Supplement to the Washington State State Implementation Plan

Vancouver Air Quality Maintenance Area Second 10-year Carbon Monoxide Maintenance Plan

Approved by SWCAA Board of Directors
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Prepared by

Southwest Clean Air Agency

For more information

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Table of Contents

Tables

Figures

Appendices

Appendix A Description of the Vancouver CO Maintenance Area
Appendix B Memo granting permission for monitor removal
Appendix C EPA AirData values for Atlas and Cox site, 1996-2005
Appendix D Vancouver 2002 Seasonal Emission Inventory Methodology
Appendix E Washington State and SWCAA Rules – Control Strategies and Contingency Plan Regulations

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Executive Summary

Vancouver, WA has been in compliance with the 8-hour carbon monoxide (CO) National Ambient Air Quality Standard (NAAQS) every year since 1992. In 1990, as a result of the passage of the Federal Clean Air Act Amendments (FCAAA) and the establishment of new national standards for CO, the Portland/Vancouver Air Quality Maintenance Area (AQMA) was deemed to be out of compliance or in 'nonattainment' with this standard. In 1995, the Portland /Vancouver AQMA was split into two separate airsheds for managing CO ambient standards. In 1996, U.S. Environmental Protection Agency (EPA) formally redesignated the Vancouver area from a CO nonattainment area to a CO maintenance area, once the EPA determined the area met the standard, approved a plan to maintain the standard for a 10-year period, and found that Vancouver had met the other requirements for redesignation. The Clean Air Act requires that an area redesignated from nonattainment to maintenance submit a plan for maintaining the NAAQS for a second 10-year period.

Therefore, this Vancouver CO Plan is submitted by the Southwest Clean Air Agency (SWCAA) for inclusion into the Washington State Implementation Plan (SIP) and will serve as the second 10-year CO maintenance plan for the Vancouver AQMA. This document demonstrates that the Vancouver area will be in compliance with the NAAQS for CO through 2016 and meets other EPA requirements.

The current NAAQS for CO is 9 ppm (or 10 mg/m3) for an 8-hour average and 35 ppm (or 40 mg/m3) for a 1-hour average, not to be exceeded more than once per year. The current 8-hour CO design value for the Vancouver CO area is 4.8 ppm based on 2004-2005 data, well below the standard. Also, the Vancouver CO area has shown a generally declining trend in the ambient 8-hour CO concentrations over the past several years.

This design value qualifies Vancouver to use the Limited Maintenance Plan (LMP) approach in preparing this CO maintenance plan. EPA detailed the limited maintenance plan approach in a memorandum entitled ``Limited Maintenance Plan Option for Nonclassifiable CO Nonattainment Areas" from Joseph Paisie, Group Leader, Integrated Policy and Strategies Group, Office of Air Quality Planning and Standards (OAQPS), dated October 6, 1995." (LMP Guidance).

According to the LMP guidance, EPA will consider the maintenance demonstration satisfied if the monitoring data show the design value is at or below, 7.65 parts per million (ppm), or 85 percent of the level of the 8-hour CO NAAQS. The design value must be based on eight consecutive quarters of data.

One of the requirements for an area to be eligible to use the Limited Maintenance Plan option is that there be no changes to the previous 10-years' plan control measures. The control measure set forth in the 1996 plan was the Washington State I/M program. While some changes in testing technology and in which model year vehicles are required to be tested have occurred, the program assures that emission control equipment is being maintained. Mobile sources represent over 60% of CO winter emissions, based on 2002 emission calculations. The Southwest Washington Regional Transportation Council's (RTC) Metropolitan Transportation Plan (MTP)[1]

[1] Metropolitan Transportation Plan for Clark County, Southwest Washington Regional Transportation Council, December 2005

predicts decreasing CO emission estimates. This decrease is, in part, due to federal automobile emission standards and fleet turnover. Other efforts identified in the MTP to improve traffic flow have contributed and continue to contribute to the reductions in pollutants from cars and trucks. Since vehicle use is growing two to three times faster than Washington's population growth[2], and since mobile sources are the largest contributor to CO emissions, maintaining the vehicle I/M program is important to maintaining current air quality and achieving predicted CO emissions reductions.

As mentioned above, EPA will consider the maintenance demonstration satisfied if the monitoring data show the design value is at or below, 7.65 parts per million (ppm), or 85 percent of the level of the 8-hour CO NAAQS. In addition, when EPA approves a limited maintenance plan, the motor vehicle emission budget (MVEB) is considered not constraining for the length of the maintenance period. Since the area is in compliance with the standard, no new control strategies or new regulations will be necessary. The Vancouver area meets the CO standard with existing control measures.

To verify continued attainment with the standard, SWCAA will track countywide, mobile emissions through the Washington Department of Ecology emission inventory triennially. If mobile emissions decrease as predicted, this will show that Vancouver is in compliance with the CO standard. Our contingency plan, should mobile emissions increase over 2005 levels, would include a tiered level of escalating response. First, SWCAA would determine if the increase is because of a change in emission calculation methodology. Then, if it appears that a true increase has occurred, SWCAA would evaluate options such as conducting a winter CO mobile emission inventory, some form of 'hot spot' analysis using a model such as the Washington State Intersection Screening Tool (WASIST) or some other method, or temporarily conducting CO monitoring. Should an exceedance be measured at the temporary monitoring site, a community advisory group could be formed to evaluate and choose emission reduction measures. Reinstatement of the oxygenated fuel rule could be considered. In the case of a violation of the standard, SWCAA could ask industrial sources to apply Lowest Achievable Emission Rate technology to their proposed projects. However, this option is unlikely to be recommended since industrial sources contribute only a small amount to the overall CO emission total. Due to the low measured CO values in Vancouver over the past ten years, SWCAA does not anticipate any future CO exceedances or violations of the 8-hour standard.

[2] Washington Department of Ecology, Focus on Motor Vehicle Emission Check Program, September 2004, Publication 96-1013-AIR (Rev 9/04)

1.0 Introduction

Carbon Monoxide (CO) is a colorless, odorless gas that displaces oxygen in the body's red blood cells through normal respiration. The major human-caused source of CO is incomplete combustion of carbon-based fuel through the use of gasoline-powered motor vehicles. Other important sources of CO are woodstoves, open burning and industrial boilers. Increased CO concentrations can occur during winter in urban areas when cooler temperatures contribute to incomplete combustion and when CO emissions are trapped near the ground by atmospheric inversions.

The Environmental Protection Agency (EPA) set two national health protection standards for CO: a one-hour standard of 35 parts per million and an eight-hour standard of 9 parts per million. Areas that have CO levels that are above the standard must develop and carry out plans to reduce CO emissions. Areas that previously violated these standards but are now in compliance, must submit plans to assure continued compliance.

2.0 Background

2.1 General and Historical Information

The Portland, OR/Vancouver, WA CO Maintenance Area was designated a moderate CO nonattainment area per section 107(d)(1)(A) of the 1990 Federal Clean Air Act Amendments (FCAAA). The Vancouver CO Air Quality Management Area (AQMA) has met the CO National Ambient Air Quality Standard (NAAQS) every year since 1992. There have been two exceedances of the 8-hour standard since that time, but no violation of the standard since 1990.

On September 29, 1995, EPA approved the separation of the Portland, OR/Vancouver, WA CO nonattainment area into two distinct nonattainment areas, effective November 28, 1995.

Through a combined effort of the Southwest Clean Air Agency (SWCAA), the Washington Department of Ecology (Ecology), and the Southwest Washington Regional Transportation Council (RTC), a Redesignation Request/Maintenance Plan for the Vancouver CO area was prepared in 1995 in accordance with the requirements of the Federal Clean Air Act Amendments and EPA guidance.

On October 21, 1996, the EPA approved the redesignation request and the 10-year CO Maintenance Plan. EPA formally redesignated the Vancouver area from a CO nonattainment area to a CO maintenance area in 1996 after EPA determined the area met the CO standard, approved a plan to maintain the CO standard for a 10-year period, and found that Vancouver had met the other requirements for redesignation The first 10-year maintenance period ended on October 21, 2006. While CO concentrations in the Vancouver area continue to be significantly better than the air quality standard requires, Section 175A(b) of the Clean Air Act requires SWCAA to develop a second 10-year maintenance plan to ensure that the area will continue to achieve the CO NAAQS through 2016.

This Vancouver CO Plan is submitted for inclusion into the Washington State Implementation Plan (SIP) and will serve as the second 10-year CO maintenance plan for Vancouver, WA.

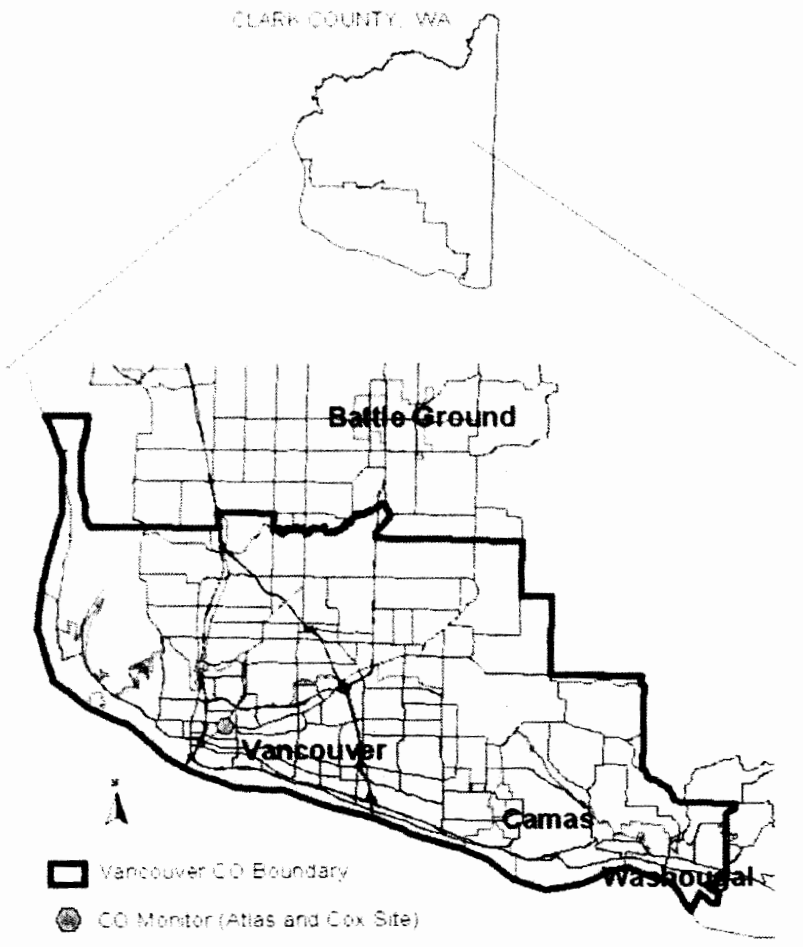
2.2 Planning direction

Vancouver qualifies for the Limited Maintenance Plan (LMP) option for the second 10-year maintenance plan. EPA's Limited Maintenance Plan approach is detailed in the EPA guidance memorandum "Limited Maintenance Plan Option for Nonclassifiable CO Nonattainment Areas" from Joseph Paisie of EPA OAQPS dated October 6, 1995. Therefore, SWCAA and Ecology are submitting a LMP to meet the federal requirement for a second 10-year period. A base year emissions inventory is required as part of a complete LMP submittal. The base year chosen for this work is 2002. SWCAA compiled the base year CO emission inventory with assistance from both Ecology and RTC.

2.3 Vancouver CO Maintenance Plan Area

The geographic area of the Vancouver CO maintenance area includes the high density urbanized southern portion of Clark County (see Figure 1 below). A legal description can be found in Appendix A. The boundaries of the emission inventory area correspond to the Vancouver CO maintenance area boundary.

Figure 1.Vancouver CO Maintenance Area



2.4 CO Monitoring Network

Up until October of 2006, the Vancouver CO maintenance area had a CO monitoring site located at the intersection of Fourth Plain Boulevard and Fort Vancouver Way. It was known as the Atlas and Cox site (EPA Site ID#530110010). Figure 1 also shows the location of this site. EPA granted approval to Ecology to remove the monitor in a memo dated May 1, 2006. A copy of this memo is included in Appendix B. Ecology removed the monitor from this site on October 5, 2006. There are no longer any CO monitors operating in the Vancouver CO maintenance area.

Historically, other CO monitors operated in the Vancouver area, but were discontinued with EPA approval when they were determined to no longer be needed due to low measured CO levels. The other locations were at the intersection of Highway 99 and 78th Street (1995-2000) and on Evergreen Boulevard between Main Street and Broadway (1978-1986).

3.0 Air Quality Status

The current NAAQS for CO is 9 ppm (or 10 mg/m^3) for an 8-hour average and 35 ppm (or 40 mg/m^3) for a 1-hour average, not to be exceeded more than once per year over at least two consecutive years. The Vancouver CO AQMA is currently a maintenance area for the 8-hour CO NAAQS. The Vancouver CO AQMA attained the carbon monoxide NAAQS based on air quality monitoring data from the Vancouver Atlas & Cox site from 1992-1993 and has not had a violation of the standard since that time. If a monitoring value exceeds 9 ppm, it is considered an exceedance of the standard. An exceedance is not a violation. If a nonoverlapping, monitored value exceeds the CO standard more than once in a year, then the area has violated the CO NAAQS.

3.1 Exceedances

EPA AirData data shows only one exceedance of the 8-hour CO standard since 1995. This exceedance occurred in 1999. The 1999 exceedance did not constitute a violation of the standard because CO readings did not exceed 9 ppm more than once in that year. One other exceedance since 1992 occurred in 1994 and predates data shown in AirData. Table 1 below shows the 8-hour values for CO for all published AirData data for the years 1995 through 2005. Vancouver has not violated the CO National Ambient Air Quality Standard (NAAQS) since redesignation in 1996.

Table 1. Vancouver Atlas and Cox station, Monitored CO Values and Exceedances

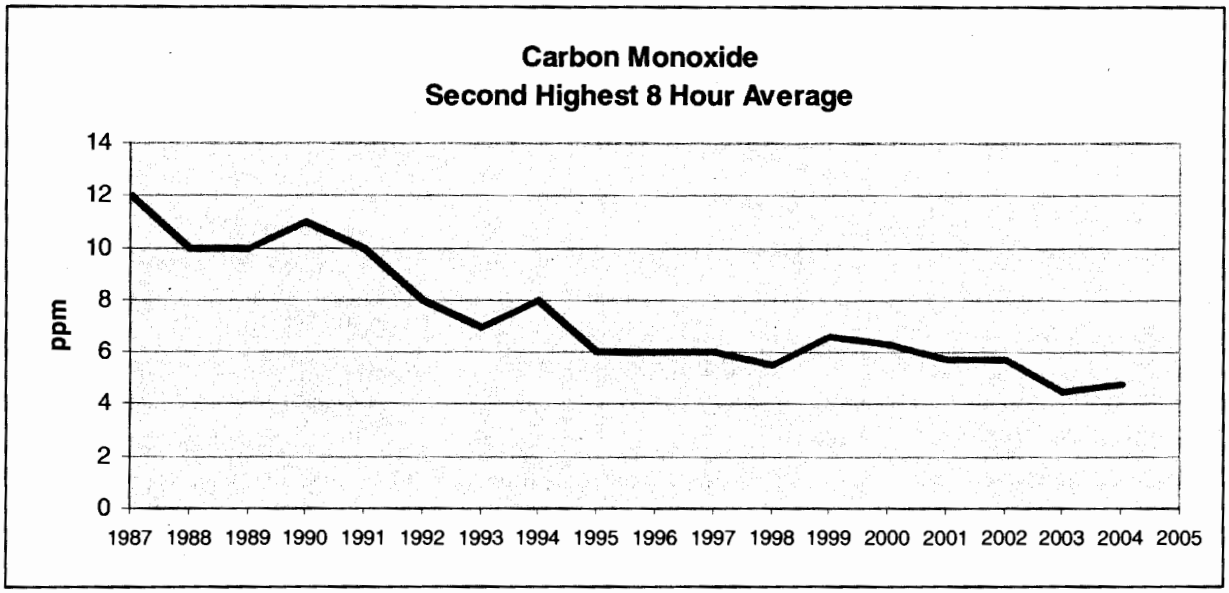
8-hour values			
1st Max	2nd Max	# Exceed	Year
6.8	6.3	0	1995
6.8	6.4	0	1996
6.6	6.0	0	1997
5.7	5.5	0	1998
10.1	6.7	1	1999
6.7	6.2	0	2000
5.9	4.7	0	2001
5.9	5.7	0	2002
4.7	4.5	0	2003
5	4.8	0	2004
4.9	4.6	0	2005

Values from US EPA - AirData Monitor Values Report - Criteria Air Pollutants
Downloaded 15-Mar-2006 at 10:35:41 AM (USA Eastern time zone)

3.2 Second Highest 8-hour Averages

The CO standard cannot be exceeded more than once per year. The second highest high values are used to determine compliance. The second highest highs from 1987 through 2005 are shown in Figure 2 below. The figure shows that CO values have been decreasing consistently since 1991.

Figure 2. Second highest 8-hour CO history for the Vancouver, WA Atlas and Cox site

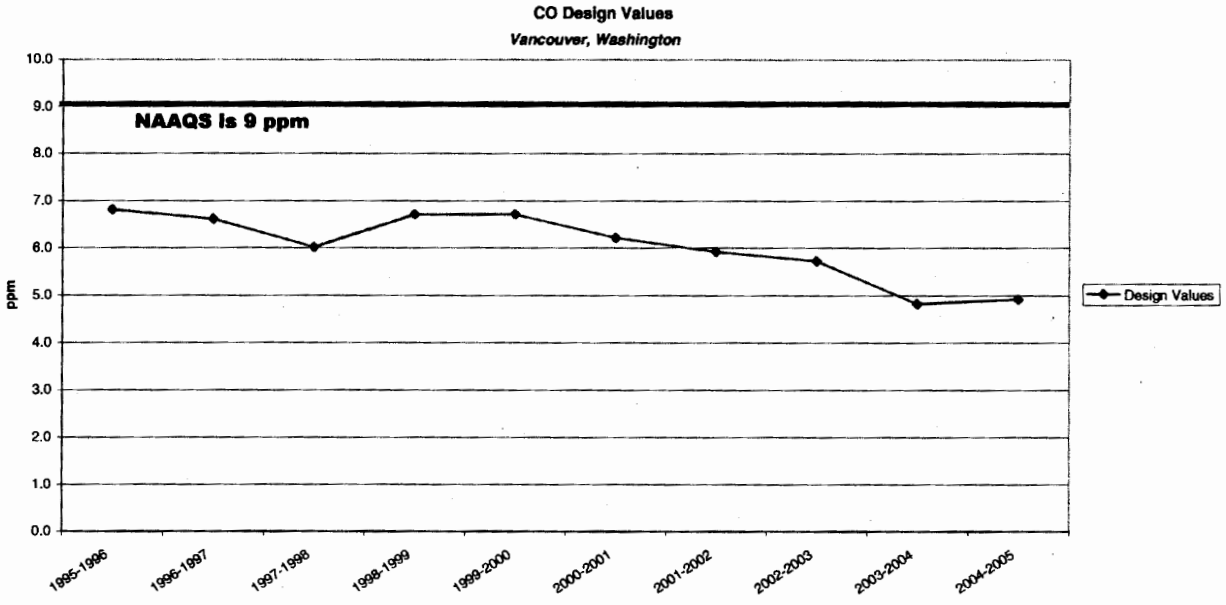


Monitored attainment has not been due to unusual or extreme occurrences in Vancouver's weather patterns. Conditions that can lead to CO exceedances historically occur in the winter, from the end of October through the end of January. Prolonged periods with little vertical mixing usually result in air stagnation that can result in increased CO concentrations. Over the past 14 years, there has been ample opportunity for variability and potential for stagnant winter weather conditions that could have lead to higher CO levels, but CO values have continued to decrease.

3.3 Design Value

The design value, or the compliance level used to compare against the standard, is the higher of the two annual second highs in a two year calendar period. Figure 3 shows design values from 1995 through 2005 based on EPA AirData. The Vancouver AQMD 8-hour average design value is 4.8 ppm based on 2004 and 2005 data, which is the most recent data in AirData. The design value for the 1-hour average is 6.9 ppm. The AirData values for the Vancouver site can be found in Appendix C. 1991 was the last year a second highest high value for a two year period was over 9 ppm. Once the 1992 value was averaged with the previous two years, the value fell below 9 ppm.

Figure 3. Vancouver CO Area Design Values, 1995-2005



SWCAA requested that Ecology petition EPA asking for permission to discontinue monitoring in a letter dated March 20, 2006. Permission was granted to Ecology by EPA by a memo dated May 1, 2006. Monitoring ended at the Atlas and Cox site on October 5, 2006.

4.0 Existing CO Control Strategies

One of the requirements for an area to be eligible to use the Limited Maintenance Plan option is that there be no changes to the previous 10-year Maintenance Plan Control Measures. SWCAA does not plan to change the initial 10-year Maintenance Plan's control strategy for the next 10-year period. The control measure included in Vancouver's 1996 CO plan was the Washington State motor vehicle inspection and maintenance (I/M) program. The Washington State I/M Program as it currently exists is maintained as a control strategy in this second 10-year plan. Additionally, there are current requirements for new industrial sources inside or impacting the maintenance plan area found in SWCAA 400.

The Vancouver portion of the Portland-Vancouver Ozone Maintenance Plan contains control strategies adopted for the reduction of ozone precursors. These control strategies also contribute to reductions of CO emissions. Many of these strategies provide benefits beyond criteria pollutant emission reductions and also help to reduce air toxics, greenhouse gas emissions and contribute to traffic congestion reduction, energy savings, and overall cost-savings for the transportation systems. Other programs such as Commute Trip Reduction also contribute to reducing CO emissions.

Although the 1995 Vancouver CO Maintenance Plan submittal did not establish any new control measures, the plan did take credit for the expanded and enhanced (at that time) vehicle inspection and maintenance program required for the Ozone Maintenance Plan. The I/M program has undergone a few changes since the original CO plan, but is still in place.

4.1 Washington State I/M Program

The 1990 Federal Clean Air Act Amendments (FCAAA) required that areas not meeting standards that had not yet implemented a motor vehicle inspection and maintenance (I/M) program do so. An I/M Program measures emissions from motor vehicles. If excessive levels of emissions are found, the vehicle must be repaired.

The Washington State Plan to attain the ozone standard in southern Clark County submitted to EPA in 1992 extended the State's existing I/M Program into the Vancouver area[3]. The I/M Program became operational in southern Clark County on June 1, 1993. Accordingly, emission calculations for mobile sources in south Clark County have since included reductions attributed to the I/M program.

The 1996 ozone maintenance plan for southern Clark County brought changes to the boundaries for the I/M Program. The vehicle emission boundary was expanded to Brush Prairie, Battle Ground, Ridgefield and La Center postal zip codes as of January 1, 1997; the testing methodology was changed to the Acceleration Simulation (ASM) mode; test standards were strengthened; testing was expanded to NO_X emissions (although NOx results were not included in the pass/fail results), and a gas cap leak detection check was instituted. EPA approval of the Clark County and Portland maintenance plans allowed EPA to redesignate the Portland-Vancouver AQMA to attainment for the 1-hour ozone NAAQS.

Since January 1, 2000, the I/M Program has exempted vehicles that are less than five or more than 25 years old from emissions testing.

Vehicle emission test procedures have been modified over the years to better address real driving conditions. Since 1996, vehicles have been equipped with On Board Diagnostic Systems (OBD) that provide a comprehensive overview of the emissions control system. The I/M Program transitioned to OBD testing for newer vehicles on July 1, 2002. Since 2006, gas cap checks are no longer performed on 2000 and newer model year vehicles because OBD checks are relied on to detect evaporative emission control system leaks including gas cap leaks.

The Vancouver area is maintaining the CO NAAQS standard with the current I/M program in place. The ongoing, routine checks assure that emission control systems on Washington's fleet are continuing to operate properly over time, preserving the emission control functionality and protecting air quality. A contract is in place for conducting I/M testing until 2012. The current Washington state I/M regulations are found in WAC 173-422.

4.2 Requirements for New Sources in a Maintenance Plan Area

SWCAA Section 400-111 contains measures intended to prevent a new or modified source from causing an ambient air quality standard violation. This section also requires offsets for new and modified major stationary industrial sources of CO over 100 tons in the maintenance plan area or that impacts the maintenance area. Industrial (point) sources contribute a small percentage to the total CO emissions (see Section 6.1). There is currently no growth allowance established for new CO sources.

[3] Previously the program only applied to Puget Sound and Spokane.

4.3 Additional Strategies

The following additional programs also contribute to CO reductions:

- Commute Trip Reduction (CTR) program originally passed in 1991 (RCW 70.94.521-551) and since replaced by The CTR Efficiency Act (ESSB 6556) - works with major employers in the state's most populous counties to encourage employees to commute without driving alone.
- Commute Trip Reduction Efficiency Act passed on March 29, 2006, effective July, 2007.
- CTR Performance Grants - the Washington Department of Transportation oversees the Trip Reduction Performance Program that was passed by the Washington State legislature in 2003 to reduce the number of vehicle trips.
- Public education and outreach
    - Air Pollution Advisories (formerly called Clean Air Action Days) are called when weather forecasts indicate a high probability for air pollution to approach levels that are unhealthy for sensitive groups. NW Airquest developed and maintains a model that can be used to predict pollution levels. This model can also be used to identify when stagnation periods are likely to occur. On cold winter days that have potential to trap pollutants near the ground, SWCAA and the Oregon Department of Environmental Quality (DEQ) work with local media and industry to encourage residents to carpool or take the bus to work and avoid burning to reduce their personal impact on air pollution.
    - Public presentations – SWCAA offers presentations as requested to various school and community groups, addressing local concerns about air pollution and pollution prevention. These presentations address personal impacts on air pollution, related health issues and local measures to address pollution.
    - Public interaction – SWCAA frequently distributes information and brochures at community events including fire district open houses, festivals and county fairs.
    - Educational materials – SWCAA routinely distributes informational brochures to residents concerned about pollution.

Other anticipated changes in the future include:

- Implementation of California motor vehicle standards for low emission vehicles beginning with the 2009 model year.

5.0 State Implementation Plan Requirements

Section 175A(b) of the FCAA requires that a nonattainment area that is redesignated as a maintenance area submit two consecutive 10-year maintenance plans. EPA approved the first 10-year Vancouver CO Maintenance Plan as part of a redesignation request in 1996. The SIP submittal developed under this Plan will satisfy the Federal Clean Air Act requirement for the second 10-year Vancouver CO Maintenance Plan. This submittal also updates the transportation conformity requirements for the Vancouver CO maintenance area.

6.0 CO Limited Maintenance Plan

The Vancouver area is eligible for the Limited Maintenance Plan (LMP) approach. This approach simplifies the plan preparation process. EPA has allowed areas whose monitored air quality values are at or less than 85% of the CO NAAQS to submit a simpler maintenance plan than those areas where CO levels are not as low. On October 6, 1995, a guidance memorandum was issued on the *Limited Maintenance Plan Option for Nonclassifiable CO Nonattainment Areas* by Joseph W. Paisie of EPA. This guidance states that an area must have a design value less than 85% of the 8-hour CO standard (7.65 ppm) to qualify for a LMP approach. The Vancouver CO maintenance area currently has an 8-hour CO design value of 4.8 ppm based on 2004-2005 data. Since the design value for the Vancouver AQMA is less than 7.65 ppm, the AQMA is eligible for the LMP option. The LMP approach does not require future year emission projections or a maintenance demonstration. A LMP must include an attainment inventory, provisions for verification of continued attainment, a contingency plan and a statement regarding conformity determinations. Due to the low measured CO values in Vancouver over the past 10-years, SWCAA does not anticipate that CO levels will approach levels that would violate or exceed the 8-hour CO standard.

6.1 Attainment Inventory

SWCAA, Ecology and RTC updated the attainment emission inventory for the second 10-year Vancouver CO Maintenance Plan. This inventory is consistent with EPA's most recent guidance on Maintenance Plan emission inventories and is in a "typical winter day" format. The base year for this inventory and the maintenance plan is 2002. For this 2002 base year inventory, an area-specific total will be given for each source category. The source categories inventoried are shown in Table 2. The inventory includes sources and activities inside the Vancouver CO AQMA. Appendix D summarizes the methodologies used in calculating the base year emission inventory. No future year emission inventory information is needed for this Second 10-year CO Maintenance Plan because future emissions estimates are not required by a LMP. This is because areas meeting the criteria for a LMP have design values so low that EPA considers them at little or no risk of a violation. Although forecasted future year inventories will not be calculated as part of this submission, the methodologies summarized in Appendix D will allow for consistency if future CO winter emission inventories are calculated.

Table 2. Source Categories Inventoried for 2002 CO Emissions

Source Category
Point Sources
Onroad Mobile Sources
Nonroad Mobile Sources from EPA NONROAD 2004 (Excluding Ships, Locomotives and Aircraft)
Ships
Locomotives
Aircraft
Residential Yard Waste Burning
Residential Trash Burning
Residential Wood Combustion
Residential and Commercial Fuel Combustion

Table 3 shows the pounds of CO emitted per winter day by source category. The largest category of CO emissions by far is onroad mobile sources.

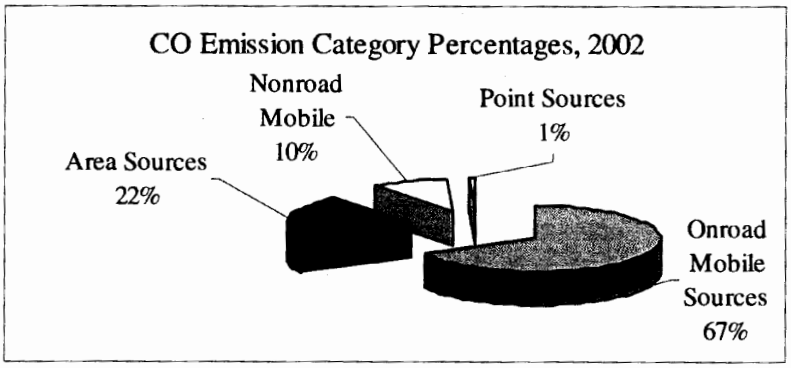
Table 3. Vancouver 2002 CO emissions

Source Category	*Pounds /winter day*
Onroad Mobile Sources	383,058
Area Sources	126,377
Nonroad Mobile Sources	56,837
Point Sources	4,396
Total	570,669

Figure 4 illustrates the dominant contribution mobile sources make to the total CO emitted in winter. Onroad mobile sources represent 67% of total winter CO emissions and area sources represent 22%.

Figure 4. Vancouver CO Emission Categories and Percentages,

(average pounds per winter day)



The subtotals for these categories are shown in Table 4 below. For details on emission calculations for these categories, see Appendix D.

Table 4. 2002 Emission Inventory, Main Source Category Subtotals

Vancouver CO Maintenance Area **Carbon Monoxide 2002 Emission Summary** **Main Source Category**		**CO Emissions Pounds per Winter Day (lb/d)**
Point Sources		
Major Point Sources (>50 tpy each)		3,414
Minor Point Sources (> 1 tpy each)		983
	Sub Total:	**4,396**
Onroad Mobile Sources		
Freeway		80,751
Arterial		259,080
Ramp		21,413
Local		21,414
Intra-Zonal		401
	Sub Total:	**383,058**

Table 4. 2002 Emission Inventory, Main Source Category Subtotals, Continued

Non-road Mobile Sources		
Aircraft		1,070
Commercial Marine Vessels		385
Recreational Marine		182
Railroads		380
Railway Maintenance Equip.		60
Lawn and Garden Equipment		14,871
Recreational Vehicles		585
Light Commercial equip.		24,689
Industrial Equip.		6,204
Construction Equip.		8,413
	Sub Total:	**56,837**
Area Sources		
Small Industrial Sources < 1 tpy each		88
Residential/Commercial Fuel Combustion		1,556
Residential Wood Combustion		122,226
Trash Burning*		1,411
Residential Yard Waste Burning		1,096
	Sub Total:	**126,377**
	Total:	570,669

*illegal throughout the state

In 2002, the two largest sources of wintertime CO emissions are onroad mobile sources and residential wood combustion. Nonroad sources contribute 10% of the total CO on a typical winter day. The two subcategories in Nonroad mobile sources that were the largest for 2002 are Lawn and Garden equipment and Light Commercial Equipment (e.g., generators, pumps, gas compressors, welders, pressure washers, air compressors). In the area source category, residential wood combustion is still the largest contributor. Residential wood combustion represents 21% of the overall lbs/day CO emissions.

6.1.1 Onroad Mobile Sources

Onroad mobile source CO emissions were 383,058 lbs/winter day as shown in Table 3 and Table 4. Emissions calculations were prepared by the Southwest Washington Regional Transportation Council (RTC) using MOBILE6.2 per EPA's February 24, 2004 policy guidance memorandum. Average Daily Vehicle Miles Traveled (ADVMT) for the Vancouver area are calculated by RTC using their regional travel model. These values are entered into EPA's MOBILE6.2 model and seasonally adjusted emissions of CO are produced. Emission rates were generated for unique combinations of: facility type, vehicle type, speed, and I/M area. Local data was used for the following input parameters: evaluation month, registration distribution, temperature, humidity, inspection and maintenance (I/M) program, speed by facility type, and fuel parameters for Reid vapor pressure (RVP), fuel program, diesel sulfur content. The parameters are described in Appendix D. In Table 5 below the ADVMT and grams/day used in calculating CO emissions are presented. Converting grams per day to lbs per day results in 383,058 lbs/day CO from mobile sources shown in Table 5.

Table 5. RTC ADVMT and Mobile 6.2 output for Vancouver Winter CO emissions

Road type	Winter ADVMT	Winter CO, grams/day	Winter CO, lbs/day
Freeway	1,108,668	36,627,855	80,751
Arterial	3,725,487	117,515,879	259,080
Ramp	239,143	9,712,707	21,413
Local	364,097	9,713,120	21,414
Intra-Zonal	6,811	181,688	401
Total.	5,444,206	173,751,248	383,058

6.1.2 Area Sources

EPA describes area sources as "facilities or activities whose individual emissions do not qualify them as point sources. Area sources represent numerous facilities or activities that individually release small amounts of a given pollutant, but collectively they can release significant amounts of a pollutant."[4] Point sources with CO emission of less than one ton per year are not included in the point sources totals but summed and included with the area sources. In addition to small point sources, area sources for this inventory include residential and commercial fuel combustion, residential wood combustion, trash burning, and residential yard waste burning. There were either no emissions or no activities from prescribed burning in the Vancouver AQMA. Emissions are typically estimated by multiplying the activity level by an emission factor in mass per activity or other methodologies consistent with EPA's guidance. Often, population or household values are used as surrogates.

Area sources represent 22% of the total CO emissions. Of that 22%, the largest contributor is residential wood combustion. Woodstoves were inventoried using the 2001 WSU statewide woodstove survey. Emission factors were taken from EPA's AP42.

6.1.3 Nonroad Mobile Sources

Locomotive and commercial marine vessel emissions were inventoried using EPA calculation methodology guidance and the latest activity data from 2002 for the respective category. Aircraft landing and takeoff data from 2004 was used as a surrogate for 2002 emissions as 2004 data was readily available. Emission factors were taken from EPA guidance documents.

All other emissions from nonroad mobile emission sources within the Vancouver CO AQMA were calculated based on the latest version of EPA's nonroad model (NONROAD2005). This includes recreational vehicles, commercial and recreational marine vessels, agricultural, construction and industrial equipment and lawn and garden equipment. There were either no emissions or no activities from airport service, agricultural, logging, mining or oil field vehicles/equipment in the Vancouver AQMA. The largest contributor in this emission category is light commercial equipment, (i.e., generators and pumps, gas compressors, welders and pressure washers). Nonroad emissions contributed 10% to the total CO emissions on a typical winter day in 2002.

[4] Handbook for Criteria Pollutant Inventory Development: A Beginner's Guide for Point and Area. Sources United States Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, NC 27711. EPA-454/R-99-037, September 1999.

6.1.4 Point Sources

Under EPA's definition, point sources are defined as any stationary source with CO emissions greater than or equal to 100 tons per year (tpy). For this 2002 inventory, SWCAA elected to reduce this threshold because the information is readily available. A 50 tpy threshold was used in the 1992 inventory for the first 10-year Vancouver CO maintenance plan. SWCAA maintains an extensive emission inventory for smaller point sources in Clark County. Facilities with emissions of over one tpy were included in the point source total. Emissions information for one large pulp and paper source within the Vancouver CO maintenance area was provided by Ecology. Stationary sources within the maintenance area with CO emissions of less than one ton per year in 2002 were summed and included with the area source category totals. Point sources contribute about 4,396 pounds or less than 1% to the total CO on a winter day.

6.1.5 Changes in Source Category Contributions

In the 1992 inventory used for the initial 1995 CO redesignation request/maintenance plan submittal, the largest CO emissions categories were onroad mobile sources, industrial sources, and residential wood combustion. Since that time the largest industrial source of CO (Vanalco, Inc.) has closed. Therefore, one large difference between the 1992 inventory and the 2002 inventory is that the contribution from point sources is considerably smaller. In 1992, point sources represented 21% of the total; in 2002 they contribute less than 1% to the total. In 2002, onroad mobile sources are still by far the largest contributor to CO winter time emissions; cars and trucks contribute 383,058 pounds per day of CO or 67%, although the overall amount of CO from onroad mobile sources is also declining.

6.2 Maintenance Demonstration

As explained in the 1995 Limited Maintenance Plan (LMP) guidance memorandum, the maintenance demonstration requirement is considered to be satisfied if the monitoring data show that the area is meeting the air quality criteria for limited maintenance areas (i.e., the area CO design level is 85% of exceedance level or less than or equal to 7.65 ppm) and the area continues to meet this level through the effective date of plan approval. The Vancouver area has a design value of 4.8, which is less than 7.65 ppm, the air quality criteria value for a limited maintenance area. The LMP guidance memorandum also states, "EPA believes if the area begins the maintenance period at or below 85 percent of the exceedance levels, the air quality along with the continued applicability of PSD requirements, any control measure already in the SIP, and Federal measures[5], should provide adequate assurance of maintenance over the initial 10-year maintenance period." Since the Vancouver area meets these criteria, the maintenance demonstration requirement is satisfied.

6.3 Verification of Continued Attainment

The LMP guidance contains provisions for continued operation of an appropriate EPA approved air quality monitoring network to verify continuing attainment with the CO standard. SWCAA and Ecology requested permission to remove the monitor from the 'Atlas and Cox' site in Vancouver, WA. Because of Vancouver's compliance history, EPA granted Ecology permission to take the last CO monitor in the Vancouver CO maintenance area out of service on May 1, 2006; the monitor was physically removed on October 5, 2006.

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[5] e.g., 40 CFR Part 86 Federal Motor Vehicle Emission Control Program

The Vancouver AQMD has been in compliance with the CO NAAQS every year since 1992, and was redesignated a CO maintenance area in 1996. Since redesignation the CO limit for the 8-hour average of 9 ppm was exceeded once on January 5, 1999. However, since CO values did not exceed the standard more than once in that year, there was no violation of the NAAQS. The 1-hour CO limit of 35 ppm has never been exceeded in this area. Design values have been declining consistently over the last ten years as shown in Section 3. Also, the Metropolitan Transportation Plan for Clark County predicts that CO emissions will be well below the SIP budget and are expected to continue to drop for the foreseeable future. Therefore, emission monitoring for CO is no longer necessary. EPA approval was granted to Ecology to remove the monitor in a memo dated May 1, 2006; the monitor was physically removed October 5, 2006.

SWCAA will track countywide mobile emissions through the Ecology emission inventories triennially. If emissions decrease as predicted, verification of attainment will be considered satisfied. Countywide annual and winter emissions for 2002 and draft values for 2005 are shown in the table below. If the triennial emission inventory shows that annual county-wide on road mobile emissions increase over 2005 levels, the contingency plan will be triggered.

Table 6. Ecology 2002 and 2005 Clark County Onroad Mobile Emissions, Winter and Annual

Clark County CO Onroad emissions in tons	
2002 Inventory	
winter	annual
23,100	86,714
2005 Inventory (draft)	
winter	annual
17,292	61,114

from draft triennial emissions inventory, provided by Sally Otterson, Washington Department of Ecology, October 23, 2006

6.4 Contingency Plan

A contingency plan for a CO maintenance area is required. SWCAA will evaluate Vancouver area compliance as described in the Verification of Continued Attainment section above through evaluation of the periodic emissions inventory.

The following are those contingency measures identified in the 1996 plan. In the case of:

- An *exceedance* of the 8 hour standard, SWCAA would identify and analyze the exceedance. If the cause was deemed to be transportation related, SWCAA committed to coordinating with RTC to identify an appropriate localized control measure or measures.
- A monitored *violation* of the 8 hour standard, the oxygenated fuel program would be implemented as soon as practical but not later than the following winter season.
- A *second violation*, New Source Review requirements, LAER and offsets for major new (and major modifications of) CO industrial sources would be triggered.

For this 2007 CO Maintenance Plan, if the triennial emission inventory shows that annual county-wide on road mobile emissions have increased over 2005 levels, the contingency plan will be triggered. Specifically, should annual onroad mobile emissions increase over the 2005 level of 61,114 tons in 2008, 2011, or 2014, SWCAA would use the following approach to

identify any necessary actions. The following measures and a tiered level of escalating response will be followed:

First, SWCAA would determine if the increase is a function of a change in emission calculation methodology.

Then, if it appears that a true increase has occurred, SWCAA will consider:

- Conducting a *winter* CO mobile emission inventory, if these numbers are not readily available in the next few triennial mobile emission inventories.
- Evaluating other source categories, such as woodstove use,
- Conducting "hot spot" analyses using a model such as WASIST at a specific location or other method.

Should hot spot analysis result in a CO value greater than 7 ppm (for an 8 hour average), SWCAA will consider

- Temporarily conducting CO monitoring.

Should an exceedance be measured at a monitoring site in the Vancouver AQMA,

- A community advisory group (or Technical Advisory Committee) could be formed to evaluate and choose CO emission reductions options.
- This group could consider potential reinstatement of the oxygenated fuel program (WAC 173-492, SWCAA 492), although this seems unlikely (see discussion below).

Should a violation of the CO standard occur while conducting monitoring, SWCAA may require that new or modified industrial sources of CO apply Lowest Achievable Emission Rate (LAER) technology to their project for CO and any pollutant for which the source is classified as major. SWCAA 400-111 describes these requirements. Since industrial sources contribute such a small percentage to the total CO emissions, it is unlikely that these sources will be targeted for reduction efforts.

Other CO emission reduction measures will be considered as may be identified in the analysis. Committing to further study in this way gives SWCAA flexibility in choosing an appropriate approach if and when the need arises.

6.4.1 Oxygenated Fuel Requirements

Oxygenated fuel requirements in winter, spelled out in SWCAA 492, were a control strategy at one time, but were shifted to contingency measures in 1996. The program rule requiring that Vancouver establish a wintertime oxygenated fuel program became effective in 1992. The program was not needed to demonstrate compliance with the standard through the last maintenance period. While the FCAA allows the elimination of this program upon redesignation to attainment status, Section 175A(d) requires that all control measures contained in the SIP prior to redesignation be included as contingency measures in the Maintenance Plan. Therefore, the oxygenated fuel program, wherein the use of fuel with no less than 2.7% oxygenate from November 1 through February 29th is required, must be kept as a potential contingency measure. However, it should be noted it would be extremely difficult to reinstate this program. SWCAA, RTC and Ecology would likely evaluate other options along with the oxygenated fuel program should it become necessary.

In March 2006, the Washington State legislature passed a biofuels bill (Engrossed Substitute Senate Bill 6508) that requires "By December 1, 2008, motor vehicle fuel licensees under chapter 82.36 RCW, other than motor vehicle fuel distributors, shall provide evidence to the Department of Licensing that at least two percent of total gasoline sold in Washington, measured on a quarterly basis, is denatured ethanol." Small increases in the oxygen content of gasoline result in small decreases in wintertime CO emissions.

It is extremely unlikely that the Vancouver area will experience CO emission increases that would cause levels to approach the NAAQS.

6.5 Conformity Determinations

One means of demonstrating conformity of Federal actions is to ensure transportation projects are consistent with emissions budgets for the maintenance area. The LMP guidance states that the motor vehicle emission budgets (MEVB) in limited maintenance plan areas may be treated as essentially not constraining for the length of the maintenance period because it is unreasonable to expect that the area will experience so much growth that a violation of the CO NAAQS will result. Therefore, the regional emissions analyses, (i.e., motor vehicle emission budgets), is not needed. Project conformity requirements (i.e., CO hot spot analyses) and consultation will still be in effect for the Vancouver CO AQMA. RTC will continue to review project conformity and conduct project conformity analysis when requested for the Vancouver area. Current regional conformity requirements under the 1996 Vancouver CO Maintenance Plan will be in effect until EPA determines that the conformity demonstration provisions in the second 10-year Vancouver CO maintenance plan are adequate or until the new CO maintenance plan is approved and adopted.

The Southwest Regional Transportation Council's (RTC) Metropolitan Transportation Improvement Program (MTIP) 2005 report demonstrates that the Vancouver CO maintenance area is in compliance with its regional conformity budget requirements. Decreasing winter CO emissions are estimated for mobile sources while fulfilling current regional conformity requirements.

This Vancouver CO plan covers the period through 2016. The RTC report shows decreasing emissions throughout the length of this plan. Winter CO emission estimates for mobile sources from their report is shown below in Table 7.

Table 7. Emission Estimates for Mobile Sources, Winter CO

	Winter CO (lbs)
Year	Emissions Estimate
2006	249,352
2009	238,636
2019	199,405

Southwest Regional Transportation Council, Metropolitan Transportation Plan for Clark County, Updated December 2005, page A-23

6.6 Risk of a Future Violation

Since Vancouver has not violated the CO NAAQS since redesignation in 1996, and since the 2004-2005 design value is 4.8 ppm, far below the 8-hour standard of 9 ppm, the Vancouver area is at little risk of future violations. CO levels have been consistently below the CO NAAQS for ten years. Also, the RTC Metropolitan Transportation Plan for Clark County concludes that the CO emission estimates for mobile sources will continue to decrease through the life of this plan. Mobile sources emissions represented the majority of the winter CO emissions in 2002 and have historically been the largest contributor to winter CO emissions. Still, reductions in this source category are predicted, so continued overall reductions for this pollutant are expected.

Because of efforts by RTC to optimize traffic flow and federal automobile standards as well as other pollution prevention efforts, it is unlikely that CO levels will be problematic for the Vancouver area in the future. Since CO levels have been well beneath the standard for many years and the design value for the area is also well below the standard, there is very little risk that CO levels will increase and threaten air quality in the Vancouver Area.

References

Southwest Washington Regional Transportation Council, *Metropolitan Transportation Plan for Clark County*, updated December 6, 2005.

Paisie, Joseph W., EPA OAQPS, *Limited Maintenance Plan Option for Nonclassifiable CO Nonattainment Areas*, October 6, 1995

Appendixes

Appendix A Description of the Vancouver CO Maintenance Area
Appendix B Memo granting permission for Atlas and Cox site monitor removal
Appendix C EPA AirData values for Atlas and Cox site, 1996-2005
Appendix D Vancouver 2002 Seasonal Emission Inventory Detail
Appendix E Washington State and SWCAA Rules – Control Strategies and Contingency Plan Regulations

Appendix A - Description of the Vancouver CO Maintenance Area Boundary

The Vancouver CO Maintenance Area Boundary

The CO maintenance area boundary description begins at the northwest corner at the intersection of the section line on the south side of Section 36 of T4N.R1W and the north side of Section 1 of T3N.R1W. The boundary turns southward following the east shores of Lake River, until it would intersect with the 14900 block NW, then easterly to join with NW 149th Street. This boundary runs until it meets the western edge of Interstate 5, then north to 159th Street and east on 159th Street to the east side of NE 50th Avenue. On 50th Avenue the boundary runs south until it joins the south bank of Salmon Creek, following the south branch of the creek until it reaches NE Caples Road (currently SR-502) until it intersects with NE 144th Street. The boundary continues eastward along the south side of NE 144th Street following the 14400 block plane to where it would join with the west side of NE 212th Avenue, then southward to the south side of NE 109th Street. The boundary continues east on NE 109th Street, then southerly along the west side of NE 232nd Avenue to where the 23200 block joins with the northern edge of NE 58th Street. The boundary continues east on NE 58th Street until the 5800 block intersects with the western edge of Livingston Road. The boundary follows Livingston Road south until it turns into NE 292nd Avenue. Staying on the plane of the 29200 block, the boundary proceeds south until it joins SE Blair Road. The boundary follows along the southwest side of Blair Road south-eastward to its intersection with Washougal River Road. The boundary proceeds eastward at the northern edge of the 2000 block to SE 20th Street. The boundary continues east on SE 20th Street until it intersects the western edge of SE Jennings Road (352nd Avenue), then south along the 4900 plane to SE 49th Avenue. The boundary follows the 4900 plane south until it intersects Evergreen Boulevard (the eastern edge of current Washougal City Limits). The boundary continues south along the Washougal City limits to the State border along the section line on the west side of Section 21 of T1N.R4E. The boundary follows the Clark County line (State Boundary) down the Columbia River until it connects at the northwest corner of the boundary at the section line of Section 36 of T4N.R1W and the north side of Section 1 of T3N.R1W.

Appendix B – Memo Granting Permission to Remove Monitor

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, WA 98101

MAY 0 1 2006

Reply to
Attn Of: OAWT-107

Mr. Mike Ragan, Air Monitoring Coordinator
Air Quality Program
Washington Department of Ecology
P.O. Box 47600
Olympia, WA 98504-7600

Re: Discontinuation of CO Monitoring at the 'Atlas and Cox' Site in Vancouver, WA

Dear Mr. Ragan:

In a letter dated March 20, 2006, Bob Elliott of the Southwest Clean Air Agency (SWCAA), requested that EPA allow SWCAA to discontinue monitoring for CO at the 'Atlas and Cox' site (AIRS #530110010) in Vancouver, WA. Data collected at this site shows that the Vancouver area has been in compliance with the CO NAAQS every year since 1992, and Vancouver was redesignated to attainment in 1996 by EPA. CO design values for this site have been declining over the last ten years, and the current 8-hour CO design value of 4.9 ppm is about 54% of the 8-hour CO NAAQS (9.0 ppm). In addition, the 2005 Metropolitan Transportation Plan for Clark County shows decreasing winter CO mobile source emissions estimates for Clark County through 2019.

Because Vancouver has not violated the CO NAAQS since redesignation in 1996, the current CO design value is 54% of the NAAQS, and it is projected that CO emission estimates will continue to decrease through 2019, I concur that CO monitoring can be discontinued at the Atlas and Cox site in Vancouver. If you have any questions on this topic, please contact Gina Bonifacino at (206) 553-2970.

Sincerely,

Mahbubul Islam

Mahbubul Islam, Manager
State and Tribal Program Unit
Office of Air, Waste and Toxics

cc: Bob Elliott, SWCAA
Laurie Hulse-Moyer, SWCAA
William Puckett, OEA

Appendix C - EPA AirData values for Atlas and Cox site, 1996-2005

Appendix C

* US EPA - AirData Monitor Values Report - Criteria Air Pollutants
* Wednesday 15-Mar-2006 at 10:35:41 AM (USA Eastern time zone)
* Geographic Area: Clark Co WA
* Pollutant: Carbon Monoxide
*
*
* File Size : 18 Rows
* File Format: CSV - Comma Separated Values
* Field 1: # Obs (1-hour CO)
* Field 2: 1st Max (1-hour CO)
* Field 3: 2nd Max (1-hour CO)
* Field 4: # Exceed (1-hour CO)
* Field 5: 1st Max(8-hour CO)
* Field 6: 2nd Max(8-hour CO)
* Field 7: # Exceed (8-hour CO)
* Field 8: Monitor Number (CO)
* Field 9: Year
* Field 10: Site ID
* Field 11: Site Address
* Field 12: City
* Field 13: County
* Field 14: State

	1 hour values			8 hour values									
No. of observations	1st Max	2nd Max	# Exceed	1st Max	2nd Max	# Exceed	Monitor No	Year	Site ID	Site address	City	County	State
8669	10.6	9.3	0	6.8	6.3	0	1	1995	530110010	Atlas-Cox Upholst/2101	Vancouver	Clark Co	WA
8722	10.1	9.3	0	6.8	6.4	0	1	1996	530110010	Atlas-Cox Upholst/2101	Vancouver	Clark Co	WA
8393	11.5	10.9	0	6.6	6.0	0	1	1997	530110010	Atlas-Cox Upholst/2101	Vancouver	Clark Co	WA
8159	8.7	7.6	0	5.7	5.5	0	1	1998	530110010	Atlas-Cox Upholst/2101	Vancouver	Clark Co	WA
8705	13.5	12.9	0	10.1	6.7	1	1	1999	530110010	Atlas-Cox Upholst/2101	Vancouver	Clark Co	WA
8719	8.7	8.4	0	6.7	6.2	0	1	2000	530110010	Atlas-Cox Upholst/2101	Vancouver	Clark Co	WA
8692	9.1	8.0	0	5.9	4.7	0	1	2001	530110010	Atlas-Cox Upholst/2101	Vancouver	Clark Co	WA
8334	8.1	7.2	0	5.9	5.7	0	1	2002	530110010	Atlas-Cox Upholst/2101	Vancouver	Clark Co	WA
8524	7.9	7.1	0	4.7	4.5	0	1	2003	530110010	Atlas-Cox Upholst/2101	Vancouver	Clark Co	WA
8721	6.4	6.3	0	5	4.8	0	1	2004	530110010	Atlas-Cox Upholst/2101	Vancouver	Clark Co	WA
7265	7.2	6.9	0	4.9	4.6	0	1	2005	530110010	Atlas-Cox Upholst/2101	Vancouver	Clark Co	WA

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Appendix D - Vancouver 2002 Seasonal Emission Inventory Detail

Vancouver CO Maintenance Plan
2002 Seasonal Emission Inventory Detail

Appendix D

Draft Date: December 26, 2006

Prepared by:
The Southwest Clean Air Agency, the Washington Department of Ecology
and
the Southwest Washington Regional Transportation Council

Table of Contents

1 Introduction and Summary

1.1 Background and Purpose

A base year Carbon Monoxide (CO) emissions inventory is part of the overall CO Limited Maintenance Plan (LMP) submittal for the Vancouver CO maintenance area as agreed upon in the Vancouver CO State Implementation Plan (SIP) development plan. This 2002 base year CO emission inventory for the maintenance area is used in the second 10-year maintenance plan to provide current estimates of wintertime CO emission levels in the Vancouver CO Maintenance Plan area. It can also be used in future years for CO emission inventory comparisons. Should the CO levels be thought to be increasing in the Vancouver CO maintenance plan area during the next 10 years, then comparisons can be made using this document to determine which CO emissions sources have changed significantly (if any).

The CO LMP option does not require an emissions budget. The 1995 EPA guidance memorandum by Joseph Paisie referenced in the Vancouver CO Plan states that the motor vehicles emission budgets (MVEB) in limited maintenance plan areas may be treated as essentially not constraining for the length of the maintenance period. This is because it is unreasonable to expect that the area will experience so much growth that a violation of the CO NAAQS will result. Therefore, regional conformity is presumed and regional emissions analyses and emission budget tests are not required.

The development of this wintertime CO emission inventory for the Vancouver CO maintenance area relied heavily on the previous emission inventory work at the Southwest Clean Air Agency (SWCAA) and the Washington State Department of Ecology (Ecology). SWCAA does annual point source emission inventories for a variety of reasons and Ecology prepared a comprehensive annual volatile organic compound (VOC), criteria pollutant, and toxic air pollutant (TAP) emission inventory for the entire state of Washington as required by the Environmental Protection Agency's Consolidated Emission Reporting Rule (CERR). Several of the calculations in this inventory were based on methodologies used in the 2002 Ecology National Emission Inventory (NEI) submittal.

1.2 CO Sources within the Vancouver CO Maintenance Area

The inventory includes estimates of the criteria pollutant CO for the sources shown in the table below.

Table 1-1 - Sources Inventoried

Source Category
Point Sources
Onroad Mobile Sources
Nonroad Mobile Sources from EPA NONROAD 2004 (Excluding Ships, Locomotives and Aircraft)
Ships
Locomotives
Aircraft
Residential Yard Waste Burning
Residential Trash Burning
Residential Wood Combustion
Residential and Commercial Fuel Combustion

1.3 Spatial Resolution

The inventory was developed for sources within the Vancouver CO maintenance area (or Air Quality Management Area) boundary unless specifically indicated otherwise. Several of the emission categories had to be calculated at the county level and then reduced to the CO maintenance area based on population, household, or other surrogate data.

1.4 Temporal Resolution

The inventory was developed for a typical winter day. Generally this meant that emissions were calculated as winter seasonal average daily emissions (except as noted in the text). Generally, Dec-Feb was classified as winter. Abbreviations used are tpy (tons per year) and tpsd (tons per season day).

1.5 Summary Table

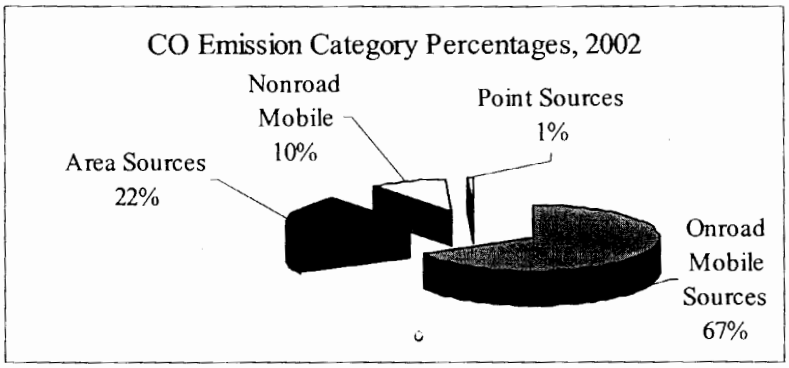
The following table is a summary of the base 2002 Vancouver CO maintenance area emission inventory for a typical winter day. The methodologies used for calculating emissions for each emission category are outlined in the remainder of this document.

Table 1-2: Summary Table

Vancouver CO Maintenance Area
Carbon Monoxide 2002 Emission Summary

Main Source Category		CO Emissions Pounds per Winter Day (lb/d)
Point Sources		
Major Point Sources (>50 tpy each)		3,414
Minor Point Sources (> 1 tpy each)		983
	Sub Total:	**4,396**
Onroad Mobile Sources		
Freeway		80,751
Arterial		259,080
Ramp		21,413
Local		21,414
Intra-Zonal		401
	Sub Total:	**383,058**
Non-road Mobile Sources		
Aircraft		1,070
Commercial Marine Vessels		385
Recreational Marine		182
Railroads		380
Railway Maintenance Equip.		60
Lawn and Garden Equipment		14,871
Recreational Vehicles		585
Light Commercial equip.		24,689
Industrial Equip.		6,204
Construction Equip.		8,413
	Sub Total:	**56,837**
Area Sources		
Small Industrial Sources < 1 tpy each		88
Residential/Commercial Fuel Combustion		1,556
Residential Wood Combustion		122,226
Trash Burning		1,411
Residential Yard Waste Burning		1,096
	Sub Total:	**126,377**
	Total:	570,669

Figure 1, Percentage of Emission Categories, based on lbs/winter day



2 County Demographics and Other General Activity Indicators

Emissions estimation methods for many source categories rely on surrogate parameters as indicators of activity. For example, to estimate the amount of woodstove activity, the number of households is required. County and CO maintenance area population and household estimates used in emissions calculations described under Section 3 are presented in Table 2-1.

For this work GIS was used to calculate the percentage of Clark County, Washington population and households that were living within the Vancouver CO maintenance area boundary. Census block group population GIS data was obtained from the Washington Office of Financial Management (OFM) to determine 2000 Census percentages that were then applied to intercensal population and housing estimates for 2002.

Table 2-1: 2002 Population and Households

Area	Population			Households		
	Incorporated	Unincorp.	Total	Incorporated	Unincorp.	Total
Clark County	187,690	175,710	363,400	77,421	65,573	142,994
Vancouver CO Maintenance Area	171,440	79,142	250,582	71,698	31,447	103,145

3 Base Year 2002 Emissions Estimates

CO emissions were estimated for the four major anthropogenic source categories. These source categories are point, area, nonroad mobile, and onroad mobile. The following sections describe the sources of data and the overall methodologies for calculating CO emissions for the Vancouver AQMA.

3.1 Point Sources

Stationary point sources for this inventory are stationary sources that emit CO emissions and lie within the CO maintenance area boundaries. Under EPA definition, a major CO point source is one with potential to emit 100 tons per year or more of carbon monoxide. Point sources with emissions 50 tpy were included in the 1992 inventory that was the basis for the 1996 plan because this information was readily available. For the purposes of this 2002 point emission inventory, all CO sources with emissions in 2002 > 1 tpy are included. Remaining point sources of CO emissions in 2002 that were less than one ton per year totaled 88 lb/day and were included

with the area source emissions. There is one major source inside the AQMA, Fort James Camas. Emission information on this source was obtained from Ecology.

3.1.1 Temporal Allocation

Individual facility operating schedules were used to convert tons per year data into pounds per typical winter day when available. For sources where data was not available, a work week of 8 hours a day and 5 days per week was assumed.

3.1.2 Emission Rates and Estimates

The emission summaries were compiled by query from SWCAA's Access database. Each facility's emissions estimates were summed. The point source emission summary includes a total in tons per year and pounds per typical winter day. The one remaining major point source for carbon monoxide is the Fort James Camas LLC paper mill. Table 3-1 details the 2002 point source CO emissions for the maintenance area.

Table 3-1: 2002 Vancouver CO Maintenance Area Point Source Emissions

Major Sources	SIC	CO (tpy)	CO (lbs/day)
Fort James Camas LLC	2611	623	3414
Small Point Sources	**SIC**	**CO (tpy)**	**CO (lbs/day)**
Boise White Paper, LLC	2621	1	4
Clark County Public Works/Salmon Creek	4952	1	9
Clark Public Utilities/ River Road Generating Project	4911	9	47
Evergreen School District No. 114	8211	2	18
Frito Lay, Inc.	2099	27	172
Great Western Malting	2083	3	15
Hannah Collision Center	7532	2	16
Hewlett-Packard Company	3674	1	9
Kyocera Industrial Ceramics Corp.	3679	1	11
Lakeside Ind./ Camas	2951	14	107
Landa Inc.	5046	8	63
Northwest Packing Company	2033	3	21
Northwest Pipeline / Washougal	4911	0	4
Pacific Rock Products, LLC/A2 - Orchards	2951	6	44
Pendleton Woolen Mills	2231	4	34
SEH America, Inc.	3674	3	18
SW WA Medical Center/ St. Joseph Campus	2951	2	18
Todd's Auto Body	7532	1	9
Vancouver Iron & Steel	3325	26	200
Vancouver School District No. 137	8211	3	25
Veteran's Administration Hospital	8069	2	14
WaferTech LLC	3674	1	6
Western States Asphalt Company / English Pit	2951	15	120
Small Point Source Summary		**135**	**984**
Total Major and Minor Point Sources		**758**	**4396**

3.2 Onroad Mobile Sources

Onroad mobile source emissions are those generated by operating vehicles on public roadways. Emissions from fuel combustion were estimated using the EPA mobile source emissions model MOBILE6.2. Emissions from mobile sources for a winter's day average was 383,058 lbs/day. The information used to calculate onroad mobile emissions is described below. The MOBILE6.2 input files can be found in the Mobile Section of Appendix E, Supporting Detail for Emission Inventory.

3.2.1 Activity Level and Spatial Allocation

The activity measurement for onroad mobile sources is the number of miles driven. The units are typically given in average daily vehicle miles traveled (ADVMT). ADVMT is normally estimated from traffic counts collected over a sampling area, or through use of travel demand models, which simulate vehicle travel patterns based on demographic and economic parameters and are validated with traffic counts.

For this inventory, ADVMT was calculated by the Southwest Washington Regional Transportation Council (RTC). A breakout of ADVMT was made to identify vehicles operating within Clark County originating from the Clark County I/M program, the Portland, Oregon I/M program, or neither area. For each link in the model transportation network , the link ADVMT estimate is further disaggregated into three time periods to account for variations in speed by facility throughout the day. The three time periods are the am peak 1-hour, pm peak 2-hour and remaining off-peak hours. Link speeds for these time periods are also estimated.

Table 3-2: 2002 Seasonally Adjusted ADVMT by Facility Type

Facility Type	ADVMT
Freeway	1,108,668
Arterial	3,725,487
Ramp	239,143
Local	364,097
Intra-Zonal	6,811
Total	5,444,206

3.2.2 Temporal Allocation

RTCs regional travel model produces ADVMT, which is an average of daily VMT for the entire year. As travel demand varies over the year, higher in the summer and lower in the winter, RTC seasonally adjusts the travel model ADVMT to winter and summer daily VMT using factors developed from traffic count data from local freeways and arterial/locals. Winter adjustment factors are 0.939 for freeways and 0.948 for arterials/locals. Summer adjustment factors are 1.054 for freeways and 1.035 for arterials/locals.

3.2.3 Emission Rates: MOBILE6.2

Emission rates in grams per mile were generated using the EPA model MOBILE6.2.[1] Emission rates were generated for unique combinations of: facility type, vehicle type, speed, and I/M area. Local data was used for the following input parameters: evaluation month, registration distribution, temperature, humidity, inspection and maintenance (I/M) program, speed by facility

type, and fuel parameters for Reid vapor pressure (RVP), fuel program, diesel sulfur content. The parameters are described below.

3.2.3.1 Registration Distribution

Washington has a substantially older fleet than the national average. To model the effect of the older fleet, local data from the Washington State Department of Licensing (DOL) was used to calculate the vehicle age registration distribution.[2]

3.2.3.2 Temperature and Humidity

Average monthly minimum and maximum temperatures for 2002 from the Vancouver 4NNE meteorological station were used to develop the MOBILE6.2 input temperature parameters.[3] Because information required to calculate average monthly humidity values for 2002 were not readily available, long-term average (1961-1990) humidity, and pressure from Portland, Oregon were used to develop the MOBILE6.2 input humidity parameters.[4]

The humidity value required in MOBILE6.2 is a mixing ratio in mass of water vapor per unit mass of dry air. A calculation formula based on relative humidity, temperature and pressure was distributed with MOBILE6.2.[5] EPA guidance for calculating the ratio states that the lowest ratio of the day(s) should be used (humidity is a daily, not hourly input). As an alternate, the highest ratio that does not result in a relative humidity greater than 100% can be used.[6]

Data from reference 4 was used to calculate the ratios. Average monthly relative humidity is available for four different hours: 4, 10, 16 and 22. In the vast majority of cases, hour 4 relative humidity is the highest, and hour 16 is the lowest. These hours roughly compare with the expected hours of the minimum and maximum temperatures. Using hour 4 and 16 relative humidity with the average daily pressure, and minimum and maximum temperatures, respectively, ratios were calculated. The minimum temperature and hour 4 relative humidity produced the lowest ratio, and kept the relative humidity from exceeding 100% even at the maximum temperature of the day. The calculation using the maximum temperature and hour 16 relative humidity produced a higher ratio, but often exceeded 100% relative humidity at the minimum temperature. The alternate guidance of using the highest ratio that does not result in a relative humidity greater than 100% produced higher ratios than the hour 4 calculations, but actual relative humidity rarely is 100%; therefore, the alternate EPA guidance was not used.

Table 3-4: Average Monthly Humidity Mixing Ratios, Longterm Averages

month	Portland
Jan	24
Feb	26
Mar	29
Apr	32
May	40
Jun	49
Jul	55
Aug	64
Sep	49
Oct	39
Nov	31
Dec	25

Table 3-5: Average Monthly Maximum Temperature, 2002

month	Vancouver
Jan	44.8
Feb	51.7
Mar	51.0
Apr	59.5
May	64.5
Jun	73.8
Jul	80.1
Aug	80.2
Sep	76.4
Oct	63.1
Nov	55.2
Dec	48.8

Table 3-6: Average Monthly Minimum Temperature, 2002

month	Vancouver
Jan	34.5
Feb	33.2
Mar	34.3
Apr	40.0
May	43.5
Jun	49.9
Jul	54.5
Aug	51.9
Sep	45.5
Oct	38.6
Nov	35.7
Dec	35.4

The values listed below are the average of the 2002 actual Dec, Jan, Feb monthly average values for minimum and maximum temperature and humidity The following temperature and humidity values were used for the 2002 emissions estimate:

Humidity – 25
Avg. Max Temp – 48.4
Avg. Min Temp – 34.4

3.2.3.3 Inspection and Maintenance (I/M) Program

A vehicle Inspection and Maintenance (I/M) program is operated in Clark County. Input parameters have been tracked by WDOE to allow modeling of the program.[7, 8, 9] Input parameters are as shown in the input files can be found in Appendix Mobile Section of Appendix E, Supporting Detail for Emission Inventory.

3.2.3.4 Facility Type and Speed

The ADVMT data was estimated by RTCs regional travel model using the Freeway, Arterial, Local and Ramp facility classes in MOBILE6.2. MOBILE6.2 facility class is a model link attribute.

The speeds chosen for this inventory are a combination of MOBILE6.2 fixed speeds for ramps and locals and RTC model link speeds for freeways and arterials. The fixed speed for locals was 12.9 mph and 34.6 mph was used for ramps. Speeds are not provided by vehicle type. Link speeds are estimated in the regional travel model by following three time periods: am peak 1-hour, pm peak 2-hour and remaining off-peak hours.

3.2.3.5 Reid Vapor Pressure (RVP)

RVP for Clark County varies by time of year. There are no CO Maintenance Plan related requirements for Clark County RVP in the wintertime. Fuel surveys to determine actual RVP are performed periodically by the Alliance of Automobile Manufacturers (AAM). The Environmental Protection Agency (EPA) made some of this data available to WDOE for 1999.[10] EPA did not collect data for years after 1999 and the data is expensive; therefore, the 1999 survey values were retained for 2002.

EPA also provided a methodology to calculate monthly RVP values in the 1996 and 1999 NEI. The methodology used the ASTM (American Society for Testing Materials) schedule of seasonal and geographical volatility classes to interpolate between summer and winter RVP values.[11, 12] Monthly RVP assignments are shown in the table below. The RVP value used in the winter CO daily emission inventory was 13.8 psi

Table 3-8: Clark County Fuel RVP Assignments, psi

Month	Clark
Jan	13.8
Feb	12
Mar	12
Apr	12
May	8.5
Jun	7.8
Jul	7.8
Aug	7.8
Sep	7.8
Oct	9.6
Nov	12
Dec	13.8

3.2.3.6 Oxygenated Fuels

The oxygenated fuel program began in 1992 for five counties in Washington: Clark, King, Pierce, Snohomish and Spokane.[13] The program was discontinued in all of the counties except Spokane County in 1996. However, in 2002 there were stations in Clark County (mainly ARCO) distributing oxygenated fuel with 10% Ethanol that accounted for approximately 35.95% of the total fuel supply purchased. This resulted in a county wide fuel oxygenate percentage of 1.24% using the calculation:

Gasoline oxygen wt = 0.3448 * volume % Ethanol * Ethanol Market Share
= 0.3448 * 0.1 * 0.3595

where 0.3448 is the conversion factor for Ethanol oxygen volume to weight.

3.2.3.7 Tier 2 Low Sulfur Fuel Phase-in

In calendar year 2000, gasoline sulfur content began to be affected by federal controls (Tier 2 low sulfur fuels rule). The rule phases in lower sulfur fuels over a several year period. The default values for Clark County, WA in MOBILE6.2 were used for this parameter.

3.2.3.8 Diesel Sulfur Content

Diesel sulfur content has no affect on CO emissions in MOBILE6.2.

3.2.4 Emissions Estimates

All vehicle emission rates in gram per mile were calculated in MOBILE6.2 for each I/M origination area; Clark County, WA I/M vehicles, Portland, OR I/M vehicles and non-I/M vehicles. The emission rates were multiplied by the seasonally adjusted link VMT estimates for each of the three I/M cases and across three time periods of the day by facility type and speed to produce the final mobile emissions estimate. The seasonal grams/day calculated by the MOBILE6.2 model for Winter CO are shown below.

Table 3-9: Mobile 6.2 output for Vancouver Winter CO emissions, seasonal gram/day

Road type	Winter CO, gr/day
Freeway	36,627,855
Arterial	117,515,879
Ramp	9,712,707
Local	9,713,120
Intra-Zonal	181,688
Total.	173,751,248

Emissions of CO from mobile sources in the Vancouver CO Maintenance area are 383,058 lbs/winter day. Table 3-10 shows the contribution from each road type source.

Table 3-10: 2002 Winter CO Emissions for Vancouver Ozone Maintenance Area

Road type	Pounds/Day
Freeway	80,751
Arterial	259,080
Ramp	21,413
Local	21,414
Intra-Zonal	401
Total	383,058

3.3 Nonroad Mobile Sources, Excluding Ships, Locomotives and Aircraft

The Nonroad Mobile category includes emissions estimates from gasoline, diesel, compressed natural gas (CNG) and liquefied petroleum gas (LPG) fueled equipment. In the EPA NONROAD2005 model,[14] equipment types are compiled into 12 categories:

Recreational Vehicles	Logging
Construction	Airport Service

Industrial	Underground Mining
Lawn and Garden	Oil Field
Agricultural	Railway Maintenance
Commercial	Marine Recreation

Emissions from Nonroad Mobile sources are shown below. Emissions from ships, locomotives and aircraft as discussed in sections 3.4, 3.5, and 3.6are included to show the complete nonroad emissions totals:

Table 3-11: Nonroad Mobile Source Emissions, lbs/winter day

Non-road Mobile Sources	Lbs/ winter day
Aircraft	1,070
Commercial Marine Vessels	385
Recreational Marine	182
Railroads	380
Railway Maintenance Equip.	60
Lawn and Garden Equipment	14,871
Recreational Vehicles	585
Light Commercial equip.	24,689
Industrial Equip.	6,204
Construction Equip.	8,413
Total	**56,837**

3.3.1 Activity Level

NONROAD2005 inputs were set to Clark County wintertime specific parameters. NONROAD2005 calculated county wide emissions for each of the categories listed above using default activity data that EPA has developed for Clark County, WA and put into files referenced by the model. The table below shows the specific parameters used.

Table 3-12 Nonroad Wintertime Specific Parameters

	Typical Winter Day
County	Clark
Gas RVP	13.8
Oxygen Wt%	1.24
Gas Sulfur Wt%	0.0383
Diesel Sulfur Wt%	0.2283
CNG/LPG Sulfur Wt%	0.0123
Min T (F)	34.48
Max T (F)	44.77
Avg. T (F)	39.63
Stage II Control %	0

3.3.2 Spatial Allocation

The NONROAD2005 model emissions estimates are reported by county for inventory year 2002. The County totals were adjusted to the Vancouver CO Maintenance area using different surrogates. The following table shows the surrogates used to reduce the county wide emissions to the Vancouver CO AQMA. Population and Household surrogates are based on 2002 Office of Financial Management (OFM) values.

Table 3-13: Nonroad Category Spatial Allocation Surrogates

NONROAD 2005 Category	Surrogate Used to Apportion Emissions	Estimated Fraction of County Emissions occurring within AQMA
Recreational	% of land in AQMA	25%
Construction	Population	83%
Industrial	Population	83%
Lawn and Garden	Households	85%
Agricultural	Agricultural Land	0%
Commercial	Population	83%
Logging	Timber Harvest	0%
Airport Service	% of airports in AQMA	80%
Underground Mining	Mining operations in AQMA	0%
Oil Field	Oil operation in AQMA	0%
Railway Maint. Equip.	% of major railway in AQMA	67%
Marine Recreation	% of Columbia and Lewis Rivers Bordering AQMA	50%

3.3.3 Temporal Allocation

The January monthly average temperature was used to calculate seasonal average temperatures.

3.3.4 Emission Rates

Winter time fuel parameters were set as shown in the table below. The wintertime Reid Vapor Pressure (RVP) was set to 13.8. Fuel oxygen content was calculated at 1.24 % using fuel throughput records for fuel suppliers using ethanol blends in Vancouver. SWCAA estimates that 10% ethanol by volume is blended into gasoline year round at ARCO and some BP stations.

Clark County currently has 35.95% of the gasoline blended even though it is not required. Therefore oxygen percentage was calculated using the following equation:

(Gasoline oxygen wt = 0.3448 * volume % Ethanol = 0.3448 * 0.1 * 0.3595).

The diesel sulfur content value was set to 0.228% and a CNG/LPG sulfur content of 0.0123was used. The CNG/LPG sulfur content was based on data from ODEQ and values used in Portland-Vancouver ozone modeling work. The diesel fuel sulfur content was based on the national average for land-based diesel engines from Chapter 3: Emission Inventory for EPA Tier 4 Nonroad Diesel Rule Regulatory Analysis. Gasoline sulfur content of 0.0383% was obtained from the MOBILE6.2 default files based on the low sulfur fuel phase-in schedule.

Table 3-14: Fuel Parameters

Fuel	Sulfur %
Gasoline sulfur %	0.0383
Diesel sulfur %	0.228
LPG/CNG sulfur %	0.0123
Fuel Oxygenate %	1.24
RVP	13.8

Temperature input parameters were based on the Vancouver NOAA meteorological site. RVP value from WDOE MOBILE6/6.1/6.2 Input Parameters and Processing document updated May 6, 2003 for Clark County wintertime (Oct-April). These values are shown in the table below.

Table 3-15: NONROAD (2005) Temperature, RVP, and Oxygenated Fuel Parameter Inputs

Aggregated County Title: Portland					
Counties (1)	Season	min	max	January 2002 Avg Temp	RVP
Clark	Winter	34.5	44.8	39.6	13.8

3.3.5 Emissions Estimates

Total emissions were generated with NONROAD2005. The model was set to calculate emissions in tons per seasonal day (tpsd) for Clark County. Emissions were allocated to the AQMA using the methodology described above in section 3.3.2. Snow blower emissions were deleted from the lawn and garden category of the NONROAD2005 output file as they are not a common source of emissions in the Clark County CO maintenance area. Emission rates for the County and AQMA area shown below.

Table 3-16: Nonroad Category Emissions

NONROAD (2005) Category	Clark County CO Emissions (tpsd*)	Vancouver CO AQMA Emissions (lbs/day)
Recreational Vehicles	1.17	585
Construction equip.	5.07	8413
Industrial equip.	3.74	6204
Lawn and Garden	8.75	14,871
Agricultural	0.03	0
Commercial equip.	14.87	24,689
Logging equip.	0.08	0
Airport Service	0.00	0
Underground Mining	0.00	0
Oil Field	0.03	0
Railway Maint. Equip.	0.04	60
Marine Recreation	0.18	182

*tons per seasonal day

3.4 Ships

The Washington State 2002 NEI submittal was based on a special project was undertaken through the Northwest Regional Technical Center (NWRTC) Demonstration Project to conduct an emissions inventory for ships (Corbett, 2001).[15] The main focus of the project was on ocean-going and harbor vessels traveling on the Columbia, Snake and Willamette Rivers. Emissions were estimated for 1999 based on a bottom-up fuel consumption approach. The estimates were provided by river segment consistent with segments reported in the US Army Corps of Engineers Waterborne Commerce publication.

3.4.1 Activity Level and Emission Rates

Activity level was based on the vessel traffic traveling the Columbia River. The emission rates are all based on the Corbett study done for the Western Regional Air Partnership. Unfortunately these emission calculations did not include data for carbon monoxide. A CO to NO_x ratio for Commercial Marine Vessels was calculated based on a ratio of emission factors used for marine vessel emissions. The Port of Portland established this relationship between NOx and CO terminal emissions in their 2000 Baseline EI in Section 6.1 Table 6-1. The CO/NOx ratio of 0.207 was applied to the AQMA portion of the CERR NOx ship emissions to calculate CO emissions for 2002 for the Clark County AQMA.

3.4.2 Temporal and Spatial Allocation

Emissions from ships were assumed to be uniform year-round. Using factors from the NWRTC Demonstration Project (the Corbett data), the 2002 CERR data was spatially resolved by several river links. Clark County emissions were allocated to the Vancouver CO maintenance area using simple GIS methods. The percentage of those river links falling adjacent to the Vancouver CO AQMA were used to apportion the county emissions. Seventy-four percent of the Columbia River bordering Clark County was estimated to border the Vancouver AQMA.

3.4.3 Emissions Estimates

Seasonal NO_x emissions in tons per year for Clark County were taken directly from the WDOE 2002 NEI submittal. NOx emissions for ships from the 2002 NEI were 917 tons. Half the NOx emissions from the 2002 NEI submittal were attributed to the Washington side of the river; 74% of the emissions were attributed to the Vancouver AQMA. Then, the CO to NO_x ratio for Commercial Marine Vessels (described above) was applied. The following formula shows the calculation:

(2002 CERR Columbia River NO_x Emissions/2) x 0.207 CO/NOx ratio x 0.74 (% of Columbia River bordering AQMA) = Vancouver AQMA tpy CO emissions = 70.2 tpy or 385 lbs/day

3.5 Locomotives

Locomotive emissions were calculated for Class 1 railroads based on EPA guidance.[16] Class 2 and 3 railroad locomotive emissions were not inventoried. A special AIRQUEST (formerly Northwest Regional Technical Center) project conducted by the Oregon Department of Environmental Quality (ODEQ) found that emissions from Class 2 and 3 railroad locomotives were a small percentage of total locomotive emissions.[17, 18]

3.5.1 Activity Level

Activity level is measured in gallons of diesel consumed by locomotives. The majority of the activity takes place on Class 1 railroads. Three Class 1 railroads operate in Washington: Burlington Northern Santa Fe (BNSF), Union Pacific and Amtrak. Union Pacific did not have any activity in the Vancouver AQMA. Fuel consumption data for the two railroads with activity was reported for 2002 to WDOE.[19, 20, 21] Gallons used for various railroad activities is shown in the table below.

Table 3-17: Locomotive Fuel Consumption in Gallons

County	Line Haul	Passenger	Yard
Clark	2,763,233	40,568	659,913

3.5.2 Temporal and Spatial Adjustments

The percentage of major railway within Clark County that falls within the Vancouver CO AQMA was calculated using GIS software. This fraction was used to apportion the amount of locomotive emissions that occurred within the CO maintenance area. The percentage of Clark County passenger track existing within the maintenance area is 67.4. This percentage was applied to Clark County passenger and line haul emissions. 100% of the yard emissions were assumed to occur at the Vancouver switchyard. Locomotives were assumed to operate uniformly year-round per EPA guidance.[22]

3.5.3 Emission Rates

CO Emission rates for the 2002 locomotive fleet were extracted from EPA's regulatory support document developed during the 1997 locomotive emissions standards rulemaking. EPA posted emission factor information by year and locomotive type (line-haul, switch, passenger) for 1999 through 2040.[23]

Table 3-18: Locomotive Emission Factors in grams per gallon fuel

Pollutant	Code	Line-haul	Passenger	Switch Yard
carbon monoxide	CO	2.66E+01	2.66E+01	3.81E+01

3.5.4 Emissions Estimates

Emissions were calculated using the following formula:

tpy = (gallons fuel) x (pollutant rate in g/gal) x (lbs/454 g) x (T/2000 lbs)

tpsd = tpy / (365 days/yr)

AQMA emissions from locomotives were 69 tpy and 380 lbs/day.

3.6 Aircraft

Aircraft emissions are based on 2004 values for landings and takeoffs from Airport Master Records obtained from the Federal Aviation Administration (FAA) website. 2002 data was not readily available and so 2004 data is used as a surrogate. Landing and takeoffs are counted separately in the Air Master Records reports, but landing and takeoff operations (LTOs) represent the complete cycle. The emission factor used to calculate CO emissions is from the U.S. Environmental Protection Agency, *Procedures for Emission Inventory Preparation, Volume IV: Mobile Sources*. EPA-450/4-81-026d (Revised). Office of Air and Radiation. Research Triangle Park, NC, and Ann Arbor, MI. 1992.

There are four airports inside the CO maintenance area and two in Battleground, outside the CO maintenance area. Only landings and takeoff operations inside the Maintenance area were included in the emission calculations. Each complete LTO emits 12.104 lbs of CO. Airports inside the CO maintenance are had 32,500 LTOs.. The table below shows the area airports and CO emissions in tons per year. CO emissions from aircraft inside the Vancouver AQMA are 195 tons per year or 1,070 lbs/day.

Table 3.19: Vancouver Maintenance Area Aircraft LTOs and CO emissions, tons per year

City	Airport	Annual AQMA LTOs	Tons/year
Camas	Grove Field	3500	21.0
Vancouver	Evergreen	5000	30.0
Vancouver	Fly For Fun	1500	9.0
Vancouver	Pearson	22500	135.2
Total		**32,500**	***195.2***

3.7 Residential, Commercial, and Small Industrial Fuel Combustion

Residential, Commercial, and Small Industrial Fuel Combustion (other than Residential Wood Combustion) emissions are based on the amount of fuel used in the maintenance area primarily for heating. Coal, distillate oil, residual oil, natural gas, and LPG are fuels that are used in the state of Washington. Information on the amount of fuel consumed and emission factors can be found in the Vancouver CO Plan Appendix E- Supporting Detail for Emission Inventory. Industrial source emissions were not included in this source category, as SWCAA tracks industrial emissions separately and emissions from industrial fuel combustion are included in the point source totals.

3.7.1 Activity Level and Emission Rates

Fuel usage is provided at the state level in the State Energy Data Report (SEDR). The 2001 data report was used for this work as it was the most recent when this section was calculated. County specific natural gas usage was obtained from NW Natural Gas which is Clark County's only major natural gas supplier. The methodology for doing these calculations is outlined in the EIIP Vol. III: Area Sources.

Emission rates for the different fuel types were obtained from AP-42 Chapter 1: External Combustion Sources per the EIIP Vol. III. Table 1.5-1 (Oct. 1996 version) was used for LPG emissions; Table 1.4-1 (July 1998 version) was used for the natural gas combustion emissions; Table 1.3-1 (Sept. 1998 version) was used for fuel oil combustion emissions, and Table 1.1-3 (Sept. 1998) for coal combustion emissions.

Table 3-20: Residential and Commercial Emission Factors and Fuel Usage

Fuel Type	Units	Residential Emission Factor lbs CO /unit	Residential Usage	Commercial Emission Factor lbs CO/unit	Commercial Usage
Coal	Tons	275	98	10	980
Distillate Oil	1000 gal	5	3,900	5	2,477
Residual Oil	1000 gal	0	0	5	14
Nat. Gas	MMft^3	40	2,654	84	1,491
LPG	1000 gal	1.9	4,639	1.9	819

3.7.2 Temporal Adjustments

Wintertime seasonal adjustment factors (SAFs) for Residential, Commercial, and Industrial fuel use were used to reflect the CO season by using Table 5.8-1 and the first equation in section 5.8.4 of Procedures for the Preparation of Emission Inventories for Carbon Monoxide and Precursors of Ozone, Vol. 1: General Guidance for Stationary Sources EPA-450/4/91-016. The Residential Seasonal Adjustment Factor for CO is 1.7; the Commercial Seasonal Adjustment factor used for commercial use is 1.4.

3.7.3 Spatial Adjustments

Emissions were allocated to the Vancouver CO maintenance area using Clark County population ratios. Eighty-three percent of the population was inside the Vancouver AQMA using 2001 data from the Washington Office of Financial Management (OFM).

3.7.4 Emissions Estimates

CO emissions for Residential and Commercial fuel use were calculated by the methodologies explained above. Industrial emissions were not included to prevent double counting of CO emission from industrial point sources. This is consistent with the results of the emission inventory analysis for the 1996 Vancouver CO Maintenance Plan submittal.

Table 3-21: Residential and Commercial CO emissions, lbs/winter day

	lbs/CO day
Residential Total	754
Commercial Total	803
Residential/Commercial Fuel Combustion Total:	**1,556**

3.8 Residential Yard Waste Burning

Residential yard waste burning is outdoor burning of vegetative material. CO emissions for this category were calculated based on the methodology used by Ecology for the 2002 NEI submittal. SWCAA banned all outdoor burning in the CO maintenance area in 1995. However, this activity still occurs illegally and is a small source of CO in the area.

3.8.1 Activity Level and Spatial Allocation

The measure of activity for residential yard waste burning is the amount of material burned. In 2001, Washington State University under contract to the Idaho Department of Environmental Quality conducted a telephone survey of wood heating and outdoor burning habits in Idaho, Oregon and Washington.[24] The survey included questions to estimate the fraction of households that burned yard waste and the number of legal size piles (4') burned per household per year. In Washington, the survey defined four geographic groups in Washington: 1) incorporated cities, 2) unincorporated western WA, 3) unincorporated eastern WA with forest lands, and 4) unincorporated eastern WA without forest lands. A county's incorporated areas were assigned to the first group. For Clark County, unincorporated areas were assigned to the western WA group. The number of households in the Vancouver AQMA, as shown in Table 2.1, was 103,145.

To apportion the amount of residential yard waste burning within the Vancouver CO AQMA, the surrogate household data for the Maintenance area (see section 2) was used to calculate emissions. Results of the WSU survey describing the fractions of households burning yard waste, and the number of piles burned are shown in the table below.

Table 3-22: Amount of Yard Waste Burning

Area	Fraction Burning	Piles per Year
Incorporated	0.077	2.56
Western WA	0.265	3.37

The tons of material burned was estimated using the following equation:

HH x (fraction burning waste) x (piles/HH) x (lbs burned/pile) x (T/2000 lbs)
Where fraction burning and piles per year come from Table 3-11
Where HH information comes from Table 2.1
Where the weight of a legal size pile was approximately 125 lbs.[25]

The CO emission rate for unspecified forest burning were taken from EPA's AP-42 §13.1 (Oct. 1996) and are shown in the table below.[26] Emission rates are given in pounds of pollutant per ton of material burned. Tons of material burned is multiplied by the emission factor of 140 lbs/ton of material burned as shown in the table below.

Table 3-23: Emission Rates in Pounds per Ton Material Burned

Pollutant	Code	lbs/T
carbon monoxide	CO	140

3.8.2 Temporal Allocation

The survey included questions about seasonal burning habits. The fractions of activity occurring in each season are shown in the table below. The winter seasonal fraction was used to calculated tons per winter day for the Vancouver CO Maintenance Plan.

Table 3-24: Seasonal Activity Fractions, Residential Yard Waste Burning

Area	Fall	Winter	Spring	Summer
Incorporated	0.25	**0.25**	0.21	0.29
Western WA	0.21	**0.28**	0.22	0.29

3.8.3 Emissions Estimates

Emissions estimates were calculated with the equations below

tpy = HH x (fraction burning waste) x (piles/HH) x (lbs burned/pile) (T/2000 lbs) x (140 lbs CO/T material burned) x (T/2000 lbs)

tpsd = tpy x (winter seasonal fraction) /91 season days * 2000 lbs/1 ton = lbs/d - winter

Table 3-25: CO Emissions from Residential Yard Waste Burning

Seasonal Allocation	Maintenance Area Calculations	HH	Fraction of HH Burning	Piles per Year	Emissions (tpy)	Emissions (lb/d - winter)
Winter Western WA	Unincorporated	31,447	0.265	3.37	122.87	756.10
Winter Incorporated	Vancouver, Camas, Washougal	71,698	0.077	2.56	61.83	339.74
	Total	103,145			185	1096

3.9 Residential Trash Burning

Residential trash burning is outdoor burning of household waste. This is activity is banned in the state of Washington, but still occurs illegally indoors (fireplaces/stoves) and outdoors.

3.9.1 Activity Level and Spatial Allocation

The measure of activity for residential trash burning is the amount of material burned. The Washington State University telephone survey of wood heating and outdoor burning habits in Idaho, Oregon and Washington described in the section above included questions to estimate the fraction of households that burned trash. The geographic subgroups, county assignments, and number of households in each subgroup were the same as in that section. The fractions of households burning trash are shown in the table below.

Table 3-26: Fraction of Households Burning Trash

Area	Fraction Burning
Incorporated	0.050
Western WA	0.199

The amount of trash burned per household was taken from an Emission Inventory Improvement Program (EIIP) recommendation. The EIIP reported that the amount of trash actually burned was approximately 50% of the combustible trash produced.[27] This was the amount used in this inventory and was 5.4 lbs per household per day.

The tons of material burned were estimated using the following equation:

Tons material burned:
HH x (fraction burning trash) x (5.4 lbs/HH-day) x (365 days) x (T/2000 lbs),
where HH = the number of households from Table 2-1
where fraction of HH burning trash = value from Table 3-21
where the lbs of trash burned was 5.4 lbs/HH-day

Table 3-27: Tons of fuel burned annually

Maintenance Area Calculations	HH	Tons burned annually
Unincorporated (Western WA)	31,447	6,167
Vancouver, Camas, Washougal, (Incorporated)	71,698	3,533
Total	103,145	9,700

3.9.2 Emission Rates

The CO emission factors for trash burning from the EIIP[27] are shown below. The emission rate is given in pounds of pollutant per ton of material actually burned.

Table 3-28: Emission Rates in Pounds per Ton Material Actually Burned

Pollutant	Code	Lbs/T
carbon monoxide	CO	5.31E+01

3.9.3 Temporal Allocation

Trash burning is considered uniform year-round.

3.9.4 Emissions Estimates

Emissions estimates were calculated with the equations below.

tpy = (tons burned from section 3.91.) x (CO lbs/T = 53.1) x (T/2000 lbs)
lbs/day = (tpy x 2000) / (365 days/yr)

Table 3-29: CO Emissions for Winter Residential Trash Burning

	Tons burned annually	Emissions	Emissions
Maintenance Area Calculations		(tpy)	(lb/d - winter)
Unincorporated	6,167	163.74	897.20
Vancouver, Camas, Washougal	3,533	93.80	513.97
Total	9,700	257.54	1411.17

3.10 Residential Wood Combustion

Residential wood combustion consists of home heating and recreational use of woodstoves, fireplaces, fireplace inserts and central furnaces.

3.10.1 Activity Level

The measure of activity for residential wood combustion is the amount of wood burned. The Washington State University telephone survey of wood heating and outdoor burning habits in Idaho, Oregon and Washington described above included questions to estimate the number of households using each type of device (Central Furnace, Certified (Phase I, Phase II) and Non-certified Inserts and Woodstoves, and Fireplaces); how much wood was burned per device; and seasonal, daily and hourly usage rates. The geographic subgroups, county assignments, and number of households in each subgroup were the same as in the above section. The fractions of households using wood burning devices are shown in the table below.

Table 3-30: Wood Burning Device Usage

Device Type	Incorporated	W WA
Central Furnace	0.013	0.000
Fireplaces	0.381	0.150
Non-certified Insert	0.039	0.058
Certified Insert, Phase I	0.000	0.006
Certified Insert, Phase II	0.067	0.043
Non-certified Pellet stove	0.017	0.043
Certified Pellet stove, 1988 stds	0.004	0.006
Non-certified Woodstove	0.039	0.126
Certified Woodstove, Phase I	0.000	0.006
Certified Woodstove, Phase II	0.032	0.058
Total Equipment	**0.591**	**0.497**

The WSU survey gathered information on pellets, presto logs and cords of wood burned. A cord contains 128 ft^3 (4' x 4' x 8'). The solid volume may range from 60-100 ft^3. An average solid volume of 85 ft^3 was used in this inventory.[28, 29] The weight of a cord of wood varies with moisture content and species type. It was assumed that moisture content was 20% (legal moisture limit).[30] Species type was defined using several sources. In a 1985 survey done by Market Trends, Inc.,[31] species burned were identified for western and eastern Washington. The survey was used to identify species for western Washington. Average weight of a cord of wood was 2607 lbs in western Washington.

Table 3-31: Wood Species Weight[28] and Percent Use by Area

Species	Lbs/cord	% use WWA
Alder	2,540	56
Cedar	2,060	4
Cottonwood	2,160	4
Douglas Fir	2,970	16.5
Hemlock	2,700	16.5
Larch	3,330	
Lodgepole Pine	2,610	
Madrona	4,320	1
Oak	3,680	1
Ponderosa Pine	2,240	

The WSU survey provided information on the number of cords burned per device. Pellets used were given in number of 40 lb bags used, and presto logs as number of logs burned. A presto log manufacturer in Spokane estimated the weight of a log as 8 lbs. The total number of tons burned by device type is shown in Table 3-31.

Table 3-32: Tons Burned per Wood Burning Device

Device Type	Incorporated	Unincorporated
	W WA	W WA
Central Furnaces	1.3	0.0
Fireplaces	1.4	1.9
Inserts	2.5	4.4
Pellet stoves	4.1	2.0
Woodstoves	3.3	4.2

3.10.2 Emission Rates

The table below lists the various equipment types and the amount of CO emitted for each ton of wood products burned.

Table 3-33: CO Emission Factors in Pounds per Ton of Wood Products Burned

Equipment Type	CO
Central Furnace	230.8
Fireplaces	252.6
Non-certified Insert	230.8
Certified Insert, Phase I	122.6
Certified Insert, Phase II	123.9
Non-certified Pellet stove	52.2
Certified Pellet stove, 1988 stds	39.4
Non-certified Woodstove	230.8
Certified Woodstove, Phase I	122.6
Certified Woodstove, Phase II	123.9

3.10.3 Spatial and Temporal Allocation

The household surrogate data in Section 2 was used to apportion the emissions based on the number of households within the CO AQMA in both the incorporated and non-incorporated portions of the AQMA.

Temporal allocation data was acquired from the WSU survey questions about seasonal burning habits. The fractions of activity occurring in each season are shown in Table 3-33 below.

Table 3-34: Seasonal Activity Fractions, Residential Wood Combustion

Area	*Winter*	Spring	Summer	Fall
Incorporated	***0.44***	0.20	0.03	0.34
Western WA	***0.39***	0.25	0.07	0.29

3.10.4 Emissions Estimates

Annual and seasonal emissions for each wood burning device were calculated according to the following equations:

tpy = (HH) x (usage fraction) x (tons burned/device-yr) x (pllt lbs /T) x (T/2000 lbs)

tpsd = (tpy) x (winter seasonal fraction) / (91 days)

where HH = households (see Table 2-1), pllt = pollutant, days = number of days in the winter season (91 days)

Table 3-35: Clark County Residential Wood Combustion emissions

	Inc. W WA	Uninc. W WA	County Total
CO tpy	8863	10424	19288
CO tps	3900	4065	7965
CO lbs/winter day	85712	89351	175062

Table 3-36: Households, Fractions of Incorporated or Unincorporated Areas and Maintenance Plan Emissions

	Fraction of Incorp. or Uninc.		Total emissions	
Maintenance Area emissions	(%)	HH	lbs/day	tpy
Camas/Washougal/Vancouver (Inc.)	93	71,698	79,376	8,863
Unincorp. Remainder of MP Area	48	31,447	42,850	4,999
CO Maintenance Plan Area Totals:		103,145	122,226	13,863

3.11 Notable Sources Not Inventoried

Biogenic emissions - were not inventoried for this base year inventory. Biogenic CO emissions come from natural biomass burning and biogenic activity (both soils and oceans). CO emissions from the terrestrial biosphere are a result of photochemical degradation of plant matter. EPA calculated biogenic emissions for Clark County for the 2002 NEI using BEIS3 – BELD3. Ecology could offer very little refinement to this inventory, and recommended acceptance of the EPA estimates. Because the biogenic CO emissions are not anthropogenic and will stay relatively constant from year to year, SWCAA chose not to include this category in the emission estimates.

Agricultural Burning – Very little activity in Clark County can be considered agricultural burning. SWCAA is not aware of any agricultural burning in the Vancouver CO AQMA in the wintertime.

Landfill Emissions – It was determined in the 1996 CO Maintenance Plan that landfills are not a significant source of CO emissions in the Vancouver CO maintenance area.

Fires – Wild and Structure – It was determined in the 1996 CO Maintenance Plan emission inventory that these are not a significant source of CO emissions in the Vancouver CO maintenance area.

Prescribed Burning - Of the 39 prescribed burns in the DNR database for 2002, there is only one that may have been inside the CO maintenance area that occurred during the winter. Therefore, emissions from prescribed burning in the Vancouver CO are negligible and not included in the inventory.

References:

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[3] Climatological Data, Washington. January - December 2002. Volume 106, Numbers 01 - 12. ISSN 0364-5320. National Oceanic and Atmospheric Administration. National Environmental Satellite, Data and Information Service. National Climatic Data Center, Asheville, NC.

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[5] Spreadsheet *Rel_hum1.xls*. U.S. Environmental Protection Agency. Spreadsheet dated Jan 16, 2002.

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[9] Sally Otterson conversations with John Raymond, Department of Ecology.

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[12] *User's Guide to MOBILE4 (Mobile Source Emission Factor Model)*, EPA-AA-TEB-89-01, U.S. Environmental Protection Agency, Office of Mobile Sources, Ann Arbor, MI, February 1989. Appendix 2B: RVP and ASTM Class Determination Guidance.

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Department of Ecology, US EPA Region 10, Washington State University, University of Washington. January 11, 2002 (draft).

[18] *Oregon 1996 Railroad Emissions Inventory Project, Emission Estimate Methodology Documentation.* Oregon Department of Environmental Quality. August 2001.

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[20] *SEA Fuel Total 20032.xls.* Transmitted by email from Michael Henderson, Amtrak to Sally Otterson, Washington Department of Ecology. April 23, 2004.

[21] *Union Pacific Railroad Company 2002 Fuel Consumption by County (Line Haul) and Yard Jobs in Washington.* Transmitted by email from Jon Germer, Union Pacific Railroad to Sally Otterson, Washington Department of Ecology. May 10, 2004.

[22] *Procedures for the Preparation of Emission Inventories for Carbon Monoxide and Precursors of Ozone.* Volume II, table 6-11. EPA-454/R-92-026, March 1992.

[23] Spreadsheet titled *locorsd.wk3.* Part of regulatory support documentation for the final emissions standards for locomotives, Federal Register April 16, 1998.

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Vancouver CO Maintenance Area
Carbon Monoxide 2002 Emission Summary
Main Source Category

		CO Emissions Pounds per Winter Day (lb/d)
Point Sources		
Major Point Sources (>50 tpy each)		3,414
Minor Point Sources (> 1 tpy each)		983
	Sub Total:	**4,396**
Mobile Sources		
Freeway		80,751
Arterial		259,080
Ramp		21,413
Local		21,414
Intra-Zonal		401
	Sub Total:	**383,058**
Non-road Mobile Sources		
Aircraft		1,070
Commercial Marine Vessels		385
Recreational Marine		182
Railroads		380
Railway Maintenance Equip.		60
Lawn and Garden Equipment		14,871
Recreational Vehicles		585
Light Commercial equip.		24,689
Industrial Equip.		6,204
Construction Equip.		8,413
	Sub Total:	**56,837**
Area Sources		
Small Industrial Sources < 1 tpy each		88
Residential/Commercial Fuel Combustion		1,556
Residential Wood Combustion		122,226
Trash Burning		1,411
Residential Yard Waste Burning		1,096
	Sub Total:	**126,377**
	Total:	570,669

No emissions/no activities or neglible from prescribed burning, airport service, agricultural equipment, logging equipment, underground mining or oil fields in Vancouver AQMA

Per 1996 CO Maintenance Plan, major point sources emitted over 50 tpy of CO in 2002.
Small point sources < 50 tpy were included in the area source category

1992 EI From 1996 Maintenance Plan

Major CO Sources in AQMA (> 50 tpy)

Source	SIC	CO (tpy)	CO (lb/day)
Fort James Camas LLC (James River II)	2611	4776	26351
Boise White Paper, LLC (Boise Cascade)	2621	527	3338
Fort Vancouver Plywood (closed)	2436	240	1920
Vanalco, Inc. (not op.in 2002)	3334	18590	101863
Vancouver Iron & Steel (Vanrich Casting)	3325	52	400
Westside Water Reclamation Facility (CoV WWTP)	4953	173	1802
TOTAL		24358	135674

Small Point Sources
(Included as area sources in 1996 plan)

Source	SIC	CO (tpy)	CO (lb/day)
Pacific Cogeneration (closed)	2083	20	110
Northwest Pipeline / Washougal	4911	17	93
Lakeside Ind.	2951	6	56
Frito Lay, Inc.	2099	3	18
Pendleton Woolen Mills	2231	2	11
SEH America, Inc.	3674	17	107
TOTAL		65	395

From 2002

Major CO Sources in AQMA (> 50 tpy)

Source	SIC	CO (tpy)	CO (lb/day)	Notes:	days per week	weeks per year
Fort James Camas LLC	2611	623	3414	25% of operation Nov-Jan per DOE (all EU's)	7	52
TOTAL		623	3414			

Source	SIC	CO (tpy)	CO (lb/day)			
Boise White Paper, LLC	2621	1	4		5	50
Clark County Public Works/Salmon Creek	4952	1	9			
Clark Public Utilities/ River Road Generating Project	4911	9	47		7	52
Evergreen School District No. 114	8211	2	18			
Frito Lay, Inc.	2099	27	172		6	52
Great Western Malting	2083	3	15		7	52
Hannah Collision Center	7532	2	16			
Hewlett-Packard Company	3674	1	9			
Kyocera Industrial Ceramics Corp.	3679	1	11			
Lakeside Ind./ Camas	2951	14	107			
Landa Inc.	5046	8	63			
Northwest Packing Company	2033	3	21			
Northwest Pipeline / Washougal	4911	0	4	Primarily Fall and Winter Operation	7	26
Pacific Rock Products, LLC/A2 - Orchards	2951	6	44			
Pendleton Woolen Mills	2231	4	34			
SEH America, Inc.	3674	3	18		7	51
SW WA Medical Center/ St. Joseph Campus	2951	2	18			
Todd's Auto Body	7532	1	9			
Vancouver Iron & Steel	3325	26	200		5	52
Vancouver School District No. 137	8211	3	25			
Veteran's Administration Hospital	8069	2	14			
WaferTech LLC	3674	1	6		7	52
Western States Asphalt Company / English Pit	2951	15	120		4	51
TOTAL		135	983			

Total Major and Minor Point Sources	758	4396
Other Sources (from 2002 SWAPE printout) not accounted for in area source calculations or above calculations summed and added to Area Source totals as "Small Point sources <1 tpy)	11	88

Clark County CO emissions in tons Onroad Mobile sources
from triennial emissions inventory (Ecology)
Oct. 23, 2006

2002 Inventory

fall	spring	summer	winter	annual
21,365	24,450	17,798	23,100	86,714

2005 Inventory (draft)

fall	spring	summer	winter	annual
15,096	15,885	12,841	17,292	61,114

Percent Change

fall	spring	summer	winter	annual
-29%	-35%	-28%	-25%	-30%

2002 Emissions - MOBILE 6.2.01

	Seasonal Grams/day summer VOC	summer NOX	winter WCO
Freeway	2,715,271	3,976,343	36,627,855
Arterial	9,164,249	11,857,049	117,515,879
Ramp	588,293	715,836	9,712,707
Local	1,350,143	1,351,306	9,713,120
Intra-Zonal	25,255	25,277	181,688
Total.	13,843,211	17,925,811	173,751,248

e.g. 36,627,855 / 453.59 g/lb = 80,751 not 80,581

	Pounds/Day VOC	NOX	WCO	Winter CO recalculated		
Freeway	5,974	8,748	80,581	80,751	170	
Arterial	20,161	26,086	258,535	259,080	545	
Ramp	1,294	1,575	21,368	21,413	45	
Local	2,970	2,973	21,369	21,414	45	
Intra-Zonal	56	56	400	401	1	
Total.	30,455	39,437	382,253	383,058	805	off by lb/day

	Tons/day VOC	NOX	WCO
Freeway	2.99	4.37	40.29
Arterial	10.08	13.04	129.27
Ramp	0.65	0.79	10.68
Local	1.49	1.49	10.68
Intra-Zonal	0.03	0.03	0.20
Total	15.23	19.72	191.13

Wade received via email from Mark Harrington on Nov. 21, 2005

talked to Mark 4/5/06
Mark says summer values for CO would be substantially lower, less than half the winter values

revised November 2006, per Sally Otterson identification of error in conversion

Temperature Data for Onroad and Nonroad Mobile Emissions Calculations for CO MP EI

Data from January 2002 NOAA data taken from Vancouver NNE monitor located at Washington State University, V
Lat: -122 degrees 39 minutes W Long: 45 degrees 41 minutes North

Jan-02

Date	Max Temp	Min Temp	Avg.
1	45	30	37.5
	45	40	42.5
	52	31	41.5
	49	34	41.5
	43	37	40
	45	41	43
	57	41	49
	57	48	52.5
	56	37	46.5
	48	36	42
	46	37	41.5
	48	38	43
	49	31	40
	43	33	38
	44	23	33.5
	41	25	33
	38	32	35
	39	33	36
	42	38	40
	44	37	40.5
	46	36	41
	38	32	35
	41	34	37.5
	45	36	40.5
	47	42	44.5
	43	33	38
	38	32	35
	37	31	34
	43	26	34.5
	36	30	33
	43	35	39
Avg.	44.77	34.48	39.63

REG DIST :
* WA 2002 (veh 1-13, 16); FTA 2002 (veh 15); PSCAA 2001 (veh 14)
01 0.0415 0.0555 0.0612 0.0565 0.0574 0.0579 0.0523 0.0577 0.0506 0.0537 0.0459 0.0506 0.0471
0.0431 0.0387 0.0345 0.0297 0.0251 0.0196 0.0119 0.0081 0.0072 0.0067 0.0089 0.0785
02 0.0115 0.0181 0.0324 0.0325 0.0355 0.0364 0.0375 0.0366 0.0548 0.0476 0.0413 0.0546 0.0480
0.0570 0.0533 0.0593 0.0656 0.0464 0.0453 0.0314 0.0245 0.0223 0.0207 0.0163 0.0711
03 0.0257 0.0465 0.0484 0.0420 0.0488 0.0509 0.0330 0.0404 0.0512 0.0398 0.0366 0.0344 0.0353
0.0356 0.0272 0.0189 0.0226 0.0217 0.0190 0.0131 0.0110 0.0148 0.0116 0.0300 0.2416
04 0.0149 0.0365 0.0506 0.0577 0.0492 0.0563 0.0418 0.0517 0.0450 0.0396 0.0432 0.0460 0.0343
0.0499 0.0432 0.0372 0.0425 0.0340 0.0297 0.0177 0.0170 0.0195 0.0142 0.0188 0.1097
05 0.0356 0.0606 0.0639 0.0624 0.0536 0.0682 0.0490 0.0563 0.0545 0.0409 0.0373 0.0336 0.0411
0.0388 0.0288 0.0157 0.0239 0.0213 0.0175 0.0107 0.0079 0.0081 0.0081 0.0216 0.1408
06 0.0773 0.1333 0.0980 0.1142 0.0518 0.0832 0.0503 0.0464 0.0349 0.0296 0.0215 0.0174 0.0221
0.0228 0.0174 0.0110 0.0184 0.0147 0.0125 0.0071 0.0068 0.0068 0.0068 0.0162 0.0796
07 0.0522 0.1049 0.0686 0.1148 0.0530 0.0502 0.0325 0.0440 0.0403 0.0299 0.0268 0.0244 0.0343
0.0339 0.0256 0.0188 0.0214 0.0185 0.0159 0.0088 0.0079 0.0108 0.0122 0.0190 0.1312
08 0.0199 0.0512 0.0787 0.0735 0.0367 0.0706 0.0449 0.0544 0.0442 0.0371 0.0333 0.0390 0.0495
0.0383 0.0229 0.0160 0.0217 0.0169 0.0120 0.0074 0.0077 0.0113 0.0104 0.0176 0.1849
09 0.0277 0.0491 0.0800 0.0710 0.0348 0.0489 0.0468 0.0466 0.0427 0.0369 0.0397 0.0291 0.0471
0.0339 0.0261 0.0198 0.0187 0.0205 0.0143 0.0074 0.0090 0.0074 0.0136 0.0219 0.2069
10 0.0223 0.0413 0.0562 0.0597 0.0432 0.0434 0.0357 0.0473 0.0339 0.0298 0.0291 0.0307 0.0324
0.0245 0.0224 0.0203 0.0206 0.0209 0.0152 0.0098 0.0124 0.0150 0.0179 0.0281 0.2880
11 0.0180 0.0301 0.0360 0.0397 0.0336 0.0289 0.0307 0.0414 0.0220 0.0229 0.0279 0.0345 0.0469
0.0340 0.0358 0.0360 0.0282 0.0345 0.0257 0.0145 0.0185 0.0285 0.0256 0.0371 0.2689
12 0.0136 0.0283 0.0340 0.0333 0.0290 0.0269 0.0298 0.0462 0.0318 0.0275 0.0292 0.0391 0.0483
0.0410 0.0410 0.0356 0.0339 0.0426 0.0312 0.0158 0.0211 0.0289 0.0312 0.0406 0.2201
13 0.0365 0.0592 0.0806 0.0740 0.0594 0.0568 0.0580 0.0646 0.0547 0.0443 0.0366 0.0360 0.0443
0.0471 0.0375 0.0295 0.0254 0.0247 0.0196 0.0070 0.0075 0.0106 0.0123 0.0149 0.0589
14 0.0120 0.0750 0.0724 0.0696 0.0812 0.0448 0.0467 0.0689 0.0789 0.0718 0.0578 0.0661 0.0512
0.0331 0.0281 0.0236 0.0266 0.0180 0.0135 0.0061 0.0121 0.0127 0.0104 0.0096 0.0099
15 0.0748 0.0748 0.0748 0.0748 0.0748 0.0748 0.0500 0.0500 0.0500 0.0500 0.0500 0.0500 0.0397
0.0397 0.0397 0.0397 0.0156 0.0156 0.0156 0.0156 0.0156 0.0029 0.0029 0.0029 0.0058
16 0.0606 0.0792 0.0652 0.0565 0.0456 0.0358 0.0343 0.0295 0.0274 0.0274 0.0193 0.5192 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000

I/M PROGRAM : 1 1975 2020 2 T/O OBD I/M
I/M MODEL YEARS : 1 1996 2020
I/M VEHICLES : 1 22222 11111111 1
I/M STRINGENCY : 1 36.1
I/M COMPLIANCE : 1 90.0
I/M WAIVER RATES : 1 0.0 0.0
I/M GRACE PERIOD : 1 1
I/M PROGRAM : 2 1975 2020 2 T/O EVAP OBD
I/M MODEL YEARS : 2 1996 2020
I/M VEHICLES : 2 22222 11111111 1
I/M STRINGENCY : 2 36.1
I/M COMPLIANCE : 2 90.0
I/M WAIVER RATES : 2 0.0 0.0
I/M GRACE PERIOD : 2 1
I/M PROGRAM : 3 1975 2020 2 T/O IM240
I/M MODEL YEARS : 3 1981 1995
I/M VEHICLES : 3 22222 11111111 1
I/M STRINGENCY : 3 36.1
I/M COMPLIANCE : 3 90.0
I/M WAIVER RATES : 3 0.0 0.0
I/M CUTPOINTS : 3 d:\projects\air\MOBILE62\ORCUTPT.d
I/M PROGRAM : 4 1975 2020 2 T/O 2500/IDLE
I/M MODEL YEARS : 4 1975 1980
I/M VEHICLES : 4 22222 22222222 2
I/M STRINGENCY : 4 36.1
I/M COMPLIANCE : 4 90.0
I/M WAIVER RATES : 4 0.0 0.0

REG DIST

* This file contains the default MOBILE6 values for the distribution of
vehicles by age for July of any calendar year. There are sixteeen (16)
* sets of values representing 16 combined gasoline/diesel vehicle class
distributions. These distributions are split for gasoline and diesel
using the separate input (or default) values for diesel sales fractions.
* Each distribution contains 25 values which represent the fraction of
all vehicles in that class (gasoline and diesel) of that age in July.
* The first number is for age 1 (calendar year minus model year plus one)
and the last number is for age 25. The last age includes all vehicles
of age 25 or older. The first number in each distribution is an integer
* which indicates which of the 16 vehicle classes are represented by the
distribution. The sixteen vehicle classes are:
*
1 LDV Light-Duty Vehicles (Passenger Cars)
2 LDT1 Light-Duty Trucks 1 (0-6,000 lbs. GVWR, 0-3750 lbs. LVW)
* 3 LDT2 Light Duty Trucks 2 (0-6,001 lbs. GVWR, 3751-5750 lbs. LVW)
4 LDT3 Light Duty Trucks 3 (6,001-8500 lbs. GVWR, 0-3750 lbs. LVW)
* 5 LDT4 Light Duty Trucks 4 (6,001-8500 lbs. GVWR, 3751-5750 lbs. LVW)
6 HDV2B Class 2b Heavy Duty Vehicles (8501-10,000 lbs. GVWR)
7 HDV3 Class 3 Heavy Duty Vehicles (10,001-14,000 lbs. GVWR)
* 8 HDV4 Class 4 Heavy Duty Vehicles (14,001-16,000 lbs. GVWR)
9 HDV5 Class 5 Heavy Duty Vehicles (16,001-19,500 lbs. GVWR)
* 10 HDV6 Class 6 Heavy Duty Vehicles (19,501-26,000 lbs. GVWR)
11 HDV7 Class 7 Heavy Duty Vehicles (26,001-33,000 lbs. GVWR)
12 HDV8A Class 8a Heavy Duty Vehicles (33,001-60,000 lbs. GVWR)
* 13 HDV8B Class 8b Heavy Duty Vehicles (>60,000 lbs. GVWR)
14 HDBS School Busses
* 15 HDBT Transit and Urban Busses
16 MC Motorcycles (All)

* The 25 age values are arranged in two rows of 10 values followed by a row
with the last 5 values. Comments (such as this one) are indicated by
* an asterisk in the first column. Empty rows are ignored. Values are
read "free format," meaning any number may appear in any row with as
many characters as needed (including a decimal) as long as 25 values
* follow the initial integer value separated by a space.

* If all 28 vehicle classes do not need to be altered from the default
values, then only the vehicle classes that need to be changed need to
be included in this file. The order in which the vehicle classes are

```
* read does not matter, however each vehicle class set must contain 25
* values and be in the proper age order.
*
* Multnomah County
*
* LDV We have data to only adjust the LDGV and the LDDV which are adjusted thru
* the one command line of LDV.
 1 0.064 0.080 0.057 0.062 0.053 0.060 0.057 0.057 0.047 0.054
   0.050 0.050 0.043 0.039 0.035 0.029 0.022 0.014 0.010 0.009
   0.009 0.011 0.010 0.008 0.071
```

```
**********    Header Section    **********
MOBILE6 INPUT FILE

SPREADSHEET       :
POLLUTANTS        : CO

RUN DATA
**********    Run Section     **********
REG DIST          : d:\projects\air\mobile62\MULTreg.d
VMT FRACTIONS     :
 0.593 0.052 0.174 0.054 0.025 0.032 0.003 0.002
 0.002 0.007 0.008 0.009 0.033 0.001 0.001 0.004
FUEL PROGRAM      : 1
NO REFUELING      :
I/M DESC FILE     : d:\projects\air\mobile62\im2002.org
ANTI-TAMP PROG    :
75 75 80 22222 22222222 1 12 090. 22212221
**********    Scenario Section    **********

SCENARIO RECORD   : OR_winter,IM,Non-ramp
CALENDAR YEAR     : 2002
EVALUATION MONTH  : 1
MIN/MAX TEMP      : 34.4 48.4
ABSOLUTE HUMIDITY : 30.9
FUEL RVP          : 13.8
AVERAGE SPEED     :  3.0 Non-ramp

.

SCENARIO RECORD   : OR_winter,IM,Non-ramp
CALENDAR YEAR     : 2002
EVALUATION MONTH  : 1
MIN/MAX TEMP      : 34.4 48.4
ABSOLUTE HUMIDITY : 30.9
FUEL RVP          : 13.8
AVERAGE SPEED     : 65.0 Non-ramp

END OF RUN
**********    Run Section     **********
REG DIST          : d:\projects\air\mobile62\MULTreg.d
VMT FRACTIONS     :
 0.593 0.052 0.174 0.054 0.025 0.032 0.003 0.002
```

0.002 0.007 0.008 0.009 0.033 0.001 0.001 0.004
FUEL PROGRAM : 1
NO REFUELING :
I/M DESC FILE : d:\projects\air\mobile62\im2002.org
ANTI-TAMP PROG :
75 75 80 22222 22222222 1 12 090. 22212221
********** Scenario Section **********

SCENARIO RECORD : OR_winter,IM,Arterial
CALENDAR YEAR : 2002
EVALUATION MONTH : 1
MIN/MAX TEMP : 34.4 48.4
ABSOLUTE HUMIDITY : 30.9OR
FUEL RVP : 13.8
AVERAGE SPEED : 3.0 Arterial

...

SCENARIO RECORD : OR_winter,IM,Arterial
CALENDAR YEAR : 2002
EVALUATION MONTH : 1
MIN/MAX TEMP : 34.4 48.4
ABSOLUTE HUMIDITY : 30.9
FUEL RVP : 13.8
AVERAGE SPEED : 65.0 Arterial

END OF RUN
********** Run Section **********
REG DIST : d:\projects\air\mobile62\MULTreg.d
VMT FRACTIONS :
0.593 0.052 0.174 0.054 0.025 0.032 0.003 0.002
0.002 0.007 0.008 0.009 0.033 0.001 0.001 0.004
FUEL PROGRAM : 1
NO REFUELING :
I/M DESC FILE : d:\projects\air\mobile62\im2002.org
ANTI-TAMP PROG :
75 75 80 22222 22222222 1 12 090. 22212221
********** Scenario Section **********

SCENARIO RECORD : OR_winter,IM,Ramp
CALENDAR YEAR : 2002
EVALUATION MONTH : 1
MIN/MAX TEMP : 34.4 48.4

ABSOLUTE HUMIDITY : 30.9
FUEL RVP : 13.8
AVERAGE SPEED : 34.6 Areawide 0.1 0.0 0.0 99.9

END OF RUN

I/M PROGRAM : 1 1993 2050 2 T/O ASM 2525 PHASE-IN
I/M MODEL YEARS : 1 1968 1995
I/M VEHICLES : 1 22222 11111111 1
I/M STRINGENCY : 1 36.0
I/M COMPLIANCE : 1 93.0
I/M WAIVER RATES : 1 4.0 7.0
I/M EXEMPTION AGE : 1 25
I/M GRACE PERIOD : 1 5
I/M PROGRAM : 2 1998 2050 2 T/O GC
I/M MODEL YEARS : 2 1968 1995
I/M VEHICLES : 2 22222 11111111 1
I/M COMPLIANCE : 2 93.0
I/M WAIVER RATES : 2 4.0 7.0
I/M EXEMPTION AGE : 2 25
I/M GRACE PERIOD : 2 5
I/M PROGRAM : 3 1993 2050 2 T/O OBD I/M
I/M MODEL YEARS : 3 1996 2050
I/M VEHICLES : 3 22222 11111111 1
I/M STRINGENCY : 3 36.0
I/M COMPLIANCE : 3 93.0
I/M WAIVER RATES : 3 4.0 7.0
I/M EXEMPTION AGE : 3 25
I/M GRACE PERIOD : 3 5
I/M PROGRAM : 4 2002 2050 2 T/O EVAP OBD & GC
I/M MODEL YEARS : 4 1996 2050
I/M VEHICLES : 4 22222 11111111 1
I/M COMPLIANCE : 4 93.0
I/M WAIVER RATES : 4 4.0 7.0
I/M EXEMPTION AGE : 4 25
I/M GRACE PERIOD : 4 5
I/M PROGRAM : 5 1993 2050 2 T/O 2500/IDLE
I/M MODEL YEARS : 5 1968 2050
I/M VEHICLES : 5 11111 22222222 2
I/M STRINGENCY : 5 36.0
I/M COMPLIANCE : 5 93.0
I/M WAIVER RATES : 5 4.0 7.0
I/M EXEMPTION AGE : 5 25
I/M GRACE PERIOD : 5 5
I/M PROGRAM : 6 1998 2050 2 T/O GC
I/M MODEL YEARS : 6 1968 2050
I/M VEHICLES : 6 11111 22222222 2
I/M COMPLIANCE : 6 93.0

I/M WAIVER RATES : 6 4.0 7.0
M EXEMPTION AGE : 6 25
I/M GRACE PERIOD : 6 5

********** Header Section **********
MOBILE6 INPUT FILE

SPREADSHEET :
POLLUTANTS : CO

RUN DATA
********** Run Section **********
REG DIST : d:\projects\air\mobile62\reg2002.txt
FUEL PROGRAM : 1
NO REFUELING :
********** Scenario Section **********

SCENARIO RECORD : VN_winter,no_IM,Non-ramp
CALENDAR YEAR : 2002
EVALUATION MONTH : 1
MIN/MAX TEMP : 34.4 48.4
ABSOLUTE HUMIDITY : 25.0
FUEL RVP : 13.8
AVERAGE SPEED : 2.5 Non-ramp

SCENARIO RECORD : VN_winter,no_IM,Non-ramp
CALENDAR YEAR : 2002
EVALUATION MONTH : 1
MIN/MAX TEMP : 34.4 48.4
ABSOLUTE HUMIDITY : 25.0
FUEL RVP : 13.8
AVERAGE SPEED : 3.0 Non-ramp

...

SCENARIO RECORD : VN_winter,no_IM,Non-ramp
CALENDAR YEAR : 2002
EVALUATION MONTH : 1
MIN/MAX TEMP : 34.4 48.4
ABSOLUTE HUMIDITY : 25.0
FUEL RVP : 13.8
AVERAGE SPEED : 65.0 Non-ramp

END OF RUN
********** Run Section **********
REG DIST : d:\projects\air\mobile62\reg2002.txt

FUEL PROGRAM : 1
NO REFUELING :
********** Scenario Section **********

SCENARIO RECORD : VN_winter,no_IM,Arterial
CALENDAR YEAR : 2002
EVALUATION MONTH : 1
MIN/MAX TEMP : 34.4 48.4
ABSOLUTE HUMIDITY : 25.0
FUEL RVP : 13.8
AVERAGE SPEED : 2.5 Arterial

SCENARIO RECORD : VN_winter,no_IM,Arterial
CALENDAR YEAR : 2002
EVALUATION MONTH : 1
MIN/MAX TEMP : 34.4 48.4
ABSOLUTE HUMIDITY : 25.0
FUEL RVP : 13.8
AVERAGE SPEED : 3.0 Arterial

...

SCENARIO RECORD : VN_winter,no_IM,Arterial
CALENDAR YEAR : 2002
EVALUATION MONTH : 1
MIN/MAX TEMP : 34.4 48.4
ABSOLUTE HUMIDITY : 25.0
FUEL RVP : 13.8
AVERAGE SPEED : 65.0 Arterial

END OF RUN
********** Run Section **********
REG DIST : d:\projects\air\mobile62\reg2002.txt
FUEL PROGRAM : 1
NO REFUELING :
********** Scenario Section **********

SCENARIO RECORD : VN_winter,no_IM,Ramp
CALENDAR YEAR : 2002
EVALUATION MONTH : 1
MIN/MAX TEMP : 34.4 48.4
ABSOLUTE HUMIDITY : 25.0
FUEL RVP : 13.8

AVERAGE SPEED : 34.6 Areawide 0.1 0.0 0.0 99.9

END OF RUN
********** Run Section **********
REG DIST : d:\projects\air\mobile62\reg2002.txt
FUEL PROGRAM : 1
NO REFUELING :
I/M DESC FILE : d:\projects\air\mobile62\im2002.van
********** Scenario Section **********

SCENARIO RECORD : VN_winter,IM,Non-ramp
CALENDAR YEAR : 2002
EVALUATION MONTH : 1
MIN/MAX TEMP : 34.4 48.4
ABSOLUTE HUMIDITY : 25.0
FUEL RVP : 13.8
AVERAGE SPEED : 2.5 Non-ramp

SCENARIO RECORD : VN_winter,IM,Non-ramp
CALENDAR YEAR : 2002
EVALUATION MONTH : 1
MIN/MAX TEMP : 34.4 48.4
ABSOLUTE HUMIDITY : 25.0
FUEL RVP : 13.8
AVERAGE SPEED : 3.0 Non-ramp

...

SCENARIO RECORD : VN_winter,IM,Non-ramp
CALENDAR YEAR : 2002
EVALUATION MONTH : 1
MIN/MAX TEMP : 34.4 48.4
ABSOLUTE HUMIDITY : 25.0
FUEL RVP : 13.8
AVERAGE SPEED : 65.0 Non-ramp

END OF RUN
********** Run Section **********
REG DIST : d:\projects\air\mobile62\reg2002.txt
FUEL PROGRAM : 1
NO REFUELING :
I/M DESC FILE : d:\projects\air\mobile62\im2002.van
********** Scenario Section **********

```
SCENARIO RECORD    : VN_winter,IM,Arterial
CALENDAR YEAR      : 2002
EVALUATION MONTH   : 1
MIN/MAX TEMP       : 34.4 48.4
ABSOLUTE HUMIDITY  : 25.0
FUEL RVP           : 13.8
AVERAGE SPEED      :  2.5 Arterial

SCENARIO RECORD    : VN_winter,IM,Arterial
CALENDAR YEAR      : 2002
EVALUATION MONTH   : 1
MIN/MAX TEMP       : 34.4 48.4
ABSOLUTE HUMIDITY  : 25.0
FUEL RVP           : 13.8
AVERAGE SPEED      :  3.0 Arterial

...

SCENARIO RECORD    : VN_winter,IM,Arterial
CALENDAR YEAR      : 2002
EVALUATION MONTH   : 1
MIN/MAX TEMP       : 34.4 48.4
ABSOLUTE HUMIDITY  : 25.0
FUEL RVP           : 13.8
AVERAGE SPEED      : 65.0 Arterial

END OF RUN
**********     Run Section     **********
REG DIST           : d:\projects\air\mobile62\reg2002.txt
FUEL PROGRAM       : 1
NO REFUELING       :
I/M DESC FILE      : d:\projects\air\mobile62\im2002.van
**********   Scenario Section   **********

SCENARIO RECORD    : VN_winter,IM,Ramp
CALENDAR YEAR      : 2002
EVALUATION MONTH   : 1
MIN/MAX TEMP       : 34.4 48.4
ABSOLUTE HUMIDITY  : 25.0
FUEL RVP           : 13.8
AVERAGE SPEED      : 34.6 Areawide 0.1 0.0 0.0 99.9
```

END OF RUN

Nonroad2004 Model Input file for 2007-2016 CO Maintenance Plan
Also used in Nonroad2005 runs
CLARK COUNTY DATA

	Typical Winter Day		Annual 2002 Avg.	
County	Clark			
Gas RVP	13.8	(1)	11.36	(7)
Oxygen Wt%	1.24	(2)	1.23	(2)
Gas Sulfur Wt%	0.0383	(3)	0.0279	(8)
Diesel Sulfur Wt%	0.2283	(4)	0.2283	(4)
CNG/LPG Sulfur Wt%	0.0123		0.0123	
Min T (F)	34.48	(6)	39.7	(9)
Max T (F)	44.77	(6)	67.3	(9)
Avg. T (F)	39.63	(6)	52	(9)
Stage II Control %	0		0	

/OPTIONS/
Title 1 : CO MP 2002 - TYPICAL DAY RUN1
Title 2 : CLARK COUNTY CO MP RUN
Fuel RVP for gas : 13.8
Oxygen Weight % : 1.03
Gas sulfur % : 0.0383
Diesel sulfur % : 0.2283
CNG/LPG sulfur % : 0.0123
Minimum temper. (F): 34.48
Maximum temper. (F): 44.77
Average temper. (F): 39.63
Altitude of region : LOW
/END/

(1) Value from WDOE Mobile6/6.1/6.2 Input Parameters and Processing Document updated May 6, 2003 for Clark county wintertime (Oct. - April) Fuel RVP

(2) SWCAA estimated that 10% EtOH by volume is blended into gasoline year round at ARCO and some BP stations.
Assumed to be the same year-round as not enough fuel distributors surveyed were allowing oxy fuel in WA during the wintertime
Gasoline oxygen wt% = 0.3448 * volume % EtOH (ref. ODEQ 574, p. 167)
Clark County Currently Has 35.95% of their gasoline coming from stations using EtOH per SWCAA throughput data and Gerald Strawn survey
SWCAA assumes that at at least 35.95% of the gasolene distributed in Clark County is and EtOH blend even though its not required in Clark County
= (0.3595 * 0.3448 * 0.1) = 0.0124
1.03%

(3) Value from WDOE Mobile6/6.1/6.2 Input Parameters and Processing Document updated May 6, 2003 for Clark county wintertime 1999 Fuel Sulfur Content

(4) Based on national average diesel fuel content for land-based diesel engines given in Chapter 3: Emission Inventory for EPA Tier 4 Nonroad Diesel Rule Regulatory Analysis, http://www.epa.gov/nonroad-diesel/2004fr.htm#ria

(6) January 2002 Avg. Temperature Data - NOAA climatorlogical data summary for January 2002

	Avg. High	Avg. Low	Avg Temp
Temp (F)	44.77	34.48	39.63

(7) Avg. of Monthy RVP values from WDOE Mobile6/6.1/6.2 Input Parameters and Processing Document updated May 6, 2003
(13.8*7+8.5+7.8*4)/12 = 11.36

(8) Default Avg. gasoline sulfur content for Western WA in Mobile 6.
Accounts for the Tier 2 and Heavy-Duty 2005/2007 Requirements in MOBILE6, Final Report (Table 8) M6.EXH.004 EPA420-R-01-057, November 2001,

(9) Temperature Data - NOAA climatorlogical data - 2002 Annual Summary
Jul. Avg. Temp, Jan Avg. Temp, and 2002 Avg Temp used for Avg. High, Avg. Low, and Avg. Temp for annual run.

EPA`s NONROAD Emissions Model
Core Model Ver 2005, Nov 2005
Dec 20 16:10:35: 2005
Vancouver CO Maintenance Plan - Typical Day Run
Typical Season Day Vancouver CO MP
Options file used: C:\nonroad\COMPNR05.OPT
Typical weekday for Winter Season, 2002
Tons/Day

	CO Emissions (tons/day)		AQMA Emissions	
	Total County	MPA %	AQMA Emissions	lb/day
Recreational Vehicles	1.17	0.25	0.3	585.3
Construction equip.	5.07	0.83	4.2	8412.9
Industrial equip.	3.74	0.83	3.1	6203.6
Lawn and Garden	8.75	0.85	7.4	14870.9
Agricultural	0.03	0	0.0	0.0
Commercial equip.	14.87	0.83	12.3	24689.2
Logging equip.	0.08	0	0.0	0.0
Airport Service	0.00	0.8	0.0	0.0
Underground Mining	0.00	0	0.0	0.0
Oil Field	0.03	0	0.0	0.0
Railway Maint. Equip.	0.04	0.674	0.0	59.6
Marine Recreation	0.18	0.5	0.1	181.7

2002 Vancouver CO Commercial Marine Vessel Emissions

Data from 2002 CERR for Clark County (entire Columbia):

fips	maincat	category abbr	category descr	CO	NH3	NOx	PM10-PRI	PM25-PRI	SO2	VOC
011	NRM2	SHIP	Ships			917	38	37	428	
x 1/2 for the Washington portion of the emissions:						458.2937	19.02858	18.57268	214.0235	

CO/Nox Ratio (Port of Portland Work):	0.207
Clark County CO Emissions:	94.8668
% of Columbia Bordering AQMA:	74%
Vancouver AQMA CMV CO Emissions (tpy):	70.20143
Vancouver AQMA CMV CO Emissions (lb/d):	384.6654

Locomotives, Ships, and Air (air not included) Ships

CO 2002 Emissions Locomotives

County	Line Haul	Yard	Passenger
Clark	2,763,233	40,568	659,913

Emission Rate (g/gal)

Pollutant	Code	Line-haul	Passenger	Switch Yard
carbon monoxide	CO	2.66E+01	2.66E+01	3.81E+01

tpy = (gallons fuel) x (pollutant rate in g/gal) x (lbs/454 g) x (T/2000 lbs)
tps = (tpy) / (4 seasons)
tpsd = tpy / (365 days/yr)

	Clark CO Emissions (tpy)	MP Area %	CO Emissions MP Area (tpy)	(lb/day)
Switch Yard	1.70	100	1.70	9.33
Passenger	19.33	67.4	13.03	71.40
Line Haul	80.95	67.4	54.56	298.96
Total	101.98		69.29	379.68

"%" based on % of N-S and E-W passenger track in MP Area = 67.4%
100 % of Clark Switch Yards are in MP area

Vancouver CO Plan
2004 Aircraft Emissions
2002 not readily available used 2004 as a surrogate

Pollutant	EF (lbs/ each complete LTO)
CO	12.014

U.S. Environmental Protection Agency. *Procedures for Emission Inventory Preparation,* Volume IV: Mobile Sources. EPA-450/4-81-026d (Revised). Office of Air and Radiation. Research Triangle Park, NC, and Ann Arbor, MI. 1992.

County	City	Airports	Annual landings and takeoffs	Annual AQMA LTOs	CO Emissions (tpy)
Clark	Battle Ground*	Goheen	1620		
Clark	Battle Ground*	Cedars North Airport	1000		
Clark	Camas	Grove Field	7000	3500	21.0
Clark	Vancouver	Evergreen	10000	5000	30.0
Clark	Vancouver	Fly For Fun	3000	1500	9.0
Clark	Vancouver	Pearson	45000	22500	135.2
CO AQMA Total				**32500**	***195.2***

*Battleground not in AQMA

11/27/06 Sally Otterson from Ecology says that the value in this column should be divided by 2
Landing and Takeoff operation values are generally reported as separate operations
the emission factor is for the entire operation (take off plus landing) so the annual values must be divided by 2

Source: Airport Master Records obtained from the Federal Aviation Administration (FAA) website

2002 CO Maintenance Plan and Clark County Surrogate Data

2002 Estimate Maintenance Plan Totals		
		% of County Total
Population	301764	0.830
Housing Units	121446	0.849

CO Maintenance Area Calcs

Based on 100% of the Incorporated area plus a remainder of CO maintenance area households from unincorporated Clark County.

84.9 % of Clark Counties Households fall within the CO maintenance area.

Maintenance Area Housing = (Camas+Washougal+Vancouver) + Total Clark HH * 0.849 - (Camas+Washougal+Vancouver) =

2002 County Totals							**CO Maintenance Area***	
Population		(Washington OFM http://www.ofm.wa.gov) **Housing**						
			Total	**1 Unit**	**2+ Units**	**MH/Spec**	**Population**	**Households**
Clark	**363,400**	Clark	142,994	100,806	32,388	9,800		
Unincorporated	175,710	Unincorporated	65,573	52,099	6,388	7,086	79142	31447
Incorporated	187,690	Incorporated	77,421	48,707	26,000	2,714		
Battle Ground	11,110	Battle Ground	3,871	3,014	557	300		
Camas	13,540	Camas	5,162	4,405	684	73	13,540	5,162
La Center	1,805	La Center	642	530	49	63		
Ridgefield	2,145	Ridgefield	789	700	54	35		
Vancouver	148,800	Vancouver	62,848	37,133	23,879	1,836	148,800	62,848
Washougal	9,100	Washougal	3,688	2,597	759	332	9,100	3,688
Woodland *part*	85	Woodland (pt)	58	16	0	42		
Yacolt	1,105	Yacolt	363	312	18	33		
	187,690						Total:	250,582	103,145
	171,440	4,270						
							% of County:	0.830	0.849

County Name	Population		Households (HH)		Persons/HH, avg
	Incorp	Unincorp	Incorp	Unincorp	
Clark	187,690	175,710	77,421	65,573	2.6
MP area	171440	79142	71,698	31447	

Incorp	2.424277651	
Unicorp	2.679608985	
	2.551943318	

Clark total check	363,400	142,994
MP area check	250,582	103,145

Land Use

County	Water	Urban	Barren	Transitional	Forest	Shrub-land	Grass-land	Urban Grass	gric., ex. Orchards	Other
Clark	58	166	1	70	1,084	42	24	7	261	19

***CO Maintenance Area Calcs**

Based on 100% of the Incorporated area plus a remainder of CO maintenance area households from unincorporated Clark County.

84.9 % of Clark Counties Households fall within the CO maintenance area.

Maintenance Area Housing = (Camas+Washougal+Vancouver) + Total Clark HH * 0.849 - (Camas+Washougal+Vancouver) =

Residential/Commercial Fuel Combustion

State 2001 Totals (2002 not available)

Fuel Type	Units	Residential	Commercial	Industrial
Coal	Tons	2000	20000	128000
Dist.Oil	1000 gal	79632	50568	150612
Res.Oil	1000 gal		294	5796
Nat. Gas	MMft^3	84000	57000	76000
LPG	1000 gal	94710	16716	185010

Factors

42 gal/barrel

Seasonal Adjustment Factor = 1.7

County Allocation:

Clark Co. 2001 Pop. = 352,600 (WA OFM)
WA State 2001 Pop. = 5,974,910 (WA OFM)

Clark County Fuel Use Estimates

Fuel Type	Units	Residential	Commercial	Industrial
Coal	Tons	118	1180	
Dist.Oil	1000 gal	4699	2984	
Res.Oil	1000 gal	0	17	
Nat. Gas	MMft^3	4957	3364	
LPG	1000 gal	5589	986	

Onita King of NW Natural gave me Clark County Gas Usage
Conversation 12-14-05
2002 usage

	Therms	MMBtu	MMft^3
Residential	31970215	3197021.5	3197.022
Commercia	17961787	1796178.7	1796.179
Industrial	21574577	2157457.7	2157.458

Vancouver CO AQMA Population = 83% of Clark County

Vancouver Maintenance Area Fuel Use

Fuel Type	Units	Residential	Commercial	Industrial
Coal	Tons	98	980	
Dist.Oil	1000 gal	3900	2477	
Res.Oil	1000 gal	0	14	
Nat. Gas	MMft^3	2654	1491	
LPG	1000 gal	4639	819	

1.7 Residential Seasonal Adjustment Factor (CO MP Guidance Section 5.8.4)
1.4 Commercial Seasonal Adjustment Factor (CO MP Guidance Section 5.8.4)

Vancouver CO Area Fuel Use CO Emissions

Fuel Type	Units	Residential lb/unit	Residential tpy	Residential lb/CO day	Commercia lb/unit	Commercia tpy	Commercial lb/CO day	Industrial lb/unit	Industrial tpy
Coal	Tons	275	13	***126***	10	5	***53***	10	
Dist.Oil	1000 gal	5	10	***91***	5	6	***67***	5	
Res.Oil	1000 gal	0	0	***0***	5	0	***0***	5	
Nat. Gas	MMft^3	40	53	***496***	84	63	***674***	35	
LPG	1000 gal	1.9	4	***41***	1.9	1	***8***	3.2	

Summary Vancouver CO Area CO Emissions	lb/CO day	tpy
Residential Total	754	81
Commercial Total	803	75
Residential/Commercial Fuel Combustion Total:	**1556**	**155**

Yard Waste Burning
Fractions, Piles and Seasonal Allocations

Area	Fraction Burning	Piles per Year
Incorporated	0.077	2.56
Eastern WA w/forest	0.184	3.64
Eastern WA w/o forest	0.21	2.84
Western WA	0.265	3.37

125	lbs/pile
140	lb CO/ton material burned

Seasonal Allocation

Area	Fall	Winter	Spring	Summer
Incorporated	0.25	0.25	0.21	0.29
Eastern WA w/forest	0.23	0.31	0.17	0.29
Eastern WA w/o forest	0.23	0.3	0.19	0.28
Western WA	0.21	0.28	0.22	0.29

HH x (fraction burning waste) x (piles/HH) x (lbs burned/pile) (T/2000 lbs) x (140 lb CO/T material burned) (T/2000 lbs) = tpy
TPY x (winter seasonal fraction) /91 season days = lbs/d - winter

Seasonal Allocation	Maintenance Area Calculations	HH	Fraction Burning	Piles per Year	Emissions (tpy)	Emissions (lb/d - winter)	
Western WA	Unincorporated	31,447	0.265	3.37	122.87	756.10	
Incorporated	Vancouver, Camas, Washougal	71,698	0.077	2.56	61.83	339.74	**** banned inside Maintenance Area
	Total	103,145			185	1096	

CO Maintenance Area Calcs
Based on 100% of the Incorporated area plus a remainder of CO maintenance area households from unincorporated Clark County.
84.9 % of Clark Counties Households fall within the CO maintenance area.

Maintenance Area Housing = (Camas+Washougal+Vancouver) + Total Clark HH * 0.849 - (Camas+Washougal+Vancouver)

Trash Burning****

Area	Fraction Burning
Incorporated (Vancouver, Camas, Washougal)	0.05
Eastern WA w/forest	0.122
Eastern WA w/o forest	0.114
Western WA (Unincorporated)	0.199

5.4 lb/household burned

53.1 lb CO/ton burned

HH x (fraction burning trash) x (5.4 lbs/HH-day) (53.1 lb CO/ton burned) x (365 days) x (T/2000 lbs),

Considered Uniform Year-round

Maintenance Area Calculations	HH	Tons burned annual	Emissions (tpy)	(lb/d - winter)
Unincorporated	31,447	6,167	163.74	897.20
Vancouver, Camas, Washougal	71,698	3,533	93.80	513.97
Total	103,145	9,700	257.54	1411.17

**** Banned throughout state

CO Maintenance Area Calcs

Based on 100% of the Incorporated area plus a remainder of CO maintenance area households from unincorporated Clark County.
84.9 % of Clark Counties Households fall within the CO maintenance area.

Maintenance Area Housing (HH) = (Camas+Washougal+Vancouver) + Total Clark HH * 0.849 - (Camas+Washougal+Vancou 103,145

Residential Wood Combustion
Clark 2002

From WDOE 2002 NEI:

fips	maincat	category abbr	category descr	CO	NH3	NOx	PM10-PRI	PM25-PRI	SO2	VOC
011	Area	WSFP	Woodstoves and Fireplaces	18,224		302	2,437	2,289	37	8,529

tpy = (HH) x (usage fraction) x (tons burned/device-yr) x (pllt lbs /T) x (T/2000 lbs)
tps = (tpy) x (seasonal fraction) x (season/days)
tpsd = (tps) / (91 days/season)
where HH = households, pllt = pollutant, days = number of days in the given season

Seasonal Activity Fractions, Residential Wood Combustion

Area	Winter	Spring	Summer	Fall
Incorporated	0.44	0.2	0.03	0.34
Eastern WA w/forest	0.4	0.26	0.03	0.3
Eastern WA w/o forest	0.49	0.19	0.02	0.3
Western WA	0.39	0.25	0.07	0.29

Criteria Pollutant Emission Factors in Pounds per Ton Burned

Equipment Type	CO EF (lb/ton)
Central Furnace	230.8
Fireplaces	252.6
Non-certified Insert	230.8
Certified Insert, Phase I	122.6
Certified Insert, Phase II	123.9
Non-certified Pellet stove	52.2
Certified Pellet stove, 1988 stds	39.4
Non-certified Woodstove	230.8
Certified Woodstove, Phase I	122.6
Certified Woodstove, Phase II	123.9

Tons Burned per Wood Burning Device

	Incorporated		Unincorporated		
Device Type	E WA	W WA	E WA w/forest	E WA w/o forest	W WA
Central Furnaces	1.4	1.3	*10.5	0	0
Fireplaces	1.5	1.4	1.4	1.9	1.9
Inserts	2.6	2.5	2.7	1.7	4.4
Pellet stoves	4.3	4.1	2.5	3.6	2
Woodstoves	3.5	3.3	4.1	2.2	4.2

Wood Species Weight[92] and Percent Use by Area

Species	lb/cord	% use WWA
Alder	2,540	56
Cedar	2,060	4
Cottonwood	2,160	4
Douglas Fir	2,970	16.5
Hemlock	2,700	16.5
Larch	3,330	
Lodgepole Pine	2,610	
Madrona	4,320	1
Oak	3,680	1
Ponderosa Pine	2,240	

Wood Burning Device Usage

Device Type	Incorporated	E WA w/forest	E WA w/o forest	W WA
Central Furnace	0.013	0.012	0	0
Fireplaces	0.381	0.161	0.185	0.15
Non-certified Insert	0.039	0.048	0.033	0.058
Certified Insert, Phase I	0	0	0	0.006
Certified Insert, Phase II	0.067	0.039	0.021	0.043
Non-certified Pellet stove	0.017	0.042	0.036	0.043
Certified Pellet stove, 1988 stds	0.004	0	0.008	0.006
Non-certified Woodstove	0.039	0.073	0.045	0.126
Certified Woodstove, Phase I	0	0.024	0	0.006
Certified Woodstove, Phase II	0.032	0.036	0.02	0.058
Total Equipment	**0.591**	**0.436**	**0.347**	**0.497**

2002 Clark County

Households (HH)	
Incorp	Unincorp
77,421	65,573

	Device Usage			Tons Burned/Device/yr		# of Devices		Tons Wood Burned		lbs CO emitted		tons CO Burned	
Device Type	**Incorporated**	**Unin. W WA**	**CO EF (lb/ton)**	**Inc. W WA**	**Uninc. W WA**	**Inc. W WA**	**Uninc. W WA**	**Inc. W WA**	**Uninc. W WA**	**Inc. W WA**	**Uninc. W WA**	**Inc. W WA**	**Uninc. W WA**
Central Furnace	0.013	0	230.8	1.3	0	1006.473	0	1308.415	0	301982.2	0	150.99	0.00
Fireplaces	0.381	0.15	252.6	1.4	1.9	29497.401	9835.95	41296.36	18688.305	10431461	4720665.843	5215.73	2360.33
Non-certified Insert	0.039	0.058	230.8	2.5	4.4	3019.419	3803.234	7548.548	16734.2296	1742205	3862260.192	871.10	1931.13
Certified Insert, Phase I	0	0.006	122.6	2.5	4.4	0	393.438	0	1731.1272	0	212236.1947	0.00	106.12
Certified Insert, Phase II	0.067	0.043	123.9	2.5	4.4	5187.207	2819.639	12968.02	12406.4116	1606737	1537154.397	803.37	768.58
Non-certified Pellet stove	0.017	0.043	52.2	4.1	2	1316.157	2819.639	5396.244	5639.278	281683.9	294370.3116	140.84	147.19
Certified Pellet stove, 1988 stds	0.004	0.006	39.4	4.1	2	309.684	393.438	1269.704	786.876	50026.35	31002.9144	25.01	15.50
Non-certified Woodstove	0.039	0.126	230.8	3.3	4.2	3019.419	8262.198	9964.083	34701.2316	2299710	8009044.253	1149.86	4004.52
Certified Woodstove, Phase I	0	0.006	122.6	3.3	4.2	0	393.438	0	1652.4396	0	202589.095	0.00	101.29
Certified Woodstove, Phase II	0.032	0.058	123.9	3.3	4.2	2477.472	3803.234	8175.658	15973.5828	1012964	1979126.909	506.48	989.56

Clark County Totals

	Inc. W WA	Uninc. W WA	County Total
CO tpy	8863	10424	19288
CO tps	3900	4065	7965
CO lb/winter day	85712	89351	175062

Seasonal Fraction

Area	Winter
Incorporated	0.44
Eastern WA w/forest	0.4
Eastern WA w/o forest	0.49
Uninc. Western WA	0.39

Clark County Total 8863.38 10424.23

CO Maintenance Area Calcs

Based on 100% of the Incorporated area plus a remainder of CO maintenance area households from unincorporated Clark County.

84.9 % of Clark Counties Households fall within the CO maintenance area.

Maintenance Area Housing = (Camas+Washougal+Vancouver) + Total Clark HH * 0.849 - (Camas+Washougal+Vancouver) =

	Fraction of Incorp. or Uninc. (%)	HH	Total emissions lb/winter day	tpy
Camas/Washougal/Vancouver (Inc.)	0.93	71,698	79,376	8,863
Unincorp. Remainder of MP Area	0.48	31,447	42,850	4,999
CO Nonattainment Area Totals:		103,145	122,226	13,863

Appendix E - Washington State and SWCAA Rules – Control Strategies and Contingency Plan Regulations

SWCAA Regulations

SWCAA 400 – General Regulations for Air Pollution Sources, last updated 12-14-06

SWCAA 400-111 Requirements for New Sources in a Maintenance Plan Area, as adopted 12/14/06

SWCAA 492 – Oxygenated Fuels, effective November 21, 1996

Washington State Regulations

Chapter 173-422 - Motor Vehicle Emission Inspection, effective date June 3, 2002

Chapter 173-492 - Motor Fuel Specifications for Oxygenated Gasoline, 9/18/96

SWCAA 400-111 Requirements for New Sources in a Maintenance Plan Area

[Statutory Authority: Chapter 70.94.141 RCW. Original Board adoption 95-17-084 filed 8/21/95, effective 9/21/95; 96-21-099 filed 10/21/96, effective 11/21/96; 99-07-028 filed 3/10/99, effective 4/11/99; 01-05-056 filed 2/15/01, effective 3/18/01; 03-21-045 filed 10/9/03, effective 11/9/03; 06-23-073, filed 11/13/06, effective 12/14/06]

For the purposes of this section, "major modification," "major stationary source," "net emissions increase," and "significant," shall have the same meaning as the definitions found in SWCAA 400-030, subsections (60)(a), (61)(a), (71)(a) and (107)(a) respectively.

An air discharge permit application to establish a "new source", install or replace an "emission unit" or make a modification to a "stationary source" in an area that is covered by a maintenance plan, shall result in the issuance of an air discharge permit or other regulatory order, which contains such conditions as are reasonably necessary to assure the maintenance of compliance with this section. "New sources", new "emission units" or modifications within a designated maintenance plan area, including "stationary sources" that emit VOC or NO_x in a designated ozone maintenance plan area, shall meet the following requirements:

(1) **Emission standards.** The proposed "new source" or modification shall:
   (a) Comply with all applicable New Source Performance Standards, National Emission Standards for Hazardous Air Pollutants, National Emission Standards for Hazardous Air Pollutants for Source Categories, emission standards adopted under Chapter 70.94 RCW, and the applicable emission standards of the Agency; and
   (b) Not cause any ambient air quality standard as provided in SWCAA 400-113(3) to be violated; and
   (c) Not violate the requirements for reasonable further progress established by the Washington State Implementation Plan; and
   (d) Minimize emissions to the extent that the "new source" or modification will not delay the attainment date for a nonattainment area, exceed emission levels or other requirements provided in a maintenance plan for an area that was previously identified as a nonattainment area, nor cause or contribute to a violation of any ambient air quality standard.

(2) **Control Technology Requirements – BACT / LAER.** Except as provided below, the owner or operator of the proposed "new source", "emission unit" or modification shall apply BACT for each pollutant. In the case of a modification, the requirement for BACT shall apply to each new or modified emission unit which increases emissions. For phased construction projects, the determination of BACT shall be reviewed at the latest reasonable time prior to commencement of construction of each independent phase. If a violation of an ozone ambient air quality standard or a second violation of the CO ambient air quality standard has occurred, the Agency may require the application of LAER for the maintenance pollutant(s) and any pollutant for which the proposed "new source" or modification is major.

(3) **Source compliance.** The owner or operator of the proposed "new source", "emission unit" or modification shall certify that all "stationary sources" owned or operated by such person (or by an entity controlling, controlled by, or under common control with such person) in Washington are in compliance or on a schedule for compliance, with all applicable emission limitations and standards under the Washington Clean Air Act Chapter 70.94 RCW).

(4) **Alternative analysis.**
   (a) Except as provided in subsection (c) of this section, the owner or operator of a proposed "major stationary source" or "major modification" shall conduct an alternatives analysis;

(b) This analysis shall include an evaluation of alternative sites, sizes, production processes, and environmental control techniques for such proposed "stationary source" or modification that demonstrates that benefits of the proposed "stationary source" or modification significantly outweigh the environmental and social costs imposed as a result of its location, construction or modification;

(c) This analysis shall not be required for a "major stationary source" or "major modification" that is subject to this rule due to emissions of particulate matter in a designated TSP maintenance area.

(5) **Emission offsets and industrial growth allowances.** The owner or operator of a proposed new "major stationary source" or "major modification" shall provide emission offsets that satisfy the requirements of this section. Except as provided in subsection (a) of this section, the offset requirements of this section may be met in whole, or in part, by an allocation from an industrial growth allowance, if available. Industrial growth allowances for "stationary sources" in a maintenance plan area are identified in and governed by the Washington SIP and the maintenance plan for the applicable maintenance plan area. All growth allowance allocations for the maintenance plan areas within the Agency's jurisdiction shall be made in accordance with this section.

(a) Available growth allowances may be increased or decreased as provided in a revision to the maintenance plan submitted to and approved by EPA. If a violation of an ozone ambient air quality standard or a second violation of the CO ambient air quality standard has occurred, the Agency may suspend the use of growth allowances, and require the proposed new "major stationary source" or "major modification" to provide offsets as described in subsection (c) below.

(b) The owner or operator of a proposed new "major stationary source" or "major modification" emitting VOCs, NO_x, or CO may obtain a portion of any remaining emissions in the respective growth allowance in accordance with the following process:

(i) Access is on a first-come-first-served basis, based on the date of a complete application and allowance allocation request;

(ii) Growth allowances shall be used to satisfy offset requirements at a ratio of 1 to 1 for new VOC and/or NO_x emissions.

(iii) No single "stationary source" may receive an emissions allocation of more than 50 percent of the available growth allowance, or up to 10.0 tons per year, whichever is greater. On a case-by-case basis, the SWCAA Board of Directors may approve an emissions allocation of greater than 50 percent upon consideration of the following:

(A) Information submitted by the "stationary source" to SWCAA justifying its request for exceeding the 50 percent emissions allocation, based on significant economic, employment, or other benefits to the maintenance plan area that will result from the proposed new "major stationary source" or "major modification";

(B) Information provided by SWCAA on other known new "major stationary sources" or "major modifications" seeking an emissions allocation from the same growth allowance; and

(C) Other relevant information submitted by the "stationary source" or SWCAA.

(iv) To avoid jeopardizing maintenance of the ozone standard during the interim years of the ozone maintenance plan, SWCAA may limit the quantity of VOC and NO_x growth allowances made available each year. SWCAA will track use of VOC and NO_x allocations from the growth allowances.

(v) The amount of the CO growth allowance that can be allocated is identified in the applicable CO maintenance plan, if any.

(c) If no emissions remain in the respective growth allowance, or the Agency has suspended the use of growth allowances, the owner or operator of the proposed "major stationary source" or "major modification" shall provide offsets.

(i) A demonstration shall be provided showing that the proposed offsets will improve air quality in the same geographical area affected by the "new source" or modification. This demonstration may require that air quality modeling be conducted according to the procedures specified in 40 CFR Part 51, Appendix W, Guideline on Air Quality Models (Revised).

(ii) Offsets for VOCs or nitrogen oxides shall be within the same maintenance plan area as the proposed "stationary source." Offsets for particulate matter, PM_{10}, sulfur dioxide, carbon monoxide, nitrogen dioxide, lead, and other pollutants may be from inside or outside of the same maintenance plan area.

(iii) "New sources" or modifications shall meet the following offset requirements:

(A) Within a designated maintenance plan area, the offsets shall provide reductions that are equivalent or greater than the proposed increases. The offsets shall be appropriate in terms of short term, seasonal, and yearly time periods to mitigate the impacts of the proposed emissions;

(B) Outside a designated maintenance plan area, owners or operators of "new sources" or modifications which have a significant air quality impact on the maintenance plan area as provided in SWCAA 400-113(3) shall provide emission offsets which are sufficient to reduce impacts to levels below the significant air quality impact level within the maintenance plan area; and

(C) The emission reductions must provide for a net air quality benefit.

(I) New "major stationary sources" within an ozone maintenance plan area shall:

(a) Offset the new VOC emissions at a ratio of 1.1 to 1, if the VOC emissions exceed either 100 tons per year or 700 pounds per day.

(b) Offset the new NO_x emissions at a ratio of 1.1 to 1, if the NO_x emissions exceed either 100 tons per year or 700 pounds per day.

(II) "Stationary sources" within an ozone maintenance plan area undergoing "major modifications" shall:

(a) Offset the entire VOC emissions increase at a ratio of 1.1 to 1, if such increase exceeds either 40 tons per year or 290 pounds per day.

(b) Offset the entire NO_x emissions increase at a ratio of 1.1 to 1, if such increase exceeds either 40 tons per year or 290 pounds per day.

(III) New "major stationary sources" within a carbon monoxide maintenance plan area shall:

(a) Offset the new carbon monoxide emissions at a ratio of 1 to 1, if the carbon monoxide emissions exceed either 100 tons per year or 700 pounds per day.

(IV) "Stationary sources" within a carbon monoxide maintenance plan area undergoing "major modifications" shall:

(a) Offset the entire carbon monoxide emissions increase at a ratio of 1 to 1, if such increase exceeds either 100 tons per year or 700 pounds per day.

(iv) Emission reductions shall be of the same type of pollutant as the emissions from the "new source" or modification. Sources of PM_{10} shall be offset with particulate in the same size range.

(v) Emission reductions shall be contemporaneous, that is, the reductions shall take effect prior to the time of startup but not more than two years prior to the submittal of a complete application for the "new source" or modification. This time limitation may be extended through banking, as provided in SWCAA 400-130, 400-131 and 400-136 for banking activities approved after the effective date of this regulation. In the case of replacement facilities, SWCAA may allow simultaneous operation of the old and new facilities during the startup period of the new facility provided that emissions do not exceed the new emission limits.

(vi) Offsets for new "major stationary sources" or "major modifications" in a maintenance plan area shall meet the following requirements:

(A) The proposed new level of allowable emissions of the "stationary source" or emission unit providing the reduction must be less than the current level of actual emissions of that "stationary source" or emission unit. No emission reduction can be credited for actual emissions that exceed the current allowable emissions of the "stationary source" or emission unit providing the reduction. Emission reductions imposed by local, state, or federal regulations, regulatory orders or permits cannot be credited.

(B) If the offsets are provided by another "stationary source," the reductions in emissions from that "stationary source" must be federally enforceable by the time the new or modified "stationary source" commences operation. The "new source" may not commence operation before the date such reductions are actually achieved. SWCAA may allow simultaneous operation of the old and new facilities during the startup period of the new facility provided that the facilitywide emissions do not exceed the new emission limit.

(9) **PSD applicability.** If the proposed "new source" is a "major stationary source" or the proposed modification is a "major modification" for the purposes of the PSD program as described in WAC 173-400-700 through 173-400-750, the "new source" or modification shall meet the requirements of that program for all pollutants. For maintenance plan pollutants, the "new source" shall meet all PSD requirements in addition to the requirements of this section.

(10) **Toxics.** If the proposed "new source" or modification will emit any toxic air pollutants regulated under Chapter 173-460 WAC, the "new source" shall meet all applicable requirements of that regulation.

(11) **Visibility.** If the proposed "new source" is a "major stationary source" or the proposed modification is a "major modification," the "new source" shall meet all the visibility protection requirements of WAC 173-400-117.

(12) **Noncompliance.** Noncompliance with any emission limit, test requirement, reporting requirement or other requirement identified in a regulatory order issued pursuant to this section shall be considered a violation of this section.

SWAPCA 492

OXYGENATED FUELS

Effective November 21, 1996

OXYGENATED FUELS

Page

SWAPCA 492-010 Policy and Purpose

[Statutory Authority: Chapter 70.94.141 and 70.94.331 RCW; Original adoption WSR 93-16-010 filed 7/22/93, effective 8/22/93]

The purpose of this regulation is to reduce carbon monoxide emissions from gasoline powered motor vehicles, through the wintertime use of oxygenated gasolines in areas that are either known or expected to exceed health-based air quality standards for carbon monoxide.

SWAPCA 492-020 Applicability

[Statutory Authority: Chapter 70.94.141 and 70.94.331 RCW; Original adoption WSR 93-16-010 filed 7/22/93, effective 8/22/93; 96-21-103, filed 10/21/96, effective 11/21/96]

This regulation is only applicable to Clark County when the Carbon Monoxide Maintenance Plan Contingency Measure is triggered as a result of a confirmed violation of the carbon monoxide National Ambient Air Quality Standard (NAAQS) in the Vancouver air quality management area (AQMA). The Vancouver AQMA is described in the Carbon Monoxide Maintenance Plan. When triggered, this regulation shall apply to all gasoline offered for sale in the control area and over the control period defined in section SWAPCA 492-070. This regulation and the discontinuance of the oxygenated fuel requirements shall be effective upon EPA approval of the Vancouver Carbon Monoxide Maintenance Plan.

SWAPCA 492-030 Definitions

[Statutory Authority: Chapter 70.94.141 and 70.94.331 RCW; Original adoption WSR 93-16-010 filed 7/22/93, effective 8/22/93; 96-21-103, filed 10/21/96, effective 11/21/96]

The following words and phrases shall have the following meanings:

(1) "Authority" means the Southwest Air Pollution Control Authority.

(2) "Blender" means a person who owns oxygenated gasoline which is sold or dispensed from an oxygenate blending facility for use in a control area during a control period.

(3) "Control area" means an area in which only oxygenated gasoline under the oxygenated gasoline program may be sold or dispensed. Each control area is a county or group of counties administered by the Authority.

(4) "Control period" means the period during which oxygenated gasoline must be sold or dispensed within the control area which is November 1 through February 29.

(5) "Ecology" or "WDOE" means the Washington State Department of Ecology.

(6) "Gasoline" means any fuel sold for use in motor vehicles equipped with internal combustion engines, and commonly known or sold as gasoline. Blended and oxygenated fuels are considered gasoline.

(7) "Large Volume Blender" means blenders that blend and offer for sale or sell one million gallons or more, but less than 15 million gallons, of oxygenated gasoline per month, on average, during a control period within a control area.

(8) "Medium Volume Blender" means blenders that blend and offer for sale or sell 100 thousand gallons or more, but less than one million gallons, of oxygenated gasoline per month, on average, during a control period within a control area.

(9) "Oxygenate" means any substance which, when added to gasoline, increases the amount of oxygen in the gasoline blend. Lawful use of any combination of these substances requires that they be substantially similar under section 211(f)(1) of the Federal Clean Air Act (CAA), or be permitted under a waiver granted by the Administrator of the Environmental Protection Agency under the authority of section 211(f)(4) of the CAA.

(10) "Oxygenated gasoline" means gasoline which contains a measurable amount of oxygenate, generally an alcohol or ether.

(11) "Small Volume Blender" means blenders that blend and offer for sale or sell less than 100 thousand gallons of oxygenated gasoline per month, on average, during a control period within a control area.

(12) "Southwest Air Pollution Control Authority (SWAPCA)" means the regional agency empowered to enforce and implement the Federal Clean Air Act (42 U.S.C. 7410, et seq.) and the Clean Air Washington Act (RCW 70.94) in Clark, Cowlitz, Lewis, Skamania and Wahkiakum Counties of Washington State.

(13) "Very Large Volume Blender" means blenders that blend and offer for sale or sell 15 million gallons or more of oxygenated gasoline per month, on average, during a control period within a control area.

SWAPCA 492-040 Compliance Requirements

[Statutory Authority: Chapter 70.94.141 and 70.94.331 RCW; Original adoption WSR 93-16-010 filed 7/22/93, effective 8/22/93]

(1) Retail Sales. No gasoline intended as a final product for fueling of motor vehicles within the control area and control period defined in SWAPCA 492-070 shall be offered for sale, sold or dispensed by any person unless the gasoline has at least 2.0% oxygen content by weight.

(2) Average Blend Requirements. Over each two-month interval during the control period, gasoline intended as a final product for fueling of motor vehicles within the Authority's control area defined in SWAPCA 492-070 supplied by blenders to purchasers within the Authority's control area defined in SWAPCA 492-070 shall average at least 2.7% oxygen by weight, and in no case be less than 2.0% oxygen content by weight.

(3) Reports. Blenders shall provide periodic reports, as stipulated in the blenders registration, to the Authority summarizing how the requirements of SWAPCA 492-040 (2) were met. With prior approval from the Authority, a credit trading program may be used to comply with these requirements. Such reports shall be on forms provided by the Authority.

SWAPCA 492-050 Registration Requirements

[Statutory Authority: Chapter 70.94.141 and 70.94.331 RCW; Original adoption WSR 93-16-010 filed 7/22/93, effective 8/22/93; WSR 95-10-003 filed 4/20/95, effective 5/21/95]

(a) Each blender who offers for sale, sells, or dispenses gasoline in the Authority's control area shall register with the Authority each year. Each request for registration shall be on forms supplied by the Authority and shall be accompanied by a fee to compensate for the cost of administering the registration program, including on-site inspections necessary to verify compliance with these requirements. The location of each blender facility shall be included in the information provided by the blender at registration. The fee for a control area shall be based on the volume of oxygenated gasoline sold or offered for sale by the blender in that control area to comply with the provisions of SWAPCA 492-040. Applicable fees are required to be paid in full by October 1 of each year or within 30 days after becoming a blender, whichever occurs later. The following fee table shall apply to blenders:

Small Volume Blender	$ 500
Medium Volume Blender	$ 1,000
Large Volume Blender	$10,000
Very Large Volume Blender	$25,000

(b) The total annual oxygenated fuel fees collected and retained by the Authority under this program shall not exceed $40,000. When the total fees submitted by all blenders on October 1 of each year exceeds $40,000, there shall be a refunding of the excess fees collected by the Authority. The refund provided to each blender shall be derived by prorating the excess fees based on that company's ratio of it's volume of oxygenate blended to the total volume of all oxygenate blended. Such refund shall be issued by the Authority by December 1 of each year and is applicable to all types of oxygenates.

SWAPCA 492-060 Labeling Requirements

[Statutory Authority: Chapter 70.94.141 and 70.94.331 RCW; Original adoption WSR 93-16-010 filed 7/22/93, effective 8/22/93]

In addition to other labeling requirements, fuel dispensing systems delivering oxygenated gasoline shall be conspicuously labeled during the control period and in the control area stated in SWAPCA 492-070 as follows:

"The gasoline dispensed from this pump is oxygenated and will reduce carbon monoxide pollution from motor vehicles."

SWAPCA 492-070 Control Area and Control Period

[Statutory Authority: Chapter 70.94.141 and 70.94.331 RCW; Original adoption WSR 93-16-010 filed 7/22/93, effective 8/22/93; 96-21-103, filed 10/21/96, effective 11/21/96]

The oxygenated gasoline requirements of this regulation shall apply to the following control area during the minimum following control period. The control period may begin earlier if there is a violation of the ambient air quality standard outside of the control period:

CONTROL AREA	COUNTIES	CONTROL PERIOD	
		BEGINNING	ENDING
Southwest	Clark	November 1	February 29

SWAPCA 492-080 Enforcement and Compliance

[Statutory Authority: Chapter 70.94.331 RCW; Original adoption WSR 93-16-010 filed 7/22/93, effective 8/22/93]

(1) Compliance with the requirements of this regulation shall be monitored and enforced by the Authority. Non-compliance shall be subject to the penalties and other remedies provided in 70.94.RCW.

(2) The Authority may designate any appropriate agency of the State to assist in the compliance monitoring of this regulation.

(3) Compliance with the standards set forth in this regulation shall be determined by use of testing methods approved by Ecology or the Authority. The maximum accuracy tolerance of this method shall be limited to +/-0.3% oxygen by weight, or an equivalent tolerance when measured by volume.

SWAPCA 492-090 Unplanned Conditions

[Statutory Authority: Chapter 70.94.141 and 70.94.331RCW; Original adoption WSR 93-16-010 filed 7/22/93, effective 8/22/93]

An unplanned condition, such as an unforeseen emergency or "act of God", which may interfere with compliance to this regulation, shall be reported to the Autohrity as soon as possible. The responsible party shall also submit a full written report within ten days to the Authority, including the known causes, the corrective actions taken, and the preventive measures to be taken to minimize or eliminate the chance of recurrence. Compliance with the requirements of SWAPCA 492-090 does not releive the responsible party from the responsibility to maintain continuous compliance with all the requirements of this regulation nor from the resulting liabilities for failure to comply. The Authority shall consider the circumstances of the unplanned condition, and may use the circumstances when determining enforcement.

SWAPCA 492-100 Severability

[Statutory Authority: Chapter 70.94.141 and 70.94.331 RCW; Original adoption WSR 93-16-010 filed 7/22/93, effective8/22/93]

The provisions of this regulation are severable and if any provision is held invalid, the application of such provision to the other circumstances and the remainder of this regulation shall not be affected.

END

Chapter 173-422 WAC

MOTOR VEHICLE EMISSION INSPECTION

Last Update: 6/3/02

WAC

DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

173-422-080	Vehicle inspection data handling procedures. [Statutory Authority: RCW 70.120.120, 43.21A.080, 70.94.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-080, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120. 82-02-027 (Order DE-81-32), § 173-422-080, filed 12/31/81; 80-03-070 (Order DE 79-35), § 173-422-080, filed 2/28/80.] Repealed by 93-10-062 (Order 91-46), filed 5/3/93, effective 6/3/93. Statutory Authority: Chapter 70.120 RCW.
173-422-110	Date system requirements. [Statutory Authority: RCW 70.120.120. 82-02-027 (Order DE 81-32), § 173-422-110, filed 12/31/81; 80-03-070 (Order DE 79-35), § 173-422-110, filed 2/28/80.] Repealed by 93-10-062 (Order 91-46), filed 5/3/93, effective 6/3/93. Statutory Authority: Chapter 70.120 RCW.
173-422-140	Inspection forms and certificates. [Statutory Authority: Chapter 70.120 RCW. 93-10-062 (Order 91-46), § 173-422-140, filed 5/3/93, effective 6/3/93; 90-06-062, § 173-422-140, filed 3/6/90, effective 4/6/90. Statutory Authority: RCW 70.120.120, 43.21A.080, 70.94.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-140, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120. 82-02-027 (Order DE 81-32), § 173-422-140, filed 12/31/81; 80-03-070 (Order DE 79-35), § 173-422-140, filed 2/28/80.] Repealed by 94-05-039 (Order 93-10), filed 2/8/94, effective 3/11/94. Statutory Authority: Chapter 70.120 RCW.
173-422-150	Inspection personnel requirements. [Statutory Authority: RCW 70.120.120. 80-03-070 (Order DE 79-35), § 173-422-150, filed 2/28/80.] Repealed by 93-10-062 (Order 91-46), filed 5/3/93, effective 6/3/93. Statutory Authority: Chapter 70.120 RCW.
173-422-180	Air quality standards. [Statutory Authority: RCW 70.120.120. 80-03-070 (Order DE 79-35), § 173-422-180, filed 2/28/80.] Repealed by 93-10-062 (Order 91-46), filed 5/3/93, effective 6/3/93. Statutory Authority: Chapter 70.120 RCW.

WAC 173-422-010 Purpose. This chapter implements the Washington Clean Air Act, chapter 70.94 RCW, as supplemented by the motor vehicle emission inspection provisions codified as chapter 70.120 RCW.

Gasoline motor vehicles are the primary emitters of carbon monoxide and emit significant quantities of hydrocarbons and

oxides of nitrogen. Diesel motor vehicles are emitters primarily of particulates, hydrocarbons, and oxides of nitrogen. Emission controls required by the federal government are designed to reduce motor vehicle related air pollution. However, the effectiveness of these controls is substantially reduced through deterioration, maladjustment and tampering. Motor vehicle emission inspection serves to identify high polluting vehicles and vehicles with tampered or missing emission controls and to reduce their emissions, when such reduction can be accomplished at reasonable cost. These rules establish the emission standards, testing procedures, and associated activities necessary to implement a program of air pollution prevention and control resulting from motor vehicle emission inspections.

[Statutory Authority: Chapter 70.120 RCW. 93-10-062 (Order 91-46), § 173-422-010, filed 5/3/93, effective 6/3/93. Statutory Authority: RCW 70.120.120, 43.21A.080, 70.94.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-010, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120. 80-03-070 (Order DE 79-35), § 173-422-010, filed 2/28/80.]

WAC 173-422-020 Definitions. Unless a different meaning is clearly indicated by context, the following definitions will apply:

(1) "Appropriate repair" means the diagnosis of the cause(s) of an emission test failure and/or the repair of one or more of these causes. An appropriate repair should reduce at least one emission test reading or diagnose and/or repair an emission problem identified by the on-board diagnostic (OBD) system.

(2) "Certificate of acceptance" means an official form, issued by someone authorized by the department, which certifies that the following conditions have been met:

(a) The vehicle failed an emission inspection; and

(b) The vehicle failed a reinspection; and

(c) All primary emission control components installed by the vehicle manufacturer, or its appropriate replacement, are installed and operative; and

(d) The recipient has provided original receipts listing and providing the cost of each appropriate repair performed by an authorized emission specialist between the initial and last inspection; and

(e) The total cost of the appropriate repairs must equal or exceed:

Pre-1981 vehicles	$100
1981 and newer	$150

(3) "Certificate of compliance" means an official form, issued by someone authorized by the department, which certifies that the recipient's vehicle on inspection complied with applicable emission inspection standards.

(4) "Authorized emission specialist" means an individual who has been issued a certificate of instruction by the department as authorized in RCW 70.120.020 (2)(a) and has maintained the certification by meeting requirements of WAC 173-422-190(2).

(5) "Dealer" means a motor vehicle dealer, as defined in chapter 46.70 RCW as amended, that is licensed pursuant to chapter 46.70 RCW.

(6) "Department" means the department of ecology.

(7) "Emission contributing area" means a land area within whose boundaries are registered motor vehicles that contribute significantly to the violation of motor vehicle related air quality standards in a noncompliance area.

(8) "Fleet" means a group of fifteen or more motor vehicles owned or leased concurrently by one owner assigned a fleet identifier code by the department of licensing.

(9) "Gross vehicle weight rating (GVWR)" means the manufacturer stated gross vehicle weight rating.

(10) "Motor vehicle" means any self-propelled vehicle required to be licensed pursuant to chapter 46.16 RCW.

(11) "Noncompliance area" means a land area within whose boundaries any air quality standard for any air contaminant from the emissions of motor vehicles will probably be exceeded.

(12) "PPM" means parts per million by volume.

(13) "Primary emission control components" means the components of the vehicle installed by the manufacturer for the purpose of reducing emissions or its replacement or modification which is acceptable to the United States Environmental Protection Agency. These components are, but are not limited to, the catalytic converter or thermal reactor, the air injection system components, the thermostatic air cleaner, the exhaust gas recirculation system components, the evaporative emission system components including the gas cap, the positive crankcase ventilation system components and the electronic control unit components that control the air/fuel mixture and/or ignition timing including all related sensors.

The primary emission control components of a vehicle with a different engine than the engine originally installed shall be an Environmental Protection Agency certified engine/emission control combination for that vehicle or its newer model.

[Statutory Authority: RCW 70.120.120. 02-12-072 (Order 02-04), § 173-422-020, filed 6/3/02, effective 7/4/02. Statutory Authority: Chapter 70.120 RCW. 95-06-068 (Order 93-35), § 173-422-020, filed 2/28/95, effective 3/31/95; 94-05-039 (Order 93-10), § 173-422-020, filed 2/8/94, effective 3/11/94; 93-10-062 (Order 91-46), § 173-422-020, filed 5/3/93, effective 6/3/93; 90-06-062, § 173-422-020, filed 3/6/90, effective 4/6/90. Statutory Authority: RCW 70.120.120, 43.21A.080, 70.94.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-020, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120. 80-03-070 (Order DE 79-35), § 173-422-020, filed 2/28/80.]

WAC 173-422-030 Vehicle emission inspection requirement. All motor vehicles, not specifically exempted by WAC 173-422-170, which are registered or reregistered within the boundaries of an emission contributing area, as specified in WAC 173-422-050, are subject to the vehicle emission inspection requirements of this chapter. In addition, the department may require an emission inspection of a motor vehicle, except military tactical vehicles, operated for more than sixty days a year on a federal installation located within an emission contributing area, or a vehicle garaged at a location within an emission contributing area, or a vehicle which has previously passed an emission inspection but has been identified using on road testing as likely to no longer comply with the inspection standards. Neither the department of licensing, county auditors nor subagents appointed under RCW 46.01.140 may change the registered owner or may issue or renew a motor vehicle license for any vehicle registered in an emission contributing area, as that area is established under RCW 70.120.150, unless the application for issuance or renewal is: (1) Accompanied by a valid certificate of compliance issued pursuant to RCW 70.120.080 or 70.120.170 or a valid certificate of acceptance issued pursuant to RCW 70.120.070; or (2) exempted from this requirement pursuant to RCW 46.16.015(2). Certificates must have a date of validation which is within twelve months of the assigned license renewal date.

[Statutory Authority: RCW 70.120.120. 02-12-072 (Order 02-04), § 173-422-030, filed 6/3/02, effective 7/4/02. Statutory Authority: Chapter 70.120 RCW. 96-21-029 (Order 95-11), § 173-422-030, filed 10/9/96, effective 11/9/96; 95-06-068 (Order 93-35), § 173-422-030, filed 2/28/95, effective 3/31/95; 94-05-039 (Order 93-10), § 173-422-030, filed 2/8/94, effective 3/11/94;

93-10-062 (Order 91-46), § 173-422-030, filed 5/3/93, effective 6/3/93. Statutory Authority: RCW 70.120.120, 43.21A.080, 70.94.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-030, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120. 80-03-070 (Order DE 79-35), § 173-422-030, filed 2/28/80.]

WAC 173-422-031 Vehicle emission inspection schedules. (1) Vehicles defined in RCW 46.16.015(2) or WAC 173-422-170 are exempt from emission inspections. Vehicles five through twenty-five years old, other than state and local government vehicles, shall be inspected every other year as described in the table below. This inspection schedule does not apply to vehicles that have already been issued a certificate of compliance or a certificate of acceptance within twelve months of the assigned license renewal date.

Year	Model Year of Vehicles Needing Inspection
2002	1978, 1980, 1982, 1984, 1986, 1988, 1990, 1992, 1994, 1997
2003	1979, 1981, 1983, 1985, 1987, 1989, 1991, 1993, 1995, 1996, 1998
2004	1980, 1982, 1984, 1986, 1988, 1990, 1992, 1994, 1997, 1999
2005	1981, 1983, 1985, 1987, 1989, 1991, 1993, 1995, 1996, 1998, 2000
2006	1982, 1984, 1986, 1988, 1990, 1992, 1994, 1997, 1999, 2001
2007	1983, 1985, 1987, 1989, 1991, 1993, 1995, 1996, 1998, 2000, 2002
2008	1984, 1986, 1988, 1990, 1992, 1994, 1997, 1999, 2001, 2003
2009	1985, 1987, 1989, 1991, 1993, 1995, 1996, 1998, 2000, 2002, 2004
2010	1986, 1988, 1990, 1992, 1994, 1997, 1999, 2001, 2003, 2005
2011	1987, 1989, 1991, 1993, 1995, 1996, 1998, 2000, 2002, 2004, 2006
2012	1988, 1990, 1992, 1994, 1997, 1999, 2001, 2003, 2005, 2007

(2) State and local government vehicles five through twenty-five years old shall be inspected yearly as described in the table below.

Year	Model Year of Vehicles Needing Inspection
2002	1977 through 1997
2003	1978 through 1998
2004	1979 through 1999

2005	1980 through 2000
2006	1981 through 2001
2007	1982 through 2002
2008	1983 through 2003
2009	1984 through 2004
2010	1985 through 2005
2011	1986 through 2006
2012	1987 through 2007

[Statutory Authority: RCW 70.120.120. 02-12-072 (Order 02-04), § 173-422-031, filed 6/3/02, effective 7/4/02; 00-22-120 (Order 00-15), § 173-422-031, filed 11/1/00, effective 12/2/00.]

WAC 173-422-035 Registration requirements. (1) Persons residing in emission contributing areas as defined under WAC 173-422-050 shall register their motor vehicles within that area.

(2) Any person who violates this section shall reregister their motor vehicle within the emission contributing area, obtain a certificate of compliance or acceptance within thirty days, and is subject to a civil penalty not to exceed two hundred fifty dollars for each violation.

(3) Any civil penalty imposed by the department hereunder shall be appealable to the pollution control hearings board as provided for in chapter 43.21B RCW.

[Statutory Authority: Chapter 70.120 RCW. 95-06-068 (Order 93-35), § 173-422-035, filed 2/28/95, effective 3/31/95; 93-10-062 (Order 91-46), § 173-422-035, filed 5/3/93, effective 6/3/93; 90-06-062, § 173-422-035, filed 3/6/90, effective 4/6/90.]

WAC 173-422-040 Noncompliance areas. The following areas are designated noncompliance areas for the air contaminants specified: Carbon monoxide

(1) The city of Seattle.
(2) The city of Bellevue.
(3) The city of Spokane.
(4) The city of Tacoma.
(5) The city of Vancouver.
(6) The city of Everett.

[Statutory Authority: Chapter 70.120 RCW. 93-10-062 (Order 91-46), § 173-422-040, filed 5/3/93, effective 6/3/93; 90-06-062, § 173-422-040, filed 3/6/90, effective 4/6/90. Statutory Authority: RCW 70.120.120, 43.21A.080, 70.94.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-040, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120. 82-02-027 (Order DE 81-32), § 173-422-040, filed 12/31/81; 80-03-070 (Order DE 79-35), § 173-422-040, filed 2/28/80.]

WAC 173-422-050 Emission contributing areas. Emission contributing areas within which the motor vehicle emission inspection program applies are designated by the following United States Postal Service ZIP codes as of September 1, 1994, set forth below:

(1) Puget Sound Region

98001	98036	98083
98002	98037	98092
98003	98038	98093
98004	98039	98101 thru 98199
98005	98040	inclusive except 98110
98006	98041	98201 thru 98208
98007	98042	98258
98008	98043	98270
98009	98046	98271
98011	98047	98275
98012	98052	98290
98015	98053	98291
98020	98054	98327
98021	98055	98332
98023	98056	98335
98025	98057	98338
98026	98058	98344
98027	98059	98352
98028	98062	98354

98031	98063	98371 thru 98374
98032	98064	98387
98033	98071	98388
98034	98072	98390
98035	98073	98401 thru 98499

(2) Spokane Region

99001
99005

99014

99016

99019

99021

99025

99027

99037

99201 thru 99299

(3) Vancouver Region

98604 except north of N.E. 279th Street
98606

98607

98629 except east of N.E. 50th Avenue

98642

98660 thru 98668

98671 except Skamania County

98682-86

[Statutory Authority: Chapter 70.120 RCW. 96-21-029 (Order 95-11), § 173-422-050, filed 10/9/96, effective 11/9/96; 95-06-068 (Order 93-35), § 173-422-050, filed 2/28/95, effective 3/31/95; 94-05-039 (Order 93-10), § 173-422-050, filed 2/8/94, effective 3/11/94; 93-10-062 (Order 91-46), § 173-422-050, filed 5/3/93, effective 6/3/93; 84-09-087 (Order DE 84-7), § 173-422-050, filed 4/18/84. Statutory Authority: RCW 70.120.120, 43.21A.080, 70.94.331 and 70.94.141(1). 83-23-115

(Order DE 83-31), § 173-422-050, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120. 82-02-027 (Order DE 81-32), § 173-422-050, filed 12/31/81; 80-03-070 (Order DE 79-35), § 173-422-050, filed 2/28/80.]

WAC 173-422-060 Gasoline vehicle emission standards. Gasoline motor vehicles subject to this chapter shall:

(1) When tested using the exhaust emission testing procedures described in (II) Two Speed Idle Test of Appendix B Test Procedures of Subpart S-Inspection/Maintenance Program Requirements of Part 51 of Chapter 1, Title 40 of the Code of Federal Regulations adopted November 1, 1992, meet the applicable exhaust emission standards from the following table during both the idle and higher speed mode.

Two Speed Idle Test Exhaust Emission Standards

Model Year	CO(%)*	HC (ppm)*
80 and earlier	3.0	600
81 and newer (0-8500 GVWR)	1.2	220
81 and newer (Greater than 8500 GVWR)	3.0	400

*Carbon monoxide (CO) and hydrocarbons (HC), measured as a percentage (%) or parts per million (ppm) of the exhaust volume.

(2) When tested using the acceleration simulation mode (ASM) procedure specified in WAC 173-422-070 meet the following standards during that mode and the applicable standard from WAC 173-422-060(1) during the idle mode.

ASM Mode Exhaust Emission Standards

Model Year Test Weight (lbs.)	CO(%)*	HC(ppm)
1980 and earlier model year cars and trucks (0-8500 lbs. GVWR)		
1750	4.2	400
1875	4.0	380
2000	3.8	350
2125	3.6	340
2250	3.4	320
2375	3.2	300
2500	3.0	290

2625	2.9	270
2750	2.8	260
2875	2.7	250
3000	2.6	240
3125	2.5	230
3250	2.4	220
3375	2.3	220
3500	2.2	210
3625	2.1	200
cars 3750 & greater	2.1	200
trucks 3750 & greater	2.5	300

1981 & later model year cars and trucks (0-8500 lbs. GVWR)

1750	1.8	250
1875	1.7	240
2000	1.6	220
2125	1.5	210
2250	1.5	200
2375	1.4	190
2500	1.3	180
2625	1.3	180
2750	1.2	170
2875	1.2	160
3000	1.1	160
3125	1.1	150
3250	1.0	150
3375	1.0	150
3500	1.0	150
3625	1.0	150
cars 3750 & greater	1.0	150
trucks 3750 & greater	1.5	200

*Carbon monoxide (CO) and hydrocarbons (HC), measured as a percentage

(%) or parts per million (ppm) of the exhaust volume.

(3) The gasoline filler cap must not leak more than 60 cubic centimeters per minute at a pressure of 30 inches of water.

(4) Standardized on-board diagnostic (OBD) systems (also known as OBDII) were required by Environmental Protection Agency starting with 1996 model gasoline vehicle cars and light trucks. If a 1996 or newer model vehicle is equipped with an Environmental Protection Agency certified on-board diagnostic (OBD) system, the information stored in the on-board computer must indicate that all emission-related functional checks have been completed except for 1996 to 2000 model year vehicles that can have up to two readiness monitors not set to ready, or 2001 or newer model year vehicles that have one readiness monitor not set to ready, and no malfunctions detected that would command the malfunction indicator light to be illuminated.

[Statutory Authority: RCW 70.120.120. 02-12-072 (Order 02-04), § 173-422-060, filed 6/3/02, effective 7/4/02. Statutory Authority: Chapter 70.120 RCW. 96-21-029 (Order 95-11), § 173-422-060, filed 10/9/96, effective 11/9/96; 95-06-068 (Order 93-35), § 173-422-060, filed 2/28/95, effective 3/31/95; 93-10-062 (Order 91-46), § 173-422-060, filed 5/3/93, effective 6/3/93; 90-06-062, § 173-422-060, filed 3/6/90, effective 4/6/90. Statutory Authority: RCW 70.120.120, 43.21A.080, 70.94.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-060, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120. 82-02-027 (Order DE 81-32), § 173-422-060, filed 12/31/81; 80-03-070 (Order DE 79-35), § 173-422-060, filed 2/28/80.]

WAC 173-422-065 Diesel vehicle exhaust emission standards. (1) Diesel motor vehicles subject to this chapter shall meet the following opacity standards when using the snap-acceleration test procedures specified in WAC 173-422-075.

Model Year	Opacity (%)
1991 and earlier	55
1992 and later	40

(2) When using the Acceleration Simulation Mode (ASM) test procedures specified in WAC 173-422-070 adapted for the testing of diesel cars or light trucks (0-8500 pounds gross vehicle weight rating), these vehicles shall meet a 20% opacity standard.

[Statutory Authority: RCW 70.120.120. 02-12-072 (Order 02-04), § 173-422-065, filed 6/3/02, effective 7/4/02. Statutory Authority: Chapter 70.120 RCW. 95-06-068 (Order 93-35), § 173-422-065, filed 2/28/95, effective 3/31/95; 93-10-062 (Order 91-46), § 173-422-065, filed 5/3/93, effective 6/3/93.]

WAC 173-422-070 Gasoline vehicle exhaust emission testing procedures. All persons certified by, or under contract to, the department to conduct motor vehicle emission inspections shall use the exhaust emission testing procedures described in (II) Two Speed Idle Test of Appendix B-Test Procedures of Subpart S-Inspection/Maintenance Program Requirements of Part 51 of chapter 1, Title 40 of the Code of Federal Regulations adopted November 1, 1992, except that the department may require that the following Acceleration Simulation Mode (ASM) test procedure replace the 2500 rpm mode of the Two Speed Idle Test. Equivalent procedures may be approved by the department.

Variations to the procedures specified may be established by the department for all or certain vehicles. Vehicles, not repaired as required by an emission recall for which owner notification was attempted after January 1, 1995, shall not be inspected until compliance with the recall is established.

Acceleration Simulation Mode (ASM)

1. Dynamometer Load: Set dynamometer horsepower load equal to [Vehicle Weight (lbs.) + 300]/300. An Environmental Protection Agency specified loading may also be used.
2. Vehicle Gear Selection: Vehicles with automatic transmissions use Drive (not Overdrive), vehicles with manual transmissions use second gear. Shift to the next higher gear if the engine speed exceeds 2500 revolutions per minute.
3. Vehicle Speed: Set vehicle speed at 25 miles per hour (mph) 1.5 ± mph.
4. Pass or Fail Determinations: Once the vehicle has been operating at 25 mph for 15 seconds, begin measuring exhaust HC, CO, and CO2, each second. The reading for pass or fail determinations is the running average of five measurements. When a final pass or fail determination is made, this mode will be stopped and the final readings recorded.
5. Fast Pass: Once HC and CO readings are equal to or less than the HC and CO standards and are within 20 ppm HC and 0.20% CO of each other.
6. Fast Fail: The vehicle will fail after 15 or more seconds of measurements when the HC reading exceeds 1800 ppm, or the CO reading exceeds 9.0 percent.

7. Full Term Pass/Fail: The vehicle will pass or fail the ASM mode after 90 seconds of measurements unless emission readings are declining at a rate that indicates that a failing vehicle will pass within the next 30 seconds. Then the failing vehicle will receive up to an additional 30 seconds of measurements before the final pass/fail determination is made.

[Statutory Authority: RCW 70.120.120. 02-12-072 (Order 02-04), § 173-422-070, filed 6/3/02, effective 7/4/02. Statutory Authority: Chapter 70.120 RCW. 96-21-029 (Order 95-11), § 173-422-070, filed 10/9/96, effective 11/9/96; 95-06-068 (Order 93-35), § 173-422-070, filed 2/28/95, effective 3/31/95; 94-05-039 (Order 93-10), § 173-422-070, filed 2/8/94, effective 3/11/94; 93-10-062 (Order 91-46), § 173-422-070, filed 5/3/93, effective 6/3/93; 90-06-062, § 173-422-070, filed 3/6/90, effective 4/6/90. Statutory Authority: RCW 70.120.120, 43.21A.080, 70.94.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-070, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120. 82-02-027 (Order DE 81-32), § 173-422-070, filed 12/31/81; 80-03-070 (Order DE 79-35), § 173-422-070, filed 2/28/80.]

NOTES:

Reviser's note: The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency.

WAC 173-422-075 Diesel vehicle inspection procedure. Diesel vehicles shall be tested using the following snap-acceleration test procedure unless the department requires the Acceleration Simulation Mode (ASM) test procedure specified in WAC 173-422-070 adapted for the testing of diesel cars or light trucks (0-8500 pounds gross vehicle weight rating) be used in lieu of the snap-acceleration test procedure.

Prior to beginning the test verify the engine is within its normal operating temperature range, all vehicle accessories including air conditioning are off, the parking brake and an engine brake or retarder is off, the transmission is in neutral (and clutch released if manual transmission).

(1) The vehicle shall receive at least three preliminary snap-acceleration test cycles until consistent engine operation is achieved. The snap-acceleration test cycle consists of moving the accelerator pedal from normal idle as rapidly as possible to the full power position, then fully releasing the throttle so the engine returns to idle.

(2) Then perform additional snap-acceleration test cycles

while measuring the smoke opacity with an opacity meter which meets the requirements specified in WAC 173-422-095. The engine must be allowed to remain at idle for at least ten seconds between snap-acceleration test cycles. If a subsequent snap-acceleration cycle is not begun within 45 seconds, the entire sequence of snap-acceleration test cycles must be restarted. The three preliminary snap-acceleration test cycles described in (1) need not be repeated.

(3) Record peak opacity readings from each snap-acceleration test cycle up to nine times if necessary to obtain a peak opacity reading and two consecutive peak readings that are equal to or less than the standard established in WAC 173-422-065.

If a peak opacity reading and two consecutive peak readings that are equal to or less than the standard established in WAC 173-422-065 are not obtained, the vehicle fails the test.

(4) Steps 2 and 3 are repeated for any additional exhaust pipes.

[Statutory Authority: RCW 70.120.120. 02-12-072 (Order 02-04), § 173-422-075, filed 6/3/02, effective 7/4/02. Statutory Authority: Chapter 70.120 RCW. 94-05-039 (Order 93-10), § 173-422-075, filed 2/8/94, effective 3/11/94; 93-10-062 (Order 91-46), § 173-422-075, filed 5/3/93, effective 6/3/93.]

WAC 173-422-090 Exhaust gas analyzer specifications. Only exhaust gas analyzers meeting the specifications contained in (I) Steady-State Exhaust Analysis System of Appendix D-Steady-State Short Test Equipment of Subpart S-Inspection/Maintenance Program Requirements of Part 51 of chapter 1, Title 40 of the Code of Federal Regulations adopted November 1, 1992, at the time of certification testing may be used for certification testing, unless equivalent specifications have been approved by the department.

[Statutory Authority: Chapter 70.120 RCW. 95-06-068 (Order 93-35), § 173-422-090, filed 2/28/95, effective 3/31/95; 93-10-062 (Order 91-46), § 173-422-090, filed 5/3/93, effective 6/3/93; 90-06-062, § 173-422-090, filed 3/6/90, effective 4/6/90. Statutory Authority: RCW 70.120.120, 43.21A.080, 70.94.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-090, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120. 82-02-027 (Order DE 81-32), § 173-422-090, filed 12/31/81; 80-03-070 (Order DE 79-35), § 173-422-090, filed 2/28/80.]

WAC 173-422-095 Exhaust opacity testing equipment. The exhaust opacity measurement shall be conducted using an opacity meter approved by the department.

The opacity meter shall:

(1) Automatically calibrates itself before each test.

(2) Provide for continuous measurement of exhaust opacity unaffected by rain or wind.

[Statutory Authority: Chapter 70.120 RCW. 94-05-039 (Order 93-10), § 173-422-095, filed 2/8/94, effective 3/11/94; 93-10-062 (Order 91-46), § 173-422-095, filed 5/3/93, effective 6/3/93.]

WAC 173-422-100 Testing equipment maintenance and calibration. (1) Unless alternative procedures have been approved or required by the department all equipment used in the inspection shall be calibrated and maintained according to the manufacturer's specifications and recommendations. Complete logs as approved by the department shall be kept for maintenance, repair, and calibration.

(2) The procedures for equipment maintenance and calibration procedures described in (I) Steady-State Test Equipment of Appendix A-Calibrations, Adjustments and Quality Control of Subpart S-Inspection/Maintenance Program Requirements of Part 51 of chapter 1, Title 40 of the Code of Federal Regulations adopted November 1, 1992, shall be followed by all testing facilities unless equivalent procedures have been approved by the department.

[Statutory Authority: Chapter 70.120 RCW. 95-06-068 (Order 93-35), § 173-422-100, filed 2/28/95, effective 3/31/95; 93-10-062 (Order 91-46), § 173-422-100, filed 5/3/93, effective 6/3/93; 90-06-062, § 173-422-100, filed 3/6/90, effective 4/6/90. Statutory Authority: RCW 70.120.120, 43.21A.080, 70.94.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-100, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120. 82-02-027 (Order DE 81-32), § 173-422-100, filed 12/31/81; 80-03-070 (Order DE 79-35), § 173-422-100, filed 2/28/80.]

WAC 173-422-120 Quality assurance. The department, or its designee, may monitor the operation of each authorized emission inspection/certification facility with unidentified or unannounced and unscheduled inspections to check the calibration and maintenance of the exhaust analyzers, test procedures, and records.

The department (or its designee) may immediately require the suspension of vehicle inspections/certifications in all or part by the inspection/certification facility if violations of this chapter are found during an audit of the inspection facility.

[Statutory Authority: Chapter 70.120 RCW. 95-06-068 (Order 93-35), § 173-422-120, filed 2/28/95, effective 3/31/95; 93-10-062 (Order 91-46), § 173-422-120, filed 5/3/93, effective 6/3/93. Statutory Authority: RCW 70.120.120, 43.21A.080, 70.94.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-120, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120. 80-03-070 (Order DE 79-35), § 173-422-120, filed 2/28/80.]

WAC 173-422-130 Inspection fees. At an inspection facility operated under contract to the state, the fee for the first emission inspection on each vehicle applicable to a vehicle license year shall be fifteen or less dollars. If the vehicle fails, one reinspection will be provided free of charge at any inspection station operated under contract to the state, provided that the reinspection is applicable to the same vehicle license year. Any additional reinspection of a failed vehicle applicable to the same vehicle license year will require the payment of fifteen or less dollars.

[Statutory Authority: RCW 70.120.080, 70.120.170 (4)(a), 46.16.015 (2)(h) and 70.120.120. 99-24-021 (Order 99-19), § 173-422-130, filed 11/22/99, effective 12/31/99. Statutory Authority: Chapter 70.120 RCW. 94-05-039 (Order 93-10), § 173-422-130, filed 2/8/94, effective 3/11/94. Statutory Authority: RCW 70.120.170 (4)(a). 93-20-010 (Order 93-15), § 173-422-130, filed 9/22/93, effective 10/23/93. Statutory Authority: Chapter 70.120 RCW. 93-10-062 (Order 91-46), § 173-422-130, filed 5/3/93, effective 6/3/93; 90-06-062, § 173-422-130, filed 3/6/90, effective 4/6/90. Statutory Authority: RCW 70.120.040(7). 87-02-051 (Order DE 86-32), § 173-422-130, filed 1/7/87, effective 4/1/87. Statutory Authority: RCW 70.120.120. 82-02-027 (Order DE 81-32), § 173-422-130, filed 12/31/81; 80-03-070 (Order DE 79-35), § 173-422-130, filed 2/28/80.]

WAC 173-422-145 Fraudulent certificates of compliance/acceptance. (1)(a) Obtaining or attempting to obtain a certificate of compliance by (i) providing false information or (ii) any fraudulent means; or

(b) Obtaining or attempting to obtain a certificate of acceptance (i) through the use of receipts or other documentation containing false information, or (ii) any fraudulent means shall be construed as a violation of these rules implementing chapter 70.94 RCW as supplemented by chapter 70.120 RCW.

(2) Any person who commits such violation or who aids or abets another in committing the same shall be subject to a civil penalty not to exceed two hundred fifty dollars for each violation.

(3) For the purposes of this section the term "expended" refers to the net actual cost to the vehicle owner in the purchase of repairs or parts derived after the amount of any rebate, discount or cash-return has been subtracted.

(4) Any civil penalty imposed by the department hereunder shall be appealable to the pollution control hearing board as provided for in chapter 43.21B RCW.

[Statutory Authority: Chapter 70.120 RCW. 90-06-062, § 173-422-145, filed 3/6/90, effective 4/6/90. Statutory Authority: RCW 70.120.120, 43.21A.080, 70.94.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-145, filed 11/23/83, effective 1/2/84.]

WAC 173-422-160 Fleet and diesel owner vehicle testing requirements. The department may authorize emission inspections by fleet operators including government agencies and the owners of diesel motor vehicles with a gross vehicle weight rating in excess of 8500 pounds or by an automotive service or testing facility engaged by the vehicle owner for such activity. Authorizations to conduct emission tests and issue certificates of compliance under this section are limited to authorized fleet vehicles or diesel vehicles with a gross vehicle weight rating in excess of 8500 pounds.

(1) All persons engaged in testing of gasoline fleet or diesel vehicles must comply with all applicable provisions of this chapter except as approved by the department.

(2) All persons conducting tests for the purpose of issuing certificates for fleet or diesel vehicles shall be ecology authorized emission specialists.

(3) Legibly completed forms will constitute certificates of compliance for licensing purposes. Any person conducting testing under this section shall forward to the department within ten working days after the end of each month, a copy of each certificate of compliance issued during that month. Copies of each certificate of compliance shall be retained by the

person issuing the certificate for at least two years from date of issuance. Alternative arrangements for providing and or storing this information using automated data storage devices may be approved or required by the department.

Forms must be purchased from the department in advance of issuance through payment of fifteen or less dollars to the department for each certificate requested. Refunds or credit may be given for unused certificates returned to the department.

Payment for fleet forms is waived for state and local government fleets.

Test forms provided under this section are official documents. Persons receiving the forms from the department are accountable for each form provided.

Voided forms must be handled the same as certificates of compliance. One copy shall be sent to the department within ten days after the end of the month in which the form was voided and one copy shall be retained by the person accountable for the forms for at least two years after date of voiding. Refunds will not be made for voided forms.

(4) All persons authorized to conduct fleet or government vehicle inspections under this section shall be subject to performance audits and compliance inspections by the department, during normal business hours.

(5) Fleet vehicles may be inspected any time between their scheduled license renewals.

(6) Certificates of acceptance may not be issued under this section.

[Statutory Authority: RCW 70.120.080, 70.120.170 (4)(a), 46.16.015 (2)(h) and 70.120.120. 99-24-021 (Order 99-19), § 173-422-160, filed 11/22/99, effective 12/31/99. Statutory Authority: Chapter 70.120 RCW. 95-06-068 (Order 93-35), § 173-422-160, filed 2/28/95, effective 3/31/95; 94-05-039 (Order 93-10), § 173-422-160, filed 2/8/94, effective 3/11/94; 93-10-062 (Order 91-46), § 173-422-160, filed 5/3/93, effective 6/3/93; 90-06-062, § 173-422-160, filed 3/6/90, effective 4/6/90. Statutory Authority: RCW 70.120.120, 43.21A.080, 70.94.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-160, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120. 82-02-027 (Order DE 81-32), § 173-422-160, filed 12/31/81; 80-03-070 (Order DE 79-35), § 173-422-160, filed 2/28/80.]

WAC 173-422-170 Exemptions. The following motor vehicles are exempt from the inspection requirement:

(1) Vehicles proportionally registered pursuant to chapter

46.85 RCW.

(2) New motor vehicles whose equitable or legal title has never been transferred to a person who in good faith purchases the vehicle for purposes other than resale; this does not exempt motor vehicles that are or have been leased.

(3) Motor vehicles that use propulsion units powered exclusively by electricity.

(4) Motor-driven cycles as defined in chapter 46.04 RCW as amended.

(5) Farm vehicles as defined in chapter 46.04 RCW as amended.

(6) Vehicles not required to be licensed.

(7) Mopeds as defined in chapter 46.04 RCW as amended.

(8) Vehicles garaged and operated out of the emission contributing area.

(9) Vehicles registered with the state but not for highway use.

(10) Used vehicles at the time of sale by a Washington licensed motor vehicle dealer.

(11) Motor vehicles fueled by propane, compressed natural gas, or liquid petroleum gas and so registered by the department of licensing.

(12) Motor vehicles whose manufacturer or engine manufacturer provides information that the vehicle cannot meet emission standards because of its design. In lieu of exempting these vehicles, alternative standards and or inspection procedures may be established.

(13) Motor vehicles whose registered ownership is being transferred between parents, siblings, grandparents, grandchildren, spouse or present co-owners and all transfers to the legal owner or a public agency.

(14) Vehicles less than five years old.

(15) Vehicles more than twenty-five years old.

[Statutory Authority: RCW 70.120.120. 00-22-120 (Order 00-15), § 173-422-170, filed 11/1/00, effective 12/2/00. Statutory Authority: RCW 70.120.080, 70.120.170 (4)(a), 46.16.015 (2)(h) and 70.120.120. 99-24-021 (Order 99-19), § 173-422-170, filed 11/22/99, effective 12/31/99. Statutory Authority: Chapter 70.120 RCW. 96-23-030 (Order 96-11), § 173-422-170, filed 11/15/96, effective 12/16/96; 96-21-029 (Order 95-11), § 173-422-170, filed 10/9/96, effective 11/9/96; 95-06-068 (Order 93-35), § 173-422-170, filed 2/28/95, effective 3/31/95; 94-05-039 (Order 93-10), § 173-422-170, filed 2/8/94, effective 3/11/94; 93-10-062 (Order 91-46), § 173-422-170, filed 5/3/93, effective 6/3/93; 90-06-062, § 173-422-170, filed 3/6/90, effective 4/6/90. Statutory Authority: RCW 70.120.120, 43.21A.080,

70.94.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-170, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120. 82-02-027 (Order DE 81-32), § 173-422-170, filed 12/31/81; 80-03-070 (Order DE 79-35), § 173-422-170, filed 2/28/80.]

WAC 173-422-175 Fraudulent exemptions. (1) Obtaining or attempting to obtain an exemption from emission inspection requirements by false statements, or failure to comply with the exemption procedures established to implement WAC 173-422-170, shall be construed as a violation of these rules implementing chapter 70.94 RCW as supplemented by chapter 70.120 RCW.

(2) Any person who commits such violation or who aids or abets another in committing the same shall be subject to a civil penalty not to exceed two hundred fifty dollars for each violation.

(3) Any civil penalty imposed by the department hereunder shall be appealable to the pollution control board as provided for in chapter 43.21B RCW.

[Statutory Authority: RCW 70.120.120, 43.21A.080, 70.94.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-175, filed 11/23/83, effective 1/2/84.]

WAC 173-422-190 Emission specialist authorization. (1) To become an authorized emission specialist an individual shall:

(a) Pass a course of study, approved by the department; and

(b) Agree in writing to meet the requirements of subsection (2) of this section and all requirements of law or regulation regarding the serving of motor vehicle emission control systems or the motor vehicle emission inspection program.

(2) To maintain certification, an authorized emission specialist shall:

(a) Successfully complete a department-approved course on emission repair within ninety days of being required to do so by the department unless an extension has been granted in writing by the department; and

(b) Sign, including the specialist identification number, all receipts and other forms required by the department for emission repairs or adjustments performed. These receipts must be prenumbered, preprinted with the business's name and address and clearly itemize all appropriate repairs performed by the specialist; and

(c) Record on all receipts:

(i) The vehicle's emission readings after appropriate

repairs or the diagnosis and/or repair of problem(s) identified by the on-board diagnostic (OBD) during an emission inspection; and

(ii) A vehicle description including the license number and vehicle identification number (VIN); and

(iii) Any missing or inoperative primary emission control components; and

(iv) Any further recommended appropriate repairs; and

(d) Not tamper with emission control systems, including adjusting an engine outside of the manufacturer's specifications (chapter 173-421 WAC); and

(e) Not obtain or attempt to obtain a certificate of compliance, a certificate of acceptance (repair waiver) or an exemption from the inspection requirements by providing false information or by any fraudulent means (chapter 173-422 WAC); and

(f) Not aid or abet any individual in committing a violation of chapter 173-421 or 173-422 WAC.

(3) The certification of an authorized emission specialist may be revoked for a first violation of chapter 173-421 WAC or WAC 173-422-145, for a period of no more than one year, and may be permanently revoked for a second violation of chapter 173-421 or 173-422 WAC.

The certification of an authorized emission specialist may be temporarily revoked for violation of subsection (2) of this section and may be permanently revoked for continued willful violation of subsection (2) of this section.

An authorized emission specialist whose certification is revoked permanently or temporarily may appeal to the pollution control hearings board as provided for in RCW 43.21B.310.

(4) An authorized emission specialist whose certification has been temporarily revoked may reapply for certification twelve months after the date of revocation by applying to the department and meeting all requirements of subsection (1) of this section. An application for certification by a permanently revoked authorized emission specialist will be denied.

[Statutory Authority: RCW 70.120.120. 02-12-072 (Order 02-04), § 173-422-190, filed 6/3/02, effective 7/4/02. Statutory Authority: Chapter 70.120 RCW. 96-21-029 (Order 95-11), § 173-422-190, filed 10/9/96, effective 11/9/96; 95-06-068 (Order 93-35), § 173-422-190, filed 2/28/95, effective 3/31/95; 90-06-062, § 173-422-190, filed 3/6/90, effective 4/6/90.]

WAC 173-422-195 Listing of authorized emission specialists. (1) A list of authorized emission specialists will

be available to the public. Specialists will be listed under one employer's business name when the business is approved for listing. The list will be updated by the department at least once every six months.

(2) The employer's business name and address will be listed by the department, when the employer agrees in writing to:

(a) Require the use of a properly maintained and correctly calibrated exhaust analyzer and a scan tool capable of communicating with the on-board diagnostic (OBD) systems installed on all U.S. Environmental Protection Agency certified 1996 model year and newer gasoline vehicles to diagnosis emission test failures and as a final check for emission repairs or adjustments;

(b) Have all emission repairs or adjustments performed by an authorized emission specialist;

(c) Require the authorized emission specialist to sign the customer's receipt for emission repairs or adjustments, and to record the vehicle's emission readings or which problem(s) identified by the on-board diagnostic (OBD) system during an emission inspection that have been diagnosed and/or repaired on the receipt after the work is completed;

(d) Require that all employees not aid or abet any person to tamper with emission control systems, including adjusting a vehicle outside of the manufacturer's specifications (chapter 173-421 WAC); and

(e) Require that all employees not aid or abet any person to obtain a fraudulent certificate of compliance, certificate of acceptance or an exemption from the inspection requirement (repair waiver) (chapter 173-422 WAC).

(f) Notify the department when an authorized emission specialist begins or ends employment.

(3) An employer may be removed from the authorized emission specialist list for a first violation of chapter 173-421 or 173-422 WAC for a period of no more than one year and may be permanently removed after a second violation of chapter 173-421 or 173-422 WAC.

An employer may be temporarily removed from the authorized emission specialist list when failing to comply with the requirements of subsection (2) of this section and may be permanently revoked for continued and willful violation of subsection (2) of this section.

(4) An employer who has been temporarily removed from the authorized emission specialist list may reapply for listing twelve months after the date of removal from the listing by applying to the department and meeting all requirements of subsection (2) of this section. An application for listing from an employer permanently removed from the authorized emission

specialist list will be denied.

(5) An employer who is removed from an authorized emission specialist list or denied listing in an authorized emission specialist list may appeal to the pollution control hearings board as provided for in RCW 43.21B.310.

(6)(a) An employer approved for listing may display the "state authorized emission specialist" sign available from the department. Any employer advertising or providing of information to the public based on the department's certification of an authorized emission specialist must be discontinued immediately when the employer no longer meets the requirements.

(b) An employer violating (a) of this subsection shall be subject to a civil penalty not to exceed two hundred fifty dollars for each violation.

(c) A civil penalty imposed by the department may be appealed to the pollution control hearings board as provided for in RCW 43.21B.310.

[Statutory Authority: RCW 70.120.120. 02-12-072 (Order 02-04), § 173-422-195, filed 6/3/02, effective 7/4/02. Statutory Authority: Chapter 70.120 RCW. 95-06-068 (Order 93-35), § 173-422-195, filed 2/28/95, effective 3/31/95; 90-06-062, § 173-422-195, filed 3/6/90, effective 4/6/90.]

Chapter 173-492 WAC

MOTOR FUEL SPECIFICATIONS FOR OXYGENATED GASOLINE

WAC

WAC 173-492-010 Policy and purpose. The purpose of this regulation is to reduce carbon monoxide emissions from gasoline powered motor vehicles, through the wintertime use of oxygenated gasolines.

[Statutory Authority: RCW 70.94 and section 211(m) of the Federal Clean Air Act. 96-19-094 (Order 96-03), § 173-492-010, filed 9/18/96, effective 10/19/96. Statutory Authority: Chapter 70.94 RCW and 1990 42 USC 7545 Sec. 211(m). 92-24-057 (Order 91-58), § 173-492-010, filed 11/30/92, effective 12/1/92.]

WAC 173-492-020 Applicability. This regulation shall apply to all gasoline offered for sale in the control areas and over the control periods defined in WAC 173-492-070.

[Statutory Authority: Chapter 70.94 RCW and 1990 42 USC 7545 Sec. 211(m). 92-24-057 (Order 91-58), § 173-492-020, filed 11/30/92, effective 12/1/92.]

WAC 173-492-030 Definitions. The following words and phrases shall have the following meanings:

"Authority" means an air pollution control authority activated pursuant to chapter 70.94 RCW that has jurisdiction over the subject source.

"Blender" means a person who owns oxygenated gasoline which is sold or dispensed from an oxygenate blending facility for use in a control area during a control period.

"Control area" means an area in which only oxygenated gasoline under the oxygenated gasoline program of this chapter may be sold or dispensed. Each control area is a county or group of counties administered by a separate air pollution control authority.

"Control period" means the period during which oxygenated gasoline must be sold or dispensed within the control area.

"Ecology" means the Washington state department of ecology.

"Gasoline" means any fuel sold for use in motor vehicles and motor vehicle engines, and commonly known or sold as gasoline.

"Large volume blender" means blenders that blend and offer for sale or sell one million gallons or more, but less than fifteen million gallons, of oxygenated gasoline per month on average during a control period within a control area.

"Medium volume blender" means blenders that blend and offer for sale or sell one hundred thousand gallons or more, but less than one million gallons, of oxygenated gasoline per month on average during a control period within a control area.

"Oxygenate" means any substance which, when added to gasoline, increases the amount of oxygen in the gasoline blend. Lawful use of any combination of these substances requires that they be "substantially similar" under section 211 (f)(1) of the federal Clean Air Act (CAA), or be permitted under a waiver granted by the Administrator of the Environmental Protection Agency under the authority of section 211 (f)(4) of the CAA.

"Oxygenated gasoline" means gasoline which contains a measurable amount of oxygenate, generally an alcohol or ether.

"Small volume blender" means blenders that blend and offer for sale or sell less than one hundred thousand gallons of oxygenated gasoline per month on average during a control period within a control area.

"Very large volume blender" means blenders that blend and offer for sale or sell fifteen million gallons or more of oxygenated gasoline per month on average during a control period within a control area.

[Statutory Authority: Chapter 70.94 RCW and 1990 42 USC 7545 Sec. 211(m). 92-24-057 (Order 91-58), § 173-492-030, filed 11/30/92, effective 12/1/92.]

WAC 173-492-040 Compliance requirements. (1) Retail sales. No gasoline intended as a final product for fueling of motor vehicles within the control areas and control periods as defined in WAC 173-492-070 shall be offered for sale, sold or dispensed by any person unless the gasoline has at least 2.0% oxygen content by weight.

(2) Average blend requirements. Over each two-month interval during the control period, gasoline intended as a final product for fueling of motor vehicles within the control areas defined in WAC 173-492-070 supplied by blenders to purchasers within the control areas defined in WAC 173-492-070 shall average at least 2.7% oxygen by weight, and in no case be less than 2.0% oxygen content by weight.

(3) Reports. Blenders shall provide periodic reports, as stipulated in the blenders registration, to ecology or the authority summarizing how the requirements of subsection (2) of this section were met. With prior approval from ecology or the authority, a credit trading program may be used to comply with these requirements. Such reports shall be on forms provided by ecology or the authority.

[Statutory Authority: Chapter 70.94 RCW and 1990 42 USC 7545 Sec. 211(m). 92-24-057 (Order 91-58), § 173-492-040, filed 11/30/92, effective 12/1/92.]

WAC 173-492-050 Registration requirements. Each blender shall register with ecology or the authority each year, in each control area where a blender offers for sale, sells, or dispenses gasoline. Each request for registration shall be on forms supplied by ecology or the authority and shall be accompanied by a fee to compensate for the cost of administering the registration program, including on-site inspections necessary to verify compliance with these requirements. The location of each blender facility shall be included in the information provided by the blender at registration. The fee may be based on the volume of oxygenated gasoline sold or offered for sale by the blender in that control area to comply with the provisions of WAC 173-492-040, including separate fee categories for small, medium, large and very large volume blenders.

Registration fees shall be set by regulation by ecology or the authority.

[Statutory Authority: RCW 70.94 and section 211(m) of the Federal Clean Air Act. 96-19-094 (Order 96-03), § 173-492-050, filed 9/18/96, effective 10/19/96. Statutory Authority: Chapter 70.94 RCW and 1990 42 USC 7545 Sec. 211(m). 92-24-057 (Order 91-58), § 173-492-050, filed 11/30/92, effective 12/1/92.]

WAC 173-492-060 Labeling requirements. In addition to other labeling requirements, fuel dispensing systems delivering oxygenated gasoline shall be conspicuously labeled during the control periods and in the control areas stated in WAC 173-492-070 as follows:

"The gasoline dispensed from this pump is oxygenated and will reduce carbon monoxide pollution from motor vehicles."

[Statutory Authority: Chapter 70.94 RCW and 1990 42 USC 7545 Sec. 211(m). 92-24-057 (Order 91-58), § 173-492-060, filed 11/30/92, effective 12/1/92.]

WAC 173-492-070 Control areas and control periods. Beginning in 1992, the oxygenated gasoline requirements of this chapter shall apply to the following control area during the following control period:

		Control Period	
Control Area	County	Beginning	Ending
Spokane	Spokane	September 1	February 29

Upon approval by EPA, the control period for Spokane will be from October 1 to February 29.

[Statutory Authority: RCW 70.94 and section 211(m) of the Federal Clean Air Act. 96-19-094 (Order 96-03), § 173-492-070, filed 9/18/96, effective 10/19/96. Statutory Authority: Chapter 70.94 RCW and 42 USC 7545 Sec. 211(m). 94-07-040 (Order 93-20), § 173-492-070, filed 3/9/94, effective 4/9/94. Statutory Authority: Chapter 70.94 RCW and 1990 42 USC 7545 Sec. 211(m). 92-24-057 (Order 91-58), § 173-492-070, filed 11/30/92, effective 12/1/92.]

WAC 173-492-080 Enforcement and compliance. (1) Compliance with the requirements of this section shall be monitored and enforced by ecology or the authority. Noncompliance shall be subject to the penalties and other remedies provided in chapter 70.94 RCW.

(2) Ecology or the authority may designate any appropriate agency of the state to assist in the compliance monitoring of this regulation. Ecology shall make every effort to coordinate compliance monitoring of this regulation with the current duties of the department of agriculture division of weights and measures.

(3) Compliance with the standards set forth in this section shall be determined by use of testing methods approved by ecology. The maximum accuracy tolerance of this method shall be limited to+/-0.3% oxygen by weight, or an equivalent tolerance when measured by volume.

[Statutory Authority: Chapter 70.94 RCW and 1990 42 USC 7545 Sec. 211(m). 92-24-057 (Order 91-58), § 173-492-080, filed 11/30/92, effective 12/1/92.]

WAC 173-492-090 Unplanned conditions. An unplanned condition, such as an unforeseen emergency or "act of God," which may interfere with compliance to this chapter, shall be reported to ecology or the authority as soon as possible. The responsible party shall also submit a full written report within ten days to ecology or the authority, including the known causes, the corrective actions taken, and the preventive measures to be taken to minimize or eliminate the chance of recurrence. Compliance with the requirements of this section does not relieve the responsible party from the responsibility to maintain continuous compliance with all the requirements of this chapter nor from the resulting liabilities for failure to comply. Ecology or the authority must consider the circumstances of the unplanned condition, and may use the circumstances when determining enforcement.

[Statutory Authority: Chapter 70.94 RCW and 1990 42 USC 7545 Sec. 211(m). 92-24-057 (Order 91-58), § 173-492-090, filed 11/30/92, effective 12/1/92.]

WAC 173-492-100 Severability. The provisions of this regulation are severable and if any provision is held invalid, the application of such provision to the other circumstances and the remainder of this regulation shall not be affected.

[Statutory Authority: Chapter 70.94 RCW and 1990 42 USC 7545 Sec. 211(m). 92-24-057 (Order 91-58), § 173-492-100, filed 11/30/92, effective 12/1/92.]

Concise Explanatory Statement and Responsiveness Summary for the Adoption of the Vancouver Carbon Monoxide Maintenance Plan

by the Southwest Clean Air Agency

March 1, 2007

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If you need this publication in another format, please contact SWCAA at 360-574-3058.

Table of Contents

Concise Explanatory Statement and Responsiveness Summary

1. Introduction

Vancouver, WA has been in compliance with the 8-hour carbon monoxide (CO) National Ambient Air Quality Standard (NAAQS) every year since 1992. In 1990, as a result of the passage of the Federal Clean Air Act Amendments (FCAAA) and the establishment of new national standards for CO, the Portland/Vancouver Air Quality Maintenance Area (AQMA) was deemed to be out of compliance or in 'nonattainment' with this standard. In 1995, the Portland /Vancouver AQMA was split into two separate airsheds for managing CO ambient standards. In 1996, the U.S. Environmental Protection Agency (EPA) formally redesignated the Vancouver area from a CO nonattainment area to a CO maintenance area, once the EPA determined the area met the standard, approved a plan to maintain the standard for a 10-year period, and found that Vancouver had met the other requirements for redesignation. The Clean Air Act requires that an area redesignated from nonattainment to maintenance submit a plan for maintaining the NAAQS for a second 10-year period.

Therefore, the Vancouver CO Maintenance Plan is submitted by the Southwest Clean Air Agency (SWCAA) for inclusion into the Washington State Implementation Plan (SIP) and will serve as the second 10-year CO maintenance plan for the Vancouver AQMA. This document demonstrates that the Vancouver area will be in compliance with the NAAQS for CO through 2016 and meets other EPA requirements.

The current NAAQS for CO is 9 ppm (or 10 mg/m^3) for an 8-hour average and 35 ppm (or 40 mg/m^3) for a 1-hour average, not to be exceeded more than once per year. The current 8-hour CO design value for the Vancouver CO area is 4.8 ppm based on 2004-2005 data, well below the standard. Also, the Vancouver CO area has shown a generally declining trend in the ambient 8-hour CO concentrations over the past several years.

This design value of 4.8 ppm qualifies Vancouver to use the Limited Maintenance Plan (LMP) approach in preparing this CO maintenance plan. EPA detailed the limited maintenance plan approach in a memorandum entitled, "Limited Maintenance Plan Option for Nonclassifiable CO Nonattainment Areas" from Joseph Paisie, Group Leader, Integrated Policy and Strategies Group, Office of Air Quality Planning and Standards (OAQPS), dated October 6, 1995." (LMP Guidance).

According to the LMP guidance, EPA will consider the maintenance demonstration satisfied if the monitoring data show the design value is at or below, 7.65 parts per million (ppm), or 85 percent of the level of the 8-hour CO NAAQS. The design value must be based on eight consecutive quarters of data.

One of the requirements for an area to be eligible to use the Limited Maintenance Plan option is that there be no changes to the previous 10-years' plan control measures. The control measure set forth in the 1996 plan was the Washington State I/M program. While some changes in testing technology and in which model year vehicles are required to be tested have occurred, the

program assures that emission control equipment is being maintained. Mobile sources represent over 60% of CO winter emissions, based on 2002 emission calculations. The Southwest Washington Regional Transportation Council's (RTC) Metropolitan Transportation Plan (MTP)[1] predicts decreasing CO emission estimates. This decrease is, in part, due to federal automobile emission standards and fleet turnover. Other efforts identified in the MTP to improve traffic flow have contributed and continue to contribute to the reductions in pollutants from cars and trucks. Since vehicle use is growing two to three times faster than Washington's population growth[2], and since mobile sources are the largest contributor to CO emissions, maintaining the vehicle I/M program is important to maintaining current air quality and achieving predicted CO emissions reductions.

As mentioned above, EPA will consider the maintenance demonstration satisfied if the monitoring data show the design value is at or below, 7.65 parts per million (ppm), or 85 percent of the level of the 8-hour CO NAAQS. In addition, when EPA approves a limited maintenance plan, the motor vehicle emission budget (MVEB) is considered not constraining for the length of the maintenance period. Since the area is in compliance with the standard, no new control strategies or new regulations will be necessary. The Vancouver area meets the CO standard with existing control measures.

To verify continued attainment with the standard, SWCAA will track countywide, mobile emissions through the Washington Department of Ecology emission inventory triennially. If mobile emissions decrease as predicted, this will show that Vancouver is in compliance with the CO standard. Our contingency plan, should mobile emissions increase over 2005 levels, would include a tiered level of escalating response. First, SWCAA would determine if the increase is because of a change in emission calculation methodology. Then, if it appears that a true increase has occurred, SWCAA would evaluate options such as conducting a winter CO mobile emission inventory, some form of 'hot spot' analysis using a model such as the Washington State Intersection Screening Tool (WASIST) or some other method, or temporarily conducting CO monitoring. Should an exceedance be measured at the temporary monitoring site, a community advisory group could be formed to evaluate and choose emission reduction measures. Reinstatement of the oxygenated fuel rule could be considered. In the case of a violation of the standard, SWCAA could ask industrial sources to apply Lowest Achievable Emission Rate technology to their proposed projects. However, this option is unlikely to be recommended since industrial sources contribute only a small amount to the overall CO emission total. Due to the low measured CO values in Vancouver over the past ten years, SWCAA does not anticipate any future CO exceedances or violations of the 8-hour standard.

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[1] Metropolitan Transportation Plan for Clark County, Southwest Washington Regional Transportation Council, December 2005

[2] Washington Department of Ecology, Focus on Motor Vehicle Emission Check Program, September 2004, Publication 96-1013-AIR (Rev 9/04)

2. Differences Between the Proposed Attainment Plan and the Final Maintenance Plan

There are no significant differences between the draft attainment plan for the Vancouver Carbon Monoxide Maintenance Plan which was made available for public comment on January 25, 2007 and the draft brought to hearing at Vancouver, Washington on March 1, 2007. Copies of the final plan will be available from the Southwest Clean Air Agency, 11815 NE 99th Street SW, Suite 1294, Vancouver, WA 98682-2454, telephone: 360-574-3058; or on the agency's web site at SWCAA.org.

One small nonsubstantive change was made to Section 4.3 under the heading Other Anticipated Changes on page 10. The reference to gasoline vapor recovery system rules is not relevant to CO. Vapor recover rules are relevant to ozone levels and affect VOC emissions, but not CO levels. This information was deleted from the text and is shown below.

- Vapor recovery systems rules will be modified once the Washington fleet contains sufficient on-board canister systems that capture refueling emissions

3. Responsiveness Summary - Summary of Public Comment and Agency Response

The Southwest Clean Air Agency received two email comments and one mailed comment to date during the public comment period. The letters are included as part of Appendix A.

A. Ms. Margo Sanders, Vancouver, Citizen, email message sent January 27, 2007, received Monday January 29, 2007

Comment: Ms. Sanders commented that a neighbor burns wood and possibly plastics in their fireplace in her neighborhood. SWCAA sent information to the neighbor about legal fuel burning. Her comment about the CO Plan includes a statement that quotes a state website that claims older and improperly maintained stoves are responsible for a large percentage of pollution during an inversion. She recommends that all wood burning stoves be updated, cleaned and maintained to new standards. She also comments that she does not believe that HOV lanes would be effective to reduce smog levels. She recommends eliminating the growth allowance for industrial sources and beginning analysis of area source emissions. She also suggested that SWCAA work with other agencies to replant open areas with plants to quiet noise and capture carbon dioxide while giving off oxygen. She also recommended the best plants and patterns to accomplish this.

Response: SWCAA responded on March 1, 2007 and thanked Ms. Sanders for her comments. SWCAA informed Ms. Sanders that Carbon Monoxide (CO) levels have been consistently below the national standard for over ten years. SWCAA also related that there is very little risk that CO levels will increase and the Agency is not expecting CO to be a problem for the foreseeable future. SWCAA invited Ms. Sanders to view the plan herself on the Agency website.

SWCAA's response described the declining CO emission trends that are largely a result of federal emission and fuel standards. SWCAA also referenced the SW Regional Transportation Council's (RTC) Plan for Clark County that concludes that the CO emission estimates for cars and trucks will continue to decrease through the next ten years. SWCAA informed Ms. Sanders that car and truck emissions have historically been the largest contributor to winter CO emissions. SWCAA's plan commits to checking car and truck emissions every three years to assure that emissions from these sources are continuing to decrease as expected. Unless the Agency sees that emissions from these sources are going up, and they are not expected to, the contingency plan will not be needed. SWCAA summarized how the plan directs that the Agency consider conducting further review of the way car and truck emissions are calculated, consider doing 'hot spot'

analysis at various intersections, consider conducting temporary ambient air monitoring and, if a problem is identified, a technical committee could be formed to identify any actions and evaluate their effectiveness. Ms. Sanders was informed that SWCAA would be working with the RTC, should all this become necessary. SWCAA's response to Ms. Sanders explained that the contingency plan does not specifically mention reinstituting HOV lanes, although this could be considered with other emission reduction/transportation control options. Recently, however, Vancouver removed the HOV lanes on Interstate 5.

The Columbian article that Ms. Sander's comments appear to reference contains information related to the ozone maintenance plan, not the CO maintenance plan. Area sources mentioned in the January 27th article, such as surface coating or curtailing painting on hot summer days is related to summer ozone precursor reductions, not winter CO. SWCAA's response included information on how residential wood combustion is the biggest contributor from area sources in the wintertime. Our response included how the Agency asks people to voluntarily refrain from wood burning, especially from uncertified woodstoves (unless it is their only source of heat) during winter stagnation periods. SWCAA's response described the Agency woodstove rebate program in which $10,000 per year is allotted to encourage citizens to replace their old uncertified woodstoves with new cleaner burning Washington certified woodstoves. SWCAA also informed Ms. Sanders that all new woodstove purchases must be Washington certified stoves and that Washington standards are more stringent than the federal standards. Also, no current program exists to require that old or improperly maintained woodstoves meet current standards. Requiring replacement or updating of old stoves would be a significant financial burden for some residents.

The Columbian article mentions a growth allowance for industrial sources. Ms. Sanders recommends eliminating the growth allowance for industrial smokestacks. SWCAA informed Ms. Sanders that industrial sources only contributed about 1% of the winter carbon monoxide in 2002. The CO plan as proposed does not contain a growth allowance for industrial sources. SWCAA asserts that if CO levels become so high that the national air quality standard is ever threatened again in Vancouver, emission reductions from industrial sources would not provide the needed reductions. Ms. Sanders recommends that SWCAA begin analysis of area emissions. SWCAA's plan directs that analysis of area sources is not necessary as long as CO emissions from mobile

sources, the largest contributor, continue to decrease. SWCAA asserts that an analysis of area sources is not warranted at this time, since the Vancouver area is well below the national CO ambient air quality standard.

SWCAA informed Ms. Sanders that the Agency does not have authority over the use of various plants to capture CO_2 and trap metals. SWCAA forwarded Ms. Sander's comments on the benefits of plantings along freeways to the Washington Department of Transportation. Washington DOT is the agency who makes the decisions regarding plantings along freeways.

SWCAA's complete response to Ms. Sanders is in Appendix A.

B. Randi Holland, Vancouver, Citizen, email message sent Monday, January 29, 2009, 3709 Clark Avenue, Vancouver, WA 98661

Comment: Randi Holland comments that although she and her husband are not informed about how air should be cleaned up or smog reduced to slow the rate of global warming, they want to see community clean air standards raised.

Response: SWCAA thanks the Hollands for their comments and appreciates their interest in maintaining clean air. SWCAA responded to the Holland's comments on March 1st by stating that the Vancouver area is in compliance with all federal and state air quality standards. SWCAA's mission is to preserve and enhance air quality in SW Washington.

C. B. Fry, letter received January 29, 2007, Citizen, no return address

Comment: B. Fry's comments were largely illegible. From what could be read, B. Fry comments that that pollution credits seem to allow businesses to pollute even more. He also commented on government ethics.

Response: Since B. Fry's comments were largely illegible, SWCAA could not comment. From what could be read, there were no comments directly related to the CO Maintenance Plan.

4. Summary of Public Comment Notifications

The Southwest Clean Air Agency provided public notification by various methods. The public comment period officially opened on January 25, 2007, when a paid advertisement appeared in The Columbian. The same paid advertisement appeared again on February 11, 2007. A news release announcing that the Vancouver Carbon Monoxide Maintenance plan was being revised and would be available for public review and comment was also issued on January 25, 2007. This release was sent to newspapers in the area: The Columbian, The Reflector, and the Camas-Washougal Post-Record. A posting to the Agency website on January 25th also included information on the public comment period and provided links so that the plan could be reviewed online. Copies of the Plan were provided for public access at the Vancouver Community Library, Ecology's Lacey Headquarters and at SWCAA offices in Vancouver. Three comments were received from local citizens. Copies of these notifications and the public comments are included in the Appendixes. In addition, a story appeared in The Columbian on Friday, January 26, 2007 called "Anti-Smog Plan Circulated for Public Input".

Appendixes

A. Public Comments
B. Public Notices
C. Newspaper Articles

Appendix A. Public Comments

1. Ms. Margo Sanders, Vancouver, Citizen, email message sent January 27, 2007, received Monday January 29, 2007
2. R. Holland, Vancouver, Citizen, email message sent Monday, January 29, 2009
3. Fry, letter received January 29, 2007, Citizen, no return address

Laurie A. Hulse-Moyer

From: Laurie A. Hulse-Moyer
Sent: Thursday, March 01, 2007 12:37 PM
To: 'Margo'
Subject: RE: comments

Dear Ms. Sanders:
Thanks for your comments. The plan that is being updated right now is the Carbon Monoxide Maintenance plan. Carbon Monoxide (CO) levels have been consistently below the national standard for over ten years. Since there is very little risk that CO levels will increase, SWCAA is not expecting CO to be a problem for the foreseeable future. You can view the plan itself on our website, swcleanair.org.

Because of federal motor vehicle emission and fuel standards, CO emissions have been decreasing and are expected to continue decreasing in the future. And, the SW Regional Transportation Council's (RTC) Plan for Clark County concludes that the CO emission estimates for cars and trucks will continue to decrease through the next ten years. However, car and truck emissions have historically been the largest contributor to winter CO emissions. Our plan says we'll check car and truck emissions every three years and see if they are continuing to decrease as expected. Unless we see that these emissions are going up, and we don't expect they will, the contingency plan will not be needed. We would consider conducting further review of the way car and truck emissions are calculated, consider doing 'hot spot' analysis at various intersections, consider conducting temporary ambient air monitoring and, if a problem is identified, a technical committee could be formed to identify any actions and evaluate their effectiveness. We would be working with the RTC, should all this become necessary. Our contingency plan does not mention reinstituting HOV lanes, although this could be considered with other emission reduction/transportation control options. Recently, however, Vancouver removed the HOV lanes on I5.

The Columbian article appears to contain information related to the Ozone Maintenance Plan, not the CO maintenance plan. Area sources mentioned in the article, such as surface coating or curtailing painting on hot summer days is related to summer ozone precursor reductions, not CO. Residential wood combustion is the biggest contributor from area sources in the wintertime (it was in the planning year 2002). During winter stagnation periods, when air pollution advisories are called, we ask people to voluntarily refrain from wood burning, especially from uncertified woodstoves (unless it is their only source of heat). Every year for the past several years SWCAA has been awarding $10,000 per year in the form of woodstove rebates to encourage citizens to replace their old uncertified woodstoves with new cleaner burning Washington certified woodstoves. The rebates have been $125 per woodstove and the dealers have been offering another $125 for a total of $250 price reduction for the purchase of new cleaner burning Washington certified woodstoves. Also, all new woodstove purchases must be Washington certified woodstoves which are cleaner than the EPA certified woodstoves. This is a statewide law. No current program exists to require that old or improperly maintained woodstoves meet current standards. Requiring replacement or updating of old stoves would be a significant financial burden for some residents.

As far as industrial sources and a growth allowance is concerned, in 2002 these sources contributed only about 1% of the wintertime carbon monoxide emissions. In 1992, point sources represented 21% of the total. If it was determined that CO levels were so high that the national air quality standard was again threatened in Vancouver, reduction in emissions from industrial sources would not help much.

SWCAA does not have authority over the use of various plants to capture CO2 and trap metals. SWCAA will forward your comments on the benefits of plantings along freeways to the Washington Department of Transportation. Washington DOT is the agency who makes the decisions regarding plantings along freeways.

I invite you to look at the Carbon Monoxide plan itself at our website at swcleanair.org. I think once you how far below the standard Vancouver has been and for how long, you'll agree that there is not a CO problem in the Vancouver area.

Laurie Hulse-Moyer
Air Quality Scientist

360-574-3058 ext 32
FAX 360-576-0925
laurie@swcleanair.org

SWCAA has applied a new spam filtering system to our email server. If you receive a rejection notice for emails sent to us, please contact us immediately at (360) 574-3058 so we can resolve this from happening to any future emails.

From: Margo [mailto:margo@evergreencontrol.com]
Sent: Saturday, January 27, 2007 11:05 AM
To: Laurie A. Hulse-Moyer
Subject: comments

Dear Ms. Hulse-Moyer,

I live in a bit of a valley between Burton Road and Fourth Plain, between 98th Avenue and 103rd Avenue, just west of I-205. We plan to change our open fireplace to a closed, propane burning fireplace to keep the house warm, promote cleaner air, and reduce the intake through our windows of emissions from our neighbors' wood stoves. One neighbor on 35th St clearly only burns wood. The other neighbor, on our culdesac, burns wood and what smells like plastics, styrofoam, and every other possible kind of garbage. I have asked them not to do that. It's so bad every winter that we cannot go outside in our yard for more than a minute when they are burning these substances. I understand from a state website on wood firestoves that this is illegal.

According to the state website, older stoves and those improperly maintained are responsible for a large percentage of unbreathable air in the neghborhoods during an inversion. I ask that you consider requiring all woodburining stoves to be updated, cleaned, and maintained according to the newest standards. A sticker would be proof of inspection and meeting the standard.

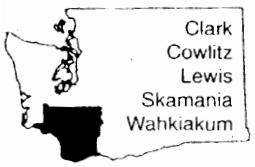
If smog creeps up again, I do not believe having HOV lanes will be effective. I get stuck in traffic everyday coming home from west of Portland to home, idling and burning gas in slow lane. No coworker works my schedule and comes from my area.

I recommend you do eliminate the growth allowance for industrial smokestacks. Get going on the analysis of area emissions.

Work with other county/state agencies to replant riparian and open areas with plants, particularly along freeway walls. This quiets noise significantly more so than do walls, and provides capture of carbon dioxide while giving off oxygen. The best ones are planted in zigzag patterns, include evergreens, shrubs, grasses, and a variety of PNW native plants to handle summer drought and cold/warm winters. Certain plants are able to take in and hold heavy metals, which would be coming off roads. This would help reduce pollution and absorb some smog.

Thank you.

Margo Sanders
Vancouver



Southwest Clean Air Agency
11815 NE 99th Street, Suite 1294 • Vancouver, WA 98682-2454
(360) 574-3058 • Fax: (360) 576-0925
www.swcleanair.org

February 28, 2007

Mr. Greg Maurer
Regional Roadside and Site Development Manager
Washington Department of Transportation
PO Box 47329
Olympia, WA 98504-7329

Dear Mr. Maurer,

Enclosed is a copy of the email I received from Ms. Margo Saunders in response to the opening of the public comment period for the Vancouver, Washington Carbon Monoxide (CO) Maintenance Plan. Please consider her recommendations.

Please call me if you have any questions. Thank you.

Sincerely,

Laurie Hulse-Moyer

Laurie Hulse-Moyer
Air Quality Scientist

Enclosure

Laurie A. Hulse-Moyer

From: Laurie A. Hulse-Moyer
Sent: Thursday, March 01, 2007 12:37 PM
To: 'r holland'
Subject: RE: Anti-smog plan

Thank you for your comments. The Vancouver area is in compliance with all federal and state air quality standards. SWCAA's mission is to preserve and enhance air quality in SW Washington. You can see the complete CO Plan at our website at http://www.swcleanair.org/co_plan.html

Laurie Hulse-Moyer
Air Quality Scientist
360-574-3058 ext 32
FAX 360-576-0925
laurie@swcleanair.org

SWCAA has applied a new spam filtering system to our email server. If you receive a rejection notice for emails sent to us, please contact us immediately at (360) 574-3058 so we can resolve this from happening to any future emails.

From: r holland [mailto:randiholland@yahoo.com]
Sent: Monday, January 29, 2007 5:36 PM
To: Laurie A. Hulse-Moyer
Subject: Anti-smog plan

Laurie, My husband and I are not informed enough to suggest HOW we should clean up our air and reduce smog (thereby also helping to slow the rate of global warming). But we are very anxious to see that our community standards for clean air are raised.
Jim and Randi Holland
3709 Clark Av
98661

RECEIVED
JAN 2 0 2007
SOUTHWEST CLEAN

Dear Laurie Hulse-Moyer

How do you ever expect to combat smog in Vancouver or anywhere if you continue to rely on the fox who were hired to fix the problem but would rather feed on it to create themselves life long jobs than fix anything or better still would rather create the problem themselves?

Who was it that passed legislation that allow the buying and selling of pollution credits so polluters could pollute even more?

Who was that decided a fine was the solution even tho those cost will be shifted back to their victims?

Who was it that refused to enforce the law or even obey the law themselves?

And who is it that has the very bad habit of always shifting the burden to others so they can continue to pollute as chronic gas guzzlers?

Unless we force these so called

Appendix B. Public Notices

1. Paid advertisements appearing in The Columbian on January 25th and February 11th.
2. News Release dated January 25, 2007
    a. Sent to The Columbian, The Reflector, and the Camas-Washougal Post-Record
3. Posting to the website January 25, 2007
4. Presentation to the SWCAA Board of Directors on February 1, 2007

The Southwest Clean Air Agency (SWCAA) announces the beginning of the public comment period for the Vancouver AQMA Carbon Monoxide Maintenance Plan.

- SWCAA has updated the required Vancouver Carbon Monoxide Maintenance Plan for the Vancouver AQMA.
- The AQMA has
  - been well below the carbon monoxide standard for some time and
  - meets the current 8-hour standard
- This proposed Plan shows the area is at little risk of violating the standard and will be well below the standard through 2016 with existing controls.
- No new requirements are proposed; no new controls are needed;
- Contingency measures have been identified as required

The public comment period begins January 25, 2007 and ends February 28, 2007 at 5:30 pm. Comments can be directed to SWCAA. Comments can also be presented in-person at the Public Hearing to be held at SWCAA's office on March 1, 2007 beginning at 3:00 pm. The plan can be viewed at swcleanair.org, at SWCAA offices, the Vancouver Community Library and Ecology's Lacey Headquarters and Vancouver Field Office.
Call 360-574-3058, ext. 32 for more information

The Southwest Clean Air Agency (SWCAA) announces the beginning of the public comment period for the Vancouver AQMA Carbon Monoxide Maintenance Plan.

- SWCAA has updated the required Vancouver Carbon Monoxide Maintenance Plan for the Vancouver AQMA.
- The AQMA has
  - been well below the carbon monoxide standard for some time and
  - meets the current 8-hour standard
- This proposed Plan shows the area is at little risk of violating the standard and will be well below the standard through 2016 with existing controls.
- No new requirements are proposed; no new controls are needed;
- Contingency measures have been identified as required

The public comment period begins January 25, 2007 and ends February 28, 2007 at 5:30 pm. Comments can be directed to SWCAA. Comments can also be presented in-person at the Public Hearing to be held at SWCAA's office on March 1, 2007 beginning at 3:00 pm. The plan can be viewed at swcleanair.org, at SWCAA offices, the Vancouver Community Library and Ecology's Lacey Headquarters and Vancouver Field Office.
Call 360-574-3058, ext. 32 for more information

Clark
Cowlitz
Lewis
Skamania
Wahkiakum

Southwest Clean Air Agency
11815 NE 99th Street, Suite 1294 • Vancouver, WA 98682-2454
(360) 574-3058 • Fax: (360) 576-0925
www.swcleanair.org

FOR IMMEDIATE RELEASE Jan. 25, 2007

Southwest Clean Air Agency Updates Carbon Monoxide Maintenance Plan – seeks comments, announces public hearing

VANCOUVER, Wash. – The Southwest Clean Air Agency (SWCAA) is updating the Vancouver Air Quality Management Area (AQMA) Carbon Monoxide Maintenance Plan. The Agency seeks public comment on this Plan. The public comment period begins January 25, 2007.

This EPA-required plan shows that the Vancouver AQMA is expected to maintain compliance with the federal 8-hour carbon monoxide air quality health standard through 2016. The Vancouver AQMA violated the 8-hour national air quality standard for carbon monoxide in the past, but has been in compliance since 1992. The new plan keeps the control strategies in place identified in the 1996 CO Maintenance and Redesignation request to EPA. No new control strategies or rules are being proposed.

The largest sources of wintertime CO emissions are cars and trucks. Emission reductions from these sources are expected to continue due to continued benefits gained from the phase-in of new fuel and emission standards.

The proposed plan will be voted on by the SWCAA Board of Directors at the March 1, 2007 meeting. A State Implementation Plan (SIP) hearing adopting the plan into the Washington State SIP will be held immediately following the Board of Directors adoption meeting. The plan can be viewed online at swcleanair.org or at the SWCAA offices located at 11815 NE 99th Street, Suite 1294, Vancouver. The plan can also be viewed at Department of Ecology Headquarters,

(more)

300 Desmond Drive in Lacey, Washington; Vancouver Community Library, 1007 E. Mill Plain Blvd.; and Washington Department of Ecology's Vancouver Field office at 2108 Grand Boulevard.

Comments can be sent to Laurie Hulse-Moyer, Air Quality Scientist, SWCAA, 11815 NE 99th Street, Suite 1294, Vancouver, WA 98682. Or, e-mail your comments to laurie@swcleanair.org or fax them to 360-576-0925. All comments are due to the SWCAA office by Feb. 28, 2007 before 5:30 p.m, unless the comments are provided in-person at the March 1, 2007 Board of Directors meeting.

Founded in 1968, the mission of the Southwest Clean Air Agency is to preserve and enhance the air quality in southwest Washington. Serving the counties of Clark, Cowlitz, Lewis, Skamania and Wahkiakum, SWCAA is responsible for protecting the public's health through the enforcement of federal, state and local air quality standards and regulations.

###

For more information contact:

Robert Elliott, Executive Director
Southwest Clean Air Agency
360-574-3058, ext. 12
bob@swcleanair.org

Laurie Hulse-Moyer, Air Quality Scientist
Southwest Clean Air Agency
360-574-3058, ext. 32
laurie@swcleanair.org

Southwest Clean Air Agency Opens Public Comment for Carbon Monoxide Maintenance Plan

The Southwest Clean Air Agency (SWCAA) announces the beginning of the public comment period for the Vancouver AQMA Carbon Monoxide Maintenance Plan.

- SWCAA has updated the required Vancouver Carbon Monoxide Maintenance Plan for the Vancouver AQMA
- The AQMA has
  - been well below the carbon monoxide standard for some time and
  - meets the current 8-hour standard
- This proposed Plan shows the area is at little risk of violating the standard and will be well below the standard through 2016 with existing controls.
- No new requirements are proposed; no new controls are needed;
- Contingency measures have been identified as required

The public comment period begins January 25, 2007 and ends February 28, 2007 at 5:30 pm. The Board of Directors will consider approval at their March 1, 2007 meeting. The plan can be viewed at swcleanair.org, at SWCAA offices, the Vancouver Community Library and Ecology's Lacey Headquarters and Vancouver Field Office. Comments can be directed to SWCAA.

To learn more, **click here**.

The Great Woodstove Rebate Program is Back!

Save $250 and your lungs!

The Great Woodstove Rebate Program of 2006-07 is back for a limited time in southwest Washington. Replace your old, uncertified woodstove and replace it with a new Washington certified heat source. The rebate program ends when funds are exhausted and the program is only open to residents of Clark, Cowlitz, Lewis, Skamania and Wahkiakum counties. This program is sponsored by the Southwest Clean Air agency and your local woodstove

SOUTHWEST CLEAN AIR AGENCY

11815 NE 99th Street, Suite 1294, Vancouver, WA 98682 • 360-574-3058 • 1-800-633-0709

Southwest Clean Air Agency Opens Public Comment for Carbon Monoxide Maintenance Plan

The Vancouver Air Quality Maintenance Area (AQMA) meets the current 8-hour air quality health standard for carbon monoxide. The Southwest Clean Air Agency (SWCAA) has updated the Vancouver Carbon Monoxide Maintenance Plan. This proposed Plan shows the area is expected to maintain levels well below the health standard until 2016 with existing controls. No new requirements are proposed. Even though the area is at little risk of violating the standard, contingency measures must be identified.

The public comment period begins January 25, 2007 and ends February 28, 2007 at 5:30 pm. Comments can be directed to SWCAA. Comments can also be presented in-person at the Public Hearing to be held at SWCAA's office on March 1, 2007 beginning at 3:00 pm. The plan can be viewed online (see below), at SWCAA offices, the Vancouver Community Library and Ecology's Lacey Headquarters and Vancouver Field Office. Call 360-574-3058, ext. 32 for more information.

For more information, read the news release online here.

The Carbon Monoxide Maintenance Plan is available online:

- Vancouver Carbon Monoxide Maintenance Plan
  Word - 800 kb, PDF - 160 kb
- Appendix B: Carbon Monoxide Monitoring Discontinuation Letter
  PDF - 187 kb
- Appendix C: EPA AirData values for Atlas & Cox site, 1996-2005

Library and Ecology's Lacey Headquarters and Vancouver Field Office. Call 360-574-3058, ext. 32 for more information.

For more information, read the news release online here.

The Carbon Monoxide Maintenance Plan is available online:

- Vancouver Carbon Monoxide Maintenance Plan
  Word - 800 kb, PDF - 160 kb
- Appendix B: Carbon Monoxide Monitoring Discontinuation Letter
  PDF - 187 kb
- Appendix C: EPA AirData values for Atlas & Cox site, 1996-2005
  PDF - 28 kb
- Appendix D: Vancouver 2002 Seasonal Emission Inventory (for more detail, contact SWCAA)
  Word - 453 kb, PDF - 106 kb
- Appendix E: Washington State and SWCAA Rules - Control Strategies and Contingency Plan Regulations
  - SWCAA 400-111 "Requirements for New Sources in a Maintenance Plan Area"
    PDF - 597 kb
  - WAC 173-422: Motor Vehicle Emission Inspection
    PDF - 60 kb
  - SWCAA 492: Oxygenated Fuels
    PDF - 159 kb
  - WAC 173-492: Motor Fuel Specifications for Oxygenated Gasoline
    PDF - 32 kb

Many of the above files are Adobe Acrobat PDF format. To open the files you will need an Adobe Acrobat Reader available free here (external link).

Vancouver Carbon Monoxide Plan Informational Meeting

February 1, 2007

Laurie Hulse-Moyer
Southwest Clean Air Agency
laurie@swcleanair.org
(360) 574-3058, ext.32

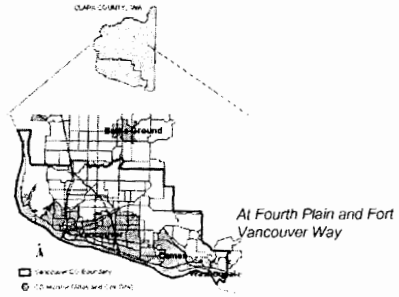
Vancouver CO Plan History

- Area out of compliance with 8 hour CO standard in 1990
- Previous plan 1996
- New Plan covers 2006-2015
- Required by Federal Clean Air Act and EPA rules

Vancouver Carbon Monoxide Maintenance Plan

- Designated **maintenance area** for 8-hour and **attainment area** for 1-hour standards
- Demonstrates compliance with the CO air quality standard through 2016 **with existing control strategies in place**
- Renews programs from the 1996 plan
- Programs have multi-pollutant benefits

Vancouver CO Maintenance Plan



The Vancouver AQMA – old monitoring site

Vancouver CO Compliance and Standard History

Year	Action
1990	Portland/Vancouver AQMA out of compliance w/ CAAA 8 hour CO standard (in "nonattainment")
1992	AQMA has last violation of 1-hour standard
1995	Portland/Vancouver AQMA split into two separate airsheds
1996	SWCAA writes CO Redesignation Request
10/21/1996	EPA approved CO "maintenance area" designation and the first 10 year plan

5

Vancouver CO Compliance and Standard History, continued

Year	Action
5/1/2006	Permission granted by EPA to remove CO monitor
10/5/2006	Monitor removed by Ecology
10/21/2006	First maintenance area plan expired
12/26/2006	SWCAA Submitted Draft Plan to EPA
1/25/07	Opened public comment period

Carbon Monoxide Standard

- 1 hour standard – 35 ppm
- 8 hour standard – 9 ppm
- Number of times the 1 hour standard has been **violated**:

0

7

Vancouver CO Values

- 'Exceedance' vs. 'Violation'
  - CO reading at monitor in AQMA goes over 9 ppm = ***exceedance*** of NAAQS

8-hour values			
1st Max	2nd Max	# Exceed	Year
6.8	6.3	0	1995
6.8	6.4	0	1996
6.6	6.0	0	1997
5.7	5.5	0	1998
10.1	6.7	1	1999
6.7	6.2	0	2000
5.9	4.7	0	2001
5.9	5.7	0	2002
4.7	4.5	0	2003
5	4.8	0	2004
4.9	4.6	0	2005

Carbon Monoxide Standard

- Exceedance vs Violation
  - Each year's 2nd highest high gets compared with previous years' 2th highest high to determine compliance level* and compare with standard
- Carbon Monoxide Compliance Level over 9 ppm is a **violation** of 8-hour NAAQS

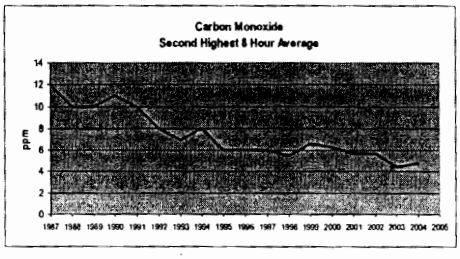
*called the 'design value'

Carbon Monoxide Standard

The design value, or the compliance level used to compare against the standard, is the ***higher of*** the ***two annual second highs*** in a ***two year*** calendar period.

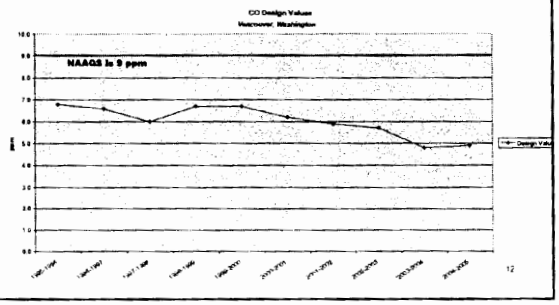
CO Compliance Level Trend

Figure 2. Second highest 8-hour CO history for the Vancouver, WA Atlas and Cox site



CO Design Value

- Figure 3. Vancouver CO area design values, 1995-2005



AQMA CO Compliance

- Because of low compliance value Vancouver can use Limited Maintenance Plan approach
  - No maintenance demonstration required
  - Still need contingency plan
- *No new programs or regulations needed*

13

Vancouver Plan CO Emission Inventory 2002

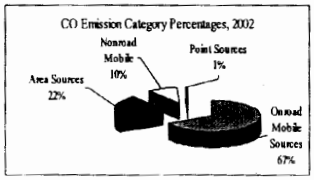
- Included in Maintenance Plan inventory – used Clark County emissions from 2002 (county emissions based on population, household, or other surrogate data reduced to obtain emissions for CO maintenance area) (i.e., spatially corrected)
- Seasonally adjusted to show winter time emissions

14

2002 Emissions Inventory: CO

Where does the pollution come from?

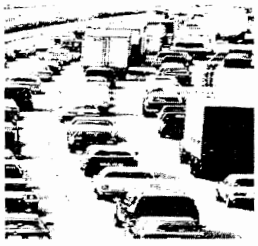
Figure 4. Vancouver CO Emission Categories and Percentages, (average pounds per winter day)



15

Vancouver Plan CO Emission Inventory

Pollution Sources



- **On-Road Mobile**
  - **- Cars and Trucks**
- **Area Sources**
- **Nonroad Mobile Sources**
- **Industrial (Point) Sources**

16

Vancouver Plan CO Emission Inventory

- **Area sources** – ***Residential Wood Burning,*** Residential/ Commercial Fuel Combustion, Trash Burning (though illegal), Residential Yard Waste Burning

Vancouver Plan CO Emission Inventory

- **Non-Road Mobile** – locomotives, snowblowers, chain saws, construction, agricultural and industrial equipment, and ***Light Commercial Equipment*** (i.e., generators and pumps, gas compressors, welders and pressure washers)

Vancouver Plan CO Emission Inventory

- **Industrial (Point) Sources** – sources with a SWCAA permit
  - Inside Clark Co. (Clark Co. = AQMA)
    - Must include those CO sources >100 tpy CO
    - Have smaller sources data readily available
    - Included sources > 1 ton per year CO
      - Sources < 1 ton, summed and included w/area sources

Existing Control Strategies

- Washington's Vehicle Inspection and Maintenance program (I&M)
- New Source Review and SWCAA Requirements for New Sources in a Maintenance Area (SWCAA 400-111)

Control Strategies Vancouver Plan, cont.

- **Commute Trip Reduction program**
- **CTR Performance grants**
- **Public Education and Outreach**
  - Air Pollution Advisories
  - Public presentations (meetings)
  - Public Interaction (e.g., fairs)
  - Educational materials distribution

Minimizing CO Formation

On winter days with impaired air quality
(Air Pollution Advisory)

We ask people to voluntarily:

- Drive less
- Reduce woodstove use
- Refrain from outdoor burning

Other Changes

- **Low Emission Vehicles** –CA standards by 2009 model year
- **Transportation Conformity Rules** – RTC no longer required to do regional conformity, but still must do project conformity

Washington Rules related to CO Maintenance Plan

- **WAC 173-492** – Motor Vehicle Inspection Program, effective date 6-3-2002
- **WAC 173-492** – Motor Fuel Specifications for Oxygenated Gasoline, effective date 9-18-96

SWCAA Rules related to CO Maintenance Plan

- **SWCAA 400-492** – Oxygenated Fuel Rules – approved in 1991 and never changed
- **SWCAA 400-111** – Requirements of New Sources in a Maintenance Plan Area (just modified December 2006)

25

Risk of a Future Violation

- Vancouver has not violated CO standard since redesignated in 1996
- Vancouver is at very little risk of a CO violation with 2004-2005 compliance level of 4.8 ppm

4.8 ppm << 9 ppm

26

Verifying Attainment

- **Track Annual Countywide Mobile Source Emissions (triennially)**
  - **If emission decrease as expected, compliance is assumed**

27

Verification of Attainment

- **Table 6. Ecology 2002 and 2005 Clark County Onroad Mobile Emissions, Winter and Annual**

Clark County CO Onroad emissions in tons

2002 Inventory		
	winter	annual
	23,100	86,714
2005 Inventory (draft)		
	winter	annual
	17,292	61,114

28

Contingency Plan

- **Predictions are CO emissions from mobile sources will decrease**
  - **If mobile emissions of CO increase, commit to further study**
    - Is increase a result of a change in the model used to calculate emissions?
    - Consider calculating winter mobile CO emissions

29

Proposed Contingency Plan

- Evaluate other source categories
  - e.g. woodstove use, nonroad engines
- Conduct hot spot analysis using WA DOT model to simulate specific intersections or actual field measurements

30

Proposed Contingency Plan

- If 'hot spot' analysis shows a level over 7 ppm
  - Consider temporary monitoring
- If an exceedance occurs at monitoring site
  - Consider community advisory group
  - One option: could consider reinstating oxygenated fuel program

31

Proposed Contingency Plan

- A *violation* of CO standard while conducting temporary monitoring
  - Consider requiring LAER technology of new and modified sources (unlikely)
  - Additional measures identified during analysis
- This approach gives SWCAA flexibility in evaluating and facilitating potential necessary actions

32

Timeline

- Public comment period opened
  - January 25, 2007
- Projected SWCAA Plan approval
  - March 1, 2007 board meeting
- Projected Department of Ecology SIP hearing
  - March 1, 2007 board meeting

Timeline

- Ecology submits plan to EPA
  - April 2007
- EPA approves Vancouver plan by
  - Summer 2007

Questions?

Thank you

Appendix C. Newspaper Articles

1. Article appearing in The Columbian, Friday, January 26, 2007 "Anti-Smog Plan Circulated for Public Input"

Anti-smog plan circulated for public input

Southwest Clean Air Agency will vote on issue at its March 1 meeting

The Columbian

A plan to combat smog in the Vancouver area is being vetted for public comments.

The Southwest Clean Air Agency is updating its air quality management plan for carbon monoxide beginning Thursday through Feb. 28. The five-county agency's board of directors will vote on the plan at its regular monthly meeting on March 1 in Vancouver.

Although Vancouver-Portland currently is considered "in attainment" with federal health standards, contingency plans call for the agency to consider a range of restrictions if smog creeps up again.

Among the options to be considered:

- Evaluate the vehicle-inspection program beyond the current expiration date of 2012, and evaluate possible transportation control measures such as high-occupancy vehicle lanes to reduce congestion.
- Consider eliminating a growth allowance for industrial smokestacks.
- Conduct an analysis designed to identify and reduce emissions from area sources, such as considering other forms of surface coating or curtailing certain kinds of painting on hot summer days. Other measures could include reducing idling from railroad locomotives or offering rebates for old lawn mowers.

The plan can be viewed online at www.swcleanair.org or at the agency's office at 11815 N.E. 99th St., Suite 1294. It's also available at the state Department of Ecology in Vancouver, at 2108 Grand Blvd., and at the Vancouver Community Library at 1007 E. Mill Plain Blvd.

Comments can be sent to Laurie Hulse-Moyer, air quality scientist, SWCCA, 11815 N.E. 99th St., Suite 1294, Vancouver, WA 98682, e-mail at laurie@swcleanair.org, or fax at 360-576-0925.

Written comments are due by 5:30 p.m. Feb. 28. People can also comment in person at the board's meeting at 3 p.m. March 1.