

2010 Oregon Annual Ambient Air Monitoring Network Plan

Submitted to: Environmental Protection Agency, Region 10.

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July 2010



State of Oregon
Department of
Environmental
Quality



2010 Oregon Annual Ambient Air Monitoring Network Plan

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2010 Oregon Annual Ambient Air Monitoring Network Plan

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Appendix

Appendix A. Total list of compounds Analyzed in ODEQ and LRAPA HAPS programs.

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Glossary of Air Quality Terms used in this report:

AQI	Air Quality Index – standardized EPA method of reporting air quality
CO	Carbon monoxide – An odorless, colorless gaseous pollutant
HAPs	Hazardous Air Pollutant as defined in Title III of the Clean Air Act
IMPROVE	EPA’s PM _{2.5} speciation visibility network
NAAQS	National Ambient Air Quality Standards – federal air quality standards (Table 4).
NADP	National Atmospheric Deposition Program
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 in diameter and smaller
PM ₁₀	Particulate Matter 10 micrometers in diameter and smaller
ppm	Parts per million - air pollutant concentration.
ppb	Parts per billion - air pollutant concentration.
SO ₂	Sulfur dioxide
µg/m ³	Microgram per cubic meter - air pollutant concentration
VOC	Volatile Organic Compounds
WAQR	Wildfire Air Quality Rating - wildfire smoke health internet page

1 Purpose

Code of Federal regulations, 40 CFR 58.10, requires the state and local air quality surveillance agencies to write an annual ambient air quality monitoring network plan. EPA requires the plan to be put out for public comment and submitted to EPA by July 1st. This report is used to determine if the network meets the monitoring objectives defined in Part 58, Appendix D and to propose modifications to the network in the following year. A more detailed air quality data summary is available annually at <http://www.deq.state.or.us/aq/forms/annrpt.htm>.

2 Introduction

The Oregon Department of Environmental Quality's (ODEQ) ambient air quality monitoring network is designed in response to the Environmental Protection Agency's (EPA) National Monitoring Strategy, state and local needs, the requirements of air quality maintenance plans and the State Implementation Plans (SIPs) for non-attainment areas, and CFR requirements.

2.1 National Monitoring Strategy

The National Monitoring Strategy directs state and local agencies to operate more continuous monitors and to collect real time air quality data. The real time information is available through EPA's AIRNow and ODEQ's Air Quality Index (AQI) web pages. In particular, EPA encouraged states to use continuous PM_{2.5} monitors instead of the filter base samplers which do not provide real time information. The National Monitoring Strategy also created National Core (NCORE) sites which contain a wide array of pollutant monitoring. ODEQ's NCORE site has monitors for Carbon monoxide (CO), Nitrogen oxides (NO_x), Sulfur dioxide (SO₂), ozone (O₃), particulate matter 2.5 and 10 micrometers in diameter and smaller (PM_{2.5} and PM₁₀), PM coarse (PM₁₀-PM_{2.5}=PM_c), PM_{2.5} Speciation, visibility, black carbon, and meteorology. Our proposed NCORE site is at SE Lafayette, Portland

State and Local Support

Our monitors support state and local needs by providing data for the Wildfire Air Quality Rating (WAQR), local wood stove management programs, Clean Air Quality Advisories for ozone, the Department of Agriculture's field burning program, and the US Forest Service and BLM's forest health program. ODEQ also operates a visibility network in the Cascades and near the Eagle Cap wilderness to support Regional Haze requirements protecting pristine Class 1 areas.

AQ Maintenance and Non-attainment support

ODEQ monitoring supports the SIPs and maintenance plans developed for many cities. ODEQ also has monitors in attainment areas with fast growing populations to support pollution prevention measures.

CFR requirements

Monitoring objectives were established and siting was selected in accordance with Appendix D of 40 CFR 58. The network was designed to meet the five basic monitoring objectives specified by federal regulations:

- (1) to determine highest concentrations expected to occur in the area covered by the network;
- (2) to determine representative concentrations in areas of high population density;
- (3) to determine the impact of significant sources or source categories on ambient pollution levels;
- (4) to determine general background concentration levels; and
- (5) to determine transport characteristics into and out of airsheds.

The current network was sited to ensure the spatial scale of the sampling matches the monitoring objective of the station. Each station in the SLAMS/NCORE network was sited in accordance with the criteria in 40 CFR Part 58, Appendix E. Quality Assurance requirements have been fully implemented through the Department's Quality Assurance Plan reviewed by EPA.

2.2 Non-attainment and Maintenance Areas

Areas are designated attainment or non-attainment a few years after a standard is proposed. If an area exceeds the standard a State Implementation Plan (SIP) is written to bring an area into attainment. After monitoring shows a non-attainment area has reached attainment, a maintenance plan is created to keep it there. Listed below are Oregon's current non-attainment and maintenance areas.

2.2.1 Non-attainment Areas:

CO: None

PM₁₀ : Eugene/Springfield Urban Growth Area (maintenance plan in development)
Oakridge Urban Growth Boundary (maintenance plan in development)

8hr Ozone None

PM_{2.5} Klamath Falls Urban Growth Boundary
Oakridge Urban Growth Boundary

2.2.2 Maintenance Areas in Oregon (formerly non-attainment areas):

CO: Eugene/Springfield Area
Grants Pass Central Business District
Portland Metropolitan Service District Boundary
Klamath Falls Urban Growth Boundary
Medford Urban Growth Boundary
Salem-Kaiser Area Transportation Study

PM₁₀: Grants Pass Urban Growth Boundary
Klamath Falls Urban Growth Boundary
Medford-Ashland Air Quality Maintenance Area
La Grande Urban Growth Boundary
Lakeview Urban Growth Boundary

Ozone (1hr): Portland/Vancouver AQMA

3 Major Network Modifications between July 2009 and June 2010

All major modifications to the ambient air quality monitoring network are submitted to the regional administrator for review and approval in the network assessment. Modifications occurring after the 2009 Network Assessment are as follows:

DEQ

- 1) Set up and operated the Tubman School Air Toxics site from Sept to November 2009, as part of the School Air Toxics (SAT) project.
- 2) Started up a new PM_{2.5}, nephelometer, and meteorology site at Burns Washington Street (41-025-0003) for comparison to existing site at Burns Madison Street (41-025-0002). Burns city officials were concerned that the Madison Street site was impacted by a chimney 13 meters away. The Washington Street site is ideally located away from any nearby sources yet situated in the same neighborhood about four blocks away.
- 3) Shut down Burns Madison Street site on March 31st, 2010. Comparison of the results from the two sites showed little difference between the sites.
- 4) Relocated the PM_{2.5} Speciation sampler from Medford Grant and Belmont (41-029-0133) to Lakeview – Center and M St. (41-037-0001) in September of 2009.
- 5) Started monitoring for wet Mercury Deposition January 1, 2010 as part of the National Ambient Deposition Program at Beaverton Highland Park (41-067-0111).
- 6) Started monitoring for TSP lead in McMinnville outside of Cascade Rolling Mills (41-071-1702) on January 1, 2010 as required by the new lead NAAQS.

LRAPA

- 7) LRAPA moved their PM_{2.5} Speciation sampler from Eugene Amazon Park (41-039-0060) to Oakridge (41-039-2013) on July 1, 2009.
- 8) LRAPA ran a one year Nephelometer study in Florence (on the coast) ending in Oct, 2009.
- 9) LRAPA temporarily halted air toxic sampling at Eugene Amazon Park in July 2009 to save resources for a two site Eugene air toxic network. The two site network started in April, 2010 at Amazon Park 41-039-0060 and Eugene Petersen Park (41-039-0101).
- 10) LRAPA started submitting Eugene, Wilkes Drive Meteorology data to DEQ and EPA.

4 Status of the Current Ambient Air Monitoring Network

Section 4 contains the current listing of Oregon's SLAMS/NCORE network for: PM₁₀, PM_{2.5}, PM_{2.5} chemical speciation, Continuous PM_{2.5} Estimates, SO₂, NO₂, CO, O₃, Lead, Air toxics, Visibility, Forest Health, Field Burning, and Meteorology.

4.1 Particulate Matter (PM₁₀, EPA pollutant #81102)

Oregon had many non-attainment areas for PM₁₀ but the PM₁₀ levels have trended down dramatically since these designations were made and SIP and maintenance programs were put in place. Figures 1 and 2 show the PM₁₀ trends.

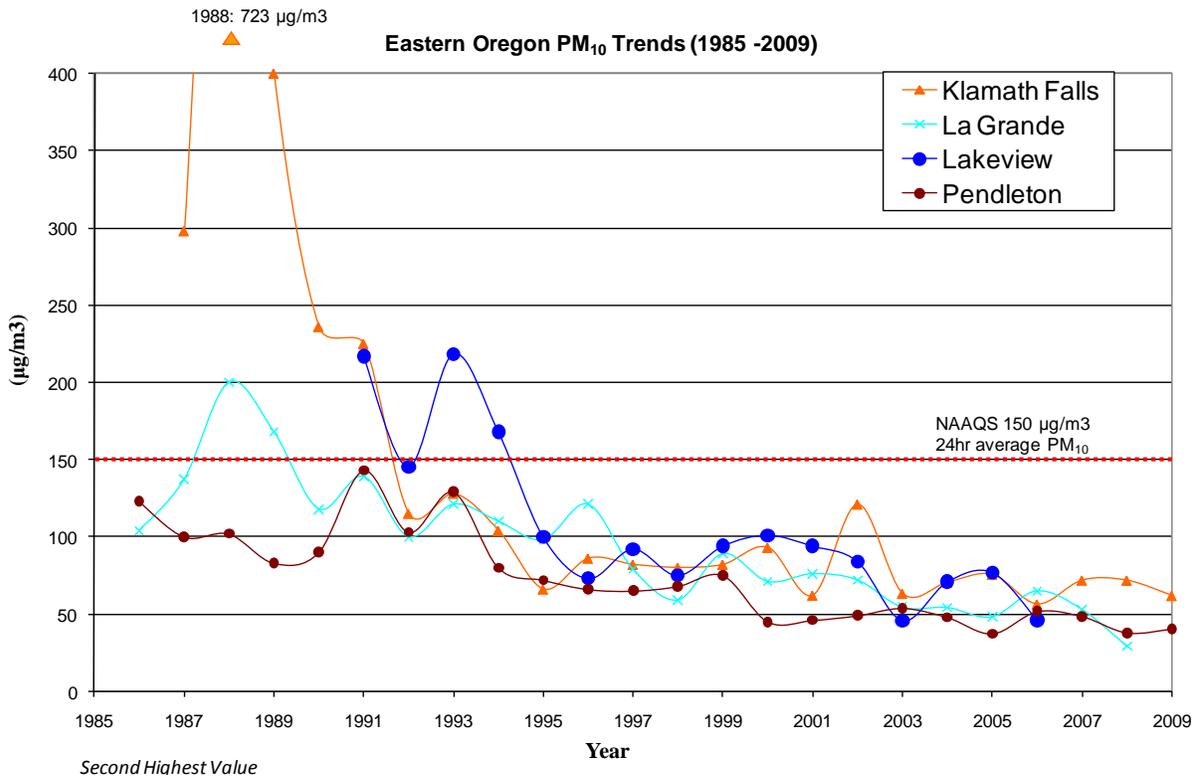


Figure 1. PM₁₀ trend for Eastern Oregon cities using the second highest 24 hr average.

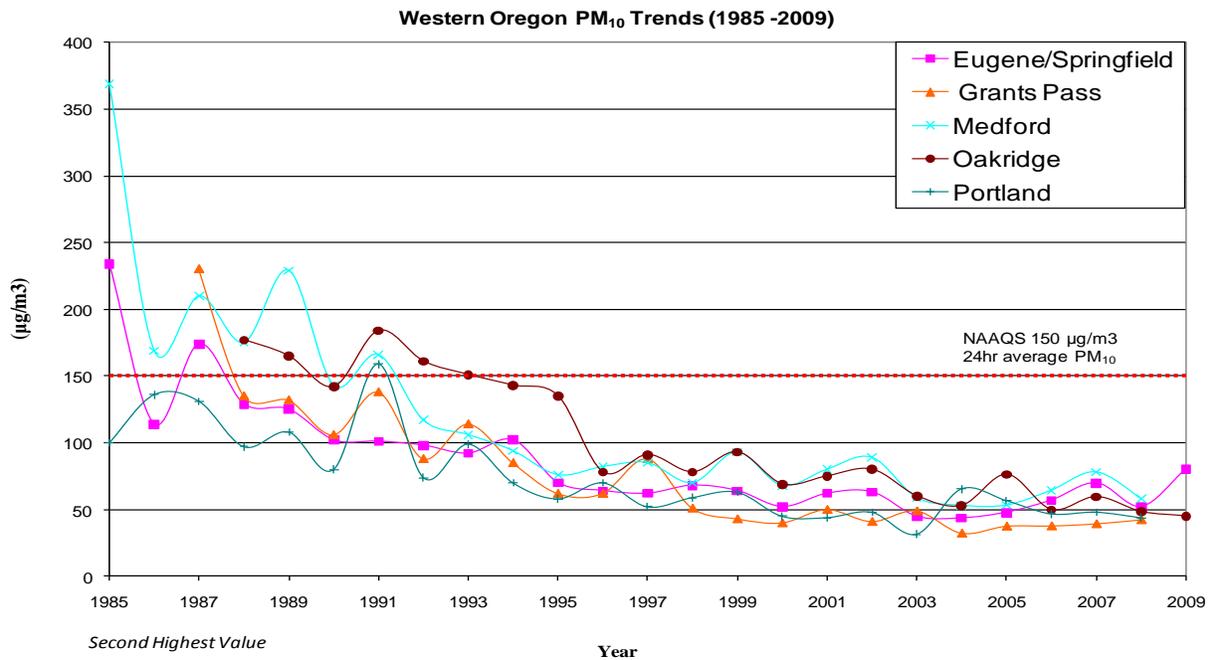


Figure 2. PM₁₀ trend for Western Oregon cities using the second highest 24 hr average.

Network:

ODEQ and LRAPA continue to operate samplers in most of these areas to satisfy terms of the maintenance and State Implementation Plans and to fulfill the 40 CFR Part 59 Appendix D (2.8 & 3.7) requirements for SLAMS/NCORE. The sites are listed in Table 1 and shown in Figure 3.

Table 1. Oregon PM₁₀ Monitoring Sites: SLAMS/NCORE.

EPA #	Name/City	Assessment Method	Project Type	Project Objective	Measurement Scale	Primary or Dup	Sampling Frequency
410294001	Uninc./White City	127	SLAMS	Conc	Middle	Prim	1/6
410290133	Medford/Grant&Belmont	063	SLAMS	Pop/HAPS	Nghbr	Prim	1/6
410292129	Medford/Welch&Jackson	127	SLAMS	Conc	Nghbr	Prim	1/6
410350004	K. Falls/Peterson School	127	SLAMS	Population	Nghbr	Prim	1/6
410390013	Eugene/LCC	127	SLAMS	Population	Nghbr	Prim	1/3
410390058	Eugene/Key Bank	127	SLAMS	Conc	Nghbr	Prim	1/3
410390060	Eugene/Amazon Park	063	SLAMS	Pop/HAPS	Nghbr	Prim	1/6
410392013	Oakridge/WillametteCnt	127	SLAMS	Conc	Nghbr	Prim	1/6
410470040	Salem State Hospital	063	SLAMS	Pop/HAPS	Nghbr	Prim	1/6
410510009	Portland/Transcon	127	SLAMS	Conc	Middle	Prim/Dup	1/6
410510080	Portland/SE Lafayette	127	NCORE	Population	Nghbr	Prim	1/6
410510246	Portland/N. Roselawn	063	SLAMS	Pop/HAPS	Nghbr	Prim/Dup	1/6
410590121	Pendleton/McKay Creek	127	SLAMS	Population	Nghbr	Prim	1/6
410610119	LaGrande/Ash Street	063	SLAMS	Pop/HAPS	Nghbr	Prim	1/6

2010 Oregon PM₁₀ NAAQS Compliance Surveillance Network

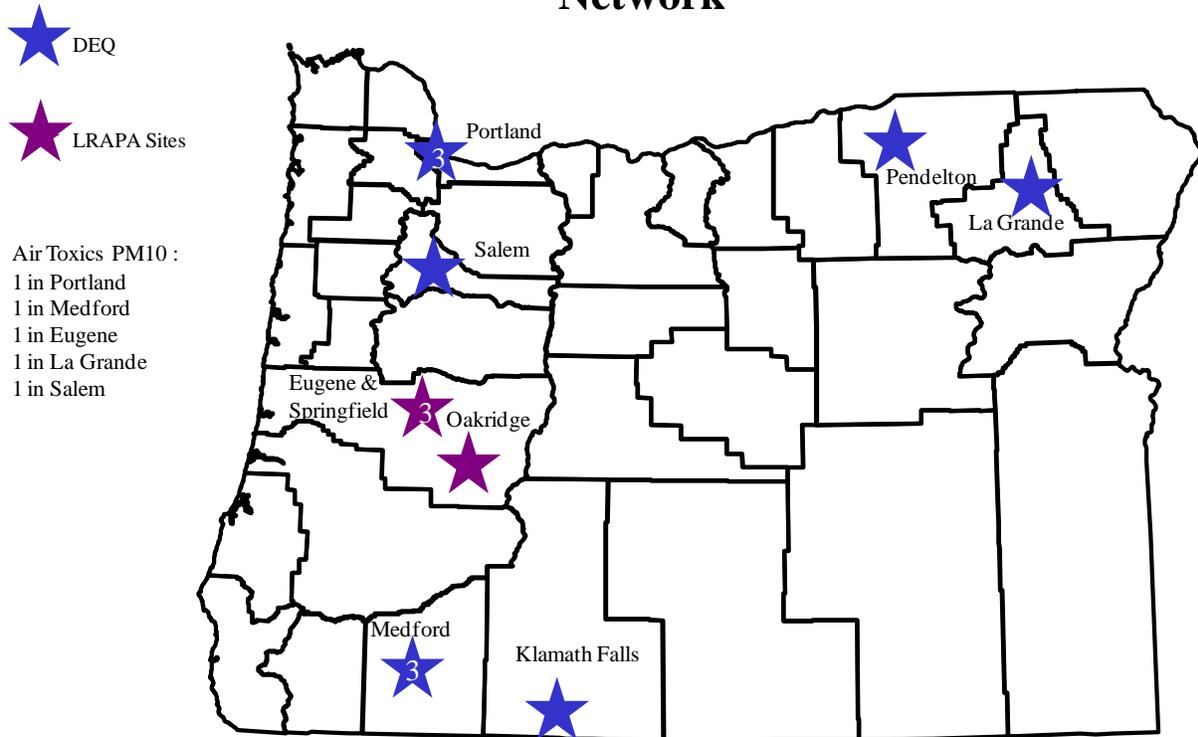


Figure 3. July 2009- June 2010 Oregon PM₁₀ monitor locations.

4.2 Particulate Matter (PM_{2.5}, EPA pollutant #88101)

Trends

Oregon has at least two cities (Oakridge and Klamath Falls) that currently violate the new PM_{2.5} daily standard of the three year average 98th percentile of 35ug/m³. There is one additional city (Lakeview) whose 2007-2009 98th Percentile was above the standard. There are also numerous cities in Oregon that are areas of concern with three year average 98th percentiles above 25ug/m³. Figure 4 shows these cities and all average 98th percentile for 2007-2009.

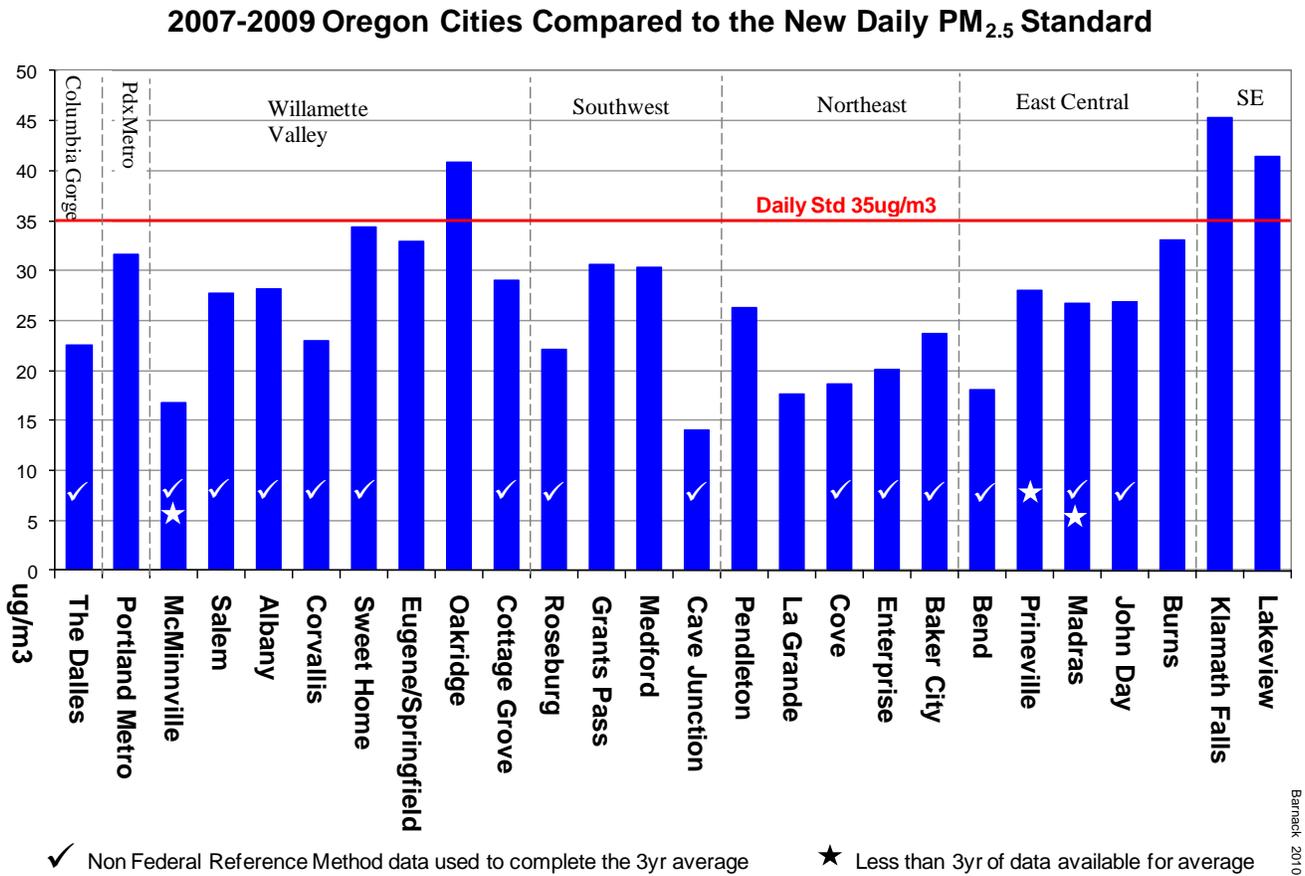


Figure 4. Average 98th percentile PM_{2.5} for 2007-2009 for Oregon cities.

Network:

Oregon meets the SLAMS/NCORE requirements in 40 CFR Part 58, Appendix D (2.8 & 3.7). Table 2 and Figure 5 show the Oregon's PM_{2.5} Federal Reference Method sampler network used for NAAQS compliance. These are filter based samplers and are not used to calculate the AQI. Tables 3 lists the PM_{2.5} estimate network used to calculate the AQI.

Note: *The FRM samplers are collocated with the visibility monitors (nephelometers) to provide correlation equations. These equations are used to convert visibility into to PM_{2.5} estimates.*

Table 2. PM_{2.5} Federal Reference Method Network.

EPA #	Site Name	Sampling and Analysis Method	Project Type	Project Objective	Meas. Scale	Sampling Frequency and Site Status	
410130100	Prineville/Davidson Park	118	SLAMS	Population	Nghbr	1/6	Prim
410170120	Bend/Pump Station	118	SLAMS	Population	Nghbr	1/6	Prim
410250003	Burns/Washington St.	118	SLAMS	Population	Nghbr	1/3	Prim
410291001	Uninc./Dodge Road	118	SLAMS	Transport	Rural	1/6	Prim
410290133	Medford/Grant & Belmont	118	SLAMS	Population	Nghbr	1/3 1/12	Prim Dup
410330114	Grants Pass/ ParksideSch	118	SLAMS	Population	Nghbr	1/6	Prim
410350004	K.Falls/Peterson Sch.	118	SLAMS	Population	Nghbr	1/3	Prim
410370001	Lakeview/ Center & M	118	SLAMS	Population	Nghbr	1/3	Prim
410390058	Eugene/Key Bank	118	SLAMS	Population	Nghbr	1/3	Prim
410390060	Eugene/AmazonPark	118	SLAMS	Population	Nghbr	1/1 1/12	Prim Dup
410391009	Springfield/City Hall	118	SLAMS	Population	Nghbr	1/6	Prim
410399003	Cottage Grove/City Shop	118	SLAMS	Population	Nghbr	1/3	Prim
410392013	Oakridge/WillametteCntr	118	SLAMS	Population	Nghbr	1/3	Prim
410510080	Portland/SE Lafayette	118	NCORE	Population	Nghbr	1/3	Prim
410510245	Portland/N Roselawn	118	SLAMS	Population	Nghbr	1/6	Prim
410610119	La Grande/Ash St	117	SLAMS	Population	Nghbr	1/6	Prim
410590121	Pendleton/McKay Crk	118	SLAMS	Population	Nghbr	1/6	Prim
410670004	Hillsboro/Hare Field	118	SLAMS	Population	Nghbr	1/3	Prim

2010 Oregon PM_{2.5} NAAQS Compliance Surveillance Network

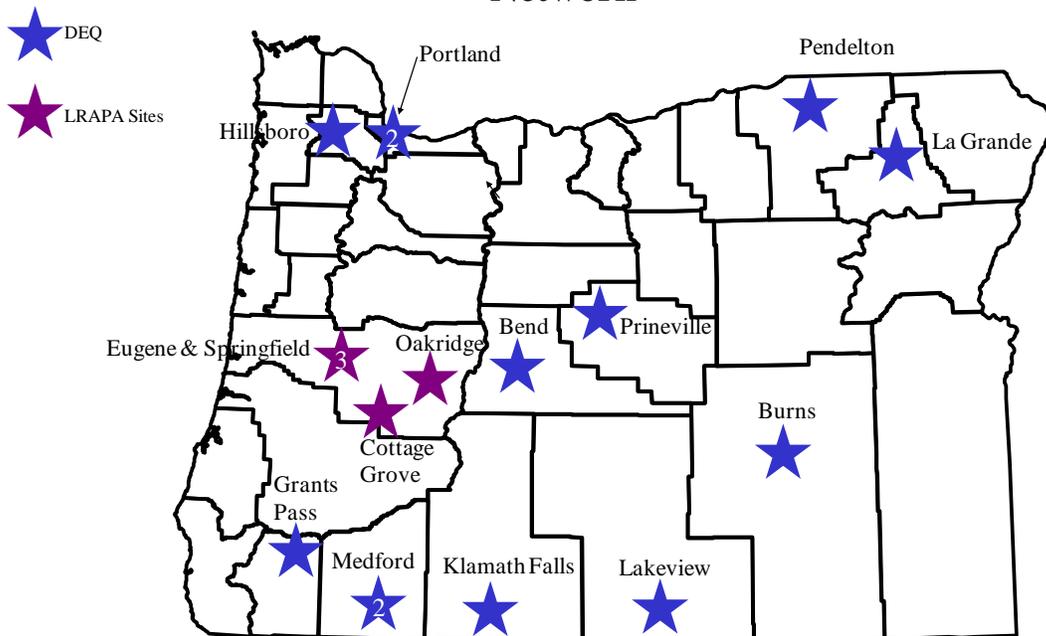


Figure 5. July 2009 to June 2010 Oregon PM_{2.5} Federal Reference Method Network.

4.2.1 PM_{2.5} Continuous Network

The PM_{2.5} continuous network is comprised of Radiance™ nephelometers. All Federal Reference Method PM_{2.5} filter samplers are co-located with nephs. The nephelometers are correlated to the filter samplers and provide real time data resolved to as low as one second intervals. The PM_{2.5} calculated from the nephelometers is estimated and is used for informational purposes and not for official comparison to the NAAQS. Table 3 and Figure 6 show the continuous PM_{2.5} network used for the AQI.

Table 3. PM_{2.5}continuous monitoring network.

AIRS #	Site Name	Measurement Scale	Monitoring Type	Sampling Frequency
410090004	Sauvie Island	Regional	Slams	Summer
410170120	Bend/Pump Station	Neighborhood	Slams	Annual
410130100	Prineville	Neighborhood	Slams	Annual
410250002	Burns/ Madison St.	Neighborhood	Slams	Annual
410290133	Medford/Grant & Belmont	Neighborhood	Slams	Annual
410310007	Madras/Westside Sch	Neighborhood	Slams	Annual
410330114	Grants Pass/Parkside School	Neighborhood	Slams	Annual
410350004	Klamath Falls/Petersen Sch	Neighborhood	Slams	Annual
410350015	S. of Klamath Falls	Neighborhood	Slams	Annual
410370001	Lakeview/Center & M	Neighborhood	Slams	Annual
410390013	Eugene/LCC	Neighborhood	Slams	Annual
410390060	Eugene/Amazon Park	Neighborhood	Slams	Annual
410392013	Oakridge	Neighborhood	Slams	Annual
410399004	Cottage Grove	Neighborhood	Slams	Annual
410430009	Albany/Calapooia School	Neighborhood	Slams	Annual
410432002	Sweet Home	Neighborhood	Slams	Annual
410470041	Salem/State Hospital	Neighborhood	Slams	Annual
410510080	Portland/SE Lafayette	Neighborhood	NCORE	Annual
410510246	Portland/N. Roselawn	Neighborhood	Slams	Annual
410590121	Pendleton/McKay Creek	Neighborhood	Slams	Annual
410650007	The Dalles/ Cherry Heights	Neighborhood	Slams	Annual
410610119	La Grande/ Ash St.	Neighborhood	Slams	Annual
410670004	Hillsboro Hare Field	Neighborhood	Slams	Annual
410670111	Beaverton/Highland Park	Neighborhood	Slams	Annual
410711002	McMinnville	Neighborhood	Slams	Annual

For all sites: The sampling method is 011, The Project Type is PM continuous, and The Objective is PM Surrogate.

This table does not include the Visibility, Field Burning and Forest Health monitors. See sections 4.10 – 4.12.

2010 Oregon PM Air Quality Surveillance Network

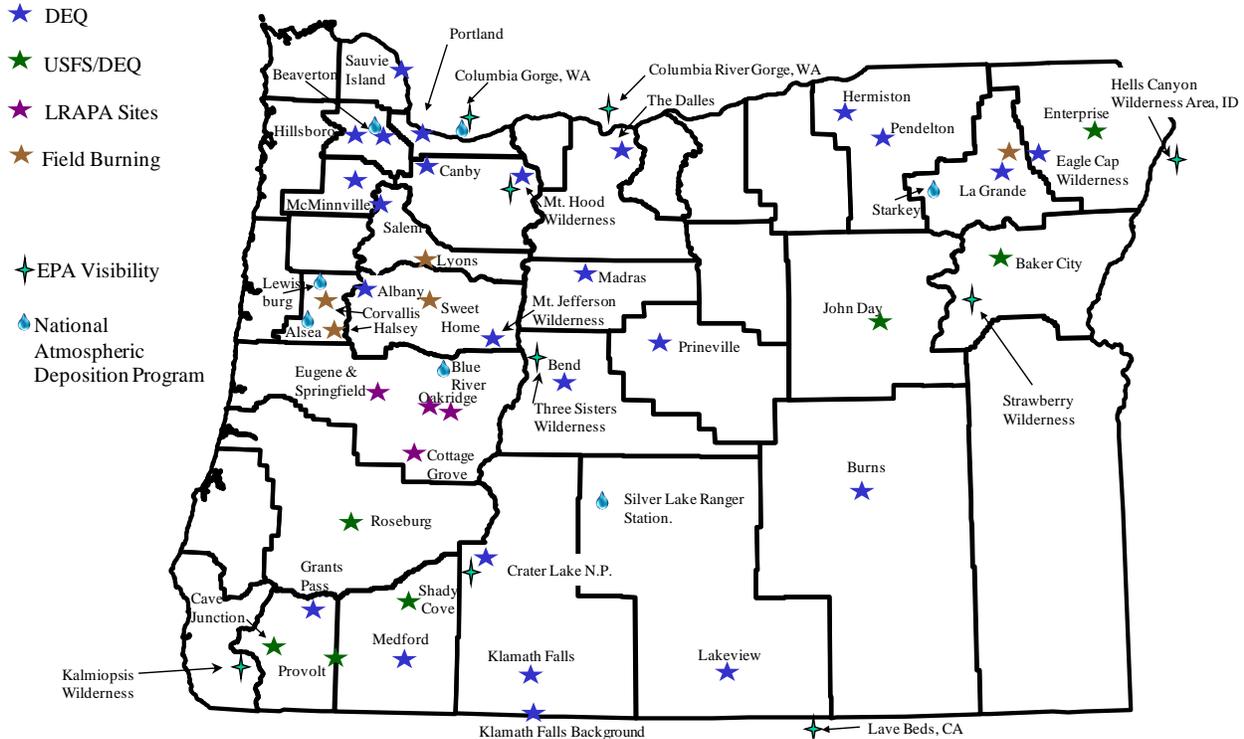


Figure 6. July 2009 to June 2010 Oregon PM_{2.5} Continuous Network used for the AQI.

4.2.2 PM_{2.5} Speciation

PM_{2.5} can be comprised of metal, carbonaceous material, aerosols, or other compounds. Speciation helps identify the type of particulate so ODEQ staff can better understand its emission source. ODEQ is operating PM_{2.5} Speciation samplers at four cities listed in Table 4 and shown in Figure 7.

Table 4. PM_{2.5} Speciation Network.

EPA #	Site Name	Project Type	Project Objective	Measurement Scale	Operating Sampling Frequency		Analysis by
410370001	Lakeview/Center and M	Special	Population	Nghbr	1/6	Annual	ODEQ
410392013	Oakridge/	Special	Population	Nghbr	1/6	Annual	ODEQ
410510080	Portland/SE Lafayette	NCORE	Population	Nghbr	1/3	Annual	RTI
410510119	KlamathFalls/Peterson Sch	Special	Population	Nghbr	1/6	Annual	ODEQ

Sampling and Analysis Method For All Sites:

810 – Met One SASS with Gravimetric, 811 – Met One SASS with ICP/MS,
 812 – Met One SASS Nylon with Ion Chromatography,
 URG Quartz with EC1+EC2+EC3+OP & OC1+OC2+OC3+OC4+OP

2010 Oregon PM_{2.5} Speciation Surveillance Network

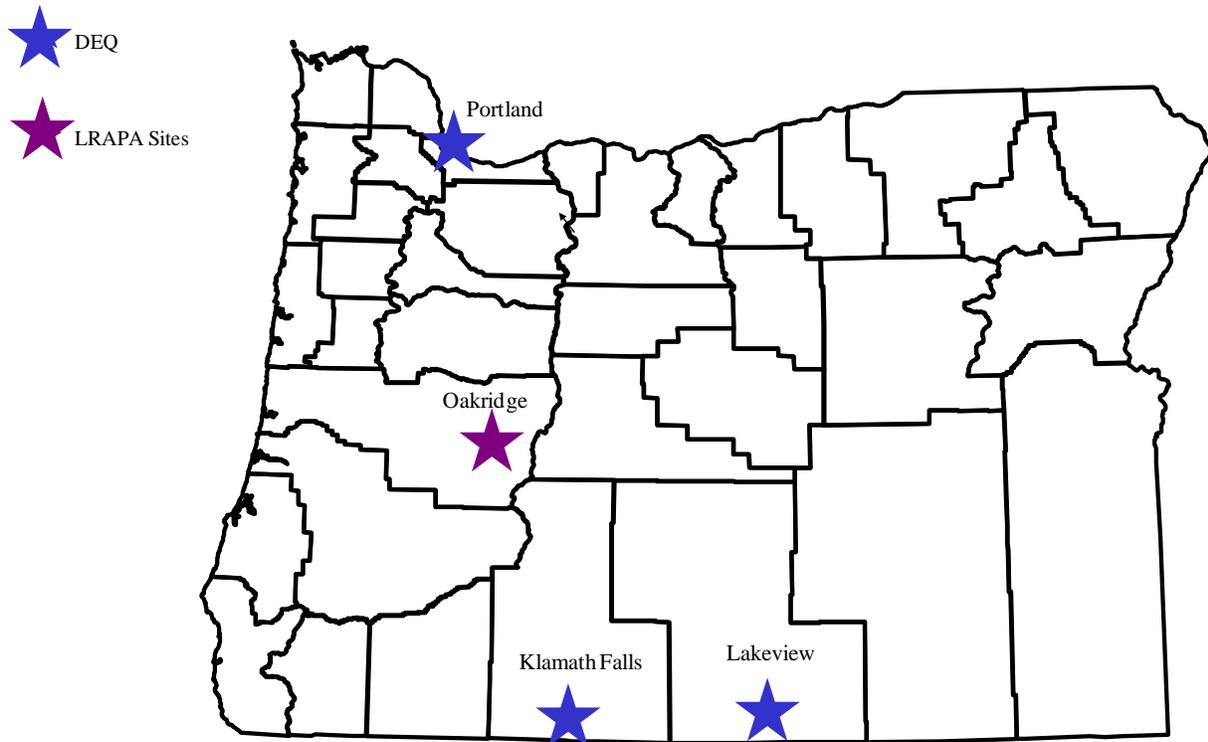


Figure 7. July 2009 to June 2010 Oregon PM_{2.5} Speciation Network.

4.3 Sulfur Dioxide (SO₂, EPA pollutant #42401)

There is one SO₂ monitor in Oregon, as listed in Table 5 and shown in Figure 11. The Portland NCORE site uses a trace gas monitor. The trace gas monitor can detect very low levels that would not be measured as accurately by a conventional monitor.

Table 5. Oregon SO₂ Monitoring Sites.

EPA #	Name/City	Assessment Method	Project Type	Site Purpose	Scale	Sampling Frequency
410510080	Portland/SE Lafayette	592	NCORE	Population	Nghbr/Trace	Annual

4.4 Nitrogen Dioxide (NO₂, 42602)

There is one NO₂ monitor in Oregon listed in Table 6 and shown in Figure 11. No changes since the 2009 Network Assessment

Table 6. Oregon NO₂ Monitoring Sites.

EPA #	Name/City	Assessment Method	Project Type	Site Purpose	Scale	Sampling Frequency
410510080	Portland/SE Lafayette	074	NCORE	Population	Nghbr	Annual

4.5 Carbon Monoxide (CO, EPA pollutant #42101)

Trends

CO continues to drop in Oregon, as it does across the country. Figure 8 shows the CO trend for Oregon.

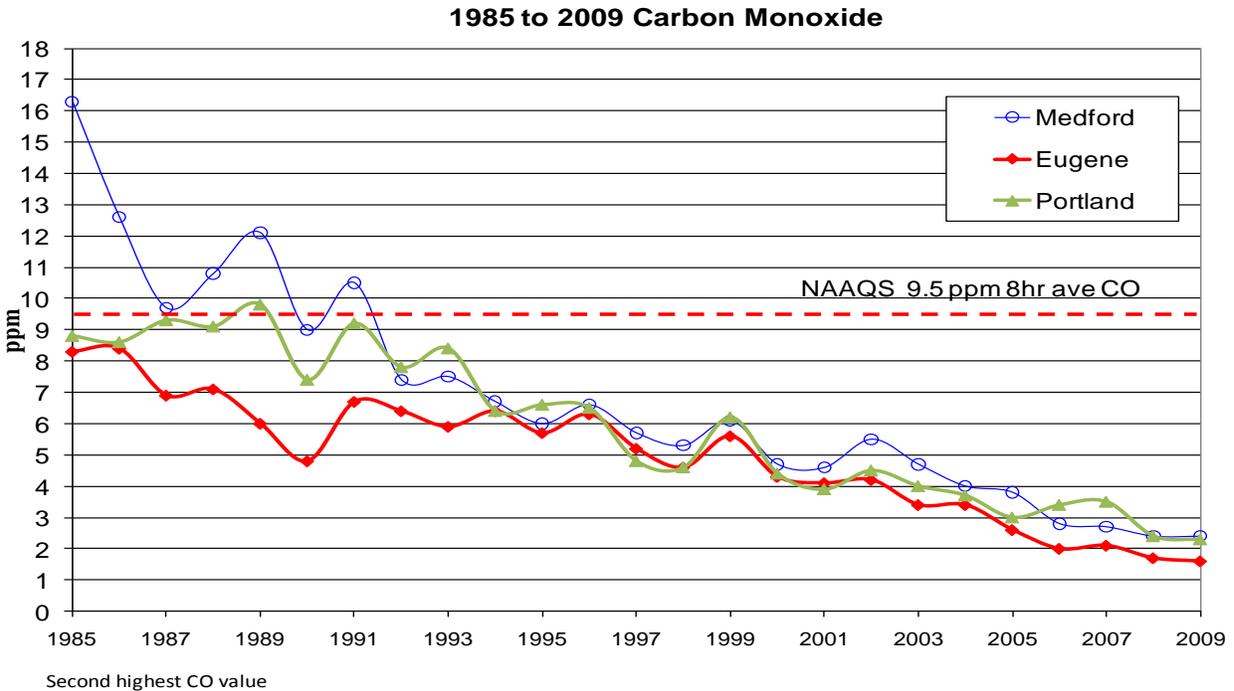


Figure 8. CO Trend chart.

The second highest eight hour average CO levels for Oregon cities.

Network

ODEQ continues to monitor for CO in two urban centers, Portland (SW 3rd Avenue) and Medford (Rogue Mall). LRAPA monitors at Eugene Lane Community College. These three sites allow ODEQ to adequately track maximum CO trends for Oregon. ODEQ also performs statewide emission inventories for CO. ODEQ operates a trace level CO monitor at SE Lafayette, as required the our National Core (NCORE) site. The sites are listed in Table 7 and shown in Figure 10.

Table 7. Oregon Carbon Monoxide Monitoring Sites.

AQS Site #	Name/City	Assessment Method	Project Type	Site Purpose	Scale	Sampling Frequency
410290018	Medford/Rogue Valley Mall	066	SLAMS	Concentration	Micro	Annual
410390013	Eugene/Lane Comm. Col.	066	SLAMS	Concentration	Micro	Annual
410510080	Portland/SE Lafayette	588	NCORE	Population	Nghbr/Trace	Annual
410510087	Portland/Postal Bldg	093	SLAMS	Concentration	Micro	Annual

4.6 Ozone (O₃, 44201)

Trends:

Ozone is trending down on average since 1991. Figure 9 shows the three year average of the fourth highest daily maximum eight hour average trends for all cities monitored except Bend which only has one year of data. Figure 10 shows the 2007-2009 data.

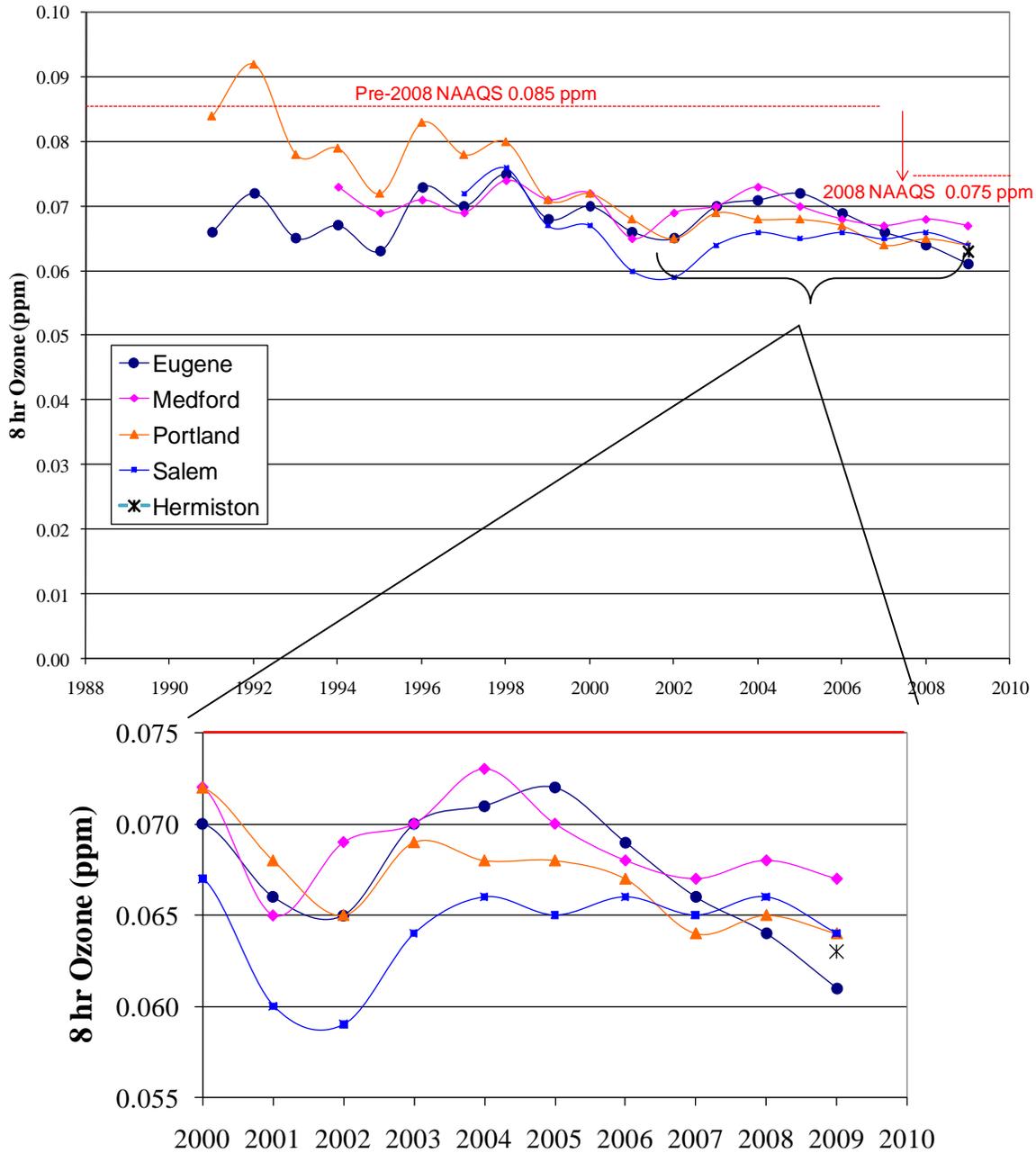


Figure 9. Comparison of the 2007-2009 three year average ozone levels to the NAAQS.

Note: The standard is violated when the three year average of the fourth highest eight hour average exceeds 0.075 ppm.

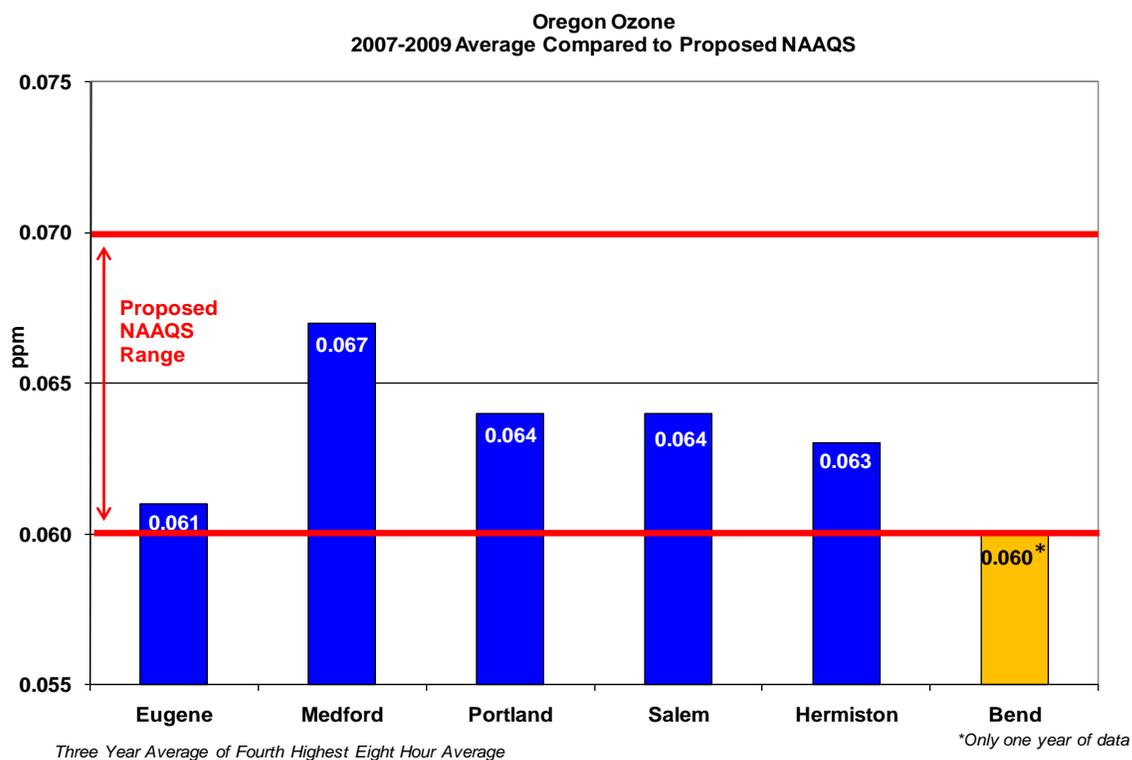


Figure 10. Oregon ozone 2007-2009 levels in comparison to the current and proposed NAAQS. Bend only has one year of data.

Network:

ODEQ operates ozone monitors in Portland, Medford, Salem, Bend, and Hermiston. LRAPA operates ozone monitors for the Eugene/Springfield. Table 8 lists all of Oregon’s ozone sites and Figure 11 shows the locations.

Table 8. Oregon Ozone Monitoring Sites.

EPA #	Name/City	Assessment Method	Project Type	Site Purpose	Scale	Sampling Frequency
410170122	Bend	019	SLAMS	Max Conc.	Urban	May –Sep
410050004	Portland/Carus	019	SLAMS	Max Conc.	Urban	May –Sep
410671004	Portland/ Sherwood	019	SLAMS	Population	Urban	May –Sep
410090004	Portland/Sauvie Is.	019	SLAMS	Transport	Urban	May –Sep
410290201	Talent/Rapp Ln	019	SLAMS	Max Conc.	Nghbr	May –Sep
410390060	Eugene/Amazon Prk	019	SLAMS	Population	Nghbr	May –Sep
410391007	Saginaw/Delight Rd	019	SLAMS	Max conc.	Urban	May –Sep
410470004	Turner/Cascade JHS	019	SLAMS	Max Conc.	Nghbr	May –Sep
410510080	Portland/SELafayette	019	NCORE	NCore	Urban	May –Sep
410591003	Hermiston/Airport	019	Special	Population	Rural	May –Sep

2010 DEQ & LRAPA Real Time Gas Air Quality Surveillance Network

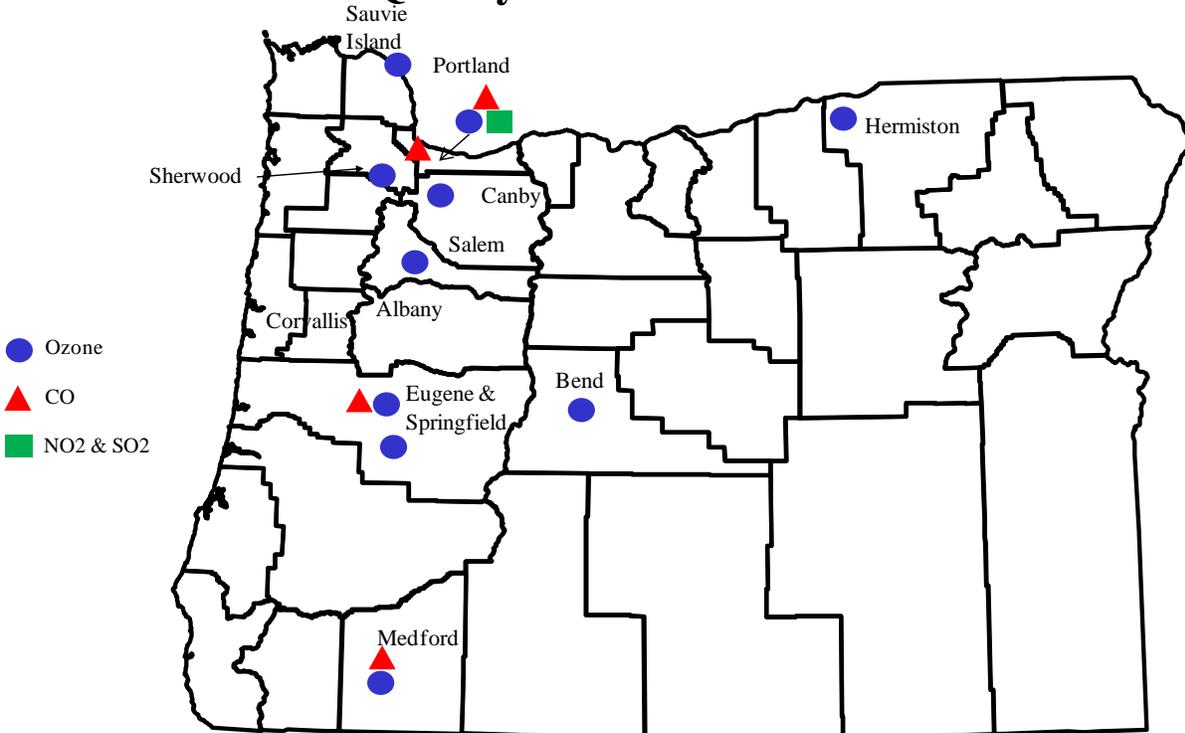


Figure 11. July 2009 to June 2010 Ozone, CO, NO₂, and SO₂ monitoring sites.

4.7 Lead (Pb, EPA pollutant #12128)

ODEQ has one TSP lead monitor at McMinnville – River Road outside of Cascade Steel Rolling Mill’s fence line. The site is listed in Table 9 and shown in Figure 12.

Table 9. Oregon TSP Lead Network.

AQS Site #	Name/City	Assessment Method	Project Type	Site Purpose	Scale	Sampling Frequency
41071	River Road/McMinnville	043	SLAMS	Max Conc.	Micro	Annual

4.8 Hazardous Air Pollutants (Air Toxics)

Trends

Over the past several years ODEQ and LRAPA have completed several air toxics monitoring projects. The number of sites in each community is shown in Table 10:

Table 10. Number of Air Toxics sites by city from 1999 to present.

	Pdx Metro Area	Vancouver, WA	Eugene	La Grande	Medford	Salem
1999	5					
2000	2	1				
2001	1					
2002	1		1			
2003	1		1			
2004	3		1	1		
2005	5	1	1	1		
2006	1		1	1		
2007	2		1	1		
2008	2		1	1	2	
2009	1		1	1	1	1
2010	1		2	1	1	1

EPA lists 188 Hazardous Air Pollutants (HAPS) or air toxics in the Clean Air Act Amendments of 1990. Of these EPA identifies 33 urban HAPS which it considers to pose the greatest risk to public health in urban areas. EPA Urban HAPS list is discussed at <http://www.epa.gov/ttn/atw/urban/list33.html>. ODEQ revised this list to include 20 HAPS of concern in Oregon, shown in Table 11.

Table 11. Hazardous Air Pollutants of Concern in Oregon.

Carbonyls	Metals
Acetaldehyde	Arsenic and Compounds
Acrolein	Cadmium
Formaldehyde	Chromium and Compounds
Volatile Organic Compounds	Lead
1, 1, 2, 2, Tetrachloroethane	Manganese
1,3-Butadiene	Nickel
Benzene	Polycyclic Aromatic Hydrocarbons
p-Dichlorobenzene	15 PAHS
Ethylbenzene	Naphthalene
Methylene chloride	Particulates
Tetrachloroethylene (Perc)	Diesel Particulate Matter
Trichloroethylene	

Currently ODEQ analyzes for the compounds in Table 11 except Acrolein and diesel particulate. No method is available to accurately measure Acrolein or diesel PM. ODEQ does monitor for black carbon at two sites using an Aethalometer. Black carbon is a component of diesel particulate and can be used as a surrogate. ODEQ analyzes for 104 compounds in the HAPS program, a complete list is available in Appendix A.

Network

DEQ currently operates air toxic sites in Portland, Salem, Medford, and La Grande. LRAPA operates two sites in Eugene. The sites are listed in Table 12 and shown in Figure 12.

Table 12. Current Hazardous Air Pollutants (Air Toxics) Network.

AIRS #	Name/City	Assessment Method	Project Type	Project Objective	Meas. Scale	Sampling Frequency	
410290133	Medford Grant and Belmont	110, 114, 089, 117	Special	Population	Nghbr	1/6	Annual
410390060	Eugene/Amazon Park	110, 114, 089, 117	Special	Population	Nghbr	1/6	Annual
410390062	Eugene/Peterson Park	110, 114, 089, 117	Special	Population	Nghbr	1/6	Annual
410470041	Salem/State Hospital	110, 114, 089, 117	Special	Population	Nghbr	1/6	Annual
410510246	Portland/N Roselawn	110, 114, 089, 117	NCORE/Trends	Population	Nghbr	1/6	Annual
410610119	La Grande/Ash St.	110, 114, 089, 117	Trend Site	Population	Nghbr	1/6	Annual

VOC: 110 – SS- Canister-Pressurized with GCMS, CARBONYL: 114–Cartridge-DNPH-Silica-SEP-PAK/ HPLC photodiode Array, Metals: 089-PM₁₀ HV/ICP/MS Quartz Filter, PAH: 117–Hi PUF/GCMS TO-13

2009 DEQ & LRAPA Air Toxics and TSP Lead Air Quality Surveillance Network

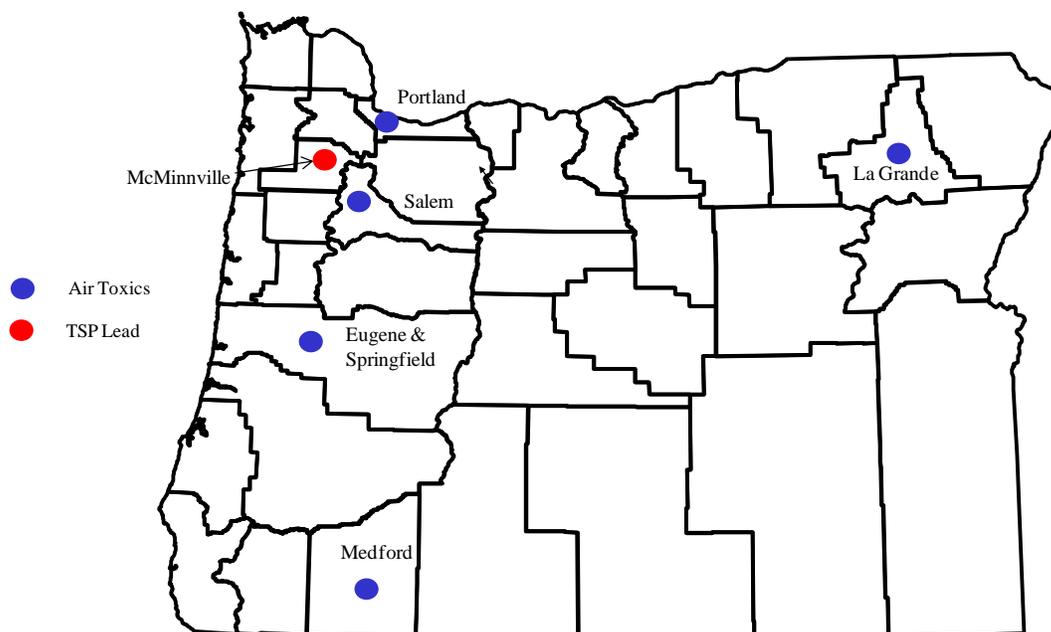


Figure 12. July 2009 to June 2010 TSP Lead and Air Toxics Sites.

4.9 Air Quality Index (Real Time Networks)

ODEQ converts all our Ozone, CO, and PM estimates to real time health information using EPA's Air Quality Index (AQI). This is a nationwide index that normalizes these pollutants and is used to inform the public about current healthy air levels. Figure 13 shows a part of ODEQ's AQI web page, updated hourly. Figure 14 shows all the locations where AQI is available. ODEQ also sends this data to EPA's AQI page, AIRNow <http://www.airnow.gov/>, on an hourly basis. LRAPA manages their own AQI web page and AIRNow upload. ODEQ also provides all hourly and five minute continuous data to Washington State University for their AIRPACT pollution model, University of Washington for their MM-5 meteorology model, and Portland State University's Environmental School.

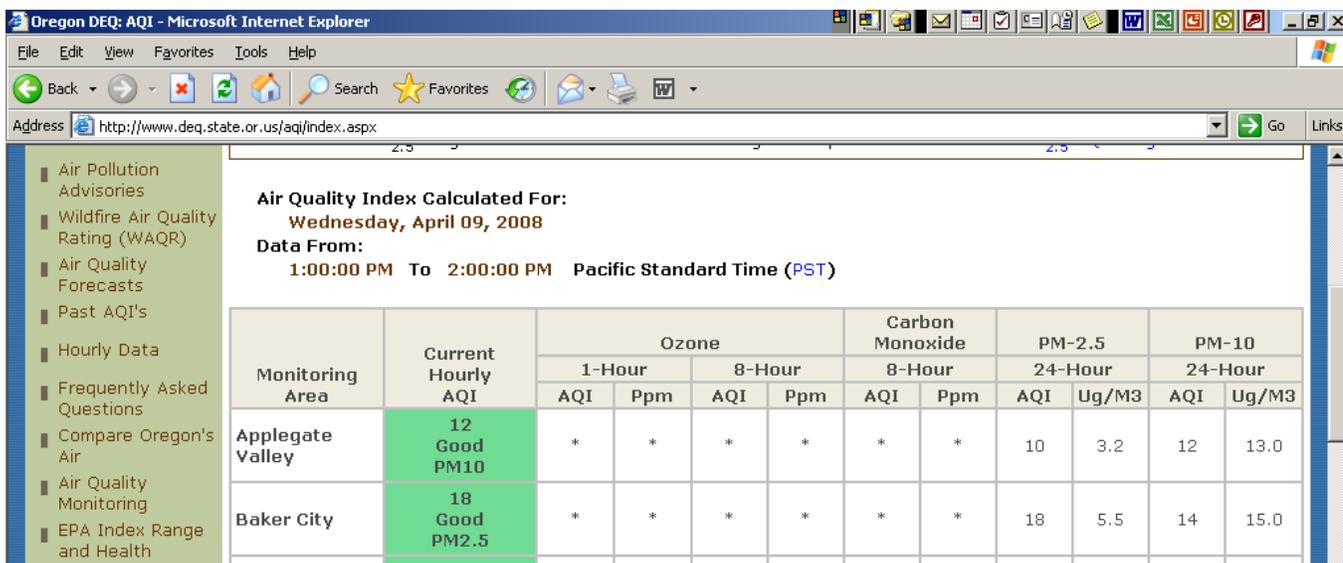


Figure 13. ODEQ's Air Quality Index (AQI) web page.

2010 DEQ & LRAPA Real Time PM Air Quality Surveillance Network

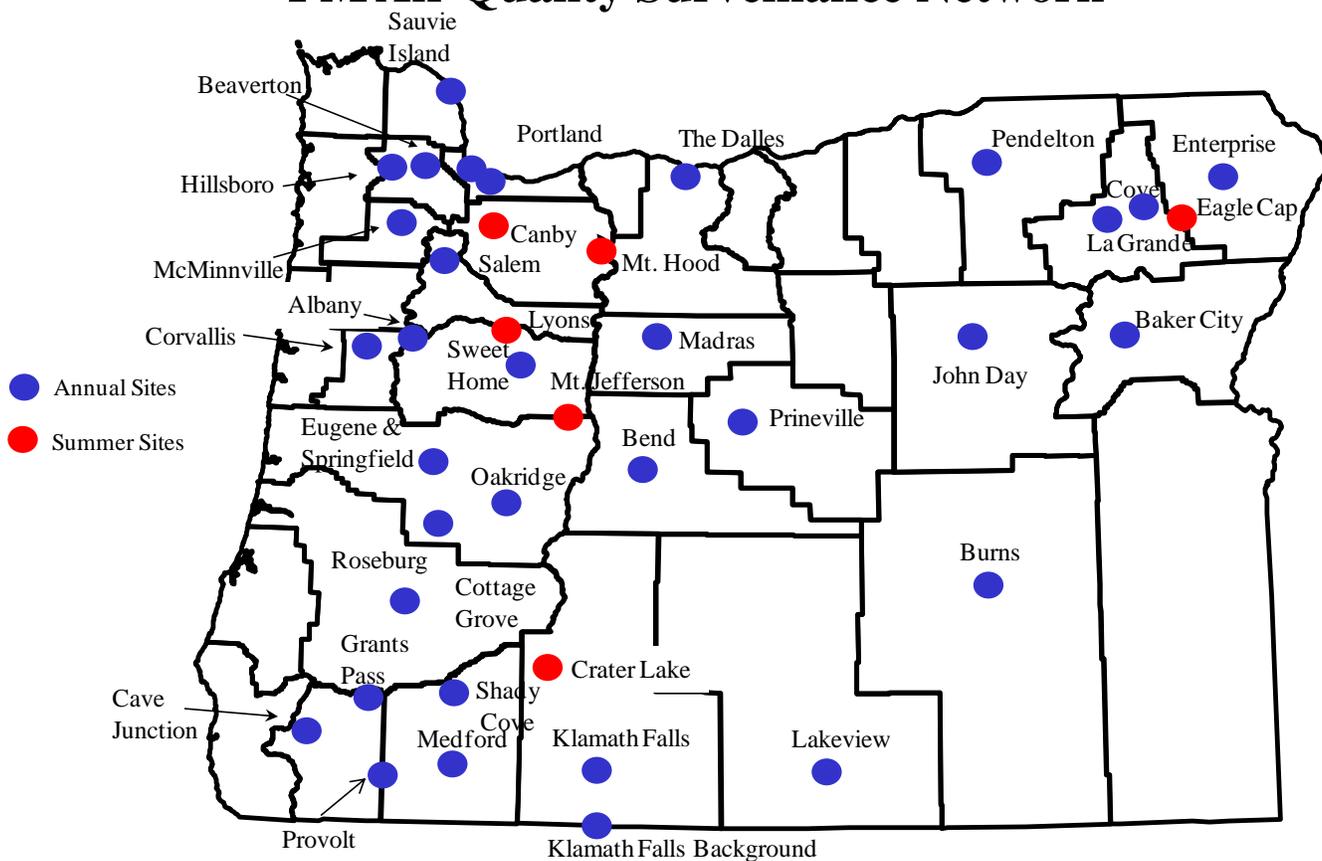


Figure 14. Locations where the Air Quality Index is available real time for July 2009 to June 2010.

4.10 Field Burning Network

ODEQ partners with the Oregon Department of Agriculture to monitor Willamette Valley field burning from July through September. The sites are shown in Table 13. The field burning network consists of visibility monitors (nephelometers) and meteorology. This information is used to track the effectiveness of the Department of Agriculture’s field burning control program. The visibility data is converted to PM_{2.5} estimates and is available once per hour on ODEQ’s web site and uploaded to AIRNow.

ODEQ is also partnering with Union County to operate a field burning site in the Grande Ronde Valley in Cove. The Cove site provides visibility, PM_{2.5} estimates, and wind speed and wind direction.

Table 13. Field Burning monitoring network.

EPA #	Site Name	Assessment Method	Project Objective	Measurement Scale	Sampling Frequency
410030013	Corvallis Fire Station #3 (neph)	011	Population	Regional	July-Sept
410050004	Spangler Road (neph & met)	011	Population	Regional	July-Sept
Not established yet	Silverton (Neph, met, PM _{2.5})	011, 050, 020	Population	Regional	Annual
410470041	Salem State Hospital (neph)	011	Population	Regional	July-Sept
None	Lyons/Marilynn School (neph)	011	Population	Regional	July-Sept
410610120	Cove (neph & met)	011, 050, 020	Population	Regional	July-Sept

011 – Nephelometer, 020- Instrumental - Spot Reading, 050 – Instrumental – Electronic or Machine Avg.

Funded by the Oregon Department of Agriculture and Union County (Cove).

4.11 Forest Health Network

ODEQ partners with the US Forest Service and BLM to monitor prescribed burning and forest fires in the areas shown in Table 14. The forest health network consists of visibility monitors (nephelometers). This information is used to track the effectiveness of the USFS/BLM prescribed burning program and health impacts from forest fire smoke. The visibility data is converted to PM_{2.5} estimates and is available once per hour on ODEQ’s web site and AIRNow.

Table 14. Forest Health monitoring network.

EPA #	Name/City	Assessment Method	Project Type	Project Objective	Measurement Scale	Sampling Frequency
410010003	Baker City	011	Prescribe Burn	Population	Regional	Annual
410190002	Roseburg	011	Prescribe Burn	Population	Regional	Annual
410230001	John Day	011	Prescribe Burn	Population	Regional	Annual
410250002	Burns	011	Prescribe Burn	Population	Regional	Summer
410290019	Shady Cove	011	Prescribe Burn	Population	Regional	Annual
410330010	Illinois Valley	011	Prescribe Burn	Population	Regional	Annual
410330011	Provolt	011	Prescribe Burn	Population	Regional	Annual
410330114	Grants Pass	011	Prescribe Burn	Population	Regional	Summer
410350004	Klamath Falls	011	Prescribe Burn	Population	Regional	Summer
410630001	Enterprise	011	Prescribe Burn	Population	Regional	Annual

Funded by the U.S. Forest Service (all nephelometers)

Wildfire Air Quality Rating (WAQR)

ODEQ created a rating (index) which uses PM_{2.5} estimates to calculate health levels. The health level rating is updated hourly and includes the maximum one, eight, or 24 hour average. The one hour average is important because a forest fire smoke plume is concentrated and can inundate an area within an hour. EPA’s Air Quality Index health levels are based on 24 hour averages and do not register immediate smoke inundation. Figure 15 shows the WAQR web page.

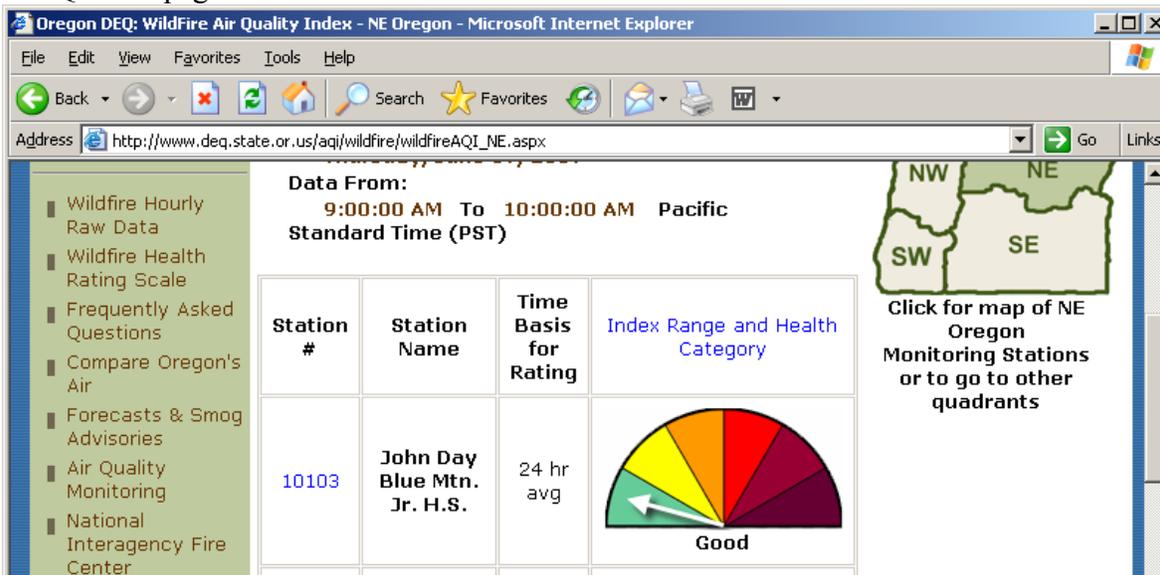


Figure 15. Wildfire Air Quality Rating (WAQR) web page.

4.12 Visibility Network

ODEQ operates a four site visibility network near pristine Class 1 areas; three in the Cascade Range and one near the Eagle Cap Wilderness in NE Oregon. Table 15 lists the visibility sites.

Table 15. Oregon Visibility Network – Neph & Met.

AIRS #	Site Name	Assement Method	Project Type & Objective	Measuremen t Scale	Sampling Frequency
410050102	Mt. Hood Wilderness/Multopor	011,050,020	Visibility	Regional	July - Sept
410351001	Crater Lake (neph only)	011,050,020	Visibility	Regional	July - Sept
410430103	Mt. Jefferson Wilderness/Big Lake	011,050,020	Visibility	Regional	July - Sept
410610121	Eagle Cap Wilderness/Mt. Fanny	011,050,020	Visibility	Regional	July - Sept

These sites operate both visibility and meteorology sensors and the data is available in the AQI or WAQR on an hourly basis.

EPA operates its own visibility network (IMPROVE) which speciates PM_{2.5} in pristine areas. These sites are listed in Table 16 and shown in Figure 16. The National Atmospheric Deposition Program is a consortium of agencies that monitor for pollutant deposition. There are six NADP sites in or next to Oregon also shown in Figure 16. NADP consists of the Mercury Deposition Network (MDN) and the National Trends Network (NTN). More information is available at <http://nadp.sws.uiuc.edu/>.

Table 16. Non State or Local Oregon visibility sites.

Region	Location	EPA # / IMPROVE CODE	Vis//PM _{2.5} Est.	IMPROVE	Met	MDN	NTN
Hells Canyon	Hells Canyon			X			
Crater Lake NP	Crater Lake	410351001 / CRLA	X	X			
Eagle Cap Wild.	Mt. Fanny	410610121	X		X		
Eagle Cap Wild.	Strawberry Mt.	STAR		X			
Kalmiopsis Wild.	Kalmiopsis	KALM		X			
Mt Hood Wild.	Multopor	410050102 / MOHO	X	X	X		
Mt Jefferson Wild.	Big Lake/Junction	410430103	X		X		
Three Sisters Wild.	Three Sisters	THIS		X			
Portland Metro	Beaverton Highland Park	410670004/ OR01	X			X	
Lane County	Andrews Forest, Blue River	OR10				X	X
Lake County	Silver Lake Ranger Station	OR09					X
Benton County	Hyslop Farm, Lewisburg	OR97					X
Union County	Starkey Experimental Forest	OR18					X
Skamania Co., WA	Columbia River Gorge	WA98					X

Notes: MDN = Mercury Deposition Network. NTN = National Trends Network for wet deposition of free acidity, calcium, magnesium, sodium, potassium, sulfate, nitrate, chloride, and ammonium.

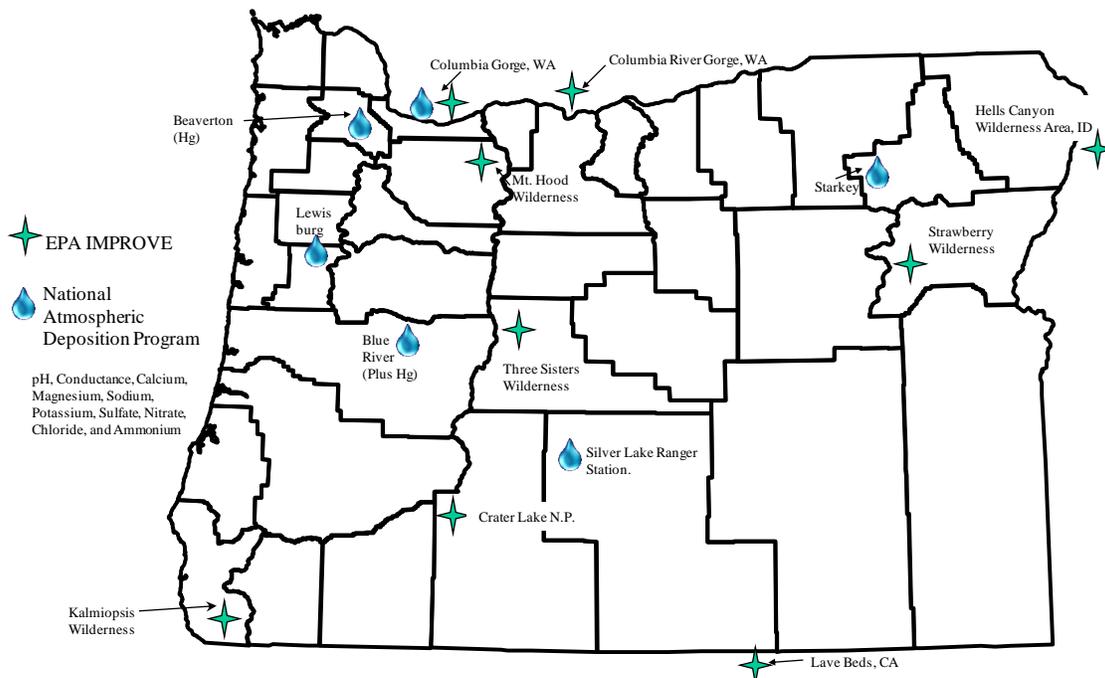


Figure 16. National Atmospheric Deposition Program and EPA IMPROVE network.

4.13 Meteorology Network

ODEQ and LRAPA operate a meteorology network in support of ozone, PM_{2.5}, and air toxics. The network is vital in understanding the source of pollution and impact of sources. The network is shown in Figure 17.

2010 DEQ & LRAPA Meteorology Network

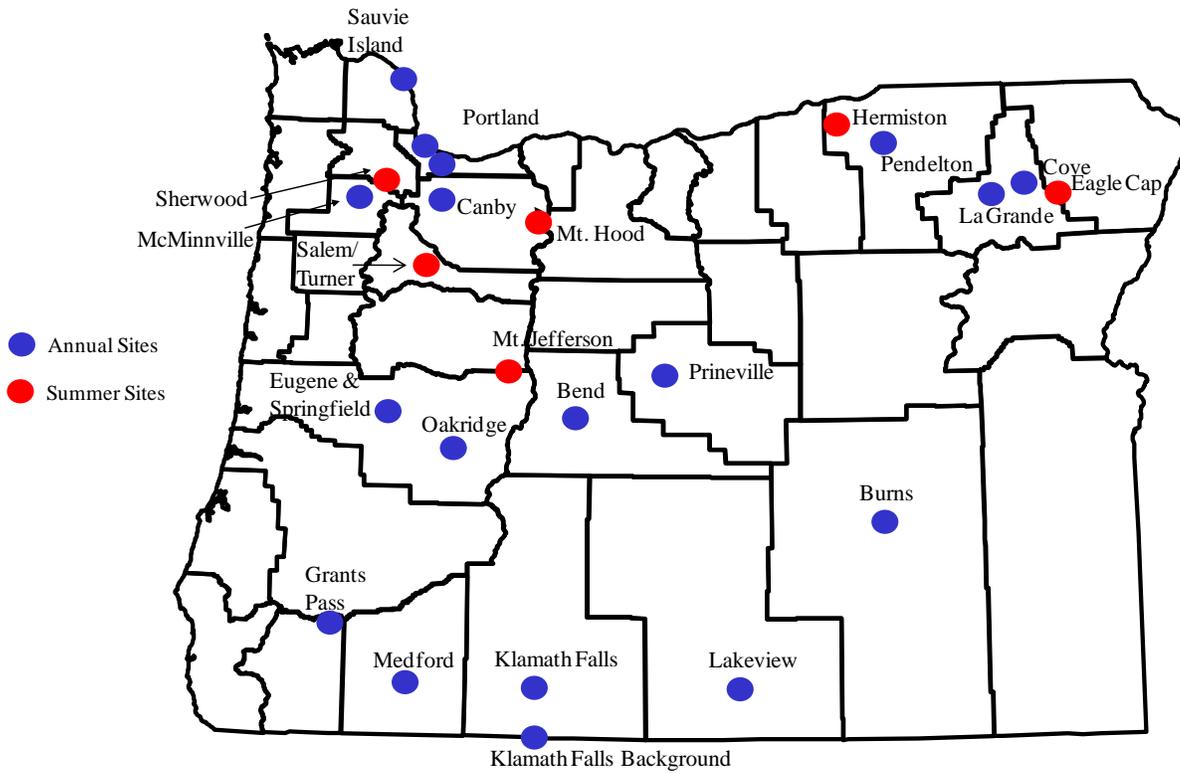


Figure 17. 2010 ODEQ and LRAPA meteorology network.

4.14 Network Summary

A summary of the July 2009 to June 2010 ambient air monitoring network is shown in Table 17.

Table 17. Oregon ambient monitoring network for 2009 – 2010.

City	Site	Site Code	EPA#	MSA	Lat	Long	SO ₂	CO	NO ₂	O ₃	VIS/Pmest	HAPS	PM ₁₀	PM _{2.5}	Spec	PM _{2.5}	TSP Pb	WS/WD	Temp	DT	BP	RH	SR
Albany	Calapooia School	ACS	410430009	0000	44.616	-123.092					X												
Bend	Bend Road Dept..	BRD	410170122	0000	44.022	-121.260				X								X	X		X	X	X
	Bend Pump Station	BPS	410170120	0000	44.064	-121.313					X			X									
Burns	E. Madison, Burns	BMS	410250002	0000	43.586	-119.051					X			X									
	E. Washington St.	BWS	410250003	0000	43.589	-119.048					X			X				X	X		X	X	X
Corvallis	Intermediate School	CCB	410030013	1890	44.588	-123.274					X												
CottageGrove	City Shops	CGH	410399003	0000	43.800	-123.053					X			X									
Eugene	Lane Community College	LCC	410390013	2400	44.048	-123.092		X			X		X										
	Pacific Hwy99N	EKB	410390058	2400	44.066	-123.140							X	X									
	E. 29th Amazon Park	EAP	410390060	2400	44.026	-123.084				X	X	X	X	X									
	Wilkes Dr	WLK	410390101	2400	44.116	-123.121												X	X	X	X	X	X
	Petersen Park	EPB ¹	410390062	2400	44.073	-123.162						X											
<i>Saginaw</i>	Delight Vly Sch Rd	SAG	410391007	2400	43.834	-123.035				X													
Springfield	City Hall	SSH	410391009	2400	44.047	-123.018					X			X			X						
Florence	Fire Department	FDF ^{1,2}	410390100	0000	43.990	-124.109					X												
Grants Pass	Parkside School	GPP	410330114	0000	42.432	-123.346					X			X				X	X		X		
Hermiston	Municipal Airport ²	HMA	410591003	0000	45.829	-119.263				X								X	X				
Klamath Falls	Clinton St, Peterson Sch	KFP	410350004	0000	42.189	-121.723					X		X	X	X			X	X	X	X	X	X
	Klamath Falls Background	KFB	410350015	0000	42.000	-121.704					X							X					
La Grande	Ash Street	LAS	410610119	0000	45.339	-117.905					X	X	X	X				X	X	X	X	X	X
Lakeview	Center & M Streets	LCM	410370001	0000	42.189	-120.352					X			X				X	X		X		
Madras	Madras	MWS	410310007	0000	44.631	-121.132					X												
McMinnville	Newby School	MNS	410711002	6440	45.209	-123.212					X							X	X		X	X	X
	River Road	MPB	410711702	6440	45.229	-123.158											X						

1. Started up in 2009-2010
2. Shut down in 2009-2010

(cont.). Oregon ambient monitoring network for 2009 – 2010

City	Site	Site Code	EPA#	MSA	Lat	Long	SO ₂	CO	NO ₂	O ₃	VIS/PM	HAPS	PM ₁₀	PM _{2.5}	PM _{2.5} Spec	TSP Pb	WS/W/D	Temp	DT	Bp	RH	SR		
Medford	Rogue Valley Mall	MRM	410290018	4890	42.341	-122.876		X																
	Welch & Jackson	MWJ	410292129	4890	42.332	-122.880							X											
	Grant and Belmont	MGB	410290133	4890	42.314	-122.879					X	X		X										
	Talent	TAL	410290201	4890	42.229	-122.788				X														
	Rossanley Drive	MTV	410291002	4890	42.368	-122.910											X	X	X	X	X	X	X	
	Dodge Road	MDR	410291001	4890	42.536	-122.875								X										
Oakridge	School Street	OAK	410392013	0000	43.744	-122.481					X		X	X	X		X	X	X	X			X	
Pendleton	SW Marshall Pl	PMC	410590121	0000	45.652	-118.819					X		X	X			X	X		X				
Portland	SW Miller - KPTV tower	KPTV	410511080	6440	45.522	-122.748												X	X					
	SE Lafayette & SE 58th	SEL	410510080	6440	45.497	-122.602	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	
	NW 26 th	TTT	410510009	6440	45.546	-122.705							X											
	SW Third Street	PPB	410510087	6440	45.519	-122.673		X																
	N Roselawn	PNR	410510246	6440	45.561	-122.679					X	X		X										
	N Kirby, Jefferson High	PJH	410511191	6440	45.561	-122.672												X						
<i>Beaverton</i>	Highland Prk School	BHP	410670111	6440	45.470	-122.816					X													
<i>Carus</i>	Spangler Road	SPR	410050004	6440	45.260	-122.588				X	X						X	X						
<i>Hillsboro</i>	NE Grant St.	HHF	410671003	6440	45.518	-122.967					X			X										
<i>Sauvie Is</i>	Rt 1 Box 442	SIS	410090004	6440	45.768	-122.772				X	X						X	X						
<i>Sherwood</i>	SW Lasich Lane	SLR	410671004	6440	45.402	-122.854				X							X	X		X	X		X	
Prineville	SE Court St.	PDP	410130100	0000	44.300	-120.845					X		X				X	X		X	X		X	
Roseburg	NW Garden Valley Blvd	RGV	410190002	0000	43.228	-123.364					X													
Salem	Salem State Hospital	SSH	410470041	7080	44.943	-123.006					X	X												
	<i>Turner</i> Cascade Jr. High,	CJH	410470004	7080	44.809	-122.914				X								X	X					
Sweet Home	Fire Department	SFD	410432002	0000	44.396	-122.730					X													
The Dalles	Cherry Heights	TDC	410650007	0000	45.602	-121.203					X													
White City	Crater Lake Hwy	WPO	410294001	4890	42.426	-122.851							X											

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5 July 2010 to June 2011 Network Plan

Recently, EPA has revised the NO₂ standard and monitoring rule, requiring one to two new monitors in Oregon. EPA has proposed revising the Ozone NAAQS and monitoring rule with the possible addition of one to two monitors. EPA proposed revising the SO₂ NAAQS and monitoring rule with the possibility of adding two to three new monitors. EPA proposed revising the lead rule with the possibility of adding one to two new monitors. Still to come in 2010, EPA will propose a revised PM_{2.5} NAAQS which may require more investment in monitoring.

At the same time as these new monitoring requirements go into effect, Oregon is facing a state budget cut. Due to reduced revenue projections, ODEQ is required to submit a budget proposal of 9% across the board cuts of the state general fund for the 2011-2013 Biennium. If fully taken, these budget cuts will result in the closure of numerous sites and the reduction of monitoring staff positions and these resources will not be available to meet any of the new EPA monitoring requirements. Shutting down the some PM₁₀, CO, Continuous PM_{2.5}, and air toxics sites will help meet these reductions while maintaining the current ozone and PM_{2.5} networks.

ODEQ plans on the following network changes to cut costs and refocus resources from low priority to high priority monitoring. ODEQ will:

PM₁₀

- 1) Discontinue the Grants Pass (41-033-0114) PM₁₀ FRM. This site has not had an annual second high value above 33% of the NAAQS in the last 10 years. The funding will be transferred to PM_{2.5} in Prineville or lost to state budget cuts.
- 2) Discontinue the Pendleton PM₁₀ FRM (41-059-0121). This site has not had an annual second high value above 37% of the NAAQS in the last 10 years. The funding will be transferred to either 1) support new ozone, SO₂, or NO₂ monitoring requirement or 2) be lost in possible state budget cuts.
- 3) Discontinue the Medford Welch and Jackson PM₁₀ FRM (41-029-2129). This site has not had an annual second high value above 62% of the NAAQS in the last 10 years. The funding will be transferred to either 1) support new ozone, SO₂, or NO₂ monitoring requirement or 2) be lost in possible state budget cuts.
[This monitor is one of three in the Medford PM₁₀ AQMA: The White City PM₁₀ sampler (41-029-4001) will remain operating indefinitely and the Medford Grant and Belmont PM₁₀ sampler (41-029-0133) will operate as long as air toxics are collected in Medford (possibly for two more years)].
- 4) Discontinue the Klamath Falls PM₁₀ FRM (41-035-0004). This site has not had a second high value above 62% of the NAAQS in the last 10 years. The funding will be transferred to either 1) support new ozone, SO₂, or NO₂ monitoring requirement or 2) be lost in possible state budget cuts.

PM_{2.5}

- 5) Discontinue the La Grande (41-061-0119) PM_{2.5} FRM. The three year average 98th percentile for this site is 18ug/m³. The funding will be transferred to the Hillsboro site to support the required increase in sampling frequency from every sixth day to

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ever third. LAS will continue to collect light scattering (continuous PM_{2.5} estimate) data.

- 6) Discontinue the Medford Dodge Road (41-029-1001) PM_{2.5} FRM Background site. The funding will be transferred to support the winter-time PM_{2.5} monitoring at a new site in Silverton.
- 7) Discontinue the Portland N. Roselawn (41-051-0246) PM_{2.5} FRM. The PNR three year average 98th percentile is 20ug/m³. Funding will be shifted to fund an FRM in Sweet Home which was defunded by the Oregon Dept of Agriculture. PNR will continue to collect light scattering (continuous PM_{2.5} estimate) data.
- 8) Start a Sweet Home (41-43-2002) PM_{2.5} FRM on a 1/6 schedule. FRM sampling will start here because the site had an estimated three year average 98th percentile of 32ug/m³ (based on light scattering).
- 9) Hillsboro (41-067-0004) PM_{2.5} FRM will change its schedule from 1/6 to 1/3 because its current 98th percentile is within 5 to 10% of the NAAQS.
- 10) ODEQ will start up a light scattering (continuous PM_{2.5} estimate) and meteorology site in Silverton, Oregon which will be funded during the summer months by the Oregon Department of Agriculture and during the winter by DEQ. The site will monitor field burning in the area just northwest of Salem starting July, 2010.
- 11) ODEQ may discontinue light scattering(continuous PM_{2.5} estimate) at the Klamath Falls Background site to transfer funding to either 1) support for a PM_{2.5} survey in the Klamath Falls area to validate modeling results or 2) be lost in possible state budget cuts.
- 12) Will assist the Siletz Tribe in the set up and operation of a Coos Bay light scattering (continuous PM_{2.5} estimate) and meteorology site if requested. Offer remains open.

CO

- 13) Discontinue the Portland, SW 3rd CO site (41-051-0087). This site is 21% of the NAAQS. The funding will be transferred to either 1) support new ozone, SO₂, or NO₂ monitoring requirement or 2) be lost in possible state budget cuts.
- 14) Discontinue the Medford Rogue Valley Mall CO site (41-039-0018). This site is 25% of the NAAQS. The funding will be transferred to either 1) support new ozone, SO₂, or NO₂ monitoring requirement or 2) be lost in possible state budget cuts.

Lead

- 15) ODEQ will start an NCORE TSP (or PM₁₀) lead monitor at Portland SE Lafayette (41-051-0080) in Jan. 2011. The funding source is expected to be EPA, as they have done with the new Pb is in McMinnville.
- 16) ODEQ will start a TSP lead site at the Hillsboro Airport (no site yet) in Jan 2011 pending final adoption of the revised rule of 0.5tpy lead per source. The funding source is also expected to be EPA.

NO_y

- 17) ODEQ will start operating an NO_y monitor at Portland SE Lafayette (41-051-0080) in Jan. 2011 as required by NCORE. This will be funded by the federal PM_{2.5} grant.

Air Toxics

- 18) ODEQ will move the Salem air toxics site on July 1st to Hillsboro, N. Portland, Gresham, Albany, McMinnville, or St. Helens depending on the outcome of the 2005 NATA yet to be reviewed. The state funding for this site may be cut on June 30th, 2011 at which time the site may be discontinued.

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With these network changes Oregon DEQ and LRAPA will continue to provide useful high quality monitoring information to Oregonians and to EPA.

6 Conclusion

In general ODEQ and LRAPA are continuing to follow the EPA monitoring strategic plan and focus our networks on PM_{2.5} and ozone (because these pollutants are near or above the NAAQS), air toxics, and real time reporting. We also have Oregon's National CORE site at Portland, SE Lafayette fully operational except for NO_y which we will do before January 2011.

Recent (and proposed) changes in the NAAQS and monitoring rules will require DEQ to focus more resources on ozone, NO₂ and SO₂. We will also likely have to add more PM_{2.5} and lead sites. All these new requirements are occurring while Oregon state funding is being cut. To finance this new monitoring, some lower priority monitoring will need to be discontinued. Carbon monoxide and PM₁₀ have remained far below the NAAQS for at least ten years. ODEQ will shut down our remaining non trace CO sites and four of our PM₁₀ sites.

2010 Oregon Annual Ambient Air Monitoring Network Plan

APPENDIX A. TOTAL LIST OF COMPOUNDS ANALYZED IN ODEQ AND LRAPA HAZARDOUS AIR POLLUTANTS (HAPS) PROGRAMS.

HV Mass PM₁₀ Quartz

Arsenic	Chromium	Manganese
Beryllium	Cobalt	Nickel
Cadmium	Lead	Selenium

Air Quality HAPs - Ketones/aldehydes by TO-11

Formaldehyde	2-Butanone (MEK)	o-Tolualdehyde
Acetaldehyde	Butyraldehyde	m-Tolualdehyde
Acetone	Benzaldehyde	p-Tolualdehyde
Propionaldehyde	Isovaleraldehyde	Hexaldehyde
Crotonaldehyde (2-Butenal, (E))	Valeraldehyde	2,5-Dimethylbenzaldehyde

Air Quality HAPs - Semi-volatile Organic Compounds by TO-13

Naphthalene	Anthracene	Benzo[e]pyrene
Acenaphthylene	Fluoranthene	Benzo[a]pyrene
Acenaphthene	Pyrene	Perylene
Dibenzofuran	Benzo[a]anthracene	Indeno[1,2,3-cd]pyrene
Fluorene	Chrysene	Dibenz[a,h]anthracene
Dibenzothiophene	Benzo[b]fluoranthene	Benzo[g,h,i]perylene
Phenanthrene	Benzo[k]fluoranthene	Coronene

Air Quality HAPs - VOCs by Method TO-15

1,1,1-Trichloroethane	2-Hexanone	Dichlorotetrafluoroethane
1,1,2,2-Tetrachloroethane	3-Chloropropene	Ethyl Benzene
1,1,2,2-Tetrachloroethylene	4-Ethyltoluene	Hexachloro-1,3-Butadiene
1,1,2-Trichloroethane	Acetone	Isopropanol
1,1-Dichloroethane	Acrylonitrile	Methylene Chloride
1,1-Dichloroethylene	Benzene	4-Methyl-2-Pentanone (MIBK)
1,2,4-Trichlorobenzene	Bromodichloromethane	Methyl-tert-Butyl Ether (MTBE)
1,2,4-Trimethylbenzene	Bromoform	n-Heptane
1,2-Dibromoethane (EDB)	Bromomethane	n-Hexane
1,2-Dichlorobenzene	Carbon Disulfide	Styrene
1,2-Dichloroethane	Carbon Tetrachloride	Tetrahydrofuran
1,2-Dichloropropane	Chlorobenzene	Toluene
1,2-Dimethylbenzene	Chloroethane	trans-1,2-Dichloroethene
1,3,5-Trimethylbenzene	Chloroform	trans-1,3-Dichloropropene
1,3-Butadiene	Chloromethane	Trichloroethylene
1,3-Dichlorobenzene	cis-1,2-Dichloroethylene	Trichlorofluoromethane
1,4/1,3-Dimethylbenzene	cis-1,3-Dichloropropene	Trichlorotrifluoroethane
1,4-Dichlorobenzene	Cyclohexane	Vinyl bromide
2,2,4-Trimethylpentane	Dibromochloromethane	Vinyl Chloride
2-Butanone (MEK)	Dichlorodifluoromethane	

Not all compounds in this list are Hazardous Air Pollutants.