

Georgia's Redesignation Request and Maintenance Plan for the Murray County 8- Hour Ozone Nonattainment Area

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Executive Summary

This document contains Georgia's request under the Federal Clean Air Act Amendments of 1990 that the designated portion of Murray County be redesignated from nonattainment to attainment with respect to the National Ambient Air Quality Standard (NAAQS) for tropospheric or ground-level ozone.¹ The Murray Partial County nonattainment area is located entirely within the Chattahoochee National Forest and is defined as the area enclosed to the east by Murray County's eastern border, to the North by latitude of 34.9004 degrees, to the West by longitude 84.7200 degrees, and to the South by 34.7040 degrees and is inclusive to all mountain peaks within this area of Murray County that have an elevation greater than or equal to 2400 feet.

This request is based on three years, 2002-2004, of ambient monitoring data at the Ft. Mountain monitor located in Murray County showing no violation of the 8-hour ozone standard; the implementation of regional permanent and enforceable reductions in ozone precursor emissions; compliance with all applicable requirements; and the Murray Partial County Maintenance Plan with projections demonstrating that the 2002 emission levels in the region influencing this area will not be exceeded through at least the year 2018.

¹ This redesignation request addresses the NAAQS for the 8-hour ozone standard.

1.0 Introduction

1.1 Purpose

This document contains the technical support necessary for the Georgia Environmental Protection Division's (EPD) request that the Murray Partial County nonattainment area be redesignated under EPA's Clean Data Policy², which herein after will be referred to as the Seitz Memo, as an area attaining the National Ambient Air Quality Standard (NAAQS) for tropospheric ozone pursuant to Sections 107(d)(3)(D) and (E) of the Clean Air Act (CAA), as amended.

This designation request was prepared in accordance with U.S. EPA Guidance issued in 1992, in memorandums on September 4 and October 28 from John Calcagni³ and additional guidance provided by memorandum on September 17, 1993, from Michael H. Shapiro⁴.

1.2 Historical Background

On July 18, 1997, U.S. EPA promulgated a revised ozone standard of 0.08 parts per million (ppm), measured over an 8-hour period. The 8-hour standard is more protective of public health and more stringent than the previous 1-hour standard.

In accordance with Section 107(d)(1) of the CAAA, the Murray Partial County (Chattahoochee National Forest), GA area was designated in a Federal Register notice on April 30, 2004, as a nonattainment area for the 8-hour National Ambient Air Quality Standards (NAAQS), effective June 15, 2004. Murray County was classified as Subpart 1 (Nonattainment Areas in General) of Part D of Title I of the CAA.

Prior to the 8-hour Ozone designation, in a letter dated July 15, 2003, to EPA (Appendix A), Georgia EPD made its recommendations for 8-hour ozone nonattainment designations in Georgia. It reported that a monitor located within a federal Class I area in Murray County had shown violation of the standard. In accordance with recent EPA proposed guidance regarding rural transport of ozone, Georgia EPD recommended only that portion of Murray County comprising the Class I area be designated nonattainment.

In a letter dated October 20, 2003, to EPA (Appendix A), Georgia EPD stated the review of evidence indicated that the relatively high ozone concentrations observed by the Ft. Mountain monitoring station were the result of pollutant transport and vertical dispersion characteristics unique to this area. Furthermore, evaluation of the eleven nonattainment designation criteria did not support designation of the entire county as a nonattainment area. Within Murray County, there are few point sources of emissions, only one which is a major source (subject to PSD emission limits for NO_x); there is low population density (see Sec. 3.2.1); and little vehicular traffic/low mobile⁵ emissions density (see Sec. 3.2.4). EPD recommended that the boundary lines of the nonattainment area should be drawn to incorporate areas of Murray County with high

² <http://www.epa.gov/ttn/oarpg/t1/memoranda/clean15.pdf>

³ <http://www.epa.gov/ttn/naaqs/ozone/ozonetech/940904.pdf>

⁴ <http://www.epa.gov/ttn/oarpg/t1/memoranda/redesig.pdf>

⁵ Unless otherwise specified, in this document the term "mobile" is used to describe emissions from on-road motor vehicles. The term "nonroad" is used to describe emissions from off-road equipment and vehicles.

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elevations and other geographic and terrain characteristics that contribute to the observed high ozone concentrations.

In a letter dated March 4, 2004, to EPA (Appendix A), EPD recommended that the nonattainment area be defined as all mountain peaks in Murray County characterized by elevations greater than or equal to 2400 feet and that are enclosed by contour lines that close on themselves and that the area be enclosed to the east by Murray County's eastern border, to the North by latitude of 34.9004 degrees, to the West by longitude 84.7200 degrees, and to the South by 34.7040 degrees. The area incorporates all mountain peaks within the Chattahoochee National Forest area of Murray County that have an elevation greater than or equal to 2400 feet. EPA promulgated the boundaries of the Murray County ozone nonattainment area in the Federal Register on April 30, 2004. EPA clarified the nonattainment boundary by adding the following boundary description in a Federal Register notice on October 13, 2006 (Appendix A).

The area enclosed to the east by Murray County's eastern border, to the north by latitude of 34.9004 degrees, to the west by longitude 84.7200 degrees, and to the south by 34.7040 degrees. All mountain peaks within the Chattahoochee National Forest area of Murray County that have an elevation greater than or equal to 2,400 feet and that are enclosed by contour lines that close on themselves.

A map of the Murray County nonattainment area is illustrated in Figure 1-1.

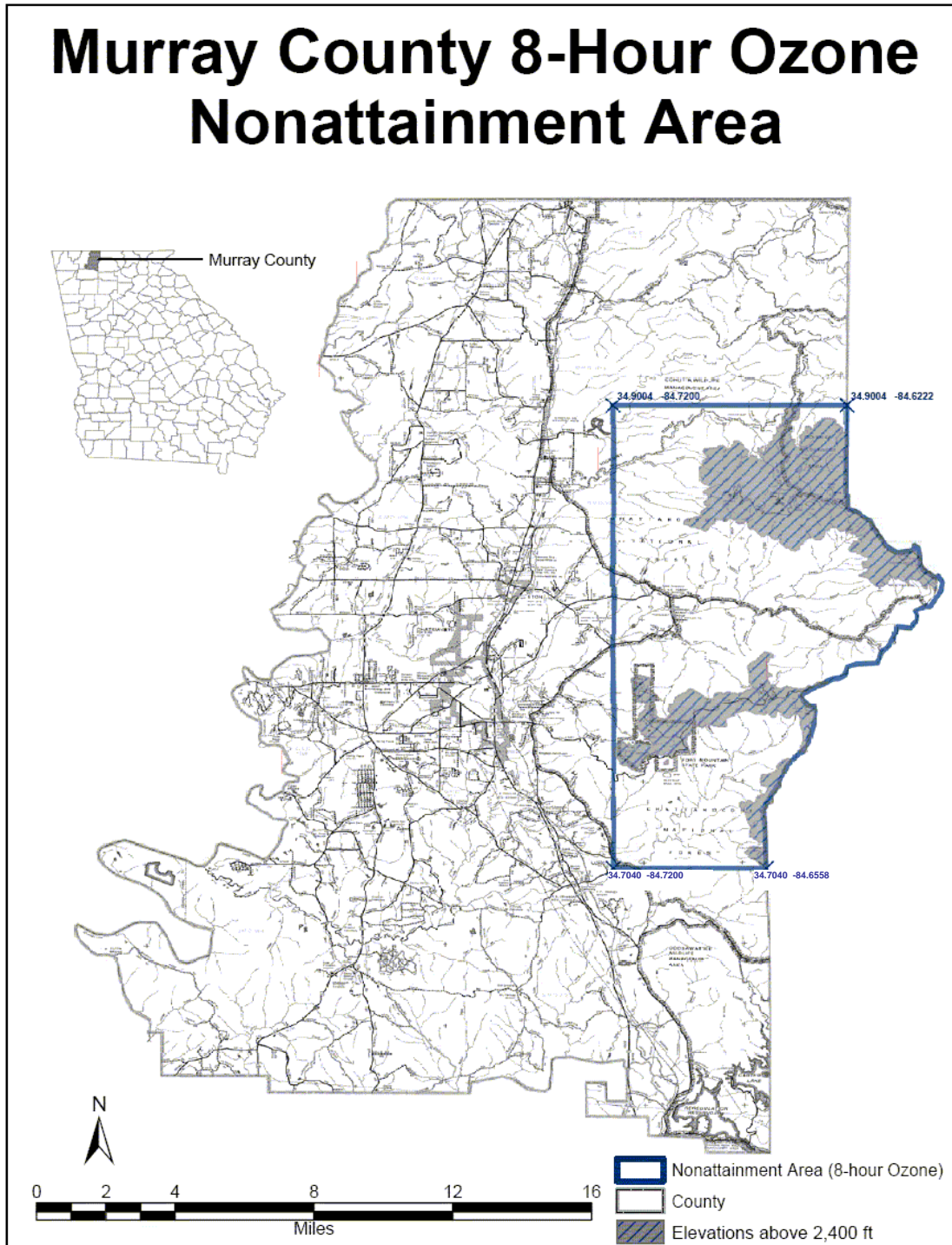


Figure 1-1 Murray County Partial Nonattainment Area

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1.3 Criteria for Redesignation

Section 107(d) of the CAAA, states that an area can be redesignated to attainment if the following conditions are met:

1. The EPA has determined that the NAAQS has been attained.
2. The applicable implementation plan has been fully approved by EPA under Section 110(k).
3. The EPA has determined that the improvement in air quality is due to permanent and enforceable reductions in emissions.
4. The state has met all applicable requirements for the area under Section 110 and Part D.
5. The EPA has fully approved a maintenance plan, including a contingency plan, for the area under Section 175A.

The first and third of these requirements relate directly to air quality and the reasons for its improvement. These requirements are discussed together in Section 2 of this document.

The second and fourth requirement will be satisfied pending the approval of this SIP revision. The area is currently only subject to the SIP provisions of Georgia's Rules for Air Quality Control. Since clean data has been demonstrated and the Maintenance Plan and Redesignation Request of this SIP revision is being submitted prior to the June 2007 deadline for an Attainment Demonstration SIP Revision for the 8-hour Ozone NAAQS, the area is not currently subject to an approved 8-hour Attainment Demonstration SIP. An approved attainment demonstration SIP is not required according to the Guidance detailed in the Seitz Memo.

The maintenance plan has two required components. First, the State must submit a revision to the SIP which provides for maintenance of the NAAQS in the area for at least ten years after the redesignation. Thus, the State must demonstrate that Murray County will maintain the standard through at least 2018 (pending a maximum of 2 years for EPA approval). Second, the plan revision must incorporate a contingency plan outlining commitments by the State to promptly correct any future violations. The maintenance demonstration and contingency plan are discussed in Section 3.3.

2.0 Monitoring Data

Criterion 1. The EPA has determined that the NAAQS has been attained.

Criterion 3. The improvement in air quality is due to permanent and enforceable reductions.

2.1 Review and Assessment of Monitored Ozone Concentrations

2.1.1 Overview

The NAAQS for ground-level ozone is 0.08 parts per million (ppm) based on a 8-hour average sample. Based on the EPA-established rounding convention, an 8-hour monitor reading of 0.085 ppm is considered an exceedance of the 8-hour ozone standard, whereas a reading of 0.084 ppm is not. Compliance with the 8-hour NAAQS for ground-level ozone is based on an average of the annual 4th highest 8-hour daily maximum concentrations from each of the last three years of air quality monitoring data. A violation of the ozone NAAQS occurs when the three-year annual average of the annual 4th highest 8-hour daily maximum concentrations exceeds 0.084 ppm.

The three years of ozone monitoring data (2002-2004) used for this Murray Partial County area Maintenance Plan demonstrate compliance with the 8-hour NAAQS for ground-level ozone. The three most recent years of quality assured data for this area are the years 2003 – 2005, which actually demonstrate a greater margin of compliance than the years 2002 – 2004. However, the analysis for this plan was initiated prior to the certification of 2005 data and since 2002 is a CERR reporting year, a baseline year according to EPA guidance, and is also used by the regional planning organization, VISTAS, for modeling purposed by EPA Region 4 states, the use of an attainment period that begins with the 2002 year, greatly aids in the inventory analysis. Additionally, 2006 data provides an even greater margin of compliance, however, 2006 monitoring data has not yet been certified.

2.1.2 Ozone Monitoring Network

Murray County currently has one ambient ozone monitoring station installed in accordance with 40 CFR 58, which provides adequate coverage of the entire nonattainment area and has been representative of the area of highest concentrations. The monitor is located at Fort Mountain in the Chattahoochee National Forest and has remained at its original location during the period 2002-2004, and will continue to remain in the same location throughout the maintenance period. Table 2-2 contains a summary of the fourth highest measured 8-hour ozone values for each year at the Ft. Mountain location. The Ft. Mountain 8-hour ozone monitor has been operational since 1999. Prior to 1999, the monitor was previously located at Jacks River Road in adjacent Fannin County, located in the Cohutta Wilderness Area of the Chattahoochee National Forest. Data for the Ft. Mountain monitor is located in Table 2-1.

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Figure 2-1 Georgia Ozone Monitor Locations as of 2004

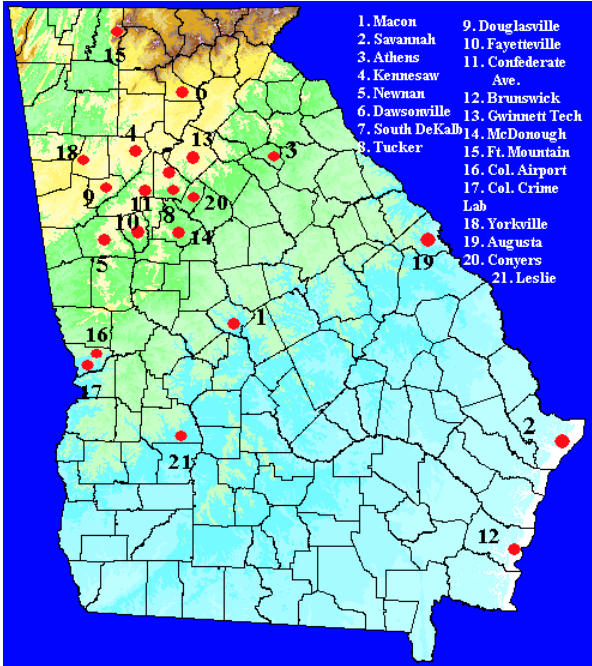


Table 2-1 Murray County Ozone Monitor Location as of 2004

Site Name	County	AQS Identification Number	Date Established
Fort Mountain, Cohutta Overlook	Murray	13-0213-0003	1999

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2.1.3 Ambient Ozone Monitoring Data

All of the ozone ambient monitoring data that was collected during 2002, 2003, and 2004 was collected in accordance with 40 CFR 58 and has been stored in EPA's Air Quality System (AQS). This process was completed in November 2005. A copy of a printout showing the fourth highest ozone concentrations at this monitor for these years is included in Appendix B.

2.1.4 Exceedances of the Standard

The actual method for determining attainment of the 8-hour ozone standard is contained in 40 CFR 50.10. The standard is attained when the 3-year average of the annual fourth-highest daily maximum 8-hour average ozone concentration is less than or equal to 0.08 ppm, as determined by Appendix I of 40 CFR 50. The number of significant figures in the level of the standard dictates the rounding convention for comparing the computed 3-year average annual fourth-highest daily maximum 8-hour average ozone concentration with the level of the standard. The third decimal place of the computed value is rounded, with values equal to or greater than 5 rounding up. Thus, a computed 3-year average ozone concentration of 0.085 ppm is the smallest value that is greater than 0.08 ppm. As stated in Appendix I of 40 CFR 50, a valid maximum daily average value may not be available for each day of the year, and it is necessary to account for any such missing values when calculating the fourth highest value for a particular calendar year. The results of this analysis for the Murray Partial County area are shown in Table 2-2.

Table 2-2 is a summary of the fourth-highest daily maximum 8-hour average ozone concentration for the Ft. Mountain monitor for each year from 2002 to 2004 and the average for that three-year period. The table illustrates 4th highest annual 8-hourly average concentrations and the 3-year average as well as all additional data available for this monitor in its current location.

Table 2-2 Fourth Highest Values

Site Name	4 th Highest Value (ppm)							3yr average 2002 - 2004
	2000	2001	2002	2003	2004	2005	2006	
Fort Mountain	0.091	0.080	0.092	0.085	0.074	0.080	0.074	0.084

2.1.5 Chemical and Meteorological Analysis

The ozone observations presented in the previous sections demonstrate that the Murray Partial County area attained the 8-hour NAAQS for ozone for the 2002-2004 period with a 3-year design value of 0.084. The original design value for the first three years (2000 – 2002) of data for this monitor was 0.088. 2005 and 2006 data was also available. 2005 data resulted in a design value of 0.080 ppm for the years 2003 - 2005, providing a greater margin of compliance, and the 2006 data provides an even greater margin of compliance at 0.076 ppm for the latest three years of data. The data from Table 2-2 clearly demonstrates a general trend of improvement of the ambient level 8-hour ozone values for Fort Mountain. Data from 2002 through 2004 was used in the analysis for this plan for the reasons provided in section 2.1.1 and because it was the first period to demonstrate compliance and most of the analysis for this plan was initiated for that monitoring period.

To satisfy Criterion 3, it must further be shown that “the improvement in air quality is due to permanent and enforceable reductions in emissions.” Section 2.2 and subsequent tables of this

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document demonstrate that permanent and enforceable reductions in emissions indeed have occurred, and the Maintenance Plan presented in Section 3.0 provides a commitment to ongoing control. However, because ozone varies with both emission rates and meteorological conditions, it may be asked whether the improvement in air quality can be attributed to the reductions in emissions or whether it arose solely from favorable meteorology. As previously discussed, the letter dated October 20, 2003, to EPA found in Appendix A addresses this question by analyzing both meteorological conditions and concentrations of ozone that originally contributed to the transport of ozone that resulted in the nonattainment designation of this area. In addition, the sensitivity analysis found in Appendix C demonstrates the influence of regional controls of NO_x emissions on measured concentrations at the Fort Mountain monitor. Therefore, EPD maintains that those reductions in NO_x emissions contributed substantially to reductions in ozone concentrations during the period.

2.2 Permanent and Enforceable Reductions in Emissions

As previously discussed in this document, the fact that the Murray Partial County NAA is located within a National Forest and has no significant sources of emissions for any source category (point, area, mobile or nonroad), is designated nonattainment due to ozone transport, and that this SIP revision is being submitted prior to the required submission of an attainment demonstration, no emission reductions have been previously required or are any emissions reductions technically feasible. The sensitivity analysis detailed in Appendix C identifies emissions contributions from the Atlanta and Chattanooga metropolitan areas to the Murray County Partial NAA. Major emission reduction programs enacted in these areas due to past and current nonattainment designations have led to significant actual, enforceable emission reductions. These programs include state regulations implemented by EPD and the State of Tennessee and approved into the subsequent SIP revisions, and a number of federal control programs. The Atlanta rules (including state and federal rules) that were relied upon to attain the 1-hour NAAQS are discussed in Appendix D. The Chattanooga area is subject to EPD rules for the Catoosa and Walker County portion of the Chattanooga Early Action Compact and rules required by the State of Tennessee for early attainment of the 8-hour ozone standard. These rules are described in Appendix E.

Other federal programs have been promulgated that have reduced and/or will reduce emissions. The following national standards are now being implemented in various phases:

1. Onboard Refueling Vapor Recovery for Light-Duty Vehicles
2. Architectural and Industrial Maintenance Coatings
3. Automobile Refinishing
4. The National Emission Standards for Hazardous Air Pollutants (NESHAP); the majority of which are also VOC
5. Phase II Acid Rain Program for NO_x
6. Tier 2 Motor Vehicle Emissions Standards and Gasoline Sulfur Control Requirements (65 FR 6697).
7. Regional NO_x SIP Call.

3.0 Maintenance Plan

3.1 Overview

Criterion 5. The EPA has fully approved a maintenance plan, including a contingency plan, for the area under Section 175A.

Section 175A of the Clean Air Act Amendments of 1990 defines the general framework of a maintenance plan. The core provisions of Section 175A include a maintenance demonstration, the verification of continued attainment, and a contingency plan. In addition to these required provisions, an attainment inventory and monitoring program are provided by this plan in support of the maintenance demonstration and verification of continued attainment.

3.2 Attainment Inventory

3.2.1 Overview

Monitored attainment of the 8-hour standard was achieved for the 2002 - 2004 three-year period. The most recent comprehensive periodic (triennial) emissions inventory for the State of Georgia was compiled for 2002 pursuant to Section 182(a)(3)(A). In accordance with federal requirements, the triennial inventory for 2002 was submitted to EPA by June 1, 2004. Documentation supporting the Georgia 2002 CERR data is located in Appendix I.

According to the September 4, 1992, EPA guidance document entitled, "Procedures for Processing Requests to Redesignate Areas to Attainment", the base attainment inventory should be consistent with EPA's most recent guidance on emission inventories and should represent the emissions during the time period associated with the monitoring data showing attainment. For purposes of demonstrating maintenance of the standard, 2002 was chosen as the base year, representing the monitoring period of 2002 - 2004. The attainment year is 2004. Because only part of Murray County is designated nonattainment, area and non-road emissions were apportioned based on population of the nonattainment area to the total population of Murray County. EPD consulted with EPA, who concurred that population scaling is an appropriate method for developing partial-county inventories. The population of Murray County from the year 2000 Census was 36,506 people. The US Census⁶ estimated that by July 1, 2002, the population of Murray County was 38,617 persons, or a growth of 5.78%. The Georgia Department of Transportation (GDOT) calculated that, based on Census 2000, and selecting the census blocks whose centers were inside the nonattainment area boundary, that the population of the partial-county area in 2000 was 297 persons. Since the census blocks cover an area that is somewhat larger than the Murray County partial nonattainment area, this is a conservative (high) value. Adjusting for 5.78% growth between the 2000 and 2002 census, the population of the partial area by July 1, 2002, was 314 persons. Therefore, the partial-county area contained 0.81% of the population as of 2002, and 0.81 % was the scaling factor applied to emission inventory data to determine the emissions from the Murray County Partial nonattainment area. Since the partial-county area contains no point sources and the on-road mobile emissions were determined as described in section 3.2.4 below, this scaling factor was only applied to area and non-road sources of emissions.

⁶ <http://www.census.gov/popest/counties/tables/CO-EST2003-01-13.xls>

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Using 2002 as the base year, the subsequent inventory years chosen were an interim year, 2009, and 2018, the end of the minimum-10-year maintenance period. These are years for which VISTAS,⁷ the regional planning organization of which Georgia is a member, has developed inventories. Preparation of the VISTAS inventories is described in Appendix I. The general approach adopted by VISTAS was to use recently updated growth and control data from sources that included EPA's Clean Air Interstate Rule analyses; EPA's Heavy Duty Diesel rulemaking emission projections; EPA's Economic Growth Analysis System (EGAS 5.0); an updated Regional Economic Models, Inc. (REMI), Policy Insight® model (version 5.5, used in the development of EGAS 5.0); and the latest Annual Energy Outlook published by the Department of Energy. The resulting emissions inventories represent the best currently available estimate of past and future year emissions in Georgia. These emissions were annual county-level emissions for each source category classification (SCC) code. To calculate summer daily emissions, temporal profiles used in EPA's Sparse Matrix Operator Kernel Emissions (SMOKE), the emission modeling system used for VISTAS, were applied to VISTAS BaseG area and nonroad emissions. These profiles gave the fraction of emissions in each month. The fractions in June, July and August (a three-month total of 92 days) were used to calculate summer daily emissions as follows:

Summer Daily Emissions = annual emissions x (fraction in June + fraction in July + fraction in August) / 92

Additional details on the individual emissions source sectors are provided in the following sections.

3.2.2 Point Sources

For purposes of this maintenance inventory, point sources are defined as stationary sources that emit greater than 100 tons per year (TPY) of VOCs or NO_x. Currently, there are no point sources located within the Murray Partial-County Nonattainment area, so this source category is not included in Tables 3-7 and 3-8.

3.2.3 Area Sources

Area sources can be defined as those sources and activities that are too small or too numerous to be handled individually in a point source inventory. Nonattainment area totals are listed in summary Tables 3-7 and 3-8 under area sources.

3.2.4 On-road Mobile Sources

3.2.4.1 Mobile Source Emissions Inventory Methodology

Highway mobile emissions for the Murray Partial County area were developed using the MOBILE6.2 emission factor model⁸. Mobile source emissions were estimated for the 2002 base year; a horizon year, 2009; and 2018.

The Murray Partial County area mobile source emission totals are listed in summary Table 3-6 below. The input parameters for the mobile source emissions modeling were established through interagency consultation and are listed below:

⁷ Visibility Improvement State and Tribal Association of the Southeast

⁸ <http://www.epa.gov/otaq/m6.htm#m60>

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- Emission Factor Model: MOBILE6.2.03
- MOBILE6 Inputs
 - Average hourly temperature, humidity, and average barometric pressure⁹ for the 10 highest Chattanooga ozone days during 2000-2002
 - No Stage II refueling
 - No anti-tampering program
 - No I/M program
 - Fuel
 - 2002 -- EPA conventional gasoline (279 ppm sulfur, 9.0 psi RVP¹⁰)
 - 2009 and 2018 -- EPA conventional gasoline (30 ppm sulfur, 9.0 psi RVP)
 - 2002 regional fleet age distribution¹¹
 - Derived from R.L. Polk & Co. registration data for Murray county
 - Applied to 15 of the 16 MOBILE6.2.03 composite vehicle classifications - LDV, LDT1, LDT2, LDT3, LDT4, HDV2B, HDV3, HDV4, HDV5, HDV6, HDV7, HDV8A, HDBS, HDBT, MC
 - Default for HDV8B
 - Default vehicle VMT¹² fractions

The MOBILE6 input, output, and supporting files used in the mobile source emissions modeling are included in Appendix H, MOBILE6 Files.

3.2.4.2 Mobile Emission Calculations

Since the Murray County nonattainment area is not within any of Georgia Department of Transportation's (GDOT) urban travel demand models, emissions estimates were produced using off-model techniques. Based on 40 CFR Part 93.122(a)(7) of the Transportation Conformity Rule, "reasonable methods" shall be used to estimate nonattainment or maintenance area VMT on off-network roadways inside, as well as outside, the urban transportation planning area. The methodology used to produce the mobile emissions for Murray County is described in this section, using "reasonable methods" in accordance with the requirements outlined in the Transportation Conformity Rule.

VMT Calculations

Data Collection

⁹ See Appendix G, Meteorological Inputs for MOBILE6

¹⁰ (Reid vapor pressure, a measure of gasoline volatility)

¹¹ Registration data was from R. L. Polk & Co.'s National Vehicle Population Profile ® current as of October 2002 and from R. L. Polk & Co.'s TIPNet ® current as of March 2003. See Appendix H, MOBILE6 Files, for the input file (02murray.d) containing the Murray county registration distribution by age.

¹² (vehicle miles traveled)

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GDOT, local, and specially-requested traffic counts were used as the basis for the VMT estimates. A majority of the roads in the nonattainment area were unpaved and unsuitable for traffic counters. Traffic estimates for unpaved roads in the nonattainment area were based on traffic counts from nearby paved roads and possible destinations for traffic utilizing the unpaved roads.

The southern portion of the nonattainment area contained mostly paved roads and had two GDOT traffic count stations located on SR 52. Additional special counts were taken to supplement the historical data. These counts are shown in Table 3-1.

Table 3-1 Data for Southern Region

Traffic Count Station	2005 AADT	April 2005 ADT
141	460	-
143	420	-
9005	-	710
9006	-	650
9007	-	590

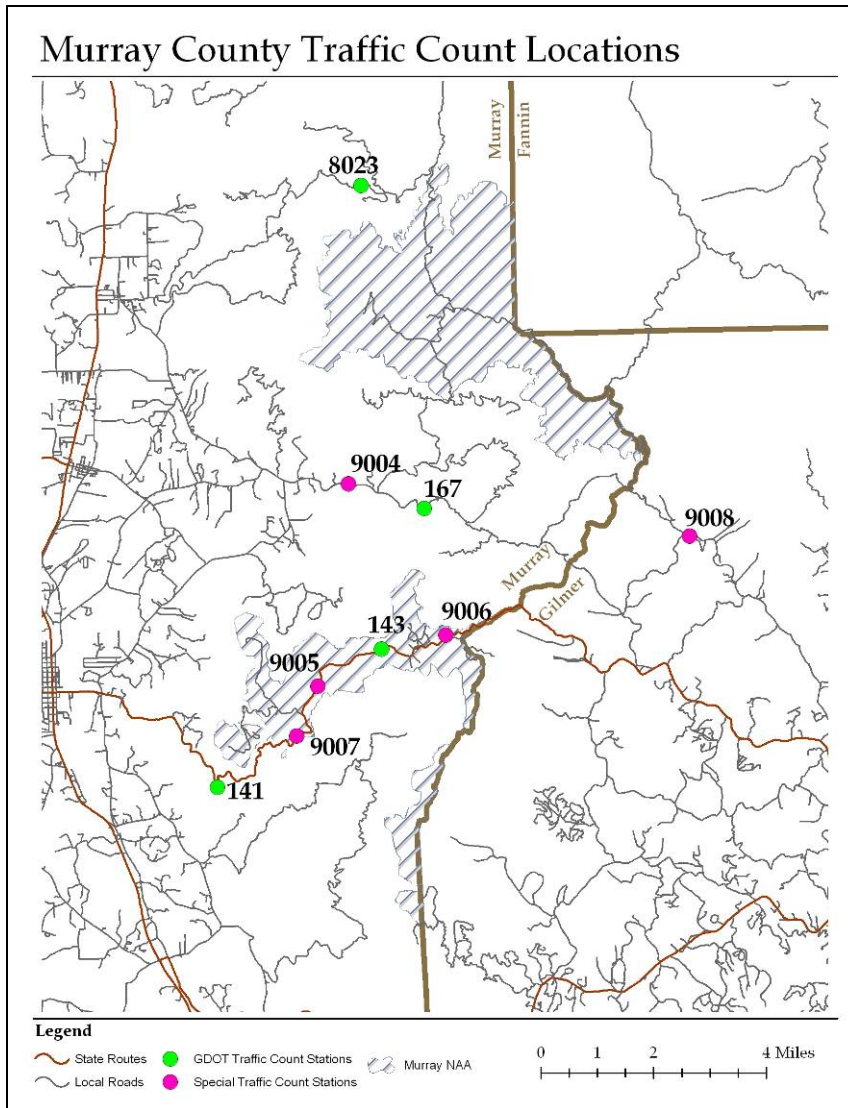
The northern portion of the Murray County nonattainment area had no paved roads, and therefore had no count stations. One local counter, one GDOT counter and two additional special GDOT counters in the vicinity were used to help estimate trips traveling to and through the area. These counts are shown in Table 3-2.

Table 3-2 – Data for Northern Region

Traffic Count Station	2005 AADT	April 2005 ADT
167	220	
8023	60	
9004		370
9008		250

The locations of these permanent and special count stations are shown in Figure 3-1.
Figure 3-1 – Traffic Count Locations

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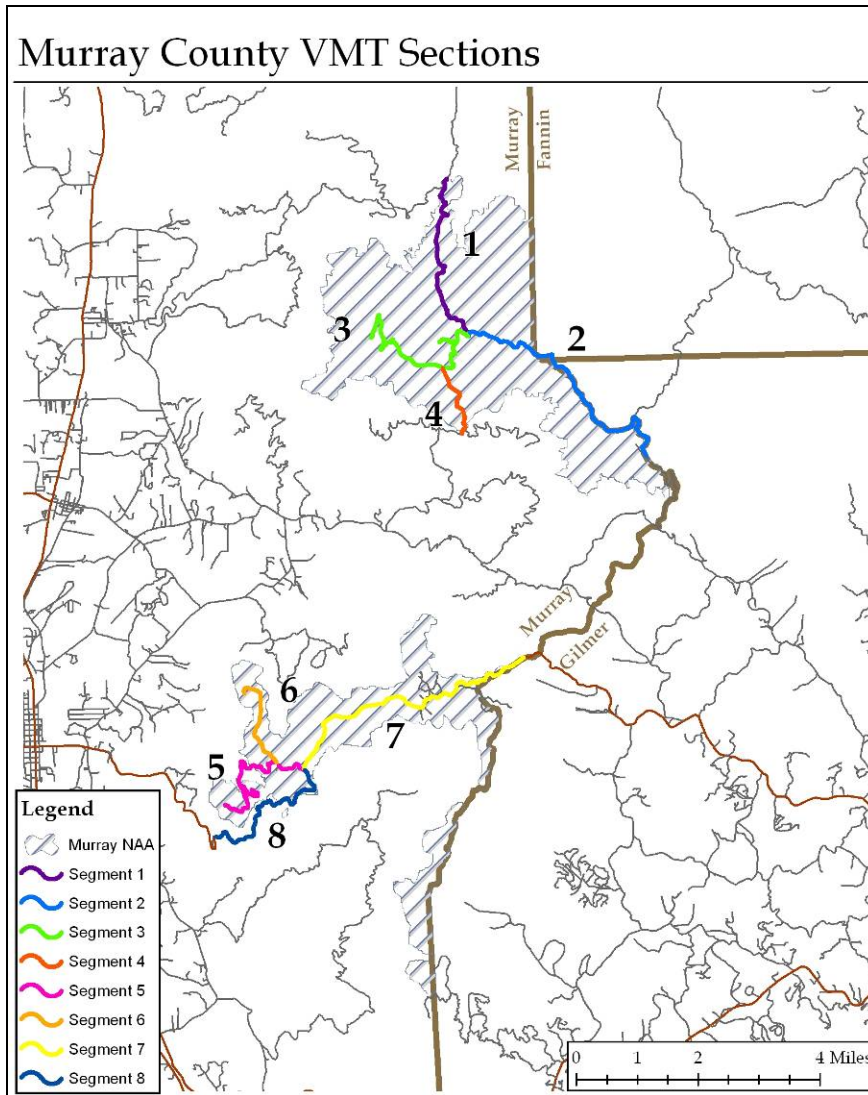


Road Segment Selection

VMT estimates were developed by using segment-level route mileage measurements and multiplying those measurements by an average daily traffic (ADT) factor. In order to calculate the segment lengths, GDOT staff studied the road network inside the nonattainment area and selected sections that would carry consistent levels of vehicular traffic. The selected road segments are shown in Figure 3-2.

Figure 3-2 – Segments for VMT Development

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Of these eight road segments, segments 7 and 8, otherwise known as State Route 52, are functionally classified as minor arterials. The remaining six road segments are all considered local roads. Based on GIS measurements of the segment lengths, there are 5.54 miles of minor arterials and 17.17 miles of local roads in the nonattainment area. Mileage by segment is shown in Table 3-3.

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ADT/VMT Development

For facilities with traffic counts, ADT factors were based on observed traffic volumes. For facilities without traffic counts, ADT factors were estimated based on the traffic volumes from facilities with counts in the area and possible destinations for traffic utilizing the unpaved roads. Estimated ADT was prepared for each of the eight road segments using both observed and estimated traffic volumes and knowledge of the two major destinations driving local traffic patterns in the area, Fort Mountain State Park and Conasauga Lake. The roadway segment lengths were then multiplied by the estimated ADT to calculate VMT by segment.

Table 3-3 ADT/VMT Worksheet

Road Segment	Length (mi)	ADT '02	ADT '09	ADT '18	VMT '02	VMT '09	VMT '18
1	3.05	40	44	51	122.00	134.20	155.55
2	5.12	100	111	127	512.00	568.32	650.24
3	3.43	85	94	108	291.55	322.42	370.44
4	1.19	25	28	32	29.75	33.32	38.08
5	2.71	75	92	120	203.25	249.32	325.20
6	1.67	20	25	32	33.40	41.75	53.44
7	4.36	650	799	1043	2834.00	3483.64	4547.48
8	1.18	750	922	1204	885.00	1087.96	1420.72

Traffic volumes for 2009 and 2018 were estimated using annual growth rates. A 1.5% annual growth rate based on traffic close to the nonattainment area was used for segments 1-4 and a 3.0% growth rate based on park attendance for Fort Mountain State Park was used for segments 5-8.

The final VMT was calculated by summer-adjusting the average daily VMT using summer adjustment factors obtained from GDOT's Office of Transportation Data (OTD). A summer adjustment factor of 1.00 was used for Murray County rural minor arterial and 0.95 for rural local roads. Per OTD, the VMT adjustment procedure involves dividing the average daily VMT by the summer-adjusting factor. Results are shown in Table 3-4.

Table 3-4 VMT Summer Adjustment Worksheet

Year	Functional Class	VMT	Summer Adj Factor	Final VMT
2002	6 (Minor Arterial)	3,719.0	1.00	3,719.0
2002	9 (Local)	1,192.0	0.95	1,254.7
2009	6	4,571.6	1.00	4,571.6
2009	9	1,349.3	0.95	1,420.3
2018	6	5,968.2	1.00	5,968.2
2018	9	1,592.0	0.95	1,675.8

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Emissions Calculations

Emission factors for minor arterials were applied to State Route 52 (segments 7 and 8) VMT, and factors applicable to local roads segments (segments 1 through 6) were applied to the remaining VMT. Since the arterial emission factors are speed dependent, an assumed speed of 40 MPH was used for State Route 52. The emission factors for the local roads are not speed dependent, so no determination of speed for these facilities was necessary. The applied emission factors by functional classification are shown in Table 3-5.

Table 3-5 Emission Factors, Grams/Mile

Minor Arterials

Analysis Year	VOC Emission Factor	NOx Emission Factor
2002	2.702	2.837
2009	1.686	1.771
2018	0.794	0.856

Local Roads

Analysis Year	VOC Emission Factor	NOx Emission Factor
2002	4.363	2.903
2009	2.627	1.899
2018	1.224	0.914

Tons of emissions were estimated by multiplying the VMT projections by the emission factors, then applying the appropriate conversion factor (907,180 grams per ton). The total calculated emissions by analysis year are shown in Table 3-6.

Table 3-6 Emission Estimations

Total Emissions	<u>VOC</u>	<u>NOx</u>
	Emissions (in grams)	Emissions (in grams)
2002	15,522.93	14,193.15
2009	11,438.97	10,793.54
2018	6,789.92	6,640.45

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	VOC	NOx
Total Emissions	Emissions (in tons)	Emissions (in tons)
2002	0.0171	0.0156
2009	0.0126	0.0119
2018	0.0075	0.0073

3.2.4.3 Mobile Source Maintenance Budget

In accordance with the Transportation Conformity Rule, this maintenance plan establishes motor vehicle emissions budgets for the last year of the maintenance plan (2018). These motor vehicle emissions budgets (MVEB) are being established for the year 2018.

This maintenance plan establishes an attainment inventory for the year 2002, the first year of the three-year period with monitoring data showing attainment. This attainment inventory identifies the base level of emissions in the area which is sufficient to maintain the 8-hour ozone NAAQS. Maintenance of the 8-hour ozone NAAQS is demonstrated by showing that future emissions of NOx and VOC will not exceed the level of the attainment inventory. NOx and VOC emissions from on-road mobile sources were projected for the year 2018 as discussed elsewhere in Section 3.2.4. The projected mobile source emissions are shown in Table 3-6. NOx and VOC emissions were also projected for the year 2018 for area and nonroad mobile sources as described in Sections 3.2.2, 3.2.3, and 3.2.5, respectively. These projections are shown in Table 3-7 for NOx and Table 3-8 for VOC. As can be seen in Tables 3-7 and 3-8, total emissions of NOx and VOC are projected to decrease from the base year (2002) through the year 2018. Specifically, NOx emissions are projected to decrease by 0.0111 tons per day and VOC emissions are projected to decrease by 0.0084 tons per day. These projected decreases in emissions from the base year through 2018 are termed the "safety margins." In establishing motor vehicle emissions budgets for the last year of the maintenance plan (2018 in this case), all or a portion of the safety margins may be allocated to the MVEB.

As a result of interagency consultation meetings and other discussions with planning partners, 50% of the projected 2018 safety margins for NOx and VOC is being allocated to the MVEB to allow for likely changes in mobile source modeling assumptions by the time EPA's approval of the maintenance plan triggers a requirement for a conformity determination using those budgets. This maintenance plan establishes the MVEB at 0.0129 tons per day for NOx ($0.0073 + (0.0111 \times 0.5) = 0.0129$) and 0.0117 tons per day for VOC ($0.0075 + (0.0084 \times 0.5) = 0.0117$). These MVEB are for the year 2018. The MVEB for NOx will be the projected 2018 emissions for on-road mobile sources in addition to 50% of the projected 2018 NOx emissions safety margin. The MVEB for VOC will be the projected 2018 emissions for on-road mobile sources in addition to 50% of the projected 2018 VOC emissions safety margin. The Murray Partial County area emissions and safety margins are listed in Tables 3-7 and 3-8.

The calculations below show how the MVEB were determined for the year 2018.

On-Road Mobile NOx Emissions for 2018 (0.0073 TPD) + 50% of NOx Emissions Safety Margin for 2018 (0.0056 TPD) = NOx MVEB for 2018 (0.0129 TPD)

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On-Road Mobile VOC Emissions for 2018 (0.0075 TPD) + 50% of VOC Emissions Safety Margin for 2018 (0.0042 TPD) = VOC MVEB for 2018 (0.0117 TPD)

Murray Partial County Area MVEB

Year for which MVEB Established	Where Established	NO_x TPD	VOC TPD
2018	Murray Partial County 8-Hour Maintenance Plan	0.0129	0.0117

3.2.5 Nonroad Mobile Sources

Nonroad mobile sources are mobile sources that do not travel on local roads, state highways and interstates. Nonroad mobile source emissions result from the use of fuel in a diverse collection of vehicles and equipment:

- agricultural equipment, such as tractors;
- aircraft, such as jets and prop planes, do not exist in the partial;
- airport ground-support equipment, such as terminal tractors, do not exist in the partial;
- commercial equipment, such as generators, air compressors, and pressure washers;
- construction and mining equipment, such as graders and backhoes;
- industrial equipment, such as fork lifts and sweepers;
- lawn and garden equipment, such as lawn mowers and leaf and snow blowers;
- logging equipment, such as chain saws and shredders;
- marine vessels, such as power boats and oil tankers, do not exist in the partial area;
- railroad equipment, such as train engines, do not exist in the partial area; and
- recreational vehicles and watercraft, such as all-terrain vehicles, off-road motorcycles, and boats. Watercraft are prohibited from using fuel powered motors and are excluded from the inventory.

Nonroad mobile source emissions for 2002, 2009, and 2018 were, with the exception of those from aircraft and locomotives, calculated by the VISTAS contractors using EPA's NONROAD2005 emissions model. The NONROAD model reflects the effects of all federal controls on nonroad sources of emissions. At this time, the NONROAD model does not calculate emissions for railroad (line-haul), aircraft, or commercial marine activity, but these sources are not present in the Murray Partial County area.

Nonattainment area totals are listed in summary Tables 3-7 and 3-8 under nonroad sources.

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3.3 Maintenance Demonstration

The required maintenance plan must become a part of the SIP and provide for maintenance of the air quality in the affected area for at least 10 years after redesignation. Georgia has chosen 2018 as the end year of the maintenance plan for the Murray County Partial NAA.

The general approach used for the maintenance plan to demonstrate that attainment of the 8-hour ozone standard will continue to be maintained is based upon restricting future anthropogenic emissions to a level that is representative of attainment of the standard. If these future emissions are no greater than the actual emissions during a year in which attainment of the standard was monitored, then it can be assumed that attainment of the standard will also be achieved in future years under similar meteorological conditions.

It can be seen from Tables 3-7 and 3-8 that there is a calculated safety margin for both VOC and NOx for each year in the maintenance plan.

**Table 3-7 Murray Partial County Ozone Attainment Area Maintenance Plan
NOx Emissions (Tons per Summer Day)**

	Source Category	2002	2009	2018
Total for the Murray Partial County NAA	Area*	0.0070	0.0072	0.0076
	Mobile	0.0156	0.0119	0.0073
	Nonroad*	0.0054	0.0040	0.0020
	Total NOx	0.0280	0.0231	0.0169
Maintenance Plan Decrease from 2002 (NOx Safety Margin**)			0.0049	0.0111

* Scaled according to the population of the partial county area.

**After assigning 0/0056 TPD of the 2018 NOx safety margin to the Motor Vehicle Emissions Budget, the revised 2018 NOx safety margin will be 0.0055 TPD.

**Table 3-8 Murray Partial County 8-Hour Ozone Attainment Area
Maintenance Plan
VOC Emissions (Tons per Summer Day)**

	Source Category	2002	2009	2018
Total for the Murray Partial County NAA	Area*	0.0209	0.0204	0.0240
	Mobile	0.0171	0.0126	0.0075
	Nonroad*	0.0050	0.0033	0.0031
	Total VOC	0.0430	0.0363	0.0346
Maintenance Plan Decrease from 2002 (VOC Safety Margin**)			0.0067	0.0084

* Scaled according to the population of the partial county area.

**After assigning 0.0042 TPD of the 2018 VOC safety margin to the Motor Vehicle Emissions Budget, the revised 2018 VOC safety margin will be 0.0042TPD.

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3.3.1 Plan to Maintain Air Quality

The EPD has previously implemented programs in existing ozone maintenance and EAC areas, for Atlanta and for the Georgia portion of Chattanooga, respectively, that Appendix C demonstrates are significant influences in the transport of ozone that has resulted in the nonattainment designation for the Murray Partial County. Those measures will remain enforceable as part of the SIP provisions responsible for ozone attainment in those respective areas and will help ensure that maintenance of the 8-hour standard for the Murray Partial County area will continue. Sources subject to existing ozone SIP measures are prohibited from reducing emission controls for those areas ("anti-backsliding") unless such a relaxation is first approved by the EPA as a revision to the Georgia SIP.

Due to the previously discussed nature of the Murray Partial County area, there are no available emission source categories to control and the area is not currently subject to any attainment demonstration SIP measures as the area has attained the standard prior to the required deadline for an 8-hour attainment demonstration SIP revision. However, control measures have been implemented on point, area, mobile, and nonroad sources to reduce emissions of oxides of nitrogen (NO_x) and volatile organic compounds (VOCs), in the Atlanta nonattainment area and Chattanooga (EAC) area. Details for these existing controls can be found in Appendix D, E, and F for Atlanta, the EAC for Catoosa and Walker Counties of Chattanooga, and the Chattanooga, TN EAC.

3.3.2 Verification of Continued Attainment

Verification of continued attainment is accomplished through operation of the ambient ozone monitoring network and the periodic updates of the area's emissions inventory.

The current ambient ozone monitor operating at the Fort Mountain site will continue to operate unless a change is approved by EPA. No plans are underway to discontinue operation, relocate, or otherwise affect the ambient monitoring network in place. As noted in Section 2.0, the 1990 Amendments required a triennial Periodic Emissions Inventory for the nonattainment area. The most recent inventory for the state of Georgia was compiled for 2002. The Consolidated Emissions Reporting Rule (CERR) was promulgated by EPA on June 10, 2002. For the purposes of verifying continued attainment based upon the emissions inventory, the three main components of the inventory will be updated on different schedules. The major point sources of air pollution will continue to submit data on their emissions on an annual basis. This has been required under 40 CFR 51, Subpart Q for many years. For the area source and mobile source portions of the inventory, these emissions will continue to be quantified on a three-year cycle. The inventory will be updated and maintained on a three-year cycle. As required by the CERR, the next overall emissions inventory will be compiled for 2005.

3.3.3 Contingency Plan

Section 175A(d) of the Clean Air Act Amendments requires that the maintenance plan include provisions for contingency measures that would promptly be implemented by the state to correct any violation of the 8-hour ozone NAAQS after redesignation of an area as an attainment area. A list of potential contingency measures that could be considered for future implementation in such an event should also be included in the maintenance plan.

EPD has developed a contingency plan for the Murray Partial County 8-hour nonattainment area. Contingency measures are intended to provide further emission reductions in the event that

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violations of the 8-hour NAAQS occur after redesignation to attainment. Consistent with this plan, EPD agrees to adopt and implement, as expeditiously as practicable, the necessary corrective actions in the event that violations of the 8-hour ozone NAAQS occur anywhere within the Murray County Partial maintenance area after redesignation to attainment. Contingency measures would be implemented within 24 months of the contingency Measure Trigger unless EPD demonstrated that technical or economic feasibility warranted an implementation period longer than 24 months.

Under Section 175A(d), the minimum requirement for contingency measures is the implementation of all measures that were contained in the SIP before the redesignation. However, due to the fact that this area has attained the 8-hour ozone NAAQS prior to requiring the submittal of an Attainment Demonstration SIP revision, the area is currently not subject to any ozone abatement measures, and none are required as per guidance prescribed by the Seitz Memo.

The State of Georgia will use actual ambient monitoring data as the indicator to determine whether these contingency measures would be implemented. In accordance with 40 CFR Part 58, ambient ozone monitoring data that indicates a violation of the ozone NAAQS will begin the process to implement these contingency measures according to the protocols identified below. The contingency plan provides for corrective responses should the 8-hour ozone NAAQS be violated, or if emissions in the Murray Partial County maintenance area increase significantly above current levels.

Contingency Measure Trigger:

Tier I: Any 8-hour ozone monitoring reading exceeding 0.084 ppm at the Fort Mountain ambient monitoring station in the Murray Partial County maintenance area or, if the periodic emission inventory updates reveal excessive or unanticipated growth greater than 10% in emissions of either ozone precursor over the baseline or intermediate emissions inventories for the Murray Partial County maintenance area (as determined by the triennial emission reporting required by CERR). EPD will evaluate the exceedances as expeditiously as practicable to determine if the trend is likely to continue. If it is determined that additional emission reductions are necessary, EPD will implement the Tier II schedule below to implement any required measures as expeditiously as practicable, taking into consideration the ease of implementation and the technical and economic feasibility of selected measures. It should be noted that EPA does not require a state to implement contingency measures when occasional exceedances are recorded.

Tier II: Any recorded violation of the 8-hour ozone NAAQS at the Fort Mountain ambient monitoring station in the Murray Partial County maintenance area, EPD will conduct a comprehensive study to determine the causes of the violation and to determine if the trend is likely to continue. Since the Murray Partial County NA designation is due significantly to the transport of ozone from sources outside of the nonattainment area, the study will also determine if the source of the transport problem is due to local emissions, emissions from the areas (located within Georgia) identified in Appendix C as having a significant sensitivity to the Murray Partial County NA, or transport due to out-of-state contributions.

If it is determined that the emissions are due to local or in-state sources, EPD will implement within 24 months any required measures as expeditiously as practicable, taking into consideration the ease of implementation and the technical and economic feasibility of selected measures. If

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the source of the emissions is due to out-of-state contributions, EPD is committed to work with those states in an attempt to assess the source(s) of emissions and to determine what likely reductions may be achieved.

The comprehensive analysis, based on quality assured ambient data, will examine:

- the number, and severity of the ambient ozone violations of the standard;
- the meteorological conditions contributing to ozone levels;
- potential local contributing emissions sources;
- potential, contributing emission sources of transport;
- the geographic applicability of possible contingency measures within the state;
- feasibility of such control measures given the complicated meteorological conditions associated with the transport-related violations;
- emission trends, including implementation timelines of potential control measures;
- current and recently identified control technologies; and
- air quality contributions from outside the state of Georgia.

Implementation, if the analysis determines that additional measures are required, will be conducted as expeditiously as practicable, but no later than 24 months and consistent with the table below, taking into consideration the ease of implementation and the technical and economic feasibility of selected measures. If it is determined that implementation will take longer than 24 months, then EPD will submit to EPA, for approval, a revised schedule for the development of contingency measures. EPD will submit to EPA the results of this analysis as expeditiously as practicable, but no later than 6 months after EPD makes a determination, based on quality-assured ambient data, that a violation of the NAAQS has occurred.

Table 3-9 Timeline for the development of contingency required regulations

Timeline begins when a determination is made based on quality-assured data that a trigger has occurred.	
Comprehensive analysis	6 months
Identify potential sources for reductions.	3 months
Identify applicable control measures.	3 months
Initiate a stakeholder process.	3 months
Draft SIP regulations.	3 months
Initiate rulemaking process (including public comment period, hearing, Board adoption and final submission to EPA). This process may be initiated simultaneous with drafting of regulations.	6 months
Completion no later than:	24 months

Contingency Measures

If the analysis required above determines that the Murray Partial County area is the source of emissions that contribute to the violation, EPD will evaluate those measures as specified in Section 172 of the CAA for control options as well as other available measures. EPD will also

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evaluate additional sources of emissions that the analysis reveals as contributing to any violation that falls outside of the Murray Partial County area for possible contingency measures. Contingency measure(s) will be selected from those identified below or from any other measure deemed appropriate and effective at the time the selection is made. Any resulting contingency measure(s) will be based upon cost effectiveness, emission reduction potential, economic and social considerations, ease and timing of implementation, and other appropriate factors. Implementation of necessary controls will take place as expeditiously as possible, but no later than 24 months after Georgia makes a determination, based on quality-assured ambient data, that a violation of the NAAQS has occurred, unless EPD demonstrated that technical or economic feasibility warranted an implementation period longer than 24 months (which will result in submission of a revised schedule).

- Reasonably Available Control Measures (RACM) for all sources of NO_x
- Reasonably Available Control Technology (RACT) for existing point sources of NO_x
- Expansion of RACM/RACT to area(s) of transport within the State
- Mobile Source Measures
- Additional NO_x reduction measures yet to be identified

As the Murray Partial County NAA is located in a National Forest, and therefore has no significant sources of emissions that could be subject to controls, any emission contributions to violations of the standard that the above analysis deems necessary will most likely fall within the Atlanta or Chattanooga metropolitan areas, which are both subject to current NAA SIP provisions. The control options for the Atlanta metropolitan area are limited due to the fact that the area has previously been subject to the 1-hour ozone severe designation, and most significant emission control measures have been utilized. Those measures ultimately resulted in the attainment of the 1-hour ozone standard for the Atlanta area. In addition, the current 8-hour ozone NAA designation for Atlanta will require even more stringent controls to an even larger NAA that is expected to have an additional beneficial impact on the transport related ambient 8-hour ozone levels for the Murray Partial County area. Similarly, the Chattanooga area is subject to the emission limitations of an 8-hour ozone Early Action Compact (EAC) that has already resulted in monitored 8-hour data that show compliance with the standard, further abating ozone transport contributions to the Fort Mountain site. EPD contends that significant improvements in ambient level ozone due to the current SIP measures for the Atlanta and Chattanooga nonattainment areas (NAAs), and the continued planning for the Atlanta 8-hour ozone NAA, will ensure continued permanent and enforceable reductions in the precursors of ozone emissions from these contributing areas to the Murray Partial County NAA. However, in the event that the analysis required above determines that the Atlanta 8-hour nonattainment area is the source of the emissions for any violation of the 8-hour Ozone standard, the Atlanta plan will be addressed as necessary for additional emission reductions.

Adoption of additional control measures is subject to necessary administrative and legal processes. EPD will solicit input from interested and affected persons (stakeholders) in the area prior to selecting appropriate contingency measures. No contingency measure will be implemented without providing the opportunity for full public participation. This process will include publication of notices, an opportunity for public hearing, and other measures required by Georgia law.

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4.0 Conclusion

The three years of ozone monitoring data for the Murray Partial County area demonstrate compliance with the 8-hour NAAQS for ground-level ozone.

Since the late 1970s, major programs enacted in the Atlanta area have led to significant actual, enforceable emissions reductions, which have led to improvements in the air quality in Atlanta and subsequently in the Murray Partial County area as well. This redesignation request and maintenance demonstration SIP revision has been prepared to meet the requirements of Section 107(d) of the 1990 Clean Air Act Amendments.

Due to the sensitivity of the Murray Partial County to the Atlanta NAA, those regulations currently in place for the Atlanta NAA, especially those controls currently in place at Georgia Power Plants Bowen, Hammond, and Wansley, will remain and are expected to allow the area to maintain the 8-hour NAAQS by mitigating Georgia's most significant in-state sources of ozone transport.

Georgia hereby requests that the Murray Partial County area be redesignated from nonattainment to attainment with respect to the 8-hour NAAQS for ozone. Further, Georgia hereby petitions EPA to make a determination that the Murray Partial County area is eligible for application of EPA's Clean Data Policy, based on the Murray Partial County area's attainment of the 8-hour ozone standard.