, Carbon Monoxide, and PM_{2.5})

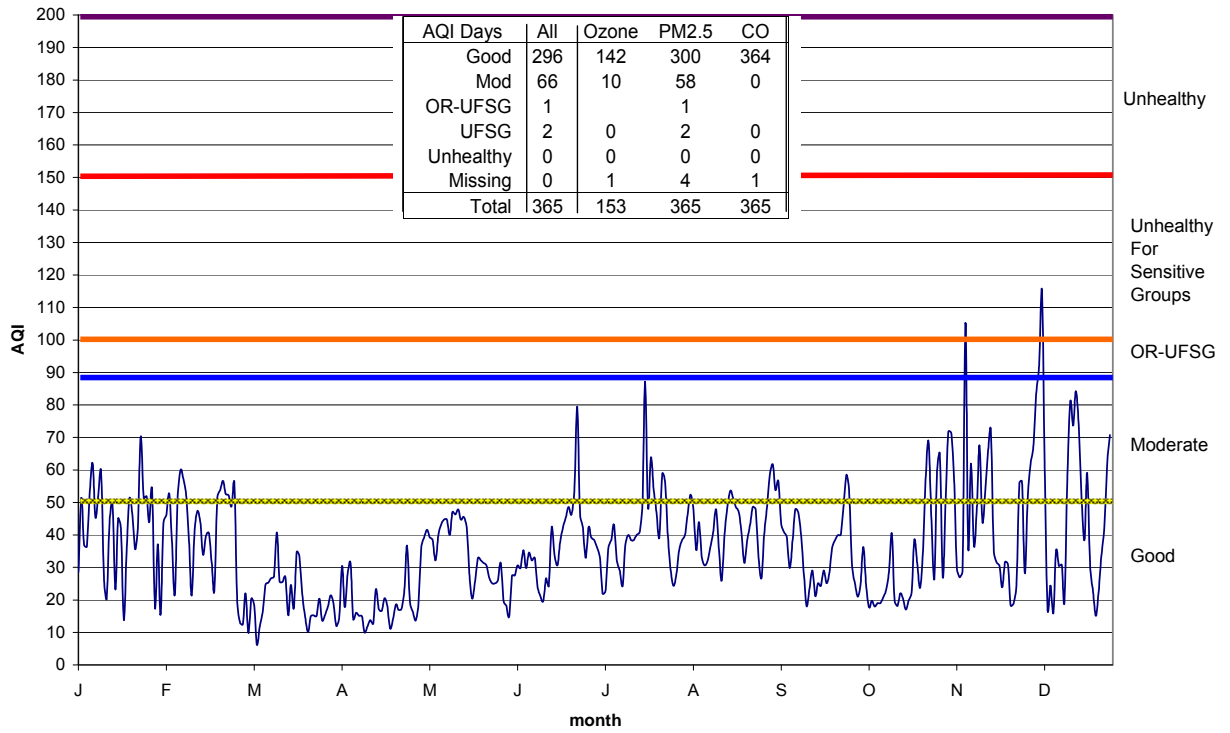


Figure 18. 2006 Medford Air Quality Summary

2006 Oakridge Air Quality Index
(based on PM_{2.5})

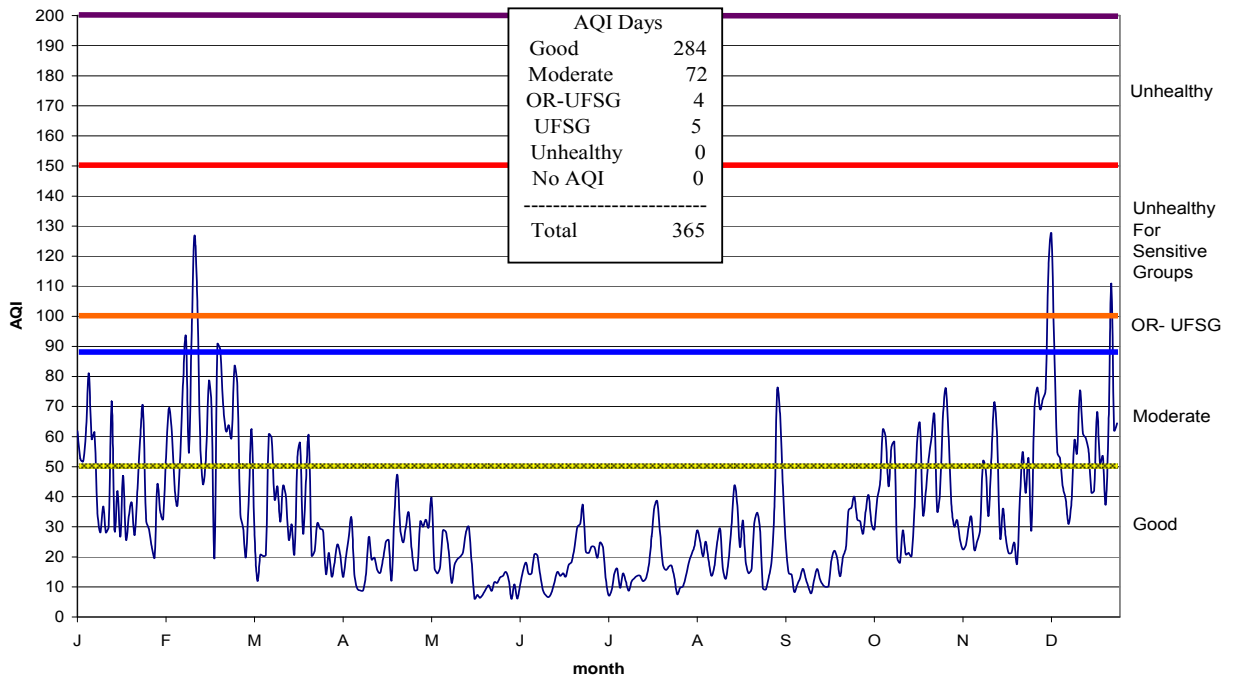


Figure 19. 2006 Oakridge Air Quality Summary

2006 Pendleton Air Quality Index
(based on PM_{2.5})

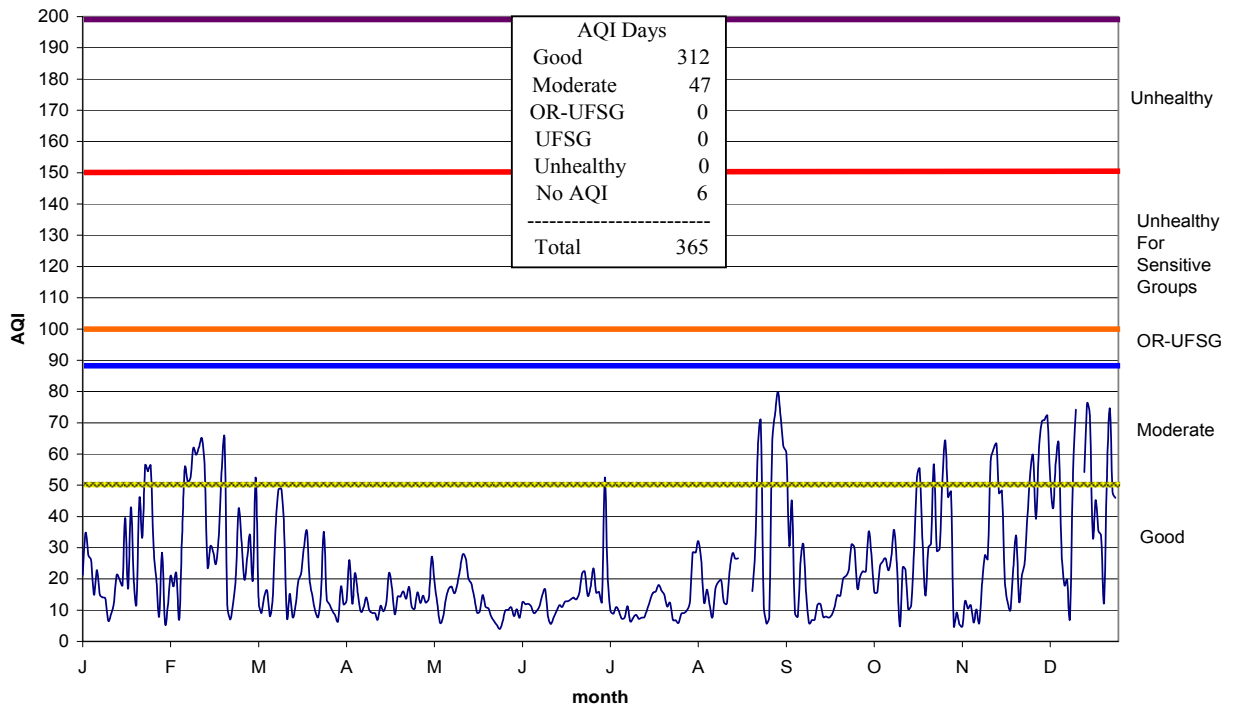


Figure 20. 2006 Pendleton Air Quality Summary

2006 Portland Air Quality Index
(based on PM_{2.5}, Ozone, and CO)

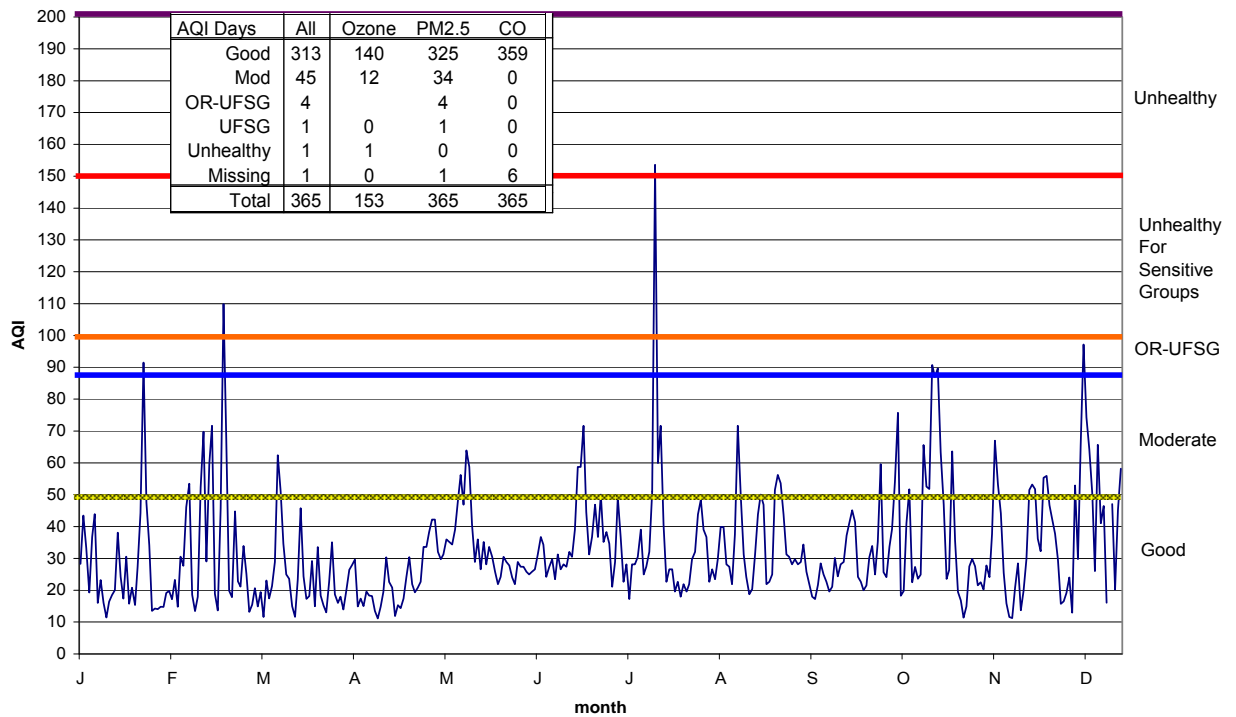


Figure 21. 2006 Portland Air Quality Summary

2006 Riddle Air Quality Index
(based on PM_{2.5})

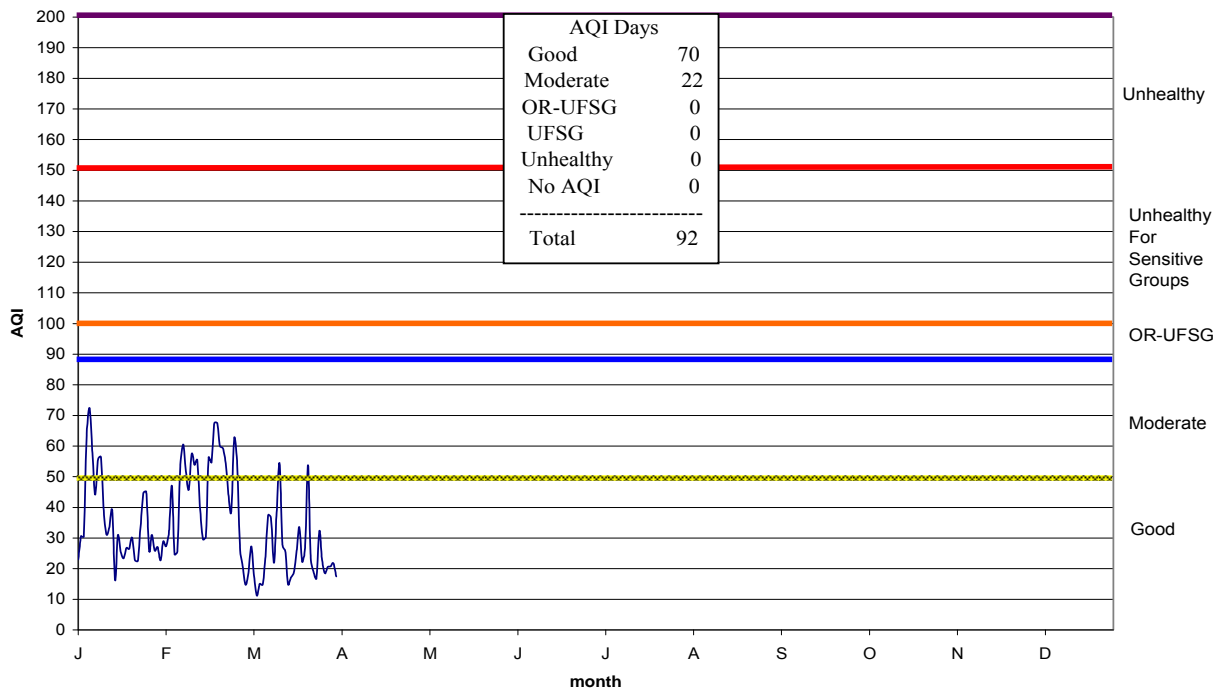


Figure 22. 2006 Riddle Air Quality Summary

2006 Roseburg Air Quality Index
(based on PM_{2.5})

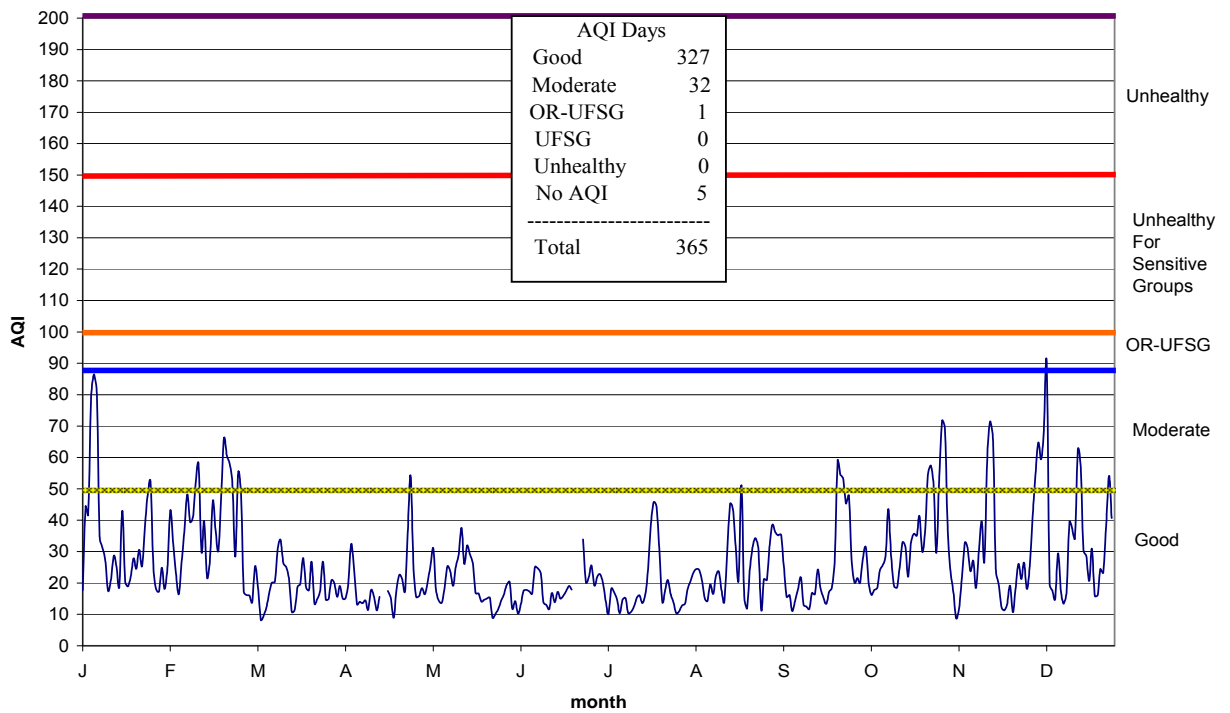


Figure 23. 2006 Roseburg Air Quality Summary

2006 Salem Air Quality Index
(based on PM_{2.5})

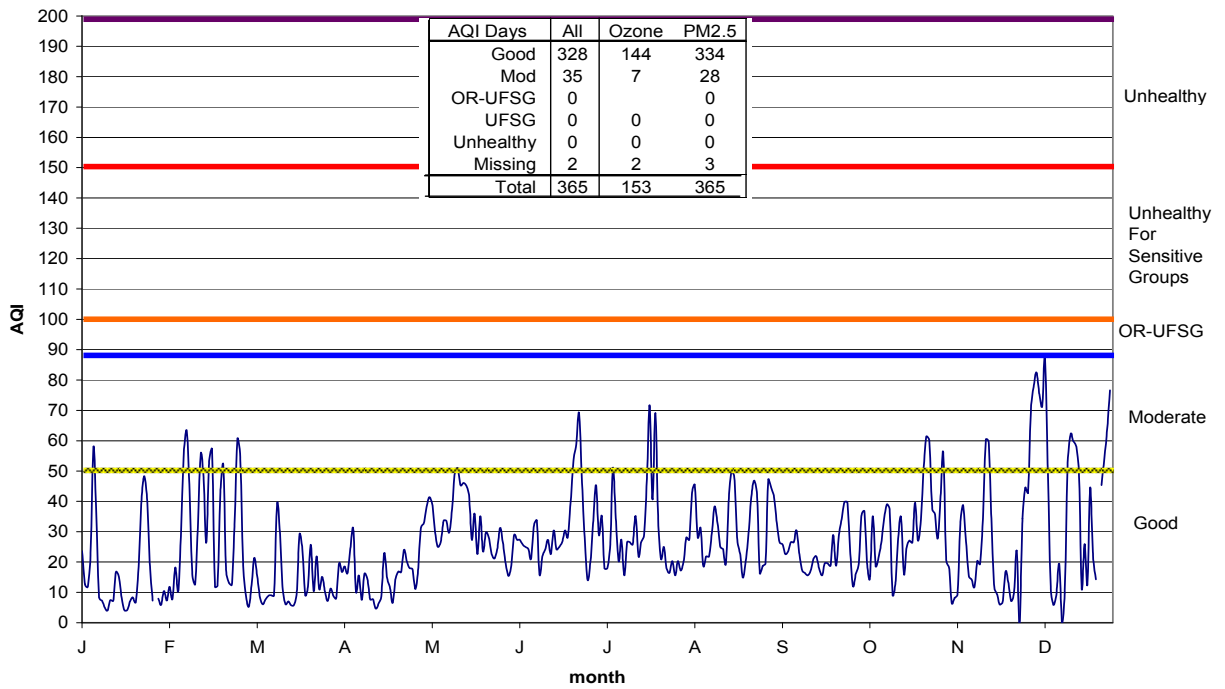


Figure 24. 2006 Salem Air Quality Summary

2006 Shady Cove Air Quality Index
(based on PM_{2.5})

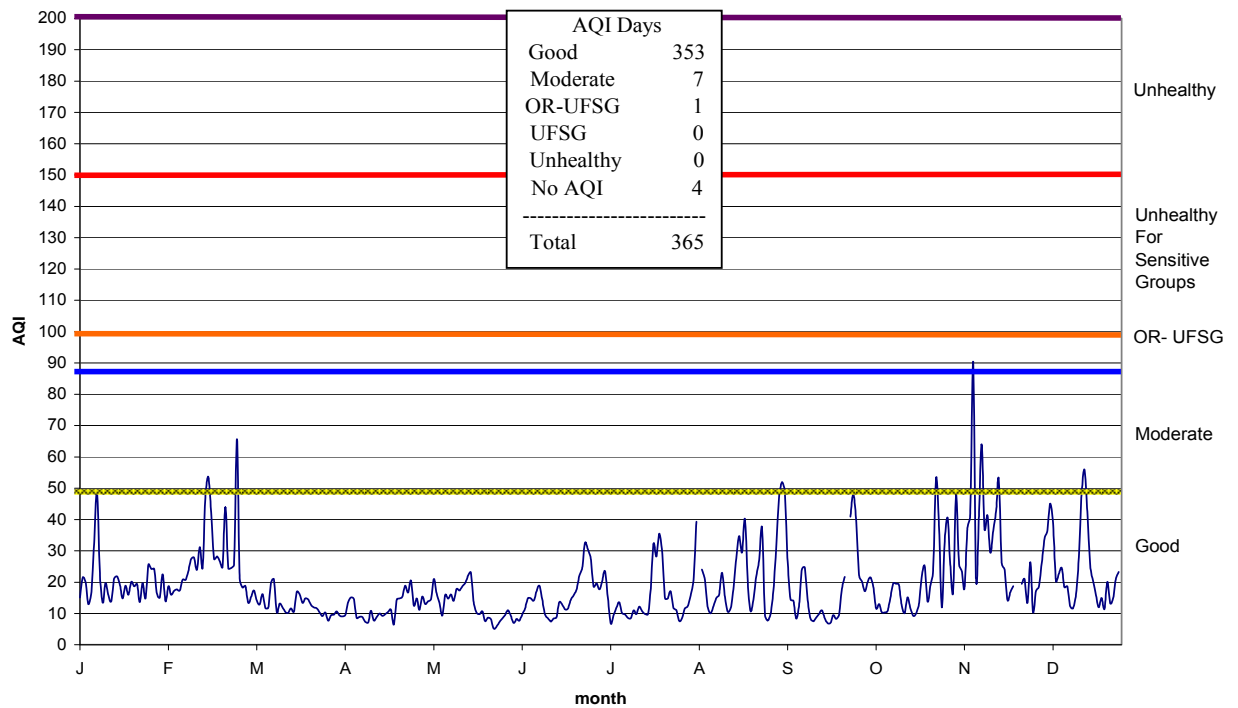


Figure 25. 2006 Shady Cove Air Quality Summary

2006 Sweet Home Air Quality Index
(based on PM_{2.5})

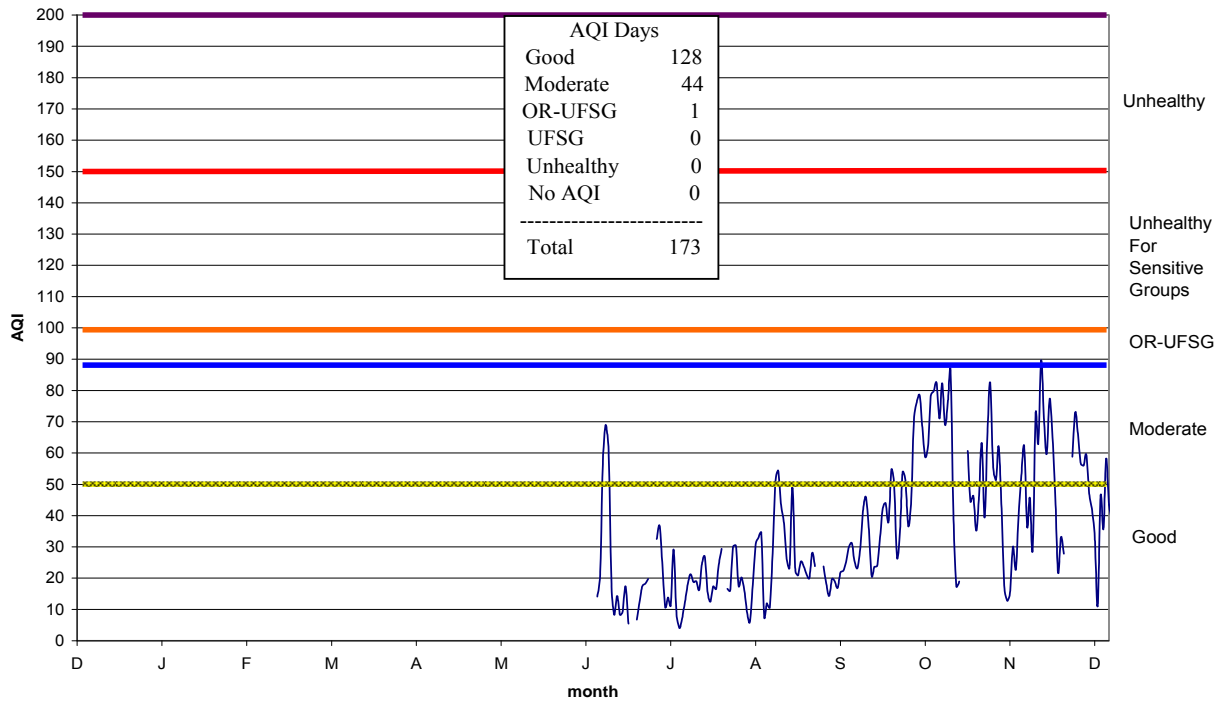


Figure 26. 2006 Sweet Home Air Quality Summary

2006 The Dalles Air Quality Index
(based on PM_{2.5})

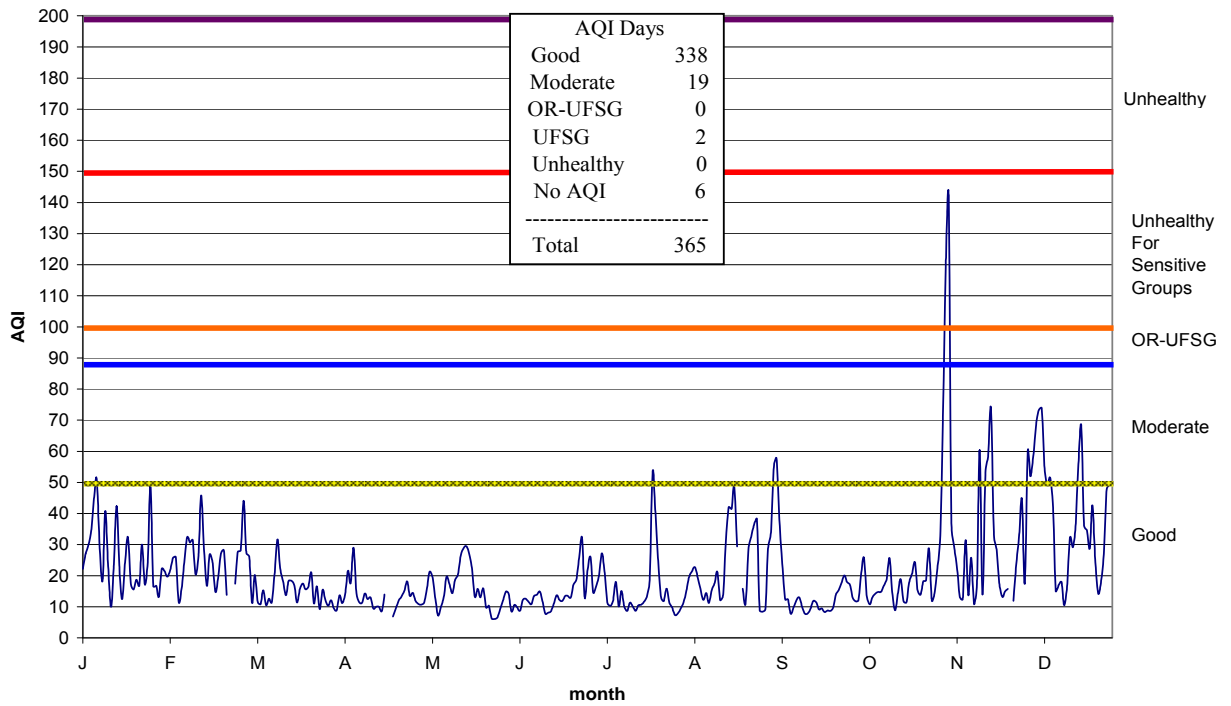


Figure 27. 2006 The Dalles Air Quality Summary

2006 White City Air Quality Index
(based on PM_{2.5})

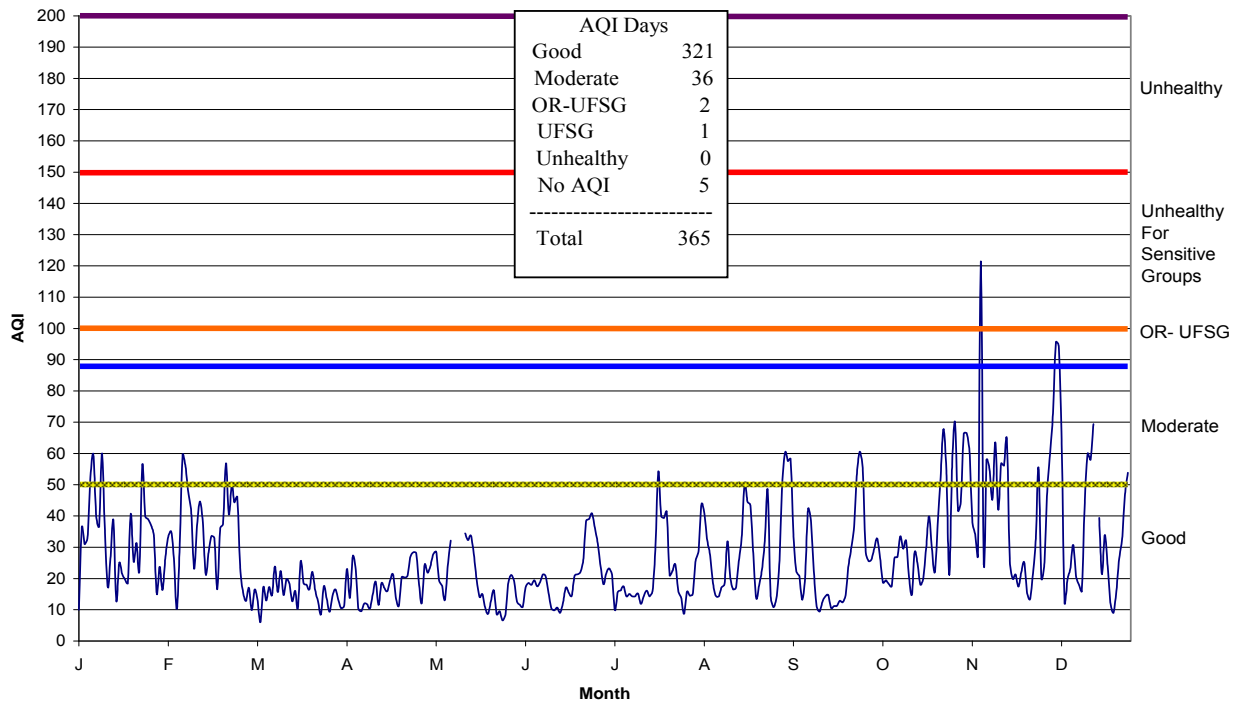


Figure 28. 2006 White City Air Quality Summary

Air Quality Trends

Most areas in the state meet the National Ambient Air Quality Standards (NAAQS). Klamath Falls and Oakridge currently violate the new daily $PM_{2.5}$ standard. Figures 29 and 30 show the reduction in PM_{10} and CO ambient pollution, while Figure 31a illustrates ozone is still near the NAAQS. Figure 31b shows Portland ozone trends relative to population and vehicle miles.

PM_{10} Trends

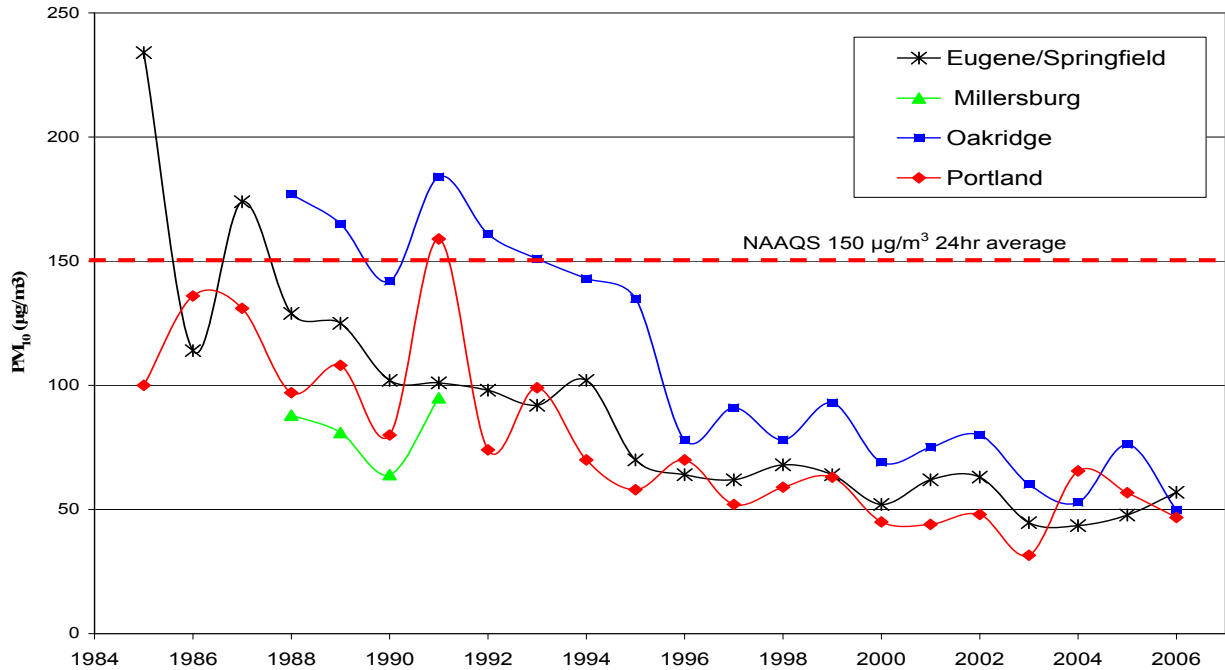


Figure 29a. PM_{10} trend for NW Oregon cities using the second highest 24 hr average.

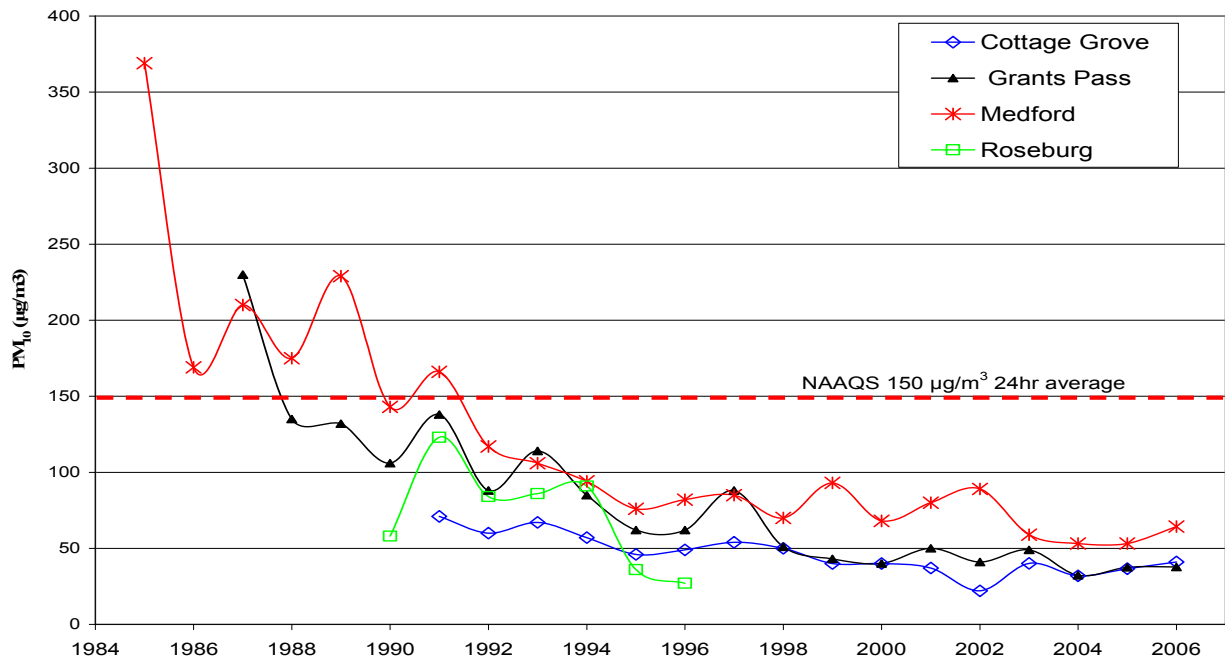


Figure 29b. PM_{10} trend for SW Oregon cities using the second highest 24 hr average.

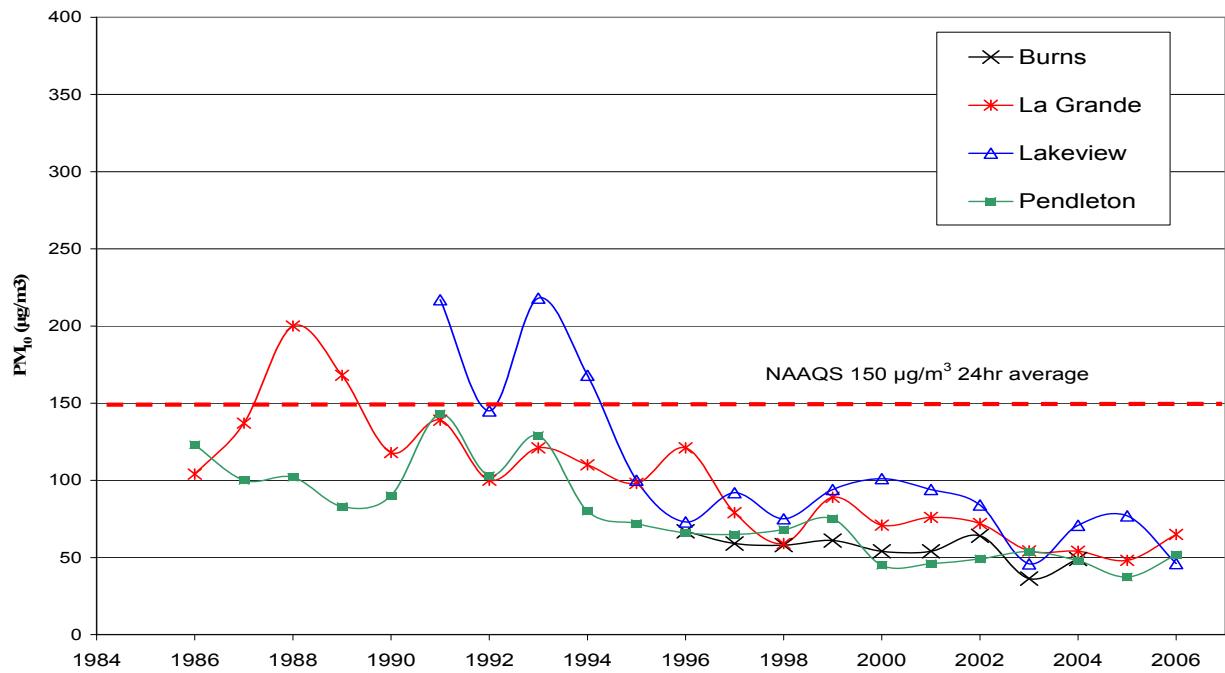


Figure 29c. PM₁₀ trend for Eastern Oregon cities using the second highest 24 hr average.

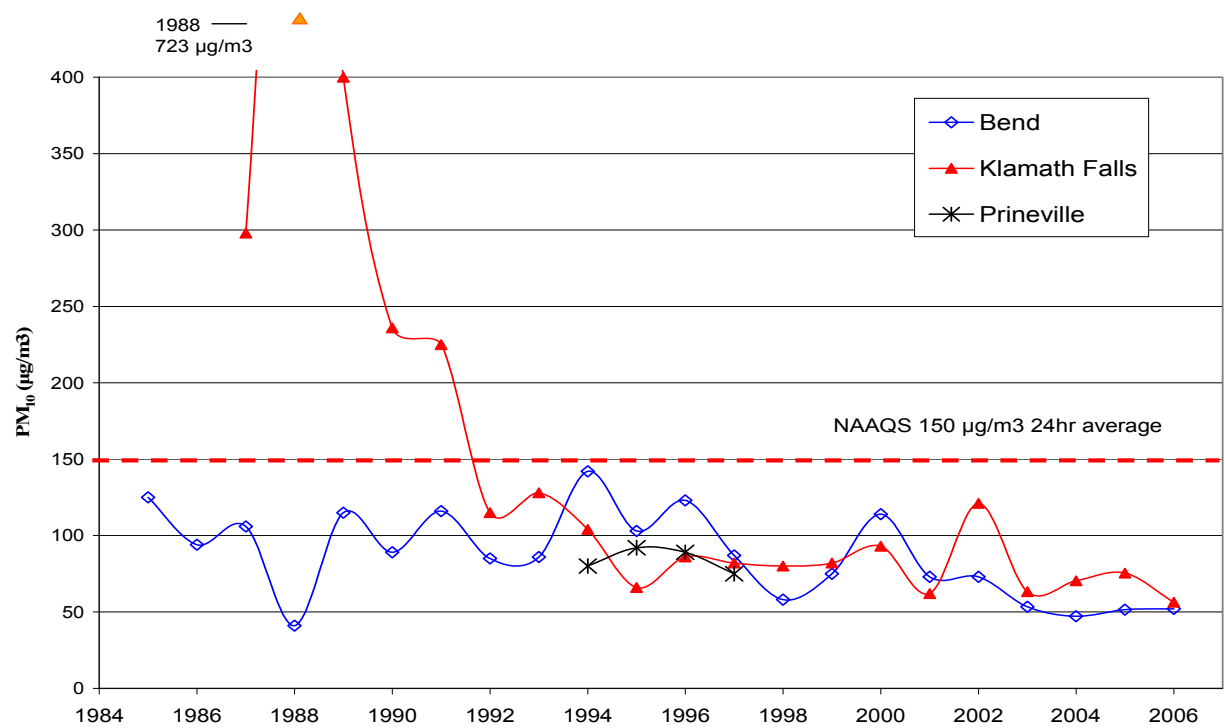


Figure 29d. PM₁₀ trend for Central Oregon cities using the second highest 24 hr average.
Carbon Monoxide Trends

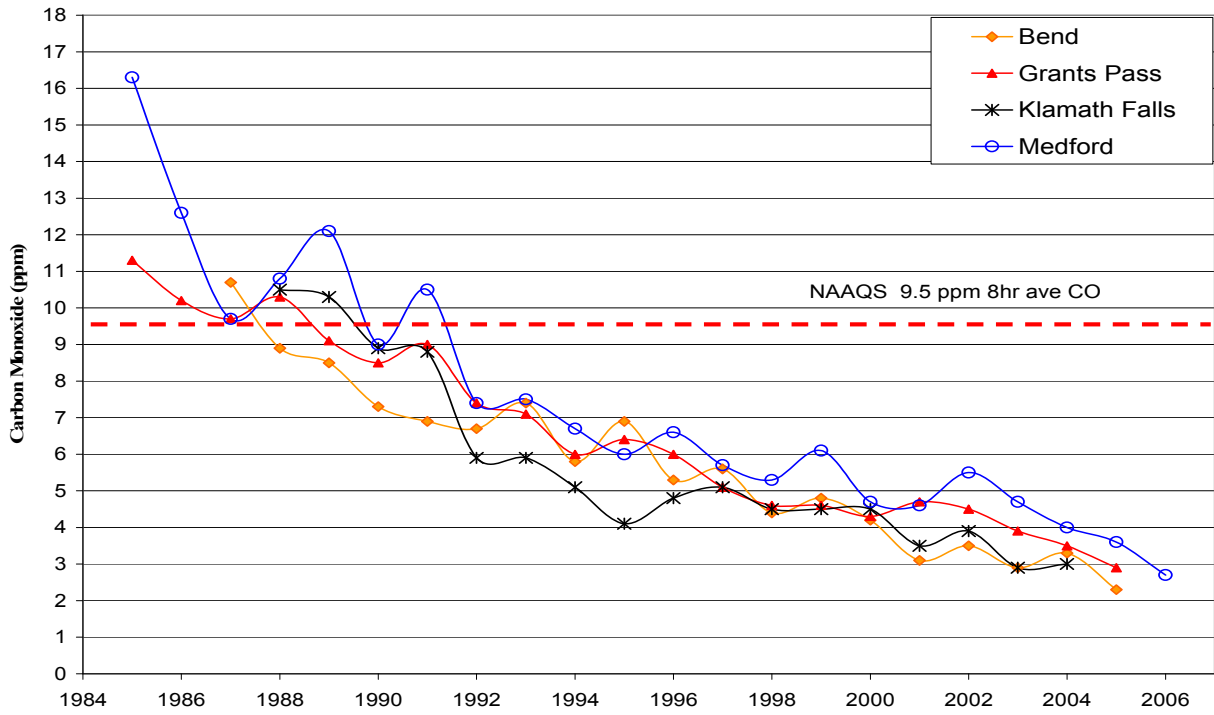


Figure 30a. CO trend for Bend, Klamath Falls, Medford, and Grants Pass using second highest eight hour average.

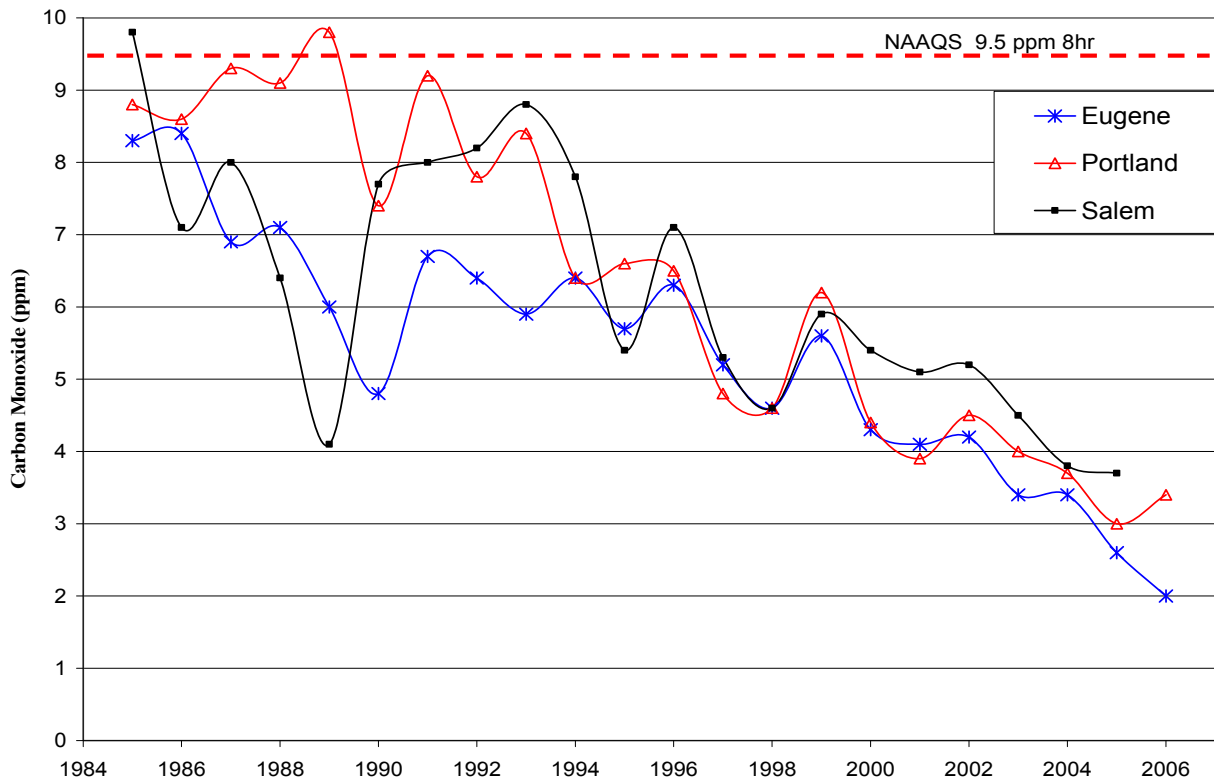


Figure 30b. CO trend for Portland, Eugene, and Salem using second highest eight hr average.

Ozone Trends

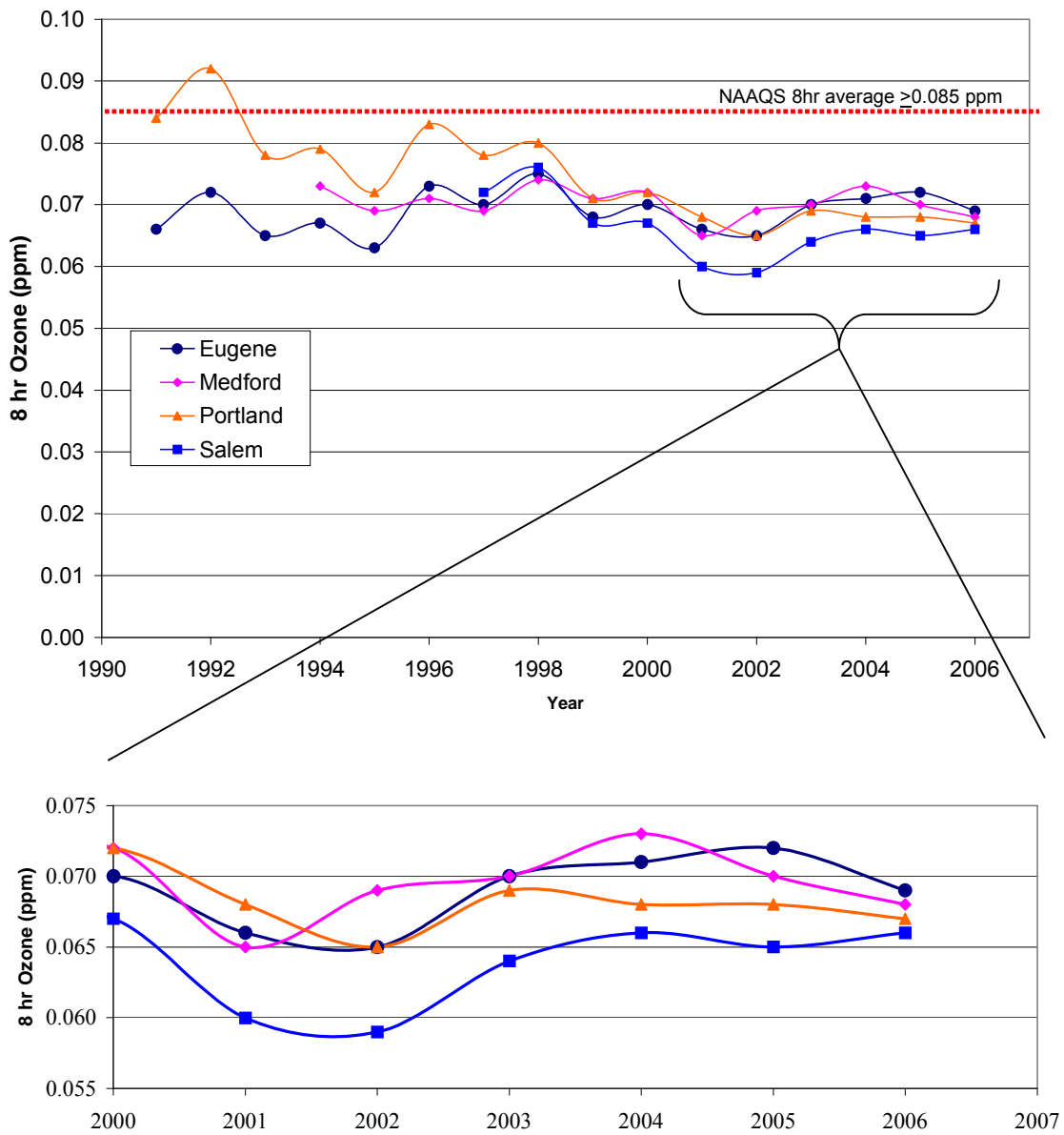
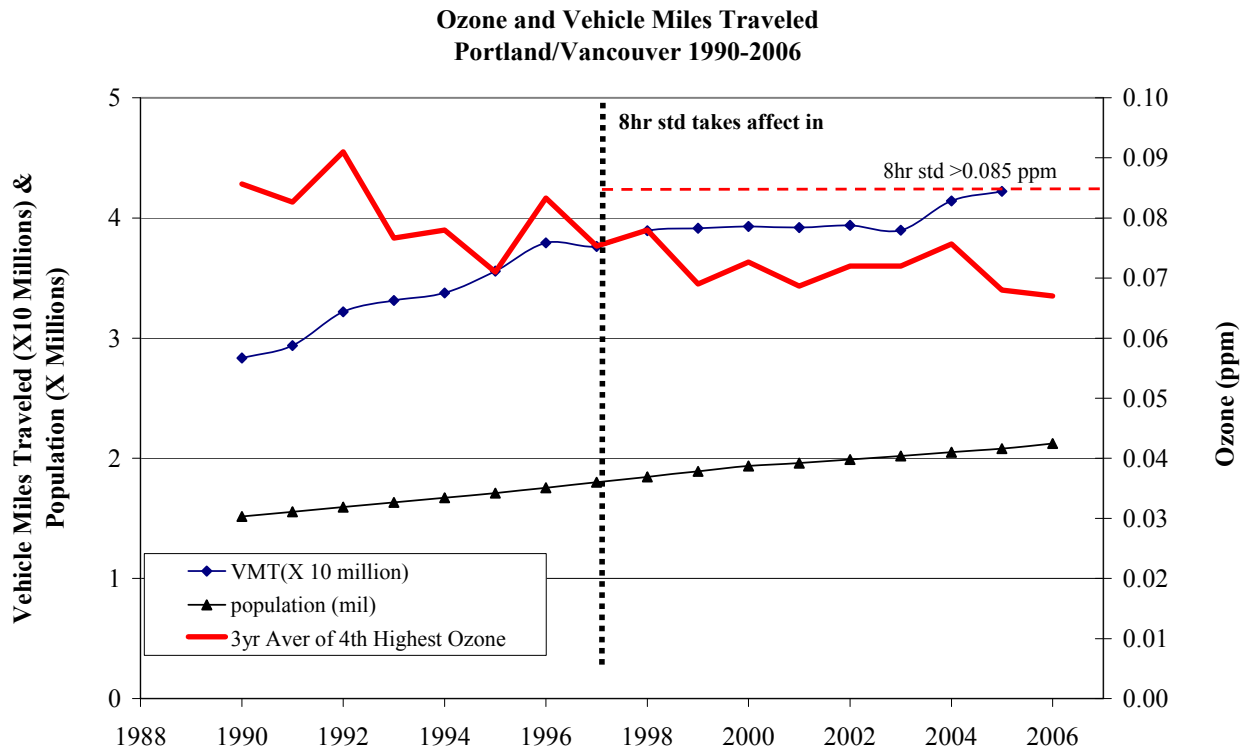


Figure 31a. Ozone trend using the three year average of fourth highest eight hour ozone value.



Ozone is the 3yr average of the fourth highest 8hr average at the maximum site in

Figure 31b. Portland/Vancouver ozone trend using the three year average of fourth highest eight hour ozone value with Vehicle Miles Traveled and Population trends.

PM_{2.5} Trends

Figures 32a through h provide the PM_{2.5} 98th percentile and annual average.

Note: The 98th Percentile is a NAAQS standard and is the 98th percent highest sample day. For example, it is the 4th highest sample day if a site has 200 sample days ($200 \times 0.98 = 196$; $200 - 196 = 4$).

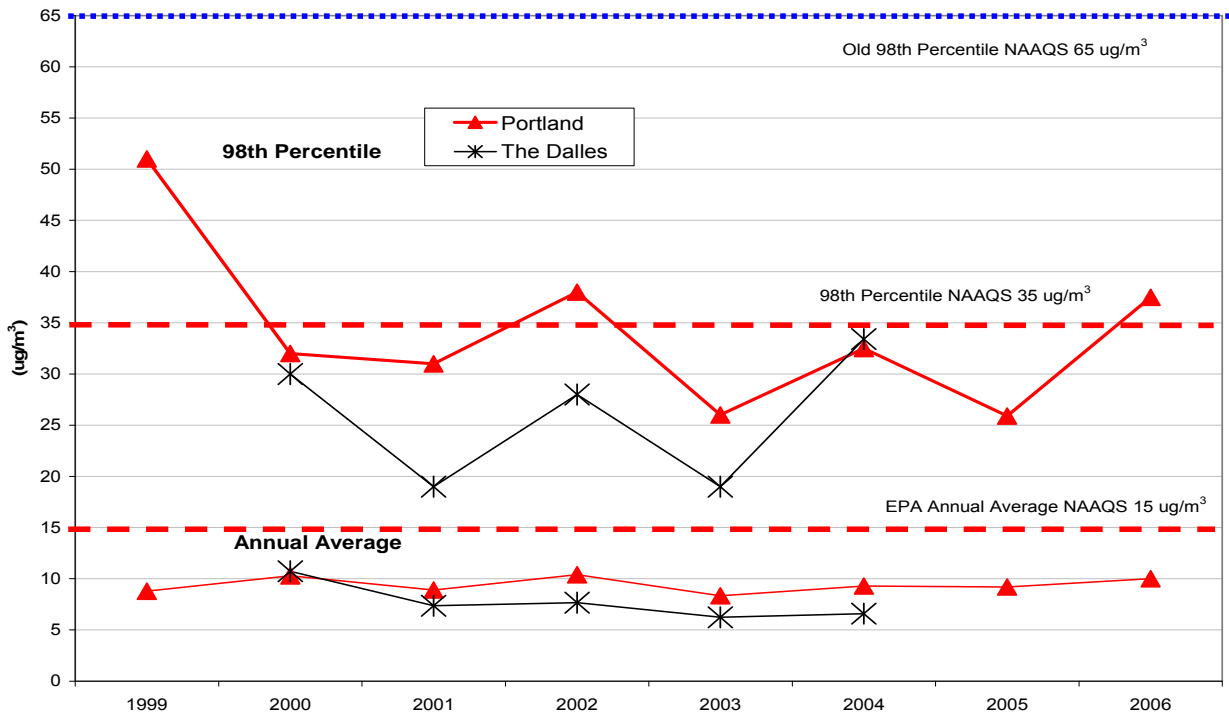


Figure 32a. Portland and The Dalles PM_{2.5} 98th Percentile (top) and Annual Average (bottom).

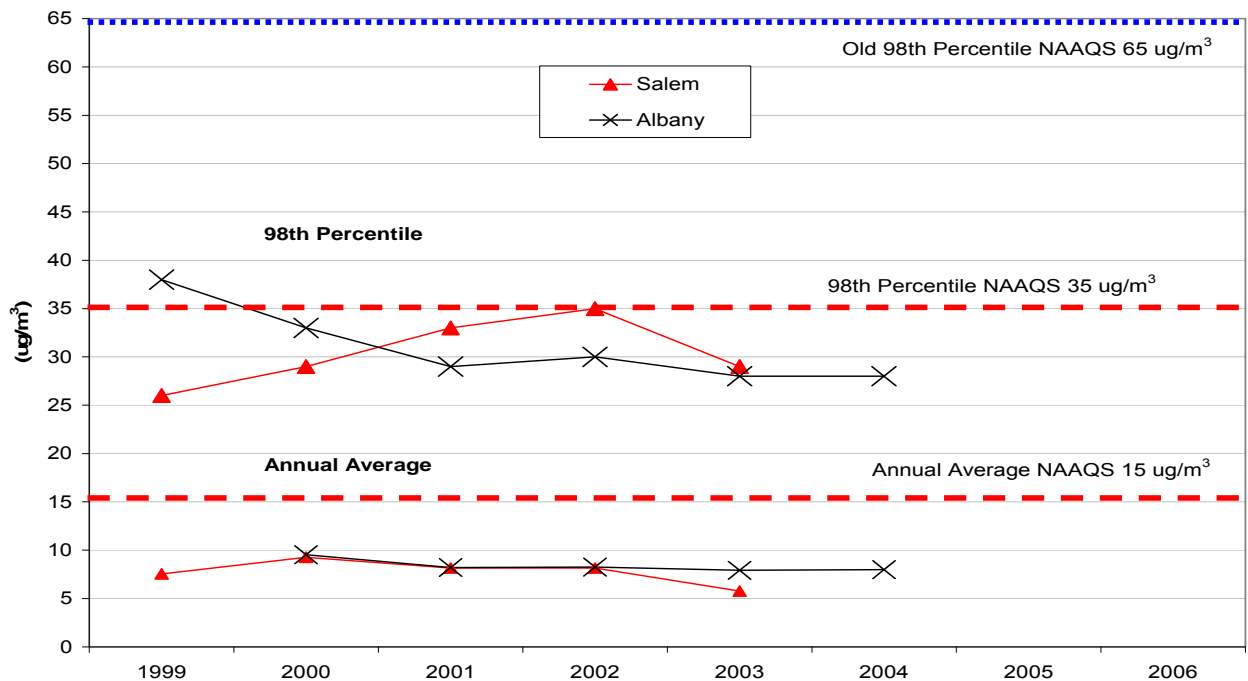


Figure 32b. Salem and Albany PM_{2.5} 98th Percentile (top) and Annual Average (bottom).

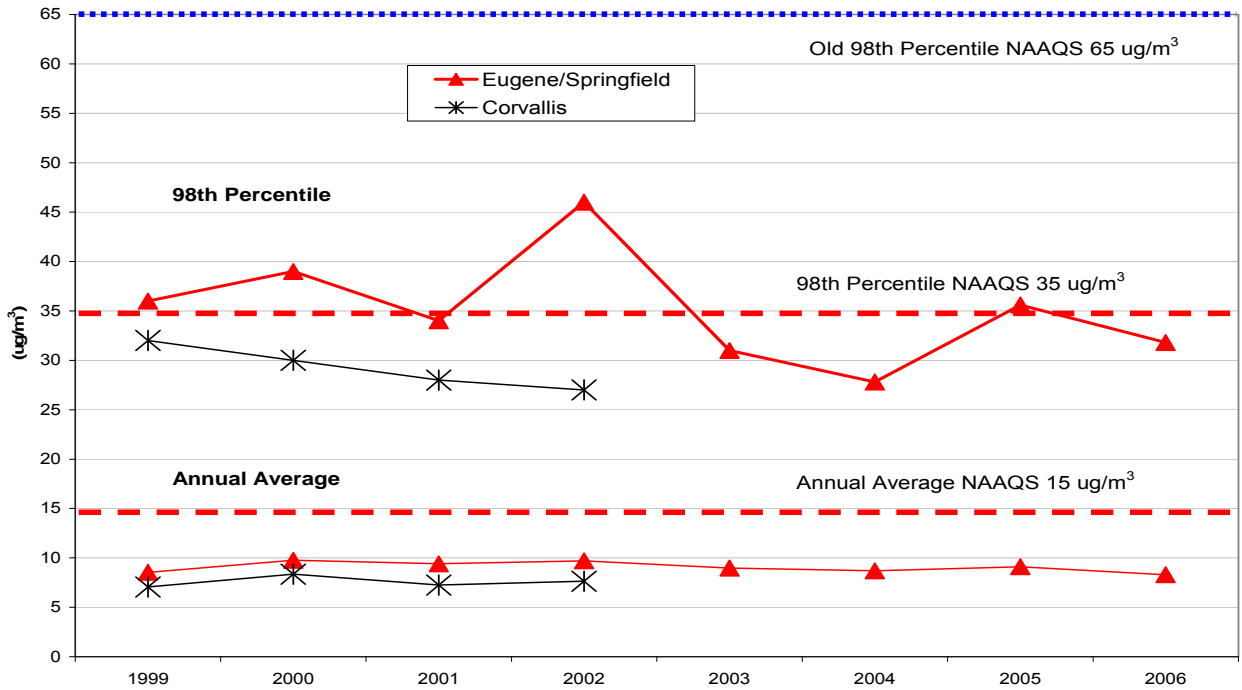


Figure 32c. Eugene and Corvallis PM_{2.5} 98th Percentile (top) and Annual Average (bottom).

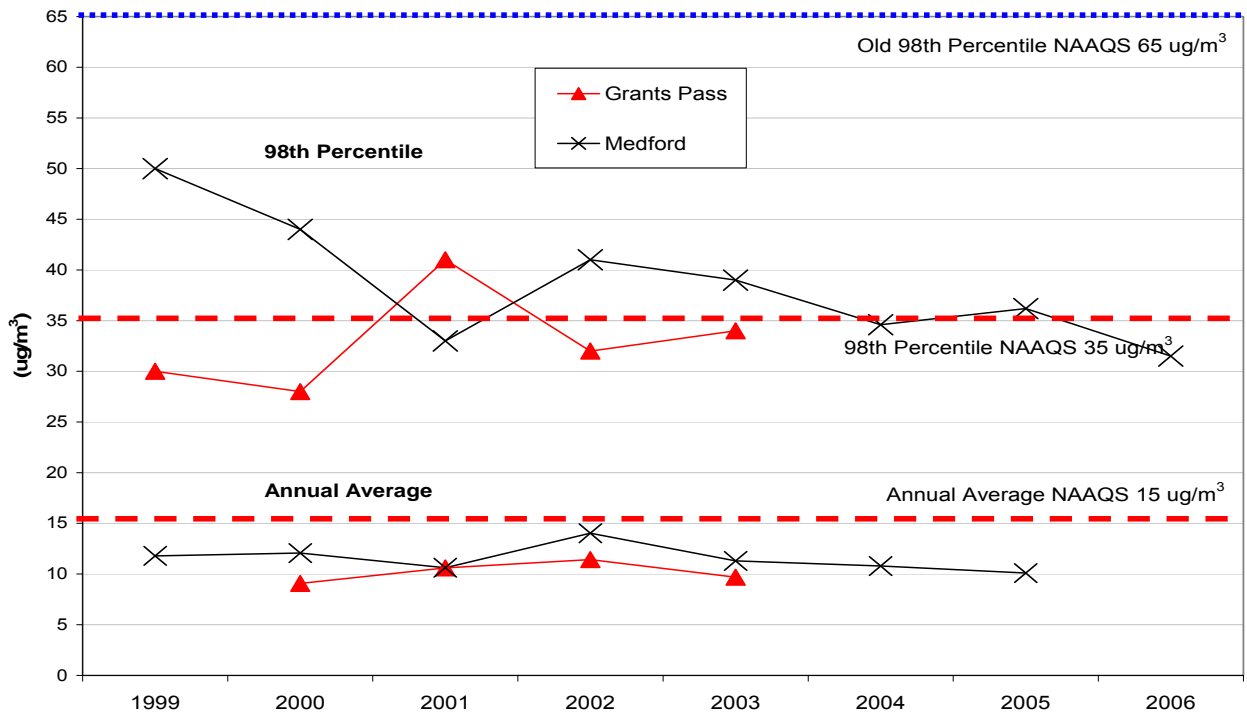


Figure 32d. Grants Pass and Medford PM_{2.5} 98th Percentile (top) and Annual Average (bottom).

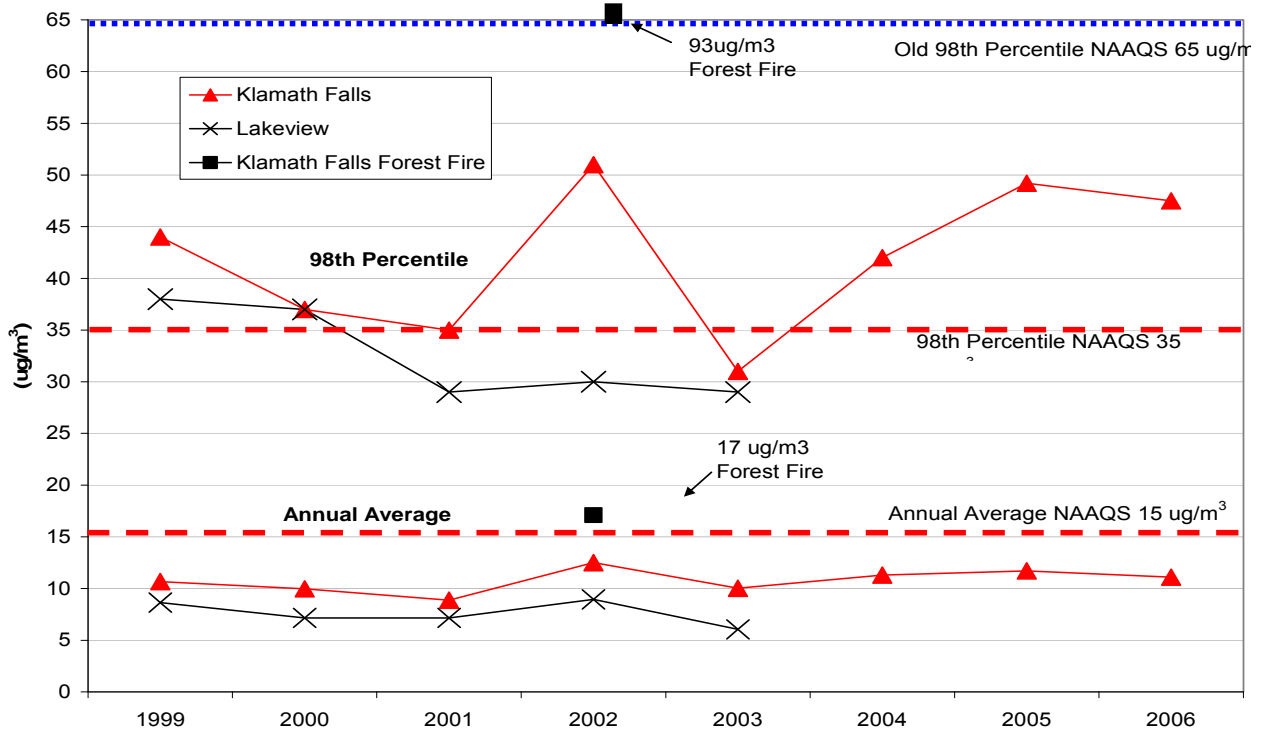


Figure 32e. Klamath Falls and Lakeview PM_{2.5} 98th Percentile (top) and Annual Average (bottom).

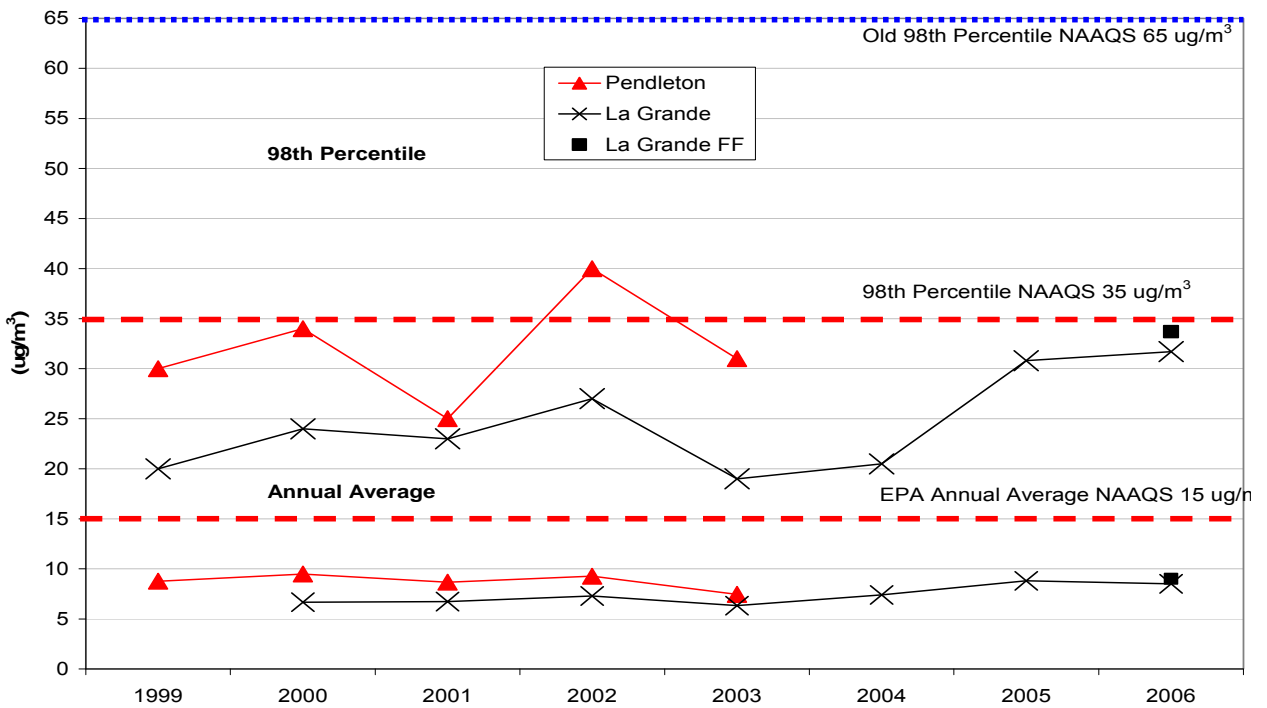


Figure 32f. Pendleton and La Grande Oregon PM_{2.5} 98th Percentile (top) and Annual Average (bottom).

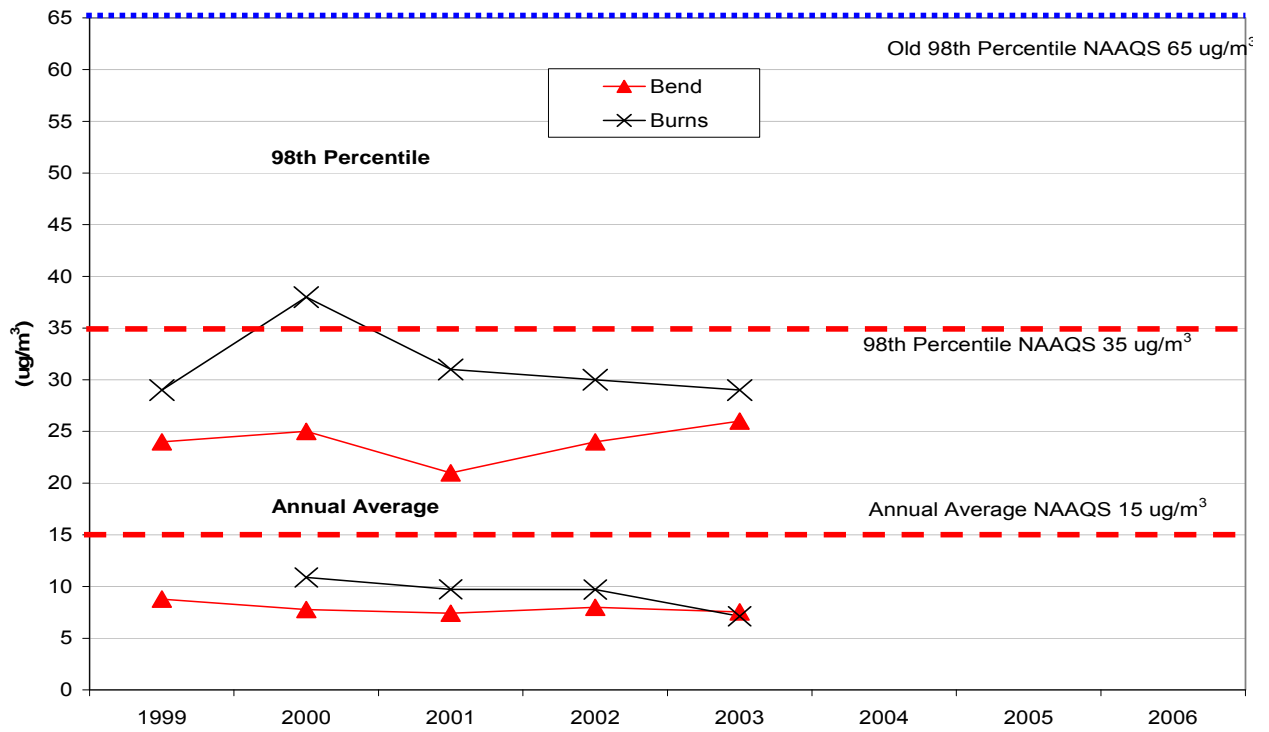


Figure 32g. Bend and Burns PM_{2.5} 98th Percentile (top) and Annual Average (bottom).

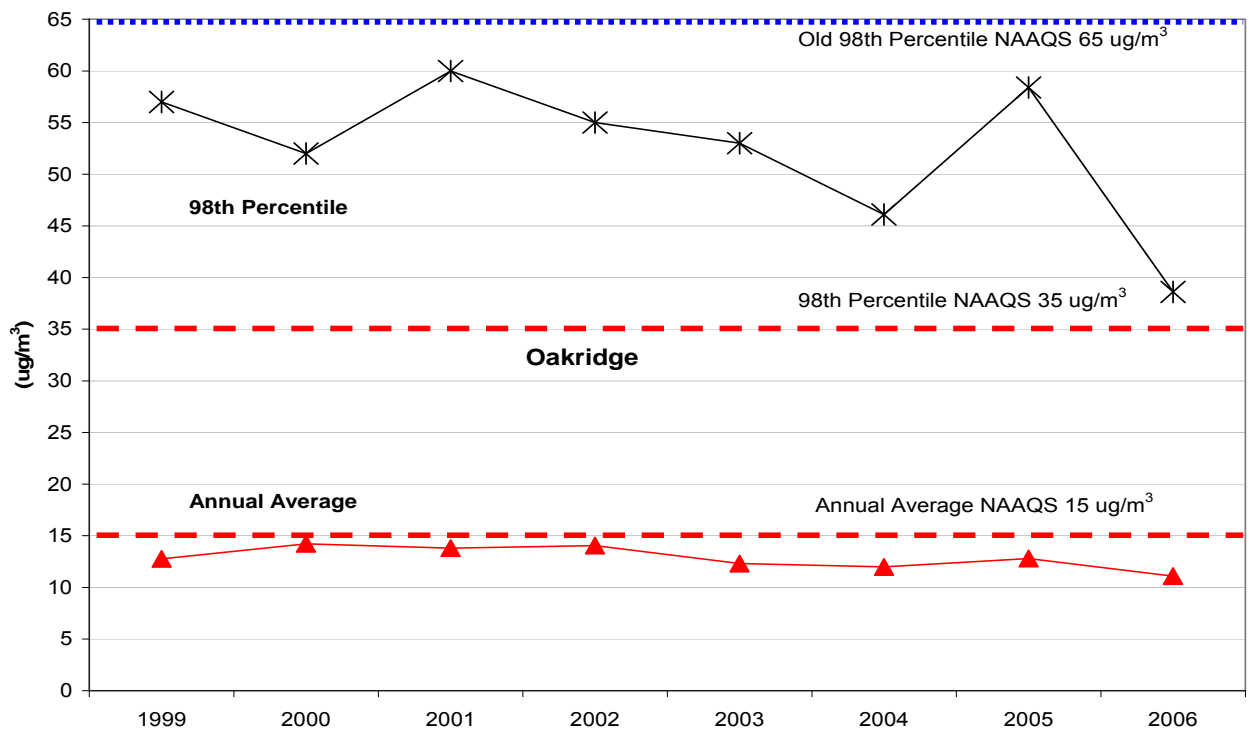


Figure 32h. Oakridge PM_{2.5} 98th Percentile (top) and Annual Average (bottom).

Figure 33 summarizes the three year average 98th percentile for Oregon cities between 2004 and 2006. Three year averages are used to determine attainment/non-attainment areas. The EPA issued a new daily standard of 35ug/m³ in 2006.

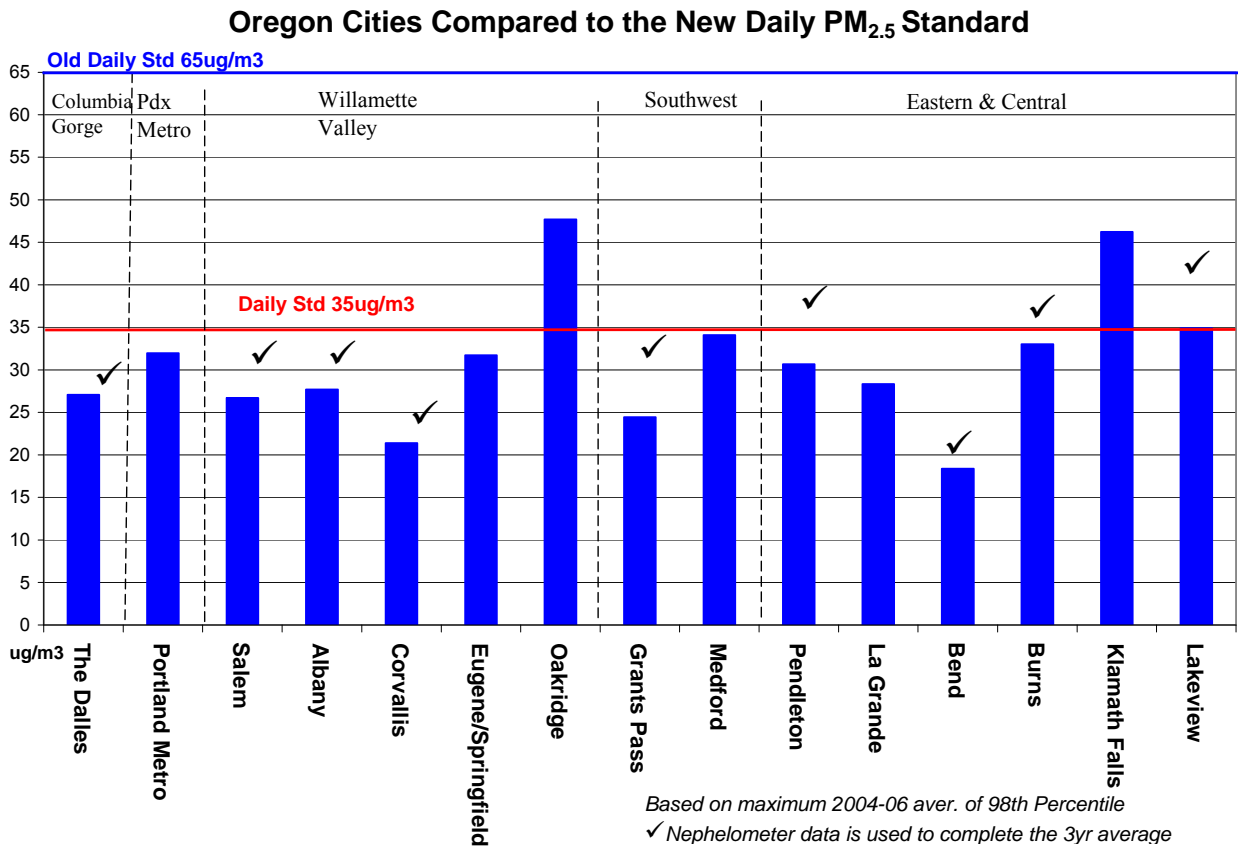


Figure 33. Oregon PM_{2.5} three year average 98th percentile compared to the new daily standard of 35ug/m³.

Oregon DEQ began sampling for air toxics in Portland in 1999 and La Grande in 2005. The Lane Regional Air Pollution Authority (LRAPA) began sampling for air toxics in Eugene in 2000. Figures 34 through 36 illustrate some trends for the Portland sites for select air toxics. More air toxic information can be found in Appendix H.

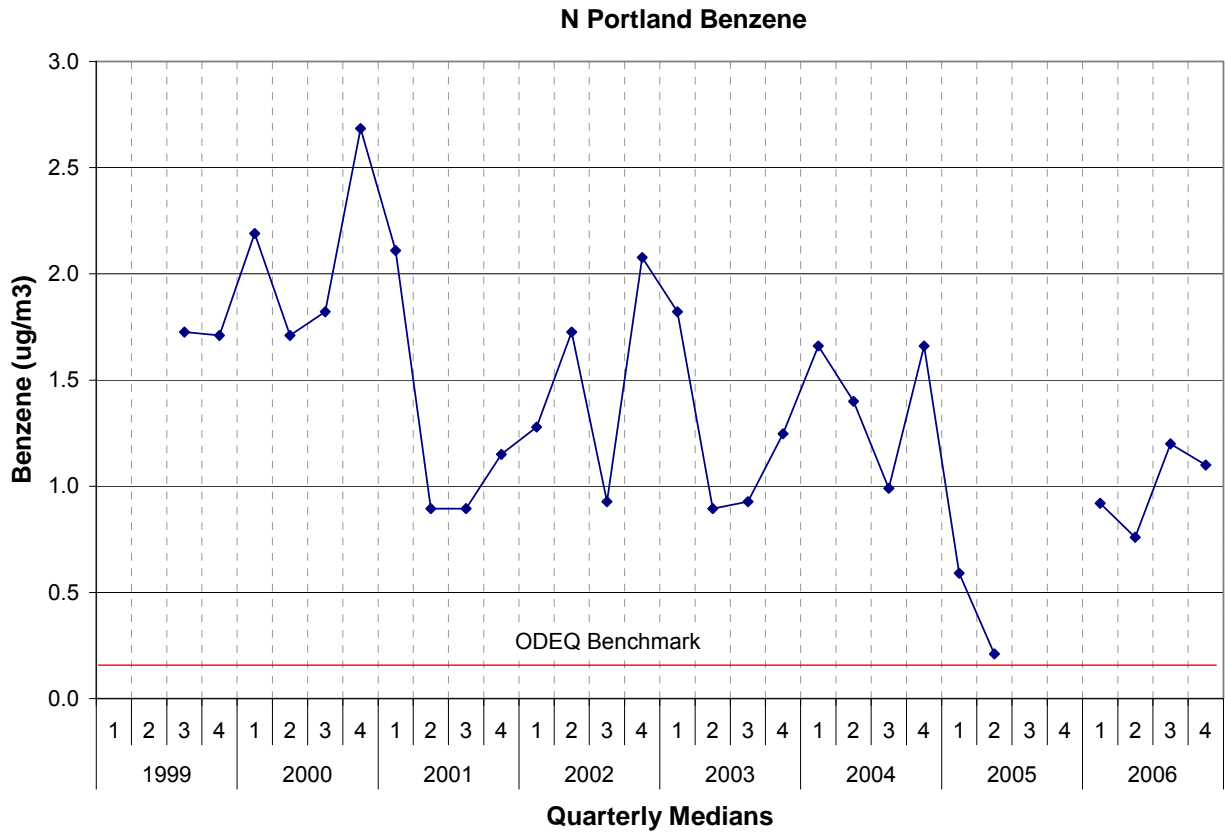


Figure 34. Median quarterly Benzene concentrations in N Portland. (1999-2006)

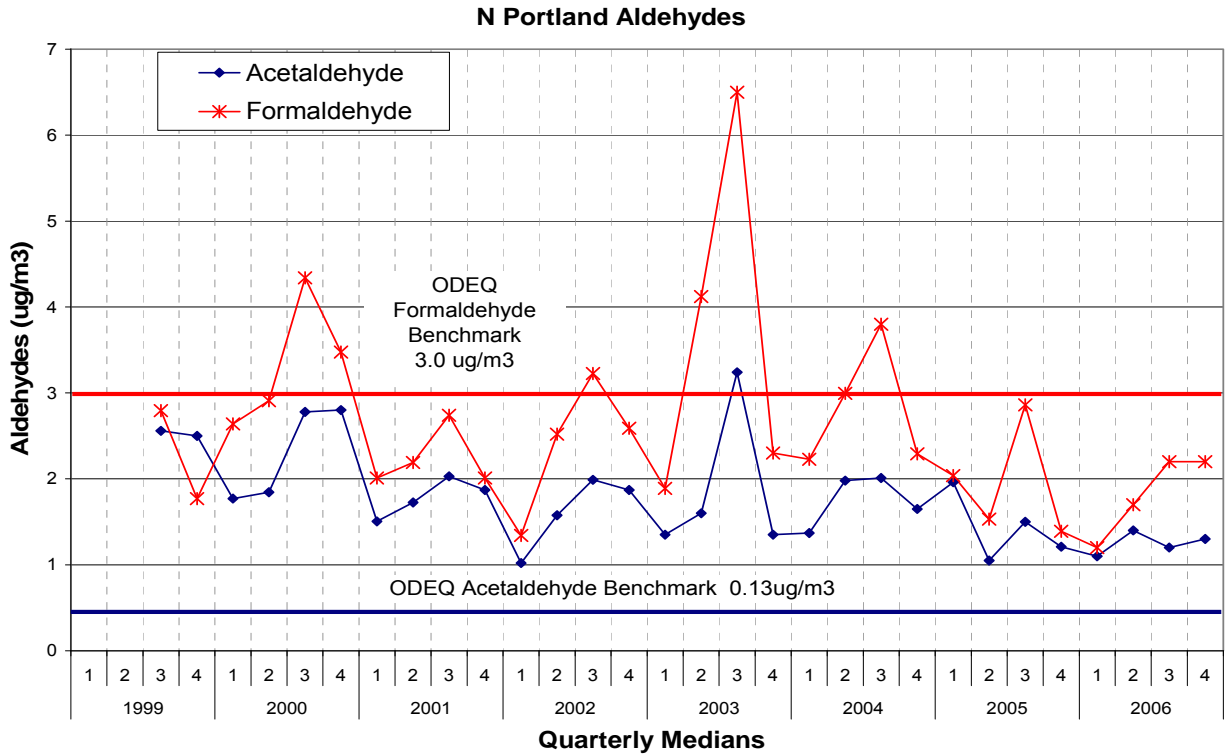


Figure 35. Median quarterly Aldehyde concentrations in N. Portland. (1999-2006)

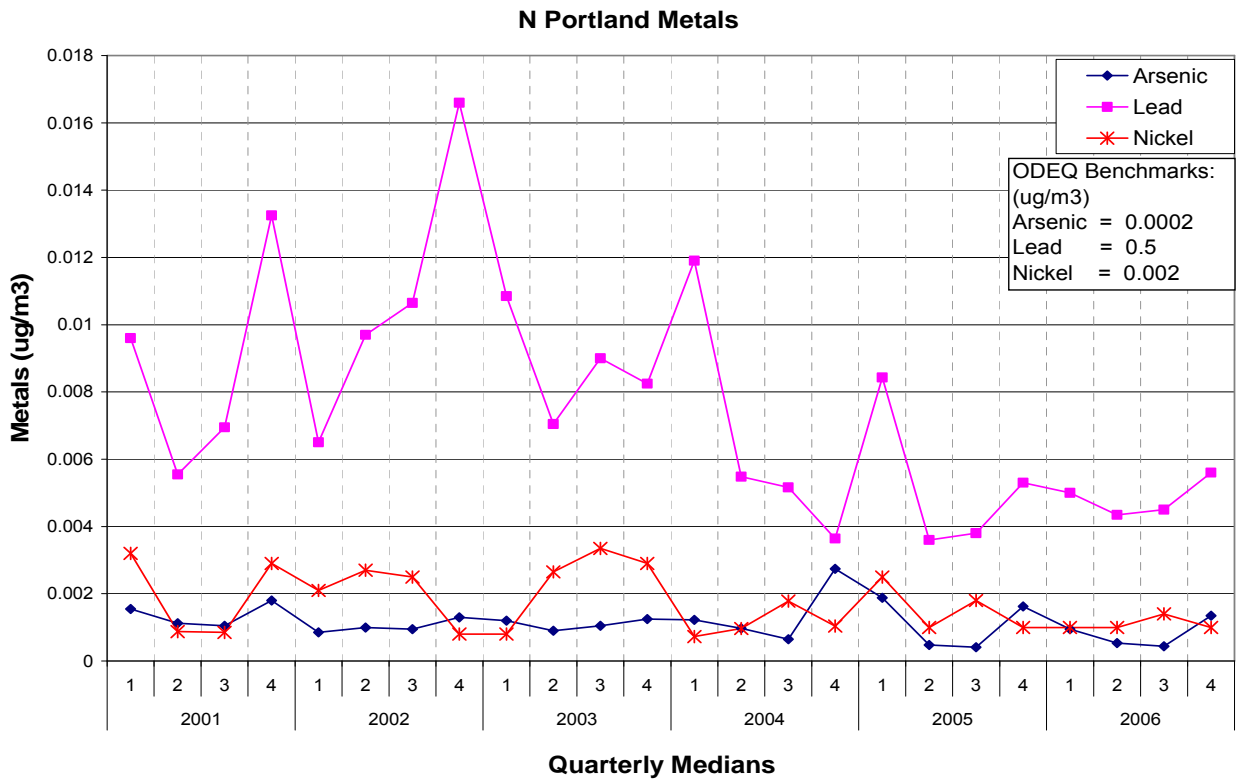


Figure 36. Median quarterly metals concentrations in N. Portland. (2001-2006)

Maintenance and Non-attainment Areas

Oregon hasn't always met the National Ambient Air Quality Standards and initially had several communities designated by the EPA as non-attainment areas. DEQ, local governments, citizens, environmental groups, and industry worked together to improve air quality in these areas and now most of Oregon consistently meets the federal standards. Many of these non-attainment areas have been officially re-designated as maintenance areas while the remaining cities are in the various stages of doing so. Table 2 lists the Oregon maintenance areas while Table 3 shows the remaining non-attainment areas and their re-designation status. Table 4 shows areas that may be designated out of attainment in 2009 because of revised standards. DEQ's web site has current information at <http://www.deq.state.or.us/aq/planning/index.htm>

Table 2. Oregon communities with air quality maintenance strategies.
(re-designated as attainment areas)

City	Pollutant	Re-designation Date
Eugene/Springfield	CO	1994
Grants Pass	CO	1999
Portland	CO	1996
Klamath Falls	CO	2001
Medford/Ashland	CO	2001
Klamath Falls	PM ₁₀	2002
Grants Pass	PM ₁₀	2003
La Grande	PM ₁₀	2006
Lakeview	PM ₁₀	2006
Medford	PM ₁₀	2006
Portland-Vancouver	1 hr O ₃	1996
Medford-Ashland	1 hr O ₃	1985

Table 3. Remaining non-attainment communities with air quality maintenance strategy development in progress.

City	Pollutant	Redesignation Status
Eugene/Springfield	PM ₁₀	NAAQS met, plan in development
Oakridge	PM ₁₀	NAAQS met, plan in development
Salem-Keizer	CO	Maintenance Plan waiting for EPA approval
Salem-Keizer	1 hr O ₃	Maintenance Plan waiting for EPA approval

Table 4. Areas violating the new PM_{2.5} standard which will likely be non-attainment when cities are designated in 2009.

City	Pollutant	Redesignation Status
Klamath Falls	PM _{2.5}	Designation determined in 2009
Oakridge	PM _{2.5}	Designation determined in 2009

Causes of Air Pollution in Oregon

Criteria Pollutants (PM_{2.5}, PM₁₀, NO₂, SO₂, lead, VOC, and CO):

Although industry is a source of some air pollution in Oregon, it accounts for less than 15% of most types of criteria pollutants. Industry emissions are lower because the 1990 Clean Air Act Amendments forced the installation of backend control devices such as bag houses and the development of pollution prevention measures like updating antiquated boilers or using alternative production processes.

Motor vehicles are now the primary source of air pollution in Oregon. Although each individual car or truck contributes relatively small amounts of pollution, the sheer number of vehicles makes their total contribution larger than any other single source. Emissions from cars contribute to ground level ozone pollution (smog) especially on hot summer days. Smog is a problem in the Portland, Eugene, Salem and Medford areas.

Other major sources of pollution are from individual actions such as using wood stoves, gas-powered lawn mowers, motor boats, paints, solvents, aerosol products like hairspray and air fresheners, charcoal barbecues, and outdoor burning. Visit DEQ's web site to learn more about ways to minimize air pollution caused by daily activities.

Greenhouse Gasses:

Greenhouse gasses cause global warming and according to the Department of Energy "*The impacts of such changes on Oregon citizens, businesses and environmental values are likely to be extensive and destructive. Coastal and river flooding, snowpack declines, lower summer river flows, impacts to farm and forest productivity, energy cost increases, public health effects, and increased pressures on many fish and wildlife species are some of the effects anticipated by scientists at Oregon and Washington universities.*"

DOE has produced a report discussing global climate change in Oregon titled **Oregon Strategy for Greenhouse Gas Reductions**. The report is available online at <http://egov.oregon.gov/ENERGY/GBLWRM/Strategy.shtml>

In 2000, 84% of greenhouse gas emissions in Oregon were Carbon dioxide (CO₂) (Figure 37). The primary source of CO₂ emissions came from burning fossil fuels, such as coal (power plants), gasoline, diesel, and natural gas. There were also emissions from various industrial processes and emissions from municipal and industrial wastes incineration of fossil-fuel derived products. Figure 38 shows the sources of CO₂ in 2000.

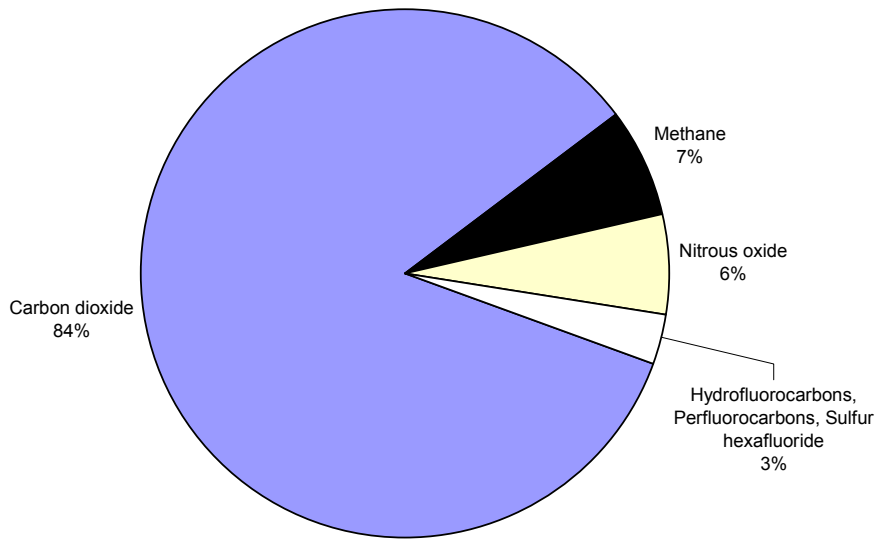


Figure 37. Type of gases making up Oregon's greenhouse gas emissions in 2000.

Note: The inventory includes a reduction in emissions from storage of carbon from yard trimmings, wood products, and other miscellaneous products in landfills. The inventory does not include other land use and forest-management related sources and sinks, such as forest sequestration, because data were not available.

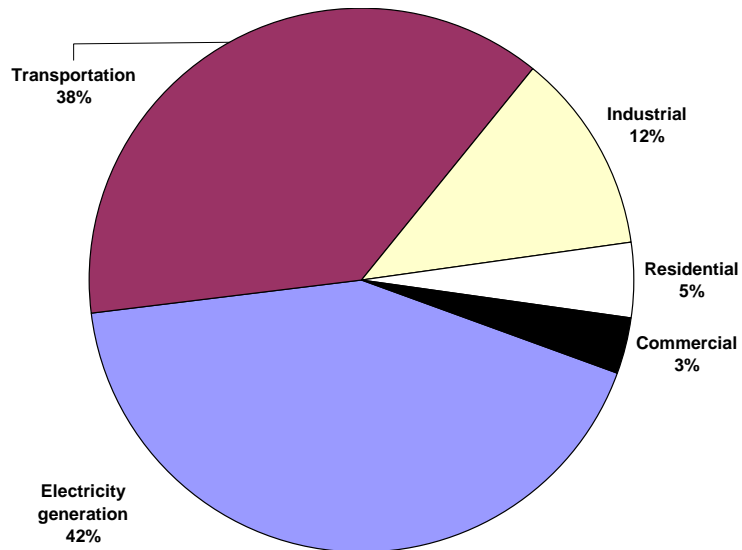


Figure 38. Sources of Carbon dioxide in Oregon in 2000.

Information for graphs was taken from ODOE's **Oregon Strategy for Greenhouse Gas Reductions** report.

Air Quality Maintenance and Improvement Programs

DEQ works with local communities to identify and prevent or solve air quality problems by:

- planning and implementing air pollution reduction strategies
- issuing and enforcing air pollution control permits for industry
- enforcing environmental regulations
- informing, educating, and involving the public
- measuring air pollutant concentrations

DEQ's Air Quality programs include:

Oregon Low Emission Vehicle	Asbestos	Emission Inventory & Modeling
Vehicle Testing	Wood Burning	Ambient Monitoring
Fuels	Outdoor Burning	Air Quality Index
Industrial Air Permitting	Air Toxics	Wildfire Air Quality Rating
Business Assistance	Visibility	

Oregon Low Emission Vehicle (ORLEV)

Motor vehicles represent one of the largest sources of greenhouse gas emissions in Oregon. Under the federal Clean Air Act, states have two options for controlling emissions from new vehicles: rely on federal emission standards or adopt emission standards developed by California. Oregon adopted the California regulations, which requires that new light and medium-duty passenger vehicles, pick-ups, and SUVs sold in Oregon must meet the low emission vehicle standards. This will take effect with the 2009 model year vehicle.

The Oregon Low Emission Vehicle program requires greenhouse gas reductions, which are not required under the federal standards. The program also reduces emissions of smog-forming compounds, Carbon monoxide and toxic air pollutants to levels lower than required by federal regulations.

Vehicle Inspection (VIP)

Vehicle Inspection is one of DEQ's most successful programs in preventing automobile air pollution. The inspection procedure is designed to ensure that emission control systems of cars and trucks are functioning. The Portland Metro area and the Rogue Valley have programs.

Fuels Program

This program's goal is to reduce ground level ozone (smog) and Carbon monoxide that result from the use of gasoline and other fuel blends. The program reduces wintertime Carbon monoxide in the Portland area by adding compounds containing oxygen to the fuel (typically Ethanol).

Vapor recovery programs in the Portland area have reduced the emission of ozone-forming gasoline vapors. Gasoline vapors can be released to the atmosphere when fueling cars and when transferring fuel from tank trucks. Accordion-shaped hoses used at service stations prevent 90 percent of gasoline vapors from escaping during refueling. Tanker trucks and service station tanks

have been modified with equipment to eliminate the loss of vapor during transfer. On-board vapor control systems on newer cars prevent vapor loss during operation and storage.

Air Permits for Industry

Approximately 1,400 industrial and commercial businesses in Oregon that release air pollutants have permits to operate. The permits regulate the amount of annual pollution these businesses can emit into the air. Staff members from regional DEQ offices regularly inspect these air pollution sources for compliance with their permit conditions. When businesses are out of compliance, DEQ issues notices of violation and when necessary recommends civil penalties.

An important element of DEQ's permitting program is the Title V (*five*) Air Operating Permit for major industrial sources of air pollution. A major industrial source of air emissions has the potential to emit 100 tons per year of particulate matter, Carbon monoxide, Nitrogen dioxide, Sulfur dioxide, or volatile organic compounds. For emitters of hazardous air pollutants, a major source has the potential to emit 10 tons per year of any individual hazardous air pollutant or 25 tons per year of any combination of hazardous air pollutants. DEQ currently requires about 100 businesses to have Title V permits. Other permitted businesses in the state operate with the Air Contaminant Discharge Permits.

Business Assistance Program (BAP)

The Business Assistant Program provides information and technical assistance on air quality regulation and related environmental issues to small businesses such as dry cleaners, auto-body shops, metal finishers, and printers. The program works with individual business owners and trade groups to educate them about solutions to air quality problems, including ways to reduce the use of toxic chemicals. Program services are free and confidential. This cooperative effort is designed to promote a healthy environment for all Oregonians without causing unnecessary hardship for small business.

Asbestos Program

DEQ certifies and licenses asbestos abatement contractors, inspects asbestos abatement projects and enforces laws regarding the proper removal and disposal of asbestos-containing materials. DEQ educates homeowners about the dangers of exposure to asbestos and the best ways to deal with asbestos-containing materials in the home. Visit DEQ's web site for more information.

Wood Burning Program

DEQ's Wood Burning Program works with Oregon communities to solve and prevent air pollution problems caused by residential wood burning. DEQ provides information about burning wood cleanly and helps local counties prepare and implement strategies to reduce pollution from wood smoke.

Outdoor Burning

The open-burning program works with local fire districts to educate people about and enforce burning regulations that apply to land clearing, as well as household, agricultural, commercial and construction, industrial and demolition activities.

Air Toxics (Hazardous Air Pollutant) Program

Air Toxics are substances in the air that can harm the environment and your health. Most of these substances are classified as volatile organic compounds, aldehydes and ketones, polycyclic organic compounds, and metals. Title III of the 1990 Clean Air Act Amendments requires the U.S. EPA to regulate emissions of 188 Hazardous Air Pollutants.

Many types of human activities produce air toxics in varying amounts. These include manufacturing, energy production, burning waste materials or wood, painting, cleaning activities, and driving vehicles. Natural sources can also contribute toxic air emissions. For example, radon gas comes from rocks in the earth's surface.

DEQ controls hazardous air pollutants in several ways:

- regulating toxic air pollutant emissions from businesses by the permits described above
- adopting as state rules the federal standards for hazardous air pollutant sources
- implementing programs to reduce VOC emissions
- monitoring for air toxics as resources allow
- modeling air toxics to estimate population exposure.

EPA regulations also require certain industrial facilities and businesses to have a plan to prevent accidental toxic air pollutant releases, and to minimize their impacts on the surrounding community in a worst case accident scenario.

Visibility

DEQ monitors visibility in federally designated wilderness areas and Crater Lake National Park. This monitoring data is used to determine if visibility is impaired and, if so, to develop strategies to improve protection for these areas. Strategies involve managing forestry and field burning, and changing slash burning practices. Most burning now takes place in spring and fall to preserve visibility during the summer when most people are enjoying Oregon's scenery.

Emission Inventory and Modeling

The emission inventory group collects information from point (industry), area (e.g. wood stove emissions), mobile (cars, trucks, buses), and off-road mobile (e.g. boats, lawn mowers) and estimates how much Carbon monoxide, Nitrogen dioxide, Sulfur dioxide, lead, particulate matter, volatile organic compounds, and air toxics are emitted in a given year. This is a tremendous effort so statewide estimates are only done every three years. Greenhouse gas emissions are calculated by the Oregon Department of Energy.

The modeling group uses the emission inventory, meteorological data, and ambient monitoring data to estimate pollutant concentrations across different airsheds. DEQ also requires industry to model pollutant impacts before they construct any major production expansion.

Air Quality Monitoring

DEQ's Laboratory Division measures pollutant levels at monitoring and sampling sites throughout the state. Monitoring air quality is the method used to demonstrate attainment and continued maintenance of the ambient air quality standards. Monitoring information is also used for wood stoves burning advisories, air quality health alerts, forest fire smoke health alerts, the Air Quality Index, PM_{2.5} forecasting for Portland, and EPA's AIRNow nationwide ambient ozone and PM_{2.5} web site.

Air Quality Index (AQI)

Oregonians can get hourly updates of air quality information for about 30 cities in Oregon using the Air Quality Index on DEQ's website <http://www.oregon.gov/DEQ>. The AQI is updated daily by phone at 503-229-6397.

Wildfire Air Quality Rating (WAQR)

Like the AQI, the WAQR provides hourly air quality health information. The WAQR was designed to fix a short coming of the AQI during forest fire smoke inundations. The AQI does not always report forest fire smoke inundations accurately because its particulate health levels are based on 24 hour averages and are designed for measuring normal winter smoke episodes. The WAQR averaging time of one hour can capture the more rapidly shifting plume of smoke that can move into an area quickly.

The WAQR is on DEQ's website <http://www.oregon.gov/DEQ/AQ/index.shtml>

Getting Involved

DEQ is committed to informing and involving the public in air quality decisions related to rule changes, permit activities and air pollution prevention programs. DEQ wants to hear from and work with citizens on air quality issues that affect them. Air Quality Program phone numbers are listed on the inside of the back cover. DEQ uses advisory committees composed of citizens and technical experts to develop rules. The public has an opportunity to comment on new permits and modifications of existing permits during publicized comment periods. No rules affecting the state's air quality are adopted without public notice and the opportunity to comment. Opportunities to comment are published in the newspaper.

Pollutants: Properties and Health and Welfare Effects

EPA has identified pollutants that are hazardous in ambient concentrations and people who are most sensitive to them. In general the pollutants can cause the following health effects:

General Health Effects

People most susceptible to severe health problems from air pollution are:

- Individuals with heart or lung disease
- Individuals with respiratory problems such as asthma or emphysema
- Pregnant women
- Outdoor workers
- Children under age 14 (their lungs are still developing)
- Athletes who exercise vigorously

High air pollution levels can cause immediate health problems:

- Aggravated cardiovascular and respiratory illness
- Added stress to heart and lungs, which must work harder to supply oxygen.
- Damaged cells in respiratory system

Long-term exposure to polluted air can have permanent health effects:

- Accelerated aging of the lungs and loss of lung capacity
- Decreased lung function
- Development of diseases such as asthma, bronchitis, emphysema, and possibly cancer
- Shortened life span

The pollutants EPA has identified as hazardous are:

Fine Particulate (PM₁₀ and PM_{2.5})

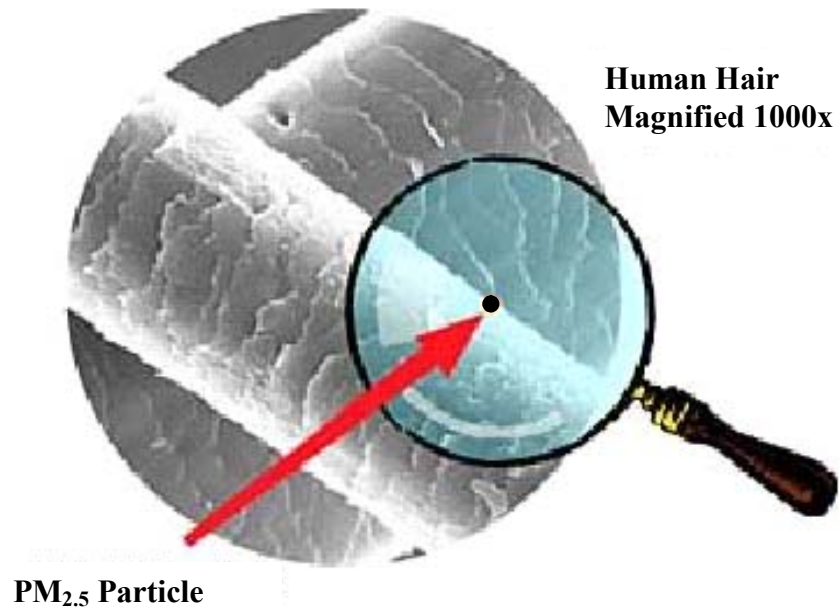
Fine particulate air pollution consists of solid particles or liquid droplets that are less than 10 microns in diameter (PM₁₀) or less than 2.5 microns in diameter (PM_{2.5}). Particles in these size ranges are of great concern because they can be inhaled deeply into the lungs where they can remain for years. The health effects of particulate matter vary with the size, concentration, and chemical composition of the particles. In general, particulate matter causes three kinds of health problems:

- The particles may be inherently toxic because of their chemistry.
- The particles may mechanically damage the respiratory system.
- The particles may be carriers for adsorbed toxic substances.

Relationships have been shown between exposure to high concentrations of particulate matter and increased hospital admissions for respiratory infections, heart disease, bronchitis, asthma, emphysema, and similar diseases. In addition, there may be several potential carcinogens present on particulate matter. Of particular concern are the condensed organic compounds released from low temperature combustion processes (wood stoves, for example).

Among the most obvious effects of fine particles are reductions in visibility due to absorption and scattering of light by suspended particles. Almost all smoke particles from residential wood stoves

and fireplaces, industrial boilers, field burning, and other combustion processes can be characterized as fine particulate and most of it is thought to be $PM_{2.5}$. In contrast, only a small fraction of the particles from road dust, agricultural tilling, and wind blown dust are fine particulate.



Total Suspended Particulate (TSP)

Pollution made up of particulate less than about 100 micro-meters in diameter is called TSP (100 micrometers is about the diameter of a human hair.) Larger particles tend to settle out of the air quickly and are often more of a nuisance than a health affecting pollution problem. In addition to health problems caused by the fine particulate component of TSP (see PM_{10} & $PM_{2.5}$), it may cause soiling and corrosion of building materials and textiles, damage to vegetation, and toxicity to animals that feed on vegetation covered by toxic particulate matter.

Natural sources of TSP include pollen, wind-blown dust, and smoke from wild fires. Humans create TSP from combustion sources--like motor vehicles, utility and industrial boilers and dryers, wood stoves, open burning, slash burning, and field burning. Other anthropogenic sources include dust from roads, agriculture, construction, and mining.

Sulfur dioxide (SO_2)

Sulfur dioxide is a colorless, pungent gas. In the body it acts as a lung and eye irritant. When SO_2 is inhaled, it causes bronchial constriction which results in breathing difficulty and increased pulse and respiratory rate. People with respiratory diseases like asthma, bronchitis, or emphysema are particularly susceptible to the effects of SO_2 .

When particles capable of oxidizing Sulfur dioxide to sulfuric acid are present, the irritant response increases in magnitude by two to three times. When sulfuric acid is inhaled, mucous production

increases. This reduces the respiratory system's ability to remove particulate matter, and can lead to more severe respiratory infections, such as pneumonia. Chronic exposure to SO₂ can lead to coughing, shortness of breath, fatigue, and bronchitis.

Sulfur dioxide can also damage plants and building materials. The leaves of some vegetables (spinach and lettuce, for example) are damaged by exposure to high levels of SO₂. Sulfur oxides accelerate corrosion of metals and other building materials (limestone, marble, mortar) by forming sulfuric acid on the surface of the material or in the atmosphere. In addition, sulfuric acid and sulfate particles formed in the atmosphere from SO₂ can cause scattering of visible light, thus contributing to haze. These same processes can contribute to acid rain and lead to acidification of lakes and soils.

The major source of SO₂ nationwide is combustion of high sulfur coal. In Oregon, where burning of high sulfur coal is not allowed diesel, heating oil, and low sulfur coal are the major combustion sources of Sulfur dioxide.

Carbon monoxide (CO)

Carbon monoxide is a colorless, odorless gas. In the body, CO binds tightly to hemoglobin (the red pigment in blood which transports oxygen from the lungs to the rest of the body). Once hemoglobin is bound to CO, it can no longer carry oxygen. In this way, CO reduces the oxygen-carrying capacity of the blood and can result in adverse health effects. High concentrations of CO strongly impair the functions of oxygen-dependent tissues, including brain, heart, and muscle. Prolonged exposure to low levels of CO aggravates existing conditions in people with heart disease or circulatory disorders. There is a correlation between CO exposure and increased hospitalization and death among such patients. Even in otherwise healthy adults, carbon monoxide has been linked to increased heart disease, decreased athletic performance, and diminished mental capacity. Carbon monoxide also affects newborn and unborn children. High CO levels have been associated with low birth weights and increased infant mortality.

A major natural source of CO is spontaneous oxidation of naturally occurring methane (swamp gas). The major human-caused source is incomplete combustion of carbon-based fuels, primarily from gasoline-powered motor vehicles. Other important sources are wood stoves and slash burns.

How a motor vehicle is operated has an effect on the amount of CO emitted. In stop-and-go driving conditions, CO emissions are high. Emissions are also increased when the outside temperature is low. Oregon's most serious CO problems occur during the winter in urban areas when CO emitted by slow-moving traffic is trapped near the ground where people can inhale them.

Ozone (O₃)

Ozone (a component of smog) is a pungent, toxic, highly reactive form of oxygen. A new eight hour standard protects the public against lower level exposures over a longer time period which has been found to be more detrimental than shorter peak levels. The long term exposure effects cause significant breathing problems, such as loss of lung capacity and increased severity of both childhood and adult asthma.

Ozone causes irritation of the nose, throat, and lungs. Exposure to ozone can cause increased airway resistance and decreased efficiency of the respiratory system. In individuals involved in strenuous physical activity and in people with pre-existing respiratory disease, ozone can cause sore throats, chest pains, coughing, and headaches. Plants can also be affected. Reductions in growth and crop yield have been attributed to ozone. Ozone can affect a variety of materials, resulting in fading of paint and fiber, and accelerated aging and cracking of synthetic rubbers and similar materials. It is also a major contributor to photochemical smog.

Ozone is not emitted directly into the air. It is formed through a series of photochemical (sunlight-requiring) reactions between other pollutants and oxygen (O₂) during hot weather. Most important are Nitrogen oxides and volatile organic compounds. To control ozone pollution, it is necessary to control emissions of these other pollutants. It is primarily caused by chemicals from car and small engine exhaust, and business and industry emissions on hot sunny days.

The Portland region has attained the one hour ozone standard and in 1996 EPA approved a 10-year plan to maintain good air quality. DEQ is currently preparing a Portland maintenance plan for the new 8 hour ozone standard.

Nitrogen Dioxide (NO₂)

Nitrogen dioxide is a reddish-brown gas that is toxic in high concentrations. It is a lung irritant and may be related to chronic pulmonary fibrosis. It is also important in the photochemical reactions leading to the formation of ozone. It can cause indirect damage to materials when it combines with moisture in the air to form nitric acid. The nitric acid can then cause corrosion of metal surfaces and can also contribute to acid rain. In addition, NO₂ absorbs visible light and causes reduced visibility. It has also been linked to suppressed growth rates in some plants.

The major human-caused source of NO₂ is fuel combustion in motor vehicles, and utility and industrial boilers. Nitric oxide (NO) is the major Nitrogen oxide produced during the combustion process, but once in the atmosphere, NO is rapidly oxidized to form NO₂.

Hydrocarbons (Non-Methane)

Non-methane hydrocarbons (also known as Volatile Organic Compounds) are a large family of compounds made up primarily of hydrogen and carbon. These compounds are instrumental in the complex series of reactions leading to the formation of ozone and photochemical smog.

The compounds come mainly from motor vehicles, fuel evaporation, the coatings industry, and combustion processes. The EPA has repealed its standard for non-methane hydrocarbons and DEQ has taken similar action, however, hydrocarbons are still controlled because of their contribution to ozone formation.

Air Toxics

Air toxics are generally defined as air pollutants known or suspected to cause serious health problems, like birth defects and cancer. The U.S. EPA regulates 188 air toxics (hazardous air pollutants).

The EPA used 1996 emission inventory data to estimate concentrations of 33 of these toxics in the air, nationwide. According to EPA's National Air Toxics Assessment, there are 16 toxic air pollutants in Oregon's air modeled at levels more than 10 times the federally determined safe level. These substances are Acetaldehyde, Acrolein, Arsenic, Benzene, 1,3-Butadiene, Beryllium, Carbon tetrachloride, Chloroform, Chromium, diesel particulate matter, Ethylene dibromide, Ethylene dichloride, Formaldehyde, Perchloroethylene, polycyclic organic matter (POM), and Nickel. All of these substances, except Acrolein, are known or suspected to cause cancer. Other air toxics in Oregon are believed to be below levels of concern.

Of these chemicals, current measurement methods cannot detect Carbon tetrachloride, Chloroform, Ethylene dibromide or Ethylene dichloride. At the time of this report, measurement methods were not available to measure Acrolein, Beryllium or diesel particulate matter.

Acetaldehyde

Acetaldehyde is a colorless flammable liquid that evaporates when exposed to air. It has a pungent odor, but smells fruity at dilute concentrations. Acetaldehyde occurs naturally in some foods, including ripe fruit and coffee.

Acetaldehyde forms as a product of incomplete wood combustion, coffee roasting, burning tobacco, and vehicle exhaust fumes. Residential fireplaces and woodstoves are the two largest sources of acetaldehyde.

Health effects from breathing small amounts of acetaldehyde over long periods are uncertain. EPA has classified acetaldehyde as a probable human carcinogen.

Arsenic and Compounds

Arsenic is a natural element in the earth's crust that occurs in two different forms, organic and inorganic. Organic arsenic contains carbon and hydrogen and occurs in plants and animals. Inorganic arsenic typically contains elements such as oxygen, chlorine, and sulfur. Inorganic arsenic is the more harmful of the two.

Inorganic arsenic is ubiquitous in the environment. Volcanoes release it into the air, as does the weathering of arsenic-containing minerals and ores. Commercial and industrial processes like metal smelting and power generation from fossil fuels also release arsenic, as does burning wood treated with arsenic. Inorganic arsenic can settle from the air to the ground. Food is the largest source of inorganic arsenic exposure for most people, primarily due to pesticide use on crops.

Inorganic arsenic is a human poison. High levels (60 parts per million or more) in food or water can be fatal. Arsenic damages many tissues including nerves, stomach and intestines, and skin. Lower levels of exposure to inorganic arsenic may cause nausea, vomiting, and diarrhea, decreased production of red and white blood cells, abnormal heart rhythm, blood vessel and nerve damage. Breathing inorganic arsenic increases the risk of lung cancer. EPA has classified inorganic arsenic as a known human carcinogen.

Benzene

Benzene is a colorless flammable liquid with a sweet odor that evaporates easily. It comes from both natural processes and human activities.

Benzene is widely used in the United States and ranks in the top 20 chemicals for production volume. Benzene is used in the processes that make plastics, resins, and nylon and synthetic fibers. It is also used to make some types of rubbers, lubricants, dyes, detergents, drugs, and pesticides. Natural sources include volcanoes and forest fires. Other sources are coal, oil, and wood combustion, car/truck exhaust, and evaporation from gas stations and industrial solvents. Tobacco smoke contains benzene and accounts for approximately 50% of our exposure.

Long-term inhalation of benzene causes many disorders including anemia, excessive bleeding, damage to the immune system and genetic damage. On the job exposure to benzene has been shown to produce an increased incidence of leukemia (cancer of the tissues that form white blood cells). EPA has classified benzene as a known human carcinogen.

1,3-Butadiene

1,3-Butadiene is a colorless gas with a mild gasoline odor. It is a combustion product found in motor vehicle exhaust, gas, oil, and wood furnaces, and industrial processes. 1,3-Butadiene is also manufactured and used in making plastics.

Studies have shown that long-term inhalation of 1,3-butadiene can result in an increased incidence of cardiovascular diseases, including rheumatic and atherosclerotic heart diseases (hardening of the arteries) and can cause blood disorders. EPA has classified 1,3-butadiene as a probable human carcinogen.

Chromium and Compounds

Chromium is a geological metal found in rocks, soil, volcanic dust and gases, plants, and animals.

Chromium metal is used mainly for making steel and other alloys. Chromium compounds are also used to manufacture dyes and pigments, and in leather and wood preservation. Manufacturing, chrome plating, or burning fossil fuels can release chromium to the air. Chromium particles can settle from the air and persist in soil.

Chromium occurs in several forms, one of which is chromium VI. Long-term inhalation of chromium VI causes respiratory tract damage. Studies suggest that exposure to chromium VI may result in complications during pregnancy and childbirth. Inhalation of chromium VI can also increase the risk of lung cancer. EPA has classified chromium VI as a known human carcinogen. The most common form of chromium, chromium III, is not known to cause cancer and is less toxic.

Formaldehyde

Formaldehyde is a colorless gas with a pungent odor. It is a common combustion product, produced by human activities but also occurs naturally.

The highest levels can occur indoors and tobacco smoke is an important source. Major outdoor sources of formaldehyde are power plants, manufacturing facilities, incinerators and car exhaust.

Chronic exposure to inhaled formaldehyde is associated with respiratory symptoms and eye, nose, and throat irritation. Increased incidences of menstrual disorders and pregnancy problems have been observed in women workers using urea-formaldehyde resins. Studies of workers have shown

significant associations between exposure to formaldehyde and increased incidence of lung and nasal cancer. EPA considers formaldehyde to be a probable human carcinogen.

Nickel and Compounds

Nickel is a very abundant element. In the environment it is usually combined with oxygen (nickel oxides) or sulfur (nickel sulfides). Nickel is a hard silvery white metal that is combined with other metals to form mixtures called alloys.

Nickel is used to make metal coins and jewelry and in industry for making many metal items. It is also used for electroplating baths, batteries, spark plugs and machinery parts. Since so many consumer products contain nickel it is released when municipal garbage is incinerated.

Respiratory effects, including chronic bronchitis and reduced lung function, have been observed in workers who breathe large amounts of nickel. Nickel may also cause reactions in sensitive skin upon contact. Some people react if they consume nickel in food or water, or react if they breathe it. EPA has classified several forms of nickel as known or probable human carcinogens.

Perchloroethylene

Perchloroethylene, also called Perc or tetrachloroethene, is a nonflammable colorless liquid with a sharp, sweet odor. Most of us know it as dry-cleaning fluid.

In addition to dry-cleaning, perchloroethylene is used in textile processing, chemical manufacturing, and as a degreasing agent in metalworking. It is also used as a solvent.

Exposure to high levels of perchloroethylene can cause acute human health effects. These effects include central nervous system damage, kidney dysfunction, and severe respiratory irritation. Long term, low level exposures can cause neurological impairment, and severe liver and kidney damage. EPA has classified perchloroethylene as a possible human carcinogen.

Polycyclic Organic Matter (POM)

The term Polycyclic Organic Matter defines a class of compounds that includes the polynuclear aromatic hydrocarbons (PAHs). These compounds exist either as gases or particulates in the air.

Combustion is the primary source of most POMs. Air emissions sources include vehicle exhaust, forest fires, residential wood and backyard burning, agricultural burning, and asphaltting roads.

Information about short and long-term human health impacts is limited. Long-term exposure to one form of POM, benzo(a)pyrene, has resulted in dermatitis, eye irritation, and reduced fertility. Cancer is the major concern from long-term exposure based on animal research. EPA has classified most POM compounds as probable human carcinogens.

Lead (Pb)

Lead is a toxic heavy metal, abundant in the earth's crust. Air borne lead particles are of sufficiently small size (less than 0.7 microns) that they can penetrate deep within the lungs and ultimately be absorbed in the blood. High concentrations of lead in the blood can cause severe and permanent brain damage, especially in children. Lower levels have vague, non-specific symptoms, including headaches, malaise, stomach pains, irritability, and pallor. Damage can be caused to heart, kidney, liver, and nerve and blood tissues.

The major lead source in the air was from leaded gasoline. This one source accounted for close to 90 percent of the U.S. annual lead emissions. Because leaded gasoline was eliminated, the ambient lead levels have dropped substantially.

Noise Pollution

In addition to the pollutants described above, noise is also a pollutant that is transmitted through the air. Noise control standards have been adopted in Oregon for various noise-generating activities. These standards protect the public from the known adverse health effects of noise, as well as protecting public welfare. In 1991 budget cuts eliminated the noise program at DEQ and enforcement of the standards is now the responsibility of local enforcement officials.

Noise has often been treated as merely a nuisance. However, many studies have now shown that noise has a definite effect on public health and welfare. Exposure to loud noises can result in hearing loss or tinnitus (a high-pitched ringing or roaring in the ears). Exposure of pregnant women to high noise levels has been linked to low birth weights and hearing loss in infants. Noise has also been linked to high blood pressure and, in the elderly, to heart attack and stroke. The noise in cities from cars, trucks, leaf blowers, mowers, chain saws, and a variety of other power tools, toys, and gadgets contributes to irritability and stress. Stress has been identified as a significant cause of disease.

Visibility

Visibility impairment may be caused by meteorological effects (clouds, rain), man-made pollution (open burning, industry), and natural pollution (wildfire, dust storms). The Department monitors visibility conditions in selected Oregon Class I (or pristine) areas during the summer months. Information from the monitoring is used to determine the extent of man-made visibility impairment, and to evaluate the effectiveness of the Department's Visibility Monitoring Program. In 1986, regulations were adopted to minimize visibility impairment in the North and Central Cascade wilderness areas. The goal of the regulations is to reduce the frequency of visibility impairment by 60 to 90 percent over 1982-84 levels.

National Ambient Air Quality Standards (NAAQS)

The NAAQS were adopted by Oregon to protect the public health. The EPA has established primary NAAQS to protect public health and secondary NAAQS to protect public welfare. Oregon's control strategies are designed to meet the more stringent secondary NAAQS. Table 5 shows the standards for the most common pollutants.

Table 5. Ambient Air Quality Standards - 2006

Pollutant	Averaging Time	National Ambient Air Quality Standard (NAAQS) Violation Determination ¹	Federal Standard (NAAQS) Exceedance Level	State Standard Exceedance Level
Carbon monoxide	1-hour	Not to be exceeded more than once/year.	35 ppm	35 ppm
	8-hour	Not to be exceeded more than once/year.	9 ppm	9 ppm
Lead	Calendar Quarter	Quarterly arithmetic mean	1.5 µg/m ³	1.5 µg/m ³
Nitrogen dioxide	Annual	Annual arithmetic mean	0.053 ppm	0.053 ppm
Ozone	1-hour	The expected number of days per calendar year with max hourly average concentrations above 0.12 ppm is equal to or less than 1.	0.12 ppm	0.12 ppm
	8-hour	3-year average of the annual 4th highest daily maximum 8-hour average concentration.	0.08 ppm	
PM _{2.5}	24 hour	98th percentile of the 24-hour values determined for each year. 3-year average of the 98 th percentile values.	35 µg/m ³	
	Annual Average	3-year average of the annual arithmetic mean	15 µg/m ³	
PM ₁₀	24 hour	The expected number of days per calendar year with a 24-hour average concentrations above 150 µg/m ³ is equal to or less than 1 over a 3-year period.	150 µg/m ³	150 µg/m ³
Sulfur dioxide	Annual Arithmetic Mean	Not to be exceeded more than once per calendar year.	0.03 ppm	0.02 ppm
	24 hour	Not to be exceeded more than once per calendar year.	0.14 ppm	0.10 ppm
	3 hour	Not to be exceeded more than once per calendar year.	N/A	0.50 ppm

Notes: µg/m³ = micrograms of pollutant per cubic meter of air
ppm = parts per million

Exceedances vs. Violation

Violations consist of one or more exceedances of the NAAQS as discussed in Table 4. Exceedances occur when the NAAQS is surpassed. NAAQS exceedances are determined using values rounded as shown in Table 6.

Table 6. Rounding Convention for NAAQS compliance determination.

Pollutant	Averaging Time	Rounding	Exceedances Value (rounded up)
Carbon monoxide	1-hour	Nearest 0.1	35.5 ppm or greater
Carbon monoxide	8-hour	Nearest 0.1	9.5 ppm or greater
Lead	Annual	Nearest 0.1	1.55 $\mu\text{g}/\text{m}^3$ or greater
Nitrogen dioxide	Annual	Nearest 0.001	0.0535 ppm or greater
Ozone	1-hour	Nearest 0.1	0.125 ppm or greater
Ozone	8-hour	Nearest 0.001	0.085 ppm or greater
PM ₁₀	24-hour	Nearest 10	155 $\mu\text{g}/\text{m}^3$ or greater
PM _{2.5}	24-hour	Nearest 1	36 $\mu\text{g}/\text{m}^3$ or greater
PM _{2.5}	Annual	Nearest 0.1	15.1 $\mu\text{g}/\text{m}^3$ or greater
Sulfur dioxide	24-hour	Nearest 0.01	0.145 ppm or greater
Sulfur dioxide	Annual	Nearest 0.001	0.035 ppm or greater

1997-2006 NAAQS Exceedances.

Tables 7 through 10 summarize Oregon's NAAQS exceedances from 1997 to 2006. Forest fire exceedances don't count as NAAQS exceedances which focus on man made pollution.

Table 7a. PM_{2.5}: Number of days over the old daily standard of 65 $\mu\text{g}/\text{m}^3$ – Eastern Oregon

Year	Bend	Burns	Klamath Falls	La Grande	Lakeview	Pendleton	The Dalles
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	14 [Ⓟ]	0	2 [Ⓟ]	0	0
2003	0	0	0	0	0	0	0
2004	-	-	0	0	-	-	0
2005	-	-	0	0	-	-	-

Table 7b. PM_{2.5}: Number of days over the old daily standard of 65 $\mu\text{g}/\text{m}^3$ – Western Oregon

Year	Albany	Beaverton	Corvallis	Eugene	Grants Pass	Hillsboro	Medford	Oakridge	Portland	Salem
1999	0	0	0	0	0	0	0	1	1	0
2000	0	0	0	0	0	0	0	1	1	0
2001	0	0	0	0	0	0	0	4	0	0
2002	0	0	0	0	0	3 [✓]	1 [Ⓟ]	3	0	0
2003	0	0	-	0	0	0	0	1	0	0
2004	0	0	-	0	-	-	0	1	0	0
2005	-	-	-	0	-	-	0	1	0	-

[Ⓟ]✓ See notes on next page

* In 2006 the PM_{2.5} daily standard was changed from 65ug/m³ to 35ug/m³. Federal Reference Methods samplers did not run every day and there were numerous days over the new standard. The 98th percentile accounts for number of days exceeding the standard with limited sampling and is shown in Figure 32 and in Appendix 1a.

✓ The estimated annual exceedances replaces the actual exceedances when sampling is done less than daily. For example if 111 days were sampled out of 365 possible days in a year, the number of actual exceedances recorded should be multiplied by (365/111) or 3.3. Rounding off to 3.

☒ Exceedances caused by forest fires.

- In 2002 in Klamath Falls 12 of the 14 exceedances were caused by forest fires.
- In 2007 in La Grande there was one measured exceedance but only 55 sampling days out of 365 days in the year.

Table 8a. PM₁₀: Number of exceedances – Eastern Oregon

Year	Bend	Burns	Klamath Falls	La Grande	Lakeview	Pendleton	Prineville
1997	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	-
1999	0	0	0	0	0	0*	-
2000	1	0	0	0	0	0	-
2001	0	0	0	0	0	0	-
2002	0	0	2☒	0	0	0	-
2003	0	0	0	0	0	0	-
2004	0	0	0	0	0	0	-
2005	0	0	0	0	0	0	-
2006	0	0	0	0	0	0	-

* Previous versions of the annual report listed one exceedance for Pendleton. This has been determined to be an exceptional event caused by road paving next to the monitor and disqualified.

☒ The flagged exceedances were caused by the July and August, 2002 forest fires. In 2002 Klamath Falls had 2 exceedances caused by forest fires. The exceedance occurred on non-required sample days and were flagged as exceptional events.

Table 8b. PM₁₀: Number of exceedances – Western Oregon

Year	Cottage Grove	Eugene /Springfield	Grants Pass	Medford	Oakridge	Portland
1997	0	0	0	0	0	0
1998	0	0	0	0	0	0
1999	0	0	0	0	0	0
2000	0	0	0	0	0	0
2001	0	0	0	0	0	0
2002	0	0	0	0	0	0
2003	0	0	0	0	0	0
2004	0	0	0	0	0	0
2005	0	0	0	0	0	0
2006	0	0	0	0	0	0

Table 9. Carbon monoxide: Number of exceedances

Year	Bend	Eugene	Grants Pass	Klamath Falls	Medford	Portland	Salem
1997	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0
1999	0	0	0	0	1	0	0
2000	0	0	0	0	1	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0
2006	-	0	-	-	0	0	-

Table 10. Ozone: Number of exceedances

Year	One Hour Average Exceedances				Eight Hour Average Exceedances			
	Eugene	Portland	Medford	Salem	Eugene	Portland	Medford	Salem
1997	0	0	0	0	0	0	0	0
1998†	0	3	1	0	2	3	5	1
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	1	0	0
2003	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0
2006	0	1	0	0	0	1	0	1

† The bolded exceedances refer to years where the NAAQS applies. Before 1998 the 1 hour standard was in effect. From 1998 to present, the 8 hour standard is in effect.

Appendix 1

Air Quality Data Summaries for 1997 through 2006

The following pages present ambient air quality data summaries for the past 10 years.

DEQ's Air Quality Surveillance Network collects data throughout the state for a number of pollutants and meteorological parameters. DEQ uses air sampling methods designated by the U.S. EPA as Federal Reference Methods to judge attainment with the NAAQS. The following air quality data summaries for particulate and gaseous pollutants are summarized for comparison to the federal standards. If Oregon has more stringent standards than the NAAQS, compliance with state standards means compliance with federal. The following notes apply to the summary tabulation:

Appendix 1 -A&B. Particulate (PM₁₀ and PM_{2.5})

- A. For 2006 - PM₁₀ Non-attainment areas are sampled every sixth day.
- B. The annual average is determined by averaging the quarterly means.
- C. The PM₁₀ max daily sample is determined by taking the highest 24 hour sample for the year.
- D. The PM₁₀ second highest daily sample is determined by taking the second highest value for the year.
- E. The PM_{2.5} max daily sample is determined by taking the highest 24 hour sample for the year.
- F. The PM_{2.5} 98th percentile is determined by multiplying the number of days sampled by 0.98.

Appendix 1-C. Carbon Monoxide (CO)

- A. Most sites sample from Oct 1st to Mar 31st. Portland, Eugene, and Medford have year round sites.
- B. Max one hour CO average is determined by taking the highest one hour average for the year.
- C. Max eight hour CO average is determined by calculating a rolling average (across midnight).
- D. Second highest eight hour average CO is determined from the data in C. Only one max per CO episode is used to count to the second highest.

Appendix 1-D. Ozone (O₃)

- A. All sites sample from May 1st to Sept 30th.
- B. Max one hour average ozone value is determined by taking the highest one hour average for the year.
- C. Max eight hour ozone average is determined by calculating a rolling average (across midnight).
- D. Fourth highest eight hour average is determined from the data in C. Only one max per day is used to count to the fourth highest.
- E. Three year average of the fourth highest eight hour ozone is calculated by averaging the current fourth highest value determined in D with the respective values calculated for the previous two years.

Appendix 1-E. Oxides of Nitrogen (NO_x) and Hydrocarbons (HC)

- A. Sampling occurs from mid May to Sept 30th.
- B. Only NO₂ has a NAAQS standard.
- C. The max one hour average NO₂ is determined by taking the highest one hour average for the year.
- D. The max one hour average NO is determined by taking the highest one hour average for the year.
- E. Hydrocarbon data is collected for ozone modeling but not included here.

Appendix 1-F. Sulfur Dioxide (SO₂)

- A. SO₂ sampling restarted in December 2004.
- B. Sampling is done year around.
- C. The maximum three hour average is calculated (must have three consecutive hours)
- D. The maximum 24 hour daily average is calculated (must have ≥ 18hrs/day)
- E. The annual average is calculated

Appendix 1-G. Light Scattering (PM_{2.5} estimate)

- A. No air quality standards have been adopted. Light scattering is used as a PM_{2.5} concentration surrogate. It is used for the Air Quality Index, the Wildfire Air Quality Rating, EPA AIRNow (EPA's air quality current conditions web page), Portland PM_{2.5} forecast, woodstove advisories, air stagnation health alerts, field burning calls, forest health (prescribed burning) calls, and forest fire smoke health alerts.
- B. The annual average is determined by taking the arithmetic mean of all the one hour averages.
- C. The one hour max is determined by taking the highest one hour average for the year.
- D. The 24 hour max is determined by averaging the one hour averages from midnight to midnight.

Appendix 1-H. Air Toxics (Hazardous Air Pollution)

- A. Ambient air toxic levels are compared to bench mark levels of one in a million chance of cancer. The EPA has pared the 188 HAPS down to 32 National Air Toxics Assessment (NATA) air toxics that are most common and hazardous in urban areas. Oregon has been identified as having levels above the bench mark for 14 NATA compounds. The NATA toxics DEQ monitors are averaged.
- B. The annual averages are determined by taking the arithmetic mean of all the one hour averages. Where the values are below the minimum detection limit (MDL), the MDL is halved prior to inclusion in the average.

Appendix 1-I. Visibility (Light Scattering)

- A. No air quality standards have been adopted. Light scattering measures visibility of scenic areas.
- B. One hour averages were determined for 9 A.M. to 9 P.M. PST from July 1 to September 15.
- C. The one hour averages were counted when the visibility was in the perceptible range (0.60 to 0.79 BScat), the moderate range (0.80 to 1.29 BScat), and the heavy range (>1.30 BScat).

Lead (Pb) DEQ discontinued TSP lead sampling in 2001. See air toxics for lead.

II. Other Data: Supplemental Air Monitoring Studies and Data

- A. This section provides a summary of the monitoring data DEQ uses for compliance and public notification purposes. The reports, studies, and data indicated are available by request from DEQ.

DEQ Air Monitoring Methods

Appendix 1-A&B. Fine Particulate Matter (PM₁₀ and PM_{2.5})

High-Volume Sampler: Some PM₁₀ samples were collected with high volume samplers which draw air through a size-separating inlet then a pre-weighed quartz filter at about 40 cubic feet per minute. After 24 hours of sampling, the filter is removed and reweighed. The difference between the starting and the ending weight is expressed as micrograms of fine particulate per cubic meter of air sampled. This is an EPA Federal Reference Method.

Medium-Volume Sampler: PM₁₀ samples are collected with DEQ designed medium volume samplers which draw air through size-separating inlets at four cubic feet per minute. The samplers collect particles on two separate filters simultaneously (quartz and Teflon), allowing for chemical analysis. The difference between the starting and the ending weight is expressed as micrograms of fine particulate per cubic meter of air sampled. This is an EPA Federal Equivalency Method.

Federal Reference Method (FRM) samplers: PM₁₀ and PM_{2.5} samples are collected with the FRM samplers which draw air through a size-separating inlet then a pre-weighed fiber filter at about 16.7 liters per minute. After 24 hours of sampling, the filter is removed and reweighed. The difference between the starting and the ending weight is expressed as micrograms of fine particulate per cubic meter of air sampled. This is an EPA Federal Reference Method.

Appendix 1-C. Carbon Monoxide: Nondispersive Infrared (NDIR)

Infrared energy from a lamp is passed through a cell containing the gas sample to be analyzed and simultaneously through a reference cell containing a non-absorbing gas. Carbon monoxide in the sample absorbs some of the energy, creating an out-of-balance condition in the detector. The imbalance is proportional to the amount of carbon monoxide in the sample air and is electronically amplified and recorded. This is an EPA Federal Reference Method.

Appendix 1-D. Ozone: Ultraviolet Photometry:

The air sample enters a chamber with an ultraviolet lamp at one end and detector at the other. The ozone in the sample stream absorbs the ultraviolet light at a specific wavelength. The amount absorbed is proportional to the amount of ozone in the air stream. The detector then sends an amplified signal to the recorder. This is an EPA Federal Reference Method.

Appendix 1-E. Oxides of Nitrogen: Chemiluminescent Detection

The air sample is continuously pumped into two paths within the analyzer, one leading through a converter to reduce Nitrogen dioxide (NO₂) to Nitric oxide (NO); the other bypasses the converter. Both samples reach reaction chambers where the nitric oxide is detected by its chemiluminescent (light emitting) reaction with ozone. The light emissions are detected by photomultiplier tubes, amplified, and recorded. This is an EPA Federal Reference Method.

Appendix 1-F. Sulfur Dioxide: Ultraviolet Fluorescence Spectrometer

The UV fluorescence method operates on the principle that when the SO₂ molecules contained in the sample gas are excited by ultraviolet radiation they emit a characteristic fluorescence in the range of 220- 240 nm. This fluorescence is measured and the SO₂ concentration is obtained from changes in the intensity of the fluorescence.

Appendix 1-G & I. Light Scattering: Nephelometer

The nephelometer measures a common property of small particles in the air--the ability to scatter light and cause visibility reduction. The instrument measures the scattering coefficient (BScat) of the sample by drawing air into the detection chamber where it is illuminated by a pulsed-flash lamp. The scattered light is measured over a range of angles by means of a photomultiplier tube. This signal is averaged, amplified, and recorded. The amount of light scattered is roughly proportional to the fine particle mass concentration and to observed visibility.

Appendix 1-H. Air Toxics:

Aldehydes/ketones - Ambient air is drawn through a carbonyl cartridge at one liter/minute for 24 hour then solid phase extracted and analyzed with by High Pressure Liquid Chromatography.

Volatile Organic Carbons – Ambient air is drawn into an evacuated canister during preprogram cycle times at about 50cc/minute for 24 hours. The sample is analyzed using Gas Chromatography/Mass Spectroscopy.

Poly Organic Carbons - Ambient air is drawn through a quartz filter then through polyurethane foam at eight cubic feet per minute for 24 hours. The sample is Soxhlet extracted from the filter and foam and analyzed using Chromatography/Mass Spectroscopy.

Metals - A TSP, PM₁₀, or PM_{2.5} sample is collected on a quartz or Teflon filter for 24 hours then the filter is analyzed using inductively coupled plasma mass spectrometry (ICP-MS).

Diesel Particulate – Ambient air is drawn through a glass filter tape and measured with a Ultraviolet/Visible lamp and photodiode detector every five minutes. The five minute measurements are compiled for an hourly average. Black Carbon is measured and used as a surrogate for diesel particulate. These are EPA Federal Reference Methods.

APPENDIX 1A
PM_{2.5} Summary (µg/m³)

STATION LOCATION AND NUMBER	Years	SAMPLE Days	ARITHMETIC MEAN†	24-HOUR AVERAGES	
				MAXIMUM (date)	98 th Percentile (date)†
<u>Albany</u> Calapooia Middle Sch. (ACS) 830 SE 24 th DEQ# 21886 EPA# 410430009	2000	115	8.7	44 (11/17)	33 (01/28)
	2001	120	8.2	37 (11/09)	29 (11/12)
	2002	119	8.2	39 (11/28)	30 (12/01)
	2003	111	8.0	31 (01/09)	28 (02/08)
	2004	95	8.0	35 (11/11)	31 (01/10)
<u>Bend</u> 8th & Newport (BEN) DEQ# 10099 EPA # 410170113 ★Moved to PumpStation 3/02/01	1999	145	8.5	27 (12/27)	24 (03/07)
	2000	351	7.3	40 (11/16)	25 (11/20)
	2001	46	*	21 (01/08)	21 (01/08)
Pump Station (BPS) 35 Portland Rd DEQ# 24172 EPA # 410170120	2001	286	7.2	42 (11/03)	21 (08/15)
	2002	321	8.0	31 (12/09)	24 (11/28)
	2003	87	7.6	27 (08/25)	26 (06/29)
<u>Burns</u> 267 E Madison St. (BMS) DEQ# 10105 EPA # 410250002	2000	44	9.3	38 (12/08)	38 (12/08)
	2001	60	9.1	39 (01/31)	31 (11/15)
	2002	54	9.7	36 (11/16)	30 (01/08)
<u>Corvallis</u> Corvallis Intermed Sch (CIS) 1310 NW Circle Blvd. DEQ# 20478 EPA # 410030013	1999	109	7.1	41 (11/05)	32 (01/03)
	2000	120	7.8	38 (11/17)	30 (11/20)
	2001	116	7.3	33 (11/09)	28 (01/28)
	2002	116	7.6	30 (11/28)	27 (11/25)
<u>Eugene</u> Amazon Park (EAP) 499 E 29TH DEQ# 18524 EPA # 410390060	1999	347	8.6	53 (12/26)	36 (12/22)
	2000	342	9.4	59 (11/18)	39 (12/26)
	2001	361	9.4	51 (11/09)	34 (01/02)
	2002	345	9.7	56 (11/27)	46 (11/03)
	2003	120	9.5	40 (01/18)	31 (11/08)
	2004	121	8.7	38 (01/13)	28 (12/20)
	2005	122	9.1	40 (01/16)	36 (02/03)
2006	123	8.4	43 (12/08)	32 (12/07)	

☞ Forest Fire Impact. Only sampled every sixth day.

PM₁₀ Appendix 1B

APPENDIX 1A
PM_{2.5} Summary (µg/m³)

STATION LOCATION AND NUMBER	YEAR	SAMPLE DAYS	ARITHMETIC MEAN†	24-HOUR AVERAGES	
				MAXIMUM (date)	98 th Percentile (date)‡
<u>Saginaw</u> Delight School (SAG) 79980 Delight Valley School Rd DEQ# 18315 EPA # 410391007 Discontinued 6/06	1999	115	6.8	25 (10/30)	21 (11/02)
	2000	114	6.7	21 (11/17)	19 (11/14)
	2001	119	7.0	27 (11/12)	17 (10/04)
	2002	121	6.7	22 (11/13)	18 (03/03)
	2003	59	6.2	17 (11/05)	16 (02/08)
	2004	60	6.0	14 (11/23)	13 (02/21)
	2005	61	6.8	25 (01/16)	18 (02/03)
<u>Grants Pass</u> Sewage Treatment Plant (GPS) 1200 SW Greenwood Ave. DEQ# 18508 EPA # 410330107 *Moved to GPP 7/02, <i>GPS & GPP combined</i>	2000	117	8.8	35 (11/11)	28 (11/17)
	2001	116	10.6	55 (11/12)	41 (01/07)
	2002	63	*	32 (02/16)	29 (02/10)
	2002 [‡]	52	11.5*	39 (11/19)	32 (02/16)
<u>Grants Pass Parkside Sch (GPP)</u> DEQ# 28859 EPA # 410330114 **Discontinued 3/04	2003	85	9.7	46 (11/23)	34 (02/08)
<u>Klamath Falls</u> Peterson School (KFP) 4856 Clinton St. DEQ# 10118 EPA # 410350004 [‡] 12 exceedences- Forest Fire Smoke *With forest fire flagged data <i>removed</i>	1999	149	10.5	52 (01/06)	44 (12/30)
	2000	346	9.6	63 (12/07)	37 (11/19)
	2001	322	8.9	40 (12/12)	35 (11/12)
	2002 [‡]	339	17.1	155(08/02)	93 (08/19)
	2002*	314	12.5	66 (12/02)	51 (01/31)
	2003	115	10.0	54 (11/23)	31 (12/17)
	2004	105	11.3	51 (12/02)	42 (11/11)
	2005	109	11.7	51 (01/19)	49 (01/22)
2006	112	11.1	53 (12/31)	48 (01/23)	

‡ Forest Fire Impact. Only sampled every sixth day.

APPENDIX 1A
PM_{2.5} Summary (µg/m³)

STATION LOCATION AND NUMBER	YEAR	SAMPLE DAYS	ARITHMETIC MEAN†	24-HOUR AVERAGES	
				MAXIMUM (date)	98 th Percentile (date)‡
La Grande Willow Street (LWS) DEQ# 10148 EPA # 410610006 ★Moved to LTI –9/99	1999	39	*	18 (01/06)	*
3rd & I Street (LTI) DEQ# 21638 EPA # 410610117 *Averaged with LWS ★Moved to LAS –12/03	1999	97	7.7*	20 (12/29)	20 (12/23)
	2000	327	6.5	36 (08/16)	24 (11/22)
	2001	337	6.7	34 (01/06)	23 (11/07)
	2002	333	7.3	43 (12/05)	27 (01/28)
	2003	104	*	25 (11/05)	18 (09/03)
Ash Street (LAS) DEQ# 26448 EPA # 410610119 * averaged with LTI ★With forest fire flagged data removed	2003	7	6.3*	19 (12/11)	19 (12/11)
	2004	102	7.4	26 (01/16)	21 (02/21)
	2005	107	8.8	41 (12/12)	31 (12/15)
	2006 [‡]	54	9.3	35 (09/08)	34 (12/19)
	2006★	53	8.6	34 (12/19)	32 (09/26)
Ladd Marsh-Foothills Rd (LLM) DEQ# 10147 EPA # 410619103 Discontinued 12/02	2000	47	6.7	39 (08/16)	39 (08/16)
	2001	51	4.7	16 (01/19)	14 (08/17)
	2002	57	5.2	24 (12/04)	14 (07/13)
Lakeview Center and M Street (LCM) DEQ# 10123 EPA # 410370001 ★With forest fire flagged data removed *Discontinued 10/03	1999	156	8.6	60 (01/06)	38 (12/29)
	2000	320	7.3	51 (12/29)	37 (12/07)
	2001	351	7.2	37 (01/31)	29 (01/18)
	2002 [‡]	347	9.0	78 (07/31)	40 (08/19)
	2002★	339	8.0	41 (02/04)	30 (08/01)
	2003	51	*	29 (01/09)	*
Grange Hall (LGH) DEQ# 10122 EPA # 410370003 ★With forest fire flagged data removed	2000	58	2.7	8 (08/22)	7 (06/29)
	2001	61	3.0	12 (09/10)	11 (08/11)
	2002 [‡]	60	5.3	57 (07/31)	46 (07/25)
	2002★	58	3.9	21 (07/19)	19 (08/06)

‡ Forest Fire Impact. Only sampled every sixth day.

APPENDIX 1A
PM_{2.5} Summary (µg/m³)

STATION LOCATION AND NUMBER	YEAR	SAMPLE DAYS	ARITHMETIC MEAN†	24-HOUR AVERAGES	
				MAXIMUM (date)	98 th Percentile (date)‡
Lebanon Fire Station (LFS) DEQ# 18331 EPA # 410411004 <i>*Summer Field Burning Site only</i>	2003	70	*	34 (09/02)	NA
	2004	29	*	12 (09/03)	NA
	2005	71	*	11 (09/27)	NA
	2006	67	*	22 (09/02)	NA
Medford Dodge Road (MDR) 4035 Dodge Road DEQ# 10106 EPA # 410291001 <i>*With forest fire flagged data removed</i>	1999	220	6.4	20 (01/06)	18 (12/29)
	2000	120	5.6	23 (11/23)	19 (01/07)
	2001	117	5.2	16 (11/18)	13 (01/07)
	2002 [‡]	110	8.9	69 (07/28)	50 (08/09)
	2002*	103	6.7	29 (08/15)	23 (08/24)
	2003	60	5.2	17 (08/31)	15 (01/09)
	2004	61	5.9	22 (12/05)	19 (11/17)
	2005	60	5.2	13 (11/18)	12 (11/24)
2006	51	5.5	17 (12/07)	14 (11/01)	
Grant & Belmont (MGB) 902 Grant Ave. DEQ# 20448 EPA # 410290133 <i>*With forest fire flagged data removed</i>	1999	316	11.8	63 (12/25)	49 (12/28)
	2000	347	11.4	56 (12/09)	40 (12/28)
	2001	347	10.6	45 (01/06)	32 (11/09)
	2002 [‡]	348	14.0	64 (07/29)	45 (11/21)
	2002*	328	12.4	60 (11/15)	41 (12/05)
	2003	116	11.1	45 (01/09)	32 (11/14)
	2004	119	10.8	38 (12/05)	35 (11/29)
	2005	116	10.1	50 (11/21)	36 (12/15)
2006	102	10.0	45 (11/10)	26 (11/04)	
Welch & Jackson (MWJ) 711 Welch St. DEQ# 10113 EPA # 410292129 <i>*With forest fire flagged data removed</i> <i>* Relocated to White City 10/04</i>	2000	331	11.4	52 (12/29)	44 (07/04)
	2001	356	10.2	46 (01/06)	33 (01/16)
	2002 [‡]	348	13.8	64 (11/15)	48 (08/12)
	2002*	327	12.1	64 (11/15)	38 (11/26)
	2003	121	11.3	47 (01/18)	39 (11/14)
	2004	77	*	35 (01/22)	*

‡ Forest Fire Impact. Only sampled every sixth day.

APPENDIX 1A
PM_{2.5} Summary (µg/m³)

STATION LOCATION AND NUMBER	YEAR	SAMPLE DAYS	ARITHMETIC MEAN†	24-HOUR AVERAGES	
				MAXIMUM (date)	98 th Percentile (date)‡
Provolt BLM Seed Orch (PSO) DEQ# 18432 EPA # na	2003	51	7.4*	22 (01/16)	*
	2004	53	6.7*	22 (02/21)	*
Oakridge Willamette Cntr. (OAK) 47674 School St. DEQ# 18733 EPA # 410392013	1999	317	13.1	72 (12/27)	57 (12/28)
	2000	362	13.1	74 (01/29)	52 (02/07)
	2001	355	13.8	96 (01/07)	60 (01/27)
	2002	353	14.1	80 (11/01)	55 (03/02)
	2003	362	12.3	69 (01/11)	53 (02/25)
	2004	362	12.0	69 (02/12)	46 (02/21)
	2005	237	12.8	73 (12/15)	58 (02/03)
	2006	118	11.1	47 (12/07)	39 (02/22)
Pendleton McKay Creek Park (PMC) 3745 SW Marshall Place DEQ# 10146 EPA # 410590121	1999	113	8.4	33 (12/21)	30 (12/22)
	2000	327	8.9	42 (11/19)	34 (11/14)
	2001	302	8.7	40 (11/27)	25 (08/15)
	2002	308	9.3	52 (11/04)	40 (11/26)
Portland Area Beaverton Highland Park Sch (BHP) 3745 SW Marshall Place DEQ# 20481 EPA # 410670111	1999	266	7.4	41 (01/01)	29 (10/30)
	2000	117	8.6	42 (11/23)	28 (12/08)
	2001	119	7.6	29 (11/09)	24 (10/28)
	2002	116	7.9	56 (12/01)	28 (10/26)
	2003	59	6.7	23 (01/21)	18 (03/04)
	2004	58	9.0	35 (01/10)	30 (11/11)
Hillsboro (HFO) 15 th & Oak St. DEQ# 21639 EPA # 410671003	2000	111	9.7	38 (12/05)	32 (10/15)
	2001	117	8.9	47 (11/09)	31 (01/28)
	2002	111	10.5	66 (12/01)	38 (07/04)
	2003	110	8.3	38 (01/21)	23 (12/20)
N.E. Portland (PNR) 24 N. Emerson (N. Roselawn) DEQ# 21889 EPA # 410510246	2000	353	9.5	46 (07/04)	29 (10/31)
	2001	351	8.8	50 (09/19)	23 (01/12)
	2002	350	8.5	36 (11/15)	26 (10/26)
	2003	117	8.1	28 (10/27)	21 (09/03)
	2004	125	8.8	34 (11/08)	28 (11/11)
	2005	119	8.8	49 (02/03)	25 (02/09)
	2006	120	7.8	28 (10/26)	19 (10/14)

‡ Forest Fire Impact. Only sampled every sixth day.

APPENDIX 1A
PM_{2.5} Summary (µg/m³)

STATION LOCATION AND NUMBER	YEAR	SAMPLE DAYS	ARITHMETIC MEAN†	24-HOUR AVERAGES	
				MAXIMUM (date)	98 th Percentile (date)‡
N.W. Portland (PNW) 1706 NW 24th St. (Forest Heights PO) DEQ# 18399 EPA # 410510244	1999	333	8.5	35 (01/10)	22 (12/31)
	2000	336	9.2	36 (11/12)	28 (02/18)
	2001	359	8.3	30 (12/07)	22 (01/10)
	2002	348	7.9	32 (11/15)	23 (11/26)
S.E. Portland (SEL) 5824 SE Lafayette DEQ# 10139 EPA # 410510080	1999	331	8.8	71 (01/05)	27 (12/14)
	2000	351	9.6	104 (07/04)	27 (12/19)
	2001	347	8.6	35 (12/07)	25 (01/31)
	2002	348	8.4	45 (12/01)	28 (10/25)
	2003	114	8.2	26 (10/27)	23 (09/03)
	2004	115	9.3	47 (11/08)	33 (11/11)
	2005	116	9.2	34 (02/03)	26 (02/12)
2006	56	9.8	39 (01/23)	38 (10/26)	
Sauvie Island (SIS) Social Security Beach DEQ# 14152 EPA # 410090004	1999	220	6.5	34 (01/05)	23 (01/04)
	2000	118	7.0	19 (11/17)	18 (11/20)
	2001	116	6.2	20 (11/12)	13 (03/23)
	2002	118	6.4	24 (12/01)	18 (11/28)
	2003	57	5.6	14 (03/04)	13 (02/08)
2004	54	6.9	21 (11/23)	19 (11/11)	
Salem Salem General Hospital (SGH) 867 Medical Center Drive DEQ# 20480 EPA # 410470040	1999	113	7.5	38 (11/05)	26 (10/30)
	2000	121	8.9	33 (11/20)	29 (12/08)
	2001	122	8.2	49 (11/09)	33 (01/16)
	2002	117	8.2	39 (11/04)	35 (12/01)
Between Salem & Portland North Marion (NMH) 20167 Grimm Rd. NE Aurora DEQ# 20479 EPA # 410470109 * moved to Butteville 7/99	1999	151	*	30 (01/04)	18 (01/06)

‡ Forest Fire Impact. Only sampled every sixth day.

APPENDIX 1A
PM_{2.5} Summary (µg/m³)

STATION LOCATION AND NUMBER	YEAR	SAMPLE DAYS	ARITHMETIC MEAN†	24-HOUR AVERAGES	
				MAXIMUM (date)	98 th Percentile (date)‡
Butteville -Schultz Road (MBC) DEQ# 21251 EPA # 410470110 *Butteville & N Marion High combined for annual average.	1999	48	6.7*	37 (10/30)	37 (10/30)
	2000	119	7.1	29 (12/08)	24 (10/27)
	2001	120	6.7	28 (11/09)	18 (11/12)
	2002	121	6.6	28 (12/01)	21 (01/11)
Springfield Springfield High Sch. (SHS) 875 N 7 th DEQ# 18734 EPA # 410391061	2000	352	8.8	37 (11/18)	29 (10/25)
	2001	349	8.6	52 (12/06)	27 (11/08)
	2002	364	8.2	35 (11/28)	26 (11/02)
	2003	120	7.8	28 (11/08)	23 (11/14)
Springfield City Hall (SCH) 255 N 5 th DEQ# 18538 EPA# 410391009	2004	51	7.8	21 (11/11)	21 (11/05)
	2005	61	8.0	32 (01/16)	25 (02/03)
	2006	61	7.4	30 (11/01)	28 (12/07)
The Dalles Cherry Heights (TDC) 1112 Cherry Heights Rd DEQ# 21252 EPA # 410650007	2000	53	9.9	36 (11/20)	30 (01/07)
	2001	61	7.4	42 (11/09)	19 (11/03)
	2002	59	7.7	30 (11/04)	28 (11/03)
	2003	52	6.6	22 (11/07)	19 (02/08)
White City - Post Office (WPO) 751 Crater Lk Hwy DEQ# 10107 EPA# 410294001	2005	103	9.1	32 (11/21)	24 (12/15)
	2006	103	9.0	48 (11/10)	23 (12/31)

† Forest Fire Impact. Only sampled every sixth day.

APPENDIX 1B PM₁₀ Summary (µg/m³)

STATION LOCATION AND NUMBER	YEAR	SAMPLE DAYS	DAYS** >150	ARITHMETIC MEAN†	24-HOUR AVERAGES	
					MAXIMUM (date)	2ND HIGHEST (date)†
<u>Bend</u> 8th & Newport (BEN) 794 NW Newport DEQ# 10099 EPA# 410170113 * Moved to BPS 3/01	1997	202	0	25.8	89 (01/08)	87 (02/15)
	1998	166	0	22.8	86 (01/08)	58 (12/23)
	1999	146	0	27.1	94 (01/04)	75 (01/05)
	2000	149	1	27.4	159 (02/07)	114 (01/28)
	2001	50	0	*	71 (02/14)	70 (01/01)
<u>Pump Station (BPS)</u> 35 Portland Ave DEQ# 24172 EPA# 410170120	2001	114	0	18.5	112 (11/09)	73 (01/01)
	2002	114	0	21.5	76 (02/04)	73 (10/29)
	2003	61	0	19.9	59 (10/30)	53 (02/08)
	2004	54	0	15.7	65 (02/09)	47 (12/17)
	2005	59	0	17.6	62 (02/03)	52 (02/27)
	2006	53	0	17.3	60 (12/07)	52 (12/19)
<u>Burns (BMS)</u> 267 E Madison Street DEQ# 10105 EPA# 410250002 *Annual data incomplete	1997	137	0	25.8	72 (03/30)	59 (01/08)
	1998	170	0	24.7	81 (04/29)	58 (01/20)
	1999	144	0	25.2	62 (01/29)	61 (01/09)
	2000	145	0	21.9	54 (12/08)	54 (02/07)
	2001	116	0	20.8	64 (01/22)	54 (01/31)
	2002	107	0	24.1	136 (11/16)	64 (07/13)
	2003	56	0	17.4	38 (01/09)	36 (11/23)
	2004	55	0	18.4	52 (05/03)	49 (02/15)
	2005	30	0	*	*	*
2006	32	0	*	*	*	
<u>Cottage Grove</u> Harrison School S. 10 th DEQ# 18515 EPA# 410399002	1997	61	0	20.2	75 (01/16)	54 (01/28)
	1998	58	0	17.3	51 (09/02)	50 (04/29)
	1999	60	0	18.5	48 (10/21)	40 (11/02)
	2000	62	0	19.1	42 (11/28)	40 (11/23)
	2001	61	0	17.0	42 (12/27)	37 (11/09)
	2002	59	0	19.2	56 (11/04)	53 (03/03)
	2003	59	0	15.6	43 (02/25)	40 (02/07)
	2004	58	0	14.0	38 (08/19)	32 (08/13)
	2005	61	0	14.9	38 (12/18)	37 (01/22)
2006	61	0	14.8	42 (11/01)	41 (02/10)	

☞ Forest Fire Impact. Only sampled every sixth day.

APPENDIX 1B PM₁₀ Summary (µg/m³)

STATION LOCATION AND NUMBER	YEAR	SAMPLE DAYS	DAYS** >150	ARITHMETIC MEAN†	24-HOUR AVERAGES	
					MAXIMUM (date)	2ND HIGHEST (date)†
Eugene Lane Comm College (LCC) 1059 Willamette DEQ# 18320 EPA# 410390013	1997	60	0	20.7	52 (01/16)	49 (12/06)
	1998	62	0	16.9	66 (09/02)	57 (04/29)
	1999	60	0	18.3	45 (10/21)	43 (11/02)
	2000	60	0	18.7	48 (11/20)	47 (12/26)
	2001	60	0	18.2	51 (11/09)	35 (09/10)
	2002	60	0	16.1	46 (08/12)	45 (09/11)
	2003	58	0	14.5	32 (09/24)	29 (09/30)
	2004	56	0	13.9	36 (08/13)	35 (08/19)
	2005	62	0	15.4	42 (09/07)	40 (02/03)
	2006	61	0	14.4	44 (12/07)	38 (07/22)
Key Bank (EKB) 450 Pacific Hwy 99 N DEQ# 18522 EPA# 410390058	1997	200	0	21.1	85 (01/15)	62 (10/21)
	1998	207	0	19.2	69 (09/02)	68 (04/29)
	1999	231	0	19.6	77 (10/22)	64 (10/21)
	2000	195	0	19.3	73 (03/30)	50 (11/22)
	2001	193	0	20.4	66 (11/09)	62 (11/10)
	2002	204	0	19.1	67 (02/14)	63 (11/02)
	2003	144	0	19.1	45 (08/19)	45 (02/07)
	2004	118	0	18.7	64 (02/12)	44 (11/05)
	2005	119	0	18.1	51 (09/07)	48 (12/09)
	2006	122	0	20.2	69 (08/18)	57 (11/01)
Amazon Park (EAP) 499 E 29 th DEQ# 18524 EPA# 410390060 Discontinued 12/01	1997	61	0	18.7	54 (12/06)	53 (01/16)
	1998	61	0	14.9	61 (09/02)	50 (04/29)
	1999	58	0	17.0	55 (12/26)	42 (10/21)
	2000	60	0	17.4	55 (11/20)	52 (12/26)
	2001	61	0	17.9	60 (11/09)	35 (10/04)

☞ Forest Fire Impact. Only sampled every sixth day.

APPENDIX 1B PM₁₀ Summary (µg/m³)

STATION LOCATION AND NUMBER	YEAR	SAMPLE DAYS	DAYS** >150	ARITHMETIC MEAN†	24-HOUR AVERAGES	
					MAXIMUM (date)	2ND HIGHEST (date)†
Grants Pass 11th & K St DEQ# 10115 EPA# 410330008	1997	59	0	22.1	73 (01/16)	47 (10/25)
Corner lot 720 NE 11 th DEQ# 10116 EPA# 410330113	1997	148	0	21.5	89 (01/15)	88 (01/16)
	1998	176	0	18.1	62 (12/23)	51 (11/13)
	1999	146	0	18.5	43 (11/11)	41 (10/21)
1200 SW Greenwood Ave. DEQ# 18508 EPA# 410330107 * Moved to GPP 7/02	1999	51	0	18.8	43 (10/21)	43 (06/11)
	2000	107	0	15.8	40 (11/21)	40 (12/27)
	2001	144	0	15.7	55 (11/12)	50 (11/09)
	2002	76	0	*	41 (03/30)	37 (01/17)
Grants Pass Parkside Sch (GPP) DEQ# 28859 EPA # 410330114 * GPS & GPP combined	2002 ^{Fb}	40	0	18.9*	45 (11/09)	44 (08/12)
	2003	87	0	13.7	56 (11/14)	49 (11/23)
	2004	76	0	16.4	36 (02/12)	32 (02/21)
	2005	57	0	16.4	48 (07/27)	38 (02/03)
	2006	59	0	15.7	39 (12/31)	38 (11/19)
Hermiston Pump Station (HPS) DEQ# 24735 EPA# na	2001	124	0	23.0	55 (10/04)	52 (05/19)
Klamath Falls Peterson School (KFP) 4856 Clinton St DEQ# 10118 EPA# 410350004	1997	171	0	21.7	85 (01/07)	82 (01/09)
	1998	175	0	19.3	86 (12/11)	80 (12/23)
	1999	151	0	21.3	84 (01/05)	82 (01/06)
	2000	146	0	19.3	94 (12/06)	93 (12/07)
	2001	146	0	18.3	82 (01/03)	62 (01/04)
	2002 ^{Fb}	151	0	28.5	145 (07/31)	121 (08/18)
	2003	87	0	20.6	110 (03/13)	63 (11/23)
	2004	81	0	22.1	76 (01/13)	70 (01/22)
	2005	59	0	21.7	85 (01/22)	76 (12/12)
	2006	60	0	20.3	71 (12/31)	56 (07/04)
Miller Island 1211 Miller Is DEQ# 10120 EPA# 410350013	1997	51	0	16.8	58 (10/01)	39 (07/15)
	1998	47	0	13.2	57 (04/29)	35 (09/08)
	1999	30	0	*	34 (03/19)	34 (05/24)
Wocus Marsh 10500 Hwy 140 DEQ# 10121 EPA# 410350014	1997	198	0	12.9	55 (10/30)	53 (10/14)
	1998	182	0	14.2	56 (04/29)	43 (10/23)
	1999	153	0	16.6	48 (10/21)	46 (10/12)

^{Fb} Forest Fire Impact. Only sampled every sixth day.

PM₁₀ Appendix 1B

APPENDIX 1B
PM₁₀ Summary (µg/m³)

STATION LOCATION AND NUMBER	YEAR	SAMPLE DAYS	DAYS** >150	ARITHMETIC MEAN†	24-HOUR AVERAGES	
					MAXIMUM (date)	2ND HIGHEST (date)†
La Grande						
Ladd Marsh (LLM)	1997	183	0	13.0	53 (10/01)	34 (08/20)
Foothills Road	1998	170	0	11.1	71 (04/29)	34 (09/02)
DEQ# 10147 EPA# 410619103	1999	124	0	12.9	64 (09/15)	46 (09/30)
Willow Street (LWS)	1997	183	0	27.6	89 (01/14)	79 (02/10)
1601 N Willow	1998	175	0	21.5	88 (04/29)	59 (01/20)
DEQ# 10148 EPA# 410610006	1999	132	0	23.1	96 (01/05)	89 (01/04)
	2000	133	0	22.2	87 (01/18)	71 (12/05)
	2001	142	0	20.7	82 (01/06)	76 (02/03)
	2002	110	0	22.0	90 (01/28)	72 (01/29)
	2003	81	0	20.5	57 (02/11)	54 (10/27)
	2004	74	0	23.6	61 (12/23)	54 (02/09)
	2005	61	0	22.3	50 (02/03)	48 (11/18)
Ash Street (LAS)						
DEQ# 26448 EPA # 410610119	2006	58	0	27.5	87 (07/22)	76 (08/27)
Lakeview	1997	202	0	19.5	99 (12/29)	87 (12/12)
Center & M (LCM)	1998	175	0	17.8	110 (12/16)	74 (12/17)
DEQ# 10123 EPA# 410370001	1999	142	0	22.5	95 (01/05)	94 (01/04)
★No data for Oct – Dec, 2001	2000	153	0	18.5	106 (12/29)	101 (12/28)
	2001	86	0	*	94 (01/03)	94 (01/04)
	2002 [Ⓜ]	117	0	22.3	104 (07/31)	84 (02/04)
	2003	87	0	17.4	49 (02/11)	46 (01/09)
	2004	74	0	19.4	71 (01/22)	71 (01/14)
	2005	59	0	18.1	78 (01/22)	77 (12/06)
	2006	57	0	14.8	61 (12/19)	46 (06/10)
Lakeview Grange Hall (LGH)	1997	148	0	8.0	21 (10/01)	20 (10/27)
DEQ# 10122 EPA# 410370003	1998	171	0	8.0	57 (04/29)	26 (12/20)
	1999	140	0	9.4	30 (07/11)	30 (08/04)
336 N “L” Street	1997	61	0	32.4	110 (12/12)	92 (12/30)
DEQ# 10124 EPA# 410376002	1998	59	0	26.1	78 (11/13)	75 (04/29)
	1999	59	0	35.6	111 (01/06)	91 (09/09)

Ⓜ Forest Fire Impact. Only sampled every sixth day.

APPENDIX 1B PM₁₀ Summary (µg/m³)

STATION LOCATION AND NUMBER	YEAR	SAMPLE DAYS	DAYS** >150	ARITHMETIC MEAN†	24-HOUR AVERAGES	
					MAXIMUM (date)	2ND HIGHEST (date)†
<u>Medford</u>						
Jackson Cnty Courthouse (MCO) Main & Oakdale DEQ# 10110 EPA# 410293001	1997	53	0	24.8	60 (01/10)	56 (12/30)
	1998	59	0	20.4	61 (04/29)	53 (12/25)
	1999	60	0	24.1	80 (12/26)	76 (01/06)
Welch & Jackson (MWJ) DEQ# 10113 EPA # 410292129	1997	185	0	26.4	101 (01/09)	85 (12/29)
	1998	182	0	23.9	76 (10/20)	66 (12/23)
	1999	152	0	27.3	98 (01/04)	93 (01/05)
	2000	151	0	23.1	72 (11/18)	68 (11/20)
	2001	140	0	21.8	64 (01/03)	63 (01/04)
	2002 [Ⓜ]	119	0	25.0	80 (07/31)	73 (08/12)
	2003	78	0	21.4	58 (11/14)	57 (01/18)
	2004	77	0	23.2	52 (01/22)	49 (11/17)
	2005	60	0	22.1	52 (02/03)	51 (11/18)
2006	61	0	20.2	65 (12/07)	62 (11/01)	
Dodge Road (MDR) 4035 Dodge Road DEQ# 10106 EPA # 410291001	1997	170	0	11.9	39 (10/25)	38 (10/24)
	1998	181	0	12.0	39 (04/29)	36 (12/24)
	1999	147	0	13.8	55 (09/30)	33 (10/03)
	2000	145	0	11.2	29 (10/24)	29 (12/31)
	2001	148	0	10.5	23 (01/06)	21 (01/04)
	2002 [Ⓜ]	113	0	15.2	66 (08/18)	63 (08/12)
	2003	90	0	9.0	30 (08/31)	27 (10/03)
2004	71	0	13.5	28 (11/17)	25 (08/19)	
Oakridge Willamette Center Trailer (OAK) DEQ# 18733 EPA# 410392013	1997	165	0	22.2	93 (01/16)	91 (01/14)
	1998	195	0	19.0	78 (02/07)	78 (12/23)
	1999	230	0	18.8	102 (10/11)	93 (12/27)
	2000	207	0	19.4	85 (01/29)	69 (12/06)
	2001	207	0	18.7	104 (01/07)	75 (12/27)
	2002	208	0	21.0	89 (11/01)	80 (02/13)
	2003	147	0	17.5	73 (01/11)	60 (02/08)
	2004	117	0	18.0	80 (02/12)	53 (01/13)
	2005	115	0	18.0	83 (12/15)	76 (02/18)
2006	110	0	16.4	56 (12/07)	50 (02/10)	

[Ⓜ] Forest Fire Impact. Only sampled every sixth day.

APPENDIX 1B PM₁₀ Summary (µg/m³)

SAMPLE DAYS** ARITHMETIC 24-HOUR AVERAGES
 YEAR DAYS >150 MEAN† MAXIMUM (date) 2ND HIGHEST (date)†

<u>Pendleton</u>						
State Office Bldg (PSO)	1997	14	0	*	43 (12/30)	42 (10/19)
700 SE Emigrant	1998	41	0	26.7	54 (07/22)	54 (08/28)
DEQ# 10145 EPA# 410590002	1999	55	0	28.9	81 (05/30)	75 (10/21)
★ Sampling halted 8/96-6/97						
<u>McKay Creek (PMC)</u>						
3745 SW Marshall	1997	227	0	23.9	70 (01/15)	65 (01/14)
DEQ# 10146 EPA # 410590121	1998	191	0	22.9	88 (04/29)	68 (01/13)
	1999	137	1	24.7	107 (02/06)	56 (10/21)
	2000	136	0	17.5	47 (11/20)	45 (11/18)
	2001	144	0	19.0	51 (02/01)	46 (10/04)
	2002	103	0	19.8	52 (10/26)	49 (10/17)
	2003	55	0	19.8	65 (10/30)	54 (09/30)
	2004	54	0	20.7	64 (04/27)	48 (01/10)
	2005	60	0	18.8	42 (02/27)	37 (10/25)
	2006	59	0	21.2	60 (09/02)	56 (07/04)
<u>Portland</u>						
Carus (SPR)	1997	60	0	14.2	37 (01/16)	33 (08/14)
13575 Spangler Rd	1998	57	0	12.8	59 (04/29)	36 (07/28)
DEQ# 10093 EPA# 410050004	1999	59	0	14.9	34 (9/21)†	32 (10/21)
<u>Central Fire Station (CFS)</u>						
55 SW Ash	1997	58	0	24.9	50 (09/25)	46 (12/18)
DEQ# 10136 EPA# 410510015	1998	57	0	21.2	76 (04/29)	42 (07/28)
★ Discontinued 03/00	1999	56	0	22.9	65 (10/21)	45 (09/21)
	2000	12	0	*	51 (02/18)	36 (03/01)
<u>SE Lafayette (SEL)</u>						
5824 SE Lafayette	1997	198	0	19.0	46 (10/21)	46 (10/22)
DEQ# 10139 EPA# 410510080	1998	179	0	18.7	70 (04/29)	47 (10/23)
	1999	130	0	15.5	75 (01/05)	63 (01/04)
	2000	150	0	16.6	52 (02/18)	45 (07/05)
	2001	183	0	15.4	45 (02/01)	44 (12/07)
- Not enough sampling days	2002	116	0	14.5	48 (01/15)	35 (10/26)
	2003	57	0	13.2	27 (09/06)	25 (09/30)
	2004	59	0	17.1	47 (11/05)	42 (11/11)
	2005	56	0	17.2	44 (02/03)	38 (12/12)
	2006	5	-	-	-	-
<u>Roosevelt High</u>						
6941 N Central	1997	61	0	21.3	43 (09/25)	39 (10/25)
DEQ# 10135 EPA# 410510003	1998	61	0	17.7	75 (04/29)	38 (05/05)
	1999	59	0	19.4	48 (10/21)	43 (01/06)

☒ Forest Fire Impact. Only sampled every sixth day.

PM₁₀ Appendix 1B

APPENDIX 1B PM₁₀ Summary (µg/m³)

STATION LOCATION AND NUMBER	YEAR	SAMPLE DAYS	DAYS** >150	ARITHMETIC MEAN†	24-HOUR AVERAGES	
					MAXIMUM (date)	2ND HIGHEST (date)†
Transcon Terminal (TTT) 3182 NW 26 th DEQ# 10140 EPA# 410510009	1997	59	0	30.2	55 (09/25)	48 (12/18)
	1998	57	0	28.9	87 (04/29)	59 (10/20)
	1999	51	0	26.8	49 (03/19)	49 (09/21)
	2000	58	0	23.0	48 (02/18)	42 (04/12)
	2001	60	0	19.8	45 (10/04)	43 (02/12)
	2002	59	0	20.0	86 (11/04)	67 (11/16)
	2003	57	0	17.5	33 (09/30)	32 (10/06)
	2004	64	0	25.2	125 (01/22)	66 (01/16)
	2005	59	0	24.2	101 (02/03)	57 (12/12)
2006	59	0	21.3	48 (10/26)	47 (12/19)	
Metzger 10105 SW Hall Blvd DEQ# 10163 EPA# 410670007 ★ Seasonal sampling	1997	53	0	*	59 (01/19)	52 (01/08)
	1998	13	0	*	26 (12/31)	19 (01/17)
	1999	5	0	*	52 (01/24)	40 (01/06)
Springfield City Hall (SCH) 255 N 5 th DEQ# 18538 EPA# 410391009	1997	60	0	21.0	57 (01/16)	49 (12/06)
	1998	60	0	18.8	65 (09/02)	60 (04/29)
	1999	60	0	19.4	55 (09/21)	54 (10/21)
	2000	60	0	19.6	55 (08/22)	45 (11/20)
	2001	60	0	17.0	43 (11/09)	38 (09/10)
	2002	60	0	16.5	52 (11/16)	51 (09/11)
White City Post Office (WPO) 751 Crater Lk Hwy DEQ# 10107 EPA# 410294001	1997	182	0	28.4	78 (12/29)	77 (01/09)
	1998	182	0	27.2	74 (12/23)	70 (04/29)
	1999	144	0	31.6	89 (01/05)	84 (01/04)
	2000	151	0	28.4	73 (11/20)	67 (03/31)
	2001	149	0	27.3	89 (01/02)	80 (01/03)
	2002 ^{FB}	118	0	32.0	90 (08/12)	89 (07/31)
	2003	83	0	22.9	68 (01/09)	59 (11/14)
	2004	72	0	27.5	58 (08/13)	53 (03/16)
	2005	60	0	24.5	70 (02/03)	53 (02/15)
2006	56	0	23.7	90 (11/01)	64 (02/10)	

^{FB} Forest Fire Impact. Only sampled every sixth day.

PM₁₀ Appendix 1B

APPENDIX 1C Carbon Monoxide Summary (ppm)

STATION LOCATION AND NUMBER	YEAR	Oct-Apr	1-HOUR AVERAGES		TIMES**	8-HOUR AVERAGES	
		Average	MAXIMUM	2ND HIGH	>9ppm	MAXIMUM (date)	2 ND HIGHEST (date)
<u>Bend</u> 934 NE 3rd (BCO) DEQ# 10098 EPA# 410170002 ★Site discontinued 04/06	1997	1.74	15.9	9.8	0	5.9 (11/21)	5.6 (01/28)
	1998	1.46	10.1	9.4	0	5.2 (11/30)	4.4 (01/08)
	1999	1.35	9.0	7.7	0	4.8 (12/28)	4.8 (12/27)
	2000	1.45	8.2	7.9	0	4.4 (01/21)	4.2 (11/22)
	2001	1.08	9.7	7.8	0	4.5 (12/28)	3.1 (12/10)
	2002	1.06	7.5	6.7	0	3.9 (12/09)	3.5 (01/02)
	2003	0.80	6.2	5.2	0	2.9 (12/19)	2.9 (01/07)
	2004	0.78	7.4	7.3	0	5.3 (01/08)	3.3 (01/13)
	2005	0.74	6.7	6.4	0	3.0 (12/19)	2.5 (11/30)
<u>Eugene</u> Lane Comm Coll. (LCC) 1059 Willamette DEQ# 18320 EPA# 410390013	1997	1.55	7.6	7.1	0	4.8 (12/05)	4.7 (12/04)
	1998	1.25	5.7	5.5	0	4.0 (01/31)	3.9 (01/10)
	1999	1.14	7.5	6.9	0	5.0 (01/04)	4.0 (01/05)
	2000	1.25	6.0	5.7	0	3.6 (11/22)	3.5 (11/16)
	2001	1.20	5.7	5.3	0	3.6 (11/09)	3.6 (01/10)
	2002	1.06	5.1	4.6	0	3.3 (11/05)	2.9 (11/06)
	2003	0.93	5.4	3.7	0	3.4 (12/04)	2.8 (01/17)
	2004	0.87	7.7	6.8	0	3.1 (01/09)	2.6 (02/12)
	2005	0.73	4.1	3.8	0	2.5 (12/19)	2.3 (12/20)
<u>Eugene</u> Sacred Heart Hosp 12555 Hilyard DEQ# 18735 EPA# 410392062 ★Site discontinued 04/06	1997	1.64	7.8	7.7	0	5.2 (01/27)	5.2 (01/15)
	1998	1.24	7.1	7.0	0	4.6 (10/22)	4.6 (01/10)
	1999	1.27	8.0	7.8	0	6.1 (01/04)	5.6 (01/05)
	2000	1.32	7.8	6.6	0	4.4 (11/17)	4.3 (11/16)
	2001	1.30	6.1	5.5	0	4.2 (11/08)	4.1 (01/10)
	2002	1.20	6.7	5.6	0	4.3 (10/15)	4.2 (11/04)
	2003	0.99	5.9	5.4	0	3.4 (12/04)	3.4 (01/17)
	2005	0.74	5.3	4.9	0	2.8 (02/11)	2.7 (12/10)

*Parts per million

**Non-overlapping 8-hour averages which exceed
9 ppm when rounded to nearest whole ppm.

Carbon Monoxide 1C

APPENDIX 1C Carbon Monoxide Summary (ppm)

STATION LOCATION AND NUMBER	YEAR	Oct-Apr	1-HOUR AVERAGES		TIMES**	8-HOUR AVERAGES	
		Average	MAXIMUM	2ND HIGH	>9ppm	MAXIMUM (date)	2 ND HIGHEST (date)
Grants Pass	1997	1.74	8.0	7.7	0	5.3 (01/14)	5.1 (12/05)
Wing Bldg (GPW)	1998	1.74	7.5	7.4	0	4.7 (10/30)	4.6 (11/20)
215 SE 6th	1999	1.61	8.5	7.9	0	4.9 (11/11)	4.6 (01/07)
DEQ # 10114 EPA # 410330006	2000	1.50	8.4	6.6	0	4.5 (11/21)	4.3 (12/27)
★Site discontinued 04/06	2001	1.53	7.7	7.7	0	5.5 (01/05)	4.7 (11/09)
	2002	1.45	7.4	6.4	0	4.6 (11/27)	4.5 (11/05)
	2003	1.30	7.0	6.7	0	3.9 (01/06)	3.9 (01/07)
	2004	1.17	5.4	5.3	0	4.0 (11/03)	3.5 (12/08)
	2005	1.11	4.4	4.1	0	3.9 (03/22)	3.0 (12/21)
Klamath Falls	1997	1.43	8.0	7.6	0	5.3 (12/29)	5.1 (01/11)
2306 Hope St (KFH)	1998	1.07	6.6	6.4	0	4.7 (12/30)	4.5 (11/13)
DEQ # 10119 EPA # 41035006	1999	1.20	7.7	7.3	0	4.7 (01/05)	4.5 (12/20)
★Site discontinued 04/06	2000	1.23	6.7	6.7	0	4.6 (12/07)	4.5 (12/06)
	2001	0.92	6.3	5.9	0	3.9 (01/05)	3.5 (01/04)
	2002	1.05	7.5	6.3	0	5.2 (10/22)	3.9 (12/03)
	2003	0.88	4.9	4.8	0	3.2 (01/24)	2.9 (12/03)
	2004	0.79	4.9	4.7	0	3.3 (12/03)	3.0 (12/16)
Medford	1997	2.13	12.3	8.4	0	7.3 (06/14)	5.7 (12/05)
Brophy Building (MBB)	1998	1.98	18.0	16.7	0	9.3 (06/20)	5.2 (01/16)
10 N Central	1999	1.82	18.7	18.5	1	10.6 (06/19)	5.7 (01/04)
DEQ # 10111 EPA # 410290009	2000	1.65	24.8	18.8	1	9.9 (06/17)	4.0 (01/07)
★Site discontinued 04/06	2001	1.53	9.9	8.3	0	4.3 (01/03)	4.0 (01/05)
	2002	1.45	8.5	8.3	0	4.4 (12/06)	4.1 (11/27)
	2003	1.41	8.8	6.1	0	4.1 (01/10)	4.0 (01/08)
	2004	1.27	7.5	6.1	0	3.2 (12/04)	3.1 (01/22)

*Parts per million

**Non-overlapping 8-hour averages which exceed
9 ppm when rounded to nearest whole ppm.

Carbon Monoxide 1C

APPENDIX 1C Carbon Monoxide Summary (ppm)

STATION LOCATION AND NUMBER	YEAR	Oct-Apr Average	1-HOUR AVERAGES			8-HOUR AVERAGES	
			MAXIMUM	2ND HIGH	TIMES** >9ppm	MAXIMUM (date)	2 ND HIGHEST (date)
Medford	1997	1.95	10.0	9.9	0	6.3 (01/09)	5.7 (01/11)
Rogue Valley Mall (MRV)	1998	1.68	8.2	8.0	0	5.5 (01/08)	5.3 (10/30)
1502 N Riverside	1999	1.71	11.3	10.4	0	6.8 (01/05)	6.1 (12/23)
DEQ # 10112 EPA # 410290018	2000	1.57	8.4	8.2	0	4.8 (12/26)	4.7 (12/28)
	2001	1.34	8.6	7.3	0	4.8 (01/05)	4.6 (11/09)
	2002	1.41	8.9	8.7	0	5.9 (11/27)	5.5 (11/20)
	2003	1.29	7.0	6.4	0	5.0 (01/19)	4.7 (01/08)
	2004	1.25	6.1	5.6	0	4.0 (12/19)	4.0 (01/12)
	2005	1.14	6.4	6.2	0	4.4 (12/16)	3.8 (11/18)
	2006	0.94	4.7	4.7	0	2.9 (01/06)	2.8 (01/25)
Portland	1997	1.37	7.8	7.8	0	4.8 (02/24)	4.7 (10/15)
4th & Alder (PFA)	1998	1.13	8.4	7.1	0	4.6 (03/11)	4.6 (09/30)
DEQ # 10137 EPA # 410510078	1999	1.23	11.6	9.8	0	7.5 (01/05)	5.5 (10/22)
*Site discontinued 04/02	2000	1.14	9.3	8.4	0	5.4 (11/17)	4.0 (04/11)
	2001	1.04	6.3	5.9	0	3.6 (08/09)	3.5 (05/31)
SE Lafayette (SEL)	1997	0.93	6.7	4.9	0	4.1 (03/29)	3.6 (10/28)
5824 SE Lafayette	1998	0.73	6.7	5.9	0	3.8 (12/09)	3.2 (12/16)
DEQ # 10139 EPA # 410510080	1999	0.70	7.4	7.2	0	5.3 (01/04)	4.4 (01/10)
	2000	0.59	6.3	5.0	0	4.1 (02/08)	3.8 (11/02)
	2001	0.65	3.9	3.9	0	3.3 (02/13)	3.2 (03/01)
	2002	0.68	6.1	4.4	0	3.1 (11/15)	2.9 (11/14)
	2003	0.65	3.7	3.6	0	3.4 (03/30)	3.1 (03/02)
	2004	0.64	4.9	4.7	0	4.0 (11/08)	3.7 (11/06)
	2005	0.60	3.2	3.1	0	2.6 (11/08)	2.5 (03/08)
	2006	0.47	3.8	3.4	0	2.9 (02/16)	2.7 (02/20)

*Parts per million

**Non-overlapping 8-hour averages which exceed
9 ppm when rounded to nearest whole ppm.

Carbon Monoxide 1C

APPENDIX 1C Carbon Monoxide Summary (ppm)

STATION LOCATION AND NUMBER	YEAR	Oct-Apr	1-HOUR AVERAGES		TIMES**	8-HOUR AVERAGES	
		Average	MAXIMUM	2ND HIGH	>9ppm	MAXIMUM (date)	2 ND HIGHEST (date)
Old Postal Bldg (PPB) 510 SW 3rd DEQ # 10141 EPA # 410510087	1997	1.68	9.6	7.8	0	5.9 (03/18)	4.8 (12/19)
	1998	1.60	8.1	8.0	0	4.7 (11/17)	4.6 (01/16)
	1999	1.54	12.6	10.4	0	7.3 (01/05)	6.2 (10/21)
	2000	1.43	6.3	6.0	0	3.7 (02/18)	3.6 (01/25)
	2001	1.21	5.4	4.9	0	3.4 (02/01)	3.4 (02/14)
	2002	1.09	7.1	5.1	0	3.4 (10/17)	3.1 (10/27)
	2003	1.10	5.1	5.0	0	3.4 (12/05)	3.3 (09/03)
	2004	0.97	14.4	8.6	0	3.8 (03/17)	3.2 (03/08)
	2005	0.82	4.5	4.1	0	2.7 (02/03)	2.3 (12/21)
	2006	0.85	10.6	9.4	0	3.6 (10/11)	3.4 (07/10)
82nd & Division (PED) DEQ# 10142 EPA# 410510243 *Site discontinued 04/06	1997	1.34	12.5	5.9	0	5.1 (12/31)	4.5 (11/08)
	1998	1.28	7.5	6.8	0	4.8 (10/22)	4.4 (12/16)
	1999	1.26	9.0	8.8	0	5.9 (01/10)	5.7 (01/04)
	2000	1.34	6.2	5.6	0	5.3 (11/12)	4.4 (01/06)
	2001	1.19	6.0	5.3	0	4.2 (03/01)	3.9 (02/28)
	2002	1.20	7.1	5.4	0	4.5 (11/15)	4.5 (11/14)
	2003	1.10	5.9	5.2	0	4.0 (02/04)	4.0 (03/29)
	2004	1.02	5.3	5.1	0	4.5 (11/08)	3.9 (11/06)
	2005	0.97	4.5	4.5	0	3.2 (02/03)	3.1 (03/09)
Salem (SML) Market & Lancaster 1685 Lancaster NE DEQ# 10131 EPA# 410470039 *AM and PM on same day but not same 8 hr average. *Site discontinued 04/06	1997	1.25	8.2	8.1	0	6.2 (11/02)	5.3 (01/15)
	1998	1.15	7.9	7.9	0	4.7 (10/26)	4.6 (10/05)
	1999	1.29	7.7	7.7	0	5.9 (01/05)	5.9 (12/23)
	2000	1.41	8.5	8.4	0	5.5 (11/16)	5.4 (01/18)
	2001	1.19	7.5	7.2	0	6.0 (11/09)	5.1 (11/10)
	2002	1.18	7.6	7.3	0	5.6 (11/26)	5.2 (11/03)
	2003	0.94	7.1	6.9	0	5.2 (01/07)	4.9 (01/07)*
	2004	1.00	5.6	5.4	0	4.2 (11/06)	3.8 (11/05)
2005	0.97	7.5	6.1	0	4.9 (11/06)	3.7 (11/23)	

*Parts per million

**Non-overlapping 8-hour averages which exceed
9 ppm when rounded to nearest whole ppm.

Carbon Monoxide 1C

APPENDIX 1D
Ozone Summary (ppm)

STATION LOCATION AND NUMBER	Year	SUMMER AVERAGE	1-HOUR MAXIMUM (date)	# OF DAYS >0.125 ppm	8-HOUR AVERAGE MAXIMUM	4TH HIGHEST 8-HOUR AVERAGE	# OF DAYS >0.085 ppm	3 YEAR AVG OF 4TH HIGH
Eugene Area Amazon Park (EAP) DEQ# 18524 EPA# 410390060	1997	0.020	0.077 (08/12)	0	0.063 (08/12)	0.056 (07/20)	0	0.066
	1998	0.022	0.094 (09/01)	0	0.081 (09/01)	0.073 (07/26)	0	0.071
	1999	0.020	0.071 (07/11)	0	0.062 (07/11)	0.056 (07/11)	0	0.061
	2000	0.018	0.056 (06/26)	0	0.050 (06/27)	0.047 (07/16)	0	0.058
	2001	0.022	0.090 (08/09)	0	0.074 (08/09)	0.061 (05/26)	0	0.054
	2002	0.023	0.092 (07/10)	0	0.070 (08/13)	0.067 (08/12)	0	0.058
	2003	0.023	0.088 (06/05)	0	0.076 (06/05)	0.071 (07/29)	0	0.066
	2004	0.021	0.082 (07/23)	0	0.069 (07/23)	0.064 (08/13)	0	0.067
	2005	0.020	0.092 (07/27)	0	0.077 (07/27)	0.064 (07/18)	0	0.066
	2006	0.024	0.098 (06/25)	0	0.084 (06/26)	0.076 (07/21)	0	0.068
Saginaw (SAG) 79980 Delight Valley School Road DEQ# 18315 EPA# 410391007	1997	0.020	0.077 (08/12)	0	0.069 (08/12)	0.059 (07/27)	0	0.070
	1998	0.022	0.121 (07/27)	0	0.094 (09/01)	0.078 (08/03)	2	0.075
	1999	0.022	0.086 (09/21)	0	0.071 (07/11)	0.068 (09/21)	0	0.068
	2000	0.022	0.084 (06/20)	0	0.072 (06/28)	0.064 (08/08)	0	0.070
	2001	0.021	0.086 (08/09)	0	0.075 (08/09)	0.066 (07/09)	0	0.066
	2002	0.022	0.079 (07/09)	0	0.074 (08/13)	0.065 (07/10)	0	0.065
	2003	0.025	0.098 (09/02)	0	0.084 (07/30)	0.079 (07/28)	0	0.070
	2004	0.020	0.085 (07/23)	0	0.076 (07/23)	0.068 (08/13)	0	0.070
	2005	0.020	0.099 (07/27)	0	0.084 (07/27)	0.071 (07/18)	0	0.072
	2006	0.022	0.099 (07/21)	0	0.074 (06/26)	0.070 (08/19)	0	0.069

*Parts per million

† The 8hour ozone standard became effective in 1998;

1-hour values are no longer evaluated for attainment purposes.

The 8 hr standard is the 3-year average of the 4th highest value.

APPENDIX 1D
Ozone Summary (ppm)

STATION LOCATION AND NUMBER	Year	SUMMER AVERAGE	1-HOUR MAXIMUM (date)	# OF DAYS >0.125 ppm	8-HOUR AVERAGE MAXIMUM	4TH HIGHEST 8-HOUR AVERAGE	# OF DAYS >0.085 ppm	3 YEAR AVG OF 4TH HIGH
Medford Area	1997	0.031	0.074 (08/13)	0	0.067 (05/19)	0.063 (07/24)	0	0.069†
Talent (TAL)	1998	0.035	0.126 (08/04)	1	0.093 (09/01)	0.085 (07/28)	5	0.074
7112 Rapp Lane	1999	0.035	0.078 (08/26)	0	0.066 (09/22)	0.065 (08/17)	0	0.071
DEQ# 10109 EPA# 410290201	2000	0.034	0.080 (08/03)	0	0.070 (08/03)	0.067 (06/29)	0	0.072
	2001	0.033	0.090 (07/03)	0	0.076 (07/03)	0.064 (09/22)	0	0.065
	2002	0.035	0.102 (08/14)	0	0.083 (08/15)	0.076 (07/31)	0	0.069
	2003	0.037	0.095 (06/06)	0	0.079 (09/02)	0.072 (06/04)	0	0.070
	2004	0.033	0.095 (08/13)	0	0.076 (08/13)	0.069 (08/11)	0	0.072
	2005	0.033	0.097 (07/27)	0	0.076 (07/27)	0.068 (08/04)	0	0.070
	2006	0.036	0.100 (06/26)	0	0.079 (07/20)	0.068 (07/26)	0	0.068
Salem Area	1997	0.024	0.082 (07/04)	0	0.067 (07/04)	0.061 (08/12)	0	0.072
Cascade Jr High (CJH)	1998	0.024	0.121 (07/27)	0	0.098 (07/27)	0.077 (08/28)	1	0.076
10226 Marion Rd. SE	1999	0.023	0.083 (09/21)	0	0.074 (07/09)	0.065 (07/10)	0	0.067
Turner	2000	0.020	0.075 (07/30)	0	0.064 (07/30)	0.059 (06/26)	0	0.067
DEQ# 10130 EPA# 410470004	2001	0.021	0.087 (08/09)	0	0.068 (07/03)	0.057 (08/12)	0	0.060
	2002	0.023	0.097 (07/10)	0	0.072 (07/12)	0.063 (08/13)	0	0.059
	2003	0.028	0.096 (09/04)	0	0.080 (09/03)	0.072 (07/30)	0	0.064
	2004	0.021	0.086 (08/11)	0	0.068 (08/11)	0.062 (07/24)	0	0.065
	2005	0.023	0.100 (08/04)	0	0.080 (08/04)	0.063 (05/27)	0	0.065
	2006	0.027	0.101 (07/21)	0	0.087 (07/21)	0.075 (06/25)	1	0.066

*Parts per million

† The 8hour ozone standard became effective in 1998;

1-hour values are no longer evaluated for attainment purposes.

The 8 hr standard is the 3-year average of the 4th highest value.

APPENDIX 1D
Ozone Summary (ppm)

STATION LOCATION AND NUMBER	Year	SUMMER AVERAGE	1-HOUR MAXIMUM (date)	# OF DAYS >0.125 ppm	8-HOUR AVERAGE MAXIMUM	4TH HIGHEST 8-HOUR AVERAGE	# OF DAYS >0.085 ppm	3 YEAR AVG OF 4TH HIGH
Portland Area	1997	0.025	0.085 (07/04)	0	0.074 (07/04)	0.062 (05/13)	0	0.078
Carus (SPR)	1998	0.026	0.137 (07/28)	3	0.116 (07/26)	0.081 (09/01)	3	0.080
13575 Spangler Road	1999	0.028	0.102 (07/10)	0	0.080 (07/09)	0.072 (07/28)	0	0.071
Canby	2000	0.025	0.086 (06/28)	0	0.071 (06/03)	0.065 (07/30)	0	0.072
DEQ# 10093 EPA# 410050004	2001	0.025	0.099 (08/09)	0	0.080 (08/09)	0.069 (06/20)	0	0.068
	2002	0.025	0.101 (07/22)	0	0.085 (07/10)	0.063 (07/21)	1	0.065
	2003	0.029	0.097 (07/29)	0	0.084 (09/03)	0.075 (07/28)	0	0.069
	2004	0.025	0.105 (07/24)	0	0.084 (07/24)	0.067 (08/11)	0	0.068
	2005	0.025	0.093 (08/04)	0	0.079 (08/04)	0.064 (07/27)	0	0.068
	2006	0.029	0.127 (07/21)	1	0.106 (07/21)	0.072 (06/26)	1	0.067
Milwaukie High Sch (MHS)	1996	0.019	0.145 (07/14)	2	0.120 (07/14)	0.085 (07/13)	4	0.069†
11300 SE 23rd	1997	0.016	0.101 (07/20)	0	0.082 (07/04)	0.054 (07/19)	0	0.068†
DEQ# 10095 EPA# 410052001	1998	0.018	0.124 (07/26)	0	0.100 (07/26)	0.061 (08/31)	1	0.066†
	1999	0.015	0.080 (06/14)	0	0.054 (07/09)	0.051 (05/23)	0	0.055†
Milwaukie (MSJ)	2000	0.018	0.085 (06/04)	0	0.068 (06/04)	0.056 (08/23)	0	0.056
St. Johns Church	2001	0.018	0.082 (08/10)	0	0.066 (08/10)	0.059 (08/12)	0	0.055
DEQ# 23306 EPA# 410052002	2002	0.020	0.116 (07/22)	0	0.082 (07/22)	0.063 (08/13)	0	0.059
	2003	0.021	0.091 (06/07)	0	0.068 (06/06)	0.061 (07/28)	0	0.061
	2004	0.017	0.094 (07/24)	0	0.077 (07/24)	0.054 (08/15)	0	0.059
	2005	0.016	0.083 (05/27)	0	0.063 (05/27)	0.050 (08/14)	0	0.055
	2006	0.022	0.091 (07/21)	0	0.071 (06/26)	0.068 (06/25)	0	0.057

*Parts per million

† The 8hour ozone standard became effective in 1998;

1-hour values are no longer evaluated for attainment purposes.

The 8 hr standard is the 3-year average of the 4th highest value.

APPENDIX 1D
Ozone Summary (ppm)

STATION LOCATION AND NUMBER	Year	SUMMER AVERAGE	1-HOUR MAXIMUM (date)	# OF DAYS >0.125 ppm	8-HOUR AVERAGE MAXIMUM	4TH HIGHEST 8-HOUR AVERAGE	# OF DAYS >0.085 ppm	3 YEAR AVG OF 4TH HIGH
SE Lafayette (SEL) 5824 SE Lafayette DEQ# 10139 EPA# 410510080 * Sampling started 07/03	2003	*	0.098 (07/10)	0	0.068 (07/29)	0.060 (08/14)	0	-
	2004	0.020	0.087 (08/09)	0	0.072 (07/24)	0.056 (08/15)	0	-
	2005	0.017	0.084 (05/27)	0	0.062 (05/27)	0.051 (07/21)	0	0.055
	2006	0.023	0.098 (07/21)	0	0.079 (07/21)	0.064 (06/25)	0	0.057
Sauvie Island (SIS) Social Security Beach DEQ# 14152 EPA# 410090004	1997	0.022	0.081 (07/04)	0	0.064 (07/04)	0.053 (05/11)	0	0.063
	1998	0.023	0.093 (07/26)	0	0.077 (07/27)	0.066 (08/28)	0	0.065
	1999	0.021	0.070 (07/09)	0	0.056 (07/09)	0.049 (09/22)	0	0.056
	2000	0.022	0.080 (06/04)	0	0.066 (06/27)	0.054 (06/03)	0	0.056
	2001	0.025	0.089 (08/10)	0	0.068 (08/10)	0.056 (05/10)	0	0.053
	2002	0.025	0.084 (07/10)	0	0.067 (08/13)	0.061 (06/12)	0	0.057
	2003	0.025	0.088 (09/03)	0	0.073 (09/03)	0.069 (07/28)	0	0.062
	2004	0.023	0.074 (07/24)	0	0.061 (07/23)	0.058 (07/22)	0	0.062
	2005	0.023	0.080 (08/04)	0	0.065 (08/04)	0.055 (08/14)	0	0.060
	2006	0.025	0.089 (07/21)	0	0.075 (07/21)	0.063 (06/25)	0	0.058
Mt. Hood Wilderness DEQ # 10094 EPA # 410050102	2005	0.034	0.085 (08/04)	0	0.077 (08/05)	0.063 (08/26)	0	-
Mt. Jefferson Wilderness DEQ # 10125 EPA # 410430103	2001	0.034	0.068 (08/10)	0	0.061 (07/04)	0.057 (08/14)	0	-
	2002	0.035	0.082 (07/21)	0	0.068 (08/15)	0.067 (08/14)	0	-

*Parts per million

† The 8hour ozone standard became effective in 1998;

1-hour values are no longer evaluated for attainment purposes.

The 8 hr standard is the 3-year average of the 4th highest value.

APPENDIX 1E
Oxides of Nitrogen Summary (ppm)

STATION LOCATION AND NUMBER	YEAR	ANNUAL ARITHMETIC MEAN	MAXIMUM 1 HOUR AVERAGE
NITROGEN DIOXIDE			
<u>Portland</u>			
SE Lafayette at 58th			
(SEL)			
DEQ # 10139	1997 ^a	-	0.056 (09/22)
EPA # 410510080	1998 ^a	-	0.091 (08/28)
	1999 ^a	-	0.074 (09/21)
	2000 ^a	-	0.067 (06/03)
	2001 ^a	-	0.052 (05/31)
	2002 ^a	-	0.046 (05/24)
	2003 ^a	-	0.061 (09/02)
	2004 ^a	-	0.040 (06/16)
	2005 ^a	-	0.057 (08/25)
	2006 ^a	-	0.060 (09/02)
 NITRIC OXIDE			
<u>Portland</u>			
SE Lafayette at 58th			
(SEL)			
DEQ # 10139	1997 ^a	-	0.227 (09/22)
EPA # 410510080	1998 ^a	-	0.201 (09/22)
	1999 ^a	-	0.173 (09/29)
	2000 ^a	-	0.232 (09/27)
	2001 ^a	-	0.165 (09/28)
	2002 ^a	-	0.165 (09/18)
	2003 ^a	-	0.116 (05/01)
	2004 ^a	-	0.134 (09/10)
	2005 ^a	-	0.125 (09/22)
	2006 ^a	-	0.212 (09/28)

*Parts per million
^a Summer data only

APPENDIX 1F
Sulfur Dioxide Summary (ppm)

STATION LOCATION AND NUMBER	YEAR	NUMBER of DAYS	3 HOUR AVER. MAXIMUM	24 HOUR AVER. MAXIMUM	ANNUAL AVERAGE
SULFUR DIOXIDE					
<u>Portland</u>					
SE Lafayette at 58th					
(SEL)					
DEQ # 10139	2005	317	0.018	0.007	*
EPA # 410510080	2006	363	0.016	0.008	0.0015
*Started 2/05					
<u>Toledo</u>					
Sewage Treatment Plant					
DEQ # 30937	2004	140	0.029 (01/06)*	0.012 (01/21)*	0.002
*Sampled from 1/1/05 to 5/19/05					
TOTAL REDUCED SULFUR					
<u>Toledo</u>					
Sewage Treatment Plant					
DEQ # 30937	2004	182	0.165 (07/23)*	0.054 (07/22)*	0.006
*Sampled from 7/3/05 to 12/31/05					

APPENDIX 1G Light Scattering (BScat)

STATION LOCATION AND NUMBER	YEAR	ANNUAL AVERAGE	1-HOUR AVERAGES MAXIMUM (date)	24-HOUR AVERAGE MAXIMUM (date)
<u>Albany</u> Calapooia School (ACS) 830 SE 24 th DEQ# 21886 EPA# 410430009 ★Started 05/04	2004	*	7.1 (11/20)	2.7 (11/11)
	2005	0.66	8.3 (12/13)	4.0 (12/11)
	2006	0.58	12.1 (05/20)	2.0 (02/06)
<u>Applegate Valley</u> Provolt Seed Orchard (PSO) DEQ# 18432 EPA# 410330011	1999	0.54	4.2 (10/04)	3.1 (10/22)
	2000	0.51	3.4 (12/01)	2.0 (11/19)
	2001	0.51	6.0 (11/11)	3.1 (11/11)
	2002	0.60	16.6 (08/05)	4.2 (08/05)
	2003	0.55	8.4 (07/22)	3.1 (09/28)
	2004	0.50	3.3 (10/28)	1.5 (11/10)
	2005	0.51	6.6 (08/26)	2.0 (08/26)
2006	0.47	5.3 (07/02)	1.5 (11/12)	
<u>Bend</u> Kenwood School (BKS) 701 NW Newport DEQ# 10097 EPA# 410170003 ★Discontinued 06/02	1997	0.64	9.3 (12/13)	2.3 (01/16)
	1998	0.52	6.4 (09/03)	1.8 (01/08)
	1999	0.48	4.9 (01/03)	1.4 (01/03)
	2000	0.52	4.9 (07/04)	2.3 (11/16)
	2001	0.46	4.6 (11/18)	3.5 (01/06)
	2002	*	5.0 (01/01)	1.6 (01/01)
<u>Pump Station (BPS)</u> 35 Portland Road DEQ# 24172 EPA# 410170120	2002	-	4.2 (11/03)	1.2 (11/27)
	2003	0.52	10.2 (06/29)	2.2 (08/24)
	2004	0.44	6.9 (04/11)	1.6 (11/10)
	2005	0.51	6.5 (10/18)	2.0 (11/08)
	2006	0.51	9.1 (07/28)	1.9 (09/03)
<u>Baker City (BCT)</u> US Forest Service Station DEQ# 10088 EPA# 410010003	1999	0.50	5.3 (12/22)	2.4 (12/25)
	2000	0.60	6.0 (01/02)	2.1 (08/17)
	2001	0.64	7.1 (02/19)	2.7 (02/03)
	2002	0.67	6.1 (07/13)	2.4 (12/04)
	2003	0.82	7.2 (11/09)	2.9 (11/09)
	2004	0.64	7.2 (11/09)	2.9 (11/09)
	2005	0.61	7.6 (10/19)	3.2 (10/25)
2006	0.59	5.4 (11/17)	2.4 (09/07)	

* Reported as Scattering Coefficient (βscat) per 10 kilometers

^a Seasonal data only

^b Forest Fire Smoke Impact

APPENDIX 1G Light Scattering (BScat)

STATION LOCATION AND NUMBER	YEAR	ANNUAL AVERAGE	1-HOUR AVERAGES MAXIMUM (date)	24-HOUR AVERAGE MAXIMUM (date)
Burns (BMS) Elks Lodge 118 N Broadway DEQ# 18423 EPA# na *Discontinued 05/97	1997	*	6.6 (01/28)	2.3 (01/18)
267 E Madison St. DEQ# 10105 EPA# 410250002 *Oct - March	1997*	-	7.4 (12/08)	2.5 (12/09)
	1998*	1.05	8.5 (11/18)	2.4 (12/09)
	1999*	1.02	11.4 (10/29)	2.7 (01/09)
	2000*	0.95	9.2 (01/01)	2.5 (01/05)
	2001*	0.81	8.1 (01/27)	2.6 (12/28)
	2002	0.70	10.4 (07/18)	4.2 (17/17)
	2003	0.57	8.7 (11/13)	2.1 (12/02)
	2004	0.55	21.9 (05/02)	3.9 (05/02)
	2005	0.66	6.9 (12/24)	2.6 (12/21)
	2006	0.69	14.3 (10/13)	4.0 (10/13)
Union High School DEQ# 10105 EPA# 410250002 *April - Sept	1999*	0.38	2.6 (07/08)	1.2 (07/08)
	2000*	0.34	5.1 (08/06)	1.4 (08/29)
	2001*	0.36	4.3 (08/14)	1.6 (08/14)
Canby Carus (SPR) 13575 Spangler Rd DEQ# 10093 EPA# 410050004	1997	0.45	6.3 (01/16)	1.9 (01/16)
	1998	0.48	4.8 (10/16)	1.9 (10/23)
	1999	0.41	4.3 (01/08)	0.9 (10/30)
	2000	0.48	3.4 (10/24)	1.7 (11/19)
	2001	0.47	5.3 (08/21)	1.9 (11/11)
	2002	0.45	4.1 (11/15)	2.3 (11/15)
	2003	0.47	3.6 (02/14)	1.6 (09/03)
	2004	0.48	5.3 (05/11)	2.5 (11/07)
* Jan through Oct only	2005*	-	2.1 (10/12)	1.7 (02/26)
	2006*	-	1.7 (09/01)	0.9 (09/02)

* Reported as Scattering Coefficient (β_{scat}) per 10 kilometers

^a Seasonal data only

^b Forest Fire Smoke Impact

APPENDIX 1G Light Scattering (BScat)

STATION LOCATION AND NUMBER	YEAR	ANNUAL AVERAGE	1-HOUR AVERAGES MAXIMUM (date)	24-HOUR AVERAGE MAXIMUM (date)
Cave Junction-Illinois Valley Illinois Valley Airport (IVA) DEQ# 21068 EPA# 410330010	1999	0.50	5.2 (10/23)	3.7 (10/22)
	2000	0.43	12.7 (11/01)	3.8 (11/01)
	2001	0.44	3.8 (11/05)	1.7 (11/11)
	2002	0.78	39.7 (08/03)	1.8 (12/01)
	2003	0.45	7.3 (09/27)	3.3 (09/28)
	2004	0.45	9.9 (11/05)	2.1 (11/23)
	2005	0.49	5.2 (12/11)	2.2 (12/11)
	2006	0.44	5.4 (12/06)	2.3 (12/06)
Corvallis (CCB) Intermediate School DEQ# 20478 EPA# 410030013	2003	-	5.6 (09/02)	2.5 (09/03)
	2004	0.43	7.3 (07/04)	2.1 (11/11)
	2005	0.49	5.2 (12/11)	2.2 (12/11)
	2006	0.47	6.2 (08/25)	1.8 (12/05)
Crater Lake (CLM) Maintenance Lodge DEQ# 20478 EPA# 410351002 * Summer only	2006	*	36.2 (08/21)	8.4 (08/23)
Enterprise (EFS) Forest Service Station DEQ# 10162 EPA# 410630001 *Started 03/99	1999	*	3.2 (11/05)	1.6 (12/04)
	2000	0.55	12.7 (08/29)	4.3 (08/29)
	2001	0.51	4.5 (02/18)	2.1 (01/24)
	2002	0.53	5.1 (09/23)	1.6 (10/26)
	2003	0.48	3.5 (01/05)	1.5 (11/15)
	2004	0.49	4.6 (01/14)	1.7 (01/14)
	2005	0.51	4.4 (12/12)	2.2 (12/12)
	2006	0.50	6.9 (10/30)	2.9 (09/08)
Eugene Lane Comm College (LCC) 1059 Willamette DEQ# 18320 EPA# 410390013	1997	0.62	5.4 (12/11)	2.3 (10/20)
	1998	0.44	2.3 (12/16)	1.6 (12/23)
	1999	0.45	2.8 (01/05)	1.4 (12/30)
	2000	0.49	3.2 (11/18)	2.0 (11/19)
	2001	0.47	2.9 (11/11)	2.0 (11/11)
	2002	0.47	5.8 (08/19)	1.5 (11/29)
	2003	0.48	2.9 (09/02)	1.5 (09/03)
	2004	0.45	2.2 (02/11)	1.8 (11/07)
	2005	0.45	2.3 (01/02)	1.4 (01/16)
2006	0.43	3.0 (12/03)	1.6 (12/08)	

* Reported as Scattering Coefficient (βscat) per 10 kilometers

^a Seasonal data only

^b Forest Fire Smoke Impact

APPENDIX 1G Light Scattering (BScat)

STATION LOCATION AND NUMBER	YEAR	ANNUAL AVERAGE	1-HOUR AVERAGES MAXIMUM (date)	24-HOUR AVERAGE MAXIMUM (date)
Amazon Park (EAP) 499 E 29 th DEQ# 18524 EPA # 410390060	2001	0.55	4.4 (11/08)	2.2 (11/10)
	2002	0.56	5.8 (08/19)	2.3 (11/28)
	2003	0.51	4.3 (01/12)	1.8 (09/03)
	2004	0.49	3.2 (01/12)	2.1 (11/07)
	2005	0.55	6.4 (07/04)	2.6 (12/11)
	2006	0.49	4.2 (01/25)	1.9 (12/03)
Grants Pass 11th & K St DEQ# 10115 EPA# 410330008	1997 ^a	-	8.1 (01/15)	4.5 (01/15)
	1998 ^a	-	4.4 (01/30)	1.6 (03/06)
Sewage Treatment Plant (GPS) 1200 SW Greenwood DEQ# 18508 EPA# 410330107 ★Discontinued - 7/02	1999	0.72	7.8 (07/04)	2.4 (10/22)
	2000	0.71	6.6 (11/21)	3.5 (11/12)
	2001	0.75	10.3 (11/11)	6.7 (11/11)
	2002	*	8.7 (02/06)	3.3 (02/06)
Parkside Sch (GPP) DEQ# 28859 EPA # 410330114 ★Started 7/02, * GPS&GPP avg together	2002 ^{fb}	0.76*	11.6 (07/31)	3.3 (11/14)
	2003	0.70	10.6 (07/22)	5.3 (09/28)
	2004	0.55	4.7 (04/11)	2.6 (11/10)
	2005	0.61	4.7 (01/05)	1.9 (02/12)
	2006	0.71	6.8 (11/14)	2.5 (11/19)
John Day Blue Mtn. School (JBM) DEQ# 10118 EPA# 410350004	2003			
	2004	0.64	6.7 (02/22)	2.8 (12/22)
	2005	0.60	9.5 (01/12)	2.5 (12/13)
	2006	0.59	8.6 (11/28)	2.1 (12/17)
Klamath Falls Petersen School (KFP) 4856 Clinton St DEQ# 10118 EPA# 410350004	1997 ^a	-	7.6 (01/14)	3.4 (01/07)
	1998 ^a	-	8.5 (12/22)	3.0 (12/23)
	1999	0.73	2.9 (01/10)	2.6 (01/09)
	2000	0.60	7.4 (11/17)	2.9 (12/07)
	2001	0.51	6.5 (12/12)	2.3 (12/12)
	2002 ^{fb}	1.20	32.8 (08/01)	13.4 (08/02)
	2003	0.64	7.3 (1/19)	2.9 (11/23)
	2004	0.53	5.5 (01/03)	4.1 (12/03)
	2005	0.72	11.1 (07/29)	3.1 (01/12)
	2006	0.78	9.3 (12/02)	3.6 (10/28)

* Reported as Scattering Coefficient (βscat) per 10 kilometers

^a Seasonal data only

^{fb} Forest Fire Smoke Impact

APPENDIX 1G Light Scattering (BScat)

STATION LOCATION AND NUMBER	YEAR	ANNUAL AVERAGE	1-HOUR AVERAGES MAXIMUM (date)	24-HOUR AVERAGE MAXIMUM (date)
La Grande Willow St (LWS) 1601 N Willow DEQ# 10148 EPA# 410610006	1997	0.68	8.0 (04/07)	2.4 (12/28)
	1998	0.65	7.7 (10/21)	2.3 (10/21)
	1999	*	6.3 (03/18)	2.3 (01/04)
3rd and I Street (LTI) DEQ# 21638 EPA# 410610117 * Moved from LWS to LTI 9/99	1999	-	3.0 (12/31)	1.8 (12/25)
	2000	0.52	14.5 (08/16)	2.7 (08/16)
	2001	0.50	3.4 (01/30)	2.1 (01/06)
	2002	0.53	5.5 (07/26)	2.7 (12/05)
	2003	0.52	3.6 (11/05)	2.1 (11/06)
Ash Street (LAS) DEQ# 26448 EPA# 410610119 * Moved from LTI to LAS 12/03 * Prescribed burn near La Grande	2003	-	3.3 (12/10)	1.3 (12/11)
	2004	0.51	4.1 (10/26)	2.4 (11/10)
	2005	0.62	14.0 (08/12)	3.5 (08/12)
	2006	0.69	19.0 (09/27)*	6.7 (09/27)*
Lakeview (LWS) Center & M St (LCM) DEQ# 10123 EPA# 410370001	1997	0.66	8.2 (12/29)	3.8 (12/29)
	1998 ^a	-	8.7 (01/23)	2.9 (12/16)
	1999	0.69	8.0 (12/23)	3.3 (12/23)
	2000	0.73	7.9 (12/30)	3.3 (12/04)
	2001	0.53	6.1 (12/08)	2.4 (12/08)
	2002 ^b	0.73	14.0 (08/02)	6.1 (07/31)
	2003	0.51	8.9 (12/18)	2.5 (12/18)
	2004	0.47	7.1 (01/17)	2.3 (01/12)
	2005	0.62	12.7 (12/15)	3.8 (12/15)
2006	0.56	8.2 (12/06)	3.3 (12/05)	

* Reported as Scattering Coefficient (β_{scat}) per 10 kilometers

^a Seasonal data only

^b Forest Fire Smoke Impact

APPENDIX 1G Light Scattering (BScat)

STATION LOCATION AND NUMBER	YEAR	ANNUAL AVERAGE	1-HOUR AVERAGES MAXIMUM (date)	24-HOUR AVERAGE MAXIMUM (date)
Medford				
Brophy Bldg (MBR)	1997	0.78	6.4 (01/10)	3.9 (01/09)
10 N Central	1998	0.69	3.7 (03/07)	2.5 (12/25)
DEQ # 10111 EPA # 410290009	1999	*	4.7 (01/05)	2.6 (01/05)
Grant & Belmont (MGB)	1999	-	1.3 (09/03)	0.7 (09/03)
DEQ # 20448 EPA # 410290133	2000	0.82	7.3 (07/12)	3.5 (12/09)
* Moved from MBR to MGB 10/99	2001	0.75	5.4 (01/07)	2.7 (01/06)
	2002 ^{fb}	1.01	29.7 (07/31)	5.1 (07/29)
	2003	0.77	12.7 (07/22)	2.8 (01/18)
	2004	0.62	4.1 (07/04)	2.7 (12/04)
	2005	0.72	6.2 (11/22)	3.5 (11/23)
	2006	0.68	5.2 (12/23)	3.0 (12/07)
Mt. Hood				
Multopor (MUL)	2006	*	26.5 (08/18)	4.0 (08/18)
DEQ # 10094 EPA # 410050102				
*Summer Only				
Mt. Jefferson				
Big Lake (BIG)	2006	*	11.7 (7/31)	3.7 (07/31)
DEQ # 10125 EPA # 410430103				
*Summer Only				
Oakridge	1997	0.94	13.1 (01/16)	5.5 (01/16)
Willamette Center (OAK)	1998	0.76	10.2 (03/07)	3.7 (02/07)
Trailer Park	1999	0.70	8.0 (01/30)	3.2 (12/27)
DEQ # 18733 EPA # 410392013	2000	0.71	8.0 (01/31)	3.2 (01/29)
	2001	0.78	8.9 (01/06)	4.4 (01/07)
	2002	0.81	10.7 (02/15)	3.7 (11/01)
	2003	0.71	8.4 (07/25)	3.2 (01/11)
	2004	0.58	6.9 (01/13)	3.1 (02/12)
	2005	0.73	7.3 (02/16)	2.9 (12/15)
	2006	0.60	5.9 (02/11)	2.4 (12/08)

* Reported as Scattering Coefficient (β_{scat}) per 10 kilometers

^a Seasonal data only

^{fb} Forest Fire Smoke Impact

APPENDIX 1G Light Scattering (BScat)

STATION LOCATION AND NUMBER	YEAR	ANNUAL	1-HOUR AVERAGES	24-HOUR AVERAGE
		AVERAGE	MAXIMUM (date)	MAXIMUM (date)
Pendleton McKay Creek 3745 SW Marshall DEQ # 10146 EPA # 410590121	1997	0.81	8.3 (01/15)	3.5 (01/14)
	1998 ^a	-	11.1 (01/23)	3.3 (01/13)
	1999	0.65	5.8 (12/31)	1.9 (01/02)
	2000	0.82	5.5 (01/01)	2.4 (11/19)
	2001	0.92	5.5 (11/04)	2.6 (11/27)
	2002	0.92	5.8 (02/06)	2.4 (11/04)
	2003	0.67	5.4 (11/09)	2.6 (11/09)
	2004	0.57	9.7 (07/04)	3.5 (11/10)
	2005	0.64	8.8 (07/04)	3.1 (12/11)
	2006	0.58	7.2 (07/04)	1.9 (09/03)
Portland Central Fire Station (CFS) 55 SW Ash DEQ # 10136 EPA # 410510015	1997	0.63	3.0 (05/30)	1.8 (10/22)
	1998	0.61	4.7 (10/23)	3.0 (10/23)
	1999	0.56	6.3 (01/05)	4.0 (01/05)
	2000	0.60	3.1 (11/11)	2.1 (11/12)
	2001	0.53	2.6 (02/01)	1.5 (12/07)
Beaverton Highland Park (BHP) 3745 SW Marshall Place DEQ# 20481 EPA # 410670111 ★Started 4/04	2004	*	6.1 (11/07)	4.1 (11/07)
	2005	0.61	7.5 (07/04)	2.7 (12/13)
	2006	0.56	5.6 (07/04)	2.8 (12/18)
Hillsboro (HHF) Hare Field – 1149 NE Grant St. DEQ# 21639 EPA # 410670004	2005	0.72	7.9 (12/14)	3.5 (12/12)
	2006	0.64	8.3 (02/20)	3.4 (02/20)
N.E.Portland (PNR) 24 N Emerson (N. Roselawn) DEQ# 21889 EPA# 410510246	2002	0.54	3.7 (07/04)	1.8 (11/15)
	2003	0.49	4.2 (08/15)	1.3 (10/01)
	2004	0.56	3.4 (07/04)	2.3 (11/07)
	2005	0.62	4.2 (07/04)	2.4 (02/03)
	2006	0.52	4.7 (12/17)	2.4 (12/18)

* Reported as Scattering Coefficient (βscat) per 10 kilometers

^a Seasonal data only

^b Forest Fire Smoke Impact

APPENDIX 1G Light Scattering (BScat)

STATION LOCATION AND NUMBER	YEAR	ANNUAL	1-HOUR AVERAGES	24-HOUR AVERAGE
		AVERAGE	MAXIMUM (date)	MAXIMUM (date)
SE Lafayette (SEL) 5824 SE Lafayette DEQ # 10139 EPA # 410510080	1997 ^a	-	7.1 (11/16)	2.8 (10/22)
	1998	0.67	7.6 (01/03)	2.6 (10/23)
	1999	0.62	7.3 (01/24)	3.8 (01/05)
	2000	0.64	9.8 (07/04)	3.3 (11/12)
	2001	0.58	5.1 (02/13)	2.0 (12/07)
	2002	0.59	6.4 (11/15)	2.6 (11/15)
	2003	0.57	4.1 (11/03)	1.7 (11/03)
	2004	0.56	4.3 (10/24)	1.4 (10/28)
	2005	0.60	5.1 (01/23)	2.1 (01/24)
	2006	0.57	6.4 (10/28)	2.5 (02/20)
Sauvie Island (SIS) Social Security Beach DEQ # 14152 EPA # 410090004	1997 ^a	-	2.6 (09/25)	1.4 (09/23)
	1998 ^a	-	2.6 (05/01)	1.2 (07/27)
	1999 ^a	-	1.9 (09/06)	1.2 (08/06)
	2000 ^a	-	1.9 (08/04)	1.0 (08/04)
	2001 ^a	-	1.8 (08/12)	1.2 (08/12)
	2002 ^a	-	1.2 (07/23)	0.9 (08/13)
	2003 ^a	-	1.6 (09/30)	1.0 (09/03)
	2004 [*]	-	3.5 (09/23)	1.8 (11/22)
	*May Thru Dec monitoring only 2005 ^{**}	-	2.4 (12/13)	1.8 (12/12)
	**No Feb thru Apr monitoring 2006	0.48	2.7 (12/18)	1.5 (02/21)

* Reported as Scattering Coefficient (β_{scat}) per 10 kilometers

^a Seasonal data only

^b Forest Fire Smoke Impact

APPENDIX 1G Light Scattering (BScat)

STATION LOCATION AND NUMBER	YEAR	ANNUAL AVERAGE	1-HOUR AVERAGES MAXIMUM (date)	24-HOUR AVERAGE MAXIMUM (date)
Provolt Provolt Seed Orchard DEQ # 18432 EPA # 410330011	1999	0.54	4.2 (10/04)	3.1 (10/22)
	2000	0.51	3.4 (12/01)	2.0 (11/19)
	2001	0.51	3.3 (11/11)	3.1 (11/11)
	2002	0.60	16.6 (08/05)	4.2 (08/05)
	2003	0.55	8.4 (07/22)	3.1 (09/28)
	2004	0.50	3.3 (10/28)	1.5 (11/10)
	2005	0.51	6.6 (08/26)	2.0 (08/26)
2006	0.47	5.3 (07/02)	1.5 (11/12)	
Riddle 1 ST and Main St. DEQ # 32590 EPA # 410190003 ★Operated 10/05 to 04/06	2005	*	3.4 (12/16)	1.8 (11/09)
	2006	*	3.8 (01/05)	1.6 (01/05)
Roseburg (RGV) 777 NW Garden Valley Blvd. DEQ # 32529 EPA # 410190002 ★Started 8/05	2005	*	3.8 (09/26)	1.5 (11/09)
	2006	0.55	4.4 (01/05)	2.1 (12/08)
Ruch (RAR) Fire Station DEQ # 21067 EPA # ★Started 6/99, Discontinued 7/05	1999	*	5.0 (11/16)	2.6 (10/04)
	2000	0.47	4.7 (12/14)	1.7 (11/17)
	2001	0.47	9.1 (08/12)	2.0 (08/12)
	2002	0.65	15.7 (08/05)	4.3 (08/05)
	2003	0.54	6.8 (02/24)	2.1 (01/16)
	2004	0.50	6.3 (03/17)	2.7 (03/17)
2005	*	1.7 (02/03)	5.4 (02/03)	
Salem Market/Lancaster (SML) 1685 Lancaster NE DEQ # 10131 EPA # 410470039 ★Discontinued 05/02	1997	0.67	7.0 (01/15)	3.1 (01/15)
	1998	0.57	4.1 (03/23)	1.9 (12/16)
	1999	0.60	6.6 (01/05)	3.4 (01/05)
	2000	0.72	8.5 (11/18)	4.0 (11/16)
	2001	0.61	7.4 (11/08)	3.4 (11/10)
	2002	*	5.6 (02/04)	2.3 (02/17)
General Hospital (SGH) 867 Medical Center Dr DEQ# 20480 EPA# 410470040 *Started 05/02, Ended 11/04	2002	0.62*	4.3 (11/06)	2.7 (11/06)
	2003	0.54	3.3 (01/07)	1.8 (01/21)
	2004	0.52	3.1 (01/09)	2.5 (11/07)
State Hospital (SSH) 23 rd NE and D St. DEQ# 20480 EPA# 410470041	2005	0.59	5.7 (12/11)	2.8 (10/27)
	2006	0.53	5.1 (12/03)	2.1 (12/08)

* Reported as Scattering Coefficient (βscat) per 10 kilometers

^a Seasonal data only

^b Forest Fire Smoke Impact

APPENDIX 1G Light Scattering (BScat)

STATION LOCATION AND NUMBER	YEAR	ANNUAL AVERAGE	1-HOUR AVERAGES MAXIMUM (date)	24-HOUR AVERAGE MAXIMUM (date)
Shady Cove 37 School House Lane DEQ# 25161 EPA#410290019 ★ Started 3/01 *Jan thru March data invalid	2001	★	3.6 (08/14)	1.0 (12/10)
	2002	0.94	31.1 (08/01)	14.4 (08/01)
	2003	0.47	4.9 (11/19)	2.3 (11/19)
	2004	0.55	15.9 (08/21)	4.3 (08/21)
	2005*	-	4.5 (11/04)	1.2 (11/05)
	2006	0.47	5.3 (02/25)	2.3 (11/10)
Springfield City Hall 255 North 5th St DEQ # 18538 EPA # 410391009	1997	0.55	4.3 (01/15)	2.1 (01/15)
	1998	0.52	3.3 (12/23)	2.1 (12/23)
	1999	0.51	4.4 (01/05)	1.6 (10/22)
	2000	0.53	3.5 (11/18)	2.0 (11/20)
	2001	0.51	2.8 (11/11)	2.1 (11/11)
	2002	0.51	3.5 (08/19)	1.5 (11/29)
	2003	0.49	3.1 (09/02)	1.7 (09/03)
	2004	0.47	4.1 (09/09)	1.5 (11/10)
	2005	0.49	3.4 (12/09)	1.5 (01/16)
	2006	0.45	2.6 (12/16)	1.5 (12/08)
The Dalles Cherry Heights (TDC) 1112 Cherry Heights Rd DEQ# 21252 EPA # 410650007 ★ Started 6/04	2004	★	3.8 (11/07)	2.8 (11/10)
	2005	0.53	3.0 (01/18)	2.3 (01/18)
	2006	0.52	5.9 (11/03)	3.9 (11/04)
White City Post Office (WPO) 751 Crater Lk Hwy DEQ# 10107 EPA# 410294001	2005	0.67	5.0 (11/22)	2.0 (11/21)
	2006	0.62	5.1 (11/10)	3.1 (11/10)

* Reported as Scattering Coefficient (βscat) per 10 kilometers

^a Seasonal data only

^b Forest Fire Smoke Impact

APPENDIX 1H
Air Toxics (ug/m³)

Pollutant (ug/m ³)	City/Site	Year	Acetaldehyde		Formaldehyde		Benzene		1,3-butadiene		Perchloro ethylene		Arsenic 1999, 2000 – PM _{2.5} 2001-2004 – TSP		Chromium (VI) TSP		Lead 1999, 2000 – PM _{2.5} 2001-2004 – TSP		Nickel 1999, 2000 – PM _{2.5} 2001-2004 – TSP		
			Samples	Annual Average	Samples	Annual Average	Samples	Annual Average	Samples	Annual Average	Samples	Annual Average	Samples	Annual Average	Samples	Annual Average	Samples	Annual Average	Samples	Annual Average	
Portland																					
NE Portland (PNR)	99-00	51	2.5	51	3.2	48	2.1	29	<0.2	49	<0.7	56	<0.0025	--	--	56	<i>0.0194</i>	53	<0.0016		
N Roselawn	2001	60	2.1	60	2.6	59	1.5	59	<0.2	59	<0.7	57	<0.001	--	--	53	0.0098	57	<0.0008		
24 N Emerson	2002	62	1.9	62	2.8	61	1.6	61	<0.2	61	<0.7	61	<0.001	61	0.00026	51	0.0124	61	>0.0008		
DEQ# 21889	2003	57	2.0	57	4.2	58	1.5	58	<0.2	58	<0.7	54	<0.001	--	--	48	0.0093	54	>0.0008		
EPA# 410510246	2004	59	1.7	59	2.9	58	1.6	59	<0.2	59	<0.5	56	0.0018	--	--	56	0.0088	56	<i>0.0021</i>		
	2005	55	1.5	58	2.2	55	*	*	<0.2	59	<0.7	59	0.0017	49	>0.000042	59	0.0012	59	>0.0008		
	2006	57	1.5	54	1.9	56	1.2	61	<0.2	61	<0.7	35	0.0014	--	--	45	0.0068	61	<0.001		
NW Portland (PNW)	99-00	59	2.1	59	2.4	57	1.8	30	<0.2	55	2.0	27	<0.0022	--	--	26	<i>0.0064</i>	26	<i>0.0040</i>		
Forest Heights P.O.	2001	56	1.9	56	2.8	58	1.5	58	<0.2	58	2.3	--	--	--	--	--	--	--	--		
1706 NW 24 th	2003	28	0.7	28	1.9	26	1.3	26	<0.2	26	2.6	--	--	28	0.00018	--	--	--	--		
DEQ# 18399	2004	43	1.7	52	2.7	58	1.5	58	<0.2	58	<0.5	44	0.0011	--	--	44	0.0070	44	<i>0.0037</i>		
EPA# 410510244	2005	55	1.7	56	2.4	54	*	*	<0.2	54	<0.7	59	0.0009	49	>0.000042	59	0.0066	59	0.0034		
SE Portland (SEL)	99-00	54	2.0	54	2.7	51	2.6	27	<0.2	51	<0.7	36	<0.002	--	--	36	<0.005	36	<0.005		
5824 SE Lafayette	2003	23	1.3	23	2.3	23	<i>1.3</i>	23	<0.2	23	<0.5	--	--	--	--	--	--	--	--		
DEQ# 10139	2004	56	1.4	56	2.4	52	1.5	52	<0.2	52	<0.5	50	0.0016	--	--	50	0.006	50	0.001		
EPA# 410510080	2005	55	1.6	57	2.2	54	1.6	56	<0.2	56	<0.7	60	0.0013	46	>0.000042	60	0.0057	60	0.001		

1. Values in italics when some but not all measurements are less than the minimum detection level of the analysis method.

2. Bolded values have >75% data completion. Non-bolded values have <75% data completion.

3. All measurements of carbon tetrachloride, chloroform, ethylene dibromide and ethylene dichloride values were below the minimum detection limit.

Acrolein, beryllium, and Diesel Particulate Matter are not available.

* Not enough valid days for average

APPENDIX 1H
Air Toxics (ug/m³)

Pollutant (ug/m ³)	City/Site	Year	Acetaldehyde		Formaldehyde		Benzene		1,3-butadiene		Perchloro ethylene		Arsenic 1999, 2000 – PM _{2.5} 2001-2004 – TSP		Chromium (VI) TSP		Lead 1999, 2000 – PM _{2.5} 2001-2004 – TSP		Nickel 1999, 2000 – PM _{2.5} 2001-2004 – TSP	
			Samples	Annual Average	Samples	Annual Average	Samples	Annual Average	Samples	Annual Average	Samples	Annual Average	Samples	Annual Average	Samples	Annual Average	Samples	Annual Average	Samples	Annual Average
Beaverton (BHP) 3745 SW Marshall Place DEQ# 20481 EPA# 410670111	99-00 2005	56 48	1.9 1.3	56 52	1.9 1.6	53 48	1.4 *	30 *	<0.2 >0.2	53 49	<0.7 >0.7	25 55	0.0016 0.0011	-- 49	-- >0.000042	25 55	0.0035 0.0025	25 55	0.0013 >0.0001	
SW Portland (PKC) SW Kelly & Curry DEQ# 31924 EPA# 410510030	2005	49	1.5	52	2.2	48	*	*	<0.2	49	<0.7	57	0.0011	50	>0.000042	57	0.0059	57	>0.0001	
Vancouver (VKT) Kauffman & W 27th DEQ# 31939 EPA# 530110030	2005	52	1.5	53	2.0	48	*	*	<0.2	48	<0.7	55	0.0011	49	<0.000042	55	0.004	55	<0.0001	
SW Portland (CFS) Central Fire Stat. 55 SW Ash DEQ# 10136 EPA# 410510015	99-00	58	2.3	58	2.8	55	1.85	28	<0.2	55	<0.7	12	>0.0021	--	--	12	0.0064	12	0.0022	

1. Values in italics when some but not all measurements are less than the minimum detection level of the analysis method.
 2. Bolded values have >75% data completion. Non-bolded values have <75% data completion.
 3. All measurements of carbon tetrachloride, chloroform, ethylene dibromide and ethylene dichloride values were below the minimum detection limit. Acrolein, beryllium, and Diesel Particulate Matter are not available.
- * Not enough valid days for average

APPENDIX 1H
Air Toxics (ug/m³)

Pollutant (ug/m ³)	City/Site	Year	Acetaldehyde		Formaldehyde		Benzene		1,3-butadiene		Perchloro ethylene		Arsenic 1999, 2000 – PM _{2.5} 2001-2006 – TSP		Chromium (VI) TSP		Lead 1999, 2000 – PM _{2.5} 2001-2006 – TSP		Nickel 1999, 2000 – PM _{2.5} 2001-2006 – TSP	
			Samples	Annual Average	Samples	Annual Average	Samples	Annual Average	Samples	Annual Average	Samples	Annual Average	Samples	Annual Average	Samples	Annual Average	Samples	Annual Average	Samples	Annual Average
Eugene Amazon Park (EAP) DEQ# 18524 EPA# 410390060	2002	60	1.6	60	2.5	58	1.6	58	<0.2	58	<0.7	58	<0.002	--	--	58	>0.0036	58	>0.002	
	2003	52	1.4	52	4.3	45	1.1	45	<0.2	45	<0.7	53	<0.002	--	--	53	0.0037	53	>0.0018	
	2004	57	1.3	57	2.8	57	1.4	57	<0.2	57	<0.5	44	0.0007	--	--	44	0.0026	44	>0.0004	
	2005	27	1.5	28	1.9	28	1.6	28	<0.2	28	<0.7	31	0.0007	--	--	31	0.0022	31	>0.0002	
	2006	27	1.4	27	1.8	28	1.0	28	<0.2	28	<0.7	30	0.0008	--	--	30	>0.001	30	>0.001	
La Grande Ash St. (LAS) DEQ# 26448 EPA# 410610119	2004	51	1.7	51	3.2	50	0.6	50	<0.2	50	<0.5	47	0.00033	--	--	47	0.0015	47	>0.0004	
	2005	52	1.8	56	2.6	55	<0.3	55	<0.2	55	<0.7	60	0.00033	--	--	60	0.0015	60	<0.0001	
	2006	53	1.8	52	2.7	57	<0.3	58	<0.2	58	<0.7	58	0.00023	50	<0.00004	58	0.0030	58	<0.001	
ODEQ Benchmarks			0.45		3.0		0.13		0.03				0.0002		0.00008		0.5		0.002	
EPA Benchmarks			0.45		0.077		0.13		0.033		0.17		0.00023		0.000083		0.083		0.0021	

1. Values in italics when some but not all measurements are less than the minimum detection level of the analysis method.
 2. Bolded values have >75% data completion. Non-bolded values have <75% data completion.
 3. All measurements of carbon tetrachloride, chloroform, ethylene dibromide and ethylene dichloride values were below the minimum detection limit. Acrolein, beryllium, and Diesel Particulate Matter are not available.
- * Not enough valid days for average

APPENDIX 11

Frequency of Visibility Impairment
9 AM - 9 PM, July 1 - September 15 (Visibility Protection Period)

IMPAIRMENT (From man made or natural sources)		PERCEPTIBLE 0.60-0.79 Bscat		MODERATE 0.80-1.29 Bscat		HEAVY >1.30 Bscat		All >0.60Bscat
Site	Year	Hours	% ¹	Hours	% ¹	Hours	% ¹	% ¹
Mt. Hood Wilderness Multopor DEQ# 10094 EPA# 410050102	1997	56	5	17	2	8	1	7
	1998	183	19	72	8	7	1	28
	1999	97	9	28	3	5	1	11
	2000	52	3	22	1	7	0	4
	2001	92	16	15	3	4	1	19
	2002	30	3	10	1	1	0	5
	2003	52	5	53	5	31	3	14
	2004	39	4	28	3	3	0	8
	2005	2	0	1	0	0	0	0
2006	72	6	58	5	32	3	14	
Mt. Jefferson Big Lake DEQ# 10125 EPA# 410430103 <i>Monitor evacuated due to fire.³</i>	1997	20	2	6	1	1	0	3
	1998	110	13	34	4	8	1	18
	1999	133	9	105	7	25	2	2
	2000	116	6	30	2	3	0	5
	2001	62	7	38	4	8	1	12
	2002 ²	92	10	76	8	50	5	23
	2003 ³	46	8	19	3	31	5	16
	2004	100	11	43	5	13	1	17
	2005	59	6	32	3	8	1	10
2006	136	14	139	14	83	8	36	
Crater Lake National Park Rim Village DEQ# 10117 EPA# 410351001	1997	3	0	0	0	0	0	0
	1998	24	2	8	1	1	0	3
	1999	131	7	27	2	21	1	10
	2000	8	0	6	0	2	0	1
	2001	46	6	24	3	7	1	9
	2002 ²	55	6	65	7	374	39	51
	2003	41	5	19	2	24	3	10
	2004	31	4	23	3	16	2	8
	2005	12	1	10	1	1	0	3
2006	110	12	70	8	142	15	35	
Eagle Cap Wilderness Mt. Harris DEQ# 30722 EPA# 410610118 Started 8/7/03	2003	63	12	95	18	27	5	36
	2004	44	5	41	4	1	0	9
	2005	29	3	21	2	11	1	6

1 Percent of impaired hours

2 Forest Fire Smoke Impact

3 B&B Complex fire forced the removal of the monitor on 8/22 to end of season.

Visibility Impairment 1 I

Appendix 2

Oregon Air Quality Surveillance Network

The following tables and sampling location maps describe the Air Quality Surveillance Networks operational during 2004. Appendix 2A lists all of the ambient air quality sampling locations in the Oregon Surveillance Network. Map 1 shows all the Oregon Ambient Air Monitoring Locations, Washington's Gorge study sites, and EPA visibility sites (IMPROVE). Map 2 shows monitoring in the Portland Metro Area.

The following abbreviations are used in the network location tables and maps:

SO ₂	Sulfur Dioxide	CO	Carbon Monoxide
NO _x	Oxides of Nitrogen	O ₃	Ozone
Neph	Integrating Nephelometer (continuous particulate monitor)	PM _{2.5}	Fine Particulate (2.5 micron)
PM ₁₀	Fine Particulate (10 micron)	PM _{2.5} Spec	PM _{2.5} Chemically Speciation
Pb	Lead	Temp	Temperature
Wind	Wind direction and speed	HAPS	Air Toxics (Hazardous Air Pollutants)
		IMPROVE	EPA visibility program

APPENDIX 2
Oregon Ambient Air Monitoring Network

City	Address	Site Code	DEQ#	SO ₂	CO	NO ₂	O ₃	VIS/ PM est	HAPS	PM ₁₀	PM _{2.5}	PM _{2.5} Spec	WS/ WD	Temp	D T	B P	R H	S R
Albany	Calapooia School	ACS	21886					X										
Bend	Deschutes Mkt. Rd.	BPN	10101										X	X				
	Bend Pump Station	BPS	24172					X		X						X		
Burns	E Madison St.	BMS	10105					X		X ¹	X ²							
Corvallis	Intermediate School	CCB	20478					X										
CottageGrove	Harrison School	CGH	18515							X ¹	X ²							
Eugene (Saginaw)	Lane Community College	LCC	18320		X			X		X								
	Pacific Hwy99N	EKB	18522							X								
	E 29th Amazon Park	EAP	18524				X	X	X	X	X	X						
	Delight Vly Sch Rd	SAG	18315				X				X ¹							
Grants Pass	Parkside School	GPP	28859					X		X	X ²		X	X		X		
Hermiston	Municipal Airport**	HMA	31000	X		X	X	X			X		X	X				
	Pump Station**	HPS	24735								X							
Klamath Falls	Peterson School	KFP	10118					X		X	X		X	X	X	X		
La Grande	1601 N Willow	LWS	10148							X ¹								
	Ash Street	LAS	26448					X	X		X	X	X	X	X	X	X	
Lakeview	Center & M Streets	LCM	10123					X		X ¹	X ²		X	X		X		
Medford	Rogue Valley Mall	MRM	10112		X													
	Welch & Jackson	MWJ	10113							X								
	Grant and Belmont	MGB	20448					X			X	X						
	7112 Rapp Rd Talent	TAL	10109				X											
	1440 Rossanley Drive	MTY	10108										X	X	X	X	X	X
	4035 Dodge Road	MDR	10106									X						

1. Shut down during or at the end of 2006
2. Started up during 2006 or in 2007

APPENDIX 2
Oregon Ambient Air Monitoring Network

City	Address	Site Code	DEQ#	SO ₂	CO	NO ₂	O ₃	VIS/PM est	HAPS	PM ₁₀	PM _{2.5}	PM _{2.5} Spec	WS/WD	Temp	DT	BP	RH	SR
Oakridge	47674 School Street	OAK	18733					X		X	X		X					
Pendleton	3745 SW Marshall Pl	PMC	10146					X		X	X		X	X		X		
Portland	SW Miller - KPTV tower	KPTV	10132											X	X			
	5824 SE Lafayette	SEL	10139	X	X	X	X	X		X	X	X ²	X	X	X	X	X	X
	3182 NW 26 th - Transcon	TTT	10140							X								
	510SW Third Street	PPB	10141		X													
	N Roselawn	PNR	21889					X	X		X	X ¹						
	Jefferson High School	PJH	25606										X					
	(Beaverton) Highland Prk School	BHP	20481					X										
	(Carus) Spangler Road	SPR	10093				X	X					X	X				
	(Hillsboro) 1149 NE Grant St.	HHF	31967					X			X							
	(Sauvie Is) Rt 1 Box 442	SIS	14152				X	X	X ²				X	X				
(Milwaukie) 23rd St. Johns Church	MSJ	23306				X												
Riddle	First and Main	RFM	32590					X ¹										
Roseburg	777 NW Garden Valley Blvd	RGV	32529					X										
Salem (Turner)	Salem State Hospital	SSH	31929					X										
	Cascade Jr. High,	CJH	10130				X						X	X				
Springfield	City Hall	SCH	18538					X			X		X					
The Dalles	Cherry Heights	TDC	21252					X										
White City	751 Crater Lake Hwy	WPO	10107					X ¹		X	X ¹							

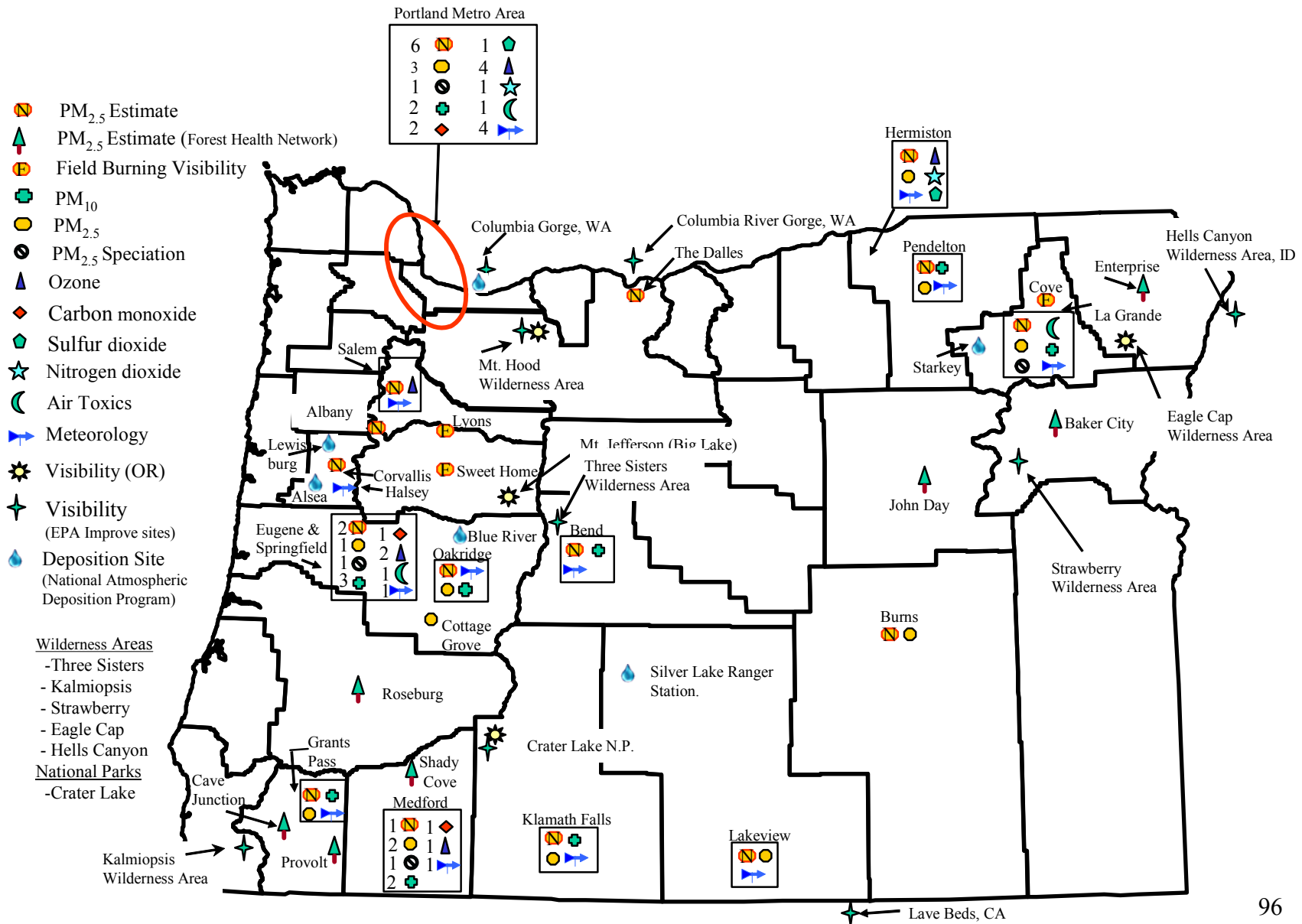
1. Shut down during or at the end of 2006
2. Started up during 2006 or in 2007

APPENDIX 2
Oregon Ambient Air Monitoring Network

Region	Location	DEQ # / IMPROVE CODE	Neph	IMPROVE	PM _{2.5}	O ₃	Win d
Visibility Sites							
Crater Lake NP	Diamond Peak	10117 / CRLA	X	X			X
Eagle Cap Wild.	Mt. Fanni		X ²				X
Eagle Cap Wild.	Strawberry Mt.	STAR		X			
Kalmiopsis Wild.	Kalmiopsis	KALM		X			
Mt Hood Wild.	Multopor	10094 / MOHO	X	X		X	X
Mt Jefferson Wild.	Big Lake	10125	X				X
Three Sisters Wild.	Three Sisters	THIS		X			
Forest Health Sites							
Wallowa-Whitman NF	Baker City	10088	X				
Malheur & Ochoco NF	Burns	10105	X				
Wallowa-Whitman NF	Enterprise	10162	X				
Siskiyou NF	Grants Pass	28859	X				
Siskiyou NF	Illinois Valley	21068	X				
Malheur NF	John Day	10103	X				
Winema, Fremont NF	Klamath Falls	10118	X				
Siskiyou NF	Provolt	18432	X				
	Roseburg	32529	X		X		
Rogue River NF	Shady Cove	25161	X				
Ag Burning Sites							
Willamette Valley	Carus, Spangler Road	10093	X				X
Willamette Valley	Corvallis	20478	X				
Willamette Valley	Halsey/Water Bureau	10128					X
NE Oregon	Cove		X ¹				X ²
Willamette Valley	Lebanon Fire Station	18331			X		
Willamette Valley	Lyons/Marilynn School	10126	X				
Willamette Valley	Salem General Hosp.	20480	X				
Willamette Valley	Sweet Home		X				
National Atmospheric Deposition Program Sites							
Benton Co.	Alsea Ranger Station ¹	http://nadp.sws.uiuc.edu/					
Benton Co.	Lewisburg ¹						
Lake Co.	Silver Lake Ranger St. ¹						
Lane Co.	Blue River ¹						
Skamania Co, WA	Columbia River Gorge ¹						
Union Co.	Starkey ¹						

1. Shut down during or at the end of 2006
2. Started up during 2006 or in 2007

2007 Oregon Air Quality Surveillance Network



Appendix 3

Quality Assurance

It is a policy of DEQ that all data used by the Department will be of sufficient quality to support the regulatory decisions based upon them. The minimum quality assurance requirements set by EPA are consistently met or exceeded by DEQ.

The continued assurance of data quality requires carrying out the two complimentary tasks discussed below:

Quality Control

The ambient air quality monitoring and sampling done by the Department follows a number of procedures intended to maintain the system within control. Standard operating procedures are documented and followed throughout. Federal Reference or Equivalent Methods are used wherever applicable. Care in using accepted methodology is what makes the Department's air quality data representative and also comparable to the data being collected in other states. Routine preventative maintenance and periodic calibrations, using National Institute of Standards Technology gases or other primary standards, are used to achieve a data base which is sufficient in quantity and quality to meet the needs of the Air Quality Program.

Quality Assessment

Evaluations of data quality are made in several ways. Each month a system audit is conducted in which each sampling and monitoring site is visited to evaluate whether the site location is still appropriate, whether procedures are being followed, and to ensure that documentation is complete. Data quality is assessed in terms of precision, accuracy, and completeness. Precision, or repeatability, is determined by analysis of a known control sample or by replicate analyses. Accuracy, or the ability to measure a "true" value, is assessed by quarterly audits of analyzer performance or sampler flow. These assessments are reported to EPA as summary statistics. Completeness is measured by the amount of data actually captured relative to the amount which ideally could have been collected.

EPA also hires independent contractors to evaluate Oregon's sites for accuracy.

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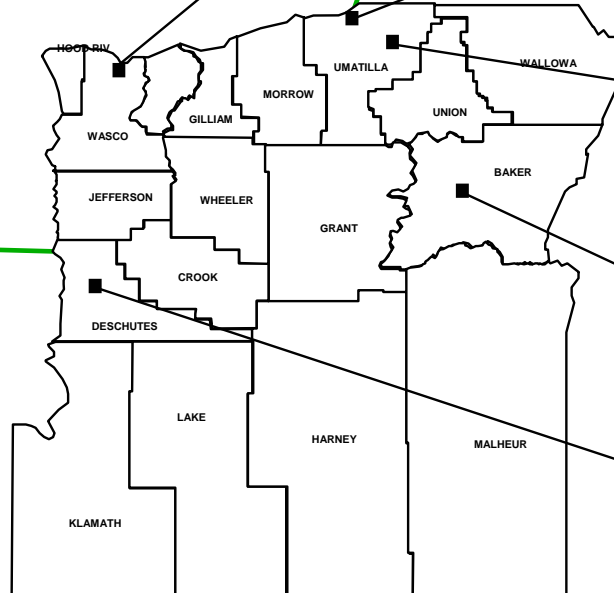
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See map (page 1) for locations and phone numbers.

Open Burning - Contact the DEQ Regional Office nearest you.
See map (page 1) for locations and phone numbers.

Title V Permits and ACDP Permits - Contact the DEQ Regional Office nearest you. See map (page 1) for locations and phone numbers.

Asbestos - Contact the DEQ Regional Office nearest you.
See map (page 1) for locations and phone numbers.

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