



APPENDIX D: AIR QUALITY ANALYSIS TECHNICAL MEMORANDUM

TECHNICAL MEMORANDUM

Subject: New River CSX Railroad Bascule Bridge PD&E Study
Air Quality Analysis
FM No. 406919-1-22-01
ETDM # 9087

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1. INTRODUCTION

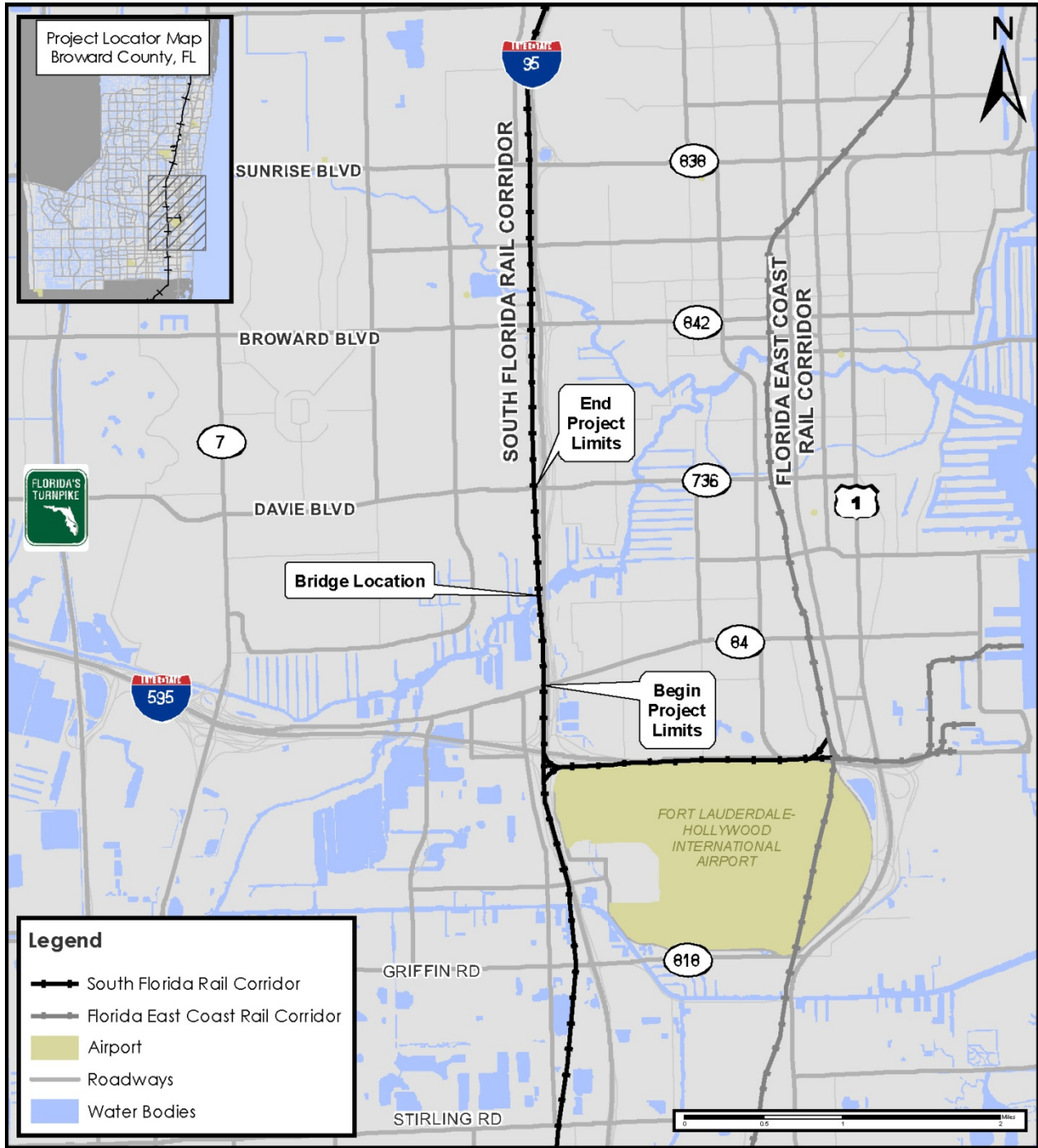
This air quality analysis was conducted to assess the air quality impacts associated with the New River CSX Railroad Bascule Bridge PD&E Study (“Project”) in accordance with the Clean Air Act Amendments of 1990 and Part 2, Chapter 16 of the Florida Department of Transportation’s (FDOT) Project Development and Environment (PD&E) Manual. The air quality analysis evaluated the net increase in emissions associated with the proposed Project by comparing existing and future conditions.

The air quality analysis requires an assessment under both the Clean Air Act (CAA) and the National Environmental Policy Act (NEPA). The Transportation Conformity Rule under Section 176 of the CAA applies to transportation plans, programs, and projects developed, funded, or approved by the United States Department of Transportation that are located in non-attainment and maintenance areas. Since Broward County is designated as attainment for all of the National Ambient Air Quality Standards (NAAQS), the CAA conformity requirements do not apply to this project.

2. PROJECT DESCRIPTION

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) Study to evaluate the proposed rehabilitation or replacement of the movable railroad bridge over the South Fork of the New River in Broward County, Florida. The total project length is 1.25 miles from Davie Boulevard (State Road 736) to State Road 84 within the South Florida Rail Corridor (SFRC) right-of-way, located immediately to the west of Interstate 95, and north of the Interstate 595 (I-595) and Interstate 95 (I-95) interchange. (See Figure 1, Project Location Map).

The subject movable railroad bridge was built in 1926-1927 as part of the Miami extension of the Seaboard Airline Railway (SAL) system. The bridge is parallel to and west of State Road 9/I-95 over the South Fork of the New River. The South Florida Regional Transportation Authority (SFRTA) operates a two-track transit facility which is parallel to the CSX track, between the CSX railroad and I-95. This is the double-track railroad line used by Tri-Rail and Amtrak.



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FLORIDA DEPARTMENT OF TRANSPORTATION
**NEW RIVER CSX RAILROAD BASCULE BRIDGE
 PROJECT DEVELOPMENT AND ENVIRONMENT (PD&E) STUDY**

FIGURE 1 PROJECT LOCATION MAP



The subject bridge is owned by the FDOT and maintenance of this bridge is currently shared by agreement between CSX and FDOT. Rail traffic over the single-track movable bridge primarily consists of CSX freight trains. Daily unit stone trains, plus local CSX freight service and CSX work trains are now moved over this bridge. In the event of maintenance or shutdown of the parallel SFRC line, Tri-Rail and Amtrak trains can utilize the trackage over the movable bridge span.

The existing horizontal navigation clearance within the channel is 56 feet. The bascule span is generally left in the open position except when closed to allow a passing train; in the open position, there are 55 feet of vertical clearance with the constraints being the Tri-Rail and I-95 bridges located directly to the east. In the closed position, the vertical clearance is approximately two (2) feet above mean high water. The proposed improvements involve rehabilitating or replacing the existing bascule bridge and improving the horizontal navigational clearance.

3. AFFECTED ENVIRONMENT

Transportation sources such as locomotives and motor vehicles typically burn fossil fuel resulting in air pollutant emissions. The primary pollutants emitted by motor vehicles are carbon monoxide (CO), nitrogen oxides (NO_x) and hydrocarbons (commonly referred to as volatile organic compounds (VOCs)). Historically, lead was also a primary pollutant emitted by motor vehicles; however, with the implementation of unleaded gasoline, lead emissions from motor vehicles have been greatly reduced.

3.1 National Ambient Air Quality Standards

Pursuant to the Federal Clean Air Act of 1970 (CAA)¹, the US Environmental Protection Agency (EPA) established the NAAQS for major pollutants, called “criteria pollutants.” Currently there are six (6) criteria pollutants: ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter, and lead (Pb). Particulate matter (PM) includes particles with a diameter less than 10 micrometers (PM₁₀) and with a diameter of less than 2.5 micrometers (PM_{2.5}).

Table 1 shows the primary and secondary NAAQS for the criteria pollutants. The NAAQS are two-tiered. The first tier (primary) is intended to protect public health; the second tier (secondary) is intended to prevent further degradation of the environment.

¹ 42 U.S.C. §§ 7401 – 7676.

Table 1. National Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging Time	Primary Standards ^[1,2]	Secondary Standards ^[1,3]	
CO	8-hour	9 ppm (10 µg/m ³)	None	
	1-hour	35 ppm (40 µg/m ³)	None	
Lead ^[4]	Quarterly Average	1.5 µg/m ³	Same as Primary	
	Rolling 3-Month Average ^[5]	0.15 µg/m ³	Same as Primary	
NO ₂	Annual Arithmetic Mean	0.053 ppm (100 µg/m ³)	Same as Primary	
	1-hour	100 ppb	None	
PM ₁₀	Annual Arithmetic Mean	None	None	
	24-hour	150 µg/m ³	Same as Primary	
PM _{2.5}	Annual Arithmetic Mean	15 µg/m ³	Same as Primary	
	24-hour	35 µg/m ³	Same as Primary	
O ₃	8-hour	0.075 ppm (147 µg/m ³)	Same as Primary	
SO ₂	Annual Arithmetic Mean	0.03 ppm (80 µg/m ³)	0.5 ppm	3-hour
	24-hour	0.14 ppm (365 µg/m ³)		
	1-hour	75 ppb ^[6]	None	

Notes:

1. National standards (other than ozone, particulate matter, and those based on annual averages) are not to be exceeded more than once per year. The ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or is less than the standard. For PM₁₀, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or is less than one. For PM_{2.5}, the 24-hour standard is attained when 98% of the daily concentrations, averaged over three years, are equal to or are less than the standard.
2. Primary Standards: Levels necessary to protect public health with an adequate margin of safety.
3. Secondary Standards: Levels necessary to protect the public from any known or anticipated adverse effects.
4. Lead is categorized as a “toxic air contaminant” with no threshold exposure level for adverse health effects determined.
5. National lead standard, rolling three-month average: final rule signed October 15, 2008.
6. Based on the final rule signed June 2, 2010. To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

3.2 Attainment Status

The standards in Table 1 apply to the concentration of a pollutant in outdoor ambient air. If the air quality in a geographic area meets or exceeds the national standard, it is designated an attainment area. Areas that do not meet the national standard are designated non-attainment areas. Once a non-attainment area meets the standards, the EPA will re-designate the area as a “maintenance area.”

Each state is required to draft a State Implementation Plan (SIP) to further improve the air quality in non-attainment areas and to maintain the air quality in attainment and maintenance areas. The plan outlines the measures that the state will take in order to improve air quality.

This Project is located in Broward County in the Southeast Florida Intrastate Air Quality Control Region. The area is designated as attainment for all regulated standards.

3.3 Monitoring Data-Existing Conditions

EPA and local state agencies operate ambient monitoring stations which are used to assess air quality in each state. To characterize the existing conditions of the Broward County area, the most recent data obtained from the EPA AIRS database was reviewed for 2008. The analysis consisted of regulated air pollutants contained in the NAAQS; including sulfur dioxide (SO₂), carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), lead (Pb), and particulate matter (PM₁₀ and PM_{2.5}). A summary of the background air quality concentrations is presented in Table 2. The monitor data shows background monitoring levels are below the NAAQS for all pollutants and averaging periods.

Table 2. Ambient Background Air Quality Concentrations

County	Carbon Monoxide (CO, ppm)		Nitrogen Dioxide (NO ₂ , ppm)		Sulfur Dioxide (SO ₂ , ppm)			Ozone (ppm)	PM _{2.5} (ug/m ³)		PM ₁₀ (ug/m ³)		Lead ¹ (ug/m ³)	
	1-Hr	8-Hr	1-Hr	Annual	1-Hr	24-Hr	Annual	8-Hr	24-Hr	Annual	24-Hr	Annual	Quarterly	Monthly
Broward	2.1	1.6	0.048	.005	0.029	0.003	0.001	0.064	24.5	8.3	64	21	0.60	0.06
NAAQS	35	9	0.100	0.053	0.075	0.14	0.03	0.075	35	15	150	50	1.5	0.15

Notes:

1. There are no lead monitors in the Broward County area; therefore, the monitor values from Tampa Bay were used.

4. AIR QUALITY ANALYSIS

The project is located in an area which is designated attainment for all of the National Ambient Air Quality Standards under the criteria provided in the Clean Air Act. Therefore, the Clean Air Act conformity requirements do not apply to the project.

4.1 Construction

Construction activities will cause short-term air quality impacts in the form of dust from earthwork and unpaved roads. These impacts will be minimized by adherence to all applicable state and local regulations and the FDOT Standard Specifications for Road and Bridge Construction.