WOODROW WILSON BRIDGE
$PM_{2.5}$ CONFORMITY ANALYSIS

Remaining phases yet to be authorized:

- **MA-5: I-295 HOV RAMPS**
- **MB-5: MD 210 HOV RAMPS**
- **MM-6: ANACOSTIA EAST WETLAND MITIGATION**
- **VA-8: JONES POINT PARK REDEVELOPMENT**
- **VA-10: US 1 HOV RAMPS**
- **VB-2/3/6: TELEGRAPH ROAD INTERCHANGE**
- **VM-5: JONES POINT PARK REFORESTATION CONSTRUCTION**
- **VM-6: ELMWOOD DRIVE STORM WATER MANAGEMENT**
- **WITTER DRIVE RECREATIONAL FACILITY**
- **FREEDMAN'S CEMETERY**
- **STREETSCAPE IMPROVEMENTS**
- **LOCAL NEIGHBORHOOD TRAFFIC IMPROVEMENTS**
- **EQUIPMENT PURCHASE PROJECTS**
- **LOCAL NEIGHBORHOOD COMMUNITY ENHANCEMENT PROGRAM**

October 2006

WOODROW WILSON BRIDGE
$PM_{2.5}$ CONFORMITY ANALYSIS

Contents

Purpose of this Document

The Clean Air Act section 176(c) requires that federally supported highway and transit project activities be 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), worsen existing violations of the standard, or delay timely attainment of the relevant standard.

Transportation conformity is required for federally supported transportation projects that are located 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.

On January 5, 2005, the EPA designated areas within the country as nonattainment for fine particulate matter, called $PM_{2.5}$. This designation became effective on April 5, 2005, 90 days after EPA's published action in the *Federal Register*. Transportation projects that are proposed after April 5, 2006 (i.e., after the one-year grace period provided by the Clean Air Act) must demonstrate compliance with the conformity rule for the $PM_{2.5}$. In addition, designated $PM_{2.5}$ nonattainment areas must have in place both a long range transportation plan and transportation improvement program (TIP) that complies with the conformity rule, and federally supported projects must also demonstrate conformity. For $PM_{2.5}$, project-level conformity may also require an assessment of localized emission impacts, known as a hot-spot analysis, for certain projects.

The Woodrow Wilson Bridge project is located in Fairfax County, Virginia and Prince George's County, Maryland. Both counties are within the designated Washington, D.C.–Maryland-Virginia $PM_{2.5}$ nonattainment area. As such, the project is required to meet Transportation Conformity requirements found in 40 CFR Part 93. Although much of the overall Woodrow Wilson Bridge project is already under construction or complete, several phases remain that still require FHWA authorization. As discussed on FHWA's frequently asked questions website for "$PM_{2.5}$ Project-Level Conformity and Hot-Spot Analyses[1]," if a project still requires a FHWA approval or authorization, a project-level conformity determination is required prior to the first such action on or after April 5, 2006, even if the project has already completed the NEPA process, or for multi-phase projects, even if other phases of the project have already been constructed. The purpose of

[1] http://www.fhwa.dot.gov/environment/conformity/pm25faqs.htm. See Question 4.

this document is to provide analysis and support for such project-level $PM_{2.5}$ conformity determination for the Woodrow Wilson Bridge project.

Therefore, in accordance with FHWA's frequently asked questions[2], the hot-spot analysis will focus on those phases of the project area that are not already under construction or are not completed and require a new FHWA authorization.

Project Description

The Woodrow Wilson Bridge Project is a complex bridge and interchange improvement project jointly sponsored by the Maryland Department of Transportation's State Highway Administration, Virginia Department of Transportation, Federal Highway Administration and the District of Columbia Department of Transportation. This multi-jurisdictional project traverses a diverse human environment, passing from Fairfax County to Alexandria, Virginia to the District of Columbia, to Prince George's County, Maryland (Figure 1).

The 7.5-mile Wilson Bridge Project is replacing the existing six-lane bridge with two six-lane, side-by-side drawbridges and rebuilding the surrounding four interchanges (Interstate 295 and Maryland 210 in Maryland and U.S. Route 1 and Telegraph Road in Virginia). The new bridge is designed to be transit ready for HOV, express bus or transit and to serve motorists for approximately 75 years. To better serve motorists, pleasure boaters and commercial vessels, it is 28 feet higher at its apex to provide extra clearance so that bridge openings will be reduced by 75 percent.

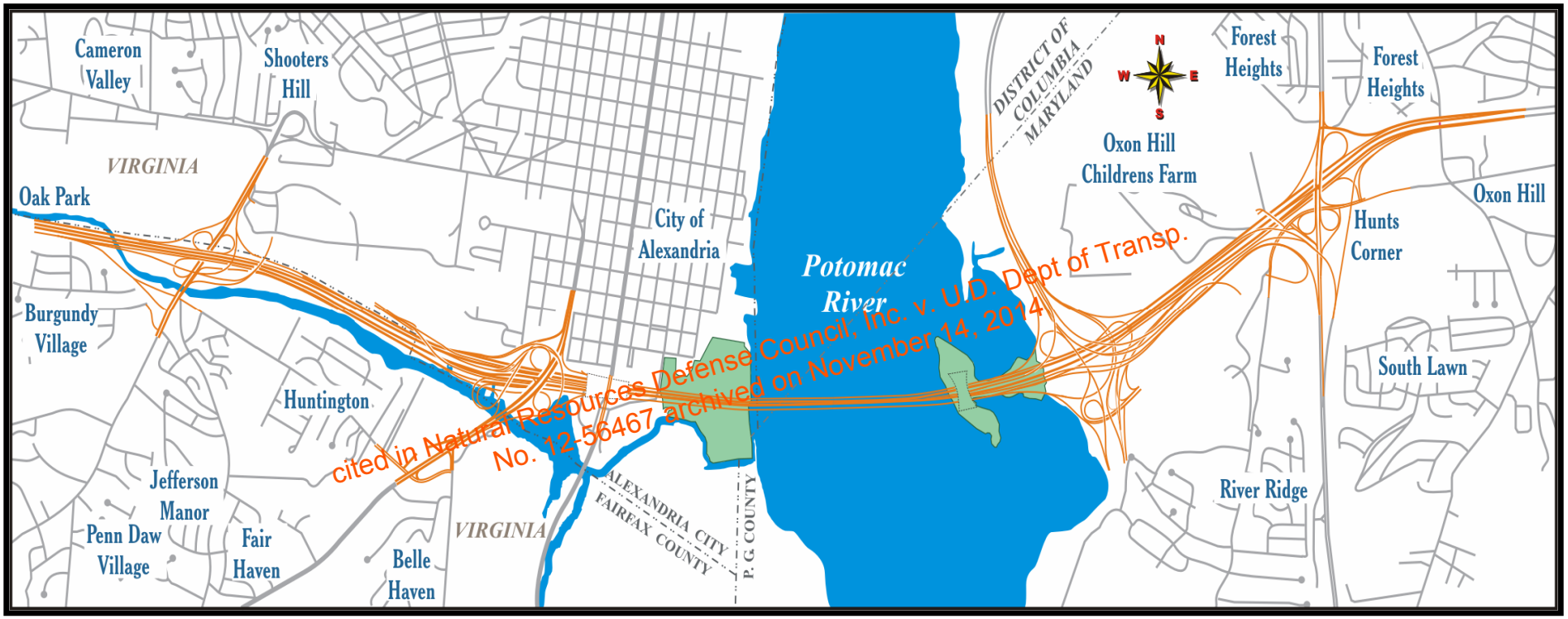
In its sixth year of construction, the Wilson Bridge Project is one of the largest transportation projects under construction in the United States and is 60 percent complete and on schedule. The project remains on-budget, with the $2.4 billion cost estimate being virtually unchanged from the original 2001 estimate (despite reflecting additional elements that will benefit the traveling public).

The project met a major milestone by opening the first new bridge in summer 2006 to carry all six lanes of Capital Beltway traffic (three in each direction). The second new bridge is scheduled to open in the summer of 2008. Once completed, the entire new facility will offer twelve lanes: eight lanes to match the eight-lane Capital Beltway, two lanes to facilitate merging/exiting and two lanes for future rail transit, bus service or high-occupancy vehicles. The year 2008 also will see the substantial completion of the project as defined in the record of decisions (completion of Interstate 295, Maryland 210 and majority of the US Route 1 Interchanges), resulting in approximately 90% of the project complete. Finally, despite the addition last year of major improvements to the Telegraph Road Interchange, this last element of the project remains slated for 2011 completion.

For more project information, please visit www.wilsonbridge.com.

[2] http://www.fhwa.dot.gov/environment/conformity/pm25faqs.htm. See Question 5.

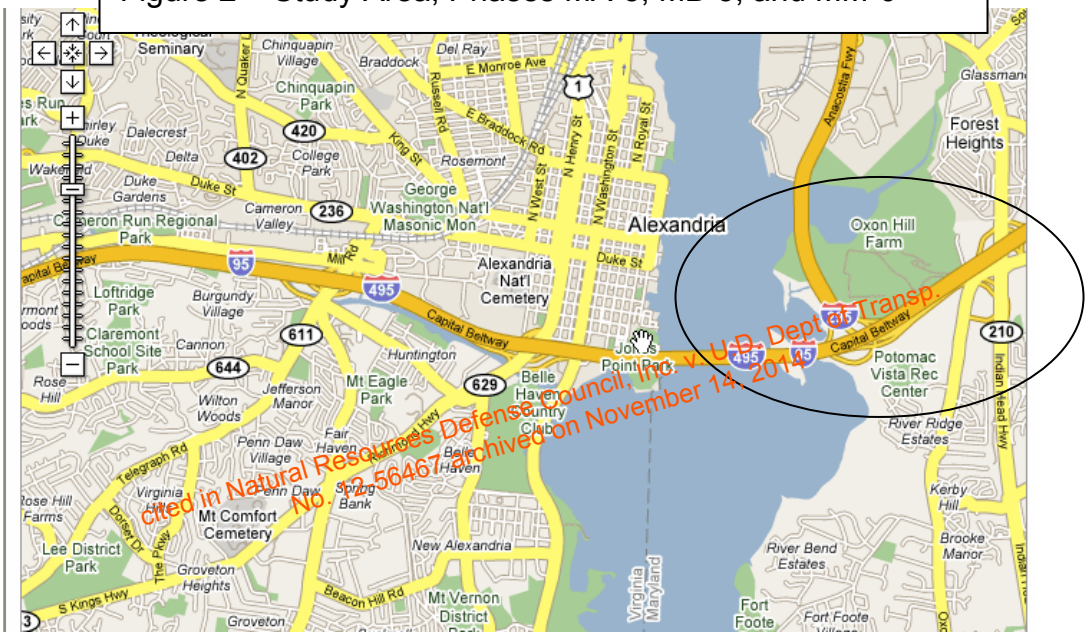
Figure 1 – Project Layout



The phases of work that remain to be authorized in Prince George's County, Maryland (Figure 2) are:

- *MA-5: I-295 HOV Ramp project* - This phase includes the construction of HOV Ramps C & D, which will connect I-95 with I-295 Northbound.
- *MB-5: MD210 HOV Ramp project* - This phase includes the construction of HOV lanes on I-95/495 to the west of MD 210 in the vicinity of the Bald Eagle Road Bridge.
- *MM-6: Anacostia East Wetland Mitigation* - This phase includes the restoration of 20.1 acres of tidal wetlands, as well as the creation of a 3.4 acre riparian forested buffer along the Anacostia River.

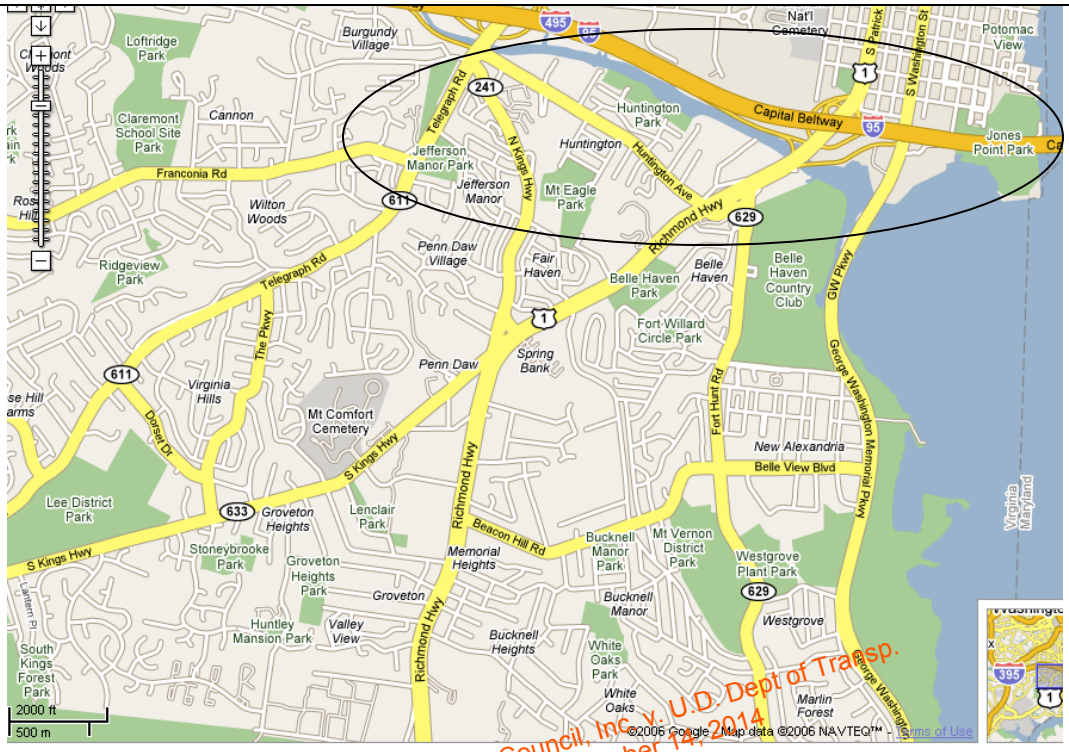
Figure 2 – Study Area, Phases MA-5, MB-5, and MM-6



The phases of work that remain to be authorized in Fairfax County, Virginia (Figure 3) are:

- *VA-8: Jones Point Park Redevelopment* - Please refer to the VM-5 phase description below, as phases VA-8 and VM-5 have been merged.
- *VA-10: US 1 HOV Ramps* - This phase includes the construction of the HOV Ramps M, N, & Q from I-95 to US Route 1.
- *VB-2/3/6: Telegraph Road Interchange* - This phase includes the re-construction of the I-95 mainline from the Eisenhower Connector to meet the US Route 1 Interchange construction work to the east, including various interchange ramps (A, A1, A2, B, C, D, E, F, G, L, H and H1) including bridges over Cameron Run, Telegraph Road and CSX/Southern/WMATA. The phase also includes utility relocations, noise walls, pedestrian paths, pavement reconstruction, traffic systems, lighting, signage, landscaping, and Cameron Run wetland mitigation.

Figure 3 - Study Area, Phases VA-8, VA-10, VB-2/3/6, VM-5, and VM-6



- *VM-5: Jones Point Park Reforestation Construction* - This phase includes the construction of ultimate improvements in Jones Point Park including a new parking lot, access roadway, recreation fields, kayak launch, playgrounds, pedestrian paths and facilities, comfort station, interpretive program, lighthouse improvements, signage, and landscaping restoration.
- VM-6: Elmwood Drive Storm Water Management - This phase includes proposed watershed restoration and storm water management techniques in the Telegraph Road Interchange area, including the installation of a storm water management/wetland infrastructure to control runoff from the Burgundy Farm School, the construction of a plunge pool to dissipate energy from flashy storm flows, the stabilization of approximately 100 feet of degraded tributary channel, the modification of a concrete channel to reduce backwater over a wider range of discharges, and the diversion of storm water runoff and removal of the concrete-lined diversion ditch along several residential properties along Elmwood Drive.
- The Witter Drive Recreational Facility is a recreational facility for the City of Alexandria that will be located just north of the Telegraph Road interchange (west of Telegraph Road, south of Duke Street, and north of the RR Tracks) on currently undeveloped land (mix of forest, field, and scrub-shrub areas).
- The Freedman's Cemetery phase includes fencing, landscaping, and possibly interpretive signage/panels and other memorializing features. The cemetery is located east of the US 1 interchanges, west of South

Washington Street, north of I-95/495, east of the Church Street ramp, and south of Church Street.

- Streetscape improvements that will not measurably affect traffic conditions.
- Local neighborhood traffic improvements that will only enhance local traffic flow but not measurably affect traffic conditions.
- Equipment purchase projects that will not affect traffic conditions.
- A local neighborhood community enhancement program that will not affect traffic conditions.

Background

Particulate Matter

Particulate matter is composed of solid particles or liquid droplets that are small enough to remain suspended in the air.

$PM_{2.5}$ refers to particles that are 2.5 microns or less in diameter, roughly 1/28th the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (e.g., from motor vehicles, power generation, and industrial facilities), residential fireplaces and wood stoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as sulfur dioxide, nitrogen oxides, and volatile organic compounds. $PM_{2.5}$ can penetrate the human respiratory system's natural defenses and damage the respiratory tract when inhaled. Numerous scientific studies have linked particle pollution exposure to a variety of problems, including:

- Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing for example;
- Decreased lung function;
- Aggravated asthma;
- Development of chronic bronchitis;
- Irregular heartbeat;
- Nonfatal heart attacks; and
- Premature death in people with heart or lung disease.

(Source: http://www.epa.gov/air/particlepollution/health.html)

National Ambient Air Quality Standards

As required by the Clean Air Act, National Ambient Air Quality Standards (NAAQS) have been established for the following major air pollutants. These pollutants, known as criteria pollutants, are: carbon monoxide, nitrogen dioxide, ozone, particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxide and lead.

The Federal standards for $PM_{2.5}$ are summarized in Table 1. The primary standards have been established to protect the public health. The secondary standards are intended to protect the nation's welfare and account for air pollutant effects on soil, water, visibility, materials, vegetation and other aspects of the general welfare.

Table 1
National Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Standards	
		Primary	Secondary
Particulate Matter as $PM_{2.5}$	Annual arithmetic mean[1]	15.0 µg/m^3	Same as primary standard
	24 hour[2]	65 µg/m^3	

1 *To attain this standard, the 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m^3.*

2 *To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor with an area must not exceed 65 µg/m^3.*

Source: *EPA http://epa.gov/air/criteria.html (May 24, 2006)*

Statutory and Regulatory Requirements for PM Nonattainment Areas

On March 10, 2006, the EPA issued amendments to the Transportation Conformity Rule to address localized impacts of particulate matter, entitled "$PM_{2.5}$ and PM_{10} Hot-Spot Analyses in Project-level Transportation Conformity Determinations for the New $PM_{2.5}$ and Existing PM_{10} National Ambient Air Quality Standards" (71 FR 12468). These amendments require the assessment of localized air quality impacts of federally-funded or approved transportation projects that are deemed to be projects of air quality concern that are located in $PM_{2.5}$ nonattainment and maintenance areas. 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.

EPA requires hot-spot findings to be based on directly emitted $PM_{2.5}$. This is because secondary particles take several hours to form in the atmosphere, giving emissions time to disperse beyond the immediate area of concern. A qualitative hot-spot analysis is required for these projects until EPA releases its future quantitative modeling guidance and announces that quantitative $PM_{2.5}$ hot-spot analyses are required under 40 CFR93.123(b)(4). The Conformity Rule requires $PM_{2.5}$ hot-spot analyses to include road dust emissions only if such emissions have been found significant by the 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).

$PM_{2.5}$ Regional Conformity Determination

Section 176(c) of the Clean Air Act and the federal conformity rule require that transportation plans and programs conform to the intent of the state implementation plan (SIP) through a regional emissions analysis in $PM_{2.5}$ nonattainment areas. The National Capital Region 2005 Constrained Long

Range Transportation Plan (CLRP) and the 2006-2011 Metropolitan Transportation Improvement Program (TIP) have been determined to conform to the intent of the SIP. The CLRP is a comprehensive plan of transportation projects and strategies that the Transportation Planning Board realistically anticipates can be implemented over the next 30 years. The TIP is a 6-year program that describes the time-frame for federal funds to be obligated to state and local projects. The U.S. Department of Transportation made a $PM_{2.5}$ conformity determination on the CLRP and the TIP on February 21, 2006; thus, there are a currently conforming transportation plan and TIP in accordance with 40 CFR 93.114. The current conformity determination is consistent with the final conformity rule found in 40 CFR Parts 51 and 93.

All project phases remaining for the entire Woodrow Wilson Bridge Project were included in the regional emissions analysis and there have been no significant changes in the project's design concept or scope from that used in the conformity analyses. The project, therefore, comes from a conforming plan and program in accordance with 40 CFR 93.115.

$PM_{2.5}$ Hot Spot Analysis

Project of Air Quality Concern

As noted previously, EPA's final rule on $PM_{2.5}$ hot-spot analyses requires localized assessment for projects of air quality concern. The final rule defines the projects of air quality concern that require a $PM_{2.5}$ or PM_{10} hot-spot analysis in 40 CFR 93.123(b)(1) as:

(i) New or expanded highway projects that have a significant number of or significant increase in diesel vehicles;

(ii) Projects affecting intersections that are Level-of-Service D, E, or F with a significant number of diesel vehicles, or those that will change to Level-of-Service D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;

(iii) New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;

(iv) Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and

(v) Projects in or affecting locations, areas, or categories of sites which are identified in the $PM_{2.5}$ or PM_{10} applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

Examples of projects of air quality concern that would be covered by 40 CFR 93.123(b)(1)(i) and (ii) include:

- A project on a new highway or expressway that serves a significant volume of diesel truck traffic, such as facilities with greater than 125,000 annual average daily traffic (AADT) where 8% or more of such AADT is diesel truck traffic;

- New exit ramps and other highway facility improvements to connect a highway or expressway to a major freight, bus, or intermodal terminal;
- Expansion of an existing highway or other facility that affects a congested intersection (operated at Level-of-Service D, E, or F) that has a significant increase in the number of diesel trucks; and
- Similar highway projects that involve a significant increase in the number of diesel transit buses and/or diesel trucks.

Examples of projects of air quality concern that would be covered by 40 CFR 93.123(b)(1)(iii) and (iv) include:

- A major new bus or intermodal terminal that is considered to be a "regionally significant project" under 40 CFR 93.101; and
- An existing bus or intermodal terminal that has a large vehicle fleet where the number of diesel buses increases by 50% or more, as measured by bus arrivals.

Based on traffic projections at major locations within the study area, as shown in Table 2, it has been determined that the Woodrow Wilson Bridge project meets the criteria set forth in 40 CFR 93.123(b)(1) as a project of air quality concern as it is estimated that the project will have a significant increase in the number of diesel vehicles. Therefore a hot-spot analysis must be performed for the project.

Table 2
Predicted Vehicular Volume and Associated Truck Percentages

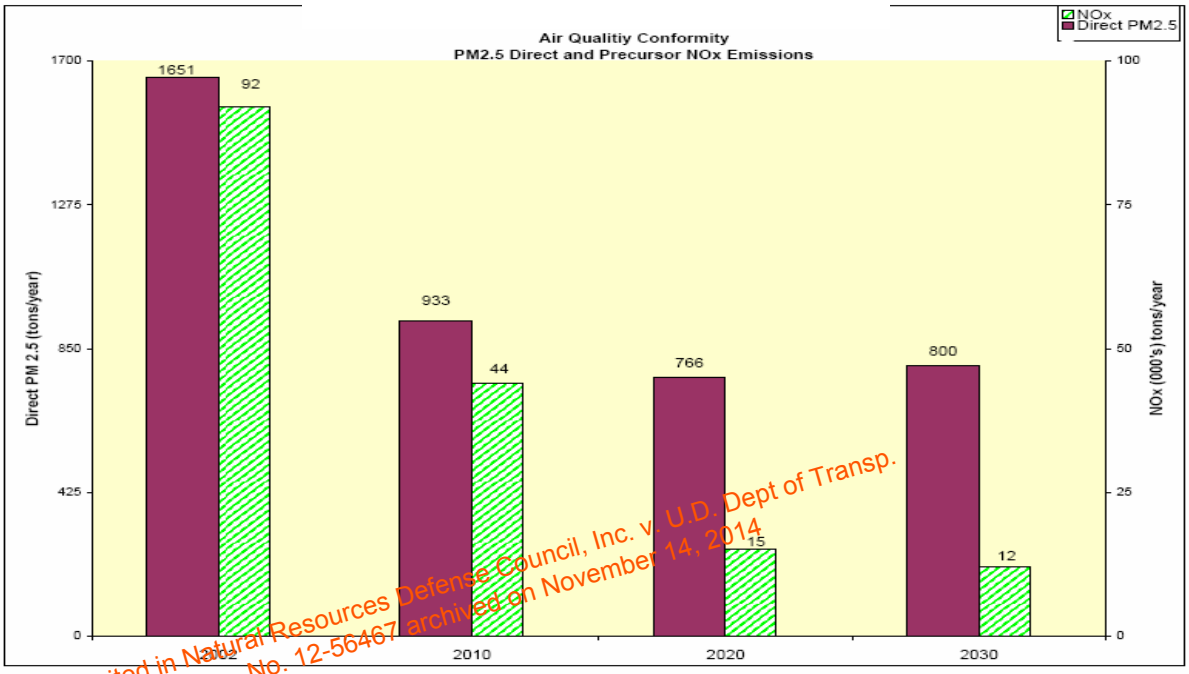
Area	2008 AADT	Truck Percentage
MA-5: I-295 HOV Ramp Area	244,275	8.0%
MB-5: MD210 HOV Ramp Area	179,356	7.5%
VA-10: US 1 HOV Ramp Area	221,315	6.6%
VB-2/3/6: Telegraph Road Interchange	200,234	6.5%

Year of Peak Emission Burden

As clarified in the preamble to the July 1, 2004 revision to the transportation conformity rule (64 FR 40056), the conformity rule requires that project-level analyses consider the year of expected peak emissions from the project. For $PM_{2.5}$, this is expected to be a near-term year, such as the first year of operation of the project, because emission rates from diesel vehicles are predicted to substantially decline between the opening year (2008) and the design year (2020) and these decreases would more than offset any increase in projected traffic volumes. The decline in emissions in future years are due in part to improvements in tailpipe emissions, national vehicle emissions control programs and the mandated use of ultra-low sulfur diesel-fuel. As shown in Figure 4, the regional $PM_{2.5}$ emissions are much higher in current years than in future years. Since regional emissions are a good indicator of the overall emissions trends in

the region, it is therefore expected that 2008 would be the year of peak emissions from the project and other emissions sources that affect the project area. This is true even though several minor phases of the project will not be operational until after 2008 because the affects on traffic from these phases will be minimal.

Figure 4 – $PM_{2.5}$ Emission Trends



Source: Metropolitan Washington Council of Governments (MWCOG), Fine Particles (PM2.5) Standards Air Quality Conformity Assessment, December 21, 2005.

Traffic Data

Overall traffic and truck data have been analyzed to assess the location associated with the remaining project phases that are most likely to have the highest emissions burden.

2008 AADT for the Build scenario for the roadways near the remaining project phases, were derived from the Woodrow Wilson Bridge FEIS and from information provided by the Maryland State Highway Administration. Truck percentages for these roadways were taken from the VDOT report "2005 Daily Traffic Volume Estimates Including Vehicle Classifications Estimates – Jurisdiction Report 29". Since the project is not changing the overall character of the area, it is not expected that the project will change in the current vehicle mix within the area. As such, the truck percentages present in 2005 are applied to 2008 vehicular volume estimates to obtain 2008 truck volumes. A description of the traffic characteristics for the project area of each remaining phase of the project is given below.

MA-5: I-295 HOV Ramp Project Phase

The 2008 Build AADT volumes for the roadways in the project area are approximately:

- 166,567 along I-95, with 8% trucks
- 77,708 along I-295, with 8% trucks

For I-95, truck percentages from the portion of I-95 between US1 and the Potomac River were used. Truck percentages for I-295 were assumed to be similar to those for I-95. The overall truck percentage for the area is 8.0%, with an AADT of 244,275.

MB-5: MD210 HOV Ramp Project

The 2008 AADT volumes for the roadways in the project area are approximately:

- 150,529 along I-95, with 8% trucks
- 28,827 along MD210, with 5% trucks

For I-95, truck percentages from the portion of I-95 between US1 and the Potomac River were used. Truck percentages for MD210 were assumed to be similar to those for Telegraph Road. Taking a weighted average based on volume, the overall truck percentage for this area is 7.5% with an AADT of 179,356.

MM-6: Anacostia East Wetland Mitigation Project

This project phase is not predicted to increase AADT as compared to the No Build Scenario. The project is not expected to increase the overall diesel truck percentages on nearby roadways.

VA-8: Jones Point Park Redevelopment

This project phase is not predicted to increase AADT as compared to the No Build Scenario. The project is not expected to increase the overall diesel truck percentages on nearby roadways.

VA-10: US 1 HOV Ramps

The 2008 AADT volumes for the roadways in the project area are approximately:

- 161,298 along I-95, with 8% trucks
- 60,017 along US1 with 3% trucks

Taking a weighted average based on volume, the overall truck percentage for the area is 6.6% with an AADT of 221,315.

VB-2/3/6: Telegraph Road Interchange

The 2008 AADT volumes for the roadways in the project area are approximately:

- 152,184 along I-95, with 7% trucks
- 48,050 along Telegraph Road/Kings Highway with 5% trucks (truck percentages from Telegraph Road conservatively applied).

Taking a weighted average based on volume, the overall truck percentage for the area is 6.5% with an AADT of 200,234.

VM-5: Jones Point Park Reforestation Construction
The project phase is not predicted to increase AADT as compared to the No Build Scenario. The project is not expected to increase the overall diesel truck percentages on nearby roadways.

VM-6: Elmwood Drive Stormwater Management Project
The project phase is not predicted to increase AADT as compared to the No Build Scenario. The project is not expected to increase the overall diesel truck percentages on nearby roadways.

Witter Drive Recreational Facility
This phase is the construction of a recreational facility for the City of Alexandria. The operation of this facility is not expected to increase the overall diesel truck percentages on nearby roadways.

Freedman's Cemetery
This project phase includes fencing, landscaping, and possibly interpretive signage/panels and other memorializing features. These actions are not expected to increase the overall diesel truck percentages on nearby roadways.

Streetscape Improvements
These improvements are not expected to increase the overall diesel truck percentages on nearby roadways.

Local Neighborhood Traffic Improvements
These improvements are not expected to increase the overall diesel truck percentages on nearby roadways.

Equipment Purchase Projects
The equipment to be purchased is not expected to increase the overall diesel truck percentages on nearby roadways.

Local Neighborhood Community Enhancement Program
These programs are not expected to increase the overall diesel truck percentages on nearby roadways.

In summation, the traffic data indicate that the remaining project phases that do not affect diesel traffic are:

- MM-6: Anacostia East Wetland Mitigation
- VA-8: Jones Point Park Redevelopment
- VM-5: Jones Point Park Reforestation Construction
- VM-6: Elmwood Drive Storm Water Management

As shown earlier in Table 2, the project areas of the remaining phases that are affected by diesel traffic are:

- MA-5: I-295 HOV Ramp
- MB-5: MD210 HOV Ramp
- VA-10: US 1 HOV Ramp
- VB-2/3/6: Telegraph Road Interchange

$PM_{2.5}$ Qualitative Methodology

According to 40 CFR 93.123(b)(2) and (4), a quantitative analysis for applicable projects is not required until the EPA releases modeling guidance in the Federal Register. However, a qualitative hot-spot analysis is still required. For this project, a qualitative project-level hot-spot assessment was therefore conducted following the joint EPA and FHWA March 29, 2006 guidance *Transportation Conformity Guidance for Qualitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas* (EPA420-B-06-902) in order to assess whether the project will cause or contribute to any new localized $PM_{2.5}$ violations, or increase the frequency or severity of any existing violations, or delay timely attainment of the $PM_{2.5}$ NAAQS.

Following the methodologies provided in the March 2006 guidance, a comparison approach of monitored $PM_{2.5}$ levels within the study area, roadway volumes, future emission projects, and future AADT estimates was used to determine whether the remaining phases of the project have the potential to cause or exacerbate a violation of the $PM_{2.5}$ NAAQS. Table 2 summarizes the traffic and truck characteristics of the project area for the four remaining project phases that have the potential to impact $PM_{2.5}$ levels. The project area of Phase MA-5: I-295 HOV Ramp Project has the highest overall vehicular volume and the highest truck percentages of all the phases analyzed. For this analysis therefore, it was determined that the project area of phase MA-5 would be analyzed as the worst case site of the remaining project phases. Thus the conditions for this phase would be used in the qualitative comparison approach to determine if the remaining phases of the project have the potential to cause or exacerbate a violation of the $PM_{2.5}$ NAAQS.

Existing Conditions - $PM_{2.5}$ Monitored Levels near the Study Area

The Virginia Department of Environmental Quality (DEQ) and the Maryland Department of the Environment (DOE) are required to conduct air quality monitoring by both federal and state regulations. Regional operators routinely service the monitoring instrumentation, perform the quality assurance checks necessary to ensure that the analyzers are operating properly, and perform various types of preventive maintenance. The current $PM_{2.5}$ monitoring network for Virginia and Maryland has been developed following the requirements of 40 CFR Part 58 and applying the EPA's "Guidance for Network Design and Optimum Site Exposure for $PM_{2.5}$ and PM_{10}".

Following the March 2006 guidance, monitoring data collected at a monitor located in an area similar to the area affected by the proposed project should be used to represent the air quality in the study area.

Eleven $PM_{2.5}$ monitors are located in the Washington DC–MD-VA $PM_{2.5}$ nonattainment area: three in the District of Columbia, five in the Commonwealth of Virginia, and three in the State of Maryland. The traffic levels near these monitors, which are a summary of 2004 AADTs on nearby roadways, and are based on the latest available traffic information, were analyzed in May of 2006 as part of the recently approved "*Project-level Conformity Determination for the Intercounty Connector Project in Maryland*", and are shown in Table 3.

Table 3
Assessment of Monitoring Sites

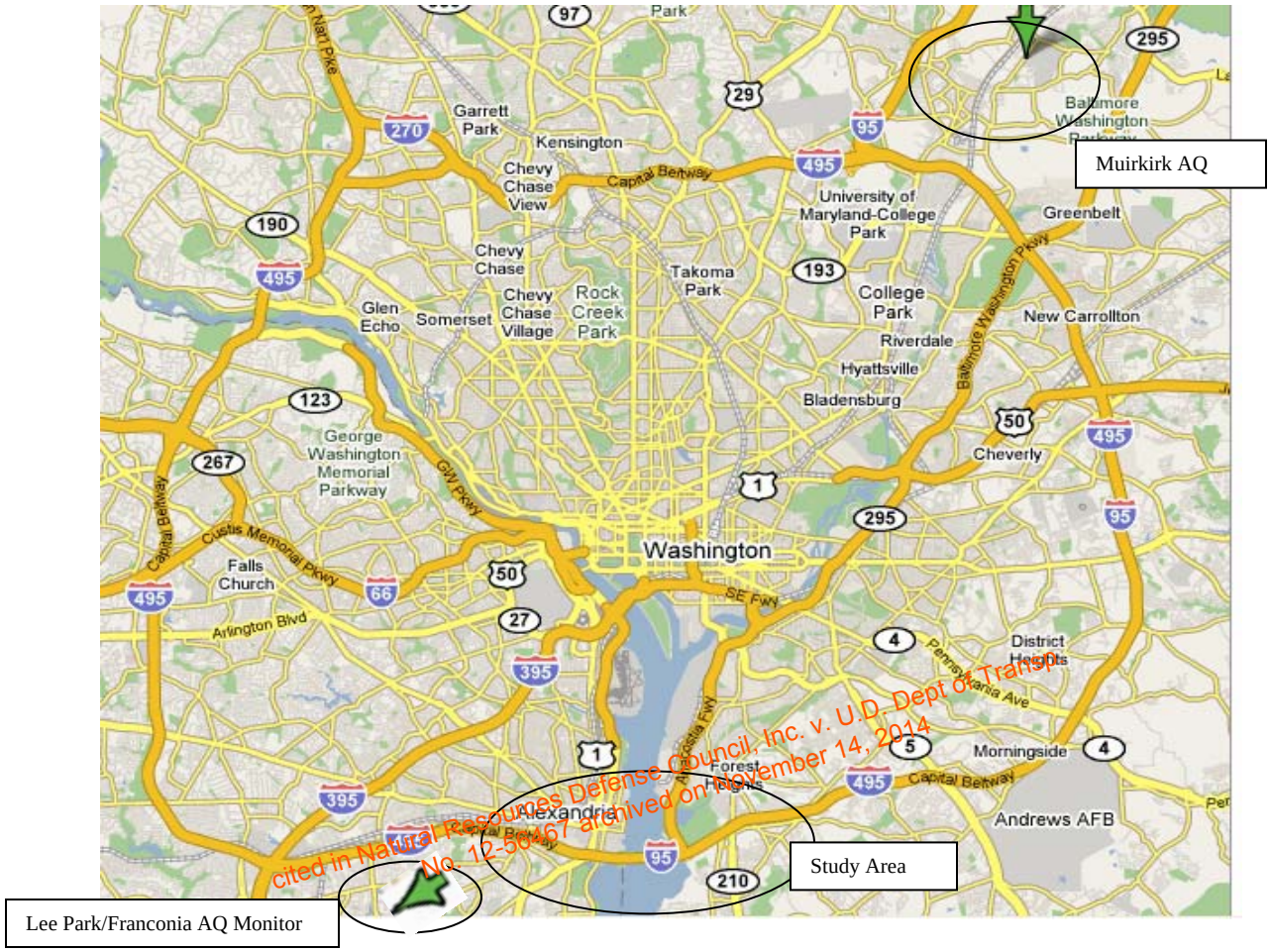
Monitor Number and Name	Traffic Impact Volumes*	Weighted Truck Percentage	Trucks per day
240330030 Muirkirk, MD	303,600	7.9%	24,288
240313001 Rockville, MD	74,375	**	---
240338003 Upper Marlboro, MD***	93,650	**	---
110010041 RFK Stadium (34th & Dix), DC***	235,600	5.4%	12,722
110010043 near Howard University, DC	130,900	**	---
110010042 near Tidal Basin, DC	223,652	5.04	11,272
510130020 near Pentagon City, VA	346,000	2.17	7,508
510595001 McLean, VA	301,000	3.4	10,234
511071005 Ashburn, VA	124,000	**	---
510590030 Franconia, VA	216,500	6.2	13,423
510591005 Annandale, VA	282,000	2.7	7,614

(Source: *Project-level Conformity Determination for the Intercounty Connector Project in Maryland***,** *Appendix C)*
** Based on major roads within approximately two miles of the monitor*
*** Where traffic impact volumes were less than ½ of the worst case traffic volumes, weighted truck percentages were not calculated.*
****There are two monitors at this location.*

Representative Monitor

While the Franconia monitor (also referred to as the Lee Park monitor) is the closest monitor to the project area (see Figure 5), the AADT and the truck percentages near the Muirkirk monitor are most representative of (and more conservative than) those near the worst case analysis site (i.e., near the phase MA-5: I-295 HOV Ramp project). The Muirkirk monitor, which is located approximately 20 miles from the study area (see Figure 5), has the highest AADT (303,600) and truck percentages (7.9%) of all the monitors listed in Table 3 while the AADT and truck percentages near the Franconia monitor are lower than those near the analysis. The Muirkirk monitor, therefore, was used as the representative monitor for the study area. However, as the Franconia monitor is closer to the study area, values recorded at this monitor were also considered.

Figure 5 – AQ Monitors and Location Relative to Study Area



Monitored $PM_{2.5}$ Levels

As shown in Figures 6 and 7, the latest two full years (2004 and 2005) of monitored values (note: the Muirkirk monitor was not operational prior to 2004) as well as monitored values for 2006 (January 1 through September 5, 2006) at the Muirkirk monitor are below the applicable NAAQS. Based on these data, the highest 98th percentile 24 hour monitored value is 38 $\mu g/m^3$, which occurred in 2004. This is 58% of the applicable standard of 65 $\mu g/m^3$. The highest annual monitored value is 13.4 $\mu g/m^3$, which occurred in 2005. This is 89% of the annual standard. No violation of the $PM_{2.5}$ NAAQS has been reported at this monitor.

The highest values recorded at the Franconia monitor, as shown in Figures 8 and 9, are 36 ug/m^3 over 24 hours (98th percentile) and 13.9 ug/m^3 annually. No violation of the $PM_{2.5}$ NAAQS has been reported at this monitor.

Built and Natural Environment

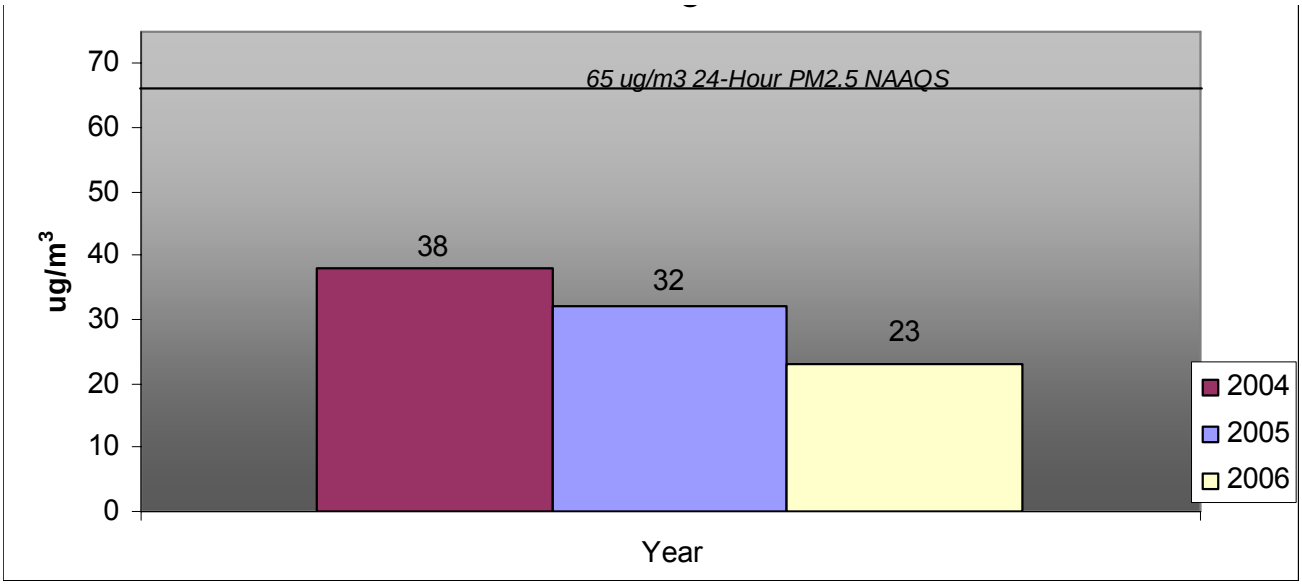
The project area is characterized primarily by a mix of residential, commercial, industrial and parkland uses. Land use development in the project area is governed by multiple layers of planning authorities including the City of Alexandria, Fairfax County, District of Columbia (D.C), and Maryland-National Capital Park and Planning Commission on behalf of Prince George's County. The built environment on the eastern side of the project area (in Maryland and D.C.) is more homogeneous than the western (Virginia) portion. On the eastern shore, there are large tracts of waterfront parkland (the historic 512-acre Oxon Cove Park/Oxon Hill Farm), utilities, and institutional uses, while the land use pattern in Alexandria and Fairfax County is more diverse. There, dense residential and commercial uses extend to the waterfront as do industrial uses and parklands. The most prominent parkland on the western shore is the 64-acre Jones Point Park (traversed by the elevated bridge). See Figure 3-4 in the 2000 FEIS for a depiction of existing land use in the project area.

There are several master and comprehensive plans in place that govern land use patterns and development in the project area. These were described in the 1997 FEIS, Section 3.3 and were updated in the same section of the 2000 FEIS. According the plans described in the FEIS, underutilized land is proposed to be redeveloped into large-scale mixed-use commercial/retail and hotel developments on several sites on the eastern side of the Potomac River (the largest being the redevelopment of DC Village east of I-295). On the Virginia side of the Potomac River, formerly commercial and industrially-zoned land will be redeveloped for mixed-use or high-density commercial uses.

Future Scenario

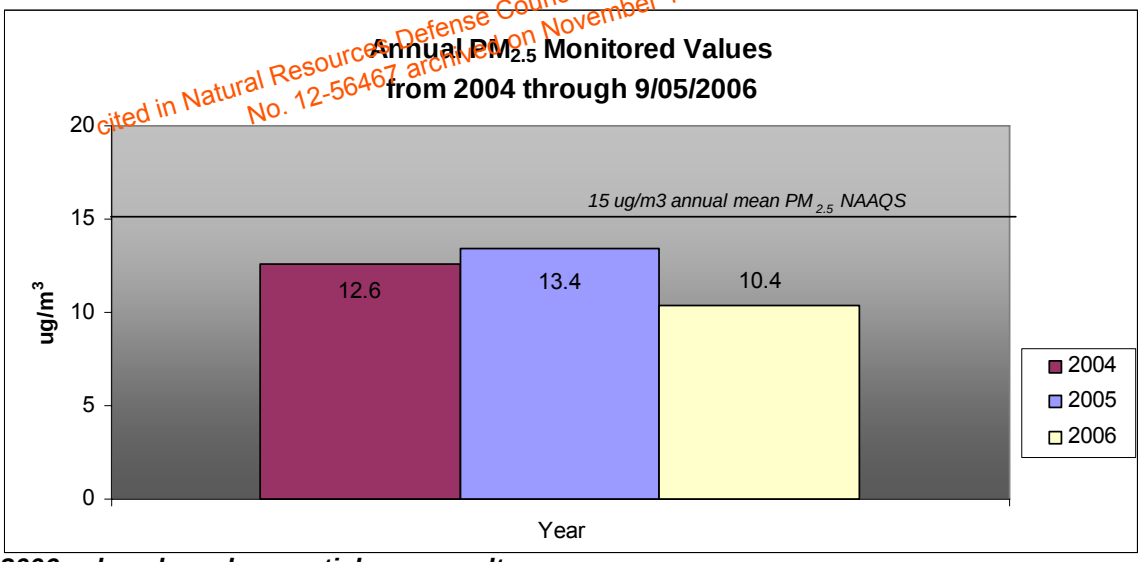
As shown previously in Figure 4, direct $PM_{2.5}$ emissions are expected to substantially decrease in future years for the entire nonattainment area. This predicted decrease in emissions is due in large part to EPA's "Heavy-duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements – Final Rule," signed in December 2000. According to this rule, particulate matter emission levels are expected to be 90% lower on a per vehicle basis in 2030 than they were in 2000.

Figure 6 – 24-Hour $PM_{2.5}$ Monitored Values (98th Percentile), Muirkirk Monitor



Note: 2006 values based on partial year results.

Figure 7 – Annual $PM_{2.5}$ Monitored Values, Muirkirk Monitor



Note: 2006 values based on partial year results.

Figure 8 – 24-Hour $PM_{2.5}$ Monitored Values (98th Percentile), Franconia Monitor

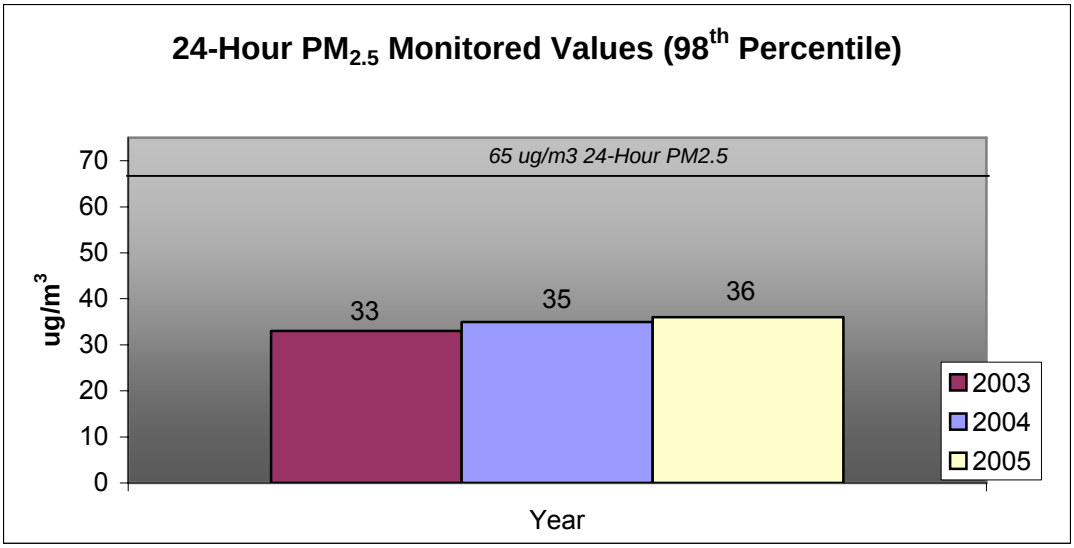
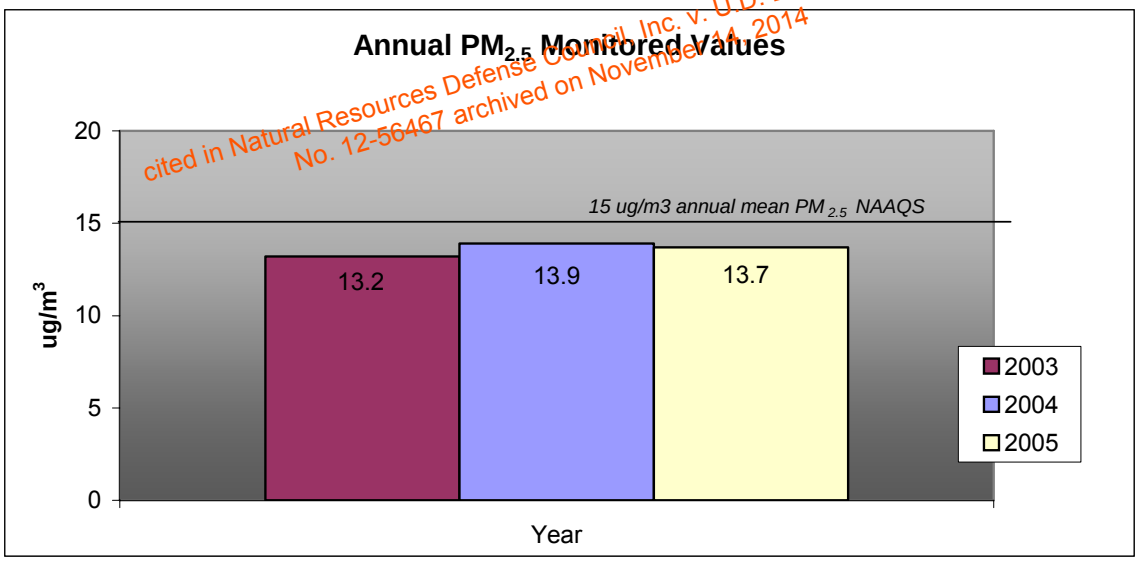


Figure 9 – Annual $PM_{2.5}$ Monitored Values, Franconia Monitor



Results

Based on the year of expected peak emissions it was determined that the project opening year, 2008, represents the year for the potential worst case impacts of the project. In addition, an analysis of truck percentages and overall 2008 Build AADTs, determined that the area affected by the MA-5: I-295 HOV ramps phase represents the worst case analysis area of the remaining project phases.

Based on the site characteristics of the eleven $PM_{2.5}$ monitoring stations located in the DC-VA-MD area, it was determined that the Muirkirk monitor has the most similar characteristics to the proposed project. As shown in Table 4, these characteristics include overall traffic volumes and truck volumes that are higher than those predicted near the project's worst case analysis site (e.g., 24,288 trucks near monitor as compared to 19,542 trucks in study area). A conservative approach was applied and the Muirkirk monitor has been used as the representative monitor for this analysis.

Values collected at the Muirkirk monitor in 2004 and 2005, as well as at the Franconia monitor from 2003-2005, did not violate the $PM_{2.5}$ NAAQS (annual or 24-hour). The 2008 project truck impacts on a per vehicle basis should be less than currently observed at this monitor, based on the implementation of national diesel engine and diesel sulfur fuel regulations that are expected to cut heavy-duty diesel emissions. It may also be noted that control programs for other sources of $PM_{2.5}$ in the region, geared toward meeting the 2010 attainment date for the $PM_{2.5}$ standard, are likely to improve air quality in the project area.

Table 4
Summary of Traffic Conditions at Analysis Site, Muirkirk Monitor

Description	AADT	Truck Percentage	Trucks per day
MA-5: I-295 HOV Ramp Project	244,275	8%	19,542
Muirkirk Monitor	303,600	7.9%	24,288
Franconia Monitor	216,500	6.2%	13,423

Interagency Consultation Process

Per the transportation conformity regulation (40CFR 93.105), this document was developed in consultation with the MPO, state air agencies, state and local transportation agencies, EPA, and DOT.

Other $PM_{2.5}$ Considerations

Construction-related emissions for the project are considered to be temporary, as the construction of each remaining project phases will be less than five years at any one site, meeting the criteria of section 93.123(c)(5). Therefore, these emissions are not required to be analyzed. The EPA has not approved a $PM_{2.5}$ SIP for the project area, nor has the EPA or the state air agency made any

significance findings related to re-entrained road dust for the $PM_{2.5}$ nonattainment area. Therefore, re-entrained road dust is not considered in the analysis, in accordance with the Conformity Rule. In addition, as there is not an applicable $PM_{2.5}$ SIP, there are no SIP-mandated $PM_{2.5}$ control measures, and the project is in compliance with 40 CFR 93.117.

Conclusion

Based on the analysis provided, it is determined that the remaining phases of the Woodrow Wilson Bridge project meet all the project level conformity requirements, and that the project will not cause or contribute to a new violation of the $PM_{2.5}$ NAAQS, or increase the frequency or severity of a violation for the following reasons:

- A monitor with comparable traffic characteristics and roadway influences to the project area in the year of estimated peak emissions is currently monitoring $PM_{2.5}$ concentrations that are below the annual and 24-hour standards.

- Vehicular emissions are expected to be reduced in the project area, as demonstrated by projected reductions in the regional emissions, as well as by national projections by the EPA reflecting the impacts of national emissions control programs, such as the 2007 Heavy-Duty Diesel Rule.