

## 6.B. AIR QUALITY

This section presents the assessment of the potential air quality impacts for all of the runway development alternatives. The evaluation was prepared pursuant to the FAA *Air Quality Procedures for Civilian Airports and Air Forces Bases (Air Quality Handbook)*,<sup>2</sup> using the FAA Emissions and Dispersion Modeling System (EDMS).<sup>3</sup> The guidelines provided in the *Air Quality Handbook* are consistent with FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*;<sup>4</sup> FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*;<sup>5</sup> and the State of Florida air pollution control provisions in its State Implementation Plan (SIP).

This section is supplemented by Appendix G, *Air Quality*, which includes Attachment G.1 *Technical Report: Air Quality Assessment Methodology and Procedure* (Air Quality Technical Report). The Air Quality Technical Report summarizes the procedures and methodology used to prepare the assessment; documents the coordination with Federal, state, and local air quality agencies in Appendix G.1.A, *Agency Coordination*; and includes Appendix G.1.B, *Hazardous Air Pollutant (HAP) Evaluation*.

### 6.B.1 REGULATORY OVERVIEW

A detailed review of the regulatory requirements for the air quality assessment is provided in the Air Quality Technical Report. Included in the report are reviews of the relevant Federal and state regulations for air quality analysis of Federal actions and a discussion of the air quality status of Broward County. Details concerning the status of Florida's SIP are included in the report, along with the *Southeast Florida Area Maintenance Plan Update (2004 Plan Update)*<sup>6</sup> emissions budgets for nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOCs), the ozone precursor pollutants. See Chapter Five, *Affected Environment*, Section 5.B, *Air Quality*, for information regarding applicable air quality regulations.

### 6.B.2 ANALYSIS OF FUTURE CONDITIONS

The Airport Sponsor's Proposed Project and runway development alternatives were assessed by preparing an emissions inventory followed by conducting a dispersion analysis. The inventory disclosed the potential relative impact of each alternative. The dispersion analysis indicated whether any of the alternatives would cause potential significant air quality impacts in Broward County.

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<sup>2</sup> FAA, *Air Quality Procedures for Civilian Airports and Air Forces Bases (Air Quality Handbook)*, April 1997.

<sup>3</sup> FAA Emissions and Dispersion Modeling System (EDMS), Version 4.5, 2006.

<sup>4</sup> FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, April 28, 2006.

<sup>5</sup> FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures* (including Change 1), March 20, 2006.

<sup>6</sup> USEPA, 69 FR 7127-7133, 2/13/2004.

An emissions inventory and dispersion analyses were conducted for both the 2012 and 2020 baseline years (Alternative A, No Action), the Airport Sponsor's Proposed Project (Alternative B1), and the runway development alternatives described in Chapter Four, *Alternatives*. The analyses were conducted as described for the analysis of 2005 Existing Conditions in Chapter Five, *Affected Environment*, Section 5.B, *Air Quality*, and according to the procedures and methodology described in the Air Quality Technical Report.

#### **6.B.2.1 Future Conditions – CAA (General Conformity)**

Future conditions require several emission inventories, because General Conformity regulations under the Clean Air Act apply to future conditions and did not apply to 2005 Existing Conditions (See Chapter Five, Section 5.B.1.4, *Clean Air Act General Conformity Rule*). These emission inventories are for criteria and precursor emissions in the calendar year when either construction or implementation of the FAA's Preferred Alternative (yet to be identified) are expected to produce the highest emission levels.<sup>7</sup>

The highest emission year is usually a construction year. The construction emission inventory would be prepared based on U.S. Environmental Protection Agency- (USEPA) approved methodology. This methodology calculates emissions from non-road equipment, using Microsoft® Office Excel 2003. The identification of the highest emission year and the resulting inventory will be provided in the Final EIS following the identification of the FAA's Preferred Alternative.

The FAA has determined that analysis of fugitive emissions resulting from construction of the FAA's Preferred Alternative adds value to the overall air quality assessment. Therefore, an inventory of fugitive emissions will be prepared to support the construction emissions inventory. The fugitive emission inventory will be provided in the Final EIS following the identification of the FAA's Preferred Alternative.

The CAA General Conformity regulations require two analyses of the FAA's Preferred Alternative: (1) emissions during the farthest year for which emissions are projected in the SIP maintenance plan, and (2) any future year for which the applicable SIP specifies an emission budget.<sup>8</sup> The 2004 Plan Update, included in Florida's SIP, includes emission budgets for 2005 and 2015. The farthest year for which emissions are projected in the SIP maintenance plan is 2015, which is also the future SIP budget year. Therefore, an emission inventory for 2015 will be provided in the Final EIS following the identification of the FAA's Preferred Alternative.

#### **6.B.2.2 Future Conditions – NEPA (Dispersion Analysis)**

The dispersion analysis was conducted for the criteria pollutants. This analysis was prepared using the FAA EDMS Version 4.5, and was based on the 2012 EDMS

<sup>7</sup> 40 CFR Part 93.159, *Procedures for Conformity Determinations of General Federal Actions*, Section (d)(2).

<sup>8</sup> 40 CFR Part 93.159, *Procedures for Conformity Determinations of General Federal Actions*, Section (d)(1)&(3).

emissions inventory. A second dispersion analysis, using the CAL3QHC<sup>9</sup> computer simulation model, was conducted to determine the carbon monoxide (CO) concentrations at critical roadway intersections in the vicinity of the airport.

A third dispersion analysis, using EDMS, will be conducted for the criteria pollutants based on the construction emission inventory, described above. The FAA determined that a dispersion analysis of construction emissions would add value to the overall air quality assessment, although that is not required under either NEPA or CAA regulations. The dispersion analysis for construction emissions would be prepared only for the FAA's Preferred Alternative and will be provided in the Final EIS following the identification of the FAA's Preferred Alternative.

The air quality assessment includes a dispersion analysis based on the 2020 EDMS emissions inventory because the planning horizon year is 2020 for this Draft EIS. This assessment, however, was not used to demonstrate NEPA compliance or CAA conformity and was not evaluated for potential impacts in this Draft EIS.

### 6.B.2.3 Criteria and Precursor Pollutant Emission Inventory

An emission inventory of the criteria pollutants (excluding lead) and the precursor pollutants (which contribute to ozone formation)<sup>10</sup> was projected for Alternative A (No Action) and for each of the runway development alternatives for 2012, 2015, and 2020. The results of the emission inventories are summarized in Table 6.B-1, *Emission Inventory of Criteria and Precursor Pollutants*.<sup>11</sup>

Results of the 2012 alternative analysis show that CO emissions are the primary pollutant at the airport, followed by emissions of NO<sub>x</sub>. The higher CO emissions were caused by the operation of aircraft, particularly piston-engine aircraft, and by the use of ground support equipment (GSE). The majority of NO<sub>x</sub> emissions were caused by the operation of jet aircraft, particularly larger aircraft with newer engines that operate at much higher temperatures.

The inventory estimated for each 2012 project alternative was compared to the 2012 Alternative A (No Action) baseline inventory to determine relative potential annual emission impacts (net emissions increase). The net emissions increase attributed to the 2012 project alternatives is provided in Table 6.B-2, *Impact of Criteria and Precursor Pollutant Emissions*.

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<sup>9</sup> CAL3QHC is a computer simulation model for preparing a "hot-spot analysis." The model is based on the California line-source model, CALINE3, which calculates delays and queues that occur at signalized intersections, and also based on the highway capacity model that considers turning movements, lane volumes, and traffic signal timing.

<sup>10</sup> Emission levels of NO<sub>x</sub> and VOC, the precursor pollutants, are evaluated because they are known to produce ozone. Ozone is not assessed on a project-level basis but instead on a regional transport basis. Lead emissions are not considered for an airport project because of improved gasoline manufacture processing and the use of low-lead aviation fuel.

<sup>11</sup> The results of the 2005 Existing Conditions emission inventory are included in Table 6.B-1 for reference.

**Table 6.B-1  
EMISSION INVENTORY OF CRITERIA AND PRECURSOR POLLUTANTS  
Fort Lauderdale-Hollywood International Airport**

ALTERNATIVES	TOTAL ANNUAL EMISSIONS FROM ALL AIRPORT-RELATED SOURCES (in tons per year)					
	CO	VOC	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>CONSTRUCTION EMISSIONS<sup>1</sup></b>						
Year 1	25.8	4.7	40.0	5.2	7.4	7.4
Year 2	60.6	8.3	18.6	3.6	1.5	1.5
Year 3	71.2	10.9	24.8	5.3	1.9	1.9
Year 4	50.7	9.3	78.6	10.2	14.6	14.6
<b>2012 ALTERNATIVES</b>						
Alternative A (No Action)	8,484.7	708.4	1,867.8	142.8	99.5	96.2
Alternative B1	8,045.5	609.8	1,810.9	128.7	97.7	94.4
Alternative B1b	8,013.6	602.8	1,806.8	127.7	97.6	94.2
Alternative B1c	8,141.0	631.3	1,823.3	131.8	98.1	94.8
Alternative B4	7,950.0	588.4	1,798.5	125.7	97.3	94.0
Alternative B5	8,039.1	608.5	1,810.1	128.6	97.7	94.4
Alternative C1	8,382.8	685.6	1,854.6	139.6	99.1	95.8
<b>2015 SIP BUDGET YEAR - FAA'S PREFERRED ALTERNATIVE</b>						
Alternative A (No Action)	This information will be provided following the identification of the FAA's Preferred Alternative.					
Preferred Alternative						
<b>CONSTRUCTION EMISSIONS<sup>1</sup></b>						
Year 1	26.1	3.6	25.9	3.6	2.1	26.1
Year 2	37.0	6.3	51.0	6.7	8.3	37.0
<b>2020 ALTERNATIVES</b>						
Alternative A (No Action)	10,220.8	1045.9	2,496.1	221.7	115.8	111.5
Alternative B1	8,657.5	681.0	2,277.9	168.8	108.6	104.4
Alternative B1b	8,627.2	673.9	2,273.6	167.8	108.5	104.2
Alternative B1c	8,627.2	673.9	2,273.6	167.8	108.5	104.2
Alternative B4	8,596.9	666.9	2,269.4	166.7	108.3	104.1
Alternative B5	8,650.0	679.3	2,276.8	168.6	108.6	104.6
Alternative C1	9,158.4	797.9	2,347.8	185.8	110.9	106.6
Alternative D1	9,021.8	766.0	2,328.8	181.1	110.2	106.0
Alternative D2	8,885.2	734.2	2,309.7	176.5	109.7	105.4

<sup>1</sup> Data reflects worst-case construction emissions assuming the construction of a proposed new parallel runway, a runway extension, bridge structure, and terminal development. This data is based on preliminary construction details and will be updated in the Final EIS when detailed construction information will be available.

Source: FAA, EDMS Version 4.5, 2006.  
Landrum & Brown analysis, 2007.

**Table 6.B-2  
IMPACT OF CRITERIA AND PRECURSOR POLLUTANT EMISSIONS  
Fort Lauderdale-Hollywood International Airport**

CAA THRESHOLDS AND ALTERNATIVES	ANNUAL EMISSIONS IMPACT (in tons per year)					
	CO	VOC	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Relevant CAA Thresholds		+100	+100			
<b>MAXIMUM CONSTRUCTION EMISSIONS IMPACT</b>						
Construction <sup>1</sup>	+71.2	+10.9	+78.6	+10.2	+14.6	+1.5
<b>2012 ALTERNATIVES</b>						
Alternative B1	-439.15	-98.53	-56.90	-14.08	-1.71	-1.79
Alternative B1b	-471.05	-105.61	-61.08	-15.10	-1.88	-1.96
Alternative B1c	-343.69	-77.03	-44.53	-11.00	-1.36	-1.45
Alternative B4	-534.69	-119.94	-69.35	-17.15	-2.13	-2.22
Alternative B5	-445.55	-99.89	-57.75	-14.25	-1.79	-1.79
Alternative C1	-101.85	-22.78	-13.22	-3.24	-0.34	-0.43
<b>2015 SIP BUDGET YEAR – FAA'S PREFERRED ALTERNATIVE</b>						
Preferred Alternative	This information will be provided following the identification of the FAA's Preferred Alternative.					

<sup>1</sup> Reflects the maximum construction emissions for each pollutant without regard to the year of construction. All years of construction would occur before 2012, the year of project implementation.

Note: Negative values indicate a decrease in annual emissions as compared to the 2012 Alternative A (No Action).

Only the annual rate of VOC and NO<sub>x</sub> emissions are relevant for the assessment of General Conformity under the CAA for Broward County, which is a maintenance area for ozone formation.

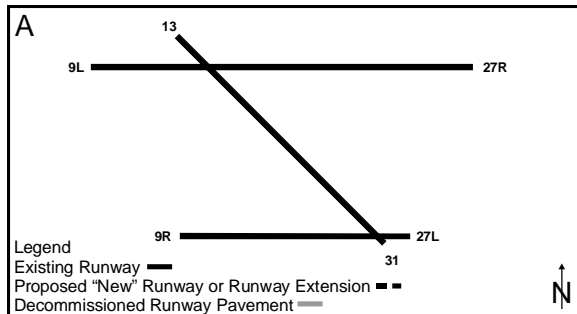
Source: FAA, EDMS Version 4.5, 2006.  
Landrum & Brown analysis, 2007.

All 2012 runway development alternatives would reduce annual emissions compared to the 2012 Alternative A, benefiting air quality in Broward County. The net reduction in emissions occurs because of the reduction in aircraft queue delay which varies with each alternative. Emission impacts also differ among the alternatives because of variations in average taxi time.

Alternative B4 results in the lowest emissions and therefore, the greatest air quality benefit. This alternative does not have the lowest average departure queue delay, but does have the lowest average taxi time among the alternatives. This alternative includes a proposed replacement Runway 9R/27L that is only slightly longer than the existing Runway 9R/27L. Therefore, the average taxi time is nearly identical to 2005 Existing Conditions and lower than the other alternatives that propose longer extensions or longer replacement runways.

Alternative C1 has the highest total annual emissions and lowest benefit among the alternatives. It has the highest average taxi time. This is because Alternative C1 includes a new parallel runway (8/26) located north of the existing Runway 9L/27R. Alternative C1 still reduces emissions below the level projected for the 2012 baseline.

**6.B.2.3.1 ALTERNATIVE A: NO ACTION**



Alternative A is the No Action alternative for 2012. Airport physical conditions, such as the airfield configuration, are assumed to be unchanged and therefore consistent with the 2005 Existing Conditions. However, with or without the Airport Sponsor's Proposed Project, air traffic will increase by 2012. More annual aircraft operations will (1) require more GSE and Auxiliary Power Units (APUs) to support those operations, (2) bring more motor vehicles to the airport, and (3) cause more fuel consumption.

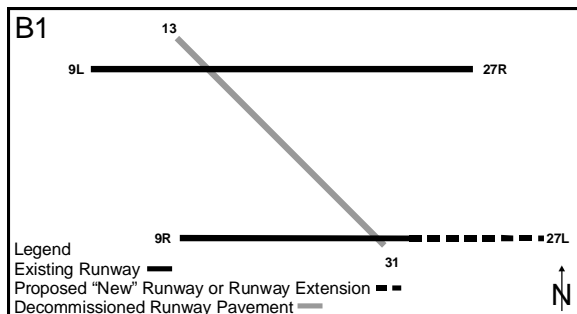
The data shows the greatest overall emission contribution comes from GSE/APU operations, which represent 84 percent of total emissions in 2012. The remaining 16 percent of total emissions come from sources operating in airport-related parking lots, garages, roadways, and the operation of stationary sources. Alternative A conditions produce the highest emissions of all the 2012 alternatives. This information is depicted in Table 6.B-3, *Alternative A (No Action) – 2012 EDMS Emission Inventory of Criteria and Precursor Pollutants*.

**Table 6.B-3  
ALTERNATIVE A (NO ACTION) – 2012 EDMS EMISSION INVENTORY OF  
CRITERIA AND PRECURSOR POLLUTANTS  
Fort Lauderdale-Hollywood International Airport**

POLLUTANT SOURCE CATEGORY	ANNUAL EMISSIONS FOR 2012 ALTERNATIVE A (in tons per year)					
	CO	VOC	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Aircraft	2231.8	370.9	1465.2	116.7	108.3	111.2
GSE and APUs	4725.1	162.6	208.7	24.1	33.3	34.1
Roadways	1108.4	103.1	144.4	1.2	14.9	9.3
Parking Facilities	418.0	60.1	43.6	0.2	3.2	1.9
Stationary Sources	1.4	11.8	6.0	0.4	1.1	1.2
<b>TOTAL</b>	<b>8,484.7</b>	<b>708.4</b>	<b>1,867.8</b>	<b>142.8</b>	<b>99.5</b>	<b>96.2</b>

Source: FAA, EDMS Version 4.5, 2006.  
Landrum & Brown analysis, 2007.

**6.B.2.3.2 ALTERNATIVE B1: REDEVELOP AND EXTEND EXISTING  
RUNWAY 9R/27L TO AN 8,600-FOOT BY 150-FOOT ELEVATED  
RUNWAY**



Alternative B1 includes the redevelopment and extension of the existing alignment of Runway 9R/27L to the east to a total length of 8,600 feet by 150 feet without encroaching onto NE 7th Avenue. The number of annual aircraft operations for Alternative B1 is the same as for 2012 Alternative A (No Action). The annual number of motor vehicles in parking lots and traversing roadways, and the annual fuel used by stationary sources of emissions are the same. The emission inventory changes, however, because of different taxi time, runway use, and aircraft departure delays.

Average aircraft taxi time increases above the 2012 baseline level due to the new position of Runway 27L. Longer taxi times increase annual aircraft emissions. However, the longer south runway in this alternative, which is Runway 9R/27L,

decreases departure queue delay time. The decrease more than offsets the additional emissions from the increased taxi time. As such, a net decrease in emissions and an increase in overall air quality benefits occurs compared to 2012 Alternative A (No Action).

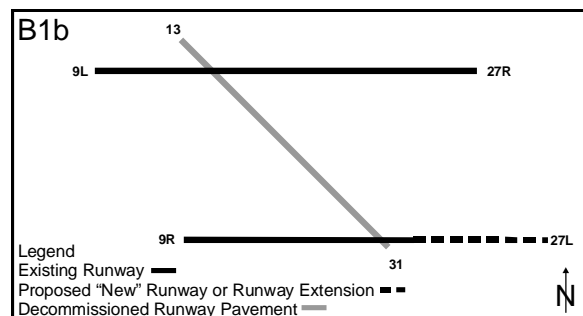
The data shows the greatest overall emissions contribution comes from GSE/APU operations, which represent 83 percent of total emissions in 2012. The remaining 17 percent of total emissions come from sources operating in airport-related parking lots, garages, roadways, and the operation of stationary sources. This information is depicted in Table 6.B-4, *Alternative B1 – 2012 EDMS Emission Inventory of Criteria and Precursor Pollutant*.

**Table 6.B-4  
ALTERNATIVE B1 – 2012 EDMS EMISSION INVENTORY OF CRITERIA AND  
PRECURSOR POLLUTANTS  
Fort Lauderdale-Hollywood International Airport**

POLLUTANT SOURCE CATEGORY	ANNUAL EMISSIONS FOR 2012 ALTERNATIVE B1 (in tons per year)					
	CO	VOC	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Aircraft	1692.5	261.0	1405.0	102.0	104.1	106.9
GSE and APUs	4800.8	168.1	210.4	24.8	34.9	35.9
Roadways	1126.1	106.6	145.6	1.3	15.6	9.7
Parking Facilities	424.7	62.1	43.9	0.3	3.4	2.1
Stationary Sources	1.4	12.2	6.0	0.4	1.2	1.3
<b>TOTAL</b>	<b>8,045.5</b>	<b>609.8</b>	<b>1,810.9</b>	<b>128.7</b>	<b>97.7</b>	<b>94.4</b>

Source: FAA, EDMS Version 4.5, 2006.  
Landrum & Brown analysis, 2007.

**6.B.2.3.3 ALTERNATIVE B1b: REDEVELOP AND EXTEND EXISTING  
RUNWAY 9R/27L TO AN 8,000-FOOT BY 150-FOOT ELEVATED  
RUNWAY WITH EMAS**



Under Alternative B1b, Runway 9R/27L would have the same physical alignment as Alternative B1. However, the overall length of Runway 9R/27L would be reduced to allow for the installation of EMAS. The number of annual aircraft operations is the

same as for 2012 Alternative A, No Action. The annual number of motor vehicles in parking lots and traversing roadways, and the annual fuel used by stationary sources of emissions is also the same. Only the effect of taxi time, runway use, and aircraft departure delay time change the emission inventory results.

Under Alternative B1b, average aircraft taxi time increases above the baseline level, due to the new position of Runway 27L. Longer taxi time means more annual emissions. However, the availability of a longer south runway (9R/27L), decreases departure queue delay time. The decrease more than offsets additional emissions caused by the increase in taxi time. The result is a net decrease in emissions and a benefit to overall air quality as compared to 2012 Alternative A (No Action).

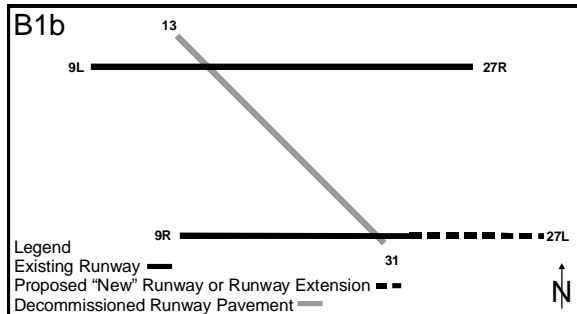
The data shows the greatest overall emission contribution comes from GSE/APU operations, which represent 82 percent of total emissions in 2012. The remaining 18 percent of total emissions come from sources operating in airport-related parking lots, garages, roadways, and the operation of stationary sources. This information is depicted in Table 6.B-5, *Alternative B1b – 2012 EDMS Emission Inventory of Criteria and Precursor Pollutants*.

**Table 6.B-5  
ALTERNATIVE B1b – 2012 EDMS EMISSION INVENTORY OF CRITERIA AND  
PRECURSOR POLLUTANTS  
Fort Lauderdale-Hollywood International Airport**

POLLUTANT SOURCE CATEGORY	ANNUAL EMISSIONS FOR 2012 ALTERNATIVE B1b (in tons per year)					
	CO	VOC	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Aircraft	1665.2	254.8	1401.0	101.0	103.9	106.7
GSE and APUs	4797.4	167.7	210.3	24.7	34.9	36.0
Roadways	1125.3	106.3	145.5	1.3	15.7	9.8
Parking Facilities	424.4	62.0	43.9	0.3	3.4	2.1
Stationary Sources	1.4	12.1	6.0	0.4	1.2	1.3
<b>TOTAL</b>	<b>8,013.6</b>	<b>602.8</b>	<b>1,806.8</b>	<b>127.7</b>	<b>97.6</b>	<b>94.2</b>

Source: FAA, EDMS Version 4.5, 2006.  
Landrum & Brown analysis, 2007.

**6.B.2.3.4 ALTERNATIVE B1c: (AIRPORT SPONSOR'S PROPOSED PROJECT): REDEVELOP AND EXTEND EXISTING RUNWAY 9R/27L TO AN 8,000-FOOT BY 150-FOOT ELEVATED RUNWAY WITH EMAS; RUNWAY USE DETERMINED BY BROWARD COUNTY'S INTERLOCAL AGREEMENTS**



Alternative B1c has the same physical alignment, design conditions, and configuration as Alternative B1b and implements Broward County's Interlocal Agreements. The Interlocal Agreements cause the average departure queue delay time to increase compared to Alternative B1b.

The number of annual aircraft operations are the same as the 2012 Alternative A (No Action). The annual number of motor vehicles in parking lots and traversing roadways, and the annual fuel used by stationary sources of emissions are the same as 2012 Alternative A (No Action). Only the effect of taxi time, runway use, and aircraft departure delay time would change the emission inventory.

Under Alternative B1c, average aircraft taxi time increases above the baseline level, due to the new position of Runway 27L and the implementation of Interlocal Agreements. Longer taxi time means more annual emissions. However, the availability of a longer south runway (9R/27L), decreases departure queue delay time. The decrease more than offsets additional emissions caused by the increase in taxi time and the implementation of Interlocal Agreements. The result is a net decrease in emissions and an increase in benefits to overall air quality as compared to 2012 Alternative A (No Action).

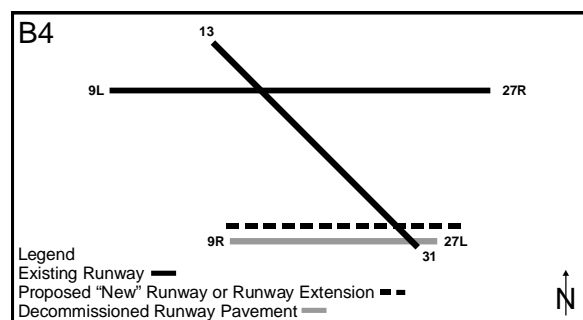
The data shows the greatest overall emission contribution comes from GSE/APU operations, which represent 82 percent of total emissions in 2012. The remaining 18 percent of total emissions come from sources operating in airport-related parking lots, garages, roadways, and the operation of stationary sources. This information is depicted in Table 6.B-6, *Alternative B1c – 2012 EDMS Emission Inventory of Criteria and Precursor Pollutant*.

**Table 6.B-6  
ALTERNATIVE B1c – 2012 EDMS EMISSION INVENTORY OF CRITERIA AND  
PRECURSOR POLLUTANTS  
Fort Lauderdale-Hollywood International Airport**

POLLUTANT SOURCE CATEGORY	ANNUAL EMISSIONS FOR 2012 ALTERNATIVE B1c (in tons per year)					
	CO	VOC	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Aircraft	1,691.7	266.9	1,413.8	104.2	15.9	16.0
GSE and APUs	4,873.7	175.6	212.2	25.5	13.1	12.7
Roadways	1,143.2	111.3	146.9	1.3	5.9	3.4
Parking Facilities	431.1	64.9	44.3	0.3	1.3	0.7
Stationary Sources	1.4	12.7	6.1	0.4	0.5	0.5
<b>TOTAL</b>	<b>8,141.0</b>	<b>631.3</b>	<b>1,823.3</b>	<b>131.8</b>	<b>36.6</b>	<b>33.3</b>

Source: FAA, EDMS Version 4.5, 2006.  
Landrum & Brown analysis, 2007.

**6.B.2.3.5 ALTERNATIVE B4: BUILD A 6,001-FOOT AT GRADE RUNWAY  
WITH EMAS LOCATED 340 FEET NORTH OF EXISTING SOUTH  
RUNWAY (TO REPLACE EXISTING RUNWAY 9R/27L)**



Alternative B4 includes a proposed new south runway to replace existing Runway 9R/27L. The proposed replacement runway would be located 340 feet north of the existing south runway and would be 724 feet longer, decreasing average aircraft taxi time.

The number of annual aircraft operations would be the same as the 2012 Alternative A (No Action). The annual number of motor vehicles in parking lots and traversing roadways, and the annual fuel used by stationary sources of emissions is the same. Only taxi time and aircraft departure delay time with the proposed airfield configuration and runway use would change the emission inventory.

Under Alternative B4, average aircraft taxi time increases below the baseline level, due to the new position of Runway 9R/27L. Shorter taxi time means fewer annual emissions. The availability of a longer south runway (9R/27L) decreases departure queue delay time. The result is a net decrease in emissions and increase in benefits to overall air quality as compared to 2012 Alternative A (No Action).

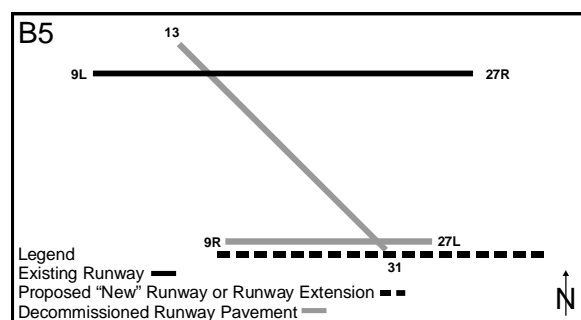
The data shows the greatest overall emission contribution comes from GSE/APU operations, which represent 83 percent of total emissions in 2012. The remaining 17 percent of total emissions come from sources operating in airport-related parking lots, garages, roadways, and the operation of stationary sources. This information is depicted in Table 6.B-7, *Alternative B4 – 2012 EDMS Emission Inventory of Criteria and Precursor Pollutant*.

**Table 6.B-7  
ALTERNATIVE B4 – 2012 EDMS EMISSION INVENTORY OF CRITERIA AND  
PRECURSOR POLLUTANTS  
Fort Lauderdale-Hollywood International Airport**

POLLUTANT SOURCE CATEGORY	ANNUAL EMISSIONS FOR 2012 ALTERNATIVE B4 (in tons per year)					
	CO	VOC	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Aircraft	1757.9	264.4	1398.4	100.2	104.8	107.6
GSE and APUs	4679.2	156.1	207.3	23.5	34.3	35.3
Roadways	1097.6	99.0	143.5	1.2	15.4	9.6
Parking Facilities	413.9	57.7	43.3	0.2	3.3	2.0
Stationary Sources	1.4	11.3	5.9	0.4	1.2	1.3
<b>TOTAL</b>	<b>7,950.0</b>	<b>588.4</b>	<b>1,798.5</b>	<b>125.7</b>	<b>97.3</b>	<b>94.0</b>

Source: FAA, EDMS Version 4.5, 2006.  
Landrum & Brown analysis, 2007.

**6.B.2.3.6 ALTERNATIVE B5: BUILD A 7,800-FOOT ELEVATED RUNWAY WITH EMAS LOCATED 320 FEET SOUTH OF EXISTING SOUTH RUNWAY (TO REPLACE EXISTING RUNWAY 9R/27L)**



Alternative B5 includes a proposed new south runway to replace the existing Runway 9R/27L. The replacement runway would be sited 320 feet south of existing Runway 9R/27L, and is 2,524 feet longer than the existing runway. The longer runway increases the average aircraft taxi time. The number of annual aircraft operations for Alternative B5 are the same as for 2012 No Action Alternative A (No Action). The annual number of motor vehicles in parking lots and traversing

roadways, and the annual fuel used by stationary sources of emissions are the same. Only the effect of taxi time, runway use, and aircraft departure delay time would change the emission inventory.

Under Alternative B5, average aircraft taxi time increases above the baseline level, due to the new position of Runway 9R/27L. Longer taxi time means more annual emissions. The availability of a longer south runway (9R/27L), decreases departure queue delay time. The result is a net decrease in emissions and increase in benefits to overall air quality compared to 2012 Alternative A (No Action).

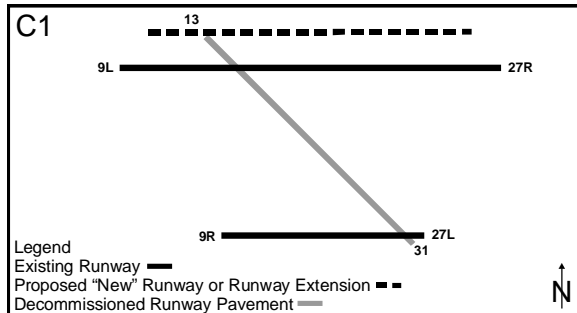
The data shows the greatest overall emission contribution comes from GSE/APU operations, which represent 83 percent of total emissions in 2012. The remaining 17 percent of total emissions come from sources operating in airport-related parking lots, garages, roadways, and the operation of stationary sources. This information is depicted in Table 6.B-8, *Alternative B5 – 2012 EDMS Emission Inventory of Criteria and Precursor Pollutant*.

**Table 6.B-8  
ALTERNATIVE B5 – 2012 EDMS EMISSION INVENTORY OF CRITERIA AND  
PRECURSOR POLLUTANTS  
Fort Lauderdale-Hollywood International Airport**

POLLUTANT SOURCE CATEGORY	ANNUAL EMISSIONS FOR 2012 ALTERNATIVE B5 (in tons per year)					
	CO	VOC	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Aircraft	1686.1	259.6	1404.1	101.8	104.1	106.9
GSE and APUs	4800.9	168.1	210.4	24.8	34.9	35.9
Roadways	1126.1	106.6	145.6	1.3	15.6	9.7
Parking Facilities	424.7	62.1	43.9	0.3	3.4	2.1
Stationary Sources	1.4	12.2	6.0	0.4	1.2	1.3
<b>TOTAL</b>	<b>8,039.1</b>	<b>608.5</b>	<b>1,810.1</b>	<b>128.6</b>	<b>97.7</b>	<b>94.4</b>

Source: FAA, EDMS Version 4.5, 2006.  
Landrum & Brown analysis, 2007.

6.B.2.3.7 ALTERNATIVE C1: BUILD A 7,721-FOOT AT GRADE RUNWAY LOCATED 850 FEET NORTH OF EXISTING RUNWAY 9L/27R (A DEPENDENT PARALLEL RUNWAY TO EXISTING RUNWAY 9R/27L)



Alternative C1 includes the construction of a new closely-spaced parallel runway approximately 850 feet north of existing Runway 9L/27R for a total runway length of 7,721 feet. For purposes of the Draft EIS analysis, the proposed new north runway is referred to as Runway 8/26. Use of the proposed new parallel runway would result in an overall increase in average aircraft taxi time. The number of annual aircraft operations for Alternative C1 is the same as for 2012 Alternative A (No Action). The annual number of motor vehicles in parking lots and traversing roadways, and the annual fuel used by stationary sources of emissions are the same as for 2012 Alternative A (No Action). Only the effect of taxi time, runway use, and aircraft departure delay time would change the emission inventory.

Under Alternative C1, average aircraft taxi time increases above the baseline level, due to the new position of Runway 8/26. Longer taxi time means more annual emissions. The availability of an additional north runway (8/26) decreases departure queue delay time. The result is a net decrease in emissions and increase in benefits to overall air quality as compared to 2012 Alternative A (No Action).

The data shows the greatest overall emission contribution comes from GSE/APU operations, which represent 82 percent of total emissions in 2012. The remaining 18 percent of total emissions come from sources operating in airport-related parking lots, garages, roadways, and the operation of stationary sources. This information is depicted in Table 6.B-9, *Alternative C1 – 2012 EDMS Emission Inventory of Criteria and Precursor Pollutant*.

**Table 6.B-9**  
**ALTERNATIVE C1 – 2012 EDMS EMISSION INVENTORY OF CRITERIA AND**  
**PRECURSOR POLLUTANTS**  
**Fort Lauderdale-Hollywood International Airport**

POLLUTANT SOURCE CATEGORY	ANNUAL EMISSIONS FOR 2012 ALTERNATIVE C1 (in tons per year)					
	CO	VOC	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Aircraft	1966.8	325.4	1446.1	112.3	106.3	109.1
GSE and APUs	4848.5	173.5	211.7	25.3	34.4	35.3
Roadways	1137.3	110.0	146.5	1.3	15.4	9.6
Parking Facilities	428.9	64.1	44.2	0.3	3.3	2.0
Stationary Sources	1.4	12.5	6.1	0.4	1.2	1.3
<b>TOTAL</b>	<b>8,382.8</b>	<b>685.6</b>	<b>1,854.6</b>	<b>139.6</b>	<b>99.1</b>	<b>95.8</b>

Source: FAA, EDMS Version 4.5, 2006.  
 Landrum & Brown analysis, 2007.

#### 6.B.2.4 Criteria Pollutant Dispersion Analysis

The computer-simulated dispersion analysis of criteria pollutant emissions at the airport was conducted for the Alternative A (No Action) scenario of each future year, 2012 and 2020, and for all runway development alternatives. The assessment includes a dispersion analysis based on the 2020 EDMS emissions inventory because planning horizon year is 2020 in this Draft EIS. The 2020 assessment, however, was not used to demonstrate NEPA compliance or CAA conformity and was not evaluated for potential impacts in this Draft EIS. A summary of the results of the dispersion analysis, showing the worst-case (maximum) ground-based design concentration<sup>12</sup> for each alternative and year, is given in Table 6.B-10, *Maximum Criteria Pollutant Design Concentrations*.<sup>13</sup>

The data in Table 6.B-10 shows that none of the pollutant concentration was projected to equal or exceed the NAAQS. The pollutant concentrations projected for each 2012 project alternative were compared to the 2012 Alternative A (No Action) baseline results to determine whether any of the project alternatives would (1) cause a new violation of a national standard or (2) make a baseline violation worse. The potential air quality impacts under the 2012 alternatives are given in Table 6.B-11, *2012 Pollutant Concentration Impact of Criteria Pollutants*.

<sup>12</sup> The “design concentration” represents the computer-simulated airport-related emissions concentration together with the background concentrations of those pollutants that would exist due to non-airport sources.

<sup>13</sup> The results of the 2005 Existing Conditions emission inventory are included in Table 6.B-1 for reference.

The data in Table 6.B-11 shows that concentrations of all the pollutants would be lower as compared to the 2012 Alternative A (No Action). Consequently, all the 2012 alternatives result in air quality benefits compared to the 2012 Alternative A (No Action).

Alternative B4 is the 2012 alternative that generally results in the lowest pollutant concentrations and therefore the highest air quality benefit. Alternative C1 results in the lowest benefit.

**Table 6.B-10  
MAXIMUM CRITERIA POLLUTANT DESIGN CONCENTRATIONS  
Fort Lauderdale-Hollywood International Airport**

STANDARDS AND ALTERNATIVES	MAXIMUM POLLUTANT CONCENTRATIONS ( $\mu\text{g}/\text{m}^3$ )						
	CO		NO <sub>x</sub>	SO <sub>x</sub>		PM <sub>2.5</sub>	
	1-HR	8-HR	ANNUAL	24-HR	ANNUAL	24-HR	ANNUAL
USEPA NAAQS	40,000	10,000	100	365	80	35	15
<b>CONSTRUCTION</b>							
This information will be provided when specific construction phasing information is available for the FAA's Preferred Alternative. This analysis will be provided in the Final EIS.							
<b>2012 ALTERNATIVES</b>							
Alternative A	25,495	8,470	96	28	6.2	27.7	10.0
Alternative B1	23,542	7,586	88	23	6.0	26.2	9.7
Alternative B1b	22,821	7,585	87	22	5.0	25.7	9.5
Alternative B1c	23,183	7,705	88	22	5.1	26.1	9.7
Alternative B4	19031	6961	84	20	4.6	25.0	9.3
Alternative B5	21,166	8,349	89	27	5.6	27.4	9.8
Alternative C1	25189	7792	96	27	5.2	27.0	9.5
<b>2020 ALTERNATIVES</b>							
Alternative A <sup>1</sup>	31,643	9,443	78	26	6.2	25.4	9.7
Alternative B1	28,411	8,777	74	23	4.6	25.1	9.9
Alternative B1b	27,541	8,508	72	22	4.5	24.9	9.6
Alternative B1c	27,979	8,644	71	22	4.6	24.9	9.0
Alternative B4	27,545	8,555	72	21	4.1	25.4	9.5
Alternative B5	27,547	8,589	73	23	5.4	24.6	9.3
Alternative C1	31,337	9,137	77	25	5.6	24.6	9.0
Alternative D1	27,541	8,508	72	22	5.0	24.9	9.5
Alternative D2	27,545	8,743	76	23	5.3	25.2	9.6

Note: Background concentrations are included.

Source: FAA, EDMS Version 4.5, 2006.

Landrum & Brown analysis, 2007.

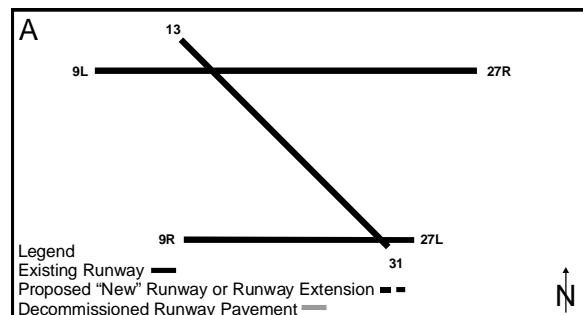
**Table 6.B-11  
2012 POLLUTANT CONCENTRATION IMPACT OF CRITERIA POLLUTANTS  
Fort Lauderdale-Hollywood International Airport**

STANDARDS AND 2012 ALTERNATIVES	POLLUTANT CONCENTRATION IMPACTS ( $\mu\text{g}/\text{m}^3$ )						
	CO	NO <sub>x</sub>		SO <sub>x</sub>		PM <sub>2.5</sub>	
	1-HR	8-HR	ANNUAL	24-HR	ANNUAL	24-HR	ANNUAL
<b>USEPA NAAQS</b>	40,000	10,000	100	365	80	65	15
Alternative B1	-1953	-885	-8	-4.9	-0.2	-1.5	-0.330
Alternative B1b	-2675	-886	-9	-6.0	-1.2	-2.0	-0.512
Alternative B1c	-2312	-765	-8	-5.3	-1.0	-1.6	-0.363
Alternative B4	-6464	-1509	-12	-7.8	-1.5	-2.7	-0.682
Alternative B5	-4330	-121	-7	-0.4	-0.6	-0.3	-0.256
Alternative C1	-306	-678	-1	-0.6	-0.9	-0.7	-0.532

Note: Alternative A data represents the design day pollutant concentrations, which would be the total impact under the no action alternative. The design concentrations projected for the remaining alternatives were compared to the no action alternative to discern potential air quality impacts.

Source: FAA, EDMS Version 4.5, 2006.  
Landrum & Brown analysis, 2007.

**6.B.2.4.1 ALTERNATIVE A: NO ACTION**



Alternative A is the No Action alternative for 2012. Airport physical conditions, such as the airfield configuration, are assumed to be unchanged and therefore consistent with the 2005 Existing Conditions. However, with or without the Airport Sponsor's Proposed Project, air traffic will increase by 2012. More annual aircraft operations will (1) require more GSE and APUs to support those operations, (2) bring more motor vehicles to the airport, and (3) cause more fuel consumption.

The emission inventory is then translated through dispersion modeling into pollutant concentrations at a physical location based on one full year of weather data, particularly wind velocity. In this Draft EIS, one full year of the real-time weather data from 2003 was applied to dispersion modeling to reflect worse case scenario concentrations.

The data in Table 6.B-12, *Alternative A (No Action) – 2012 Criteria Pollutant Design Concentration*, shows that no single receptor could be identified as the location of the lowest concentration of every pollutant. However, concentrations at Receptor 45, located in the off-airport parking lot, east of Interstate-95, were projected to be the lowest overall. The overall highest concentrations were projected for the receptor adjacent to Terminal 3 (Receptor T3).

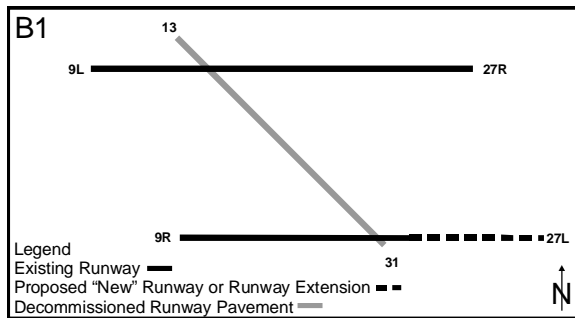
**Table 6.B-12  
ALTERNATIVE A (NO ACTION) – 2012 CRITERIA POLLUTANT DESIGN  
CONCENTRATIONS  
Fort Lauderdale-Hollywood International Airport**

RECEPTORS	MAXIMUM POLLUTANT CONCENTRATIONS FOR 2012 ALTERNATIVE A ( $\mu\text{g}/\text{m}^3$ )						
	CO		NO <sub>x</sub>	SO <sub>x</sub>		PM <sub>2.5</sub>	
	1-HR	8-HR	ANNUAL	24-HR	ANNUAL	24-HR	ANNUAL
USEPA STANDARDS	40,000	10,000	100	365	80	35	15
Receptor T3	20,674	5,137	80	17	3.7	8.8	2.7
Background	4,821	3,333	16	11	2.5	18.9	7.3
<b>TOTAL</b>	<b>25,495</b>	<b>8,470</b>	<b>96</b>	<b>28</b>	<b>6.2</b>	<b>27.7</b>	<b>10.0</b>
Receptor 118	14,948	2,219	6	6	0.3	2.8	0.8
Background	4,821	3,333	16	11	2.5	18.9	7.3
<b>TOTAL</b>	<b>19,769</b>	<b>5,552</b>	<b>22</b>	<b>17</b>	<b>2.8</b>	<b>21.7</b>	<b>8.1</b>
Receptor 57	6,304	886	3	5	0.4	2.1	0.1
Background	4,821	3,333	16	11	2.5	18.9	7.3
<b>TOTAL</b>	<b>11,125</b>	<b>4,219</b>	<b>19</b>	<b>16</b>	<b>2.9</b>	<b>21.0</b>	<b>7.4</b>
Receptor 45	3,470	800	9	6	1.0	3.1	0.5
Background	4,821	3,333	16	11	2.5	18.9	7.3
<b>TOTAL</b>	<b>8,291</b>	<b>4,134</b>	<b>25</b>	<b>17</b>	<b>3.5</b>	<b>22.0</b>	<b>7.8</b>

Note: "Background" refers to the background concentrations projected to exist in 2012.

Source: FAA, EDMS Version 4.5, 2006.  
Landrum & Brown analysis, 2007.

**6.B.2.4.2 ALTERNATIVE B1: REDEVELOP AND EXTEND EXISTING RUNWAY 9R/27L TO AN 8,600-FOOT BY 150-FOOT ELEVATED RUNWAY**



Alternative B1 includes the redevelopment and extension of the existing alignment of Runway 9R/27L to the east to a total length of 8,600 feet by 150 feet without encroaching onto NE 7th Avenue. The number of annual aircraft operations for Alternative B1 is the same as for 2012 Alternative A (No Action). The annual number of motor vehicles in parking lots and traversing roadways, and the annual fuel used by stationary sources of emissions are also the same. The emission inventory changes, however, because of different taxi time, runway use, and aircraft departure delays.

Average aircraft taxi time increases above the 2012 baseline level due to the new position of Runway 27L. Longer taxi times increase annual aircraft emissions. However, the longer south runway in this alternative, which is Runway 9R/27L, decreases departure queue delay time. The decrease more than offsets the additional emissions from the increased taxi time. As such, a net decrease in emissions and a benefit in overall air quality occurs compared to 2012 Alternative A (No Action).

The emission inventory is then translated through dispersion modeling into pollutant concentrations at a physical location based on one full year of weather data, particularly wind velocity. In this Draft EIS, one full year of the real-time weather data from 2003 was applied to dispersion modeling to reflect worse case scenario concentrations.

The data in Table 6.B-13, *Alternative B1 – 2012 Criteria Pollutant Design Concentration*, shows that no single receptor could be identified as the location of the lowest concentration of every pollutant. However, concentrations at Receptor 57, located on the north side of the airport beyond Interstate-595 and east of Snyder Park, were projected to be the lowest overall. The overall highest concentrations were projected for the receptor near Melaluca Gardens (Receptor 118), a residential area south of Runway 9R/27L.

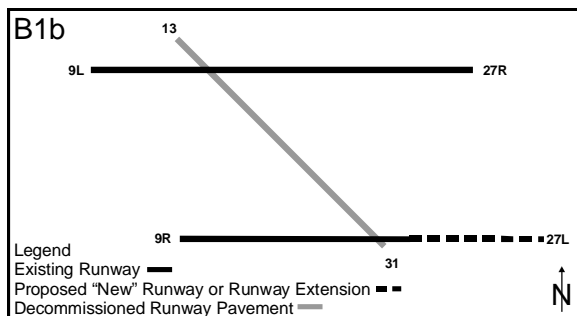
**Table 6.B-13  
ALTERNATIVE B1 – 2012 CRITERIA POLLUTANT DESIGN CONCENTRATIONS  
Fort Lauderdale-Hollywood International Airport**

RECEPTORS	MAXIMUM POLLUTANT CONCENTRATIONS FOR 2012 ALTERNATIVE B1 ( $\mu\text{g}/\text{m}^3$ )						
	CO		NO <sub>x</sub>	SO <sub>x</sub>		PM <sub>2.5</sub>	
	1-HR	8-HR	ANNUAL	24-HR	ANNUAL	24-HR	ANNUAL
USEPA STANDARDS	40,000	10,000	100	365	80	35	15
Receptor T3	18,721	4,252	72	12	3.5	7.3	2.4
Background	4,821	3,333	16	11	2.5	18.9	7.3
<b>TOTAL</b>	<b>23,542</b>	<b>7,586</b>	<b>88</b>	<b>23</b>	<b>6.0</b>	<b>26.2</b>	<b>9.7</b>
Receptor 118	22,552	2,637	7	7	0.9	3.3	0.1
Background	4,821	3,333	16	11	2.5	18.9	8.1
<b>TOTAL</b>	<b>27,373</b>	<b>5,970</b>	<b>23</b>	<b>18</b>	<b>3.4</b>	<b>22.2</b>	<b>8.2</b>
Receptor 57	270	1,241	2	3	0.6	1.5	0.0
Background	4,821	3,333	16	11	2.5	18.9	8.1
<b>TOTAL</b>	<b>5,091</b>	<b>4,575</b>	<b>18</b>	<b>14</b>	<b>3.1</b>	<b>20.4</b>	<b>8.1</b>
Receptor 45	8,066	829	9	3	0.9	1.8	0.2
Background	4,821	3,333	16	11	2.5	18.9	7.3
<b>TOTAL</b>	<b>12,887</b>	<b>4,162</b>	<b>25</b>	<b>14</b>	<b>3.4</b>	<b>20.7</b>	<b>7.5</b>

Note: "Background" refers to the background concentrations projected to exist in 2012.

Source: FAA, EDMS Version 4.5, 2006.  
Landrum & Brown analysis, 2007.

**6.B.2.4.3 ALTERNATIVE B1b: REDEVELOP AND EXTEND EXISTING RUNWAY 9R/27L TO AN 8,000-FOOT BY 150-FOOT ELEVATED RUNWAY WITH EMAS**



Under Alternative B1b, Runway 9R/27L would have the same physical alignment as Alternative B1. However, the overall length of Runway 9R/27L would be reduced to allow for the installation of EMAS. The number of annual aircraft operations is the same as for 2012 No Action Alternative A. The annual number of motor vehicles in parking lots and traversing roadways, and the annual fuel used by stationary

sources of emissions is the same as for 2012 No Action Alternative A. Only the effect of taxi time, runway use, and aircraft departure delay time change the emissions inventory results.

Under Alternative B1b, average aircraft taxi time increases above the baseline level, due to the new position of Runway 27L. Longer taxi time means more annual emissions. However, the availability of a longer south runway (9R/27L), decreases departure queue delay time. The decrease more than offsets additional emissions caused by the increase in taxi time. The result is a net decrease in emissions and an increase in benefits to overall air quality as compared to 2012 Alternative A (No Action).

The emission inventory is then translated through dispersion modeling into pollutant concentrations at a physical location based on one full year of weather data, particularly wind velocity. In this Draft EIS, one full year of the real-time weather data from 2003 was applied to dispersion modeling to reflect worse case scenario concentrations.

The data in Table 6.B-14, *Alternative B1b – 2012 Criteria Pollutant Design Concentration*, shows that no single receptor could be identified as the location of the lowest concentration of every pollutant. However, concentrations at Receptor 57, located on the north side of the airport beyond Interstate-595 and east of Snyder Park, were projected to be the lowest overall. The overall highest concentrations were projected for the receptor near Melaluca Gardens (Receptor 118), a residential area south of Runway 9R/27L.

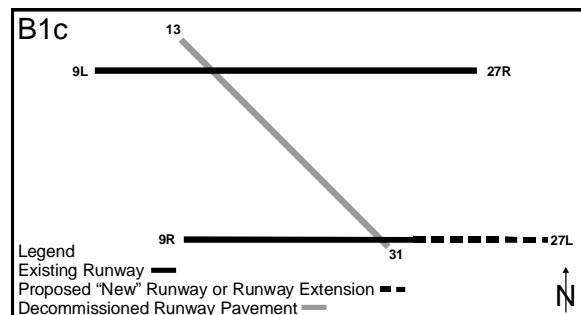
**Table 6.B-14**  
**ALTERNATIVE B1b – 2012 CRITERIA POLLUTANT DESIGN**  
**CONCENTRATIONS**  
**Fort Lauderdale-Hollywood International Airport**

RECEPTORS	MAXIMUM POLLUTANT CONCENTRATIONS FOR 2012 ALTERNATIVE B1b ( $\mu\text{g}/\text{m}^3$ )								
	CO		NO <sub>x</sub>	SO <sub>x</sub>		PM <sub>10</sub>		PM <sub>2.5</sub>	
	1-HR	8-HR	ANNUAL	24-HR	ANNUAL	24-HR	ANNUAL	24-HR	ANNUAL
USEPA STANDARDS	40,000	10,000	100	365	80	150	50	65	15
Receptor T3	18,000	4,251	71	11	2.5	9.0	3.1	6.8	2.2
Background	4,821	3,333	16	11	2.5	48.9	20.5	18.9	7.3
<b>TOTAL</b>	<b>22,821</b>	<b>7,585</b>	<b>87</b>	<b>22</b>	<b>5.0</b>	<b>57.9</b>	<b>23.6</b>	<b>25.7</b>	<b>9.5</b>
Receptor 118	21,714	2,636	7	6	0.4	2.8	-0.1	2.9	0.0
Background	4,821	3,333	16	11	2.5	48.9	20.5	18.9	8.1
<b>TOTAL</b>	<b>26,535</b>	<b>5,970</b>	<b>23</b>	<b>17</b>	<b>2.9</b>	<b>51.7</b>	<b>20.4</b>	<b>21.8</b>	<b>8.1</b>
Receptor 57	114	1,241	2	3	0.1	0.8	-0.3	1.1	-0.1
Background	4,821	3,333	16	11	2.5	48.9	20.5	18.9	8.1
<b>TOTAL</b>	<b>4,935</b>	<b>4,574</b>	<b>18</b>	<b>14</b>	<b>2.6</b>	<b>49.7</b>	<b>20.2</b>	<b>20.0</b>	<b>8.0</b>
Receptor 45	7,672	828	9	2	0.4	1.3	0.0	1.5	0.1
Background	4,821	3,333	16	11	2.5	48.9	20.5	18.9	7.3
<b>TOTAL</b>	<b>12,493</b>	<b>4,161</b>	<b>25</b>	<b>13</b>	<b>2.9</b>	<b>50.2</b>	<b>20.5</b>	<b>20.4</b>	<b>7.4</b>

Note: "Background" refers to the background concentrations projected to exist in 2012.

Source: FAA, EDMS Version 4.5, 2006.  
 Landrum & Brown analysis, 2007.

**6.B.2.4.4 ALTERNATIVE B1c: (AIRPORT SPONSOR'S AIRPORT SPONSOR'S PROPOSED PROJECT): REDEVELOP AND EXTEND EXISTING RUNWAY 9R/27L TO AN 8,000-FOOT BY 150 FOOT ELEVATED RUNWAY WITH EMAS; RUNWAY USE DETERMINED BY BROWARD COUNTY'S INTERLOCAL AGREEMENTS.**



Alternative B1c has the same physical alignment, design conditions, and configuration as Alternative B1b and implements Broward County's Interlocal Agreements. The Interlocal Agreements cause the average departure queue delay time to increase, compared to Alternative B1b.

The number of annual aircraft operations are the same as the 2012 Alternative A (No Action). The annual number of motor vehicles in parking lots and traversing roadways, and the annual fuel used by stationary sources of emissions are the same as the 2012 Alternative A (No Action). Only the effect of taxi time, runway use, and aircraft departure delay time would change the emissions inventory.

Under Alternative B1c, average aircraft taxi time increases above the baseline level, due to the new position of Runway 27L and the implementation of Interlocal Agreements. Longer taxi time means more annual emissions. However, the availability of a longer south runway (9R/27L), decreases departure queue delay time. The decrease more than offsets additional emissions caused by the increase in taxi time and the implementation of Interlocal Agreements. The result is a net decrease in emissions and increase in benefits to overall air quality as compared to 2012 Alternative A (No Action).

The emission inventory is then translated through dispersion modeling into pollutant concentrations at a physical location based on one full year of weather data, particularly wind velocity. In this Draft EIS, one full year of the real-time weather data from 2003 was applied to dispersion modeling to reflect worse case scenario concentrations.

The data in Table 6.B-15, *Alternative B1c – 2012 Criteria Pollutant Design Concentration*, shows that no single receptor could be identified as the location of the lowest concentration of every pollutant. However, concentrations at Receptor 57, located on the north side of the airport beyond Interstate-595 and east of Snyder Park, were projected to be the lowest overall. The overall highest concentrations were projected for the receptor near Melaluca Gardens (Receptor 118), a residential area south of Runway 9R/27L.

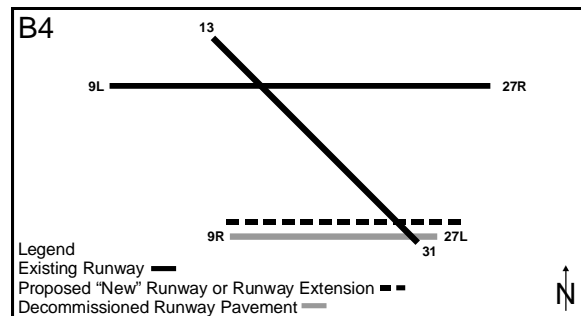
**Table 6.B-15  
ALTERNATIVE B1c – 2012 CRITERIA POLLUTANT DESIGN  
CONCENTRATIONS  
Fort Lauderdale-Hollywood International Airport**

RECEPTORS	MAXIMUM POLLUTANT CONCENTRATIONS FOR 2012 ALTERNATIVE B1c ( $\mu\text{g}/\text{m}^3$ )								
	CO		NO <sub>x</sub>	SO <sub>x</sub>		PM <sub>10</sub>		PM <sub>2.5</sub>	
	1-HR	8-HR	ANNUAL	24-HR	ANNUAL	24-HR	ANNUAL	24-HR	ANNUAL
USEPA STANDARDS	40,000	10,000	100	365	80	150	50	65	15
Receptor T3	18,362	4,372	72	11	2.6	9.8	3.4	7.2	2.4
Background	4,821	3,333	16	11	2.5	48.9	20.5	18.9	7.3
<b>TOTAL</b>	<b>23,183</b>	<b>7,705</b>	<b>88</b>	<b>22</b>	<b>5.1</b>	<b>58.7</b>	<b>23.9</b>	<b>26.1</b>	<b>9.7</b>
Receptor 118	22,135	2,731	7	6	0.4	3.6	0.2	3.2	0.1
Background	4,821	3,333	16	11	2.5	48.9	20.5	18.9	8.1
<b>TOTAL</b>	<b>26,956</b>	<b>6,065</b>	<b>23</b>	<b>17</b>	<b>2.9</b>	<b>52.5</b>	<b>20.7</b>	<b>22.1</b>	<b>8.2</b>
Receptor 57	192	1,313	2	3	0.2	1.5	0.0	1.4	0.0
Background	4,821	3,333	16	11	2.5	48.9	20.5	18.9	8.1
<b>TOTAL</b>	<b>5,013</b>	<b>4,647</b>	<b>18</b>	<b>14</b>	<b>2.7</b>	<b>50.4</b>	<b>20.5</b>	<b>20.3</b>	<b>8.1</b>
Receptor 45	7,870	894	9	2	0.4	2.0	0.3	1.8	0.2
Background	4,821	3,333	16	11	2.5	48.9	20.5	18.9	7.3
<b>TOTAL</b>	<b>12,691</b>	<b>4,227</b>	<b>25</b>	<b>13</b>	<b>2.9</b>	<b>50.9</b>	<b>20.8</b>	<b>20.7</b>	<b>7.5</b>

Note: "Background" refers to the background concentrations projected to exist in 2012.

Source: FAA, EDMS Version 4.5, 2006.  
Landrum & Brown analysis, 2007.

**6.B.2.4.5 ALTERNATIVE B4: BUILD A 6,001-FOOT AT GRADE RUNWAY WITH EMAS LOCATED 340 FEET NORTH OF EXISTING SOUTH RUNWAY (TO REPLACE EXISTING RUNWAY 9R/27L)**



Alternative B4 includes a proposed new south runway to replace existing Runway 9R/27L. The proposed replacement runway would be located 340 feet north of the existing south runway and would be 724 feet longer, decreasing average aircraft taxi time.

The number of annual aircraft operations would be the same as the 2012 Alternative A (No Action). The annual number of motor vehicles in parking lots and traversing roadways, and the annual fuel used by stationary sources of emissions is the same as the 2012 Alternative A (No Action). Only taxi time and aircraft departure delay time with the proposed airfield configuration and runway use would change the emission inventory.

Under Alternative B4, average aircraft taxi time increases below the baseline level, due to the new position of Runway 9R/27L. Shorter taxi time means fewer annual emissions. The availability of a longer south runway (9R/27L) decreases departure queue delay time. The result is a net decrease in emissions and increase in benefits to overall air quality as compared to 2012 Alternative A (No Action).

The emission inventory is then translated through dispersion modeling into pollutant concentrations at a physical location based on one full year of weather data, particularly wind velocity. In this Draft EIS, one full year of the real-time weather data from 2003 was applied to dispersion modeling to reflect worse case scenario concentrations.

The data in Table 6.B-16, *Alternative B4 – 2012 Criteria Pollutant Design Concentration*, shows that no single receptor could be identified as the location of the lowest concentration of every pollutant. However, concentrations at Receptor 45, located in the off-airport parking lot and east of Interstate-95, were projected to be the lowest overall. The overall highest concentrations were projected for the receptor adjacent to Terminal 3 (Receptor T3). This alternative would potentially show the greatest benefit to air quality.

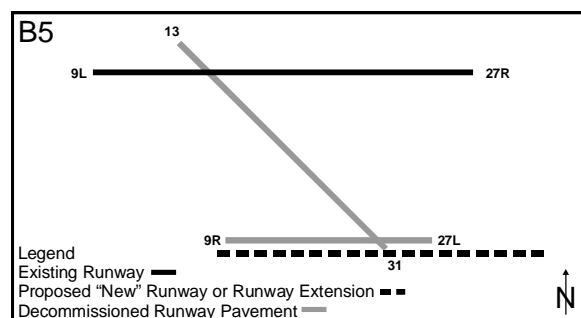
**Table 6.B-16  
ALTERNATIVE B4 – 2012 CRITERIA POLLUTANT DESIGN CONCENTRATIONS  
Fort Lauderdale-Hollywood International Airport**

RECEPTORS	MAXIMUM POLLUTANT CONCENTRATIONS FOR 2012 ALTERNATIVE B4 ( $\mu\text{g}/\text{m}^3$ )								
	CO		NO <sub>x</sub>	SO <sub>x</sub>		PM <sub>10</sub>		PM <sub>2.5</sub>	
	1-HR	8-HR	ANNUAL	24-HR	ANNUAL	24-HR	ANNUAL	24-HR	ANNUAL
USEPA STANDARDS	40,000	10,000	100	365	80	150	50	65	15
Receptor T3	14,210	3,627	68	9	2.1	8.1	2.8	6.1	2.0
Background	4,821	3,333	16	11	2.5	48.9	20.5	18.9	7.3
<b>TOTAL</b>	<b>19,031</b>	<b>6,961</b>	<b>84</b>	<b>20</b>	<b>4.6</b>	<b>57.0</b>	<b>23</b>	<b>25.0</b>	<b>9.3</b>
Receptor 118	12,912	2,061	5	5	0.3	2.2	0.0	2.3	0.0
Background	4,821	3,333	16	11	2.5	48.9	20.5	18.9	8.1
<b>TOTAL</b>	<b>17,733</b>	<b>5,395</b>	<b>21</b>	<b>16</b>	<b>2.8</b>	<b>51.1</b>	<b>20.5</b>	<b>21.2</b>	<b>8.1</b>
Receptor 57	6,000	935	2	2	0.1	0.6	-0.2	0.9	-0.1
Background	4,821	3,333	16	11	2.5	48.9	20.5	18.9	8.1
<b>TOTAL</b>	<b>10,821</b>	<b>4,268</b>	<b>18</b>	<b>13</b>	<b>2.6</b>	<b>49.5</b>	<b>20.3</b>	<b>19.8</b>	<b>8.0</b>
Receptor 45	4,963	698	9	2	0.3	1.3	0.1	1.4	0.1
Background	4,821	3,333	16	11	2.5	48.9	20.5	18.9	7.3
<b>TOTAL</b>	<b>9,784</b>	<b>4,031</b>	<b>25</b>	<b>13</b>	<b>2.8</b>	<b>50.2</b>	<b>20.6</b>	<b>20.3</b>	<b>7.4</b>

Note: "Background" refers to the background concentrations projected to exist in 2012.

Source: FAA, EDMS Version 4.5, 2006.  
Landrum & Brown analysis, 2007.

**6.B.2.4.6 ALTERNATIVE B5: BUILD A 7,800-FOOT ELEVATED RUNWAY WITH EMAS LOCATED 320 FEET SOUTH OF EXISTING SOUTH RUNWAY (TO REPLACE EXISTING RUNWAY 9R/27L)**



Alternative B5 includes a proposed new south runway to replace the existing Runway 9R/27L. The replacement runway would be sited 320 feet south of existing Runway 9R/27L, and is 2,524 feet longer than the existing runway. The longer runway increases the average aircraft taxi time. The number of annual aircraft operations for Alternative B5 are the same as for 2012 No Action Alternative A (No Action). The annual number of motor vehicles in parking lots and traversing roadways, and the annual fuel used by stationary sources of emissions are the

same as for 2012 No Action Alternative A (No Action). Only the effect of taxi time, runway use, and aircraft departure delay time would change the emission inventory.

Under Alternative B5, average aircraft taxi time increases above the baseline level, due to the new position of Runway 9R/27L. Longer taxi time means more annual emissions. The availability of a longer south runway (9R/27L) decreases departure queue delay time. The result is a net decrease in emissions and increase in benefits to overall air quality as compared to 2012 Alternative A (No Action).

The emission inventory is then translated through dispersion modeling into pollutant concentrations at a physical location based on one full year of weather data, particularly wind velocity. In this Draft EIS, one full year of the real-time weather data from 2003 was applied to dispersion modeling to reflect worse case scenario concentrations.

The data in Table 6.B-17, *Alternative B5 – 2012 Criteria Pollutant Design Concentration*, shows that no single receptor could be identified as the location of the lowest concentration of every pollutant. However, concentrations at Receptor 45, located in the off-airport parking lot and east of Interstate-95, were projected to be the lowest overall. The overall highest concentrations were projected for the receptor adjacent to Terminal 3 (Receptor T3).

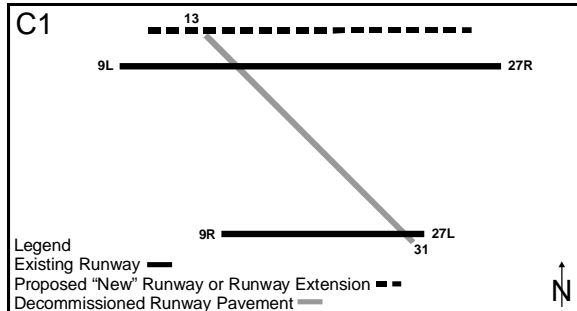
**Table 6.B-17  
ALTERNATIVE B5 – 2012 CRITERIA POLLUTANT DESIGN CONCENTRATIONS  
Fort Lauderdale-Hollywood International Airport**

RECEPTORS	MAXIMUM POLLUTANT CONCENTRATIONS FOR 2012 ALTERNATIVE B5 ( $\mu\text{g}/\text{m}^3$ )								
	CO		NO <sub>x</sub>	SO <sub>x</sub>		PM <sub>10</sub>		PM <sub>2.5</sub>	
	1-HR	8-HR	ANNUAL	24-HR	ANNUAL	24-HR	ANNUAL	24-HR	ANNUAL
USEPA STANDARDS	40,000	10,000	100	365	80	150	50	65	15
Receptor T3	16,345	5,016	73	16	3.1	9.5	3.3	8.5	2.5
Background	4,821	3,333	16	11	2.5	48.9	20.5	18.9	7.3
<b>TOTAL</b>	<b>21,166</b>	<b>8,349</b>	<b>89</b>	<b>27</b>	<b>5.6</b>	<b>58.4</b>	<b>24</b>	<b>27.4</b>	<b>9.8</b>
Receptor 118	17,342	2,406	7	5	0.4	2.5	-0.1	2.6	0.0
Background	4,821	3,333	16	11	2.5	48.9	20.5	18.9	8.1
<b>TOTAL</b>	<b>22,163</b>	<b>5,739</b>	<b>23</b>	<b>16</b>	<b>2.9</b>	<b>51.4</b>	<b>20.4</b>	<b>21.5</b>	<b>8.1</b>
Receptor 57	8,337	1,200	2	3	0.1	1.2	-0.3	1.4	-0.1
Background	4,821	3,333	16	11	2.5	48.9	20.5	18.9	8.1
<b>TOTAL</b>	<b>13,158</b>	<b>4,534</b>	<b>18</b>	<b>14</b>	<b>2.6</b>	<b>50.1</b>	<b>20.2</b>	<b>20.3</b>	<b>8.0</b>
Receptor 45	6,265	830	10	2	0.4	1.2	0.1	1.3	0.2
Background	4,821	3,333	16	11	2.5	48.9	20.5	18.9	7.3
<b>TOTAL</b>	<b>11,086</b>	<b>4,163</b>	<b>26</b>	<b>13</b>	<b>2.9</b>	<b>50.1</b>	<b>20.6</b>	<b>20.2</b>	<b>7.5</b>

Note: "Background" refers to the background concentrations projected to exist in 2012.

Source: FAA, EDMS Version 4.5, 2006.  
Landrum & Brown analysis, 2007.

6.B.2.4.6 ALTERNATIVE C1: BUILD A 7,721 FOOT AT GRADE RUNWAY LOCATED 850 FEET NORTH OF EXISTING RUNWAY 9L/27R (A DEPENDENT PARALLEL RUNWAY TO EXISTING RUNWAY 9R/27L)



Alternative C1 includes a proposed new north 7,721-foot Runway 8/26 positioned parallel and 850 feet north of existing Runway 9L/27R. Use of the proposed new parallel runway would result in an overall increase in average aircraft taxi time. The number of annual aircraft operations for Alternative C1 is the same as for 2012 Alternative A (No Action). The annual number of motor vehicles in parking lots and traversing roadways, and the annual fuel used by stationary sources of emissions are the same as for 2012 Alternative A (No Action). Only the effect of taxi time, runway use, and aircraft departure delay time would change the emissions inventory.

Under Alternative C1, average aircraft taxi time increases above the baseline level, due to the new position of Runway 8/26. Longer taxi time means more annual emissions. The availability of an additional north runway (8/26) decreases departure queue delay time. The result is a net decrease in emissions and increase in benefits to overall air quality as compared to 2012 Alternative A (No Action).

The emission inventory is then translated through dispersion modeling into pollutant concentrations at a physical location based on one full year of weather data, particularly wind velocity. In this Draft EIS, one full year of the real-time weather data from 2003 was applied to dispersion modeling to reflect worse case scenario concentrations.

The data in Table 6.B-18, *Alternative C1 – 2012 Criteria Pollutant Design Concentration*, shows that no single receptor could be identified as the location of the lowest concentration of every pollutant. However, overall, concentrations at Receptor 45, located in the off-airport parking lot and east of Interstate-95, were projected to be the lowest. The overall highest concentrations were projected for the receptor adjacent to Terminal 3 (Receptor T3). This alternative would potentially show the least benefit to air quality.

**Table 6.B-18**  
**ALTERNATIVE C1 – 2012 CRITERIA POLLUTANT DESIGN CONCENTRATIONS**  
**Fort Lauderdale-Hollywood International Airport**

RECEPTORS	MAXIMUM POLLUTANT CONCENTRATIONS FOR 2012 ALTERNATIVE C1 ( $\mu\text{g}/\text{m}^3$ )								
	CO		NO <sub>x</sub>	SO <sub>x</sub>		PM <sub>10</sub>		PM <sub>2.5</sub>	
	1-HR	8-HR	ANNUAL	24-HR	ANNUAL	24-HR	ANNUAL	24-HR	ANNUAL
USEPA STANDARDS	40,000	10,000	100	365	80	150	50	65	15
Receptor T3	20,368	4,459	80	16	2.7	10.6	3.5	8.1	2.2
Background	4,821	3,333	16	11	2.5	48.9	20.5	18.9	7.3
<b>TOTAL</b>	<b>25,189</b>	<b>7,792</b>	<b>96</b>	<b>27</b>	<b>5.2</b>	<b>59.5</b>	<b>24</b>	<b>27.0</b>	<b>9.5</b>
Receptor 118	18,649	2,706	8	11	0.6	4.5	0.6	4.0	0.1
Background	4,821	3,333	16	11	2.5	48.9	20.5	18.9	8.1
<b>TOTAL</b>	<b>23,470</b>	<b>6,039</b>	<b>24</b>	<b>22</b>	<b>3.1</b>	<b>53.4</b>	<b>21.1</b>	<b>22.9</b>	<b>8.2</b>
Receptor 57	9,501	1,445	4	7	0.4	2.8	0.4	2.5	0.0
Background	4,821	3,333	16	11	2.5	48.9	20.5	18.9	8.1
<b>TOTAL</b>	<b>14,322</b>	<b>4,778</b>	<b>20</b>	<b>18</b>	<b>2.9</b>	<b>51.7</b>	<b>20.9</b>	<b>21.4</b>	<b>8.1</b>
Receptor 45	8,129	1,180	12	6	0.6	3.5	0.7	3.1	0.2
Background	4,821	3,333	16	11	2.5	48.9	20.5	18.9	7.3
<b>TOTAL</b>	<b>12,950</b>	<b>4,513</b>	<b>28</b>	<b>17</b>	<b>3.1</b>	<b>52.4</b>	<b>21.2</b>	<b>22.0</b>	<b>7.5</b>

Note: "Background" refers to the background concentrations projected to exist in 2012.

Source: FAA, EDMS Version 4.5, 2006.  
 Landrum & Brown analysis, 2007.

### 6.B.2.5 Roadway Intersection CO Dispersion Analysis

The computer-simulated dispersion analysis of CO emissions at four roadway intersections was conducted for the Alternative A (No Action) scenario of each future year, 2012 and 2020, and for the runway development alternatives. The assessment includes a dispersion analysis based on the 2020 EDMS emission inventory because the planning horizon year is 2020 in this Draft EIS. This assessment, however, was not used to demonstrate NEPA compliance or CAA conformity and was not evaluated for potential impacts in this Draft EIS. A summary of the results of the dispersion analysis, showing the worst-case (maximum) ground-based design concentration<sup>14</sup> for each alternative and year, is provided in Table 6.B-19, *Maximum CO Design Concentration for Intersections for 2012 and 2020*.

<sup>14</sup> The "design concentration" represents the computer-simulated airport-related emissions concentration together with the background concentrations of those pollutants that would exist due to non-airport sources.

Generally, the emissions of CO from on-road motor vehicles are expected to decrease because USEPA emission standards at the vehicle manufacturing level have become more stringent. As a result, lower CO emissions for each future year would offset the additional emissions presumably caused by increasing numbers of vehicles.

The peak-hour volume of vehicles traversing the regional roadway system is the same under all the alternatives of a given year. However, the distribution of the vehicles across the roadways and through the intersections, differs depending on the project alternative. This change in traffic patterns is caused by the potential differences in land use among the alternatives. Traffic patterns for the "B" alternatives (B1, B1b, B1c, B4, and B5) are the same and the results of dispersion modeling are identical. The traffic patterns for Alternative C1, Alternative D2, and the No Action Alternative A are the same. The traffic pattern for Alternative D1 is unique.

Alternative C1 produces the maximum estimated CO concentration, which occurs at the intersection of Griffin and U.S. Highway 1. In fact, all the maximum CO concentrations given in Table 6.B-19 occurred at the intersection of Griffin Road and U.S. Highway 1; this intersection is projected to have the highest volume of peak-hour vehicle queuing under all alternatives. The "B" alternatives result in the lowest maximum concentration of CO at Griffin Road and U.S. Highway 1.

Alternative B5 is the single alternative that requires physical realignment of the Griffin Road and U.S. Highway 1 intersection.

**Table 6.B-19  
MAXIMUM CO DESIGN CONCENTRATIONS FOR INTERSECTIONS FOR 2012  
AND 2020  
Fort Lauderdale-Hollywood International Airport**

ALTERNATIVES	MAXIMUM CARBON MONOXIDE (CO) DESIGN CONCENTRATIONS FOR THE INTERSECTION OF GRIFFIN AND U.S. 1 ( $\mu\text{g}/\text{m}^3$ )	
	1-HR	8-HR
USEPA STANDARDS	40,000	10,000
<b>2012 ALTERNATIVES</b>		
Alternative A	9,873	5,920
Alternative B1	9,298	5,575
Alternative B1b	9,298	5,575
Alternative B1c	9,298	5,575
Alternative B4	9,298	5,575
Alternative B5	9,298	5,575
Alternative C1	9,873	5,920
<b>2020 ALTERNATIVES</b>		
Alternative A	9,413	5,644
Alternative B1	8,723	5,230
Alternative B1b	8,723	5,230
Alternative B1c	8,723	5,230
Alternative B4	8,723	5,230
Alternative B5	8,723	5,230
Alternative C1	9,068	5,437
Alternative D1	8,953	5,368
Alternative D2	9,068	5,437

Note:  $\mu\text{g}/\text{m}^3$  is micrograms per cubic meter. Background concentrations are included.

Source: USEPA, CAL3QHC.  
The Corradino Group analysis, 2006  
Landrum & Brown analysis, 2006.

The pollutant concentrations projected for the Griffin Road and U.S. Highway 1 intersection under the 2012 runway development alternatives were compared to the 2012 Alternative A (No Action) baseline results to determine whether any of the alternatives would (1) cause a new violation of the CO National Ambient Air Quality Standards (NAAQS) or (2) make an existing (future baseline) violation worse. The

potential air quality impacts at the intersection of Griffin Road and U.S. Highway 1 under the 2012 alternatives are provided in Table 6.B-20, *2012 CO Concentration Impacts at Intersections*.

**Table 6.B-20  
2012 CO CONCENTRATION IMPACTS AT INTERSECTIONS  
Fort Lauderdale-Hollywood International Airport**

ALTERNATIVES	CARBON MONOXIDE (CO) DESIGN CONCENTRATION IMPACTS FOR THE INTERSECTION OF GRIFFIN AND U.S. 1 ( $\mu\text{g}/\text{m}^3$ )	
	1-HR	8-HR
USEPA STANDARDS	40,000	10,000
Alternative B1	-575	-345
Alternative B1b	-575	-345
Alternative B1c	-575	-345
Alternative B4	-575	-345
Alternative B5	-575	-345
Alternative C1	0	0

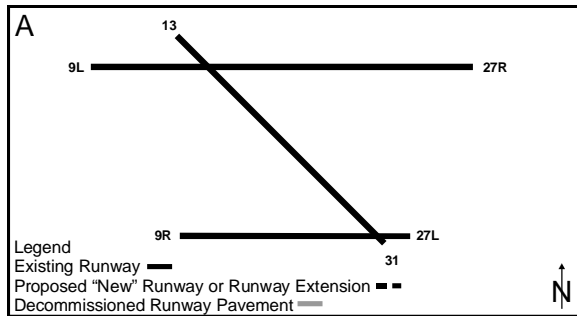
Note:  $\mu\text{g}/\text{m}^3$  is micrograms per cubic meter.

Source: USEPA, CAL3QHC.  
The Corradino Group analysis, 2006.  
Landrum & Brown analysis, 2006.

The data in Table 6.B-20 shows that ground concentrations of CO for the 2012 alternatives decrease, resulting in an air quality benefit as compared to the 2012 Alternative A (No Action). The exception is Alternative C1.

The "B" alternatives generally result in the lowest concentrations and therefore the highest overall air quality benefit. Alternative C1, which is identical to the 2012 Alternative A (No Action), results in the lowest benefit.

### 6.B.2.5.1 Alternative A: No Action



Alternative A is the No Action alternative for 2012. No physical changes would be proposed for the intersections under this alternative. However, traffic volumes increase by 2012 with or without the Airport Sponsor's Proposed Project.

The data in Table 6.B-21, *Alternative A (No Action) – 2012 Roadway Intersection CO Design Concentrations*, shows that although the potential maximum concentration of CO would occur at the intersection of Griffin Road and U.S. Highway 1, the concentration for both the one-hour and eight-hour concentration of CO at that intersection is much lower than the NAAQS. The intersection of Ravenswood and SW 42nd Street would have the lowest concentrations of CO.

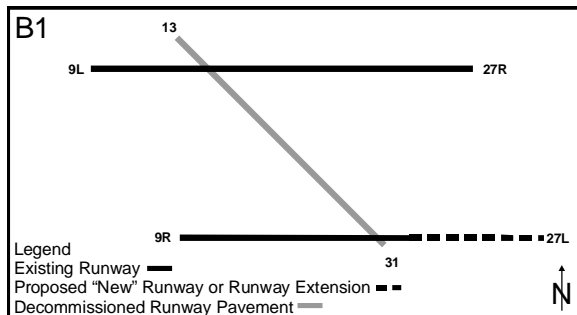
**Table 6.B-21  
ALTERNATIVE A (NO ACTION) – 2012 ROADWAY INTERSECTION CO  
DESIGN CONCENTRATIONS  
Fort Lauderdale-Hollywood International Airport**

INTERSECTIONS	ALTERNATIVE A CARBON MONOXIDE (CO) DESIGN CONCENTRATIONS ( $\mu\text{g}/\text{m}^3$ )	
	1-HR	8-HR
USEPA STANDARDS	40,000	10,000
Griffin and U.S. 1	4,140 (37)	2,484
Background	5,733	3,436
<b>TOTAL</b>	<b>9,873</b>	<b>5,920</b>
Southeast 30 <sup>th</sup> Street and U.S. 1	3,220 (34)	1,932
Background	5,733	3,436
<b>TOTAL</b>	<b>8,953</b>	<b>5,368</b>
Griffin and Interstate-95 Ramps	3,335 (27)	2,001
Background	5,733	3,436
<b>TOTAL</b>	<b>9,068</b>	<b>5,437</b>
Ravenswood and SW 42 <sup>nd</sup> Street	1,035 (13)	621
Background	5,733	3,436
<b>TOTAL</b>	<b>6,768</b>	<b>4,057</b>

Note:  $\mu\text{g}/\text{m}^3$  is micrograms per cubic meter. "Background" refers to the background concentrations projected to exist in 2012. Numbers in parentheses ( ) indicates receptor location. Refer to the diagrams of the intersections and the receptor locations included in the Air Quality Technical Report attached to Appendix G, *Air Quality*.

Source: USEPA, CAL3QHC.  
The Corradino Group analysis, 2006.  
Landrum & Brown analysis, 2006.

6.B.2.5.1 ALTERNATIVE B1: REDEVELOP AND EXTEND EXISTING  
RUNWAY 9R/27L TO AN 8,600-FOOT BY 150-FOOT ELEVATED  
RUNWAY



No physical changes to intersections are proposed for this alternative. However, traffic volumes increase by 2012 with or without the Airport Sponsor's Proposed Project.

The data in Table 6.B-22, *Alternative B1 – 2012 Roadway Intersection Carbon Monoxide (CO) Design Concentrations*, shows that although the potential maximum concentration of CO would occur at the intersection of Griffin Road and U.S. Highway 1, the concentration for both the one-hour and eight-hour concentration of CO at that intersection is much lower than the NAAQS. The intersection of Ravenswood and SW 42<sup>nd</sup> Street would have the lowest concentrations of CO.

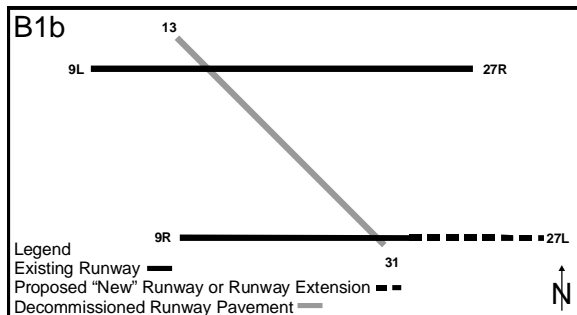
**Table 6.B-22  
ALTERNATIVE B1 – 2012 ROADWAY INTERSECTION CARBON MONOXIDE  
DESIGN CONCENTRATIONS  
Fort Lauderdale-Hollywood International Airport**

INTERSECTIONS	ALTERNATIVE B1 CARBON MONOXIDE (CO) 2012 DESIGN CONCENTRATIONS ( $\mu\text{g}/\text{m}^3$ )	
	1-HR	8-HR
<b>USEPA STANDARDS</b>	<b>40,000</b>	<b>10,000</b>
Griffin and U.S. 1	3,565 (37)	2,139
Background	5,733	3,436
<b>TOTAL</b>	<b>9,298</b>	<b>5,575</b>
Southeast 30 <sup>th</sup> Street and U.S. 1	2,875 (30)	1,725
Background	5,733	3,436
<b>TOTAL</b>	<b>8,608</b>	<b>5,161</b>
Griffin and Interstate-95 Ramps	3,335 (27)	2,001
Background	5,733	3,436
<b>TOTAL</b>	<b>9,068</b>	<b>5,437</b>
Ravenswood and SW 42 <sup>nd</sup> Street	805 (55)	483
Background	5,733	3,436
<b>TOTAL</b>	<b>6,538</b>	<b>3,919</b>

Note:  $\mu\text{g}/\text{m}^3$  is micrograms per cubic meter. "Background" refers to the background concentrations projected to exist in 2012.  
Number in parentheses ( ) indicates receptor location.

Source: USEPA, CAL3QHC.  
The Corradino Group analysis, 2006.  
Landrum & Brown analysis, 2006.

6.B.2.5.2 ALTERNATIVE B1b: REDEVELOP AND EXTEND EXISTING  
RUNWAY 9R/27L TO AN 8,000-FOOT BY 150-FOOT ELEVATED  
RUNWAY WITH EMAS



No physical changes would be proposed for the intersections under this alternative. However, traffic volumes increase by 2012 with or without the Airport Sponsor's Proposed Project.

The data in Table 6.B-23, *Alternative B1b – 2012 Roadway Intersection Carbon Monoxide (CO) Design Concentrations*, shows that although the potential maximum concentration of CO would occur at the intersection of Griffin Road and U.S. Highway 1, the concentration for both the one-hour and eight-hour concentration of CO at that intersection is much lower than the NAAQS. The intersection of Ravenswood and SW 42nd Street would have the lowest concentrations of CO.

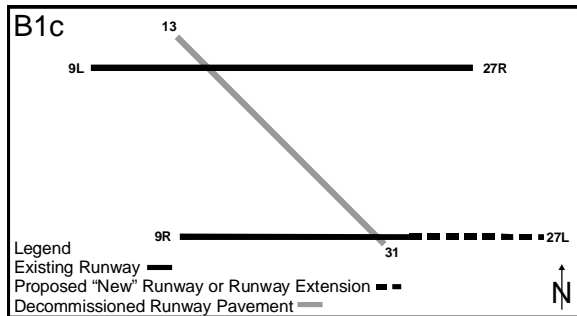
**Table 6.B-23  
ALTERNATIVE B1B – 2012 ROADWAY INTERSECTION CARBON MONOXIDE  
DESIGN CONCENTRATIONS  
Fort Lauderdale-Hollywood International Airport**

INTERSECTIONS	ALTERNATIVE B1b CARBON MONOXIDE (CO) 2012 DESIGN CONCENTRATIONS ( $\mu\text{g}/\text{m}^3$ )	
	1-HR	8-HR
<b>USEPA STANDARDS</b>	<b>40,000</b>	<b>10,000</b>
Griffin and U.S. 1	3,565 (37)	2,139
Background	5,733	3,436
<b>TOTAL</b>	<b>9,298</b>	<b>5,575</b>
Southeast 30 <sup>th</sup> Street and U.S. 1	2,875 (30)	1,725
Background	5,733	3,436
<b>TOTAL</b>	<b>8,608</b>	<b>5,161</b>
Griffin and Interstate-95 Ramps	3,335 (27)	2,001
Background	5,733	3,436
<b>TOTAL</b>	<b>9,068</b>	<b>5,437</b>
Ravenswood and SW 42 <sup>nd</sup> Street	805 (55)	483
Background	5,733	3,436
<b>TOTAL</b>	<b>6,538</b>	<b>3,919</b>

Note:  $\mu\text{g}/\text{m}^3$  is micrograms per cubic meter. "Background" refers to the background concentrations projected to exist in 2012.  
Number in parentheses ( ) indicates receptor that demonstrated the concentration.

Source: USEPA, CAL3QHC.  
The Corradino Group analysis, 2006.  
Landrum & Brown analysis, 2006.

**6.B.2.5.3 ALTERNATIVE B1c: (AIRPORT SPONSOR'S AIRPORT SPONSOR'S PROPOSED PROJECT): REDEVELOP AND EXTEND EXISTING RUNWAY 9R/27L TO AN 8,000-FOOT BY 150-FOOT ELEVATED RUNWAY WITH EMAS; RUNWAY USE DETERMINED BY BROWARD COUNTY'S INTERLOCAL AGREEMENTS.**



No physical changes would be proposed for the intersections under this alternative. However, traffic volumes increase by 2012 with or without the Airport Sponsor's Proposed Project.

The data in Table 6.B-24, *Alternative B1c – 2012 Roadway Intersection Carbon Monoxide (CO) Design Concentrations*, shows that although the potential maximum concentration of CO would occur at the intersection of Griffin Road and U.S. Highway 1, the concentration for both the one-hour and eight-hour concentration of CO at that intersection is much lower than the NAAQS. The intersection of Ravenswood and SW 42<sup>nd</sup> Street would have the lowest concentrations of CO.

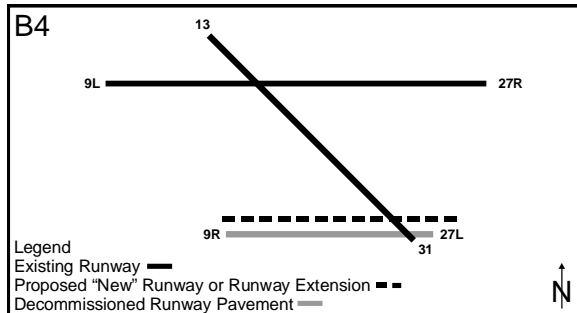
**Table 6.B-24  
ALTERNATIVE B1c – 2012 ROADWAY INTERSECTION CARBON MONOXIDE  
(CO) DESIGN CONCENTRATIONS  
Fort Lauderdale-Hollywood International Airport**

INTERSECTIONS	ALTERNATIVE B1c CARBON MONOXIDE (CO) 2012 DESIGN CONCENTRATIONS ( $\mu\text{g}/\text{m}^3$ )	
	1-HR	8-HR
<b>USEPA STANDARDS</b>	<b>40,000</b>	<b>10,000</b>
Griffin and U.S. 1	3,565 (37)	2,139
Background	5,733	3,436
<b>TOTAL</b>	<b>9,298</b>	<b>5,575</b>
Southeast 30 <sup>th</sup> Street and U.S. 1	2,875 (30)	1,725
Background	5,733	3,436
<b>TOTAL</b>	<b>8,608</b>	<b>5,161</b>
Griffin and Interstate-95 Ramps	3,335 (27)	2,001
Background	5,733	3,436
<b>TOTAL</b>	<b>9,068</b>	<b>5,437</b>
Ravenswood and SW 42 <sup>nd</sup> Street	805 (55)	483
Background	5,733	3,436
<b>TOTAL</b>	<b>6,538</b>	<b>3,919</b>

Note:  $\mu\text{g}/\text{m}^3$  is micrograms per cubic meter. "Background" refers to the background concentrations projected to exist in 2012.  
Number in parentheses ( ) indicates receptor that demonstrated the concentration.

Source: USEPA, CAL3QHC.  
The Corradino Group analysis, 2006.  
Landrum & Brown analysis, 2006.

6.B.2.5.4 ALTERNATIVE B4: BUILD A 6,001-FOOT AT GRADE RUNWAY WITH EMAS LOCATED 340 FEET NORTH OF EXISTING SOUTH RUNWAY (TO REPLACE EXISTING RUNWAY 9R/27L)



No physical changes would be proposed for the intersections under this alternative. However, traffic volumes increase by 2012 with or without the Airport Sponsor's Proposed Project.

The data in Table 6.B-25, *Alternative B4 – 2012 Roadway Intersection Carbon Monoxide (CO) Design Concentrations*, shows that although the potential maximum concentration of CO would occur at the intersection of Griffin Road and U.S. Highway 1, the concentration for both the one-hour and eight-hour concentration of CO at that intersection is much lower than the NAAQS. The intersection of Ravenswood and SW 42nd Street would have the lowest concentrations of CO.

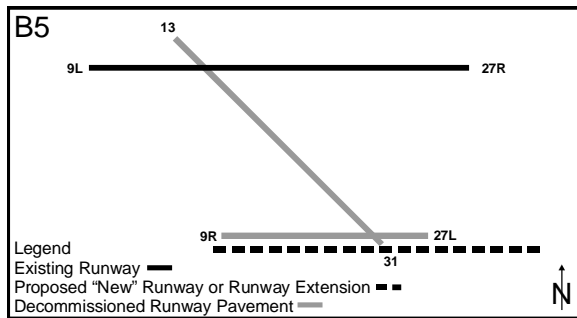
**Table 6.B-25  
ALTERNATIVE B4 – 2012 ROADWAY INTERSECTION CARBON MONOXIDE  
(CO) DESIGN CONCENTRATIONS  
Fort Lauderdale-Hollywood International Airport**

INTERSECTIONS	ALTERNATIVE B4 CARBON MONOXIDE (CO) 2012 DESIGN CONCENTRATIONS ( $\mu\text{g}/\text{m}^3$ )	
	1-HR	8-HR
<b>USEPA STANDARDS</b>	<b>40,000</b>	<b>10,000</b>
Griffin and U.S. 1	3,565 (37)	2,139
Background	5,733	3,436
<b>TOTAL</b>	<b>9,298</b>	<b>5,575</b>
Southeast 30 <sup>th</sup> Street and U.S. 1	2,875 (30)	1,725
Background	5,733	3,436
<b>TOTAL</b>	<b>8,608</b>	<b>5,161</b>
Griffin and Interstate-95 Ramps	3,335 (27)	2,001
Background	5,733	3,436
<b>TOTAL</b>	<b>9,068</b>	<b>5,437</b>
Ravenswood and SW 42 <sup>nd</sup> Street	805 (55)	483
Background	5,733	3,436
<b>TOTAL</b>	<b>6,538</b>	<b>3,919</b>

Note:  $\mu\text{g}/\text{m}^3$  is micrograms per cubic meter. "Background" refers to the background concentrations projected to exist in 2012.  
Number in parentheses ( ) indicates receptor that demonstrated the concentration.

Source: USEPA, CAL3QHC.  
The Corradino Group analysis, 2006.  
Landrum & Brown analysis, 2006.

**6.B.2.5.5 ALTERNATIVE B5: BUILD A 7,800-FOOT ELEVATED RUNWAY WITH EMAS LOCATED 320 FEET SOUTH OF EXISTING SOUTH RUNWAY (TO REPLACE EXISTING RUNWAY 9R/27L)**



Alternative B5 includes a proposed new south runway to replace existing Runway 9R/27L. The proposed replacement runway would be located 320 feet south of the existing south Runway 27L. The location of the new south runway would require the realignment of the intersection at Griffin Road and U.S. Highway 1. The realignment would not change the volume of vehicles on either roadway, and it would not change the regional transportation pattern. No physical modifications would be required for other intersections. The traffic volumes increase by 2012 with or without the Airport Sponsor’s Proposed Project.

The data in Table 6.B-26, *Alternative B5 – 2012 Roadway Intersection Carbon Monoxide (CO) Design Concentrations*, shows that although the potential maximum concentration of CO would occur at the intersection of Griffin Road and U.S. Highway 1, the concentration for both the one-hour and eight-hour concentration of CO at that intersection is much lower than the NAAQS. The intersection of Ravenswood and SW 42nd Street would have the lowest concentrations of CO.

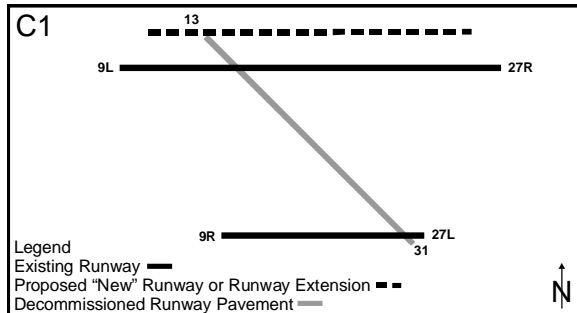
**Table 6.B-26  
ALTERNATIVE B5 – 2012 ROADWAY INTERSECTION CARBON MONOXIDE  
(CO) DESIGN CONCENTRATIONS  
Fort Lauderdale-Hollywood International Airport**

INTERSECTIONS	ALTERNATIVE B5 CARBON MONOXIDE (CO) 2012 DESIGN CONCENTRATIONS ( $\mu\text{g}/\text{m}^3$ )	
	1-HR	8-HR
<b>USEPA STANDARDS</b>	<b>40,000</b>	<b>10,000</b>
Griffin and U.S. 1	3,565 (37)	2,139
Background	5,733	3,436
<b>TOTAL</b>	<b>9,298</b>	<b>5,575</b>
Southeast 30 <sup>th</sup> Street and U.S. 1	2,875 (30)	1,725
Background	5,733	3,436
<b>TOTAL</b>	<b>8,608</b>	<b>5,161</b>
Griffin and Interstate-95 Ramps	3,335 (27)	2,001
Background	5,733	3,436
<b>TOTAL</b>	<b>9,068</b>	<b>5,437</b>
Ravenswood and SW 42 <sup>nd</sup> Street	805 (55)	483
Background	5,733	3,436
<b>TOTAL</b>	<b>6,538</b>	<b>3,919</b>

Note:  $\mu\text{g}/\text{m}^3$  is micrograms per cubic meter. "Background" refers to the background concentrations projected to exist in 2012.  
Number in parentheses ( ) indicates receptor that demonstrated the concentration.

Source: USEPA, CAL3QHC.  
The Corradino Group analysis, 2006.  
Landrum & Brown analysis, 2006.

6.B.2.5.6 ALTERNATIVE C1: BUILD A 7,721-FOOT AT GRADE RUNWAY LOCATED 850 FEET NORTH OF EXISTING RUNWAY 9L/27R (A DEPENDENT PARALLEL RUNWAY TO EXISTING RUNWAY 9R/27L)



No physical changes would be proposed for the intersections under this alternative. However, traffic volumes increase by 2012 with or without the Airport Sponsor's Proposed Project.

The data in Table 6.B-27, *Alternative C1 – 2012 Roadway Intersection Carbon Monoxide (CO) Design Concentrations*, shows that although the potential maximum concentration of CO would occur at the intersection of Griffin Road and U.S. Highway 1, the concentration for both the one-hour and eight-hour concentration of CO at that intersection is much lower than the NAAQS. The intersection of Ravenswood and SW 42<sup>nd</sup> Street would have the lowest concentrations of CO.

**Table 6.B-27**  
**ALTERNATIVE C1 – 2012 ROADWAY INTERSECTION CARBON MONOXIDE (CO) DESIGN CONCENTRATIONS**  
**Fort Lauderdale-Hollywood International Airport**

INTERSECTIONS	ALTERNATIVE C1 CARBON MONOXIDE (CO) 2012 DESIGN CONCENTRATIONS ( $\mu\text{g}/\text{m}^3$ )	
	1-HR	8-HR
USEPA STANDARDS	40,000	10,000
Griffin and U.S. 1	4,140 (37)	2,484
Background	5,733	3,436
<b>TOTAL</b>	<b>9,873</b>	<b>5,920</b>
Southeast 30 <sup>th</sup> Street and U.S. 1	2,875 (30)	1,725
Background	5,733	3,436
<b>TOTAL</b>	<b>8,608</b>	<b>5,161</b>
Griffin and Interstate-95 Ramps	3,335 (27)	2,001
Background	5,733	3,436
<b>TOTAL</b>	<b>9,068</b>	<b>5,437</b>
Ravenswood and SW 42 <sup>nd</sup> Street	1,035 (13)	621
Background	5,733	3,436
<b>TOTAL</b>	<b>6,768</b>	<b>4,057</b>

Note:  $\mu\text{g}/\text{m}^3$  is micrograms per cubic meter. "Background" refers to the background concentrations projected to exist in 2012.  
 Number in parentheses ( ) indicates receptor that demonstrated the concentration.

Source: USEPA, CAL3QHC.  
 The Corradino Group analysis, 2006.  
 Landrum & Brown analysis, 2006.

### 6.B.3 GENERAL CONFORMITY COMPLIANCE EVALUATION

The evaluation of General Conformity for a Federal action requires an impact analysis for the Federal agency's Preferred Alternative. The FAA will identify the Preferred Alternative following the review of the Draft EIS and the General Conformity evaluation for the Preferred Alternative will be provided in the Final EIS. Therefore, the General Conformity evaluation for the Draft EIS includes a review of the net emissions attributable to each of the 2012 project alternatives. The net emissions are provided in Table 6.B-2, *Impact of Criteria and Precursor Pollutant Emissions*.

For General Conformity, the pollutants of concern for Broward County are the ozone precursor pollutants, NO<sub>x</sub> and VOC. The maximum allowable net increase in emissions of either NO<sub>x</sub> or VOC in Broward County is 100 tons per year, each. The data in Table 6.B-2 shows that none of the 2012 alternatives, or construction, causes emissions that equal or exceed the relevant thresholds for Broward County.

The evaluation of the 2015 SIP budget year analysis will be completed for the FAA's Preferred Alternative and provided in the Final EIS. Otherwise, construction and implementation of any of the runway development alternatives through 2012 is consistent with the Florida SIP. The construction and implementation of the alternatives through 2012, under CAA Section 176(c)(1), would conform and would not:

- Cause or contribute to any new violation of any standard in any area;
- Increase the frequency or severity of any existing violation of any standard in any area; or,
- Delay timely attainment of any standard or any required interim emission.

#### **6.B.4 NAAQS COMPLIANCE ASSESSMENT**

As required under NEPA, a computer-simulated dispersion analysis was conducted for each of the 2012 runway development alternatives. The results are summarized in Table 6.B-10, *Maximum Criteria Pollutant Design Concentrations*. None of the 2012 alternatives were projected to equal or exceed any of the NAAQS. In fact, each project alternative resulted in pollutant concentrations that were projected to be less than the baseline impact, as shown in Table 6.B-11, *2012 Pollutant Concentration Impact of Criteria Pollutants*.

The same is true for the critical roadway intersection analysis for CO concentrations, shown in Table 6.B-19, *Maximum CO Design Concentrations for Intersections for 2012 and 2020*, and Table 6.B-20, *2012 CO Concentration Impacts at Intersections*.

The dispersion analysis of construction emissions will be completed for the FAA's Preferred Alternative and provided in the Final EIS. Otherwise, the runway development alternatives through 2012 meet the standards of 40 CFR Part 93.158(b)(1) and (2) and do not:

- Cause or contribute to any new violation of any standard in any area; or
- Increase the frequency or severity of any existing violation of any standard in any area.

#### **6.B.5 CONCLUSION**

The emissions for the 2015 SIP budget year will be estimated for the FAA Preferred Alternative and the projected emissions from construction emissions will be provided in the Final EIS. Likewise, the dispersion analysis of construction emissions will be completed for the FAA's Preferred Alternative and provided in the Final EIS.

The implementation of the runway development alternatives through 2012 would affect the volume and concentration of Federally-regulated pollutants at ground level. This is due mainly to the position of aircraft on the field for the various airfield configurations associated with each alternative. Other factors include variations in estimated taxi times and aircraft departure queue times among the alternatives, compared to the baseline data.

The CAA evaluation of the alternatives showed that all of the emissions projected through 2012 would comply with the General Conformity regulations for emissions of NO<sub>x</sub> and VOC, the ozone precursor pollutants. Consequently, a General Conformity Determination is not necessary to show conformity of the implementation of the 2012 alternatives to the SIP and no further reporting or analysis is required under the CAA General Conformity regulations.

The NEPA analysis demonstrated that concentrations of criteria pollutants due to the implementation of the 2012 alternatives were projected to be less than the NAAQS. Consequently, no additional analysis was conducted.

The results of the analyses and evaluations support the conclusion that the implementation of the 2012 runway development alternatives satisfy all Federal and state air quality regulations and guidelines and do not cause significant adverse air quality impacts.