Air Emissions Inventory for Shenandoah National Park

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Background

In August of 1999, the National Park Service (NPS) embarked on the Natural Resource Challenge, a major effort to substantially improve how the NPS manages the natural resources under its care. As part of Natural Resource Challenge, the Air Resources Division (ARD) was tasked with the responsibility of expanding efforts to monitor and understand air quality and related values in the parks. In addition, the draft 2001 NPS Environmental Leadership policy directs NPS to manage the parks in a manner "that demonstrates sound environmental stewardship by implementing sustainable practices in all aspects of NPS management…." In order to achieve both of these objectives, it is necessary to gain an understanding of air pollution emissions that result from activities within the park. Development of an in-park air emissions inventory for Shenandoah will serve three functions in this regard. First, it will provide an understanding of the sources and magnitude of in-park emissions and a basis for contrasting them with emissions from the surrounding area. Second, it will serve to identify existing and potential strategies to mitigate in-park air emissions. Finally, it will help to evaluate and ensure the compliance status of the park relative to state and federal air pollution regulations.

Park Description

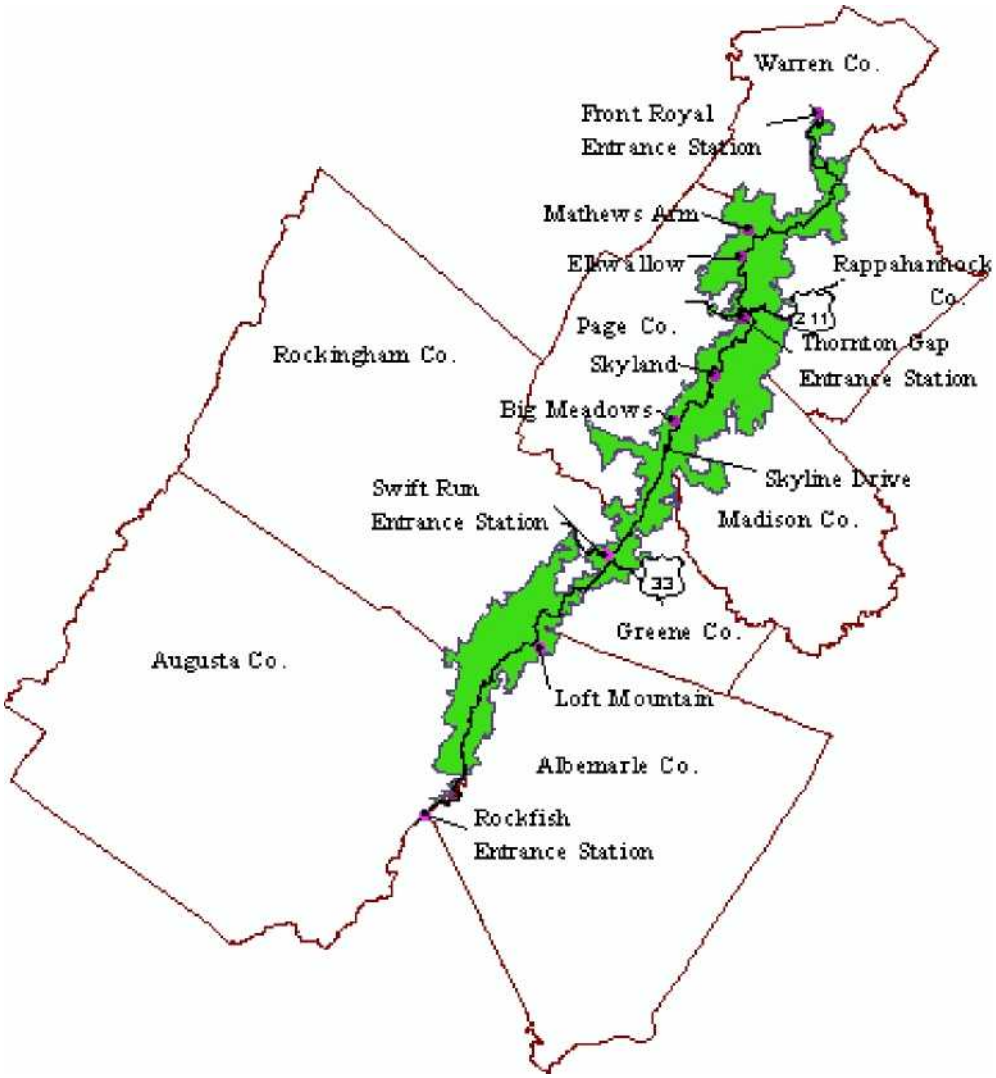
Shenandoah NP encompasses some 196,000 acres located in the Blue Ridge Mountains of Virginia (see Figure 1). Shenandoah was established in 1935 and dedicated as a National Park by President Franklin Roosevelt in 1936. In 1976, more than 80,000 acres of the park were designated by Congress as wilderness. Skyline Drive, following a ridgeline northeast to southwest through the park for 105 miles, was added to the National Register of Historic Places in 1996. Over 100 miles of the Appalachian Scenic Trail are also located along the ridgeline of Shenandoah NP.

Annual visitation in Shenandoah NP averages 1.5 million visits. Most of this visitation occurs between April and November as most visitor facilities are closed during the winter months. (Refer to Appendix A for public use statistics). Visitor activities offered by Shenandoah NP include auto-touring, camping, backpacking, hiking, fishing, horseback riding, and cycling along Skyline Drive. Like most parks, air quality at Shenandoah NP is an important component of the visitor experience, particularly in terms of visibility.

Shenandoah NP offers visitors a number of facilities including visitor centers, lodges, and campgrounds. Lodging facilities, managed by the park concessionaire, ARAMARK, are located at Skyland, Big Meadows, and Lewis Mountain. Skyland (milepost 41.7) has 177 guestrooms, rustic cabins, multi-unit lodges, and modern suites. Big Meadows (milepost 51) has 25 rooms in the main lodge, 72 additional rooms in rustic cabins, multi-unit lodges, and modern suites. Lewis Mountain (milepost 57.5) has several rustic, furnished cabins with private baths and outdoor grills.

Shenandoah NP was designated as a Class I area under the 1977 Clean Air Act (CAA) amendments. Class I areas are afforded the greatest degree of air quality protection. Very little deterioration of air quality is allowed in these areas. The CAA gives Federal Land Managers an affirmative responsibility to protect air quality related values, including but not limited to visibility, in Class I areas.

Figure 1. Shenandoah National Park



Air Pollution Emission Sources

Air pollution emission sources are generally categorized as one of three types: stationary, area, or mobile. Stationary sources are point sources that are inventoried on an individual basis. Typical stationary sources include boilers, generators, and incinerators. Area sources are sources that are too small to be inventoried individually and are spread over a large geographic area. Typical area sources include consumer solvent use, residential heating, and fugitive dust. Mobile sources include both on-road and off-road mobile sources. Off-road mobile sources, such as construction equipment and lawn and garden equipment, are often included under the area source category for inventory purposes.

The definition of stationary, area, and mobile sources can vary depending on the intended use of the emission inventory and are often associated with emission rate thresholds. For example, stationary sources with emissions less than 10 tons per year (tpy) are in some applications considered as area sources. Section 9VAC5-10-20 of the Virginia air regulations defines stationary source as "…. any building, structure, facility or installation which emits or may emit any air pollutant. A stationary source shall include all of the pollutant-emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control)…." Therefore, most NPS and ARAMARK facilities, regardless of annual emission rates, will be treated as stationary sources for the purposes of this emissions inventory. However, it should be noted that because activity data for some types of equipment (e.g., a propane clothes dryer) are not available, their emissions have been estimated using methodologies appropriate to area sources. In addition, these types of small sources are often considered as insignificant sources under 9 VAC 5 CHAPTER 80 of the Virginia air permitting regulations (Title V).

Air pollutants include both criteria and toxic pollutants. Criteria pollutants are those pollutants for which the Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) and include ozone, nitrogen oxides (NOx), particulate matter (as PM_{10} or $PM_{2.5)}$, sulfur dioxide (SO2), carbon monoxide (CO), and lead. Volatile organic compounds (VOC) are regulated as a precursor to the formation of ozone. Toxic, or hazardous air pollutants (HAPs), are defined in section 112 of the CAA and include 188 compounds (or classes of compounds). Toxic emissions from previous park emission inventories have been found to be negligible (for example, see EA Engineering, 2000), and therefore only criteria emissions will be considered here.

Emission estimates are provided in tons per year or pounds per year, depending on the magnitude of the emissions for the given source category.

Methodology

In most cases, emission estimates are based on activity data provided by park and concessionaire staff combined with emission factors from *Compilation of Air Pollution Emission Factors, AP-42* (EPA, 1995) or Factor Information Retrieval System (FIRE) Database (EPA, 2000). In other instances, EPA emissions estimation software was utilized. MOBILE5b (EPA, 1997) and PART5 (EPA, 1995b) were used to generate mobile source emission factors. TANKS (EPA,

2000b) was used to estimate storage tank emissions.

1999 was selected as the base year for the Shenandoah NP emission inventory. It should be noted that emissions are expected to vary from year to year due to fluctuations in visitation, prescribed burning, and other activities. 1999 has been selected as the basis for the inventory in order to allow emission comparisons with surrounding counties for which data are available from the National Emission Inventory (NEI). The NEI is compiled every third year, and the most recent compilation is for 1999. It was also selected since activity data for 1999 are readily available, whereas activity data for more recent years may not.

Additional information on emission estimation methodology, including emission factor references, are provided in the relevant sections of this report.

Air Quality Status

Shenandoah NP is currently attaining all NAAQS with the exception of the newly promulgated 8-hour ozone standard. Shenandoah NP operates and maintains an air quality monitoring site at Big Meadows that monitors several pollutants, including ozone. The 1997-1999 8-hour design value for this site is 0.096 ppm. This violates the 8-hr ozone NAAQS which is set at 0.08 ppm. In February 2001, the constitutionality of the 8-hour ozone standard was upheld by the U.S. Supreme Court, but certain issues were remanded to the D.C. Circuit Court of Appeals for resolution. In March of this year, the Circuit Court rejected all remaining challenges to the rule. However, the EPA must finalize plans for moving from the 1-hour standard to the revised standard. Therefore, air quality designations for the revised standard are currently pending.

In addition to violating the 8-hour ozone standard, the Big Meadows monitor recorded an exceedance of the 1-hour ozone standard in 1998. However, more than three exceedances in a three year period must occur before the standard is violated.

Stationary Sources

Potential vs. Actual Emissions

In order to determine the applicability of regulatory requirements for park stationary sources, both actual and potential emission have been estimated. Actual emissions are based on the actual throughput of fuel or material during 1999. Potential emissions, on the other hand, are based on the rated capacity of the equipment and, in most cases, a full-year of operation. Potential emissions are often used to determine regulatory requirements. For example, a stationary source with potential emissions exceeding 100 tons per year is subject to the permitting requirements of Title V of the CAA. For emergency generators, in accordance with EPA guidance, potential emissions are based on 500 hours of operation. In addition, here the potential emissions for many smaller pieces of equipment (e.g., propane clothes dryers and water heaters) have been based on twice the actual emissions. This is because the rated capacities for small equipment were not readily available and regulatory thresholds are unlikely to be exceeded even collectively.

Fuel Combustion

Fuel combustion sources found at Shenandoah NP include generators, boilers, furnaces, stoves, barbecue grills, water heaters, and clothes dryers. The generators primarily provide emergency electrical backup during power failures at locations such as wastewater treatment plants and maintenance facilities. Generators are fueled by either: LPG (propane), gasoline, or diesel fuel. Actual generator emissions are based on 30 hours of operation per year, while potential emissions are based on 500 hours of operation per year. Rated capacities for distillate oil-fired boilers and furnaces located at lodges and other ARAMARK facilities were not available. Therefore, potential emissions for these sources have been based on twice the actual emissions. Individual throughputs for NPS distillate fuel and propane heating equipment, consisting of hot water furnaces, were not available. Therefore, emission estimates for NPS operations are based on park-wide consumption. Furthermore, actual emissions from concessionaire propane usage, including heating and cooking equipment, have been based on the overall consumption of propane by location, and not on individual equipment usage. Potential emissions from concessionaire propane use are also based on twice the actual emissions.

Tables 1 and 3 provide actual and potential emissions from NPS generators, respectively. Tables 2 and 4 provide actual and potential emissions from other fuel burning equipment, respectively. As can be seen from Tables 1 and 2, actual emissions from generators and other fuel sources at Shenandoah NP are minimal.

The emission factors used for each fuel burning type are denoted in Tables 1 through 4.

Table 1. Actual Emissions from Generators

Location	Fuel	Number of Sources	Rating (kW)	Run Time (hrs/yr)	PM (lbs/yr)	SO_2 (lbs/yr)	NO_x (lbs/yr)	CO (lbs/yr)	VOC (lbs/yr)
Big Meadows Maintenance Area	Propane	1	45.0	30	0	2	6	2	0
HQ Dispatch	Propane	1	20.0	30	0	1	3	1	0
Loft Mtn. Radio Repeater	Propane	1	12.5	30	0	0	6	221	11
Propane Generator Totals			77.5	90	1	4	15	223	11
EF from AP-42, Chapt 3.1-1 for NG Uncont. Turbines (lb/hp-hr), S=.18					1.54E-04	.52E-03*S	3.53E-03	8.60E-04	1.92E-04
Formula = EF (lb/hp-hr) * 608 (g/kW-hr / lb/hp-hr) * Output (kW-hr/yr) / 453.6 (g/lb)									
1 Trailer mounted auxillary unit	Diesel	1	30.0	30	3	0	37	8	3
2 Trailer mounted lighting units	Diesel	2	5.0	30	1	0	12	3	1
Big Meadows Housing Area	Diesel	1	15.0	30	1	0	19	4	2
Big Meadows WWTP	Diesel	1	180.0	30	16	1	224	48	18
HQ Auto Repair Shop	Diesel	1	40.0	30	4	0	50	11	4
HQ Warehouse, I&M Offices	Diesel	1	175.0	30	15	1	218	47	18
Loft Mtn. WWTP	Diesel	1	100.0	30	9	0	125	27	10
Mathews Arm WWTP	Diesel	1	70.0	30	6	0	87	19	7
Simmons Gap Maintenance Shop	Diesel	1	30.0	30	3	0	37	8	3
Skyland Sewer Lift Station	Diesel	1	55.0	30	5	0	69	15	6
Skyland WWTP	Diesel	1	165.0	30	15	1	206	44	17
Thornton Gap WWTP	Diesel	1	60.0	30	5	0	75	16	6
Diesel Generator Totals			925	360	82	4	1159	250	94
EF from AP-42, Chapt.3.4-1 for small generators					2.20E-03	2.05E-03	3.10E-02	6.68E-03	2.51E-03
Formula = Output (kW-hr/yr) * 1.34 (hp/kW) * Emission Factor (lb/hp-hr)									
Simmons Gap Maintenance Office	Gasoline	1	30.0	30	1	0	13	529	26
Simmons Gap Residence	Gasoline	1	10.5	30	0	0	5	185	9
Simmons Gap Stone House	Gasoline	1	13.5	30	0	0	6	238	12
Small portable generators	Gasoline	3	*5.0*	30	0	0	7	265	13
Diesel Generator Totals			59.0	120	2	0	31	1218	60
EF from AP-42, Chapt. 3.4-1 for small generators					7.21E-04	5.91E-03	1.10E-02	4.39E-01	2.16E-02
Formula = Output (kW-hr/yr) * 1.34 (hp/kW) * Emission Factor (lb/hp-hr)									
All Generators Total				lbs/yr	85	8	1,204	1,690	165
				tons/yr	0.0	0.0	0.6	0.8	0.1

Table 2. Actual Emissions from Other Fuel Burning Equipment

Location	Fuel	Number of Sources	Consumption (gal/yr)	PM (lbs/yr)	SO_2 (lbs/yr)	NO_x (lbs/yr)	CO (lbs/yr)	VOC (lbs/yr)
Big Meadows Lodge (ARAMARK)	No. 2 Oil	2	13,741	5	976	247	69	10
Elkwallow (ARAMARK)	No. 2 Oil	1	467	0	33	8	2	0
Panorama (ARAMARK)	No. 2 Oil	1	4,121	2	293	74	21	3
Skyland (ARAMARK)	No. 2 Oil	2	13,494	5	958	243	67	10
NPS Operations	No. 2 Oil	Multiple	13,000	5	923	234	65	9
No. 2 Oil Boiler Totals			31,823	13	2,259	573	159	23
EF from AP-42, Tables 1.3-1 and 1.3-3 for residential furnaces, S=.5				0.4	142*S	18.0	5.0	0.713
Formula = Consumption (gal/yr) / 1000 * Emission Factor (lb/1000gal)								
Big Meadows Lodge	Propane	9	11,240	4	0	157	22	56
Big Meadows Wayside	Propane	1	8,601	3	0	120	17	43
Elkwallow	Propane	None	0	0	0	0	0	0
Lewis Mountain	Propane	3	547	0	0	8	1	3
Loft Mountain	Propane	1	1,864	1	0	26	4	9
Panorama	Propane	2	3,245	1	0	45	6	16
Skyland	Propane	1	32,350	13	1	453	65	162
NPS Operations	Propane	Multiple	33,000	13	1	462	66	165
Combined LPG Totals			57,847	23	1	810	116	289
EF from AP-42, Tables 1.5-1 for residential furnaces, S=.18				0.4	.1*S	14	2	0.5
Formula = Consumption (gal/yr) / 1000 * Emission Factor (lb/1000gal)								
All Other Fuel Burning Equipment Total			lbs/yr	36	2,260	1,383	275	312
			tons/yr	0.0	1.1	0.7	0.1	0.2

Table 3. Potential Emissions from Generators

Location	Fuel	Number of Sources	Rating (kW)	Run Time (hrs/yr)	PM (lbs/yr)	SO2 (lbs/yr)	NOx (lbs/yr)	CO (lbs/yr)	VOC (lbs/yr)
Big Meadows Maintenance Area	Propane	1	45.0	500	5	41	106	26	6
HQ Dispatch	Propane	1	20.0	500	2	18	47	12	3
Loft Mtn. Radio Repeater	Propane	1	12.5	500	6	5	92	3677	181
Propane Generator Totals			77.5	1,500	13	64	246	3714	189
EF from AP-42, Chapt 3.1-1 for NG Uncont. Turbines (lb/hp-hr), S=.18					1.54E-04	.52E-03*S	3.53E-03	8.60E-04	1.92E-04
Formula = EF (lb/hp-hr) * 608 (g/kW-hr / lb/hp-hr) * Output (kW-hr/yr) / 453.6 (g/lb)									
1 Trailer mounted auxillary unit	Diesel	1	30.0	500	44	41	623	134	50
2 Trailer mounted lighting units	Diesel	2	5.0	500	15	14	208	45	17
Big Meadows Housing Area	Diesel	1	15.0	500	22	21	312	67	25
Big Meadows WWTP	Diesel	1	180.0	500	265	247	3739	806	303
HQ Auto Repair Shop	Diesel	1	40.0	500	59	55	831	179	67
HQ Warehouse, I&M Offices	Diesel	1	175.0	500	258	240	3635	783	294
Loft Mtn. WWTP	Diesel	1	100.0	500	147	137	2077	448	168
Mathews Arm WWTP	Diesel	1	70.0	500	103	96	1454	313	118
Simmons Gap Maintenance Shop	Diesel	1	30.0	500	44	41	623	134	50
Skyland Sever Lift Station	Diesel	1	55.0	500	81	76	1142	246	92
Skyland WWTP	Diesel	1	165.0	500	243	227	3427	738	277
Thornton Gap WWTP	Diesel	1	60.0	500	88	82	1246	269	101
Diesel Generator Totals			925.0	6000	1371	1277	19316	4162	1564
EF from AP-42, Chapt.3.4-1 for small generators					2.20E-03	2.05E-03	3.10E-02	6.68E-03	2.51E-03
Formula = Output (kW-hr/yr) * 1.34 (hp/kW) * Emission Factor (lb/hp-hr)									
Simmons Gap Maintenance Office	Gasoline	1	30.0	500	14	12	221	8824	434
Simmons Gap Residence	Gasoline	1	10.5	500	5	4	77	3088	152
Simmons Gap Stone House	Gasoline	1	13.5	500	7	5	99	3971	195
Small portable generators	Gasoline	3	*5.0*	500	7	6	111	4412	217
Diesel Generator Totals			59.0	2000	33	27	509	20295	998
EF from AP-42, Chapt. 3.4-1 for small generators					7.21E-04	5.91E-03	1.10E-02	4.39E-01	2.16E-02
Formula = Output (kW-hr/yr) * 1.34 (hp/kW) * Emission Factor (lb/hp-hr)									
All Generators Total				lbs/yr	1,417	1,369	20,071	28,171	2,751
				tons/yr	0.7	0.7	10.0	14.1	1.4

Table 4. Potential Emissions from Other Fuel Burning Equipment

Location	Fuel	Number of Sources	Consumption (gal/yr)	PM (lbs/yr)	SO2 (lbs/yr)	NOx (lbs/yr)	CO (lbs/yr)	VOC (lbs/yr)
Big Meadows Lodge	No. 2 Oil	2	27,482	22	3,902	989	275	39
Elkwallow	No. 2 Oil	1	934	1	133	34	9	1
Panorama	No. 2 Oil	1	8,242	7	1,170	297	82	12
Skyland	No. 2 Oil	2	26,988	22	3,832	972	270	38
NPS Operations	No. 2 Oil	Multiple	26000	21	3,692	936	260	37
No. 2 Oil Boiler Totals			63,646	51	9,038	2,291	636	91
EF from AP-42, Tables 1.3-1 and 1.3-3 for residential furnaces, S=.5				0.4	142*S	18.0	5.0	0.713
Formula = Consumption (gal/yr) / 1000 * Emission Factor (lb/1000gal)								
Big Meadows Lodge	Propane	9	22,480	18	1	629	90	225
Big Meadows Wayside	Propane	1	17,202	14	1	482	69	172
Elkwallow	Propane	None	0	0	0	0	0	0
Lewis Mountain	Propane	3	1,094	1	0	31	4	11
Loft Mountain	Propane	1	3,728	3	0	104	15	37
Panorama	Propane	2	6,490	5	0	182	26	65
Skyland	Propane	1	64,700	52	2	1,812	259	647
NPS Operations	Propane	Multiple	66000	53	2	1848	264	660
Combined LPG Totals			115,694	93	4	3,239	463	1,157
EF from AP-42, Tables 1.5-1 for residential furnaces, S=.18				0.4	.1*S	14	2	0.5
Formula = Consumption (gal/yr) / 1000 * Emission Factor (lb/1000gal)								
All Other Fuel Burning Equipment Total			lbs/yr	143	9,042	5,531	1,099	1,248
			tons/yr	0.1	4.5	2.8	0.5	0.6

Storage Tanks

Storage tank emissions include both standing (or breathing) losses and working losses of VOC. Breathing losses result from the expansion and contraction of vapors due to diurnal temperature fluctuations. Working losses result from displacement of headspace vapors as a tank is being filled, or from the expansion of organic vapors as liquid is being withdrawn.

The NPS operates aboveground storage tanks (AST) for gasoline at four locations: Piney River, Headquarters, Big Meadows, and Simmons Gap. Each of these tanks has a capacity of 2000 gallons with a combined annual throughput for 1999 of approximately 72,000 gallons. Working losses from these tanks are controlled by vapor balancing during filling which results in a minimum control efficiency of 90%.

ARAMARK operates a number of underground storage tanks (UST) for gasoline at various locations: Big Meadows Wayside, Loft Mountain, and Elkwallow. Based on sales estimates, the annual throughputs (1999) for these locations are approximately 108,000, 40,000, and 36,000 gallons, respectively. Because the ARAMARK gasoline tanks are underground, they are not subject to diurnal temperature variations and therefore are expected to have negligible breathing losses. The ARAMARK gasoline tank working losses are minimized by vapor balancing.

The EPA TANKS (version 4.09) software was used to estimate storage tank emissions. TANKS is based on the emission estimation procedures of Chapter 7 of AP-42. TANKS output reports for NPS and ARAMARK gasoline storage tanks can be found in Appendix B.

In addition to gasoline storage tanks, several No. 2 fuel oil, diesel fuel, and LPG storage tanks are located within Shenandoah NP. Emissions from No. 2 fuel oil and diesel fuel storage tanks are negligible due to the low volatility of these fuels. A sample TANKS run was performed for diesel fuel to confirm that the emissions are negligible (refer to Appendix B). LPG storage tanks are maintained at high pressure and therefore also have negligible emissions.

Annual gasoline storage tank losses for 1999, as well as potential losses, are presented in Table 5. The total actual VOC emissions from gasoline storage tanks for 1999 were 0.5 tons.

Table 5. Gasoline Storage Tank VOC Emissions

Tank Identification	Volume	Type[a]	Thruput	Breathing Losses Uncont. (lbs/yr)	Breathing Losses Cont. (lbs/yr)	Working Losses Uncont. (lbs/yr)	Working Losses Cont. (lbs/yr)
NPS Gasoline Storage Tanks							
Big Meadows	2000	AST	18000	223	NA	126	13
Headquarters	2000	AST	18000	223	NA	126	13
Piney River	2000	AST	18000	223	NA	126	13
Simmons Gap	2000	AST	18000	223	NA	126	13
ARAMARK Gasoline Storage Tanks							
Big Meadows Wayside 1	3000	UST	36000	0	NA	241	24
Big Meadows Wayside 2	3000	UST	36000	0	NA	241	24
Big Meadows Wayside 3	3000	UST	36000	0	NA	241	24
Elkwallow 1	1000	UST	6000	0	NA	40	4
Elkwallow 2	2000	UST	12000	0	NA	80	8
Elkwallow 3	3000	UST	18000	0	NA	120	12
Loft Mountain 1	1000	UST	6700	0	NA	45	4
Loft Mountain 2	2000	UST	13400	0	NA	90	9
Loft Mountain 3	3000	UST	20100	0	NA	135	13
			Total	891	NA	1738	174
			Combined Total Controlled (lb/yr)				1065
			Combined Total Controlled (ton/yr)				0.5

[a]UST = Underground Storage Tank (horizontal); AST = Above Ground Storage Tank (horizontal)

Waste Water Treatment Plants

Shenandoah NP operates wastewater treatment plants (WWTP) at five locations: Big Meadows, Loft Mountain, Mathews Arm, Panorama, and Skyland. The Big Meadows WWTP operates year round, while the remaining WWTP operate seasonally. VOC emissions from WWTP are based on an emission factor of 8.9 lb VOC per million gallons of wastewater treated (from EPA FIRE Database for SCC 50100701). Potential WWTP emissions are based on the rated daily treatment capacity of the unit and 8,760 hours of operation per year. Both actual and potential emissions from WWTP are presented in Table 6.

Table 6. Waste Water Treatment Plants VOC Emissions

Location	Period	Capacity (gal/day)	1999 Thruput (gal/yr)	VOC Emissions (lbs/yr) Actual	VOC Emissions (lbs/yr) Potential
Big Meadows	All year	130,000	8,998,300	80	422
Loft Mountain	May-Early Nov	35,000	1,307,000	12	114
Mathews Arm	May-Early Nov	25,000	532,000	5	81
Panorama	May-Early Nov	15,000	383,600	3	49
Skyland	April-Dec	70,000	10,741,300	96	227
			Total (lbs/yr)	195	893
			(tons/yr)	0.1	0.4

Mobile Source Emissions

As auto touring is one of the principal activities enjoyed by visitors to Shenandoah NP, mobile source emissions are of particular interest in assessing park emissions. Mobile source emissions can be categorized as either exhaust emissions or evaporative emissions. Exhaust emissions are related to the combustion of fuel in the engine and include VOC, NOx, CO, and PM. Exhaust emissions are dependent on a number of factors, including engine load, engine design and age, combustion efficiency, emissions control equipment such as catalytic converters, and other factors. Evaporative emissions, which can occur while the vehicle is running or at rest, are related to the volatilization of fuel from vapor expansion, leaks and seepage, and fuel tank vapor displacement. Evaporative emissions are primarily dependent on daily temperature cycles and fuel volatility.

In addition to vehicle exhaust, PM emissions also result from brake and tire wear, as well as the re-entrainment of dust from paved and unpaved roads (referred to as fugitive dust).

Emission factors produced by the MOBILE5b model were used in conjunction with vehicle miles traveled (VMT) data in order to estimate mobile source emissions for VOC (both exhaust and evaporative), NOx, and CO. Similarly, emission factors produced by the PART5 model were used in conjunction with VMT data to estimate PM emissions. Both the MOBILE5b and PART5 models are typically used to support planning and modeling efforts in urban or regional areas, and include default inputs suited for these applications. Therefore, it was necessary to utilize specific modeling inputs that reflect mobile source operation along Skyline Drive in the park. Specifically, as discussed below, unique inputs were used for the park to characterize the vehicle mix and age distribution.

Mobile Source Activity Data

Activity data used to support estimates of mobile source emissions included VMT and idle times. Separate VMT estimates were developed for summer (April through September) and winter (October through March) to correspond to the MOBILE5b emission factors for these periods.

The major roadway through Shenandoah NP is Sykline Drive, extending some 105 miles from the north entrance station near Front Royal to the south entrance station near Rockfish. Two other entrance stations provide motorists access to Skyline Drive: Thornton Gap at mile marker 31 and Swift Run Gap at mile marker 65. Shenandoah NP is bisected by Highway 211 in the north and Highway 33 in the south. However, the majority of the traffic on these highways is through-traffic and therefore was not considered in estimating the park mobile source emissions. Refer to Figure 1 for a map of the park and roadways.

The vehicles entering Shenandoah NP are predominately visitor vehicles engaged in recreation, but also include non-recreation vehicles and employee vehicles. Traffic counts are recorded for each of these categories at each entrance station. Buses are accounted for separately in the traffic counts. The traffic counts are collected by park personnel and tabulated by the NPS Public Use Statistics Office.

Annual VMT for each entrance station was generated by multiplying vehicle counts by an estimated trip distance. The trip distances assumed for the Front Royal, Thornton Gap, Swift Run, and Rockfish entrance stations were 40, 45, 50, and 55 miles, respectively. Note that VMT from non-recreational vehicles and employee vehicles was treated collectively with visitor vehicles because mileage accumulation data were not available for these vehicles. Nonetheless, based on entrance station counts, emissions from non-recreational vehicles and employee vehicles are expected to contribute less than 12% of the mobile emissions. The VMT for all vehicles, by entrance station for the summer and winter seasons, are presented in Table 7 below.

Table 7. Total Vehicle Miles Traveled by Entrance Station (1999) [a]

	Annual		Summer		Winter	
Entrance Station	Cars	Buses	Cars	Buses	Cars	Buses
Front Royal	73918 80	657 0	468 130 5	3285	27105 75	328 5
Thornton Gap	8654400	17250	5700000	10550	2954400	6700
Panorama	42500	NA	5000	NA	37500	NA
Swift Run	6929780	14245	4517425	10285	2412355	3960
Rocksfish	5385360	2220	3569040	1320	1816320	900
Totals	28403920	40285	18472770	25440	9931150	14845

[a] Includes visitor, employee, and non-recreation vehicles

The assumed idle time for all vehicle types and classes was 15 minutes per visit.

Mobile Source Emission Factors

MOBILE5b produces exhaust and evaporative emission factors for the following classes of vehicles: Light Duty Gasoline Vehicles (LDGV), Light Duty Gasoline Trucks 1 (LDGT1), Light Duty Gasoline Trucks 2 (LDGT2), Heavy Duty Gasoline Vehicles (HDGV), Light Duty Diesel Vehicles (LDDV), Light Duty Diesel Trucks (LDDT), Heavy Duty Diesel Vehicles (HDDV), and Motorcycles. It also produces a composite emission factor for all vehicles based on the vehicle VMT mix supplied to the model. Inputs to the model include average vehicle speed, vehicle VMT mix, annual mileage accumulation rates and registration distributions by age, inspection and maintenance (I/M) program information, fuel information, ambient temperature data, and others.

MOBILE5b is commonly used to develop emission factors to support planning and modeling efforts for ozone nonattainment areas. As such, it is ideally suited for application in large urban areas and over large, regional transportation networks. Application of the MOBILE5b model therefore required the utilization of unique inputs that were representative of mobile source activity within the park. In particular, it was necessary to utilize unique inputs for the vehicle VMT mix and the vehicle age distribution. The Center for Environmental Research and Technology within the College of Engineering at the University of California's Riverside Campus (CE-CERT) established park-specific vehicle fleet characterizations in developing air emission inventories for Arches National Park and Zion National Park (CE-CERT, 2001). CE-CERT found that the distribution of vehicle classes, and thereby VMT, within the park reflected

a higher fraction of LDDV, LDGT, and motorcycles and a lower fraction of HDDV. CE-CERT also found that the distribution of vehicle ages in the park reflected a larger fraction of newer vehicles. The park-specific VMT mix and vehicle age distribution developed by CE-CERT have been applied in the mobile modeling for Shenandoah NP.

In addition to VMT mix and age distribution, CE-CERT also established park-specific modeling inputs for driving pattern characterization. CE-CERT found that park driving patterns differ significantly from the default driving patterns typically used in mobile modeling, such as the Federal Test Procedure (FTP). In particularly, they found that the FTP reflects both higher speeds and a wider range of speeds than observed in the parks. However, because the MOBILE5b model is not designed to readily incorporate unique driving pattern data, the default driving cycle remains the basis for the mobile source emission estimates provided here.

Other important mobile modeling inputs that can significantly affect mobile emission factors are the average speed, fuel characteristics, and I/M program parameters. The average speed input to the mobile models was 35 mph, the speed limit along Skyline Drive. Consistent with the fuel characteristics of the out-state Virginia area and of the park gas stations, the fuel volatility was assumed to be RVP 9 and reformulated gasoline was not assumed to be present. Finally, I/M program inputs were not included since, although Northern Virginia and Washington D.C. do operate I/M programs, many of the visitor vehicles entering the park are not subject to an I/M program.

In order to account for seasonal differences in mobile emissions, separate MOBILE5b runs were performed to produce emission factors for winter and summer. A composite emission factor for each season, reflecting a park specific VMT mix adapted from CE-CERT, served as the basis for mobile source emission estimates. Table 8 presents the composite mobile source emission factors produced by the MOBILE5b (VOC, NOx, and CO) and PART5 (PM) models.

Table 8. Mobile Source Emission Factors

Composite MOBILE5b Emission Factors					
Composite (g/mi)			Idle (g/hr)		
VOC	NOx	CO	VOC	NOx	CO
Summer					
0.95	0.93	8.41	11.23	3.43	187.09
Winter					
0.99	1.06	12.65	16.39	3.91	280.28

Composite PART5 Particulate Emission Factors			
	Exhaust, Brake, and Tire PM10 (g/mi)	Fugitive PM10 Paved (g/mi)	Fugitive PM10 Unpaved (g/mi)
All Vehicles	0.066	0.84	271.25
Buses	0.392	0.84	NA

MOBILE5b and PART5 input and output files can be found in Appendix C.

Mobile Source Emissions Summary

As can be seen in Table 9, the majority of mobile source emissions occur during the summer season when visitation is the highest.

Table 9. Total Mobile Source Emissions (tons/y)

Sesaon	VOC	NOx	CO	PM_{10}
Summer	21.1	19.5	189.9	---
Winter	11.7	11.8	153.6	---
Annual	32.8	31.3	343.5	40.8

Area Source Emissions

Prescribed Burning and Wildfires

Fire emissions at Shenandoah NP originate from both prescribed burning and wildfires. Prescribed burning fires are intentionally ignited to achieve fire management objectives. Wildfires are most often the result of accidental human ignitions or arson, but may also result from natural ignitions. Historically, wildfires at Shenandoah NP have been suppressed, but may be utilized in the future to achieve resource benefits (i.e., as wildland fire use [WFU]). Typically, emissions from prescribed fire and WFU associated with ecosystem maintenance, as well as emissions from suppressed wildfires, are considered natural. In contrast, emissions from all other fire activities, including prescribed fire associated with ecosystem restoration, are considered anthropogenic. However, for the purposes of this inventory, all prescribed burning emissions are treated as anthropogenic. Table 10 shows emission estimates for prescribed burning and wildfires based on the number of acres burned for 1999. The emission factors for fire activities in the park are taken from AP-42, Section 13.1, Wildfires and Prescribed Burning. These emission factors are generalized for large regions and may not accurately reflect fire characteristics in Shenandoah NP.

Table 10. Prescribed Burning and Wildfire Emissions (tons/y)

Fire Type	Acres	VOC	NOx	CO	PM10
Wildfire Suppression	3334.8	360.2	60.0	2100.9	216.5
Prescribed Burning	1436.0	41.4	25.8	723.7	77.5
Wildfire Fire Use (WFU)	0.0	0.0	0.0	0.0	0.0

Detailed information on wildfire and prescribed burning procedures and activities can be found in the Shenandoah National Park Wildland Fire Management Plan (NPS, 1993). The plan is currently being revised to reflect new fire management policies.

Fireplace and Campfires

Firewood for campfires is sold at several locations in the park. It has been assumed that 80% of the campfire firewood is purchased on-site, while the remainder is brought into the park from outside. Annual firewood usage for campfires is based on sales figures for 1999. In addition to firewood sold for campfires, firewood is provided at Big Meadows Lodge and Skyland Lodge

for use in fireplaces. The emission factors for fireplace and campfire emissions are taken from AP-42, Section 1.9, Residential Wood Burning. Emissions from fireplaces and campfires are presented in Table 11.

Table 11. Fireplace and Campfire Emissions (tons/yr)

Location	Cords	tons/yr	PM10	CO	SO2	NOx	VOC
Campfires							
Elkwallow	11	19.6	0.3	2.5	0.0	0.0	2.2
Big Meadows Wayside	149	267.9	4.6	33.8	0.1	0.3	30.7
Lewis Mountain	21	38.5	0.7	4.9	0.0	0.1	4.4
Loft Mountain	62	111.0	1.9	14.0	0.0	0.1	12.7
Fireplaces							
Big Meadows Lodge	45	81.0	1.4	10.2	0.0	0.1	9.3
Skyland Lodge	15	27.0	0.5	3.4	0.0	0.0	3.1
	Total	545	9.4	68.8	0.1	0.7	62.4

Emissions Summary and Comparison

Table 12 provides a summary of in-park emissions. As can be seen from Table 12, prescribed burning, fireplaces and campfires, and mobile sources are the largest contributors to park emissions. Stationary sources contribute very little to the overall park emissions.

Table 12. Shenandoah NP 1999 Emissions Summary (tons/yr)

	VOC	NOx	SO2	PM10	CO
Stationary Sources					
Generators	0.1	0.6	0.0	0.0	0.8
External Combustion	0.0	0.0	0.0	0.0	0.0
WWTP	0.1	---	---	---	---
Gasoline Tanks	0.5	---	---	---	---
Subtotal	0.7	0.6	0.0	0.0	0.8
Mobile Sources					
All Vehicles	32.8	31.3	---	40.8	343.5
Area Sources					
Prescribed Burning	41.4	25.8	---	77.5	723.7
Fireplaces and Campfires	62.4	0.7	0.1	9.4	68.8
Subtotal	103.8	26.6	0.1	87.0	792.6
Overall Total	137.3	58.4	0.1	127.8	1136.9

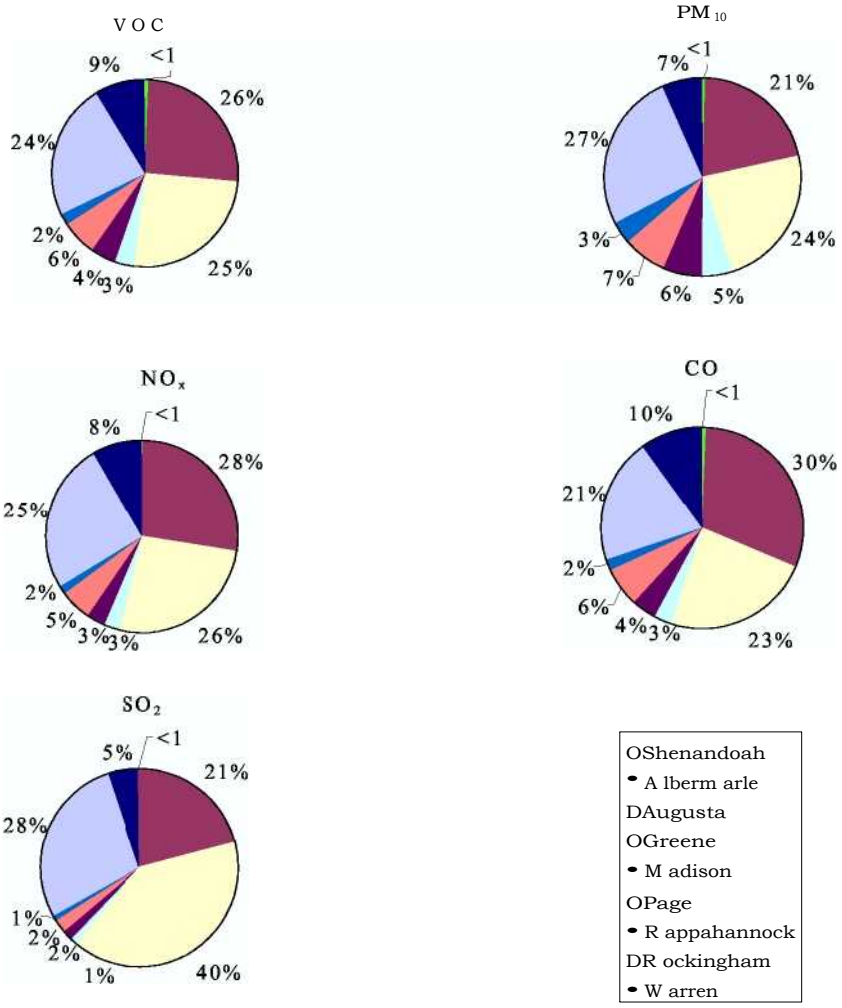
The Park is surrounded by the counties of Albermarle, Augusta, Greene, Madison, Page, Rappahannock, Rockingham, and Warren. Emission estimates for these counties, and for the Commonwealth of Virginia, were obtained from the 1999 NEI maintained by EPA. It is important to note that differences may exist between the methodologies used to generate the park emission inventory and those used to generate the NEI. For example, here gasoline storage tanks have been included as stationary sources, while the NEI treats them as area sources. Table 13 provides a comparison of Shenandoah NP emissions with those from the surrounding counties

and the state. For all pollutants, Shenandoah NP emissions account for less than 1% of the surrounding county emissions. Figure 2 displays the contribution of Shenandoah NP emissions relative to the surrounding counties.

Table 13. Shenandoah NP Annual Emissions Totals (tons) and Comparison with Surrounding Counties

	VOC	NOx	SO_2	PM10	CO
Area and Mobile Source					
Shenandoah NP	136.6	57.8	0.1	127.8	1136.0
Albermarle Co.	6655.0	8035.0	591.0	6005.0	47313.0
Augusta Co.	6248.0	6943.0	462.0	6512.0	36487.0
Greene Co.	906.0	812.0	62.0	1450.0	5128.0
Madison Co.	1100.0	944.0	70.0	1788.0	5733.0
Page Co.	1570.0	1568.0	112.0	2086.0	9974.0
Rappahannock Co.	562.0	490.0	36.0	989.0	2661.0
Rockingham Co.	5640.0	7214.0	488.0	7286.0	31925.0
Warren Co.	2232.0	2550.0	166.0	1930.0	15440.0
Surrounding County Total	24913.0	28556.0	1987.0	28046.0	154661.0
VA State Total	437462.0	406884.0	40106.0	344603.0	2452333.0
Point Source					
Shenandoah NP	0.7	0.6	0.0	0.0	0.8
Albermarle Co.	167.0	289.0	563.0	96.0	121.0
Augusta Co.	379.0	1067.0	1732.0	156.0	78.0
Greene Co.	13.0	20.0	0.5	2.0	17.0
Madison Co.	14.0	3.0	13.0	1.0	1.0
Page Co.	44.0	41.0	19.0	4.0	11.0
Rappahannock Co.	0.5	1.0	1.0	1.0	1.0
Rockingham Co.	633.0	568.0	1073.0	196.0	205.0
Warren Co.	57.0	39.0	109.0	18.0	4.0
Surrounding County Total	1307.5	2028.0	3510.5	474.0	438.0
VA State Total	59144.0	168416.0	334941.0	19550.0	66873.0
All Sources					
Shenandoah NP	137.3	58.4	0.1	127.8	1136.9
Albermarle Co.	6822.0	8324.0	1154.0	6101.0	47434.0
Augusta Co.	6627.0	8010.0	2194.0	6668.0	36565.0
Greene Co.	919.0	832.0	62.5	1452.0	5145.0
Madison Co.	1114.0	947.0	83.0	1789.0	5734.0
Page Co.	1614.0	1609.0	131.0	2090.0	9985.0
Rappahannock Co.	562.5	491.0	37.0	990.0	2662.0
Rockingham Co.	6273.0	7782.0	1561.0	7482.0	32130.0
Warren Co.	2289.0	2589.0	275.0	1948.0	15444.0
Surrounding County Total	26220.5	30584.0	5497.5	28520.0	155099.0
VA State Total	496606.0	575300.0	375047.0	364153.0	2519206.0

Figure 2. Contribution of Shenandoah NP Relative to Surrounding Counties



Compliance with State and Federal Air Pollution Regulations

Regulatory requirements which were considered for Shenandoah NP include those for permitting, general and transportation conformity, new source performance, open burning and fugitive dust. All Federal regulatory requirements that may have applicability to Shenandoah NP are delegated to the Commonwealth of Virginia. Therefore, only the state air regulations have been reviewed. Shenandoah NP complies with all applicable air regulations.

Stationary Source Permitting

The Virginia Department of Environmental Quality (VDEQ) was contacted to determine the existence of any air pollution permits, and compliance with those permits, for Shenandoah NP. VDEQ indicated that Shenandoah NP does not currently hold any permits for air pollution sources. Virginia air permitting regulations for stationary sources are contained in 9 VAC Chapter 80, Permits for Stationary Sources. Several air permitting programs exist in the Commonwealth of Virginia: Title V operating permits, state operating permits, major source permits for new and modified sources of both criteria pollutants and HAPs, and general permits. The Title V permitting thresholds applicable to Shenandoah are 100 tpy for criteria pollutants and 10 tpy for any single HAP or 25 tpy for all HAPs combined. The park-wide potential emissions, including those from concessionaire activities, are well below the Title V applicability thresholds. In addition, the remaining Virginia permitting requirements are not applicable to Shenandoah NP because emissions are below applicability thresholds.

Open Burning

Prescribed burning is utilized as a fire management tool at Shenandoah NP. It is conducted to protect property and natural resources and to maintain ecosystems in a healthy, natural state. Management of fuel levels also reduces the amount of air pollution emitted during intense wildfires. Prescribed burning is specifically permitted by section 9 VAC 5-40-5631, Forest management and agricultural practices, provided that certain fire management practices are met. A review of the park Fire Management Plan (FMP) suggests that the fire management practices are being adhered to. Otherwise, open burning is not conducted within the park.

Fugitive and Visible Emissions

Virginia air regulations pertaining to fugitive dust and visible emissions are contained in 9 VAC Chapter 40, Part II, ARTICLE 1, Visible Emissions and Fugitive Dust/Emissions (Rule 4-1). The emission standards contained in this rule are generally applicable to any source of visible or fugitive emissions. Therefore, this rule is applicable to combustion sources at the park (for visible emissions), as well as road dust (for fugitive emissions). The visible emission standard requires that opacity not exceed 20%. The fugitive dust emission standard requires that measures be taken to minimize fugitive emissions, such as application of dust suppressants on unpaved roads. Visible emissions within the park have not been observed to exceed the opacity standards. Likewise, fugitive emissions levels from unpaved roads have not observed to be problematic, as vehicle traffic along these roads is limited to park vehicles and is not substantial. Furthermore, other park activities, such as campfire burning, are dispersed and have not proven

to be a significant source of fugitive emissions. Therefore, the park complies with the Virginia fugitive and visible emissions regulations. Note that these standards are not appropriate for prescribed burning for which specific regulations have been adopted.

NSPS and NESHAP

New Source Performance Standards (NSPS) apply to certain types of stationary sources of criteria pollutants that were constructed or modified after a specified date. Similarly, the National Emission Standards for Hazardous Air Pollutants (NESHAP) apply to certain source of HAPs that were constructed or modified after a specified date. NSPS and NESHAP standards are incorporated by reference in 9 VAC Chapter 50 and 9 VAC Chapter 60. Shenandoah NP does not own or operate any facilities or equipment that are subject to NSPS or NESHAP requirements.

Conformity

Conformity requirements, both general and transportation, require that federal activities within nonattainment areas (i.e., areas that do not meet the NAAQS) conform to the State Implementation Plan (or SIP). General and transportation conformity regulations are addressed in 9 VAC Chapter 160 and 9 VAC Chapter 150, respectively. General conformity applies to projects with emissions expected to be above a certain thresholds, or that otherwise result in emissions increases that are regionally significant. Transportation conformity applies to transportation projects receiving federal funding, or that may otherwise be regionally significant. Shenandoah NP is not currently part of a nonattainment area for any pollutant, and therefore conformity requirements are not currently applicable. However, it is anticipated that portions of Page and Madison County will be designated as nonattainment under the 8-hr ozone standard within the near future. Accordingly, park management personnel will need to consider all future projects with the potential for increased ozone precursor (VOC and NO_x) emissions, including fire management activities and transportation planning, in terms of conformity requirements.

Mitigation Strategies

As prescribed burning is a large contributor to overall park emissions, it is a logical candidate for considering emission mitigation strategies. The park Fire Management Plan (FMP) incorporates guidelines for ensuring that prescribed burning does not negatively impact air quality, and to some extent identifies strategies for mitigating emissions. In order to reduce the magnitude and impact of smoke emissions, the park implements the following measures: burning is only conducted during favorable meteorological conditions, such as when visibility is greater than 5 miles, mixing heights are above 2000 feet, and wind speeds exceed 5 mph; banking and flanking fires are use to minimize particulate emissions; prescribed fires are not conducted during ozone alerts or other health advisories, and, appropriate outreach steps are taken to ensure public awareness of burning activities. Additional reductions in smoke emissions could be achieved by more aggressive prescribed burning to reduce build up of fuels and by mechanical thinning in selected areas. It is recommended that the FMP, which is currently under review, incorporate the most recent state and federal policy and guidance regarding smoke management. It is also

recommended that it address a long-term prescribed burning strategy aimed at reducing emissions.

Mobile sources also contribute significantly to the overall park emissions. However, because auto touring has historically been one of the most popular activities at Shenandoah NP, and because the configuration of Skyline Drive is in most cases not conducive to certain transportation alternatives (e.g., shuttle buses), opportunities for mitigating mobile source emissions from visitor vehicles may be somewhat limited. Nonetheless, as federal control measures for mobile sources are implemented, it can be expected that mobile source emissions in the park will decrease accordingly. Moreover, NPS is currently considering policies that would limit the amount of time that tour buses spend idling (thereby reducing idling emissions). Where park fleet vehicles are concerned, replacing pre-1994 vehicles, and switching to alternative fuel vehicles is another means by which emissions could be reduced. A pilot program to assess the feasibility of alternative fuel vehicles in the park is currently being considered.

Emission reductions of SO2 and other pollutants can be achieved by switching to cleaner burning or low-sulfur fuels. ARAMARK has replaced older oil burning boilers and furnaces with propane burning units. Further reductions will be achieved as older units are retired and additional new clean fuel units are added. In addition, the park could reduce SO2 emissions by switching from high-sulfur to low-sulfur diesel heating fuel. In 1999, the park, including ARAMARK, consumed 31,823 gallons of diesel fuel in heating applications, resulting in 2,260 lbs of SO2 emissions. Switching to low-sulfur fuel would reduce SO2 emissions by around 2000 lbs annually at a cost less than $1000 per year. For diesel fueled vehicles, switching to B20, a blend of 20% biodiesel and 80% conventional diesel, would lower emissions of all pollutants except for NO_x at a cost of $0.15 to $0.30 per gallon.

In addition to measures specifically aimed at mitigating in-park air emissions, the park and concessionaire engage in a number of practices aimed at energy conservation, water conservation, waste reduction, and pollution prevention. These practices are part of the Greening the Parks program and include:

- Incandescent lighting has been replaced by fluorescent lighting in areas that require illumination 24 hours a day.
- Water conservation products, such as low flow shower heads and toilets, have been installed.
- Guest room towel and linen replacement programs are used to conserve water.
- Electric, water, and fuel records are kept in order to track reductions in use and progress towards greening the park.
- Winterization of guest facilities and establishing minimum heating and lighting needs.
- Installation of soap and shampoo dispensers in guest rooms to reduce waste generation.
- Recycling of office paper, cardboard, glass, plastic, and aluminum.
- Use of photovoltaics to provide lighting in remote areas.

Conclusion

In conclusion, Shenandoah NP contributes very little (less than 1% for all pollutants) to the man-made emissions in the surrounding area. Anthropogenic emissions from the park are dominated by prescribed burning, campfires, and motor vehicles. In addition, the park complies fully with all state and federal air pollution regulations. However, it is recommended that the park take additional steps to reduce its emissions, thereby demonstrating environmental leadership in regard to air pollution. Among these are phasing out pre-1994 vehicles, phasing in alternative fuel vehicles, switching to cleaner burning fuels, limiting idling time for tour buses, and application of fire management practices aimed at reducing smoke emissions. After portions of Shenandoah NP are officially designated ozone nonattainment areas, park managers will need to consider conformity requirements for all projects with the potential for increased ozone precursor emissions, including but not limited to fire management activities and transportation planning.

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Appendix A

Public Use Statistics

Shenandoah National Park
Visitation - 1983-Present

Year	Jan.	Feb.	Mar.	A r.	May	Jun	Jul	Aug	Sep.	Oct.	Nov.	Dec.	Total
1983	27,902	23,256	61,964	103,299	178,558	192,857	300,218	257,617	208,836	365,077	95,707	23,577	1,838,868
1984	24,063	42,134	62,564	129,729	**193,863**	212,397	269,090	266,238	218,196	390,867	94,892	40,120	1,944,153
1985	18,097	30,863	74,612	129,036	187,216	234,165	271,826	250,990	248,904	386,852	91,440	36,965	1,960,966
1986	33,433	21,280	88,498	121,782	192,088	193,112	266,141	283,224	191,033	345,573	96,968	41,552	1,874,684
1987	27,021	30,263	65,315	97,187	189,955	181,064	244,348	268,275	152,229	416,577	82,501	34,255	1,788,990
1988	33,043	29,842	65,798	127,912	193,152	187,330	267,668	266,947	220,967	425,732	92,166	50,265	1,960,822
1989	43,405	32,713	82,998	109,232	183,145	203,059	281,661	257,189	201,396	383,136	93,208	28,856	1,899,998
1990	35,056	441,168	75,827	120,189	148,828	185,484	238,887	236,683	221,493	340,764	131,514	34,964	2,210,857
1991	32,459	53,003	89,885	114,689	193,658	198,692	262,914	297,975	223,075	390,287	92,836	34,735	1,984,208
1992	34,055	413,395	67,529	138,989	158,439	200,021	286,626	200,509	186,630	402,516	103,395	30,566	2,222,670
1993	40,241	26,507	41,926	173,984	180,550	187,427	312,832	297,302	202,301	387,600	106,297	24,600	1,981,567
1994	14,166	26,429	62,085	169,054	176,794	183,159	273,795	269,248	218,994	416,793	110,542	41,967	1,963,026
1995	23,957	29,025	74,806	126,054	161,250	172,114	270,433	249,796	194,256	299,595	90,876	19,572	1,711,734
1996	11,165	24,223	65,360	119,826	142,330	188,626	246,679	257,105	118,778	310,204	81,927	33,913	1,600,136
1997	21,233	38,126	73,161	103,808	147,821	163,632	222,104	265,086	156,689	262,758	110,245	34,089	1,598,752
1998	22,935	12,993	27,860	95,983	155,354	144,843	200,518	223,785	162,359	301,621	108,679	27,134	1,484,064
1999	13,838	31,613	41,123	96,027	**146,694**	135,411	178,292	171,130	130,144	288,409	90,685	26,882	1,350,248
2000	24,313	31,097	58,577	96,570	123,772	134,446	179,995	169,314	150,250	348,327	91,304	22,576	1,430,541
2001	16,972	27,895	41,896	108,054	132,685	157,071	214,875	183,445	180,601	304,928	100,437	40,664	1,509,523
2002	26,724	32,650											
Averages (1989-Present)	27,313	27,953	51,930	105,677	155,622	174,964	257,547	220,531	194,719	335,003	98,072	32,121	1,806,095

Appendix B

TANKS Output Reports

TANKS 4.0
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification:	Big Meadows Wayside
City:	Shenandoah NP
State:	Virginia
Company:	ARAMARK
Type of Tank:	Horizontal Tank
Description:	Big Meadowns 3000 gal UST gasoline tank (1 of 3)

Tank Dimensions

Shell Length (ft):	**14.75**
Diameter (ft):	6.00
Volume (gallons):	3,000.00
Turnovers:	12.00
Net Throughput (galiyr):	36,000.00
Is Tank Heated *(yin):*	N
Is Tank Underground (y/n):	Y

Paint Characteristics

Shell Color/Shade:	White/While
Shell Condition:	Good

Breather Vent Settings

Vacuum Settings (psig):	0.00
Pressure Settings (psig):	0.00

Meteorological Data used in Emissions Calculations: Roanoke, Virginia (Avg Atmospheric Pressure = 14.15 psia)

TANKS 4.0
Emissions Report - Summary Format
Individual Tank Emission Totals

Annual Emissions Report

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 9)	240.92	0.00	240.92

TANKS 4.0
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification:	Elkwallow 2
City:	Shenandoah NP
State:	Virginia
Company:	ARAMARK
Type of Tank:	Horizontal Tank
Description:	Elkwallow 2000 gal UST gasoline lank

Tank Dimensions

Shell Length (it):	12.50
Diameter (it):	5.50
Volume (gallons):	2,000.00
Turnovers:	6.00
Net Throughput (gal/yr):	12,000.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	Y

Paint Characteristics

Shell Color/Shade:	
Shelf Condition:	

Breather Vent Settings

Vacuum Settings (psig):	0.00
Pressure Settings (psig):	0.00

Meteorological Data used In Emissions Calculations: Roanoke, Virginia (Avg Atmospheric Pressure = 14.15 psia)

TANKS 4.0
Emissions Report - Summary Format
Individual Tank Emission Totals

Annual Emissions Report

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 9)	80.31	0.00	80.31

TANKS 4.0
Emissions Report - Summary Format
Liquid Contents of Storage Tank

Mixlure&Cornponent	Month	Daily Liquid Surf. Temperatures (dog F) Avg.	Min.	Max.	Liquid Bulk Temp. (de~F)	Vapor Pressures (pals)		Max.	Vapor Mol. Weight	Liquid Mass Frad.	Vapor Mass Fred.	Mol. Weight	Basis for Vapor Pressure Cak:ulations
Gasoline (RVP 9)	Alt	55.24	55.24	55.24	54.80	4.1952	4.1952	4.1952	67.0000			92.00	Option 4: RVP.9. ASTM Slope.3

TANKS 4.0
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identi ication

User Identification:	Loft Mountain 1
City:	Shenandoah NP
State:	Virginia
Company:	ARAMARK
Type of Tank:	Horizontal Tank
Description:	Loft Mountain 1000 gal UST gasoline tank

Tank Dimensions

Shelf Length (ft):	10.50
Diameter (ft):	4.00
Volume (gallons):	1,000.00
Turnovers:	6.70
Net Throughput (gaVyr):	6,700.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	Y

Paint Characteristics

Shelf Color/Shade:	
Shell Condition:	

Breather Vent Settings

Vacuum Settings (psig):	0.00
Pressure Settings (psig):	0.00

Meteorological Data used In Emissions Calculations: Roanoke, Virginia (Avg Atmospheric Pressure = 14.15 psla)

TANKS 4.0
Emissions Report - Summary Format
Individual Tank Emission Totals

Annual Emissions Report

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 9)	44.84	0.00	44.84

TANKS 4.0
Emissions Report - Summary Format
Liquid Contents of Storage Tank

MiAura&ComponenI	Month	Daily Liquid Surf. Temperatures (dog F) Avg.	Min.	Liquid Bulk Temp. Max.	(dog F)	Vapor Pressures (psia) Avg.	Min.	Max.	Vapor Mol. Weight	Liquid Mass Fred.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor *Presswe* Calculations
Gasoline (RVP 9)	A9	55.24	55.24	55.24	54.80	4.1952	4.1952	4.1952	67.0000			92.00	Option 4: RVP=9. ASTM Slops-3

TANKS 4.0
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification:	Loft Mountain 3
City:	Shenandoah NP
State:	Virginia
Company:	ARAMARK
Type of Tank:	Horizontal Tank
Description:	Loft Mountain 3000 gal UST gasoline tank

Tank Dimensions

Shell Length (ft):	14.75
Diameter (ft):	6.00
Volume (gallons):	3,000.00
Turnovers:	6.70
Net Throughput (gat/yr):	20,100.00
Is Tank Heated *(y/n):*	N
Is Tank Underground (y/n):	Y

Paint Characteristics

Shell Color/Shade:	
Shelf Condition:	

Breather Vent Settings

Vacuum Settings (psig):	0.00
Pressure Settings (psig):	0.00

Meteorological Data used In Emissions Calculations: Roanoke, Virginia (Avg Atmospheric Pressure = 14.15 psla)

TANKS 4.0
Emissions Report - Summary Format
Individual Tank Emission Totals

Annual Emissions Report

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 9)	134.51	0.00	134.51

TANKS 4.0
Emissions Report - Summary Format
Liquid Contents of Storage Tank

MYraurelCortponenI	Month	Daily Liquid Surf. Temperatures (dog F) Avg.	Min.	Max	Liquid Bulk Temp. (dog F)	Vapor Pressures (pals) Avg	Min	Max	Vapor Mol. Weight	Liquid Mass Fred.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Distiaale fuel oil no. 2	All	57.61	52.14	83.08	55.82	0.0080	0.0050	0.0072	130.0000			188.00	Option S: A.12.101, 8.8807

TANKS 4.0
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification:	Park AST Gasoline Tank
City:	Shenandoah NP
State:	Virginia
Company:	NPS
Type of Tank:	Horizontal Tank
Description:	2,000 gallon gasonline AST (1 of 4) - Locations: Piney River, Headquarters, Big Meadows, and Simmons Gap

Tank Dimensions

Shell Length (ft):	12.50
Diameter (ft):	5.50
Volume (gallons):	2,000.00
Turnovers:	9.00
Net Throughput (gal/yr):	18,000.00
is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/While
Shelf Condition:	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.11
Pressure Settings (psig):	0.29

Meteorological Data used In Emissions Calculations: Roanoke, Virginia (Avg Atmospheric Pressure = 14.15 psia)

TANKS 4.0
Emissions Report - Summary Format
Individual Tank Emission Totals

Annual Emissions Report

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 9)	126.31	222.70	349.00

TANKS 4.0
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification:	Park AST Gasoline Tank
City:	Shenandoah *NP*
State:	Virginia
Company:	*NPS*
Type of Tank:	Horizontal Tank
Description:	2,000 gallon gasoniine AST (1 of 4) - Locations: Piney River, Headquarters, Big Meadows, and Simmons Gap

Tank Dimensions

Shell Length (ft):	12.50
Diameter (ft):	5.50
Volume (gallons):	2,000.00
Turnovers:	9.00
Net Throughput *(gaVyr):*	18,000.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition:	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.11
Pressure Settings (psig):	0.29

Meteorological Data used In Emissions Calculations: Roanoke, Virginia (Avg Atmospheric Pressure = 14.15 psia)

TANKS 4.0
Emissions Report - Summary Format
Individual Tank Emission Totals

Annual Emissions Report

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 9)	126.31	222.70	349.00

Appendix C

MOBILE5b Input and Output Files

```
1           PRCMPT
1Mobile 5b irnputGfile specific to traffic in along Skyline Drive in SHEN (Suarer)

1           SPOFLG - one value of average speed for all scenarios
3           1MFLAG - User supplied vehicle mites traveled mix for all scenarios
3           MYMRFG - User su~p Lied age distribution; MOBILE sullied annual mileage ac=.
1           NEWFLG - Mobile basic exhaust emission rates used
1           IMFLAG - No UM program assured to be operating
2           ALHFLG - User stppLed trailer towing fraction (10% for LDGV, LDGT1, LDGT)
1           ATPFLG - No anti-tarperirg program
2           RLFLAG - Stage IL and arboard assumed (Is stage II present?)
2           LOCFLG - One LAP for all  scenarios
1           TEMFLG - MOBILE determired  turps
4           CUTFMT - Spreadsheet forest
4           PRTFLG - Calculate and print  EFs for  HC, 00,  and NOx
2           IDLFLG - Idle calculated
3           NMHFLG - Calculate emissions  for volatile organic  hydrocarbons.
2           HCFLAG - Print sun and coapornents;  evap in gm.
.701.138.106.008.000.003.016.028                                  Park VMT Mix (from Zion / Arches)
.158 .158 .158  .158 .059 .059  .059  .059  .025  .025.          LDGV age distribution
.025 .010 .010  .010 .004 .004  .004  .004  .004  .002
.002 .002 .000  .000 .000
.161 .161 .161  .161 .043 .043  _Q43  .043  .025  .025          LDGT1 age distribution
.025 .018 .018  .018 .010 .010  .010  .010  .004  .004
 004  :W1  W1 .II81 :000                    ---
AO. .228 .228  .228 .049 .049  .049  .049  .026  .026          LDGT2 age distribution
 026 .011 .011  .011 .002 .002  .002  .002  000   .000
W    .'000 .000  .000 :b00                 --
_183 .183 .183  .183 .050 .050  .050  .050  ,022  .022,         tDGV age distribution
.022 .000 .000  .000 X00 .1)00  .000  .000  .000  .000
.000 .000 .000  .000 .000
.158 .158 .158  .158 .059 .059  .059  .059  .025  .03           LDDV age distribution
.025 .010 .010  .010 .004 .004  .004  .004  .004  .002
.002 .002 .000  .000 .000
.161 .161 .161_.1    .043 .043  .043  .043  .025  .025          LDDT.age distribution
.025 .01~ .      .018 01.0 .010 X10  .010  .004  .004
.004 .OO1. 1  :MT .000
.147 .147 .147  .147 .088 .088  .088  .088  .020  .020.         HOW age distribution
.020 .000 .000  .000  DOD .000  .000  .000  .000  .000
:O06 .000 .000  .000  .000
.100 .100 .100  .100 .100 .100  .100  .100  .050  .050         MC
.050 .050 .000  .000 .000 .000  .000  .000  .000  .000
.000 .000  ODO .000 .000
97 1 080 060                                                      RLFLAG refueling emissions control model.
SHEN SZmrer.      B 58. 79. 09.0  09.0 92 1 1  1  1             Local Area Parameter record
1 99 35.0 69.0 20.6 27.3 20.6  01                               scenario description record
.00  .06 .12 .31 .10 133.                                       Additional correction factors
```

1,1 „ u ,,,,11110 ,,,,,,,,,,,,,,,1 11,,,,,,,,,,,,,

1 MOBILESb run specific to traffic in along Skyline Drive in SHEN (Summer
MOBILE5b (14-Sep-96)

0
-M 49 Warning:
+ 0.999 MYR sum not = 1. (will normalize)
-M 49 Warning:
0.999 MYR sum not = 1. (will normalize)
-M 49 Warning:
+ 0.998 MYR sum not = 1. (will normalize)
-M 49 Warning:
0.999 MYR sum not = 1. (will normalize)
-M 22 Warning:
0.424E-01 mileage with zero registration
-M 22 Warning:
0.401E-01 mileage with zero registration
-M 22 Warning:
0.379E-01 mileage with zero registration
-M 22 Warning:
0.346E-01 mileage with zero registration
-M 22 Warning:
0.148 mileage with zero registration
-M 22 Warning:
+ 0.776E-01 mileage with zero registration
-M 22 Warning:
0.749E-01 mileage with zero registration
-M 22 Warning:
0.723E-01 mileage with zero registration
-M 22 Warning:
0.697E-01 mileage with zero registration
-M 22 Warning:
0.673E-01 mileage with zero registration
-M 22 Warning:
0.649E-01 mileage with zero registration
-M 22 Warning:
0.626E-01 mileage with zero registration
-M 22 Warning:
0.855E-01 mileage with zero registration
-M 22 Warning:
0.802E-01 m::eage with zero registration
-M 22 Warning:
0.753E-01 m_=eage with zero registration
-M 22 Warning:
0.706E-01 m`.ieage with zero registration
-M 22 Warning:
0.662E-01 mileage with zero registration
-M 22 Warning:
0.622E-01 mileage with zero registration
-M 22 Warning:
+ 0.583E-01 mileage with zero registration
-M 22 Warning:
0.547E-01 mileage with zero registration
-M 22 Warning:
0.513E-01 mileage with zero registration
-M 22 Warning:
0.481E-01 mileage with zero registration
-M 22 Warning:
0.452E-01 mileage with zero registration
-M 22 Warning:
0.424E-01 mileage with zero registration
-M 22 Warning:
0.398E-01 mileage with zero registration
-M 22 Warning:
+ 0.373E-01 mileage with zero registration
-M 22 Warning:
0.316E-01 mileage with zero registration
-M 22 Warning:
0.292E-01 mileage with zero registration
-M 22 Warning:
+ 0.270E-01 mileage with zero registration
-M 22 Warning:
+ 0.222E-01 mileage with zero registration
-M170 Warning:
+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of

Gasoline Detergent Additive Regulations (1994).

-M154 Warning:

Refueling emissions for LDGV and LDGT after 1998
model year have been reduced as a result of the
Onboard Refueling Vapor Recovery Regulations (1994).

OSHEN Summer.

Minimum Temp: 58. *(F)* **Maximum Temp: 79.** *(F)*

Period 1 RVP: 9.0 Period 2 RVP: 9.0 Period 2 Yr: 1992

OVOC HC emission factors include evaporative HC emission factors.

0

OEmission factors are as of Jan. 1st of the indicated calendar year.
OUser supplied veh registration distributions.
OCal. Year: 1999 Region: Low Altitude: **500.** ***Ft***
I/M Program: No Ambient Temp: **73.9 / 73.9 / 73.9** ***F***
Anti-tam. Program: No Operating Mode: 20.6 / 27.3 / 20.6
Reformulated Gas: No
Absolute Humidity:133.00. AC (DB / WB): 0.0 (85.0 / 75.0)

OVeh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Spd.:	35.0	35.0	35.0		35.0	35.0	35.0	35.0	35.0	
VMT Mix:	0.701	0.138	0.106		0.008	0.000	0.003	0.016	0.028	
Ext. Load:	0.060	0.120	0.310							
Trlr Tow:	0.100	0.100	0.100							
OComposite Emission Factors (Gm/Mile)										
VOC HC:	0.83	1.02	0.97	1.00	1.21	0.30	0.44	1.30	3.45	0.95
Exhst HC:	0.50	0.67	0.66	0.67	0.54	0.30	0.44	1.30	1.39	0.58
Evap. HC:	0.12	0.13	0.10	0.12	0.35				1.75	0.16
Refuel HC:	0.04	0.06	0.06	0.06	0.16					0.04
Runing HC:	0.14	0.13	0.12	0.13	0.14					0.13
Rsting HC:	0.03	0.03	0.03	0.03	0.02				0.31	0.04
Exhst CO:	7.65	10.54	10.50	10.52	8.46	0.00	0.88	5.84	11.30	8.41
Exhst NOX:	0.73	0.88	1.00	0.93	4.21	0.00	1.13	7.99	0.84	0.93
Oldle Emission Factors (Gm/Hr)										
VOCId HC:	9.98	13.37	12.73	13.09	11.51	0.00	3.81	11.38	26.84	11.23
Idle CO:	172.88	220.36	209.'S	215.75	133.73	0.00	12.72	84.12	385.86	187.09
Idle NOX:	2.60	3.22	3.'.'2	3.44	7.86	0.00	5.67	40.01	1.81	3.43

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1 PRCMPT
Mobile Sb input file specific to traffic **in** along Skyline Drive in SHEN (Winter)
1 TAMFLG
I SPDFLG - One value of average speed for all scenarios
3 WIFtAG - User supplied vehicle mites traveled mix for all scenarios
3 MYWFG - User supplied age distribution; MOBILE s&plied arrsml mileage acorn.
1 NEWFLG - Mobile basic exhaust emission rates used
1 IMFLAG - No I/M program assunad to be operating
2 ALHFLG - User st,ppled trailer towing fraction (10% for LD(;V, LDGT1, LDGT)
1 ATPFLG - No anti-tampering program
2 RLFLAG - Stage II and crtoard assured (is stage II present?)
2 LOCFLG - One LAP for all scenarios
1 TEMFLG - MOBILE determined terrps
4 OUTFMT - Spreadsheet format
4 PRTFLG - Calculate and print EFs for HC; CO, and .
2 IDLFLG - Idle calculated
3 NMHFLG - Calculate emissions for volatile organic hydrocarbons.
2 HCFLAG - Print sun and crnponents; evap in **gin.**

.701.138.106.008.000.003.016.028 Park MiT Mix (from Zion / Arches)
.158 .158 .158 .158 .059 .059 .059 .059 **.025** .025 LDGV age distribution
.025 .010 .010 .010 .004 .004 .004 .004 .002
.002 .002 .000 .000 .000
.161 .161 .161 .161 .043 .043 .043 .043 .025 .025 LDGT1 age distribution
.025 .018 .018 .018 .010 .010 .010 .010 .004 .004
.004 .001 .001 .001 .000
.000 **.228** **.228** **.228** .049 .049 .049 .049 .026 .026 LDGT2 age distribution
.026 .011 .011 .011 .002 **.002** **.002** **.002** **.000** **.000**
.000 **.000** **.000** **.000** **.000**
.183 .183 **.183** **.183** .050 .050 .050 .050 **.022** **.022** HDGV age distribution
.022 **.000** **.000** **.000** **.000** **.000** **.000** **.000** **.000** **.000**
.000 **.000** **.000** **.000** **.000**
.158 **.158** .158 **.158** .059 .059 .059 .059 .025 .025 LDDV age distribution
.025 .010 .010 .010 .004 .004 .004 .004 .004 **.002**
.002 **.002** **.000** **.000** **.000**
.161 .161 .161 .161 .043 .043 .043 .043 .025 **.025** LOOT age distribution
.025 .018 .018 .018 .010 .010 .010 .010 .004 .004
.004 .001 .001 .001 .000
.147 .147 .147 .147 **.088** **.088** **.088** **.088** .020 .020 HDDV age distribution
.020 .000 .000 .000 .000 .000 .000 .000 .000 .000
.000 .000 .000 .000 .000
.100 .100 .100 .100 .100 .100 .100 .100 .050 .050 MC
.050 .050 .000 .000 .000 .000 .000 .000 .000 .000
.000. .000 .000 .
97 1 080 060 RLFLAG refueling emissions control model.
SHEN Winter. 8 34. 53. 09.0 09.0 92 1 1 1 1 Local Area Paranater record
1 99 35.0 44.0 20.6 27.3 20.6 01 Scenario description record
.00 .06 .12 .31 .10 133. Additional correction factors

1111x111111 nrrrr1r111rr0aIIII,at u, ii, asIIIIII,iiiI, IIIIIIaIIIIIIIII5,5iiiItiIII

Gasoline Detergent Additive Regulations (1994).

-M154 Warning:

+ Refueling emissions for LDGV and LDGT after 1998
model year have been reduced as a result of the
Onboard Refueling Vapor Recovery Regulations (1994).

OSHEN Winter.

Minimum Temp: 34. (F) Maximum Temp: 53. (F)
Period 1 RVP: 9.0 Period 2 RVP: 9.0 Period 2 Yr: 1992

OVOC HC emission factors include evaporative HC emission factors.

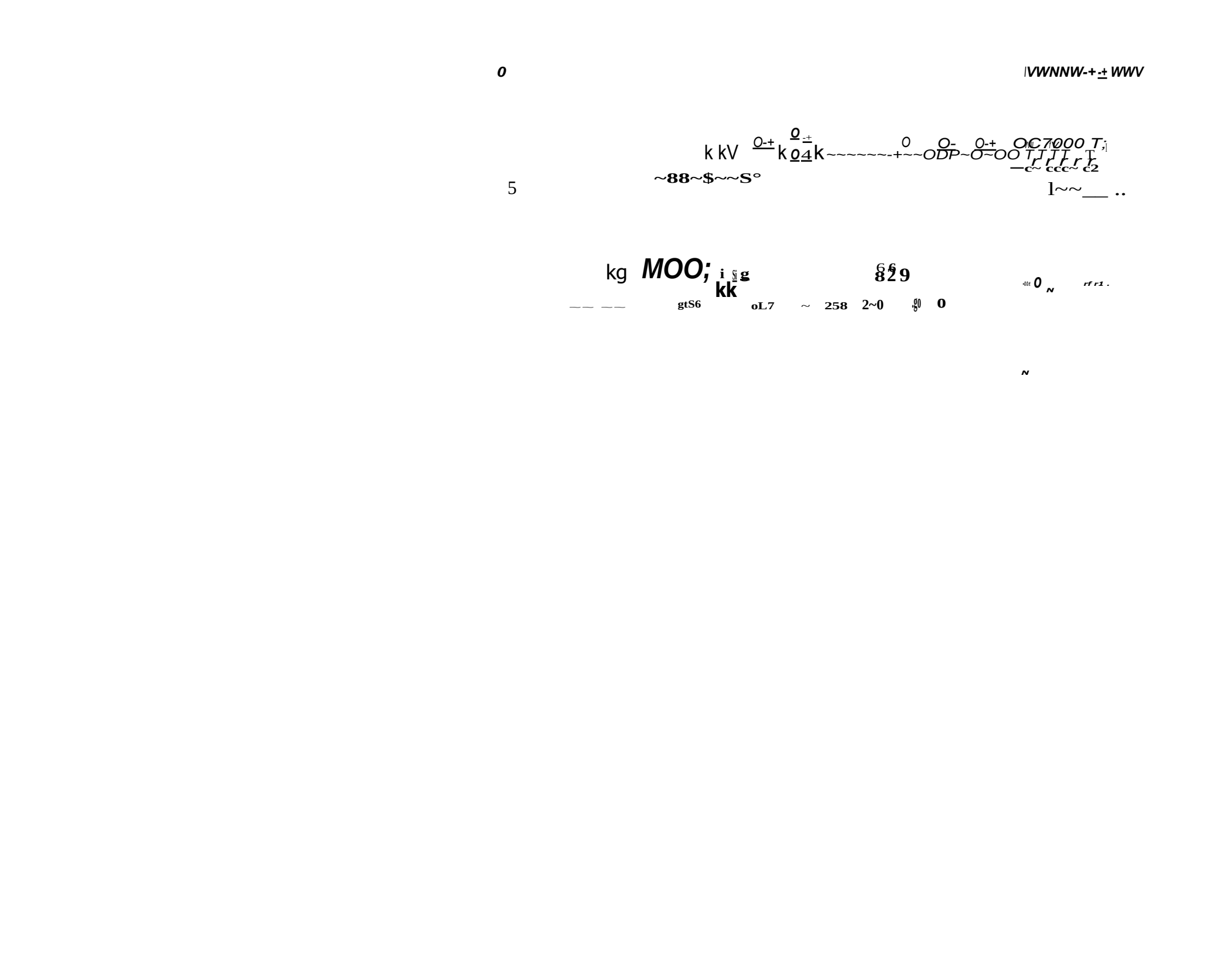
0

OEmission factors are as of Jan. 1st of the indicated calendar year.

OUser supplied veh registration distributions.

OCal. Year: 1999 Region: Low Altitude: 500. Ft.
I/M Program: No Ambient Temp: 47.9 / 47.9 / 47.9 F
Anti-tam. Program: No Operating Mode: 20:6 / 27.3 / 20.6
'Reformulated Gas: No
Absolute Humidity:133.00 AC (DB / WB): 0.0 (85.0 / 75.0)

OVeh. *Type:*	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
+										
Veh. Spd.:	35.0	35.0	35.0		35.0	35.0	35.0	35.0	35.0	
VMT **Mix**:	0.701	0.138	0.106		0.008	0.000	0.003	0.016	0.028	
Ext. Load:	0.060	0.120	0.310							
Trlr Tow:	0.100	0.100	0.100							
OComposite Emission Factors (Gm/Mile)										
VOC HC:	0.87	1.18	1.15	1.17	0.98	0.30	0.44	1.30	2.06	0.99
Exhst HC:	0.73	1.02	1.00	1.02	0.71	0.30	0.44	1.30	1.67	0.84
Evap. HC:	0.05	0.06	0.05	0.05	0.10				0.24	0.06
Refuel HC:	0.03	0.04	0.04	0.04	0.11.					0.03
Runing HC:	0.05	0.04	0.04	0.04	0.04					0.04
Rsting HC:	0.02	0.02	0.01	0.01	0.01				0.15	0.02
Exhst CO:	11.51	16.36	16.45	16.40	9.89	0.00	0.88	5.84	14.45	12.65
Exhst NOx:	0.86	1.04	1.18	1.10	4.43	0.00	1.13	7.99	0.95	1.06
Oldie Emission Factors (Gm/Hr)										
VOCId HC:	14.71	20.28	19.49	19.94	15.09	0.00	3.81	11.38	32.23	16.39
Idle CO:	260.04	339.14	327.83	334.22	156.39	0.00	12.72	84.12	493.23	280.28
Idle NOx:	3.04	3.81	4.40	4.07	'.27	0.00	5.67	40.01	2.06	3.91



WARNING: According to historical records
there are no class 28 Heavy Duty Diesel vehicles for model years before 1981 or Light H Duty Diesel vehicles after 1976. PART5 will always assume 0.0 registration for these vehicles during those periods.

PART5 Revised 02-24-95
Part 5 : Shenaidoeh NP

User supplied veh miles traveled mixture , veh registration distrituticns.
SHEN Annual PARTS Run
Particle Size Cutoff 10.00 Microns
Cat. Year: 1999
Altitude: 500. Ft.
IM Program: No
Driving: Region:
Cruise RFG:No Law

Veh. Type: LDGV	LDGT1	LDGT2	IDGV	MC	LDDV	L00T	2BIDDV	LIDOV	MIDOV	HH)DV	BUSES	ALL Veh.	Transit &ses**	CBD
Veh. Speeds: 35.0 35.0		35:x	= 35.0	35:'8	$:0	= 35.0	35.0	35.0	35.0	35.0	35.0	35.0	18.5	10.6
VMT Mix: 0.7010	0.1380	0.1060	0.0080	0.0280	0.0000	0.0030	0.0040	0.0040	0.0040	0.0000	0.0040			
Carposite Emission Factors (g/mi)														
Exhaust PM:	0.012	0.017	0.017	0.045	0.020	0.000	0.150	0.118	0.853	0.302	0.000	0.235	0.020	0.292	0.699
Brake:	0.013	0.013	0.013	0.013	0.013	0.000	0.013	0.013	0.013	0.013	0.000	0.013	0.013	O. M 3	0. fl3
Tire:	0.008	0.008	0.008	0.012	0.004	0.000	0.008	0.008	0.012	0.012	0.000	0.008	0.03	0.03	0.08
Total PM:	0.055	0.067	0.067	0.118	0.046	0.000	0.208	0.199	0.965	0.445	0.000	0.392	0.066	0.538	0.993

Fugitive Dust: lkpaved Roads Fleet Average 271.45 g/mi (as calculated in AP42 VOL 1 9/88)*
Paved Roads Fleet Average 1.04 g/mi (as calculated in draft AP42 Vol 13/93)*
Unpaved Roads Fleet Average 271.25 g/mi (as calculated in AP42 Vol 19/88, miss tailpipe and tire-weer emissions)**
Paved Roads Fleet Average 0.84 glad (as calculated in draft AP42 Vol 13/93, minx tailpipe ad tire-weer emissions)**

* Includes fleet average tailpipe, tire-weer and brake-wear emissions.
** Includes fleet average brake-wear emissiens.

Paved Road Silt: 0.10 (g/m' 2)
Unpaved Silt: 4.3%
Precipitation Days: 119 >0.01 in. (per year)

Fleet average vehicle weight: 6000
Fleet average naber of wheels: 4

Veh. Type: LDGV	LDGT1	LDGT2	HDGV	MC	LDDV	LDDT	2BIDOV	LIDDV	MIDDV	HH70V	BUSES	All Veh.	Transit Buses**	CBD Buses**
Total Idle (g/hr) : *	*	*	*	*	*	*	1.181	5.285	1.237	0.000	1.214	*	1.214	1.214
Gas. S02: (g/mi) : 0.078	0.103	0.103	0.170	0.033	0.000	0.129	0.211	0.303	0.410	0.000	0.474	0.088	0.782	0.949

* Missing ata
** Not included in ALL Veh.

Appendix D

Relevant Virginia Air Regulations

COMMONWEALTH OF VIRGINIA
STATE AIR POLLUTION CONTROL BOARD
REGULATIONS FOR THE CONTROL AND ABATEMENT OF AIR POLLUTION

9 VAC 5 CHAPTER 40.
EXISTING STATIONARY SOURCES.

PART 11.
Emission Standards.

ARTICLE 40.
Emission Standards For Open Burning (Rule 4-40).

9 VAC 5-40-5600. Applicability.

A. Except as provided in subsection C of this section, the provisions of this article apply to any person who permits or engages in open burning or who permits or engages in burning using special incineration devices.

B. The provisions of this article apply throughout the Commonwealth of Virginia.

C. The provisions of this article do not apply to such an extent as to prohibit the burning of leaves by persons on property where they reside if the local governing body of the county, city or town in which such persons reside has enacted an otherwise valid ordinance (under the provisions of § 10.1-1308 of the Virginia Air Pollution Control Law) regulating such burning in all or any part of the locality.

9 VAC 5-40-5610. Definitions.

A. For the purpose of these regulations and subsequent amendments or any orders issued by the board, the words or terms shall have the meaning given them in subsection C of this section.

B. As used in this article, all terms not defined here shall have the meaning given them in 9 VAC 5 Chapter 10 (9 VAC 5-10-10 et seq.), unless otherwise required by context.

C. Terms defined:

"Automobile graveyard" means any lot or place which is exposed to the weather and upon which more than five motor vehicles of any kind, incapable of being operated, and which it would not be economically practical to make operative, are placed, located or found.

"Built-up area" means any area with a substantial portion covered by industrial, commercial or residential buildings.

"Clean burning waste" means waste which does not produce emissions of greater than 40% opacity when burned and which is not prohibited to be burned under this article.

"Commercial waste" means all waste generated by establishments engaged in business operations. This category includes, but is not limited to, waste resulting from the operation of stores, markets, office buildings, restaurants and shopping centers.

"Construction waste" means solid waste which is produced or generated during construction of structures. Construction waste consists of lumber, wire, sheetrock, broken brick, shingles, glass, pipes, concrete, and metal and plastics if the metal or plastics are a part of the materials of construction or empty containers for such materials. Paints, coatings, solvents, asbestos, any liquid, compressed gases or semi-liquids, and garbage are not construction wastes and the disposal of such materials shall be in accordance with the regulations of the Virginia Waste Management Board.

"Debris waste" means stumps, wood, brush, and leaves from land clearing operations.

"Demolition waste" means that solid waste which is produced by the destruction of structures and their foundations and includes the same materials as construction waste.

"Garbage" means rotting animal and vegetable matter accumulated by a household in the course of ordinary day-to-day living.

"Hazardous waste" means refuse or combination of refuse which, because of its quantity, concentration or physical, chemical or infectious characteristics may:

a. Cause or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating illness; or

b. Pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed, or

otherwise managed.

"Household refuse" means waste material and trash normally accumulated by a household in the course of ordinary day-to-day living.

"Industrial waste" means all waste generated on the premises of manufacturing and industrial operations such as, but not limited to, those carried on in factories, processing plants, refineries, slaughter houses, and steel mills.

"Junk" means old or scrap copper, brass, rope, rags, batteries, paper, trash, rubber, debris, waste, or junked, dismantled, or wrecked automobiles, or parts thereof, iron, steel, and other old or scrap ferrous or nonferrous material.

"Junkyard" means an establishment or place of business which is maintained, operated, or used for storing, keeping, buying, or selling junk, or for the maintenance or operation of an automobile graveyard, and the term shall include garbage dumps and sanitary fills.

"Landfill" means a sanitary landfill, an industrial waste landfill, or a construction/demolition/debris landfill. See Part I (9 VAC 20-80-10 et seq.) of 9 VAC 20 Chapter 80 (Solid Waste Management Regulations) for further definitions of these terms.

"Local landfill" means any landfill located within the jurisdiction of a local government.

"Open burning" means the burning of any matter in such a manner that the products resulting from combustion are emitted directly into the atmosphere without passing through a stack, duct or chimney.

"Open pit incinerator" means a device used to burn waste for the primary purpose of reducing the volume by removing combustible matter. Such devices function by directing a curtain of air at an angle across the top of a trench or similarly enclosed space, thus reducing the amount of combustion by-products emitted into the atmosphere. The term also includes trench burners, air curtain destructors and over draft incinerators.

"Refuse" means trash, rubbish, garbage and other forms of solid or liquid waste, including, but not limited to, wastes resultant from residential, agricultural, commercial, industrial, institutional, trade, construction, land clearing, forest management and emergency operations.

"Salvage operation" means any operation consisting of a business, trade or industry participating in salvaging or reclaiming any product or material, such as, but not limited to, reprocessing of used motor oils, metals, chemicals, shipping containers or drums, and specifically including automobile graveyards and junkyards.

"Sanitary landfill" means an engineered land burial facility for the disposal of

household waste which is so located, designed, constructed, and operated to contain and isolate the waste so that it does not pose a substantial present or potential hazard to human health or the environment. A sanitary landfill also may receive other types of solid wastes, such as commercial solid waste, nonhazardous sludge, hazardous waste from conditionally exempt small quantity generators, and nonhazardous industrial solid waste. See Part I (9 VAC 20-80-10 et seq.) of 9 VAC 20 Chapter 80 (Solid Waste Management Regulations) for further definitions of these terms.

"Smoke" means small gas-borne particulate matter consisting mostly, but not exclusively, of carbon, ash and other material in concentrations sufficient to form a visible plume.

"Special incineration device" means a pit incinerator, conical or teepee burner, or any other device specifically designed to provide good combustion performance.

9 VAC 5-40-5620. Open burning prohibitions.

A. No owner or other person shall cause or permit open burning of refuse or use of special incineration devices except as provided in 9 VAC 5-40-5630.

B. No owner or other person shall cause or permit open burning or the use of a special incineration device for disposal of rubber tires, asphaltic materials, crankcase oil, impregnated wood or other rubber or petroleum based materials except when conducting bona fide fire fighting instruction at fire fighting training schools having permanent facilities.

C. No owner or other person shall cause or permit open burning or the use of a special incineration device for disposal of hazardous waste or containers for such materials.

D. No owner or other person shall cause or permit open burning or the use of a special incineration device for the purpose of a salvage operation or for the disposal of commercial/industrial waste.

E. Open burning or the use of special incineration devices permitted under the provisions of this article does not exempt or excuse any owner or other person from the consequences, liability, damages or injuries which may result from such conduct; nor does it excuse or exempt any owner or other person from complying with other applicable laws, ordinances, regulations and orders of the governmental entities having jurisdiction, even though the open burning is conducted in compliance with this article. In this regard special attention should be directed to § 10.1-1142 of the Code of Virginia, which is enforced by the Department of Forestry.

F. With regard to the provisions of subsection E of this section, special attention should also be directed to the regulations of the Virginia Waste Management

Board. No disposal of waste by open burning or transportation of waste to be disposed of by open burning shall take place in violation of the regulations of the Virginia Waste Management Board.

G. Upon declaration of an alert, warning or emergency stage of an air pollution episode as described in 9 VAC 5 Chapter 70 (9 VAC 5-70-10 et seq.) or when deemed advisable by the board to prevent a hazard to, or an unreasonable burden upon, public health or welfare, no owner or other person shall cause or permit open burning or use of a special incineration device; and any in-process burning or use of special incineration devices shall be immediately terminated in the designated air quality control region.

9 VAC 5-40-5630. Permissible open burning.

Open burning or the use of special incineration devices is permitted in the following instances provided the provisions of subsections B through G of 9 VAC 5-40-5620 are met:

1. Upon the request of an owner or a responsible civil or military public official, the board may approve open burning or the use of special incineration devices under controlled conditions for the elimination of a hazard which constitutes a threat to the public health, safety or welfare and which cannot be remedied by other means consonant with the circumstances presented by the hazard. Such uses of open burning or the use of special incineration devices may include, but are not limited to, the following:

a. Destruction of deteriorated or unused explosives and munitions on government or private property when other means of disposal are not available.

b. Disposal of debris caused by floods, tornadoes, hurricanes or other natural disasters where alternate means of disposal are not economical or practical and when it is in the best interest of the citizens of the Commonwealth.

2. Open burning is permitted for training and instruction of government and public fire fighters under the supervision of the designated official and industrial in-house fire fighting personnel with clearance from the local fire fighting authority. The designated official in charge of the training shall notify and obtain the approval of the regional director prior to conducting the training exercise. Training schools where permanent facilities are installed for fire fighting instruction are exempt from this notification requirement.

3. Open burning or the use of special incineration devices is permitted for the destruction of classified military documents under the supervision of the designated official.

4. Open burning is permitted for camp fires or other fires that are used solely for recreational purposes, for ceremonial occasions, for outdoor noncommercial

preparation of food, and for warming of outdoor workers provided the materials specified in subsections B and C of 9 VAC 5-40-5620 are not burned.

5. In urban areas, open burning is permitted for the disposal of leaves and tree, yard and garden trimmings located on the premises of private property, provided that no regularly scheduled public or private collection service for such trimmings is available at the adjacent street or public road. In non-urban areas, open burning is permitted for the disposal of leaves and tree, yard and garden trimmings located on the premises of private property regardless of the availability of collection service for such trimmings.

6. Open burning is permitted for the disposal of household refuse by homeowners or tenants, provided that no regularly scheduled public or private collection service for such refuse is available at the adjacent street or public road.

7. Open burning is permitted for the destruction of any combustible liquid or gaseous material by burning in a flare or flare stack. Use of a flare or flare stack for the destruction of hazardous waste or commercial/industrial waste is allowed provided written approval is obtained from the board and the facility is in compliance with Article 3 (9 VAC 5-40-160 et seq.) of this chapter and Article 3 (9 VAC 5-50-160 et seq.) of 9 VAC 5 Chapter 50. Permits issued under 9 VAC 5 Chapter 80 (9 VAC 5-80-10 et seq.) may be used to satisfy the requirement for written approval.

8. Open burning or the use of special incineration devices is permitted for disposal of clean burning construction waste, debris waste, and demolition waste resulting from property maintenance, from the development or modification of roads and highways, parking areas, railroad tracks, pipelines, power and communication lines, buildings or building areas, sanitary landfills, or from any other clearing operations. Buildings which have not been demolished may be burned only as provided in subdivision 2 of this section. Open burning for the purpose of such disposal is prohibited in the Northern Virginia Volatile Organic Compounds Emissions Control Area (see 9 VAC 5-20-206) during June, July, and August. As of January 1, 2000, open burning for the purpose of such disposal is prohibited in the Richmond and Hampton Roads Volatile Organic Compounds Emissions Control Areas (see 9 VAC 5-20-206) during June, July, and August.

9. Open burning is permitted for forest management and agriculture practices approved by the board (see 9 VAC 5-40-5631), provided the following conditions are met:

a. The burning shall be at least 1000 feet from any occupied building unless the occupants have given prior permission, other than a building located on the property on which the burning is conducted; and

b. The burning shall be attended at all times.

10. Open burning or the use of special incineration devices is permitted for disposal of clean burning construction waste, debris waste, and demolition waste on the site of local landfills provided that the burning does not take place on land that has been filled and covered so as to present an underground fire hazard due to the presence of methane gas. Open burning for the purpose of such disposal is prohibited in the Northern Virginia Volatile Organic Compounds Emissions Control Area (see 9 VAC 5-20-206) during June, July, and August. As of January 1, 2000, open burning for the purpose of such disposal is prohibited in the Richmond and Hampton Roads Volatile Organic Compounds Emissions Control Areas (see 9 VAC 5-20-206) during June, July, and August.

9 VAC 5-40-5631. Forest management and agricultural practices.

A. Open burning is permitted in accordance with subsections B and C of this section provided the provisions of subsections B through G of 9 VAC 5-40-5620 are met.

B. Open burning may be used for the following forest management practices provided the burning is conducted in accordance with the Department of Forestry's smoke management plan:

1. To reduce forest fuels and minimize the effect of wild fires.

2. To control undesirable growth of hardwoods.

3. To control disease in pine seedlings.

4. To prepare forest land for planting or seeding.

5. To create a favorable habitat for certain species.

6. To remove dead vegetation for the maintenance of railroad, highway and public utility right-of-way.

C. In the absence of other means of disposal, open burning may be used for the following agricultural practices:

1. To destroy undesirable vegetation.

2. To clear orchards and orchard prunings.

3. To destroy fertilizer and chemical containers.

4. To denature seed and grain which may no longer be suitable for agricultural purposes.

5. To prevent loss from frost or freeze damage.

6. To create a favorable habitat for certain species.

7. To destroy strings and plastic ground cover remaining in the field after being used in growing staked tomatoes.

9 VAC 5-40-5640. Repealed.

9 VAC 5-40-5641. Local ordinances on open burning.

A. General.

1. If the governing body of any locality wishes to adopt an ordinance governing open burning within its jurisdiction, the ordinance must first be approved by the board (see § 10.1-1321 B of the Code of Virginia).

2. In order to assist local governments in the development of ordinances acceptable to the board, the ordinance in subsection C of this section is offered as a model.

3. If a local government wishes to adopt the language of the model ordinance without changing any wording except that enclosed by parentheses, that government's ordinance shall be deemed to be approved by the board on the date of local adoption provided that a copy of the ordinance is filed with the department upon its adoption by the local government.

4. If a local government wishes to change any wording of the model ordinance aside from that enclosed by parentheses in order to construct a local ordinance, that government shall request the approval of the board prior to adoption of the ordinance by the local jurisdiction. A copy of the ordinance shall be filed with the department upon its adoption by the local government.

5. Local ordinances which have been approved by the board prior to April 1, 1996, remain in full force and effect as specified by their promulgating authorities.

B. Establishment and approval of local ordinances varying from the model.

1. Any local governing body proposing to adopt or amend an ordinance relating to open burning which differs from the model local ordinance in subsection C of this section shall first obtain the approval of the board for the ordinance or amendment as specified in subdivision A 4 of this section. The board in approving local ordinances will consider, but will not be limited to, the following criteria:

a. The local ordinance shall provide for intergovernmental cooperation and exchange of information.

b. Adequate local resources will be committed to enforcing the proposed local ordinance.

c. The provisions of the local ordinance shall be as strict as state regulations, except as provided for leaf burning in § 10.1-1308 of the Virginia Air Pollution Control Law.

d. If a waiver from any provision of Article 40 (9 VAC 5-40-5600 et seq.) of 9 VAC 5 Chapter 40 has been requested under 9 VAC 5-40-5640, the language of the ordinance shall achieve the objective of the provision from which the waiver is requested.

2. Approval of any local ordinance may be withdrawn if the board determines that the local ordinance is less strict than state regulations or if the locality fails to enforce the ordinance.

3. If a local ordinance must be amended to conform to an amendment to state regulations, such local amendment will be made within six months of the effective date of the amended state regulations.

4. Local ordinances are a supplement to state regulations. Any provisions of local ordinances which have been approved by the board and are more strict than state regulations shall take precedence over state regulations within the respective locality. If a locality fails to enforce its own ordinance, the board reserves the right to enforce state regulations.

5. A local governing body may grant a variance to any provision of its air pollution control ordinance(s) provided that:

a. A public hearing is held prior to granting the variance;

b. The public is notified of the application for a variance by notice in at least one major newspaper of general circulation in the affected locality at least 30 days prior to the date of the hearing; and

c. The variance does not permit any owner or other person to take action that would result in a violation of any provision of state regulations unless a variance is granted by the board. The public hearings required for the variances to the local ordinance and state regulations may be conducted jointly as one proceeding.

6. 9 VAC 5-20-60 shall not apply to local ordinances concerned solely with open burning.

C. Model Ordinance.

ORDINANCE NO. (000)

Section (000-1). Title. This article shall be known as the (local jurisdiction) Ordinance for the Regulation of Open Burning.

Section (000-2). Purpose. The purpose of this article is to protect public health, safety, and welfare by regulating open burning within (local jurisdiction) to achieve and maintain, to the greatest extent practicable, a level of air quality that will provide comfort and convenience while promoting economic and social development. This article is intended to supplement the applicable regulations promulgated by the State Air Pollution Control Board and other applicable regulations and laws.

Section (000-3). Definitions. For the purpose of this article and subsequent amendments or any orders issued by (local jurisdiction), the words or phrases shall have the meaning given them in this section.

A. "Automobile graveyard" means any lot or place which is exposed to the weather and upon which more than five motor vehicles of any kind, incapable of being operated, and which it would not be economically practical to make operative, are placed, located or found.

B. "Clean burning waste" means waste which does not produce dense smoke when burned and is not prohibited to be burned under this ordinance.

C. "Construction waste" means solid waste which is produced or generated during construction of structures. Construction waste consists of lumber, wire, sheetrock, broken brick, shingles, glass, pipes, concrete, and metal and plastics if the metal or plastics are a part of the materials of construction or empty containers for such materials. Paints, coatings, solvents, asbestos, any liquid, compressed gases or semi-liquids, and garbage are not construction wastes and the disposal of such materials must be in accordance with the regulations of the Virginia Waste Management Board.

D. "Debris waste" means stumps, wood, brush, and leaves from land clearing operations.

E. "Demolition waste" means that solid waste which is produced by the destruction of structures and their foundations and includes the same materials as construction waste.

F. "Garbage" means rotting animal and vegetable matter accumulated by a household in the course of ordinary day to day living.

G. "Hazardous waste" means refuse or combination of refuse which, because of its quantity, concentration or physical, chemical or infectious characteristics may:

1. Cause or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating illness; or

2. Pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed, or otherwise managed.

H. "Household refuse" means waste material and trash normally accumulated by a household in the course of ordinary day to day living.

I. "Industrial waste" means all waste generated on the premises of manufacturing and industrial operations such as, but not limited to, those carried on in factories, processing plants, refineries, slaughter houses, and steel mills.

J. "Junkyard" means an establishment or place of business which is maintained, operated, or used for storing, keeping, buying, or selling junk, or for the maintenance or operation of an automobile graveyard, and the term shall include garbage dumps and sanitary fills.

K. "Landfill" means a sanitary landfill, an industrial waste landfill, or a construction/demolition/debris landfill. See Solid Waste Management Regulations (9 VAC 20-80-10 et seq.) for further definitions of these terms.

L. "Local landfill" means any landfill located within the jurisdiction of a local government.

M. "Open burning" means the burning of any matter in such a manner that the products resulting from combustion are emitted directly into the atmosphere without passing through a stack, duct or chimney.

N. "Open pit incinerator" means a device used to bum waste for the primary purpose of reducing the volume by removing combustible matter. Such devices function by directing a curtain of air at an angle across the top of a trench or similarly enclosed space, thus reducing the amount of combustion byproducts emitted into the atmosphere. The term also includes trench burners, air curtain destructors and over draft incinerators.

O. "Refuse" means trash, rubbish, garbage and other forms of solid or liquid waste, including, but not limited to, wastes resulting from residential, agricultural, commercial, industrial, institutional, trade, construction, land clearing, forest management and emergency operations.

P. "Salvage operation" means any operation consisting of a business, trade or industry participating in salvaging or reclaiming any product or material, such as, but not limited to, reprocessing of used motor oils, metals, chemicals, shipping containers or drums, and specifically including automobile graveyards and junkyards.

Q. "Sanitary landfill" means an engineered land burial facility for the disposal of household waste which is so located, designed, constructed, and operated to contain and

isolate the waste so that it does not pose a substantial present or potential hazard to human health or the environment. A sanitary landfill also may receive other types of solid wastes, such as commercial solid waste, nonhazardous sludge, hazardous waste from conditionally exempt small quantity generators, and nonhazardous industrial solid waste. See Solid Waste Management Regulations (9 VAC 20-80-10 et seq.) for further definitions of these terms.

R. "Smoke" means small gas-borne particulate matter consisting mostly, but not exclusively, of carbon, ash and other material in concentrations sufficient to form a visible plume.

S. "Special incineration device" means a pit incinerator, conical or teepee burner, or any other device specifically designed to provide good combustion performance.

Section (000-4). Prohibitions on open burning.

A. No owner or other person shall cause or permit open burning or the use of a special incineration device for disposal of refuse except as provided in this ordinance.

B. No owner or other person shall cause or permit open burning or the use of a special incineration device for disposal of rubber tires, asphaltic materials, crankcase oil, impregnated wood or other rubber or petroleum based materials except when conducting bona fide fire fighting instruction at fire fighting training schools having permanent facilities.

C. No owner or other person shall cause or permit open burning or the use of a special incineration device for disposal of hazardous waste or containers for such materials.

D. No owner or other person shall cause or permit open burning or the use of a special incineration device for the purpose of a salvage operation or for the disposal of commercial/industrial waste.

E. Open burning or the use of special incineration devices permitted under the provisions of this ordinance does not exempt or excuse any owner or other person from the consequences, liability, damages or injuries which may result from such conduct; nor does it excuse or exempt any owner or other person from complying with other applicable laws, ordinances, regulations and orders of the governmental entities having jurisdiction, even though the open burning is conducted in compliance with this ordinance. In this regard special attention should be directed to § 10.1-1142 of the Forest Fire Law of Virginia, the regulations of the Virginia Waste Management Board, and the State Air Pollution Control Board's Regulations for the Control and Abatement of Air Pollution.

F. Upon declaration of an alert, warning or emergency stage of an air pollution episode as described in 9 VAC 5 Chapter 70 (9 VAC 5-70-10 et seq.) or when deemed

advisable by the State Air Pollution Control Board to prevent a hazard to, or an unreasonable burden upon, public health or welfare, no owner or other person shall cause or permit open burning or use of a special incineration device; and any in process burning or use of special incineration devices shall be immediately terminated in the designated air quality control region.

Section (000-5). Exemptions. The following activities are exempted to the extent covered by the State Air Pollution Control Board's Regulations for the Control and Abatement of Air Pollution:

A. Open burning for training and instruction of government and public fire fighters under the supervision of the designated official and industrial in-house fire fighting personnel;

B. Open burning for camp fires or other fires that are used solely for recreational purposes, for ceremonial occasions, for outdoor noncommercial preparation of food, and for warming of outdoor workers;

C. Open burning for the destruction of any combustible liquid or gaseous material by burning in a flare or flare stack;

D. Open burning for forest management and agriculture practices approved by the State Air Pollution Control Board; and

E. Open burning for the destruction of classified military documents.

Section (000-6). Permissible open burning.

A. Open burning is permitted for the disposal of leaves and tree, yard and garden trimmings located on the premises of private property, provided that the conditions are met:

1. The burning takes place on the premises of the private property; (and)

2. The location of the burning is not less than 300 feet from any occupied building unless the occupants have given prior permission, other than a building located on the property on which the burning is conducted(; and

3. No regularly scheduled public or private collection service for such trimmings is available at the adjacent street or public road').

B. Open burning is permitted for the disposal of household refuse by

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'This provision shall be included in ordinances for urban areas. It may be included in ordinances for non-urban areas.

homeowners or tenants, provided that the following conditions are met:

1. The burning takes place on the premises of the dwelling;

2. Animal carcasses or animal wastes are not burned;

3. Garbage is not burned; (and)

4. The location of the burning is not less than 300 feet from any occupied building unless the occupants have given prior permission, other than a building located on the property on which the burning is conducted(; and

5. No regularly scheduled public or private collection service for such *refuse is available at the adjacent street or public road [2]).*

C. Open burning is permitted for disposal of debris waste resulting from property maintenance, from the development or modification of roads and highways, parking areas, railroad tracks, pipelines, power and communication lines, buildings or building areas, sanitary landfills, or from any other clearing operations which may be approved by (designated local official), provided the following conditions are met:

1. All reasonable effort shall be made to minimize the amount of material burned, with the number and size of the debris piles approved by (designated local official);

2. The material to be burned shall consist of brush, stumps and similar debris waste and shall not include demolition material;

3. The burning shall be at least 500 feet from any occupied building unless the occupants have given prior permission, other than a building located on the property on which the burning is conducted;

4. The burning shall be conducted at the greatest distance practicable from highways and air fields,

5. The burning shall be attended at all times and conducted to ensure the best possible combustion with a minimum of smoke being produced;

6. The burning shall not be allowed to smolder beyond the minimum period of time necessary for the destruction of the materials; and

7. The burning shall be conducted only when the prevailing winds are away from any city, town or built-up area.

This provision shall be included in ordinances for urban areas. It may be included in ordinances for non-urban areas.

D. Open burning is permitted for disposal of debris on the site of local landfills provided that the burning does not take place on land that has been filled and covered so as to present an underground fire hazard due to the presence of methane gas provided that the following conditions are met:

1. The burning shall take place on the premises of a local sanitary landfill which meets the provisions of the regulations of the Virginia Waste Management Board;

2. The burning shall be attended at all times;

3. The material to be burned shall consist only of brush, tree trimmings, yard and garden trimmings, clean burning construction waste, clean burning debris waste, or clean burning demolition waste;

4. All reasonable effort shall be made to minimize the amount of material that is burned;

5. No materials may be burned in violation of the regulations of the Virginia Waste Management Board or the State Air Pollution Control Board. The exact site of the burning on a local landfill shall be established in coordination with the regional director and (designated local official); no other site shall be used without the approval of these officials. (Designated local official) shall be notified of the days during which the burning will occur.

(E. Sections 000-6.A. through D. notwithstanding, no owner or other person shall cause or permit open burning or the use of a special incineration device during June, July, or August. [3])

Section (000-7). Permits.

A. When open burning of debris waste (Section 000-6.C.) or open burning of debris on the site of a local landfill (Section 000-6.D.) is to occur within (local jurisdiction), the person responsible for the burning shall obtain a permit from (designated local official) prior to the burning. Such a permit may be granted only after confirmation by (designated local official) that the burning can and will comply with the provisions of this ordinance and any other conditions which are deemed necessary to ensure that the burning will not endanger the public health and welfare or to ensure compliance with any applicable provisions of the State Air Pollution Control Board's Regulations for the Control and Abatement of Air Pollution. The permit may be issued for each occasion of burning or for a specific period of time deemed appropriate by (designated local official).

[3] This provision shall be included in ordinances for jurisdictions within volatile organic compound emissions control areas. It may be included in ordinances for jurisdictions outside these areas.

B. Prior to the initial installation (or reinstallation, in cases of relocation) and operation of special incineration devices, the person responsible for the burning shall obtain a permit from (designated local official), such permits to be granted only after confirmation by (designated local official) that the burning can and will comply with the applicable provisions in Regulations for the Control and Abatement of Air Pollution and that any conditions are met which are deemed necessary by (designated local official) to ensure that the operation of the devices will not endanger the public health and welfare. Permits granted for the use of special incineration devices shall at a minimum contain the following conditions:

1. All reasonable effort shall be made to minimize the amount of material that is burned. Such efforts shall include, but are not limited to, the removal of pulpwood, sawlogs and firewood.

2. The material to be burned shall consist of brush, stumps and similar debris waste and shall not include demolition material.

3. The burning shall be at least 300 feet from any occupied building unless the occupants have given prior permission, other than a building located on the property on which the burning is conducted; burning shall be conducted at the greatest distance practicable from highways and air fields. If (designated local official) determines that it is necessary to protect public health and welfare, he may direct that any of the above cited distances be increased.

4. The burning shall be attended at all times and conducted to ensure the best possible combustion with a minimum of smoke being produced. Under no circumstances should the burning be allowed to smolder beyond the minimum period of time necessary for the destruction of the materials.

5. The burning shall be conducted only when the prevailing winds are away from any city, town or built-up area.

6. The use of special incineration devices shall be allowed only for the disposal of debris waste, clean burning construction waste, and clean burning demolition waste.

7. Permits issued under this subsection shall be limited to a specific period of time deemed appropriate by (designated local official).

(C. An application for a permit under Section 000-7.A. or 000-7.B. shall be accompanied by a processing fee of $-.[4])

`The fee stipulation in this section is optional at the discretion of the jurisdiction.

Section (000-8). Penalties for violation.

A. Any violation of this ordinance is punishable as a Class I misdemeanor. (See § 15.1-901 of the Code of Virginia.)

B. Each separate incident may be considered a new violation.

9 VAC 5-40-5645. Waivers.

A. A waiver from any provision of this article may be granted by the board for any person or geographic area provided that satisfactory demonstration is made that another state or local government entity has in effect statutory provisions or other enforceable mechanisms that will achieve the objective of the provision from which the waiver is granted.

B. Demonstrations made pursuant to subsection A of this section should, at a minimum, meet the following criteria:

1. The demonstration should show that the statutory provisions or other enforceable mechanisms essentially provide the same effect as the provision from which the waiver is granted.

2. That the governmental entity has the legal authority to enforce the statutory provisions or enforceable mechanisms.

C. Waivers under subsection A of this section shall be executed through a . memorandum of understanding between the board and affected governmental entity and may include such terms and conditions as may be necessary to ensure that the objectives of this article are met by the waiver.

D. A waiver from any applicable provision of this article may be granted by the board for any locality which has lawfully adopted an ordinance in accordance with 9 VAC 5-40-5641.

HISTORICAL NOTES:

Derived from: Rule 4-40 of Part IV or VR 120-01 (§ 120-04-4001 through § 120-04-4005)

Effective Date: March 17, 1972
Promulgated: March 17, 1972
Amended: October 5, 1973
Amended: December 20, 1974
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Amended: January 1, 1985

Amended: January 1, 1988
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Amended: July 1, 1997

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COMMONWEALTH OF VIRGINIA
STATE AIR POLLUTION CONTROL BOARD
REGULATIONS FOR THE CONTROL AND ABATEMENT OF AIR POLLUTION

9 VAC 5 CHAPTER 80.
PERMITS FOR STATIONARY SOURCES.

Part I.
Permits for New and Modified Sources.

9 VAC 5-80-10. Permits - new and modified stationary sources.

A. Applicability.

1. Except as provided in subsection A 3 of this section, the provisions of this section apply to the construction, reconstruction, relocation or modification of any stationary source.

2. The provisions of this section apply throughout the Commonwealth of Virginia.

3. The provisions of this section do not apply to any facility exempted by 9 VAC 5-80-11. Exemption from the requirement to obtain a permit under this section shall not relieve any owner of the responsibility to comply with any other applicable provisions of these regulations or any other applicable regulations, laws, ordinances and orders of the governmental entities having jurisdiction. Any facility which is exempt from the provisions of this section based on the criteria in 9 VAC 5-80-11 but which exceeds the applicability thresholds for any emission standard in 9 VAC 5 Chapter 40 (9 VAC 5-40-10 et seq.) if it were an existing source or any standard of performance in 9 VAC 5 Chapter 50 (9 VAC 5-50-10 et seq.) shall be subject to the more restrictive of the provisions of either the emission standard in 9 VAC 5 Chapter 40 (9 VAC 5-40-10 et seq.) or the standard of performance in 9 VAC 5 Chapter 50 (9 VAC 5-50-10 et seq.).

4. Where a source is constructed or modified in contemporaneous increments which individually are not subject to approval under this section and which are not part of a program of construction or modification in planned incremental phases approved by the board, all such increments shall be added together for determining the applicability of this section. An incremental change is contemporaneous with the particular change only if it occurs between the date five years before construction on the particular change commences and the date that the increase from the particular change occurs.

5. Unless specified otherwise, the provisions of this section are

applicable to various sources as follows:

a. Provisions referring to "sources," "new or modified sources, or both" or "stationary sources" are applicable to the construction, reconstruction or modification of all stationary sources (including major stationary sources and major modifications) and the emissions from them to the extent that such sources and their emissions are not subject to the provisions of Article 8 (9 VAC 5-80-1700 et seq.) of Part II of this chapter or 9 VAC 5-80-30.

b. Provisions referring to "major stationary sources" are applicable to the construction, reconstruction or modification of all major stationary sources.

c. In cases where the provisions of Article 8 (9 VAC 5-80-1700 et seq.) of Part II of this chapter or 9 VAC 5-80-30 conflict with those of this section, the provisions of Article 8 (9 VAC 5-80-1700 et seq.) of Part II of this chapter or 9 VAC 5-80-30 shall prevail.

B. Definitions.

1. For the purpose of these regulations and subsequent amendments or any orders issued by the board, the words or terms shall have the meaning given them in subsection B 3 of this section.

2. As used in this section, all terms not defined here shall have the meaning given them in 9 VAC 5 Chapter 10 (9 VAC 5-10-10 et seq.), unless otherwise required by context.

3. Terms defined.

"Allowable emissions" means the emission rate of a stationary source calculated by using the maximum rated capacity of the source (unless the source is subject to state and federally enforceable limits which restrict the operating rate or hours of operation, or both) and the most stringent of the following:

(1) Applicable emission standards;

(2) The emission limitation specified as a state and federally enforceable permit condition, including those with a future compliance date; and

(3) Any other applicable emission limitation, including those with a future compliance date.

"Begin actual construction" means initiation of permanent physical on-site construction of an emissions unit. This includes, but is not limited to, installation of building supports and foundations, laying of underground pipework, and construction of

permanent storage structures. With respect to a change in method of operation, this term refers to those on-site activities other than preparatory activities which mark the initiation of the change. With respect to the initial location of a portable facility, this term refers to the delivery of any portion of the portable facility to the site.

"Commence," as applied to the construction, reconstruction or modification of an emissions unit, means that the owner has all necessary preconstruction approvals or permits and has either:

(1) Begun, or caused to begin, a continuous program of actual on-site construction, reconstruction or modification of the unit, to be completed within a reasonable time; or

(2) Entered into binding agreements or contractual obligations, which cannot be canceled or modified without substantial loss to the owner, to undertake a program of actual construction, reconstruction or modification of the unit, to be completed within a reasonable time.

"Construction" means fabrication, erection or installation of an emissions unit.

"Emissions unit" means any part of a stationary source which emits or would have the potential to emit any air pollutant.

"Federally enforceable" means all limitations and conditions which are enforceable by the administrator, including those requirements developed pursuant to 40 CFR 60 and 61, requirements within the State Implementation Plan, and any permit requirements established pursuant to 40 CFR 52.21 or this chapter, including operating permits issued under an EPA-approved program that is incorporated into the State Implementation Plan and expressly requires adherence to any permit issued under such program.

"Fixed capital cost" means the capital needed to provide all the depreciable components.

"Major modification" means any modification defined as such in 9 VAC Article 8 (9 VAC 5-80-1700 et seq.) of Part II of this chapter or 9 VAC 5-80-30, as may apply.

"Major stationary source" means any stationary source which emits, or has the potential to emit, 100 tons or more per year of any air pollutant.

"Modification" means any physical change in, change in the method of operation of, or addition to, an emissions unit which increases the uncontrolled emission rate of any air pollutant emitted into the atmosphere by the unit or which results in the emission of any air pollutant into the atmosphere not previously emitted, except that

the following shall not, by themselves (unless previously limited by permit conditions), be considered modifications under this definition:

(1) Maintenance, repair and replacement which the board determines to be routine for a source type and which does not fall within the definition of reconstruction;

(2) An increase in the production rate of a unit, if that increase does not exceed the operating design capacity of that unit;

(3) An increase in the hours of operation;

(4) Use of an alternative fuel or raw material if, prior to the date any provision of these regulations becomes applicable to the source type, the emissions unit was designed to accommodate that alternative use. A unit shall be considered to be designed to accommodate an alternative fuel or raw material if provisions for that use were included in the final construction specifications; or

(5) The addition or use of any system or device whose primary function is the reduction of air pollutants, except when an emission control system is removed or is replaced by a system which the board considers to be less efficient.

"Modified source" means any stationary source (or portion of it), the modification of which commenced on or after March 17, 1972.

"Necessary preconstruction approvals or permits" means those - permits or approvals required under federal air quality control laws and regulations, and those air quality control laws and regulations which are part of the State Implementation Plan.

"New source" means any stationary source (or portion of it), the construction or relocation of which commenced on or after March 17, 1972; and any stationary source (or portion of it), the reconstruction of which commenced on or after December 10, 1976.

"Potential to emit" means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment, and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design only if the limitation or its effect on emissions is state and federally enforceable. Secondary emissions do not count in determining the potential to emit of a stationary source.

"Public comment period" means a time during which the public shall have the opportunity to comment on the new or modified source permit application

information (exclusive of confidential information), the preliminary review and analysis of the effect of the source upon the ambient air quality, and the preliminary decision of the board regarding the permit application.

"Reactivation" means beginning operation of an emissions unit that has been shut down.

"Reconstruction"

(1) . Means the replacement of an emissions unit or its components to such an extent that:

(a) The fixed capital cost of the new components exceeds 50% of the fixed capital cost that would be required to construct a comparable entirely new unit, and

(b) It is technologically and economically feasible to meet the applicable emission standards prescribed under these regulations.

(2) Any determination by the board as to whether a proposed replacement constitutes reconstruction shall be based on:

(a) The fixed capital cost of the replacements in comparison to the fixed capital cost of the construction of a comparable entirely new unit;

(b) The estimated life of the unit after the replacements compared to the life of a comparable entirely new unit;

(c) The extent to which the components being replaced cause or contribute to the emissions from the unit; and

(d) Any economic or technical limitations on compliance with applicable standards of performance which are inherent in the proposed replacements.

"Secondary emissions" means emissions which occur or would occur as a result of the construction, reconstruction, modification or operation of a stationary source, but do not come from the stationary source itself. For the purpose of this section, secondary emissions must be specific, well-defined, and quantifiable; and must impact upon the same general areas as the stationary source which causes the secondary emissions. Secondary emissions include emissions from any off site support facility which would not be constructed or increase its emissions except as a result of the construction or operation of the stationary source. Secondary emissions do not include any emissions which come directly from a mobile source, such as emissions from the tailpipe of a motor vehicle, from a train, or from a vessel.

"State enforceable" means all limitations and conditions which are enforceable by the board, including those requirements developed pursuant to 9 VAC 5-20-110, requirements within any applicable order or variance, and any permit requirements established pursuant to this chapter.

"Stationary source" means any building, structure, facility or installation which emits or may emit any air pollutant. A stationary source shall include all of the pollutant-emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control) except the activities of any vessel. Pollutant-emitting activities shall be considered as part of the same industrial grouping if they belong to the same "major group" (i.e., which have the same two-digit code) as described in the "Standard Industrial Classification Manual," as amended by the supplement (see 9 VAC 5-20-21).

"Uncontrolled emission rate" means the emission rate from a source when operating at maximum capacity without air pollution control equipment. Air pollutant control equipment includes control equipment which is not vital to its operation, except that its use enables the source to conform to applicable air pollution control laws and regulations. Annual uncontrolled emissions shall be based on the maximum annual rated capacity (based on 8760 hours of operation per year) of the source, unless the source is subject to state and federally enforceable permit conditions which limit the annual hours of operation. Enforceable permit conditions on the type or amount of material combusted or processed may be used in determining the uncontrolled emission rate of a source. Secondary emissions do not count in determining the uncontrolled emission rate of a stationary source.

C. General.

1. No owner or other person shall begin actual construction, reconstruction or modification of any of the following types of sources without first obtaining from the board a permit to construct and operate or to modify and operate such source:

a. Any stationary source; or

b. Any stationary source of hazardous air pollutants to which an emission standard prescribed under 9 VAC 5 Chapter 60 (9 VAC 5-60-10 et seq.) became applicable prior to the beginning of construction, reconstruction or modification. In the event that a new emission standard prescribed under 9 VAC 5 Chapter 60 (9 VAC 5-60-10 et seq.) becomes applicable after a permit is issued but prior to initial startup, a new permit must be obtained by the owner.

2. No owner or other person shall relocate any emissions unit subject to the provisions of 9 VAC 5-20-160 without first obtaining from the board a permit to relocate the unit.

3. No owner or other person shall reduce the outlet elevation of any stack or chimney which discharges any pollutant from an affected facility subject to the provisions of 9 VAC 5-20-160 without first obtaining a permit from the board.

4. The board may combine the requirements of and the permits for emissions units within a stationary source subject to 9 VAC 5-80-10, Article 8 (9 VAC 5-80-1700 et seq.) of Part II of this chapter, and 9 VAC 5-80-30 into one permit. Likewise the board may require that applications for permits for emissions units within a stationary source required by 9 VAC 5-80-10, Article 8 (9 VAC 5-80-1700 et seq.) of Part II of this chapter, and 9 VAC 5-80-30 be combined into one application.

D. Applications.

1. A single application is required identifying at a minimum each emissions point within the emissions unit subject to this section. The application shall be submitted according to procedures approved by the board. However, where several emissions units are included in one project, a single application covering all units in the project may be submitted. A separate application is required for each location.

2. For projects with phased development, a single application should be submitted covering the entire project.

3. Any application form, report, or compliance certification submitted to the board shall be signed by a responsible official. A responsible official is defined as follows:

a. For a business entity, such as a corporation, association or cooperative, a responsible official is either:

(1) The president, secretary, treasurer, or a vice president of the business entity in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the business entity; or

(2) A duly authorized representative of such business entity if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either (i) the facilities employ more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), or (ii) the authority to sign documents has been assigned or delegated to such representative in accordance with procedures of the business entity.

b. For a partnership or sole proprietorship, a responsible official is a general partner or the proprietor, respectively.

c. For a municipality, state, federal, or other public agency, a

responsible official is either a principal executive officer or ranking elected official. A principal executive officer of a federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

4. Any person signing a document under subsection D 3 above shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering and evaluating the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

5. As required under § 10.1-1321.1 of the Virginia Air Pollution Control Law, applications shall not be deemed complete unless the applicant has provided a notice from the locality in which the source is located or is to be located that the site and operation of the source are consistent with all local ordinances adopted pursuant to Chapter 11 (§ 15.1-427 et seq.) of Title 15.1 of the Code of Virginia.

E. Information required.

1. Each application for a permit shall include such information as may be required by the board to determine the effect of the proposed source on the ambient air quality and to determine compliance with the emission standards which are applicable. The information required shall include, but is not limited to, the following:

a. That specified on applicable permit forms furnished by the board. Any calculations shall include sufficient detail to permit assessment of the validity of such calculations. Completion of these forms serves as initial registration of new and modified sources; and

b. Any additional information or documentation that the board deems necessary to review and analyze the air pollution aspects of the source, including the submission of measured air quality data at the proposed site prior to construction, reconstruction or modification. Such measurements shall be accomplished using procedures acceptable to the board.

2. The above information and analysis shall be determined and presented according to procedures and using methods acceptable to the board.

F. Action on permit application.

1. Within 30 days after receipt of an application, the board shall notify

the applicant of the status of the application. The notification of the initial determination with regard to the status of the application shall be provided by the board in writing and shall include (i) a determination as to which provisions of this chapter are applicable, (ii) the identification of any deficiencies, and (iii) a determination as to whether the application contains sufficient information to begin application review. The determination that the application has sufficient information to begin review is not necessarily a determination that it is complete. Within 30 days after receipt of any additional information, the board shall notify the applicant of any deficiencies in such information. The date of receipt of a complete application for processing under subsection F 2 of this section shall be the date on which the board received all required information.

2. Processing time for a permit is normally 90 days following receipt of a complete application. Processing steps normally are as follows:

a. Completion of the preliminary review and analysis in accordance with subsection I of this section and the preliminary decision of the board. This step may constitute the final step if the provisions of subsection G of this section concerning public participation are not applicable;

b. When required, completion of the public participation requirements in subsection G of this section; and

c. Completion of the final review and analysis and the final decision of the board.

3. The board normally will take action on all applications after completion of the review and analysis, or expiration of the public comment period (and consideration of comments from that) when required, unless more information is needed. The board shall notify the applicant in writing of its decision on the application, including its reasons, and shall also specify the applicable emission limitations. These emission limitations are applicable during any emission testing conducted in accordance with subsection J of this section.

4. The applicant may appeal the decision pursuant to 9 VAC 5-20-90.

5. Within 5 days after notification to the applicant pursuant to subsection F 3 of this section, the notification and any comments received pursuant to the public comment period and public hearing shall be made available for public inspection at the same location as was the information in subsection G 5 a of this section.

G. Public participation.

1. No later than 15 days after receiving the initial determination notification required under subsection F 1 of this section, the applicant for a permit for a major stationary source or a major modification with a net emissions increase of 100 tons per year of any single pollutant shall notify the public of the proposed source as required

in subsection G 2 of this section.

2. The public notice required under this subsection shall be placed by the applicant in at least one newspaper of general circulation in the affected air quality control region. The notice shall be approved by the board and shall include, but not be limited to, the following:

a. The source name, location, and type;

b. The pollutants and the total quantity of each which the applicant estimates will be emitted, and a brief statement of the air quality impact of such pollutants;

c. The control technology proposed to be used at the time of the publication of the notice; and

d. The name and telephone number of a contact person, employed by the applicant, who can answer questions about the proposed source.

3. Upon a determination by the board that it will achieve the desired results in an equally effective manner, an applicant for a permit may implement an alternative plan for notifying the public as required in subsection G 2 of this section.

4. Prior to the decision of the board, permit applications as specified below shall be subject to a public comment period of at least 30 days. At the end of the public comment period, a public hearing shall be held in accordance with subsection G 5 of this section.

a. Applications for stationary sources of hazardous air pollutants as specified in subsection C 1 b of this section.

b. Applications for major stationary sources and major modifications with a net emissions increase of 100 tons per year of any single pollutant.

c. Applications for stationary sources which have the potential for public interest concerning air quality issues, as determined by the board. The identification of such sources shall be made using the following criteria:

(1) Whether the project is opposed by any person;

(2) Whether the project has resulted in adverse media;

(3) Whether the project has generated adverse comment through any public participation or governmental review process initiated by any other governmental agency; and

(4) Whether the project has generated adverse comment by a local official, governing body or advisory board.

d. Applications for stationary sources for which any provision of the permit is to be based upon a good engineering practice (GEP) stack height that exceeds the height allowed by paragraphs 1 and 2 of the GEP definition. The demonstration specified in paragraph 3 of the GEP definition must be available during the public comment period.

5. When a public comment period and public hearing are required, the board shall notify the public, by advertisement in at least one newspaper of general circulation in the affected air quality control region, of the opportunity for the public comment and the public hearing on the information available for public inspection under the provisions of subsection G 5 a of this section. The notification shall be published at least 30 days prior to the day of the public hearing.

a. Information on the permit application (exclusive of confidential information under 9 VAC 5-20-150), as well as the preliminary review and analysis and preliminary decision of the board, shall be available for public inspection during the entire public comment period in at least one location in the affected air quality control region.

b. A copy of the notice shall be sent to all local air pollution control agencies having State Implementation Plan responsibilities in the affected air quality control region, all states sharing the affected air quality control region, and to the regional administrator, U.S. Environmental Protection Agency.

H. Standards for granting permits.

No permit will be granted pursuant to this section unless it is shown to the satisfaction of the board that the source will be designed, built and equipped to operate without causing a violation of the applicable provisions of these regulations and that the following standards have been met:

1. The source shall be designed, built and equipped to comply with standards of performance prescribed under 9 VAC 5 Chapter 50 (9 VAC 5-50-10 et seq.) and with emission standards prescribed under 9 VAC 5 Chapter 60 (9 VAC 5-60-10 et seq.);

2. The source shall be designed, built and equipped to operate without preventing or interfering with the attainment or maintenance of any applicable ambient air quality standard and without causing or exacerbating a violation of any applicable ambient air quality standard; and

3. Stack evaluation reductions under 9 VAC 5-80-10 C 3. The source shall be designed, built and equipped to operate without preventing or interfering with the attainment or maintenance of any applicable ambient air quality standard and without

causing or exacerbating a violation of any applicable ambient air quality standard.

I. Application review and analysis.

No permit shall be granted pursuant to this section unless compliance with the standards in subsection H of this section is demonstrated to the satisfaction of the board by a review and analysis of the application performed on a source-by-source basis as specified below:

1. Stationary sources.

a. Applications for stationary sources shall be subject to a control technology review to determine if such source will be designed, built and equipped to comply with all applicable standards of performance prescribed under 9 VAC 5 Chapter 50 (9 VAC 5-50-10 et seq.).

b. Applications shall be subject to an air quality analysis to determine the impact of pollutant emissions as may be deemed appropriate by the board.

2. Stationary sources of hazardous air pollutants.

Applications for stationary sources of hazardous air pollutants shall be subject to a control technology review to determine if such source will be designed, built and equipped to comply with all applicable emission standards prescribed under 9 VAC 5 Chapter 60 (9 VAC 5-60-10 et seq.).

3. Stack elevation reductions under 9 VAC 5-80-10 C 3.

Applications under 9 VAC 5-80-10 C 3 shall be subject to an air quality analysis to determine the-impact of applicable criteria pollutant emissions.

J. Compliance determination and verification by performance testing.

1. For stationary sources other than those specified in subdivision 2 of this subsection, compliance with standards of performance shall be determined in accordance with the provisions of 9 VAC 5-50-20 and shall be verified by performance tests in accordance with the provisions of 9 VAC 5-50-30..

2. For stationary sources of hazardous air pollutants, compliance with emission standards shall be determined in accordance with the provisions of 9 VAC 5-60-20 and shall be verified by emission tests in accordance with the provisions of 9 VAC 5-60-30.

3. Testing required by subsections J I and 2 of this section shall be conducted by the owner within 60 days after achieving the maximum production rate at which the new or modified source will be operated, but not later than 180 days after initial

startup of the source; and 60 days thereafter the board shall be provided by the owner with two or, upon request, more copies of a written report of the results of the tests.

4. For sources subject to the provisions of Article 5 (9 VAC 5-50-400 et seq.) of 9 VAC 5 Chapter 50 or Article 1 (9 VAC 5-60-60 et seq.) of 9 VAC 5 Chapter 60, the requirements of subsections J 1 through 3 of this section shall be met in all cases.

5. For sources other than those specified in subsection J 4 of this section, the requirements of subsection J 1 through 3 of this section shall be met unless the board:

a. Specifies or approves, in specific cases, the use of a reference method with minor changes in methodology;

b. Approves the use of an equivalent method;

c. Approves the use of an alternative method, the results of which the board has determined to be adequate for indicating whether a specific source is in compliance;

d. Waives the requirement for testing because, based upon a technical evaluation of the past performance of similar source types, using similar control methods, the board reasonably expects the new or modified source to perform in compliance with applicable standards; or

e. Waives the requirement for testing because the owner of the source has demonstrated by other means to the board's satisfaction that the source is in compliance with the applicable standard.

6. The provisions for the granting of waivers under subsection J 5 of this section are intended for use in determining the initial compliance status of a source, and the granting of a waiver does not obligate the board to do so for determining compliance once the source has been in operation for more than one year beyond the initial startup date.

K. Permit invalidation, revocation and enforcement.

1. A permit granted pursuant to this section shall become invalid if a program of continuous construction, reconstruction or modification is not commenced within the latest of the following time frames:

a. Eighteen months from the date the permit is granted;

b. Nine months from the date of the issuance of the last permit or other authorization (other than permits granted pursuant to this section) from any governmental entity; or

c. Nine months from the date of the last resolution of any litigation concerning any such permits or authorizations (including permits granted pursuant to this section).

2. A permit granted pursuant to this section shall become invalid if a program of construction, reconstruction or modification is discontinued for a period of 18 months or more, or if a program of construction, reconstruction or modification is not completed within a reasonable time. This provision does not apply to the period between construction of the approved phases of a phased construction project; each phase must commence construction within 18 months of the projected and approved commencement date.

3. The board may extend the periods prescribed in subsections K 1 and 2 of this section upon a satisfactory demonstration that an extension is justified. Provided there is no substantive change to the application information, the review and analysis, and the decision of the board, such extensions may be granted without being subject to the requirements of subsection G of this section.

4. Any owner who constructs or operates a new or modified source not in accordance (i) with the application submitted pursuant to this section or (ii) with the terms and conditions of any permit to construct or operate, or any owner of a new or modified source subject to this section who commences construction or operation without applying for and receiving a permit hereunder, shall be subject to appropriate enforcement action including, but not limited to, any specified in this subsection.

5. Permits issued under this section shall be subject to such terms and conditions set forth in the permit as the board may deem necessary to ensure compliance with all applicable requirements of the regulations.

6. The board may revoke any permit if the permittee:

a. Knowingly makes material misstatements in the permit application or any amendments to it;

b. Fails to comply with the terms or conditions of the permit;

c. Fails to comply with any emission standards applicable to an emissions unit included in the permit;

d. Causes emissions from the stationary source which result in violations of, or interfere with the attainment and maintenance of, any ambient air quality standard; or fails to operate in conformance with any applicable control strategy, including any emission standards or emission limitations, in the State Implementation Plan in effect at the time that an application is submitted; or

e. Fails to comply with the applicable provisions of this section.

7. The board may suspend, under such conditions and for such period of time as the board may prescribe, any permit for any of the grounds for revocation contained in subsection K 6 of this section or for any other violations of these regulations.

8. Violation of these regulations shall be grounds for revocation of permits issued under this section and are subject to the civil charges, penalties and all other relief contained in Part II of these regulations and the Virginia Air Pollution Control Law.

9. The board shall notify the applicant in writing of its decision, with its reasons, to change, suspend or revoke a permit, or to render a permit invalid.

L. Existence of permit no defense.

The existence of a permit under this section shall not constitute defense to a violation of the Virginia Air Pollution Control Law or these regulations and shall not relieve any owner of the responsibility to comply with any applicable regulations, laws, ordinances and orders of the governmental entities having jurisdiction.

M. Compliance with local zoning requirements.

The owner shall comply in all respects with any existing zoning ordinances and regulations in the locality in which the source is located or proposes to be located; provided, however, that such compliance does not relieve the board of its duty_ under 9 VAC 5-20-140 of these Regulations and § 10.1-1307 E of the Virginia Air Pollution Control Law to independently consider relevant facts and circumstances.

N. Reactivation and permanent shutdown.

1. The reactivation of a stationary source is not subject to provisions of this section unless a decision concerning shutdown has been made pursuant to the provisions of subdivisions N 2 through N 4 of this section or 9 VAC 5-80-40 P 5.

2. Upon a final decision by the board that a stationary source is shut down permanently, the board shall revoke the permit by written notification to the owner and remove the source from the emission inventory or consider its emissions to be zero in any air quality. analysis conducted; and the source shall not commence operation without a permit being issued under the applicable provisions of this chapter.

3. The final decision shall be rendered as follows:

a. Upon a determination that the source has not operated for a year or more, the board shall provide written notification to the owner (i) of its tentative decision that the source is considered to be shut down permanently; (ii) that the decision

shall become final if the owner fails to provide, within three months of the notice, written response to the board that the shutdown is not to be considered permanent; and (iii) that the owner has a right to a formal hearing on this issue before the board makes a final decision. The response from the owner shall include the basis for the assertion that the shutdown is not to be considered permanent and a projected date for restart-up of the source and shall include a request for a formal hearing if the owner wishes to exercise that right.

b. If the board should find that the basis for the assertion is not sound or the projected restart-up date allows for an unreasonably long period of inoperation, the board shall hold a formal hearing on the issue if one is requested or, if no hearing is requested, the decision to consider the shutdown permanent shall become final.

4. Nothing in these regulations shall be construed to prevent the board and the owner from making a mutual determination that a source is shutdown permanently prior to any final decision rendered under subdivision N 3 of this section.

O. Transfer of permits.

1. No persons shall transfer a permit from one location to another, or from one piece of equipment to another.

2. In the case of a transfer of ownership of a stationary source, the new owner shall abide by any current permit issued to the previous owner. The new owner shall notify the board of the change in ownership within 30 days of the transfer.

3. In the case of a name change of a stationary source, the owner shall abide by any current permit issued under the previous source name. The owner shall notify the board of the change in source name within 30 days of the name change.

4. The provisions of this subsection concerning the transfer of a permit from one location to another shall not apply to the relocation of portable facilities that are exempt from the provisions of this section by 9 VAC 5-80-11.

P. Circumvention.

Regardless of the exemptions provided in this section, no owner or other person shall circumvent the requirements of this section by causing or allowing a pattern of ownership or development over a geographic area of a source which, except for the pattern of ownership or development, would otherwise require a permit.

9 VAC 5-80-11. Stationary source permit exemption levels.

A. General.

1. In determining whether a facility is exempt from the requirements of 9 VAC 5-80-10, the provisions of subsections B through H of this section are independent from the provisions of subsection I of this section. A facility must be determined to be exempt both under the provisions of subsections B through H taken as a group and under the provisions of subsection I to be exempt from 9 VAC 5-80-10.

2. In determining whether a facility is exempt from the requirements of 9 VAC 5-80-10 under the provisions of subsections B and C of this section, the definitions in the rule in 9 VAC 5 Chapter 40 (9 VAC 5-40-10 et seq.) that would cover the facility if it were an existing source shall be used unless deemed inappropriate by the board.

B. New source exemption levels by size.

Facilities as specified below shall be exempt from the requirements of 9 VAC 5-80-10 as they pertain to construction, reconstruction or relocation.

1. Fuel burning equipment.

a. Any unit using solid fuel with a maximum heat input of less than 1,000,000 Btu per hour.

b. Any unit using liquid fuel with a maximum heat input of less than 10,000,000 Btu per hour.

c. Any unit using liquid and gaseous fuel with a maximum heat input of less than 10,000,000 Btu per hour.

d. Any unit using gaseous fuel with a maximum heat input of less than 50,000,000 Btu per hour, unless subject to a new source performance standard in Article 5 (9 VAC 5-50-400 et seq.) of 9 VAC 5 Chapter 50.

e. Any unit that powers a mobile source but is removed for maintenance or repair and testing.

2. Solvent metal cleaning operations.

Any solvent metal cleaning operation with an uncontrolled emission rate of not more than seven tons per year, 40 pounds per day and eight pounds per hour.

3. Volatile organic compound storage and transfer operations.

Any storage or transfer operation involving petroleum liquids and other volatile organic compounds with a vapor pressure less than 1.5 pounds per square inch absolute under actual storage conditions or, in the case of loading or processing, under actual loading or processing conditions; and any operation specified below:

a. Volatile organic compound transfer operations.

(1) Any tank of 2,000 gallons or less storage capacity.

(2) Any operation outside the volatile organic compound emissions control areas designated in 9 VAC 5-20-206.

b. Volatile organic compound storage operations.

Any tank of 40,000 gallons or less storage capacity.

4. Large appliance coating application systems.

Any coating application system if it is within a plant that has an uncontrolled emission rate of not more than seven tons per year, 40 pounds per day and eight pounds per hour.

5. Magnet wire coating application systems.

Any coating application system if it is within a plant that has an uncontrolled emission rate of not more than seven tons per year, 40 pounds per day and eight pounds per hour.

6. Automobile and light duty truck coating application systems.

a. Any coating application system if it is within a plant that has an uncontrolled emission rate of not more than seven tons per year, 40 pounds per day and eight pounds per hour.

b. Any vehicle refinishing operation.

7. Can coating application systems.

Any coating application system if it is within a plant that has an uncontrolled emission rate of not more than seven tons per year, 40 pounds per day and eight pounds per hour.

8. Metal coil coating application systems.

Any coating application system if it is within a plant that has an uncontrolled emission rate of not more than seven tons per year, 40 pounds per day and eight pounds per hour.

9. Paper and fabric coating application system.

Any coating application system if it is within a plant that has an uncontrolled

emission rate of not more than seven tons per year, 40 pounds per day and eight pounds per hour.

10. Vinyl coating application systems.

Any coating application system if it is within a plant that has an uncontrolled emission rate of not more than seven tons per year, 40 pounds per day and eight pounds per hour.

11. Metal furniture coating application systems.

Any coating application system if it is within a plant that has an uncontrolled emission rate of not more than seven tons per year, 40 pounds per day and eight pounds per hour.

12. Miscellaneous metal parts and products coating application systems.

a. Any coating application system if it is within a plant that has an uncontrolled emission rate of not more than seven tons per year, 40 pounds per day and eight pounds per hour.

b. Any vehicle customizing coating operation, if production is less than 20 vehicles per day.

c. Any vehicle refinishing operation.

d. Any fully assembled aircraft or marine vessel exterior coating operation.

13. Flatwood paneling coating application systems.

Any coating application system if it is within in a plant that has an uncontrolled emission rate of not more than seven tons per year, 40 pounds per day and eight pounds per hour.

14. Graphic arts (printing processes).

Any printing process if it is within a plant that has an uncontrolled emission rate of not more than seven tons per year, 40 pounds per day and eight pounds per hour.

15. Petroleum liquid storage and transfer operations.

Any storage or transfer operation involving petroleum liquids with a vapor pressure less than 1.5 pounds per square inch absolute under actual storage conditions or, in the case of loading or processing, under actual loading or processing conditions (kerosene and fuel oil used for household heating have vapor pressures of less than 1.5

pounds per square inch absolute under actual storage conditions; therefore, kerosene and fuel oil are not subject to the provisions of 9 VAC 5-80-10 when used or stored at ambient temperatures); and any operation specified below:

a. Bulk terminals - gasoline bulk loading operations.

Any operation outside volatile organic compound emissions control areas designated in 9 VAC 5-20-206.

b. Gasoline dispensing facilities.

Any gasoline dispensing facility.

c. Bulk plants - gasoline bulk loading operations.

(1) Any facility with an expected daily throughput of less than 4,000 gallons.

(2) Any operation outside volatile organic compound emissions control areas designated in 9 VAC 5-20-206.

d. Account/tank trucks.

No permit is required for account/tank trucks, but permits issued for gasoline storage/transfer facilities should include a provision that all associated account/tank trucks meet the same requirements as those trucks serving existing facilities.

e. Petroleum liquid storage operations.

(1) Any tank of 40,000 gallons or less storage capacity.

(2) Any tank of less than 420,000 gallons storage capacity for crude oil or condensate stored, processed or treated at a drilling and production facility prior to custody transfer.

(3) Any tank storing waxy, heavy pour crude oil.

16. Dry cleaning plants.

Any petroleum dry cleaning plant with a total manufacturers' rated solvent dryer capacity less than 84 pounds as determined by the applicable new source performance standard in 9 VAC 5-50-410.

17. Wood product manufacturing plants.

Any addition of, relocation of or change to a woodworking machine within a plant provided the system air movement capacity, expressed as the cubic feet per minute of air, and maximum control efficiency of the control system are not decreased.

18. Wood sawmills.

Any wood sawmill.

C. New sources with no exemptions.

Facilities as specified below shall not be exempt, regardless of size or emission rate, from the requirements of 9 VAC 5-80-10 as they pertain to construction, reconstruction or relocation.

1. Petroleum refineries.

2. Asphalt plants.

3. Chemical fertilizer manufacturing plants.

4. Kraft pulp mills.

5. Sand and gravel processing facilities.

6. Coal preparation plants.

7. Stone quarrying and processing facilities.

8. Portland cement plants.

9. Wood product manufacturing plants.

10. Secondary metal operations.

11. Lightweight aggregate process operations.

12. Feed manufacturing plants.

13. Incinerators.

14. Coke ovens.

15. Sulfuric acid production units.

16. Sulfur recovery operations.

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Amended: January 1, 1985
Amended: October 1, 1986
Amended: January 1, 1993
Amended: July 1, 1997

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COMMONWEALTH OF VIRGINIA
STATE AIR POLLUTION CONTROL BOARD
REGULATIONS FOR THE CONTROL AND ABATEMENT OF AIR POLLUTION

9 VAC 5 CHAPTER 40.
EXISTING STATIONARY SOURCES.

PART 11.
Emission Standards.

ARTICLE 1.
Visible Emissions and Fugitive Dust/Emissions (Rule 4-1).

9 VAC 5-40-60. Applicability and designation of affected facility.

A. The affected facilities to which the provisions of this article apply are the following:

1. Each source of visible emissions; and

2. Each source of fugitive dust/emissions.

B. The provisions of this article apply throughout the Commonwealth of Virginia.

9 VAC 5-40-70. Definitions.

A. For the purpose of these regulations and subsequent amendments or any orders issued by the board, the words and terms shall have the meaning given them in subsection C of this section.

B. As used in this article, all terms not defined here shall have the meaning given them in 9 VAC 5 Chapter 10 (9 VAC 5-10-10 et seq.), unless otherwise required by context.

C. Terms defined.

"Fugitive dust" means particulate matter composed of soil or other

materials, or both, of natural origin. Fugitive dust may include emissions from haul roads, wind erosion of exposed surfaces and storage piles and other activities in which the material is either removed, stored, transported or redistributed.

"Fugitive emissions" means emissions which are generated by industrial or other activities and which do not pass through a stack, chimney, vent or other functionally equivalent opening, but which may escape from openings (such as windows, doors, ill-fitting closures or poorly maintained equipment) or material handling equipment.

"Opacity" means the degree to which emissions reduce the transmission of light and obscure the view of an object in the background, expressed as a percentage.

"Six-minute period" means any one of the 10 equal parts of one hour or a one-hour period, as may be applicable.

9 VAC 5-40-80. Standard for visible emissions.

Unless specified otherwise in this part, no owner or other person shall cause or permit to be discharged into the atmosphere from any affected facility any visible emissions which exhibit greater than 20% opacity, except for one six-minute period in any one hour of not more than 60% opacity. Failure to meet the requirements of this section because of the presence of water vapor shall not be a violation of this section.

9 VAC 5-40-90. Standard for fugitive dust/emissions.

No owner or other person shall cause or permit any materials or property to be handled, transported, stored, used, constructed, altered, repaired or demolished without taking reasonable. precautions to prevent particulate matter from becoming airborne. Such reasonable precautions may include, but are not limited to, the following:

1. Use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads or the clearing of land.

2. Application of asphalt, oil, water or suitable chemicals on dirt roads, materials stockpiles and other surfaces which may create airborne dust; the paving of roadways and maintaining them in a clean condition.

3. Installation and use of hoods, fans and fabric filters to enclose and vent the handling of dusty materials. Adequate containment methods shall be employed during sandblasting or other similar operations.

4. Open equipment for conveying or transporting materials likely to create objectionable air pollution when airborne shall be covered or treated in an

equally effective manner at all times when in motion.

5. The prompt removal of spilled or tracked dirt or other materials from paved streets and of dried sediments resulting from soil erosion.

9 VAC 5-40-100. Monitoring.

A. Unless otherwise approved by the board, all continuous monitoring systems required by this article shall be installed, calibrated, maintained and operated in accordance with applicable requirements in 9 VAC 5-40-40 and 9 VAC 5-40-41.

B. Each owner required to install a continuous monitoring system shall provide notifications and reports and maintain records and monitoring results in accordance with the requirements of 9 VAC 5-40-50.

C. In cases where the requirements of 9 VAC 5-40-40 and 9 VAC 5-40-41 are not appropriate for a particular source type, the owner shall comply with other procedures acceptable to the board.

9 VAC 5-40-110. Test methods and procedures.

The provisions of 9 VAC 5-40-20 A 2 apply to determine compliance with the standard prescribed in 9 VAC 5-40-80.

9 VAC 5-40-120. Waivers.

A. A waiver from the opacity emission limitation in 9 VAC 5-40-80 may be granted by the executive director, provided that a technical decision is reached that the plume opacity observations made in accordance with 9 VAC 5-40-20 and 9 VAC **5-40-** 110 are not representative of the pollutant loading of the plume.

B. Upon granting the above waiver, the executive director shall require one or more alternate source surveillance methods, which methods may include, but are not limited to, the following:

1. Requiring the owner to install, calibrate, maintain and operate systems for continuously monitoring and recording emissions of specified pollutants in accordance with 9 VAC 5-40-40 and 9 VAC 5-40-100.

2. Requiring the owner to conduct, at specified intervals, emission tests for measuring emissions of specified pollutants in accordance with 9 VAC 5-40-30.

3. Establishing an opacity emission limitation for the facility based on a correlation between tests of visible and other specified pollutant emissions.

C. The waiver may be granted for an indefinite period of time; however, approval may be withdrawn by the executive director:

1. For failure to adhere to any terms or conditions of the waiver,

2. If the affected facility is found to be in violation of any applicable emission standard; or

3. For failure to conduct or adhere to any alternate source surveillance method required for waiver approval.

HISTORICAL NOTES:

Derived from: Rule 4-1 of Part IV of VR 120-01 (§ 120-04-0101 through § 120-04-0107)

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COMMONWEALTH OF VIRGINIA
STATE AIR POLLUTION CONTROL BOARD

9 VAC 5 CHAPTER 150.
REGULATION FOR TRANSPORTATION CONFORMITY.

PART I.
GENERAL DEFINITIONS.

9 VAC 5- 150-10 General.

A. For the purpose of this regulation and subsequent amendments or any orders issued by the board, the words or terms shal 1 have the meanings given them i n 9 VAC-- 5-150- 20.

B. Unl ess speci fi cal 1 y defi ned i n the Vi rgi ni a Ai r Poll uti on Control Law or i n this chapter, terms used shall have the meanings given them by the federal Clean Air Act, Titles 23 and 49 of the United States Code, other U.S. Environmental Protection Agency regulations, other USDOT regulations, 9 VAC 5-170-20 (definitions, Regulation for General Administration), or commonly ascribed to them by recognized authorities, i n that order of priority.

9 VAC 5-150-20 Terms defined.

"Administrator" means the administrator of the Environmental Protection Agency (EPA) or an authorized representative.

"Ambient air" means that portion of the atmosphere, external to buildings, to which the general public has access.

"Applicable implementation plan" means. the portion or portions of the state implementation plan, or the most recent revision thereof, which has been approved under § 110 of the federal Clean Air Act, or promulgated under § 110(c) of the federal Clean Air Act, or promulgated or approved pursuant to regulations promulgated under § 301(d) of the federal Clean Air Act and which implements the relevant requirements of the federal Clean Air Act.

PART II.
GENERAL PROVISIONS.

9 VAC 5-150-30 Applicability.

A. The provisions of this regulation, unless specified otherwise, shall apply to the following actions:

1. Except as provided for i n subsection C of thi s section or 9 VAC 5-150-420, conformity determinations are required for:

a. The adoption, acceptance, approval or support of transportation plans developed pursuant to 23 CFR Part 450 or 49 CFR Part 613 by a MPO or USDOT;

b. The adoption, acceptance, approval or support of TI Ps developed pursuant to 23 CFR Part 450 or 49 CFR Part 613 by a MPO or USDOT; and

c. The approval, funding, or implementation of FHWA/FTA proj ects.

2. Conformity determinations are not requi red under this regulation for individual projects which are not FHWA/FTA projects. However, 9 VAC 5-150-370 applies to the projects i f they are regionally significant.

3. This regulation shall be effective on and apply to conformity determinations for which the final decision i s made on or after the effective date of the approval of this regulation by EPA.

B. The provisions of this regulation, unless specified otherwise,. shall apply to the following geographic areas:

1. The provi si ons of thi s regul ati on shall appl y i n al l nonattai nment and maintenance areas for transportati on- related criteria pollutants for which the area i s designated nonattai nment or has a maintenance plan.

2. The provisions of this regulation apply with respect to emissions of the following criteria pollutants: ozone, carbon monoxide, nitrogen dioxide, and particulate matter (PM_{io}).

3. The provisions of this regulation apply with respect to emissions of the following precursor pollutants:

a. Volatile organic compounds and nitrogen oxides i n ozone areas;

b. Nitrogen oxides i n nitrogen dioxide areas; and

c. Volatile organic compounds, nitrogen oxides, and PM_{10} i n PM_{io} areas i f

(1) During the interim period, the EPA Regional. Administrator or the DEQ Director has made a finding that transportation-related precursor emissions within the nonattai nment area are a significant contributor to the PM_{io} nonattai nment problem and has so. not i f i ed the MPO and USDOT; or

(2) During the transitional, control strategy, and maintenance periods, the applicable implementation plan (or implementation plan submission) establishes a budget for the emissions as part of the reasonable further progress, attainment or maintenance strategy.

C. The applicability of this regulation, unless specified otherwise, shall be subject to the following limitations:

1. Projects subject to this regulation for which the NEPA process and a conformity determination have been completed by FHWA or FTA may proceed toward implementation without further conformity determinations i f one of the following major steps has

occurred within the past three years: NEPA process completion; start of final design; acquisition of a significant portion of the right-of-way; or approval of the plans, specifications and estimates. All phases of such projects which were considered i n the conformity determination are also included, i f those phases were for the purpose of funding, final design, right-of-way acquisition, construction, or any combination of these phases.

2. A new conformity determination for the project shall be required i f there i s a significant change i n project design concept and scope, i f a supplemental environmental document for air quality purposes i s initiated, or i f no maj or steps to advance the project have occurred within the past three years.

D. A grace period for new nonattai nment areas i s allowed for areas or portions of areas which have been i n attainment for either ozone, CO, PM-10, or NOx since 1990 and are subsequently r edesi gnat ed t o nonat t ai nment for any of these pollutants, the provisions of this chapter shall not apply for such pollutant for 12 months following the date of final designation to nonattai nment.

9 VAC 5-150-40 Authority of board and DEQ.

A. No provision of this regulation shall limit the power of the board to take such appropriate action as necessary to control and abate air pollution i n emergency situations.

B. I n accordance with the Virginia Air Pollution Control Law and the Administrative Process Act and by the adoption of this regulation, the board confers upon . the DEQ the administrative, enforcement and decision making authority enumerated 'in this regulation.

C. The board reserves the right to exercise its authority i n any of the powers del egated i n thi s regul at.i on shoul d i t choose to do so.

D. The DEQ Director has final authority to adjudicate contested decisions of subordinates delegated powers by him prior to appeal of the decisions to the circuit court or consideration by the board.

9 VAC 5- 150- 50 Repealed.

9 VAC 5- 150- 60 Repealed.

9 VAC 5- 150- 70 Repealed.

9 VAC 5-150- 80 Relationship of state regulations t o federal regulations.

A. In order for the Commonwealth to fulfill its obligations under the federal Clean Air Act, some provisions of this regulation are required to be approved by the U.S. Environmental Protection Agency and when approved those provisions become federally enforceable.

B. I n cases where this regulation specifies that procedures or methods shall be approved by, acceptable to, "or determined by the board or DEQ or other similar phrasing or specifically provide for decisions to be made by the board or DEQ, i t may be necessary to have the actions (approvals determinations, exemptions, exclusions, or decisions) reviewed and confirmed as acceptable or approved by the U.S. Environmental Protection Agency i n order to make them federally enforceable. Determination of which state actions require federal confirmation or approval and the administrative mechanism for making associated confirmation or approval decisions shall be made on a case-by-case basis i n accordance with U.S. Environmental Protection Agency regulations and policy.

9 VAC 5-150-90 Repealed.

PART III.
CRITERIA AND PROCEDURES FOR MAKI NG CONFORMI TY DETERMINATIONS.

9 VAC 5-150-110	Pri on ty.
9 VAC 5-150-120	Frequency of conformity determinations.
9 VAC 5-150-130	Consultation.
9 VAC 5-150-140	Content of transportation plans.
9 VAC 5-150-150	Relationship of transportati on pl an and TIP conformity with the NEPA process.
9 VAC 5-150-160	Fiscal constraints for transportation plans and TI Ps.
9 VAC 5-150-170	Criteria and procedures for determining conformity of transportation plans, programs, and projects: General.
9 VAC 5-150-180	Criteria and procedures: Latest planning assumptions.
9 VAC 5-150-190	Criteria and procedures: Latest emissions model.
9 VAC 5-150-200	Criteria and procedures: Consultation.
9 VAC 5-150-210	Criteria and procedures: Timely implementation of TCMs.
9 VAC 5-150-220	Criteria and procedures: Currently conforming transportation plan and TIP.
9 VAC 5-150-230	Criteria and procedures: Projects from a plan and TIP.
9 VAC 5-150-240	Criteria and procedures: Local i zed CO and PM_{10} violations (hot spots).
9 VAC 5-150-250	Criteria and procedures: Compliance with PM_{10} control measures.
9 VAC 5-150-260	Criteria and procedures: Motor vehicle emissions budget (transportation plan).
9 VAC 5-150-270	Criteria and procedures: Motor vehicle emissions budget (TIP).
9 VAC 5-150-280	Criteria and procedures: Motor vehicle emissions budget (project not from a plan and TIP).
9 VAC . 5-150- 290	Criteria and procedures: Local i zed CO violations (hot spots) i n the i nteri m period.
9 VAC 5-150-300	Criteria and procedures: Interim period reductions in ozone and CO areas

COMMONWEALTH OF VIRGINIA
STATE AIR POLLUTION CONTROL BOARD

9 VAC 5 CHAPTER 160.
REGULATION FOR GENERAL CONFORMITY

PART I
GENERAL DEFINITIONS

9 VAC 5-160-10. General.

A. For the purpose of this regulation and subsequent amendments or any orders issued by the board, the words or terms shall have the meanings given them i n 9 VAC 5-160-20.

B. Unless specifically defined i n the Virginia Air Pollution Control Law or i n this regulation, terms used shall have the meanings given them by the federal Clean Air Act, other U.S. Environmental Protection Agency (EPA) regulations, 9 VAC 5- 170-20 (definitions, Regulation for General Administration), or commonly ascribed to them by recognized authorities, i n that order of priority.

9 VAC 5-160-20. Terms defined.

"Administrator" means the administrator of EPA or an authorized representative.

"Affected federal 1 and manager" means the federal agency or the federal official charged with direct responsibility for management of an area designated as class I under the federal Clean Air Act, and 1 ocated within 100 ki 1 ometers of the proposed federal act i on.

"Ambient air" means that portion of the atmosphere, external to buildings, to which the general public has access.

"Applicable implementation plan" means the portion or portions of the state implementation plan, or the most recent revision thereof, which has been approved under § 110 of the federal Clean Air Act, or promulgated under § 110(c) of the federal Clean Air Act, or promulgated or approved pursuant to regulations promulgated under § 301(d) of the federal Clean Air Act and which

implements the relevant requirements of the federal Clean Air Act.

"Areawide air quality modeling analysis" means an assessment on a scale that includes the entire nonattainment area or maintenance area which uses an air quality dispersion model to determine the effects of emissions on air quality.

"Board" means the State Air Pollution Control Board or its designated representative.

"Cause or contribute to a new violation" means a federal action that:

1. Causes a new violation of a national ambient air quality standard at a location in a nonattainment or maintenance area which would otherwise not be in violation of the standard during the future period in question if the federal action were not taken; or

2. Contributes, in conjunction with other reasonably foreseeable actions, to a new violation of a national ambient air quality standard at a location in a nonattainment or maintenance area in a manner that would increase the frequency or severity of the new violation.

"Caused by" means, as used in the terms "direct emissions" and "indirect emissions," . emissions that would not otherwise occur in the absence of the federal action.

"Consultation" means that one party confers with another identified party, provides all information to that party needed for meaningful input, and, prior to taking any action, considers the views of that party and responds to those views in a timely, substantive, written manner prior to any final decision on the action. The views and written response shall be made part of the record of any decision or action.

"Control" means the ability to regulate the emissions from the action. The ability to regulate may be demonstrated directly, such as through the use of emission control equipment, or indirectly, such as through the implementation of regulations or conditions on the nature of the activity that may be established in permits or approvals or by the design of the action. An example of control includes the ability of a federal agency to control the level of vehicle emissions by controlling the size of a parking facility and setting requirements for employee trip reductions.

"Criteria pollutant" means any pollutant for which there is established a national ambient air quality standard in 40 CFR Part 50.

"Department" means any employee or other representative of the Virginia Department of Environmental Quality, as designated by the director.

"Direct emissions" means those emissions of a criteria pollutant or its precursors that are caused or initiated by the federal action and occur at the same time and place as the action.

"Director" means the director of the Virginia Department of Environmental Quality.

"Emergency" means, in the context of 9 VAC 5-160-30, a situation where extremely quick action on the part' of federal agencies involved is needed and where the timing of the federal activities makes it impractical to meet the requirements of this regulation, such as natural disasters like hurricanes or earthquakes, civil disturbances such as terrorist acts, and military mobilizations.

"Emergency" means, in the context of 9 VAC 5-160-40, a situation that immediately and unreasonably affects, or has the potential to immediately and unreasonably affect, public health, safety or welfare; the health of animal or plant life; or property, whether used for recreational, commercial, industrial, agricultural or other reasonable use.

"Emissions budgets" are those portions of the total allowable emissions defined in the applicable implementation plan for a certain date for the purpose of meeting reasonable further progress milestones or attainment or maintenance demonstrations, for any criteria pollutant or its precursors, specifically allocated by the applicable implementation plan to mobile sources, to any stationary source or class of stationary sources, to any federal action or any class of action, to any class of area sources, or to any subcategory of the emissions inventory. The allocation system shall be specific enough to assure meeting the criteria of § 176(c) (1) (B) of the federal Clean Air Act. An emissions budget may be expressed in terms of an annual period, a daily period, or other period established in the applicable implementation plan.

"Emissions offsets" means, for the purposes of 9 VAC 5-

160-160, emissions reductions which are quantifiable, consistent with the applicable implementation plan attainment and-reasonable future progress demonstrations, surplus to reductions required by, and credited to, other applicable implementation plan provisions, enforceable under both state and federal law, and permanent within the ti meframe specified by that program. Emi ssi ons reducti ons i ntended to be achi eyed as emi ssi ons offsets under thi s regul ati on shall be monitored and enforced i n a manner equivalent to that under the new source review program.

"Emissions that a federal agency has a continuing program responsibility for" means emissions that are specifically caused by an agency carrying out its authorities, and does not include emissions that occur due to subsequent activities, unless the activities are required by the federal agency. Where an agency, i n performing its normal program responsibilities, takes actions itself or imposes condi ti ons that result i n air pollutant emissions by a non-federal entity taking subsequent actions, the emissions are covered by the meaning of a continuing program responsibility.

"EPA" means the United States Environmental Protection Agency.

"Facility" means something that i s built, installed, or established to serve a particular purpose; includes, but i s not limited to, buildings, installations, public works, businesses, commercial and industrial plants, shops and stores, heating and power plants, apparatus, processes, operations, structures, and equipment of all types.

"Federal action" means any activity engaged i n by a federal agency, or any activity that a federal agency supports i n any way, provides financial assistance for, licenses, permits, or approves, other than activities related to transportation plans, programs, and projects developed, funded, or approved under title 23 USC or the Federal Transit Act (49 USC 1601 et seq.). Where the federal action i s a permit, license, or other approval for some aspect of a non-federal undertaking, the relevant action i s the part, portion, or phase that the non-federal undertaking that requires the federal permit, license, or approval.

"Federal agency" means a department, agency, or instrumentality of the federal government.

"Federal Clean Air Act" means 42 USC 7401 et seq.

"Increase the frequency or severity of any existing violation of any standard i n any area" means to cause a nonattainment area to exceed a standard more often, or to cause a violation at a greater concentration than previously existed or would otherwise exist during the future period i n question, i f the project were not implemented.

"Indirect emissions" means those emissions of a criteria pollutant or its precursors that:

1. Are. caused by the federal action, but may occur later i n time, or may be farther removed i n distance from the action itself but are still reasonably foreseeable; and

2. The federal agency can practicably control and will maintain control over due to a continuing program responsibility of the federal agency, including, but not limited to:

a. Traffic on or to, or stimulated or accommodated by, a proposed facility which i s related to increases or other changes i n the scale or timing of operations of the facility;

b. Emissions related to the activities of employees of contractors or federal employees;

c. Emi ssi ons rel ated to empi oyee commutati on and similar programs to increase average vehicle occupancy imposed on all employers of a certain size i n the 1 ocal i ty; and

d. Emissions related to the activities of contractors or 1 easehol ders that may be addressed by provisions that are usual and customary for contracts or leases or within the scope of contractual protection of the interests of the United States.

"Lead Planning Organization" means the organization certified by the state as being responsible for the preparation of control strategy implementation plan revisions for nonattai nment areas under § 174 of the federal Clean Air Act. The organization includes elected officials of local governments i n the affected nonattai nment area, and representatives of the department, the Virginia Department of Transportation, the metropolitan planning organizations for the affected area, and other agencies and organizations that have responsibilities for developing, submitting

or implementing any of the plan revisions. It is the forum for cooperative air quality planning decision-making.

"Local air quality modeling analysis" means assessment of localized impacts on a scale smaller than the entire nonattainment or maintenance area, including, for example, congested roadway intersections and highways or transit terminals, which uses an air quality dispersion model to determine the effects of emissions on air quality.

"Maintenance area" means any geographic region of the United States previously designated as a nonattainment area and subsequently redesignated to attainment subject to the requirement to develop a maintenance plan.

"Maintenance plan" means a revision to the applicable implementation plan, meeting the requirements of § 175A of the federal Clean Air Act.

"Metropolitan planning organization" means the organization designated as being responsible, together with the Commonwealth of Virginia, for conducting the continuing, cooperative, and comprehensive planning process under 23 USC 134 and 49 USC 1607.

"Milestone" means as defined in §§ 182(g) and 189(c) (1) of the federal Clean Air Act. A milestone consists of an emissions level and the date on which it is required to be achieved.

"National ambient air quality standards" means those standards established pursuant to § 109 of the federal Clean Air Act.

"NEPA" means the National Environmental Policy Act of 1969 as amended (42 USC 4321 et seq.)

"New source review program" means a program for the preconstruction review and permitting of new stationary sources or expansions to existing ones in accordance with regulations promulgated to implement the requirements of §§ 110 (a) (2) (C), 165 (relating to permits in prevention of significant deterioration areas) and 173 (relating to permits in nonattainment areas) of the federal Clean Air Act.

"Nonattainment area" means any geographic region of the United States which has been designated as nonattainment under

§ 107 of the federal Clean Air Act for any pollutant for which a national ambient air quality standard exists.

"PM_{10}" means particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the applicable reference method or an equivalent method.

"Person" means an individual, corporation, partnership, association, a governmental body, a municipal corporation, or any other 1 egal enti ty.

"Precursors of a criteria pollutant" means:

1. For ozone,

a. Nitrogen oxides, unless an area i s exempted from nitrogen oxides requirements under § 182(f) of the federal Clean Air Act, and

b. Volatile organic compounds; and

2. For PM_{10}, those pol 1 utants descri bed i n the PM, o nonattai nment area applicable implementation plan as significant contributors to the particulate matter levels.

"Reasonably foreseeable emissions" are projected future indirect emissions that are identified at the time the conformity determination i s made; the location of the emissions i s known to the extent adequate to determine the impact of the emissions; and the emissions are quantifiable, as described and documented by the federal agency based on its own information and after reviewing any information presented to the federal agency.

"Regional water or wastewater projects" means construction, operation, and maintenance of water or wastewater conveyances, water or wastewater treatment facilities, and water storage reservoirs which affect a large portion of a nonattai nment or maintenance area.

"Regionally significant action" means a federal action for which the direct and indirect emissions of any pollutant represent 10% or more of a nonattainment or maintenance area's emissions inventory for that pollutant.

"Source" means any one or combination of the following: buildings, structures, facilities, installations, articles,

machines, equipment, landcraft, watercraft, aircraft, or other contrivances which contribute, or may contribute, either directly or indirectly to air pollution. Any activity by any person that contributes, or may contribute, either directly or indirectly to air pollution, including, but not limited to, open burning, generation of fugitive dust or emissions, and cleaning with abrasives or chemicals.

"Total of direct and indirect emissions" means the sum of direct and indirect emissions increases and decreases caused by the federal action, that is, the "net" emissions considering all direct and indirect emissions. Any emissions decreases used to reduce the total shall have already occurred by the time the corresponding increases occur or shall be enforceable under state and federal law. The portion of emissions which are exempt or presumed to conform under 9 VAC 5-160-30 are not' included in the "total of direct and indirect emissions," except as provided in 9 VAC 5-160-30 M. The "total of direct and indirect emissions" includes emissions of criteria pollutants and emissions of precursors of criteria pollutants. Segmentation of projects for conformity analyses when emissions are reasonably foreseeable is prohibited.

"Virginia Air Pollution Control Law" means Chapter 13 (§ 10.1-1300 et seq.) of Title 10.1 of the Code of Virginia.

"Welfare" means that language referring to effects on welfare includes, but is not limited to, effects on soils, water, crops, vegetation, human-made materials, animals, wildlife, weather, visibility and climate, damage to and deterioration of property, and hazards to transportation, as well as effects on economic values and on personal comfort and well being.

PART II
GENERAL PROVISIONS

9 VAC 5-160-30. Applicability.

A. The provisions of this regulation shall apply i n all nonattai nment and maintenance areas for criteria pollutants for which the area i s designated nonattai nment or has a maintenance pl an.

B. The provisions of this regulation apply with respect to emissions of the following criteria pollutants: ozone, carbon monoxide, nitrogen dioxide, and particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}).

C. The provisions of this regulation apply ' wi th respect to emissions of the following precursor pollutants:

1. For ozone:

a. Nitrogen oxides, unless an area i s exempted from nitrogen oxides requirements under § 182(f) of the federal Clean Air Act, and

b. Volatile organic compounds.

2. For PM_{10}, those pollutants described i n the PM10 nonattai nment area applicable implementation plan as significant contributors to the particulate matter levels.

D. Conformity determinations for federal actions related to transportation plans, programs, and projects developed, funded, or approved under title 23 USC or the Federal Transit Act (49 USC 1601 et seq.) shall meet the procedures and criteria of the Regulation for Transportation Conformity (9 VAC 5 Chapter 150). i n lieu of the procedures set forth i n this regulation.

E. For federal actions not covered by subsection D of this section. a conformity determination i s required for each pollutant where the total of direct and indirect emissions i n a nonattai nment or maintenance area caused by a federal action would equal or exceed any of the rates i n subsections **E 1 or 2 of, this section.**

1. **For the purposes of this subsection, the following** rates apply i n nonattai nment areas:

	Tons per year
Ozone (VOCs or NO.)	
Serious nonattainment areas	**50**
Severe nonattainment areas	**25**
Extreme nonattainment areas	**10'**
Other ozone nonattainment areas outside an ozone transport region	**100**
Marginal and moderate nonattai nment areas inside an **ozone transport region:**	
VOC	50
NO, . . .	**100**
Carbon **monoxide, all nonat t** ai **nment areas**	**100**
Sulfur dioxide or nitrogen dioxide, all nonattainment areas	100
PM10:	
Moderate nonattainment areas	**100**
Serious nonattai nment areas	**70**
Lead, all nonattai nment areas	**25**

2. For the purposes of this subsection, the following rates apply i **n maintenance areas:**

	Tons per year
Ozone (NO.), sulfur dioxide, or nitrogen dioxide, all maintenance areas .	**100**
Ozone (VOCs):	
Maintenance areas inside an ozone transport region	**50**
Maintenance areas outside an ozone	

transport region .	100
Carbon monoxide, all maintenance areas	100
PM_{10} all maintenance area	100
Lead, all maintenance areas	25

F. The requirements of this section shall not apply to:

1. Actions where the total of direct and indirect emissions are below the emissions levels specified in subsection E of this section.

2. The following actions which would result in no emissions increase or an increase in emissions that is clearly de minimis:

a. Judicial and legislative proceedings.

b. Continuing and recurring activities such as permit renewals where activities conducted shall be similar in scope and operation to activities currently being conducted.

c. Rulemaking and policy development and issuance.

d. Routine maintenance and repair activities, including repair and maintenance of administrative sites, roads, trails, and facilities.

e. Civil and criminal enforcement activities, such as investigations, audits, inspections, examinations, prosecutions, and the training of law enforcement personnel.

f. Administrative actions such as personnel actions, organizational changes, debt management, internal agency audits, program budget proposals, and matters relating to administration and collection of taxes, duties, and fees.

g. The routine, recurring transportation of materiel and personnel.

h. Routine movement of mobile assets, such as ships and aircraft, in home port reassignments and stations (when no new support facilities or personnel are required) to perform as operational groups and for repair or overhaul or both.

i. Maintenance dredging and debris disposal where no new depths are required, applicable permits are secured, and disposal shall be at an approved disposal site.

j. With respect to existing structures, properties, facilities, and lands where future activities conducted shall be similar in scope and operation to activities currently being conducted at the existing structures, properties, facilities, and lands, actions such as relocation of personnel, disposition of federally-owned existing structures, properties, facilities, and lands, rent subsidies, operation and maintenance cost subsidies, the exercise of receivership or conservatorship authority, assistance in purchasing structures, and the production of coins and currency.

k. The granting of leases, licenses such as for exports and trade, permits, and easements where activities conducted shall be similar in scope and operation to activities currently being conducted.

1. Planning, studies, and provision of technical assistance.

m. Routine operation of facilities, mobile assets, and equipment.

n. Transfers of ownership, interests, and titles in land, facilities, and real and personal properties, regardless of the form or method of the transfer.

o. The designation of empowerment zones, enterprise communities, or vi ti cul tural areas.

p. Actions by any of the federal banking agencies or the federal reserve banks, including actions regarding charters, applications, notices, licenses, the supervision or examination of depository institutions or depository institution holding companies, access to the discount window, or the provision of financial services to banking organizations or to any state, agency, or instrumentality of the United States.

q. Actions by the Board of Governors of the federal reserve system or any federal reserve bank to effect monetary or exchange rate policy.

r. Actions that implement a foreign affairs

function of the United States.

s. Actions or portions thereof associated with transfers of land, facilities, title, and real properties through an enforceable contract or lease agreement where the delivery of the deed i s requi red to occur promptly after a specific, reasonabl e condition i s met, such as promptly after the land i s certified as meeting the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and where the federal agency does not retain continuing authority to control emissions associated with the lands, facilities, title, or real properties.

t. Transfers of real property, including 1 and, facilities, and related personal property from a federal entity to another federal entity, and assignments of real property, including land, facilities, and related personal property from a federal entity to another federal entity, for subsequent deeding to eligible applicants.

u. Actions by the Department of the Treasury to effect fiscal policy and to exercise the, borrowi ng authority of the United States.

3. Actions where the emissions are not reasonably foreseeable, such as the following:

a. Initial outer continental shelf lease sales whi ch are made on a broad scal e and are fol 1 owed by expl orati on and development plans on a project level.

b. Electric power marketing activities that involve the acquisition, sale, and transmission of electric energy.

4. Individual actions which implement a decision to conduct or carry out a program that has been found to conform to the applicable implementation plan, such as prescribed burning actions which are consistent with a conforming land management plan, that has been found to conform to the applicable i mpl ementati on pl an. The land management plan shall have been found to conform within the past five years.

G. Notwithstanding the other requirements of this section, a conformity determination i s not required for the following federal actions or portions thereof:

1. The porti on of an acti on that includes maj or new or modified stationary sources that require a permit under the new source review program.

2. Actions i n response t o emergencies or natural disasters such as hurricanes, earthquakes, etc., which are commenced on the order of hours or days after the emergency or disaster and, i f applicable, which meet the requirements of subsection H of this section.

3. Research, investigations, studies, demonstrations, or training (other than those exempted under subsection F 2 of this section), where no environmental detriment i s incurred, or the particular action furthers air quality research, as determined by the department.

4. Alteration and additions of existing structures as speci fi cal 1 y requi red by new or exi sti ng appl i cable envi ronmental legislation or environmental regulations (for example, hush houses for aircraft engines and scrubbers for air emissions).

5. Direct emissions from remedial and removal actions carried out under CERCLA and associated regulations to the extent the emissions either comply with the substantive requirements of the new source review program, or are exempted from other environmental regulation under the provisions of CERCLA and. applicable regulations issued under CERCLA.

H. Federal actions which are part of a continuing response to an emergency or disaster under subsection G 2 of this section and which are to be taken more than six months after the commencement of the response to the emergency. or disaster under subsecti on **G 2** of this secti on are exempt from the requirements of this subsection only if:

1. The federal agency taking the actions makes a written determination that, for a specified peri od not to exceed an additional six months, i t i s impractical to prepare the conformity analyses 'whi ch would otherwise be required and the actions cannot be delayed due to overriding concerns for public health and welfare, national security interests, and foreign policy commitments; or

2. For actions which are to be taken after those sections covered by subsection H 1 of this section, the federal agency makes a new determination as **provided i n subsection H 1 of**

this section.

I. Notwithstanding other requirements of this regulation, actions specified by individual federal agencies that have met the cri teri a set forth i n ei ther subsecti on J 1 or J 2 of this secti on and the procedures set forth i n subsection K of this section are presumed to conform, except as provided i n subsection M of this sect i on.

J. The federal agency shal 1 meet the criteria for establishing activities that are presumed to conform by fulfilling the requi rements set forth i n ei ther subsecti on J 1 or J 2 of thi s secti on.

1. The federal agency shall clearly demonstrate, using methods consistent with this regulation, that the total of direct and indirect emissions from the type of activities which would be presumed to conform would not:

a. Cause or contribute to any new vi of ati on of any standard i **n any area;**

b. I nterf ere with the provisions i n the appl i cabl e i mplementation plan for maintenance of any standard;

c. Increase the frequency or severity of any existing violation of any standard i n any area;

d. Delay timely attainment of any standard or any required interim emissions reductions or other milestones in any area including, where applicable, emission levels specified i n the applicable implementation plan for purposes of

(1) A demonstration of reasonable further progress;

(2) A demonstration of- attainment; or

(3) A maintenance plan.

2. The federal agency shall provide documentation that the total of direct and indirect emissions from the future actions would be below the emission rates for a conformity determination that are established i n subsection B of this section, based, for **example, on similar actions taken over recent years.**

K. I n addition to meeting the criteria for establishing exemptions set forth i n subsections J 1 or J 2 of this section, the following procedures shall also be complied with to presume that activities shall conform:

1. The federal agency shall identify through publication i n the Federal Register its list of proposed activities that are presumed to conform, and the analysis, assumptions, emissions factors, and criteria used as the basis for the presumpti ons;

2. The federal agency shall notify the appropriate EPA regional office(s), department, and local air quality agencies and, where applicable, the lead planning organization, and the metropolitan planning organization and provide at least 30 days for the public to comment on the list of proposed activities presumed t o conform;

3. The federal agency shall document its response to all the comments received and make the comments, response, and final list of activities available to the public upon request; and

4. The federal agency shall publish the final list of the activities i n the Federal Register.

L. Notwithstanding the other requirements of thi **S** secti on, when the total of direct and indirect emissions of any pollutant from a federal acti on does not equal or exceed the rates speci fi ed i n subsecti on E of this section, but represents 10% or more of a nonattai nment or maintenance area's total emissions of that pollutant, the action i s defined as a regionally significant action and the requirements of 9 VAC 5-160-110 and 9 VAC 5-160-130 through 9 VAC 5-160- 180 shall apply for the federal action.

M. Where an action presumed to be de mi ni mi s under subsections F 1 or F 2 of this section or otherwise presumed to conform under subsection I of this section i s a regionally significant action or where an action otherwise presumed to conform under subsection I of this section does not i n fact meet one of the criteria i n subsection J 1 of this section, that action shall not be considered de mi ni mi s or presumed to conform and the requirements of 9 VAC 5-160-110 and 9 VAC 5-160-130 through 9 VAC 5- 160-180 shall apply for the federal action.

N. Any measures used to affect or determine applicability of this regulation, as determined under this **section, shall result i n**

projects that are in fact de minimis, shall result in the de minimis levels prior to the time the applicability determination is made, and shall be state or federally enforceable. Any measures that are intended to reduce air quality impacts for this purpose shall be identified (including the identification and quantification of all emission reductions claimed) and the process for implementation (including any necessary funding of the measures and tracking of the emission reductions) and enforcement of the measures shall be including an implementation schedule containing explicit timelines for implementation. Prior to a determination of applicability, the federal agency making the determination shall obtain written commitments from the appropriate persons or agencies to implement any measures which are identified as conditions for making the determinations. The written commitment shall describe the mitigation measures and the nature of the commitment, in a manner consistent with the previous sentence. After this regulation is approved by EPA, enforceability through the applicable implementation plan of any measures necessary for a determination of applicability shall apply to all persons who agree to reduce direct and indirect emissions associated with a federal action for a conformity applicability determination.

9 VAC 5-160-40. Authority of board and department.

A. No provision of this regulation shall limit the power of the board to take such appropriate action as necessary to control and abate air pollution in emergency situations.

B. In accordance with the Virginia Air Pollution Control Law and the Administrative Process Act and by the adoption of this regulation, the board confers upon the department the administrative, enforcement and decision making authority enumerated in this regulation.

C. The board reserves the right to exercise its authority in any of the powers delegated in this regulation should it choose to do so.

D. The director has final authority to adjudicate contested decisions of subordinates delegated powers by the director prior to appeal of the decisions to the circuit court or consideration by the board.

9 VAC 5-160-50. Repealed.

9 VAC 5-160-60. Repealed.

9 VAC 5-160-70. Repealed.

9 VAC 5-160-80. Relationship of state regulations t o federal regulations.

A. I n order for the Commonweal th of Vi rgi ni a to ful fi 11 i **is** obligations under the federal Clean Air Act, some provisions of this regulation are requi red to be approved by EPA and when approved those provisions become federally enforceable.

B. In cases where this regulation specifies that procedures or methods shall be approved by, acceptable to, or determined by the board or department or other similar phrasing or specifically provide for decisions to be made by the board or department, i t may be necessary to have the actions (approvals determinations, exemptions, exclusions, or decisions) reviewed and confirmed as acceptable or approved by EPA i n order to make them federally enforceable. Determination of which state actions require federal confirmation or approval and the administrative mechanism for making associated confirmation or approval decisions shall be made on a case-by-case basis i n accordance with EPA regulations and policy.

9 VAC 5-160-90. Repealed.

PART III
CRITERIA AND PROCEDURES FOR
MAKING CONFORMITY DETERMINATIONS

9 VAC 5-160-110. General.

A. No federal agency shall engage in, support i n any way, or provide financial assistance for, license, or permit, or approve any activity which does not conform to an applicable implementation pl an.

B. A federal agency must make a determination <u>that</u> a federal action conforms to the applicable implementation plan i n accordance with the requirements of this regulation before the action i s taken.

C. Subsection B of this section does not include federal actions where either:

1. A NEPA analysis was completed as evidenced by a final environmental assessment, environmental impact statement, or finding of no significant impact that was prepared prior to January 31, 1994, or

2. a. Prior to January 31, 1994, an environmental assessment was commenced or a contract was awarded to develop the specific environmental analysis,

b. Sufficient environmental analysis i s completed by March 15, 1994, so that the federal agency may determine that the federal action i s i n conformity with the specific requirements and the purposes of the applicable implementation plan pursuant t o the agency's affirmative obligation under § 176(c) of the federal

Clean Air Act, and

c. A written determination of conformity under § 176(c) of the federal Clean Air Act has been made by the federal agency responsible for the federal action by March 15, 1994.

D. Notwithstanding any provision of this regulation, a determination that an action is in conformity with the applicable implementation plan does not exempt the action from any other requirements of the applicable implementation plan, NEPA, or the federal Clean Air Act.

9 VAC 5-160-120. Conformity analysis.

Any federal agency taking an action subject to this regulation shall make its own conformity determination consistent with the requirements of this part. In making its conformity determination, a federal agency shall consider comments from any interested parties. Where multiple federal agencies have jurisdiction for various aspects of a project, a federal agency may choose to adopt the analysis of another federal agency (to the extent the proposed action and impacts analyzed are the same as the project for which a conformity determination is required) or develop its own analysis in order to make its conformity determination.

9 VAC 5-160-130. Reporting requirements.

A. A federal agency making a conformity determination under 9 VAC 5-160-160 shall provide to the appropriate EPA regional office(s), department and local air quality agencies, and, where applicable, affected federal land managers, the **lead *planning* organization, and the metropolitan planning organization, a 30-day notice which describes** the proposed action and the federal agency's draft conformity determination on the action.

B. A federal agency shall notify the appropriate EPA regional office(s), department and local air quality agencies, and, where applicable, affected federal land managers, the lead planning organization, and the metropolitan planning organization within 30 days after making a final conformity determination under 9 VAC 5-160-160.

9 VAC 5-160-140. Public participation.

A. Upon request by any person regarding a specific federal action, a federal agency shall make available for review its draft

conformity determination under 9 VAC 5-160- 160 with supporting materials which describe the analytical methods and conclusions relied upon i n making the applicability analysis and draft conformity determination.

B. A federal agency shall make public its draft conformity determination under 9 VAC 5- 160- 160 by placing a notice by prominent advertisement i n a daily newspaper of general circulation i n the area affected by the action and by providing 30 days for written public comment prior to taking any formal action on the draft determination. This comment period may be concurrent with any other public involvement such as occurs i n the NEPA process.

C. A federal agency shall document its response to all the comments received on its draft conformity determination under 9 VAC 5-160-160 and make the comments and responses available, upon request by any person regarding a specific federal action, within 30 days of the final conformity determination.

D. A federal agency shall make public its final conformity determination under 9 VAC 5-160- 160 for a federal action by placing a notice by prominent advertisement i n a daily newspaper of general circulation i n the area affected by the action within 30 days of the final conformity determination.

9 VAC 5-160-150. Frequency of conformity determinations.

A. The conformity status of a federal action automatically lapses five years from the date a final conformity determination i s reported under 9 VAC 5-160-130, unless the federal action has been completed or a continuous program has been commenced to implement that federal action within a reasonable time.

B. Ongoing federal activities at a given site showing continuous progress are not new actions and do not require periodic redetermi nations so 1 ong as the acti vi ti es are within the scope of the final conformity determination reported under 9 VAC 5-160-130.

C. If, after the conformity determination i s made, the federal action i s changed so that there i s an increase i n the total of direct and indirect emissions above the levels i n 9 VAC 5-160-30 E, a new conformity determination i s required.

9 VAC 5-160-160. Criteria for determining conformity.

A. Any action required under 9 VAC **5- 160- 30 to have a**

conformity determination for a specific pollutant, shall be determined t o conform t o the applicable implementation plan if, for each pollutant that exceeds the rates in 9 VAC 160-30 E, or otherwise requires a conformity determination due to the total of direct and indirect emissions from the action, the action meets the requirements of subsecti on C of this secti on, and meets any of the fol l owi ng requi rements:

1. For any cri teri a poll utant, the total of di rect and indirect emissions from the action are specifically identified and accounted for i n the applicable implementation plan's attainment or maintenance demonstration;

2. For ozone or nitrogen dioxide, the total of direct and indirect emissions from the action are fully offset within the same nonattai nment or maintenance area through a revision to the applicable implementation plan or a similarly enforceable measure that effects emission reductions so that theree i s...no net increase i n emissions of that pollutant;

3. For any criteria pollutant, except ozone and nitrogen dioxide, the total of direct and indirect emissions from the action meet the requirements:

a. Specified i n subsection B of this section, based on areawi de air quality modeling analysis and local air quality modeling analysis; or

b. Meet the requirements of subsection A 5 of this section, and, for local air quality modeling analysis, the requirement of subsection B of this section;

4. For carbon monoxide or PM,o:

a. Where the department determines (in accordance with 9 VAC 5- 160- 120 and 9 VAC 5-160- 130 and consistent with the applicable implementation plan) that an areawi de air quality modeling analysis i s not needed, the total of direct and indirect emissions from the action meet the requirements specified i n subsection B of this section, based on local air quality modeling analysis; or

b. Where the department determines (in accordance with 9 VAC 5- 160- 120 and 9 VAC 5-160-130 and consistent with the applicable implementation plan) that an areawi de air quality modeling analysis i s appropriate and that a local air quality

modeling analysis is not needed, the total of direct and indirect emissions from the action meet the requirements specified in subsection B of this section, based on areawide modeling, or meet the requirements of subsection A 5 of this section; or

5. For ozone or nitrogen dioxide, and for the purposes of subsections A 3 b and A 4 b of this section, each portion of the action or the action as a whole meets any of the following requirements:

a. Where EPA has approved a revision to an area's attainment or maintenance demonstration after 1990 and the department makes a determination that as provided in subsection A 5.a (1) of this section or where the Commonwealth of Virginia makes a commitment as provided in paragraph A 5 a (2) of this section:

(1) The total of direct and indirect emissions from the action or portion thereof is determined and documented by the department to result in a level of emissions which, together with all other emissions in the nonattainment or maintenance area, would not exceed the emissions budgets specified in the applicable implementation plan.

(2) The total of direct and indirect emissions from the action or portion thereof is determined and documented by the department to result in a level of emissions which, together with all other emissions in the nonattainment or maintenance area, would exceed an emissions budgets specified in the applicable implementation plan and the governor or the governor's designee for state implementation plan actions makes a written commitment to EPA which includes the following:

(a) A specific schedule for adoption and submittal of a revision to the applicable implementation plan which would achieve the needed emissions reductions prior to the time emissions from the federal action would occur;

(b) Identification of specific measures for incorporation into the applicable implementation plan which would result in a level of emissions which, together with all other emissions in the nonattainment or maintenance area, would not exceed any emissions budget specified in the applicable implementation plan.

(c) A demonstration that all existing applicable implementation plan requirements are being implemented

in the area for the pollutants affected by the federal action, and that local authority to implement additional requirements has been fully pursued;

(d) A determination that the responsible federal agencies have required all reasonable mitigation measures associated with their action; and

(e) Written documentation including all air quality analyses supporting the conformity determination;

(3) Where a federal agency made a conformity determination based on a commitment from the Commonwealth of Virginia under subsection A 5 a (2) of this section, the commitment is automatically deemed a call for a revision to the applicable implementation plan by EPA under § 110(k) (5) of the federal Clean Air Act, effective on the date of the federal conformity determination and requiring response within 18 months or any shorter time within which the Commonwealth of Virginia commits to revise the applicable implementation plan;

b. The action or portion thereof, as determined by the metropolitan planning organization, is specifically included in a current transportation plan and transportation improvement program which have been found to conform to the applicable implementation plan under 40 CFR Part 51, subpart T, or 40 CFR Part **93, subpart A;**

c. The action or portion thereof fully offsets its emissions within the same attainment or maintenance area through a revision to the applicable implementation plan or an equally enforceable measure that effects emissions reductions equal to or greater than the total of direct and indirect emissions from the action so that there is no net increase in emissions of that pollutant;

d. Where EPA has not approved a revision to the relevant implementation plan attainment or maintenance demonstration since 1990, the total of direct and indirect emissions from the action for the future years (described in 9 VAC 5-160-170) do not increase emissions with respect to the baseline emissions;

(1) The baseline emissions reflect the historical activity levels that occurred in the geographic area affected by the proposed federal action during:

(a) Calendar year 1990;

(b) The calendar year that is the basis for the classification (or, where the classification is based on multiple years, the year that is most representative in terms of the level of activity), if a classification is promulgated in 40 CFR Part 81; or

(c) The year of the baseline inventory in the PM_{10}-applicable implementation plan;

(2) The baseline emissions are the total of direct and indirect emissions calculated for future years (described in 9 VAC 5-160-170 D) using the historic activity levels (described in subsection A 5 d (1) of this section) and appropriate emission factors for the future years; or

e. Where the action involves regional water or wastewater projects or both, the projects are sized to meet only the needs of population projections that are in the applicable implementation plan, based on assumptions regarding per capita use that are developed or approved in accordance with 9 VAC 5-160-170 A.

B. The areawide or local air quality modeling analyses or both shall:

1. Meet the requirements of 9 VAC 5-160-170; and

2. Show that the action does not:

a. Cause or contribute to any new violation of any standard in any area; or

b. Increase the frequency or severity of any existing violation of any standard in any area.

C. Notwithstanding any other requirements of this section, an action subject to this section may not be determined to conform to the applicable implementation plan unless the total of direct and indirect emissions from the action is in compliance or consistent with all relevant requirements and milestones contained in the applicable implementation plan, such as elements identified as part of the reasonable further progress schedules, assumptions specified in the attainment or maintenance **demonstration, prohibitions, numerical emission limits, and work practice**

requirements, and the action is otherwise in accordance with all relevant requirements of the applicable implementation plan.

D. Any analyses required under this section shall be completed, and any mitigation requirements necessary for a finding of conformity shall be identified in accordance with 9 VAC 5-160-180 before the determination of conformity is made.

9 VAC 5-160-170. Procedures for conformity determinations.

A. The analyses required under this section shall be based on the latest planning assumptions.

1. All planning assumptions (including, but not limited to, per capita water and sewer use, vehicle miles traveled per capita or per household, trip generation per household, vehicle occupancy, household size, vehicle fleet mix, vehicle ownership, wood stoves per household, and the geographic distribution of population growth) shall be derived from the estimates of current and future population, employment, travel, and congestion most recently approved by the metropolitan planning organization or other agency authorized to make the estimates, where available. The conformity determination shall also be based on the latest assumptions about current and future background concentrations and other federal actions.

2. Any revisions to these estimates used as part of the conformity determination, including projected shifts in geographic location or level of population, employment, travel, and congestion shall be approved by the metropolitan planning organization or other agency authorized to make the estimates for the urban area.

B. The analyses required under this subsection shall be based on the latest and most accurate emission estimation techniques available as described below, unless the techniques are inappropriate. If the techniques are inappropriate and written approval of the EPA Regional Administrator is obtained for any modification or substitution, they may be modified or another technique substituted on a case-by-case basis or, where appropriate, on a generic basis for a specific federal agency program.

1. For motor vehicle emissions, the most current version of the motor vehicle emissions model specified by EPA for use in the preparation or revision of the applicable implementation plan shall be used for the conformity analysis as specified in

subsections B 1 a and B i b of this section.

a. The EPA shall publish i n the Federal Register a notice of availability of any new motor vehicle emissions model.

b. A grace period of three months shall apply during which the motor vehicle emissions model previously specified by EPA as the most current versi on may be used. Conformity analyses for which the analysis was begun during the grace period or no more .than three years before the Federal Register notice of availability of the latest emission model may continue t o use the previous version of the model specified by EPA, i f a final conformity determination i s made within 3 years of the analysis.

2. For non-motor vehicle sources, including stationary and area source emissions, the latest emission factors specified by EPA i n the "Compilation of Air Pollutant Emission Factors (AP-42)" shall be used for the conformity analysis unless more accurate emission data are available, such as actual stack test data from stationary sources which are part of the conformity analysis.

C. The air quality modeling analyses required under this subpart shall be based on the applicable air quality models, databases, and other requirements specified i n Appendix W of 40 CFR Part 51, unless:

1. The guideline techniques are inappropriate, i n which case the model may be modified or another model substituted on a case-by-case basis, or, where appropriate, on a generic basis for a specific federal agency program; and

2. Written approval of the EPA Regional Administrator i s obtained for any modification or substitution.

D. The analyses required under this subsection, except 9 VAC 5-160-160 A 1, shall be based on the total of direct and indirect emissions from the action and shall reflect emission scenarios that are expected to occur under each of the following cases:

1. The federal Clean Air Act-mandated attainment year or, i f applicable, the farthest year for which emissions are projected i n the maintenance plan;

2. The year during which the total of direct and i ndirect emissions from the action i s expected to be the greatest on an annual basis; and

3. Any year for which the applicable implementation plan specifies an emissions budget.

9 VAC 5-160-180. Mitigation of air quality impacts.

A. Any measures that are intended t o mitigate air quality impacts shall be identified (including the identification and quantification of all emission reductions claimed) and the process for implementation (including any necessary funding of the measures and tracking of the emission reductions) and enforcement of the measures shall be described, including an implementation schedule containing explicit timelines for implementation.

B. Prior to determining that a federal action i s i n conformity, the federal agency making the conformity determination shall obtain written commitments from the appropriate persons or agencies to implement any mitigation measures which are identified as condi ti ons for making conformity decisions. The written commitment shall describe the mitigation measures and the nature of the commitment, i n a manner consistent with subsection A of this section.

C. Persons or agencies voluntarily committing t o mitigation measures to facilitate positive conformity determinations shall comply with the obligations of the commitments.

D. I n instances where the federal agency i s licensing, permitting, or otherwise approving the action of another governmental or private entity, approval by the federal agency shall be conditioned on the other entity meeting the mitigation measures set forth i n the conformity determination as provided i n subsection A of this section.

E. When necessary because of changed circumstances, mitigation measures may be modified so long as the new mitigation measures continue to support the conformity determination i n accordance with 9 VAC 5-160- 150 and 9 VAC 5-160-160 and this section. Any proposed change i n the mitigation measures i s subject to the reporting requirements of 9 VAC 5-160-130 and the public participation requirements of 9 VAC 5-160-140.

F. Written comments to mitigation measures shall be obtained prior to a positive conformity determination, and the commitments shall be fulfilled.

G. After EPA approves this regulation, any agreements,

including mitigation measures, necessary for a conformity determination shall be both state and federally enforceable. Enforceability through the applicable implementation plan shall apply to all persons who agree to mitigate direct and indirect emissions associated with a federal action for a conformity determination.

9 VAC 5-160-190. Savings provision.

The federal conformity rules under 40 CFR Part 51 subpart W, in addition to any existing applicable Commonwealth of Virginia requirements, shall establish the conformity criteria and procedures necessary to meet the requirements of § 176(c) of the federal Clean Air Act until such time as this regulation is approved by EPA. Following EPA approval of this regulation, the approved or approved portion of this regulation shall govern conformity determinations and the federal conformity regulations contained in 40 CFR Part 93 shall apply only for the portion, if any, of this regulation that is not approved by EPA. In addition, any previously applicable implementation plan requirements relating to conformity shall remain enforceable until the Commonwealth of Virginia revises its applicable implementation plan to specifically remove them and that revision is approved by EPA.

9 VAC 5-160-200. Review and confirmation of this chapter by board.

A. Prior to January 1, 2000, the department shall provide the board with an analysis to include (i) an assessment of the effectiveness of this chapter, (ii) the status of any specific federal requirements and the identification of any provisions more stringent than the federal requirements, (iii) the federal approval status of this chapter and (iv) an assessment of the need for continuation of this chapter.

B. Upon review of the department's analysis, the board shall confirm (i) the continuation of this chapter, (ii) the repeal of this chapter or (iii) the need to amend this chapter. If a decision is made in either of the latter two cases, the board shall authorize the department to initiate the applicable regulatory process to carry out the decision of the board.

Jil STORI CAL NOTES:

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Promulgated: January 1, 1997
Amended: January 1, 1998

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