



PM_{2.5} Qualitative Hot-Spot Analysis

Greensboro Western Urban Loop, New Location from
North of Bryan Boulevard to East of Lawndale Drive

Guilford County

WBS Element No. 34820.1.2
TIP Project No. U-2524C and U-2524 D

North Carolina Department of Transportation
Project Development and Environmental Analysis Branch
Human Environment Unit
Traffic Noise and Air Quality Group

May 12, 2011

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1.0 Purpose of the Document

The *Clean Air Act section 176(c)* requires that federally supported highway and transit project activities are consistent with state air quality goals, found in the *state implementation plan* (SIP). The process to ensure this consistency is called Transportation Conformity. Conformity to the SIP means that transportation activities will not cause new violations of the *national ambient air quality standards* (NAAQS or “standards” or “criteria pollutants”), worsen existing violations of the standard, or delay timely attainment or achievement of interim emissions reduction or other milestones associated with the relevant standard.

Transportation conformity is required for federally funded or approved transportation projects in areas that have been designated by the U.S. Environmental Protection Agency (EPA) as not meeting a NAAQS. These areas are called *nonattainment areas* if they currently do not meet air quality standards or *maintenance areas* if they have previously violated air quality standards, but currently meet them and have an approved *Clean Air Act section 175A* maintenance plan.

EPA amended the Transportation Conformity rule on March 10, 2006¹ requiring a hot-spot analysis to determine project-level conformity in PM_{2.5} and PM₁₀ nonattainment and maintenance areas. A hot-spot analysis is an assessment of localized emissions impacts from a proposed transportation project and is only required for “projects of air quality concern” in PM₁₀ and PM_{2.5} nonattainment and maintenance areas. The March 10, 2006 rule provides examples of projects of air quality concern. The PM_{2.5} and PM₁₀ hot-spot requirements in the final rule became effective April 5, 2006. Project level conformity determinations are required pursuant to *40 CFR §93.116. and §93.123.*

The Greensboro-Winston-Salem-High Point area was designated as non-attainment for the 1997 PM_{2.5} annual standard. This area includes Guilford and Davidson Counties. The Greensboro Western Urban Loop falls within the Guilford County portion of the non-attainment area. As a result, the project is required to meet Transportation Conformity requirements found in 40 CFR Part 93 as amended. This report seeks to address the project level transportation conformity requirements for sections U-2524 C and U-2524 D of the Greensboro Western Urban Loop.

2.0 Project Description

General Overview

This document presents a qualitative PM_{2.5} hot-spot analysis for the Greensboro Western Urban Loop, a new location facility north of Bryan Boulevard and east of Lawndale Drive. The project will consist of a six lane freeway facility, ultimately connecting between the I-85 Greensboro Bypass and the Greensboro Eastern/Northern Urban Loop. Two phases of this project, U-2524 A and U-2524 B have already been completed. This

¹ EPA posted the final rule on its website on March 1, 2006 and the final rule was published in the Federal Register on March 10, 2006.

analysis will focus on U-2524 C and U-2524 D. The NEPA documentation for the entire U-2524 project was completed and signed in the mid-1990s. The final environmental impact statement (EIS) was approved February 28, 1995, while the record of decision (ROD) was published August 25, 1995. A consultation process is underway to revisit this environmental documentation for U-2524 C and U-2524 D. Currently, these two project phases are at the right-of-way stage.

U-2524 C is a 3.6 mile new location facility extending between Bryan Boulevard to the east of Battleground Avenue. U-2524 C is included in the funded portion of the TIP, with right-of-way acquisition set to begin in FY 2011, and construction set to begin in 2014. The project is also included in the currently conforming 2035 Greensboro LRTP. Project completion for U-2524 C is anticipated for 2018. A design year of 2030 was identified as a part of the NEPA process for this project.

U-2524 D is a 2.1 mile new location facility extending between from east of Battleground Avenue to Lawndale Drive. U-2524 D is included in the TIP, but only in the past years unfunded component. A date has been identified for right-of-way acquisition, but no date has been identified to move construction on this project forward for funding. However, U-2524 D has been assigned the same completion date (2018) as U-2524 C in both the NEPA documentation being prepared for these projects as well as in the regional LRTP. To maintain consistency with these documents, a completion of year of 2018 will be used for this project. Additionally, a project design year of 2030 will be used to remain consistent with the NEPA document.

The project extents for both U-2524 C and U-2524 D are shown in **Figure 1**.

PM_{2.5} Qualitative Hot-Spot Analysis Methodology

In 2007, an interagency consultation process was initiated for the U-2524 PM_{2.5} qualitative hot-spot analysis. This interagency process involved NCDOT, EPA, NCDENR, FHWA, FTA, and the City of Greensboro. Through this process, several criteria were used to determine if a PM_{2.5} hot-spot analysis was necessary for this project. First, this project is located in the Guilford County PM_{2.5} non-attainment area. Secondly, 2030 design year volumes have been forecasted along the corridor around 75,000 vehicles per day. The percentage of trucks in this area is forecasted as 15%, resulting in a projected daily truck volume of over 11,000. Considering this information, it was determined that this project is one of air quality concern and that a PM_{2.5} hot-spot analysis was appropriate.

Existing conditions will be assessed through monitoring data closest to the proposed site, as well as data and assumptions used in the regional conformity determination and the results of that determination. Future conditions will be assessed for the project completion year (2018) as well as the project design year (2030). The 2018 scenario includes lower traffic volumes, but likely also higher emission rates. As a result, it is not known whether the total emissions would be greater for 2018 or 2030. Including both 2018 and 2030 allows for two potential worst-case scenarios to be considered.

A Pre-Analysis Data Report was prepared by NCDOT and submitted to FHWA, EPA, NCDENR, and FTA documenting the assumptions, data sources, and methodology used in this analysis. This document was reviewed by and commented on by the concerned agencies and was finalized in February 2011 with received comments being addressed. Information contained within that document serves as the basis for this report. The Pre-Analysis Data Report is included as an Appendix to this report.

3.0 Background

What is Particulate Matter (PM)?

Motor vehicles (*i.e.*, cars, trucks, and buses) emit direct PM from their tailpipes, as well as from normal brake and tire wear. In addition, vehicles cause dust from paved and unpaved roads to be re-entrained, or re-suspended, in the atmosphere. In addition, highway and transit project construction may cause dust. Finally, gases in vehicle exhaust may react in the atmosphere to form PM. Particles come in a wide variety of sizes and have been historically assessed based on size, typically measured by the diameter of the particle in micrometers. PM_{2.5}, or fine particulate matter, refers to particles that are 2.5 micrometers in diameter or less. (*Note:* A human hair is about 70 micrometers in diameter and a grain of sand is about 90 micrometers in diameter). The National Ambient Air Quality Standards (NAAQS) for fine particulate matter include an annual standard (15.0 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$)) and a 24-hour standard (35 $\mu\text{g}/\text{m}^3$). The annual standard is based on a 3-year average of annual mean PM_{2.5} concentrations; the 24-hour standard is based on a 3-year average of the 98th percentile of 24-hour concentrations.

Statutory and Regulatory Requirements for PM Hot-Spot Analyses

On March 10, 2006, EPA issued amendments to the Transportation Conformity Rule to address localized impacts of particulate matter: “PM_{2.5} and PM₁₀ Hot-Spot Analyses in Project-level Transportation Conformity Determinations for the New PM_{2.5} and Existing PM₁₀ National Ambient Air Quality Standards” (71 *FR* 12468). This rule amendment requires the assessment of localized air quality impacts of Federally-funded or approved transportation projects in PM₁₀ and PM_{2.5} nonattainment and maintenance areas deemed to be *projects of air quality concern*². This assessment of localized impacts (*i.e.*, “hot-spot analysis”) examines potential air quality impacts on a scale smaller than an entire nonattainment or maintenance area. Such an analysis is a means of demonstrating that a transportation project meets Clean Air Act conformity requirements to support State and local air quality goals. If a project still requires a Federal Highway Administration (FHWA) or Federal Transit Administration (FTA) approval or authorization, a project-level conformity determination will be required prior to the first such action on or after April 5, 2006. After project-level conformity is determined for a project, a new

² Criteria for identifying projects of air quality concern is described in 40 CFR 93.123(b)(1), as amended.

conformity determination is only required under the scenarios discussed in 40 CFR 93.104(d)³.

A qualitative hot-spot analysis is currently required⁴ for the projects of air quality concern in PM_{2.5} and PM₁₀ nonattainment and maintenance areas as required under 40 CFR §93.123(b)(4). EPA requires hot-spot findings to be based on directly emitted PM_{2.5}, since secondary particles take several hours to form in the atmosphere giving emissions time to disperse beyond the immediate area of concern. The Conformity Rule requires PM_{2.5} hot-spot analyses to include road dust emissions only if such emissions have been found significant by EPA or the state air agency prior to the PM_{2.5} SIP or as part of an adequate PM_{2.5} SIP motor vehicle emissions budget (40 CFR §93.102(b)(3)). Emissions resulting from construction of the project are not required to be considered in the hot-spot analysis if such emissions are considered temporary according to 40 CFR §93.123(c)(5).

4.0 Regional Conformity Determination

The project is located in Guilford County, which is within the Greensboro-Winston-Salem-High Point nonattainment area for fine particles PM_{2.5} as defined by the EPA. This area was designated nonattainment for the PM_{2.5} standard in accordance with the Clean Air Act Amendments (CAAA) on January 5, 2005, with an effective date of April 5, 2005. Section 176(c) of the CAAA requires that transportation plans, programs, and projects conform to the intent of the state air quality implementation plan (SIP). The USDOT made a conformity determination on the Greensboro MPO 2035 LRTP and the 2009-2015 Greensboro MPO TIP on February 26, 2010. The current conformity determinations are consistent with the final conformity rule found in 40 CFR Parts 51 and 93. There are no significant changes in the project's design concept or scope, as used in the regional conformity analyses. **Tables 1 and 2** show the conformity findings for Guilford County included in the most recent approved conformity analysis. The tables include emissions comparisons for PM_{2.5} and NO_x, respectively. NO_x is a contributing pollutant to particulate emissions.

³ 40 CFR 93.104(d) states, "FHWA/FTA projects must be found to conform before they are adopted, accepted, approved, or funded. Conformity must be redetermined for an FHWA/FTA project if one of the following occurs: a significant change in the project's design concept and scope; three years elapse since the most recent major step to advance the project; or initiation of a supplemental environmental document for air quality purposes. Major steps include NEPA process completion; start of final design; acquisition of a significant portion of the right-of-way; and construction (including Federal approval of plan, specifications and estimates)."

⁴ On December 20, 2010 EPA announced in the Federal Register (75 FR 79370) that it was approving MOVES2010a for use in PM_{2.5} conformity hotspot analyses outside of California. That notice established a 2-year grace period before quantitative PM_{2.5} hotspot analyses using MOVES2010a would be required in states outside of California. That grace period ends on December 20, 2012. During the grace period, hotspot requirements for projects of air quality concern in PM_{2.5} and PM₁₀ nonattainment and maintenance areas may continue to be met by carrying out a qualitative analysis.

Table 1
Guilford County Conformity Interim (Less than Baseline)
Test Emissions Comparison, PM_{2.5}

Analysis Year	LRTP Emissions (kg/year)	2002 Baseline Emission (kg/year)
2002	226,008	
2010	145,979	226,008
2015	110,036	226,008
2025	85,712	226,008
2035	101,175	226,008

Table 2
Guilford County Conformity Interim (Less than Baseline)
Test Emissions Comparison, NO_x

Analysis Year	LRTP Emissions (kg/year)	2002 Baseline Emission (kg/year)
2002	14,142,913	
2010	7,812,825	14,142,913
2015	4,436,572	14,142,913
2025	2,247,062	14,142,913
2035	2,157,763	14,142,913

The Triad Regional Model was used to obtain forecasted regional population and employment growth for future analysis years. This model includes the Winston-Salem, Greensboro, High Point, and Burlington metropolitan areas. Population and employment forecasts were obtained for the future model years 2015, 2025, and 2035. These forecasts were determined based on the latest planning assumptions for the Triad area, and reflect the total population and employment forecasts for all of the MPOs in the greater region. These socioeconomic data were used to generate the traffic volumes that were used in the regional air quality conformity determination. Interpolation was used to obtain the 2018 and 2030 values that represent the completion and design years of this analysis. **Table 3** contains these forecasted values. Based on this information, regional population and employment will continue to experience steady growth by the identified project completion and project design years.

Table 3
Population and Employment Forecasts,
Triad Regional Model Area

Analysis Year	Population	Employment
2015	1,216,109	701,221
2018	1,269,535	744,011
2025	1,394,195	843,854
2030	1,505,020	912,499
2035	1,615,845	981,143

The contribution and impact of mobile sources on the region’s PM_{2.5} emissions is discussed in more detail in Section 6 of this document.

5.0 Existing Conditions

The document “Transportation Conformity Guidance for Qualitative Hot-Spot Analyses in PM_{2.5} and PM₁₀ Nonattainment and Maintenance Areas”, released by EPA and FHWA in March 2006, provides a list of factors and considerations that should be examined when evaluating the existing conditions of a proposed project. These factors include air quality; transportation and traffic conditions; built and natural environment; meteorology, climate, and seasonal data; and retrofit, anti-idling, or other adopted emission control measures. The most relevant of these factors are discussed in more detail below.

Air Quality - Monitors

An inventory was performed of PM_{2.5} monitoring locations within the non-attainment counties in North Carolina (Guilford, Davidson, and Catawba Counties). Four monitors were identified within these counties. In order to provide a broader set of monitors from which to select, another PM_{2.5} monitor in neighboring Forsyth County was also examined. A summary of these monitors’ locations, pertinent information, and comments is included as **Table 4**. Subsequent sections of report will elaborate further on the information contained within this table.

Table 4 Monitoring Sites Assessment

Monitor Number	Monitor Location	Traffic Impact Volumes	Comments	Scenario
37-035-0004	1650 1 st St., Hickory	41,000 - 56,000	Traffic volumes comparable to forecasted 2018 project volumes	2018 Surrogate Site
37-057-0002	S. Salisbury St., Lexington	44,000 – 48,000	Traffic volumes below forecasted 2018 project volumes	Not selected
37-067-0022	1300 Block Hattie Ave., Winston-Salem	79,000 – 81,000	In a PM _{2.5} attainment area	Not selected
37-081-0013	205 Willoughby Blvd., Greensboro	**	Closest monitor to proposed project	Project monitoring site
37-081-0014	2127 Sandy Ridge Rd., Guilford County	101,000 – 105,000	Traffic volumes exceed forecasted 2030 design volumes	2030 Surrogate Site

* Truck volumes and percentages are not collected for existing roadways without planned improvements.

** Since this monitoring location has been identified as the closest to the proposed project, data from this location will be used for comparison to other selected monitoring locations. The proposed project involves a new facility, meaning that there is not an existing traffic impact volume for comparison in this table.

The closest PM_{2.5} monitor to the U-2524 C and U-2524 D project extents is located at 205 Willoughby Boulevard in Greensboro. This monitor has been collecting data for PM_{2.5} from 2001 onwards. For the purposes of this analysis, data was analyzed for the years 2007 through 2009. Data from this site was used to get a clearer picture of the existing emissions around the proposed project site. **Figure 2** shows the location of this monitor.

Table 5 shows the monitoring values measured at the 205 Willoughby Boulevard, Greensboro site for the years 2007 through 2009. These monitoring values were obtained from NCDENR-DAQ, and reflect the weighted arithmetic mean concentrations for the stated calendar year. All the weighted arithmetic mean emissions fall below the NAAQS annual PM_{2.5} standard of 15.0 µg/m³, which is important to note since emissions generated from the proposed project would impact this location.

**Table 5
205 Willoughby Boulevard, Greensboro Monitoring Data**

Year	Weighted Arithmetic Mean Emission (µg/m³)	Annual Standard (µg/m³)
2007	13.11	15.0
2008	11.40	15.0
2009	9.31	15.0

To try and understand the impacts of this project during the project completion and design years, a surrogate site analysis was used. Surrogate sites were selected to compare existing monitoring locations with similar traffic volumes to those expected during the 2018 project completion year and the 2030 project design year. If the monitoring values at these surrogate sites fall below the NAAQS annual PM_{2.5} standard, it can be extrapolated that the worst-case build scenario for the proposed project will not cause or add to an existing PM_{2.5} violation.

Transportation and Traffic Conditions

Traffic data for this study was obtained from the traffic forecasting done as a part of the NEPA process. This traffic data was compiled in 2004 as a part of the study for U-2524. This data contains analysis for the 2004 base year as well as the project’s 2030 design year. To obtain project completion year information, the 2004 and 2030 values were interpolated to get an estimate for 2018. This resulted in an interpolated traffic volume for the facility of approximately 57,000 vehicles per day in 2018. The projected traffic volume in 2030 is 74,900 vehicles per day.

As stated earlier in this document, the traffic forecasts developed for the NEPA process included projected truck volumes. According to these forecasts, truck volumes for U-2524 C and D are projected to be around 15% of the total volume. **Table 6** shows the overall traffic and truck volumes for 2004, 2018, and 2030.

**Table 6
U-2524 C and D Traffic and Truck Volumes**

Year	Traffic Volumes (vpd)	Truck Volumes (vpd)
2004	36,000	5,400
2018	57,000	8,550
2030	74,900	11,235

At this time, NCDOT does not collect truck percentages for existing facilities that are not programmed or planned for improvements. As a result, this report will not directly compare truck percentages during the selection of surrogate sites. In an attempt to consider surrogate facilities with similar truck percentages, only roadways operating as freeways or interstate routes were considered in this process. With the exception of the monitoring location in Catawba County (Hickory), all of the surrogate roadways are also located within the Triad region.

Following confirmation with the NCDOT project manager for this NEPA process, only temporary construction emissions are expected to be generated by U-2524 C and U-2524 D. Therefore, no analysis of these emissions is required as a part of this report.

Built and Natural Environment

U-2524 C and U-2524 D are located within the City of Greensboro. The area is a transitional urban to suburban area, featuring residential neighborhoods as well as commercial development along major arterials. The proposed project is also located in proximity to such landmarks as the Guilford Courthouse National Military Park, the Forest Lawn Cemetery, and Greensboro Country Park. There are no significant proposed industrial facilities or intermodal facilities being planned for the area surrounding the project. For more information on the existing and future land use in the project area, please refer to the corresponding EIS.

A high-level review of the project area indicated there are no significant barriers that would inhibit the dispersal of PM_{2.5}.

Retrofit, Anti-Idling, or Other Adopted Emission Control Measures

The Greensboro-Winston-Salem-High Point PM_{2.5} non-attainment area employs a range of emission control measures. These include an inspection and maintenance program, Tier 2 vehicle emission standards, low sulfur gasoline and diesel fuels, heavy duty gasoline and diesel highway vehicle standards, large non-road diesel engine standards, non-road spark-ignition engines and recreational engines standard, and the Clean Air Interstate Rule (CAIR). Additionally, the area has put in place such features as park and ride lots, a regional bicycle and pedestrian plan, land use planning strategies, vanpools, and intelligent transportation strategies (ITS) to further manage transportation emissions. North Carolina also put the Clean Smokestacks Act in place to reduce point source emissions. Additionally, the EPA has proposed a transport rule which when finalized would serve to reduce PM_{2.5} concentrations in the air by reducing SO₂ and NO_x emissions.

6.0 Future Scenario

Regional Emissions and Air Quality Trends

According to an assessment of PM_{2.5} emissions in Guilford County prepared by the North Carolina Department of Environment and Natural Resources – Division of Air Quality

(NCDENR-DAQ), ambient PM_{2.5} concentrations in the area fall below the current NAAQS PM_{2.5} annual standard of 15.0 µg/m³ and are projected to fall even further in the future. PM_{2.5} emissions generated from on-road mobile sources are only a small component of the overall PM_{2.5} emissions total. In 2002, approximately 11% of primary PM_{2.5} emissions were generated from on-road mobile sources. This percentage decreased to 7% in 2009, and is expected to decrease further to 5% by 2018. Despite a projected increase in vehicle miles traveled (VMTs) of almost 25% between 2002 and 2018, on-road mobile source PM_{2.5} emissions during that timeframe are anticipated to decrease by approximately 56%. These estimates indicate that decreases in future measured PM_{2.5} emissions will continue to outpace emissions generated by additional vehicle miles. The Fine Particulate Matter Attainment Demonstration report prepared by NCDENR in 2009 for all the PM_{2.5} nonattainment areas supports these conclusions by indicating that regional PM_{2.5} emissions are decreasing, with only a minimal percentage of direct PM_{2.5} emissions being generated by mobile sources. This reduction is attributed to the presence of local and statewide control measures and legislative initiatives.

The concentrations at individual monitors are discussed in other sections of this document.

2018 Project Opening Year Conditions

As stated earlier in this report, a surrogate site selection process was chosen to compare the project site to similar locations. A surrogate site was chosen for 2018 from within the three counties in NC that are non-attainment for the annual PM_{2.5} standard. The PM_{2.5} monitor located at 1650 1st Street in Hickory (Catawba County) was chosen for this. Data for PM_{2.5} has been collected at this monitor since 1999. For the purposes of this analysis, 2007-2009 data was referenced. This monitor is located approximately one mile from I-40, which experiences traffic volumes ranging between 56,000 and 41,000 vehicles per day on the portion of the facility located closest to the monitor. These traffic volumes are approximately equivalent to the projected 2018 volumes for U-2524 C and U-2524 D. As such, this site was identified as the most appropriate surrogate site for the 2018 completion year. NCDOT does not collect truck percentages on existing facilities without planned improvements. Since this data is not readily available, the assumption was made that the interstate facility in this location would have similar truck percentages to the proposed project. **Figure 3** shows the location of this monitor.

Table 7 shows the monitoring values measured at the 1650 1st Street, Hickory site for the years 2007 through 2009. These monitoring values were obtained from NCDENR-DAQ, and reflect the weighted arithmetic mean concentrations for the stated calendar year. All the weighted arithmetic mean emissions fall below the NAAQS annual PM_{2.5} standard of 15.0 µg/m³.

Table 7
1650 1st Street, Hickory Monitoring Data

Year	Weighted Arithmetic Mean Emission ($\mu\text{g}/\text{m}^3$)	Annual Standard ($\mu\text{g}/\text{m}^3$)
2007	14.59	15.0
2008	12.81	15.0
2009	10.26	15.0

When selecting the most appropriate surrogate site for 2018 conditions, two monitoring sites were identified as the most applicable for consideration. The alternate site identified for the 2018 scenario is located at S. Salisbury Street within Davidson County, which is also in non-attainment for the $\text{PM}_{2.5}$ standard. The monitor is located about 2.5 miles from I-85, which experiences traffic volumes ranging between 44,000 and 48,000 vehicles per day on the portion of the facility located closest to the monitor. Since these traffic volumes fall below those projected for the 2018 Project Opening Year of U-2524 C and D, this site was not determined to be a suitable surrogate location.

2030 Project Design Year Conditions

Two monitoring site options were considered for surrogate sites in the year 2030 – 2127 Sandy Ridge Road in Greensboro, and the 1300 Block of Hattie Avenue in Winston-Salem. The option that fit the projected traffic levels most closely uses the monitor located at 2127 Sandy Ridge Road in Greensboro (Guilford County). Data for $\text{PM}_{2.5}$ has been collected at this monitoring location since 2008. As a result, only two full years of monitoring data (2008 and 2009) are available for reference in this analysis. This monitor is located less than 1.5 miles away from I-40, which is experiencing a traffic volume ranging between 101,000 and 105,000 vehicles per day on the portion of the facility located closest to the monitor. While these traffic volumes are significantly higher than those projected for the U-2524 C and U-2524 D 2030 design year, this monitor appears to be the most appropriate fit for a surrogate site. NCDOT does not collect truck percentages on existing facilities without planned improvements. Since this data is not readily available, the assumption was made that the interstate facility in this location would have similar truck percentages to the proposed project. **Figure 4** shows the location of this monitor.

Table 8 shows the monitoring values measured at the 2127 Sandy Ridge Road, Greensboro site for the years 2008 and 2009. These monitoring values were obtained from NCDENR-DAQ, and reflect the weighted arithmetic mean emissions for the stated calendar year. All the weighted arithmetic mean emissions fall below the NAAQS annual $\text{PM}_{2.5}$ standard of $15.0 \mu\text{g}/\text{m}^3$.

Table 8
2127 Sandy Ridge Road, Greensboro Monitoring Data

Year*	Weighted Arithmetic Mean Emission ($\mu\text{g}/\text{m}^3$)	Annual Standard ($\mu\text{g}/\text{m}^3$)
2008	12.32	15.0
2009	9.63	15.0

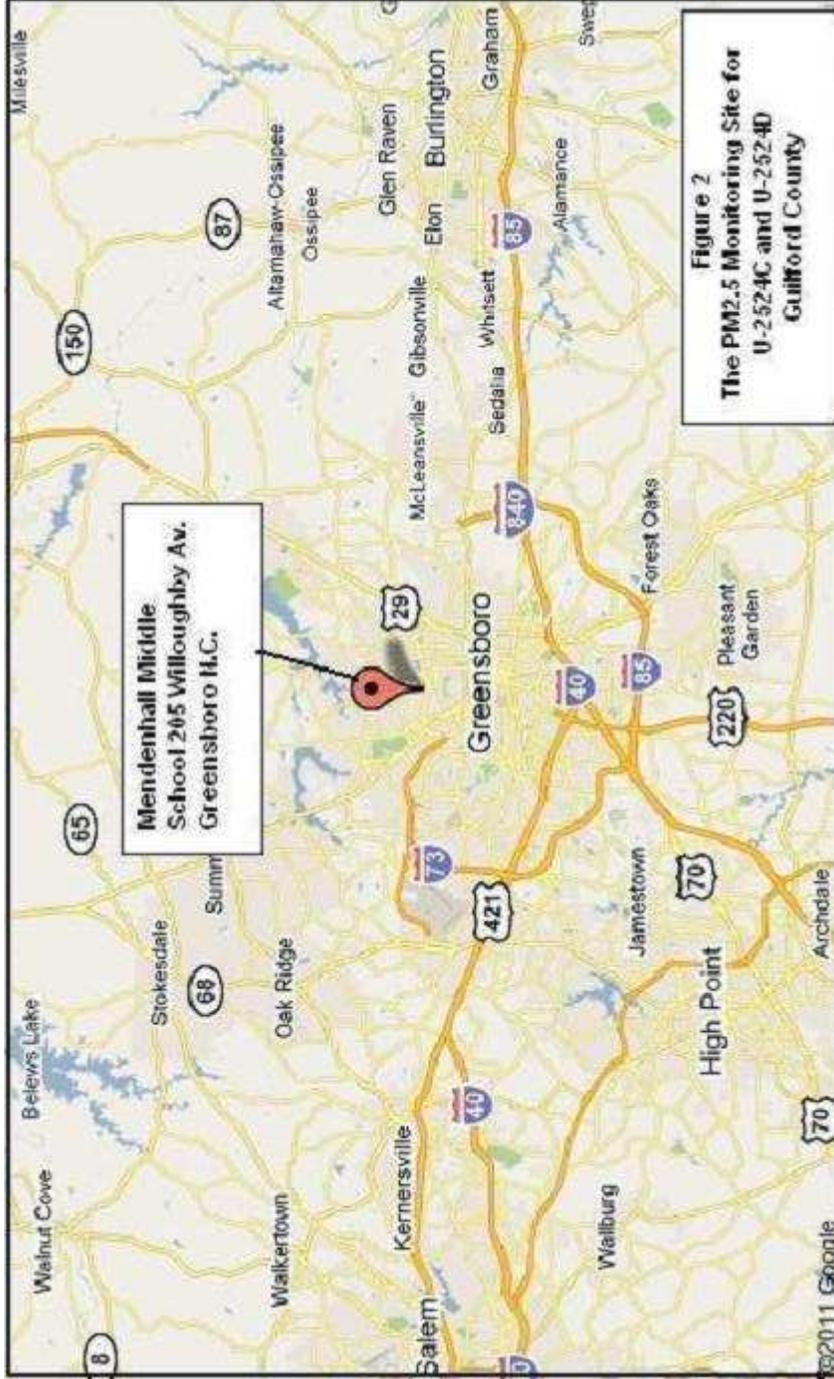
*Data is available for this monitor beginning in 2008, so only two years are included.

The other monitoring site considered when selecting the most appropriate surrogate site for 2030 conditions is located on the 1300 block of Hattie Avenue in Winston-Salem (Forsyth County). It is located less than 1 mile from US 52, a freeway facility with traffic volumes ranging between 79,000 and 81,000 vehicles per day in the area. This volume is comparable to the forecasted 2030 traffic volumes for U-2524 C and D. However, this monitor is not located within a PM_{2.5} nonattainment area. As a result, this monitor was not determined to be a suitable surrogate location.

7.0 Conclusion

Based on the consultation between the NCDOT, EPA, NCDENR, FHWA, FTA, and the City of Greensboro in 2007, it was determined that the Greensboro Western Urban Loop is a project of air quality concern. Based on the regional conditions and surrogate site analysis conducted for U-2524 C and U-2524 D, it has been determined that these two project segments meet all the project level conformity requirements relating to the annual PM_{2.5} standard. Further, it has been extrapolated based on the analyzed data that the completion of U-2524 C and U-2524 D will not cause or contribute to a new violation of the PM_{2.5} NAAQS, or increase the frequency or severity of a violation or interfere with any interim milestones. The annual PM_{2.5} design values for the monitors considered in this analysis are well below the annual PM_{2.5} standard of 15.0 $\mu\text{g}/\text{m}^3$. The results of the regional conformity determination for the area show that on-road emissions are predicted to decline from present levels in future years. Additionally, North Carolina has adopted regulations to limit emissions from stationary sources. The EPA has also proposed a transport rule to address emissions of PM_{2.5} precursors in North Carolina and other states, which when finalized will further reduce PM_{2.5} concentrations in the area. Therefore, the project segments meet the conformity hot-spot requirements in *40 CFR §93.116 and §93.123* for PM_{2.5}.

FIGURES



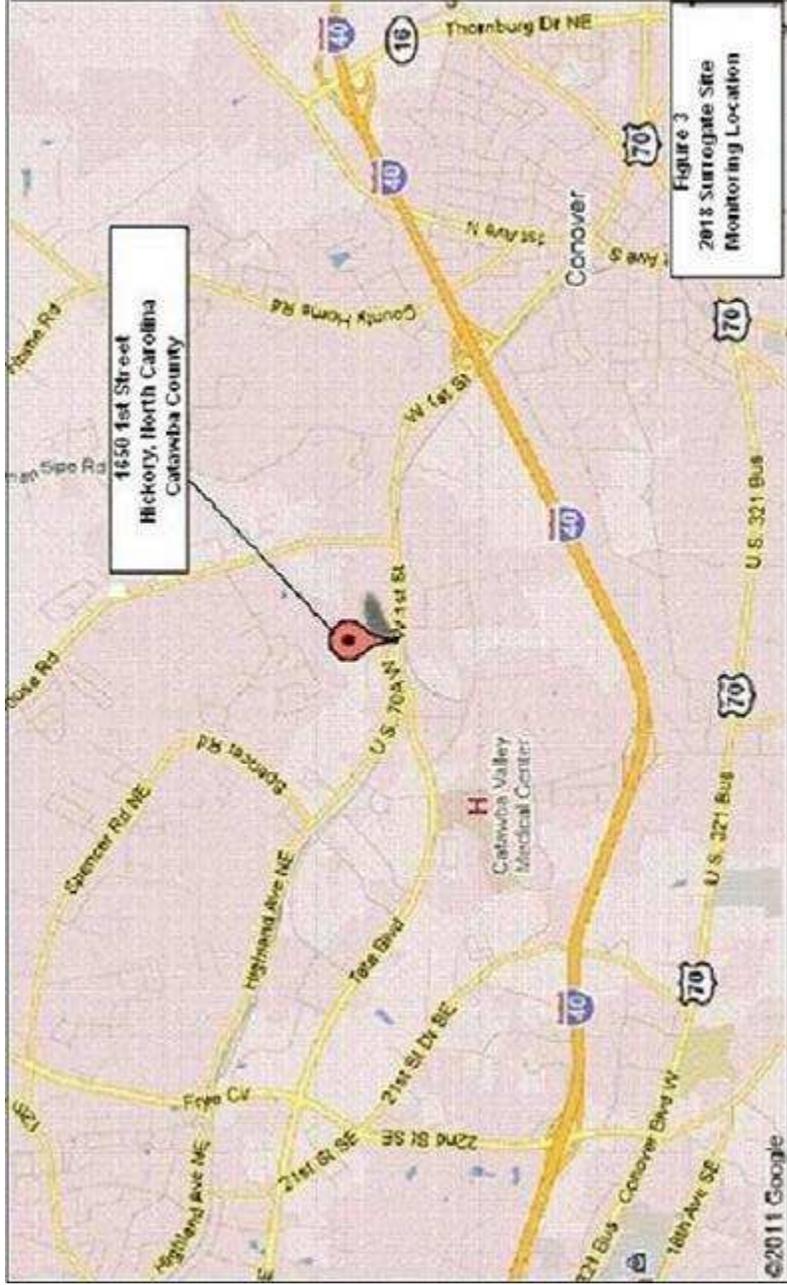


Figure 3
2018 Surrogate Site
Monitoring Location

