

*Commonwealth of Virginia  
Department of Environmental Quality*

***Maintenance Plan for  
The Richmond-Petersburg  
Nonattainment Area Consisting Of  
The Cities of Petersburg, Colonial  
Heights, Hopewell, and Richmond,  
and The Counties of Prince George,  
Chesterfield, Hanover, Henrico, and  
Charles City***

*Final*

**SEPTEMBER 15, 2006**

---

# Table of Contents

<b>1.</b>	<b>BACKGROUND.....</b>	<b>1</b>
<b>2.</b>	<b>PREVIOUS PLANNING REQUIREMENTS.....</b>	<b>1</b>
<b>3.</b>	<b>VIRGINIA'S APPROACH.....</b>	<b>2</b>
<b>4.</b>	<b>ATTAINMENT INVENTORY .....</b>	<b>4</b>
4.1.	EPA REQUIREMENTS.....	4
4.2.	VIRGINIA'S APPROACH.....	4
<b>5.</b>	<b>MAINTENANCE DEMONSTRATION .....</b>	<b>4</b>
5.1.	EPA REQUIREMENTS.....	4
5.2.	VIRGINIA'S APPROACH.....	5
<b>6.</b>	<b>AIR QUALITY MONITORING NETWORK.....</b>	<b>9</b>
6.1.	EPA REQUIREMENTS.....	9
6.2.	VIRGINIA'S APPROACH.....	9
<b>7.</b>	<b>VERIFY CONTINUED ATTAINMENT.....</b>	<b>9</b>
7.1.	EPA REQUIREMENTS.....	9
7.2.	VIRGINIA'S APPROACH.....	9
<b>8.</b>	<b>CONTINGENCY MEASURES .....</b>	<b>10</b>
8.1.	EPA REQUIREMENTS.....	10
8.2.	VIRGINIA'S APPROACH.....	10
8.3.	SPECIFIC CONTINGENCY MEASURES .....	11

# Commonwealth of Virginia

## State Implementation Plan Revision for the Maintenance of Air Quality in the Richmond-Petersburg Ozone Nonattainment Area

### 1. Background

The redesignation process provides that a state may petition EPA to redesignate a nonattainment area as attainment and EPA may approve the redesignation subject to certain criteria being met. Section 107(d)(3)(E) stipulates one of these criteria, that EPA must fully approve a maintenance plan that meets the requirements of Section 175A. A state may submit both the redesignation request and the maintenance plan at the same time, and rulemaking on both may proceed on a parallel track. All applicable nonattainment area requirements remain in place. The maintenance plan constitutes a SIP revision, and must provide for maintenance of the relevant NAAQS in the area for at least 10 years after redesignation, including additional measures to ensure prompt correction of any violation of the NAAQS. The state must also submit a SIP revision 8 years after the original redesignation request is approved to provide for maintenance of the NAAQS for an additional 10 years following the first 10-year period.

EPA requires the following provisions to ensure maintenance of the NAAQS:

- The state must develop an attainment emissions inventory to identify the level of emissions in the area which is sufficient to attain the NAAQS.
- A state may generally demonstrate maintenance by showing that future emissions of a pollutant or its precursors will not exceed the level of the attainment inventory over the 10-year period following redesignation.
- Once an area has been redesignated, the state must continue to operate an appropriate air quality monitoring network in order to verify the area's attainment status.
- The state must ensure that it has the legal authority to implement and enforce all measures necessary to attain and maintain the NAAQS. Continued attainment must be verified by the state by indicating how maintenance plan progress will be tracked.
- Contingency measures must be available to promptly correct any NAAQS violation.

This maintenance plan for the 8-hour ozone standard supersedes the previous maintenance plan that was designed to maintain compliance in this region with the revoked 1-hour ozone standard. However, it is worth noting that this plan allows no backsliding of any requirements in the previous 1-hour ozone standard maintenance plan.

### 2. Previous Planning Requirements

Under the 1-hour ozone standard requirements, the Richmond-Petersburg area was originally designated a moderate nonattainment area. The area's air quality improved, and a redesignation request and maintenance plan were sent to EPA and approved on November 17, 1997. A revision to this maintenance plan was sent to EPA November 20, 2001, and EPA proposed approval for this revision on October 7, 2002. This maintenance plan contained area wide emission caps, mobile source budgets, and contingency measures. Additionally, this maintenance plan needs to be updated and resubmitted approximately 10

years after approval.

The Commonwealth is requesting that all portions of the 1-hour maintenance plan be superseded with the requirements listed in this 8-hour maintenance plan. This request includes the removal of the obligation to implement the 1-hour ozone contingency plan upon a violation or exceedance of the 1-hour ozone standard for the Richmond-Petersburg area. Once EPA approves the 8-hour ozone contingency plan, the need for contingency measures will be activated only in the event that a violation of the 8-hour ozone standard occurs at a monitor located in the Richmond-Petersburg monitoring network.

The Commonwealth is also requesting that the area wide emissions caps and mobile source budgets listed in the 1-hour ozone maintenance plan be superseded with the area wide emissions caps and mobile source budgets listed in this 8-hour ozone maintenance plan.

Lastly, the Commonwealth is requesting that EPA approve this 8-hour maintenance plan as meeting the requirements of CAA Section 175(A)b with respect to the 1-hour ozone maintenance plan update.

### **3. Virginia's Approach**

Virginia has developed a maintenance plan that meets all EPA requirements and demonstrates that, because of permanent and enforceable measures, emissions over the 10 years following redesignation approval will remain below the 2005 attainment year levels while allowing for growth in population and vehicle miles traveled. The period covered by this maintenance plan is 2005-2018.

The state has developed an emissions inventory in accordance with EPA guidance that identifies the level of emissions sufficient to achieve the NAAQS. The attainment inventory consists of the actual emissions for a year during the three-year period associated with the monitoring data showing attainment of the ozone standard, that is, 2005. The plan includes a demonstration that emissions will remain within the 2005 levels for a 10-year period by keeping in place key elements of the current federal and state regulatory programs and putting in place additional controls.

The programs which are currently in effect are as follows:

- The National Low Emission Vehicle (NLEV) program;
- Open burning restrictions for Colonial Heights, Richmond, Hopewell, Hanover, Henrico, Chesterfield, and western Charles City;
- Control Technology Guideline (CTG) Reasonably Available Control Technology (RACT) requirements for Colonial Heights, Richmond, Hopewell, Hanover, Henrico, Chesterfield, and western Charles City;
- Non-CTG VOC RACT requirements for Colonial Heights, Richmond, Hopewell, Hanover, Henrico, Chesterfield, and western Charles City;
- Stage I and Stage II vapor recovery requirements for Colonial Heights, Richmond, Hopewell, Hanover, Henrico, Chesterfield, and western Charles City;
- Reformulated gasoline requirements for Colonial Heights, Richmond, Hopewell, Hanover, Henrico, Chesterfield, and western Charles City;
- Motor vehicle fleet turnover with new vehicles meeting the Tier 2 standards; and

- Low sulfur gasoline.

Additionally, the following programs are in place and are either effective or due to become effective:

- Heavy duty diesel on road (2004/2007) and non-road emissions standards (2008); and
- Low sulfur on-road (2006) and off-road diesel fuel (2007/2010).

Lastly, to further improve air quality and to provide room for industrial and population growth while maintaining emissions in the area to less than 2005 levels, the Commonwealth of Virginia has initiated rulemaking to implement the following programs:

- Implement the Stage I requirements of 9 VAC 5 Chapter 40, Article 37 in Prince George, Petersburg, and eastern Charles City,
- Implement the open burning restriction requirements of 9 VAC 5 Chapter 40, Article 40 in Prince George, Petersburg, and eastern Charles City, and
- Implement the existing source CTG RACT requirements of 9 VAC 5 Chapter 40, Articles 5-6, 24-36, and 39 in Prince George, Petersburg, and eastern Charles City.

The schedule for implementation of these measures is as follows:

- For Stage I and CTG RACT requirements, VDEQ requested approval from the Virginia State Air Pollution Control Board to promulgate these regulatory changes for public comment in June of 2005. For the open burning restrictions, VDEQ requested approval from the Virginia State Air Pollution Control Board to promulgate these regulatory changes for public comment in March of 2005.
- VDEQ initiated public participation requirements in November of 2005.
- VDEQ requested final approval from the State Air Pollution Control Board to adopt these regulatory changes in June of 2006.
- Upon completion of executive review, the regulatory changes will become effective. VDEQ expects that completion of executive review will take place in December of 2006.

Virginia will continue to operate and maintain its air quality monitoring network. The Commonwealth of Virginia has the legal authority to implement and enforce specified measures necessary to attain and maintain the NAAQS.

In addition to maintaining key elements of its regulatory program, the state will acquire air quality and source emissions data to track attainment and maintenance. The maintenance plan includes contingency measures, as necessary, to promptly correct any NAAQS violation that occurs after redesignation of the area. These include implementation of one or more area source VOC controls.

EPA's requirements, and a description of how Virginia intends to fulfill these requirements, follow.

## 4. Attainment Inventory

### 4.1. EPA Requirements

The state must develop an attainment emissions inventory to identify the level of emissions sufficient to achieve the NAAQS. This inventory should be consistent with EPA's most recent guidance on emission inventories for nonattainment areas available at the time, and should include emissions during the time period associated with the monitoring data showing attainment of the ozone NAAQS. Where the state has made an adequate demonstration that air quality has improved as a result of the SIP, the attainment inventory will generally be the actual inventory during the time period the area attained the standard. The inventory must be based on "typical summer day" emissions of VOCs, NO<sub>x</sub> and carbon monoxide (CO) during the attainment year.

### 4.2. Virginia's Approach

The state has developed an attainment year emissions inventory that identifies the level of emissions sufficient to achieve the NAAQS. The attainment inventory consists of the actual emissions for the year during the three-year period associated with the monitoring data showing attainment of the ozone standard, that is, 2005. The 2005 inventory is appropriate to use because it represents the typical inventory for the three-year period demonstrating attainment of the standard. The 2005 inventory is consistent with EPA guidance, is based on "typical summer day" emissions of VOCs, NO<sub>x</sub>, and CO during 2005, and consists of a list of sources and emissions in tons per day. A detailed description of the procedures used to develop the attainment year inventory is contained in the Technical Support Document. It should be noted that CO emissions calculations are necessary to create a 2005 inventory and area wide cap but not necessarily a CO mobile source budget.

**Table 4.2-1  
2005 Attainment Year Inventory**

<b>Pollutant</b>	<b>Point</b>	<b>Area</b>	<b>NonRoad</b>	<b>Mobile</b>	<b>Total</b>
<b>VOC</b>	32.705 tons/day	54.760 tons/day	20.438 tons/day	43.518 tons/day	<b>151.421 tons/day</b>
<b>NO<sub>x</sub></b>	77.281 tons/day	26.501 tons/day	16.862 tons/day	67.155 tons/day	<b>187.799 tons/day</b>
<b>CO</b>	23.385 tons/day	39.548 tons/day	285.780 tons/day	509.681 tons/day	<b>858.394 tons/day</b>

## 5. Maintenance Demonstration

### 5.1. EPA Requirements

A state may demonstrate maintenance of the NAAQS by showing that future emissions of a pollutant or its precursors will not exceed the level of the attainment inventory. The demonstration should be for a period of 10 years following the redesignation. The projected inventory should consider future growth, including population and industry. It should also be consistent with the attainment inventory, and it should document data inputs and assumptions. All elements of the demonstration should be consistent with current EPA guidance. Enforceability through regulations must also be demonstrated.

Any assumptions concerning emission rates must reflect permanent, enforceable measures. A state generally cannot take credit for reductions unless there are regulations in place requiring those reductions or the reductions are otherwise shown to be permanent. Therefore, the state is expected to maintain its implemented control strategy despite redesignation to attainment, unless such measures are shown to be unnecessary for maintenance or are replaced with measures that achieve equivalent reductions. Emission reductions from source shutdowns can be considered permanent and enforceable to the extent that those shutdowns have been reflected in the SIP and all applicable permits have been modified accordingly.

## 5.2. Virginia's Approach

Table 5.2-1 demonstrates how future emissions of VOCs, NO<sub>x</sub>, and CO will not exceed the level of Virginia's attainment inventory for a 10-year period following redesignation. The projected emissions reflect the expected ozone season daily emissions based on the best available growth rates and projections (see Table 5.2-2).

**Table 5.2-1  
Richmond-Petersburg Area VOC, NO<sub>x</sub>, and CO Emissions from 2005 to 2018**

<b>Volatile Organic Compounds (VOC) in Tons/Day</b>					
Year	Point	Area <sup>1</sup>	Nonroad	Mobile <sup>3</sup>	Total (tons/day)
Year 2005	32.705	54.760	20.438	43.518	151.421
Year 2011	36.074	60.315	15.898	32.343	144.630
DIFF. (05-11)	3.369	5.555	-4.540	-11.175	-6.791
Year 2018	39.900	68.331	15.515	23.845	147.591
DIFF. (05-18)	7.195	13.571	-4.923	-19.673	-3.830
<b>Nitrogen Oxides (NO<sub>x</sub>) in Tons/Day</b>					
Year	Point	Area <sup>2</sup>	Nonroad	Mobile <sup>3</sup>	Total
Year 2005	77.281	26.501	16.862	67.155	187.799
Year 2011	84.296	27.417	13.118	43.661	168.492
DIFF. (05-11)	7.015	0.916	-3.744	-23.494	-19.307
Year 2018	90.521	28.169	8.641	26.827	154.158
DIFF. (05-18)	13.240	1.668	-8.221	-40.328	-33.641

**Table 5.2-1 Continued**  
**Richmond-Petersburg Area VOC, NO<sub>x</sub>, and CO Emissions from 2005 to 2018**

Carbon Monoxide <sup>4</sup> (CO) in Tons/Day					
Year	Point	Area	Nonroad	Mobile	Total
Year 2005	23.385	39.548	285.780	509.681	858.394
Year 2011	25.588	39.320	308.715	355.364	728.987
DIFF. (05-11)	2.203	-0.228	22.935	-154.317	-129.407
Year 2018	27.667	43.151	337.174	321.035	729.027
DIFF. (05-18)	4.282	3.603	51.394	-188.646	-129.367

<sup>1</sup>Includes vehicle refueling emissions and the benefits of selected local controls (Stage I and II, CTG RACT, and open burning)

<sup>2</sup>Includes selected local controls (open burning)

<sup>3</sup>Includes conformity buffers identified in Table 5.2.1-1.

<sup>4</sup>Carbon monoxide emissions from mobile sources are shown to provide the basis for the maintenance year cap and the annual maintenance demonstration. The CO emissions from this area will be capped at 2005 levels. However, the CO mobile source emissions listed above are not intended to be a mobile source emissions cap.

**Table 5.2-2.**  
**Growth Assumptions Used In Emission Inventory Projections<sup>1</sup>**

Category	Level of Detail	Source
Stationary (Industrial) Source Growth <sup>2</sup>	Source/Process Specific	E-GAS
Area and Non-Road Mobile Source Growth <sup>3</sup>	Category Specific	BEA
Vehicle Miles Traveled Growth <sup>4</sup>	County/Road Class Specific	VDOT

<sup>1</sup>This table contains summary growth rate level of detail and source information. Detailed information concerning the actual growth factors and procedures used to develop the emissions projections in the maintenance plan can be found in the technical support document.

<sup>2</sup>Growth factors developed using the EPA Economic Growth Analysis System (E-GAS) which produces source and process specific growth factors based on leading economic indicators such as earnings and production forecasts.

<sup>3</sup>Individual sub-category growth projections were developed using surrogate activity growth rates published by the U.S. Bureau of Economic Analysis (i.e., population, employment, housing, etc.).

<sup>4</sup>Individual growth rates by jurisdiction and road class were provided by the Virginia Department of Transportation (VDOT). These factors were developed using the area's official transportation model (MINUTP). This is the same model used for transportation conformity.

Mobile source emissions were calculated using EPA's MOBILE6.2 mobile source inventory model. The Virginia Department of Transportation provided daily vehicle miles traveled (DVMT), average speed data for each road type by jurisdiction, and annual growth rates that were used to forecast DVMT into the future. Also, the Virginia Department of Motor Vehicles provided registration data that was specific to each jurisdiction.

Mobile source emission projections include the National Low Emission Vehicle Program (NLEV), the 2004 Tier 2 and Low Sulfur Gasoline Rule, the 2004 and 2007 Heavy-Duty Diesel Vehicle Rules, and the 2006 Low Sulfur Diesel Rule. In addition, Richmond, Hopewell, Colonial Heights, Chesterfield, Hanover, Henrico, and Charles City were modeled with Phase II Reformulated Gasoline (RFG) while Prince George and Petersburg were modeled with conventional gasoline fuel. Non-road emissions were calculated using EPA's NONROAD2004 model, version 2.2.0, which incorporates the projected emission reductions resulting from EPA's Clean Air Nonroad Diesel Rule adopted last May 2004.

### 5.2.1. Mobile Source Emissions Budgets

As is the case for ozone nonattainment plans, the maintenance plan establishes on-road mobile source emissions budgets for VOCs and NO<sub>x</sub>. These budgets represent the level of mobile source emissions that can be emitted in the area while supporting the air quality plan. The mobile source budgets established by this plan are presented in Table 5.2.1-1. For VOCs and NO<sub>x</sub>, initial, interim and final mobile source budgets have been developed to accommodate the fluctuation in mobile source emissions estimates over time. In the near term, mobile source emissions are rapidly decreasing due to the implementation of the NLEV, Tier 2, and HDDV rules, even as VMT continues to grow. Once these rules have sufficiently penetrated the fleet, growth in VMT becomes more pronounced and eventually pushes mobile emissions back on an upward trend. To allow the area to demonstrate conformity of its transportation plans in early TIP evaluation years within the maintenance period, a higher initial budget (set at 2005 levels) has been established which will be in effect from the beginning of the maintenance period through 2011. Beginning in 2011, the interim emissions budget comes into effect and remains through 2017. Finally, in 2018 the final maintenance plan budget comes into effect and will remain in place until such time as a new budget is established. The interim mobile source budgets for NO<sub>x</sub> and VOC include a safety margin of 1 ton VOC/day and 3 tons NO<sub>x</sub>/day to accommodate updated planning assumptions and estimates for the conformity and maintenance processes. The final mobile source budgets also include a safety margin of 1 ton VOC/day and 3 tons NO<sub>x</sub>/day. The final mobile source budget safety margins will help to take into account updated planning assumptions. These safety margins will facilitate conformity determinations in the "out" years past 2018, where VOC emissions from the Richmond-Petersburg area mobile source category will eventually be rising due to increases in VMT and population. These safety margins were taken from the surplus of emission reductions below the attainment year cap.

**Table 5.2.1-1. - Maintenance Plan On-Road Mobile Source Emissions Budgets**

Year	VOC Emissions (tpd)	NO <sub>x</sub> Emissions (tpd)
<b>2005 Attainment Year</b>	<b>43.518 tons/day</b>	<b>67.155 tons/day</b>
2011 Predicted Emissions	31.343 tons/day	40.661 tons/day
Conformity Buffers	1.000 ton/day	3.000 tons/day
<b>2011 Interim Budget Year</b>	<b>32.343 tons/day</b>	<b>43.661 tons/day</b>
2018 Predicted Emissions	22.845 tons/day	23.827 tons/day
Conformity Buffers	1.000 ton/day	3.000 tons/day
<b>2018 Final Budget</b>	<b>23.845 tons/day</b>	<b>26.827 tons/day</b>

### 5.2.2. Control Measure Emission Reductions

Point and area source emission projections assume controls on emissions from certain source categories by strategies such as federal requirements, CTG RACT, Stage I vapor recovery, and open burning restrictions. The point source growth rate was determined using the EPA developed and approved Economic Growth Analysis System (E-GAS) along with industry and source-specific growth estimates in selected cases. Table 5.2.2-1 contains a summary of the emission control measures and reductions included in the plan. A detailed description of the growth factors and procedures used to develop these data may be found in the Technical Support Document.

**Table 5.2.2-1. - Maintenance Plan Control Measures and Emission Reductions**

Emission Control Measure	Emissions Reductions (tons/day)	
	2011	2018
<b>Volatile Organic Compounds (VOC)</b>		
Federal Tier 2/Low Sulfur Gasoline Rule	1.678 tons/day	3.582 tons/day
Federal Heavy Duty Diesel Engine Rule	0.076 tons/day	0.211 tons/day
Motor Vehicle Vapor Recovery/Stage II	0.674 tons/day	0.898 tons/day
Reformulated Gasoline (On-Road)	4.964 tons/day	3.433 tons/day
Reformulated Gasoline (Non-Road)	0.080 tons/day	0.081 tons/day
Reformulated Gasoline (Area)	0.065 tons/day	0.047 tons/day
Federal Nonroad Engine/Equipment Rules	4.617 tons/day	5.000 tons/day
Stage I Vapor Recovery	0.808 tons/day	0.803 tons/day
Open burning restrictions	0.584 tons/day	0.673 tons/day
CTG RACT	0.369 tons/day	0.429 tons/day
Total VOC Reductions:	13.915 tons/day	15.157 tons/day
<b>Nitrogen Oxides (NO<sub>x</sub>)</b>		
Federal Tier 2/Low Sulfur Gasoline Rule	9.026 tons/day	16.809 tons/day
Federal Heavy Duty Diesel Engine Rule	5.093 tons/day	13.466 tons/day
Reformulated Gasoline (On-Road)	0.214 tons/day	0.161 tons/day
Federal Nonroad Engine/Equipment Rules	3.719 tons/day	8.193 tons/day
Open Burning Restrictions	0.123 tons/day	0.142 tons/day
Total NO <sub>x</sub> Reductions:	18.175 tons/day	38.771 tons/day
<b>Carbon Monoxide (CO)</b>		
Federal Tier 2/Low Sulfur Gasoline Rule	28.744 tons/day	52.945 tons/day
Federal Heavy Duty Diesel Engine Rule	1.985 tons/day	4.115 tons/day
Reformulated Gasoline (On-Road)	21.297 tons/day	18.503 tons/day
Total CO Reductions:	52.026 tons/day	75.563 tons/day

Please note that due to the limitations of the EPA models used to develop some of these estimates, the reductions identified differ in what they represent. Some, like the federal vehicle and nonroad estimates, represent reductions from the attainment (2005) estimates. Others, like the local controls, are estimates from uncontrolled emission estimates during the selected projection years. Therefore, the reduction totals presented here do not exactly match the overall area reductions predicted in this maintenance plan and used for the maintenance emission tests. The calculations detailing methodology may be found in the

## **6. Air Quality Monitoring Network**

### **6.1. EPA Requirements**

Once an area has been redesignated, the state must continue to operate an appropriate air quality monitoring network in accordance with 40 CFR Part 58, to verify the area's attainment status. In cases where measured mobile source parameters (for example, vehicle miles traveled) have changed over time, the state may also need to perform a saturation monitoring study to determine the need for and location of additional permanent monitors.

### **6.2. Virginia's Approach**

Virginia will continue to operate and maintain its air quality monitoring network. Should measured mobile source parameters change significantly over time, the state will perform a saturation monitoring study to determine the need for and location of additional permanent monitors.

## **7. Verify Continued Attainment**

### **7.1. EPA Requirements**

The state must ensure that it has the legal authority to implement and enforce all measures necessary to attain and maintain the NAAQS. Sections 110(a)(2)(B) and (F) of the Act, and regulations promulgated in 40 CFR 51.110(k) suggest that one such measure is the acquisition of air quality and source emission data to demonstrate attainment and maintenance. The state submittal must indicate how the state will track the progress of the maintenance plan. This is necessary due to the fact that the emission projections made for the maintenance demonstration depend on assumptions of point, area, and mobile source growth.

One option for tracking the progress of the maintenance demonstration would be for the state to periodically update the emissions inventory. In this case, the maintenance plan should specify the frequency of any planned inventory updates. Such an update could be based, in part, on the annual update of the EPA Aerometric Information Retrieval System (AIRS) and could indicate new source growth and other changes from the attainment inventory (such as changes in vehicle miles traveled or in traffic patterns). As an alternative to a complete update of the inventory, the state may choose to do a comprehensive review of the factors that were used in developing the attainment inventory to show no significant change. If this review does show a significant change, the state should then perform an update of the inventory.

### **7.2. Virginia's Approach**

The Commonwealth of Virginia has the legal authority to implement and enforce specified measures necessary to attain and maintain the NAAQS. Key regulatory elements that the state will keep in place to maintain attainment are as follows:

- Existing source regulatory program requiring controls for certain source types for which EPA has defined reasonably available control technology in guideline documents (CTG RACT). These are in place in Colonial Heights, Hopewell, Richmond, Hanover, Henrico, Chesterfield, and western Charles City. They will be expanded to Prince George, Petersburg, and eastern Charles City.
- Requirement for vapor recovery controls for emissions from filling of underground storage tanks at gasoline service stations (Stage I). Stage I and Stage II controls are required in Colonial Heights,

Hopewell, Richmond, Hanover, Henrico, Chesterfield, and western Charles City. Only Stage I will be expanded into Prince George, Petersburg, and eastern Charles City.

- Open Burning Restrictions. These control measures were previously in place in Colonial Heights, Hopewell, Richmond, Hanover, Henrico, Chesterfield, and western Charles City. They will be expanded into Prince George, Petersburg, and eastern Charles City

In addition to maintaining key elements of its regulatory program in place, the Commonwealth will acquire ambient and source emission data to track attainment and maintenance.

Virginia will track the progress of the maintenance demonstration by periodically updating the emissions inventory. This tracking will consist of annual and periodic evaluations. The annual evaluation will consist of checks on key emissions trend indicators such as the annual emissions update of stationary sources, the Highway Performance Monitoring System (HPMS) vehicle miles traveled data reported to the Federal Highway Administration, and other growth indicators. These indicators will be compared to the growth assumptions used in the plan to determine if the predicted versus the observed growth remains relatively constant. The state will also develop and submit to EPA comprehensive tracking inventories every three years during the maintenance plan period, beginning in 2005. For the purpose of performing this tracking function for point sources, the state will retain the annual emission statement requirements for the maintenance area (9 VAC 5-20-160).

The state will report the results of this tracking program to EPA every three years.

## **8. Contingency Measures**

### **8.1. EPA Requirements**

The maintenance plan must include contingency measures, as necessary, to promptly correct any NAAQS violation that occurs after redesignation of an area. It should include measures to be adopted, a schedule and procedures for adoption and implementation, and a specific time limit for action. Specific triggers that would put the plan into motion must be identified. This plan is considered to be an enforceable part of the SIP and should ensure that the contingency measures are adopted explicitly once they are triggered.

### **8.2. Virginia's Approach**

The ability of the Richmond-Petersburg nonattainment area to stay in compliance with the ozone standard after redesignation depends largely on the level of VOC and NO<sub>x</sub> emissions in the region. Emissions are projected to decrease or stay below 2005 levels through the year 2018. However, if emissions do not decrease as expected, or if emissions increase, the area may experience ozone violations.

Because future ozone violations are related to future emission levels, the state has developed contingency measures for the maintenance SIP revisions that address two situations.

The first situation would be an actual increase of the VOC, NO<sub>x</sub>, or CO emissions above the regional emissions budget which would be identified or predicted through the development of the comprehensive periodic tracking inventories. As stated earlier, the Department of Environmental Quality will monitor the observed growth rates for vehicle miles traveled, population, and point source VOCs, NO<sub>x</sub>, and CO emissions on a yearly basis which will serve as a reality check and early warning indicator. Comprehensive tracking inventories will also be developed every three years using current EPA-approved methods to estimate emissions, concentrating on areas identified in the less rigorous yearly evaluations as being potential problems. If the regional emissions budget for one or more of the pollutants of concern is exceeded, appropriate contingency measures will be implemented according to this section.

The second situation is monitored ozone violations. The Department of Environmental Quality will rely on recorded ozone readings to determine whether violations have occurred. A violation is any three year average of each annual fourth highest 8 hour average of monitored ozone readings. If violations of the ozone air quality standard of 0.08 parts per million occur, mandatory contingency measures will be implemented according to Section 8.3.2. and Section 8.3.3.

Virginia agrees to expeditiously implement the following contingency measures, on a schedule as described in Section 8.3.4, in response to future VOC and NO<sub>x</sub> emission increases or ozone violations that occur after EPA approval of the plan, as defined in each scenario below. The state's obligation under these provisions is subject to state administrative law and, as applicable, any necessary legal authorizations prior to implementation.

### **8.3. Specific Contingency Measures**

#### **8.3.1. For VOC and NO<sub>x</sub> Emissions Above the Regional Emissions Budget**

In the event that VOC or NO<sub>x</sub> emissions exceed the regional emissions budget, VDEQ – Air Division will prepare a complete VOC and NO<sub>x</sub> emission inventory. If the complete VOC and NO<sub>x</sub> emission inventory continues to demonstrate that the regional emissions caps have been exceeded, VDEQ – Air Division will implement one or more control strategies that are currently not in place from Table 8.3.2-1.

#### **8.3.2. For a Violation of the Ozone Standard**

In the event that a violation of the ozone standard occurs at a monitor located in the Richmond-Petersburg monitoring network, the VDEQ – Air Division will implement two control strategies from Table 8.3.2-1 that are currently not in place.

**Table 8.3.2-1  
Maintenance Plan Contingency Measure Choices**

<b>Control Strategy</b>	<b>Description</b>
9 VAC 5 Chapter 40, Article 42	Emission Standards for Portable Fuel Container Spillage
9 VAC 5 Chapter 40, Article 47	Emission Standards for Solvent Metal Cleaning Operations
9 VAC 5 Chapter 40, Article 48	Emission Standards for Mobile Equipment Repair and Refinishing Operations
9 VAC 5 Chapter 40, Article 49	Emission Standards for Architectural and Industrial Maintenance Coatings
9 VAC 5 Chapter 40, Article 50	Emission Standards for Consumer Products
9 VAC 5-40-310 of 9 VAC 5 Chapter 40, Article 4	General Process Operations – Standard for Nitrogen Oxides (non-CTG RACT for major sources)

**8.3.3. For a Violation of the Ozone Standard in Any Subsequent Ozone Season**

In the event that a violation of the ozone standard occurs in the Richmond-Petersburg monitoring network following the implementation of section 8.3.2 and in any subsequent ozone season, two additional control strategies from Table 8.3.2-1 will be implemented.

**8.3.4. Schedule**

The following schedule applies to the contingency measures concerning non-CTG RACT requirements and the area source VOC regulations:

- Notification received from EPA that a contingency measure must be implemented, or three months after a recorded violation.
- Applicable regulation to be adopted 6 months after this date.
- Applicable regulation to be implemented 6 months after adoption.
- Compliance with regulation to be achieved within 12 months of adoption.