

## 9. Environmental Overview

An environmental overview was conducted for the Airport and adjacent areas as part of the Master Plan Update to provide a general overview of the potential environmental consequences of the recommended development. An environmental overview differs from an EA or an Environmental Impact Statement (EIS) in the depth of analysis. This environmental overview, which discusses the environmental resource categories identified in FAA Orders 1050.1E, *Environmental Impacts: Policies and Procedures*,<sup>1</sup> and 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*,<sup>2</sup> is intended to provide decision-makers with an understanding of potential issues that could result from implementation of the preferred alternatives in the Master Plan Update. As discussed previously, major Airport development projects are recommended for implementation throughout the 20-year planning period. In general, these projects consist of taxiway reconfiguration, glideslope relocation, terminal area development, roadway reconfiguration, parking garage construction, potential hotel development, and land use/FBO redevelopment along Lemmon Avenue.

The environmental overview focuses only on the environmental effects that could result from implementation of the preferred development alternative presented in this Master Plan Update, rather than also discussing a "no action" alternative, as would be included in an EA or EIS. Existing conditions for each environmental resource category are documented in this section and, in general terms, the potential effects that may result from implementation of the full buildout of the preferred development alternative are identified. Interim stages of development will likely result in different environmental effects; however, interim stages were not assessed in the environmental overview. Detailed analyses of potential environmental consequences and associated mitigation measures related to the preferred alternative and other alternatives considered will be conducted pursuant to NEPA subsequent to publication of this Master Plan Update.

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<sup>1</sup> Federal Aviation Administration, Order 1050.1E, *Environmental Impacts: Policies and Procedures*, Change 1, effective March 20, 2006.

<sup>2</sup> Federal Aviation Administration, Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, effective April 28, 2006.

## 9.1 Aircraft Noise

### 9.1.1 GENERAL CHARACTERISTICS OF AIRCRAFT NOISE

Aircraft noise originates from both the engines and the airframe of an aircraft, but the engines are, by far, the most significant source of aircraft noise. Jet aircraft operations at the Airport are the primary source of noise disturbance in the Airport vicinity.

Loudness, measured in decibels (dB), is the most commonly used metric to describe noise. The A-weighted decibel (dBA) is used in aircraft noise analyses because it most closely associates sound frequencies with the sensitivity of the human ear.

Some common sounds on the dBA scale are listed in **Table 9-1**. As shown in the table, the relative perceived loudness of a sound doubles for each increase of 10 dBA, although a 10 dBA change corresponds to a factor of 10 in relative sound energy. Generally, sounds with differences of 2 dBA or less are not perceived to be noticeably different by most listeners. A noise event produced by a jet aircraft flyover is usually characterized by a buildup to a peak noise level as the aircraft approaches, and then a decrease in the noise level through a series of lesser peaks or pulses after the aircraft passes.

**Table 9-1: Common Sounds on the A-Weighted Decibel Scale**

SOUND	SOUND LEVEL (dBA)	RELATIVE LOUDNESS (APPROXIMATE dBA)	RELATIVE SOUND ENERGY
Rock music, with amplifier	120	64	1,000,000
Thunder, snowmobile (operator)	110	32	100,000
Boiler shop, power mower	100	16	10,000
Orchestral crescendo at 25 feet, noisy kitchen	90	8	1,000
Busy street	80	4	100
Interior of department store	70	2	10
Ordinary conversation, 3 feet away	60	1	1
Quiet automobiles at low speed	50	1/2	.1
Average office	40	1/4	.01
City residence	30	1/8	.001
Quiet country residence	20	1/16	.0001
Rustle of leaves	10	1/32	.00001
Threshold of hearing	0	1/64	.000001

SOURCE: U.S. Department of Housing and Urban Development, *Aircraft Noise Impact—Planning Guidelines for Local Agencies*, 1972.

PREPARED BY: Ricondo & Associates, Inc., August 2014.

The FAA has developed specific guidance and requirements for the assessment of aircraft noise to comply with NEPA requirements. The methodology to be used in conducting aircraft noise analyses is established in FAA Order 1050.1E. The FAA has determined that the cumulative noise exposure of individuals resulting from aircraft noise must be established in terms of the annual day-night average sound level (DNL) metric.

The Noise Control Program for the Airport was officially adopted by the Dallas City Council in December 1981 to provide a voluntary noise abatement and mitigation program that could be implemented over time. To balance the operating needs of the Airport with the needs of surrounding communities, the City adopted the *Dallas Love Field Policies*. These policies recognize Love Field's importance to the Dallas community at large and also establish a noise reduction goal aimed at minimizing the effects of aircraft operations at the Airport on surrounding neighborhoods.

Some of the most effective measures, among others, in the Noise Control Program include:

- **Noise Abatement Advisory Committee:** Members of this committee meet quarterly to review Airport operations, the effectiveness of the overall noise abatement procedures, incidents of non-compliance, records of noise complaints, and potential adjustments or improvements to the Noise Control Program.
- **Noise Monitoring and Flight Tracking System:** The Department of Aviation has installed 13 permanent noise monitors in key locations around the Airport. These monitors have the ability to collect noise, runway use, and flight track information for every aircraft arrival and departure at the Airport. The data are stored and can be referenced at any time for reporting purposes.
- **Noise Complaint Hotline:** Aircraft-related noise disturbances can be reported 24 hours a day to Department of Aviation Operations personnel. The disturbance is recorded and an investigation is initiated at that time. Aircraft operators that may have caused the disturbance are contacted and encouraged to comply with all voluntary noise abatement procedures in effect at the Airport.
- **Noise Abatement Information:** Noise abatement information provided to pilots and Airport users is a key to the effectiveness of the Noise Control Program. The Department of Aviation has installed signs at the runway ends informing pilots to follow noise abatement procedures. In addition to airfield signs, the Department of Aviation has published an information package that is updated and distributed on a regular basis to FBOs and pilots.
- **Nighttime Preferential Runway Use:** The Department of Aviation has adopted a policy that encourages the pilots of turbojet aircraft and all other aircraft weighing more than 12,500 pounds to use Runway 13R-31L. Nighttime hours are between 10:00 p.m. and 7:00 a.m.
- **Trinity Departure for Nighttime Operations on Runway 13R:** This voluntary procedure allows the use of a river route departure for turbojet aircraft and aircraft weighing more than 12,500 pounds when air traffic flow is to the south. ATC requests the use of Runway 13R for departures when traffic flows and safety conditions permit.
- **Noise Abatement Departure Profile:** This voluntary measure allows all departing aircraft to use a noise abatement departure profile to achieve a higher altitude more quickly and reduce takeoff noise over nearby residential areas.

- **Engine Run-up Restriction:** All engine maintenance run-ups are prohibited between 12:00 a.m. (midnight) and 6:00 a.m. The Department of Aviation has installed video recorders to monitor engine run-up areas during nighttime hours.
- **Prohibition of Training Flights:** No training flights are allowed at the Airport between 10:00 p.m. and 7:00 a.m.

The presence of sensitive noise receptors (residential uses, schools, hospitals, etc.) in proximity to the Airport was reviewed. A list of sensitive noise receptors is provided in Section 9.2. The Department of Aviation conducted noise analyses in 2001 for the updated Airport Master Plan, and in 2006 to assess impacts from the repeal of the Wright Amendment, as described below.

## 9.1.2 AIRCRAFT NOISE ANALYSIS METHODOLOGY

The methodology for analyzing aircraft noise consisted of: (1) the use of noise descriptors developed for aircraft noise analyses, (2) the use of a computer model to estimate aircraft noise levels, and (3) development of basic data and assumptions as input to the computer model.

### 9.1.2.1 Noise Descriptors

Following extensive research into the characteristics of aircraft noise and human response to that noise, a standard system of descriptors was developed. These descriptors, as used in this aircraft noise analysis, are as follows:

- **A-Weighted Sound Pressure Level (dBA):** dBA is a frequency-weighted sound level (in decibels) that correlates with the way sound is heard by the human ear.
- **Maximum Noise Level (Lmax):** Lmax is the maximum, or peak, sound level during a noise event. The Lmax metric accounts only for the instantaneous peak intensity of the sound, and not for the duration of the event. Some sound level meters measure the maximum, or Lmax, level of aircraft noise events.
- **Sound Exposure Level (SEL):** SEL is a time-integrated measure, expressed in decibels, of the sound energy of a single noise event. The sound level is integrated over the period that the level exceeds a threshold (normally 65 dBA for aircraft noise events). Therefore, SEL accounts for the duration of the sound. SELs for aircraft noise events depend on the location of the aircraft, the type of operation (landing, takeoff, or overflight), and the type of aircraft.
- **A-weighted Day-Night Average Sound Level (DNL):** DNL is expressed in dBA and represents the average A-weighted sound level over a 24-hour period. For each hour during the nighttime period (10:00 p.m. to 7:00 a.m.), the average sound levels are increased by a 10 decibel weighting penalty (equivalent to a tenfold increase in aircraft operations) before the 24 hour average is computed. This weighting penalty accounts for the more intrusive nature of noise during nighttime and early morning hours.

DNL, as used in the aircraft noise analysis for this environmental overview, is expressed as an A-weighted average noise level on the basis of annual aircraft operations during a calendar year. To calculate the DNL at a specific location, SELs for that location are determined for each aircraft operation (landing or takeoff). The

SEL for each operation is then adjusted to reflect the duration of the operation and arrive at a "partial" DNL for the operation. The partial DNLs are then added logarithmically with the appropriate penalty for those operations occurring during nighttime hours to determine the total aircraft noise exposure for the calendar year.

DNL is used to describe the existing and predicted cumulative aircraft noise exposure for communities in airport environs in most of the United States, and to estimate the effects of airport operations on land use compatibility. DNL has been widely accepted as the best available method to describe aircraft noise exposure and is the noise descriptor required by all federal agencies, including the FAA, for use in aircraft noise exposure analyses and noise compatibility planning.

#### 9.1.2.2 Integrated Noise Model

The Integrated Noise Model (INM) is an FAA computer model used to develop aircraft noise exposure maps, and is the accepted industry standard, state-of-the-art tool for determining the total effect of aircraft noise at and around airports. Version 7.0d of the INM was used for the Master Plan Update noise analysis.

The noise data contained in the INM aircraft database include a representation of commercial, general aviation, and military aircraft powered by turbojet, turbofan, or propeller-driven engines, and reflect average aircraft operating conditions at an average airport. The database contains the following information for each aircraft: (1) a set of departure profiles for each applicable trip length, (2) a set of approach parameters, and (3) SEL versus distance curves for several thrust settings.

The INM uses the aircraft characteristics combined with conditions specific to an airport, such as runway geometry, runway use flight tracks, etc., to create noise exposure contours based on the DNL noise descriptor.

#### 9.1.2.3 DNL and Noise Exposure Ranges

DNL 75, 70, and 65 were used as the criterion levels for the aircraft noise analysis. Three specific ranges of noise exposure were estimated and analyzed: (1) DNL 75+, (2) DNL 70 to 75, and (3) DNL 65 to 70. Areas exposed to DNL 75+ are considered to experience "severe" aircraft noise conditions, while areas exposed to DNL 65 to 75 are considered to experience "significant" aircraft noise conditions.

#### 9.1.2.4 Noise Exposure Maps

Noise exposure contours are lines on a map that connect points of equal DNLs. For example, a contour may be drawn to connect all points with a DNL of 70; another may be drawn to connect all points with a DNL of 65, and so forth. Generally, noise exposure contours are plotted at 5-dBA intervals. For this environmental overview, noise exposure contours were plotted for DNL 75, 70, 65, and 60. DNL 60 contours have been included on the noise exposure maps for context and reference for this noise level.

### 9.1.3 2001 DALLAS LOVE FIELD AIRPORT IMPACT ANALYSIS/MASTER PLAN

For the 2001 *Dallas Love Field Airport Impact Analysis/Master Plan*, a noise impact analysis was conducted using the INM and actual data from the Airport noise monitoring system. Noise contours and peak period

data were developed to determine the impacts associated with the growth scenario considered and the required related facility development.

According to the 2001 noise analysis, the population exposed to DNL 65 was projected to decrease from nearly 27,000 people in 1998 to 23,000 people in 2010 because of new, quieter aircraft that were scheduled to replace older models, along with voluntary noise control program.

#### 9.1.4 2006 DALLAS LOVE FIELD IMPACT ANALYSIS UPDATE

Following the opening of DFW in 1974, airline service at Love Field was limited under the restrictions of the Wright/Shelby Amendments, as previously discussed. These federal regulations restricted flights and destinations served from Dallas Love Field to protect DFW from nearby competition. These restrictions were gradually phased out and a complete repeal of the Wright/Shelby Amendments was completed in October 2014.

The noise analysis conducted for the 2006 *Dallas Love Field Impact Analysis Update* included an assessment of the impacts that would occur under the expected future air service in the absence of the restrictions in the Wright/Shelby Amendments, and those impacts were compared with the results of the *Dallas Love Field Airport Impact Analysis/Master Plan* published in 2001.

The 2006 noise analysis determined the following:

- The level of noise resulting from the 20-Gate No Wright Amendment scenario decreased from that estimated for the 2001 Airport Master Plan 32-Gate scenario, while the level of noise resulting from the 32-Gate No Wright Amendment scenario increased. **Table 9-2** summarizes the inputs and comparative results from the computer modeling of each scenario.
- The DNL 65 noise exposure contour for the 20-Gate No Wright Amendment scenario is approximately 4.3 percent smaller than the DNL 65 noise exposure contour for the 2001 Master Plan 32-Gate scenario, and would affect approximately 3,800 fewer people.
- The DNL 65 noise exposure contour for the 32-Gate No Wright Amendment scenario is approximately 4.0 percent larger than the DNL 65 noise exposure contour for the 2001 Master Plan 32-Gate scenario, and would affect approximately 4,350 additional people.

In each of the No Wright Amendment scenarios, the 2001 Master Plan 32-Gate regional jet fleet mix was replaced for the most part by standard air carrier jets. These aircraft are larger and have a louder noise footprint than the Canadair Regional Jet (CRJ), Embraer 135, and Embraer 145 aircraft assumed in the 2001 Master Plan analysis. Furthermore, some of the standard jets were assumed to depart at heavier takeoff weights to serve more distant nonstop destinations than were possible under the Wright/Shelby Amendments.

**Table 9-2: Comparison of Area and Population for Various Noise Impact Scenarios**

NOISE EXPOSURE LEVEL	32 GATES 2001 MASTER PLAN		20 GATES NO WRIGHT AMENDMENT		32 GATES NO WRIGHT AMENDMENT	
	SQUARE MILES	AFFECTED POPULATION	SQUARE MILES	AFFECTED POPULATION	SQUARE MILES	AFFECTED POPULATION
DNL 65 and Higher	4.6	24,872	4.4	21,045	4.8	29,219
DNL 70 and Higher	1.9	2,686	1.8	2,620	2	2,655
DNL 75 and Higher	0.9	-	0.8	-	0.9	-

NOTE: DNL = Day-Night Average Sound Level, expressed in A-weighted decibels.

SOURCE: City of Dallas, *Dallas Love Field Impact Analysis – In the Absence of the Wright Amendment*, May 2006.

PREPARED BY: Ricondo & Associates, Inc., April 2014.

### 9.1.5 2013 DALLAS LOVE FIELD NOISE EXPOSURE CONTOURS

The Department of Aviation analyzed 2013 aircraft operations at DAL to prepare noise exposure contours. The 2013 noise exposure contours reflect the effect of operations during the entire calendar year. Total operations were obtained from the FAA ATADS. **Table 9-3** lists 2013 operations data used to develop the noise exposure contours. The 2013 contours were developed using the latest available version of the FAA INM (Version 7.0d) and a data preprocessor called RealContours™. RealContours™ converts every usable 2013 radar flight track into input for the INM, ensuring that the modeling includes runway closures, deviations from flight tracks, changes in flight schedules, and deviations from average runway use. This process resulted in the modeling of more than 150,000 flight tracks to develop the 2013 noise exposure contours.<sup>3</sup>

**Table 9-3: 2013 Modeled Average Daily FAA Category Operations**

FAA OPERATIONAL CATEGORY	2013 OPERATIONS	
	FAA AIR TRAFFIC ACTIVITY DATA SYSTEM	AVERAGE ANNUAL DAY MODELED OPERATIONS
Air Carrier	88,028	242.39
Air Taxi	33,302	91.24
General Aviation	55,122	152.45
Military	965	-
<b>Total</b>	<b>177,417</b>	<b>486.07</b>

NOTES: Columns may not add to totals shown because of rounding. Average annual day air carrier and air taxi include the military counts. The 965 annual military operations from ATADS were distributed over the air carrier and general aviation group totals with a 46% to 54% split respectively.

SOURCE: HMMH, Inc., *Dallas Love Field, 2013 Day-Night Average Sound Level Contours*, July 29, 2014.

PREPARED BY: Ricondo & Associates, Inc., August 2014.

<sup>3</sup> HMMH, Inc., *Dallas Love Field, 2013 Day-Night Average Sound Level Contours*, July 29, 2014.

These contours were used in conjunction with 2010 U.S. Census data to estimate the number of people that reside within the area exposed to DNL 65, between the area exposed to DNL 60 and DNL 65, between the area exposed to DNL 65 and DNL 70, between the area exposed to DNL 70 and DNL 75, and within the area exposed to DNL 75 and higher.

Results of the 2013 DNL noise exposure analysis show that a total area of 6.01 square miles is exposed to DNL 60, which includes a total of 30,049 residents. The area exposed to DNL 65 consists of approximately 2.17 square miles, which includes a population of 3,091 (see **Table 9-4**). The 2013 noise exposure contours are illustrated over the Dallas Love Field vicinity land use on **Exhibit 9-1**.

**Table 9-4: Estimated Area and Population Exposed to Aircraft Noise**

(2010 US CENSUS DATA)		
DNL (DBA)	AREA (SQUARE MILES)	POPULATION
60-65	3.84	26,958
>65	2.17	3,091
65-70	1.37	3,088
70-75	0.42	3
>75	0.38	0

SOURCES: HMMH, Inc., *Dallas Love Field, 2013 Day-Night Average Sound Level Contours*, July 29, 2014; U.S. Decennial Census, 2010. PREPARED BY: Ricondo & Associates, Inc., August 2014.

#### 9.1.5.1 Comparison of 1998, 2000, 2006, and 2013 Noise Exposure Contours

The overall land area and population exposed to Airport-related aircraft noise exposure decreased significantly between 1998 and 2013. **Exhibit 9-2** presents a comparison of the 2013 noise exposure contours with the 1998, 2000, and 2006 noise exposure contours<sup>4, 5</sup> for the same DNL 60 through DNL 75 range. The 1998 and 2000 contours were developed as part of the noise analysis for the 2001 Master Plan. Noise levels decreased notably in nearly all areas between 1998 and 2013. Since 2006, decreases between 4 and 5 dBA have been recorded for aircraft departures in areas directly off the end and along the side of all runways and decreases between 2 and 3 dBA have been recorded for aircraft arrivals in the extended runway centerline regions following runway centerlines.<sup>6, 7</sup>

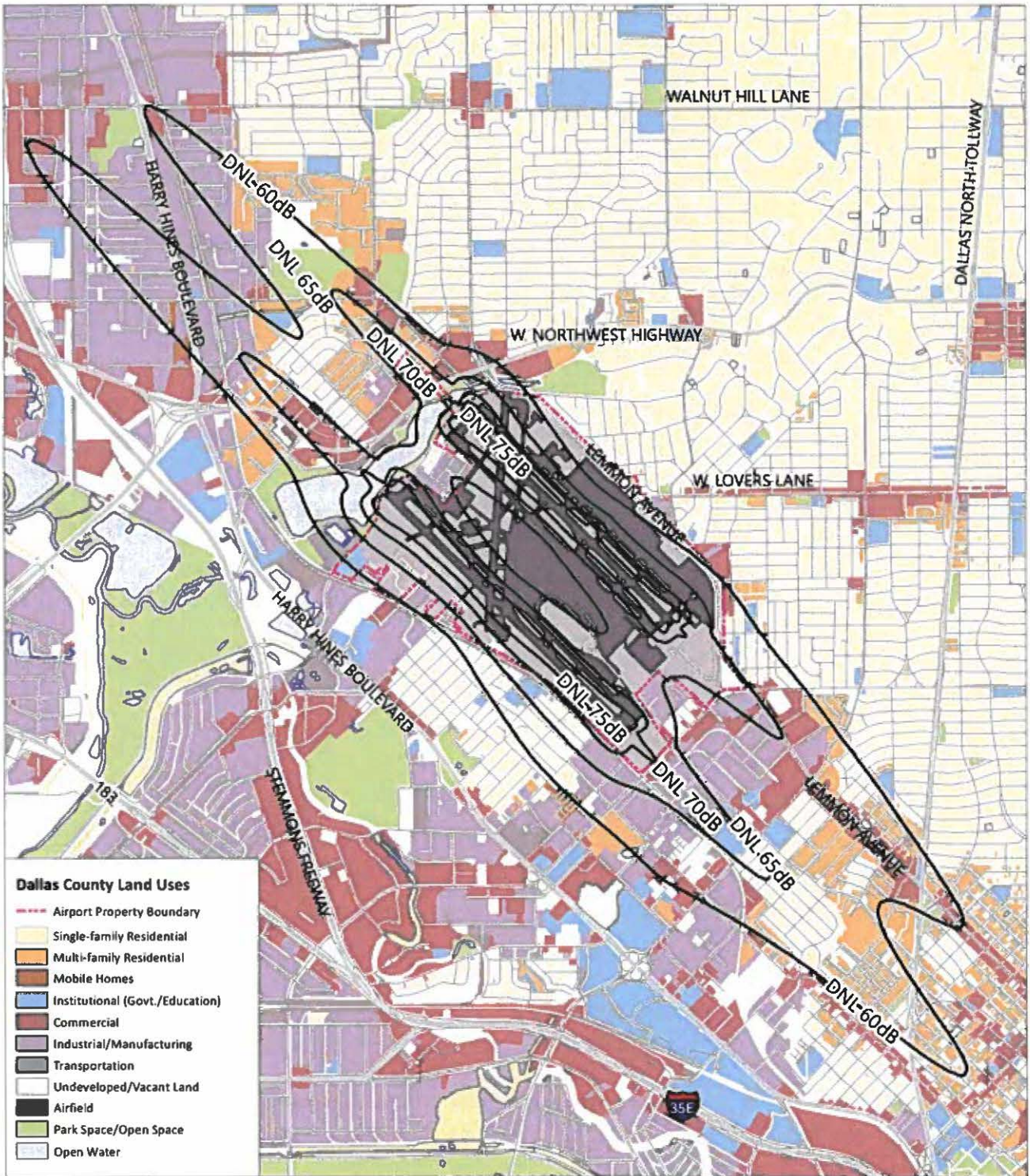
<sup>4</sup> City of Dallas, Department of Aviation, *Dallas Love Field Impact Analysis Update – In the Absence of the Wright Amendment*, May 31, 2006.

<sup>5</sup> City of Dallas, Department of Aviation, *Dallas Love Field Airport Impact Analysis/Master Plan*, March 2001.

<sup>6</sup> HMMH, Inc., *Dallas Love Field, 2013 Day-Night Average Sound Level Contours*, July 29, 2014.

<sup>7</sup> City of Dallas, Department of Aviation, *Dallas Love Field Airport Impact Analysis/Master Plan*, March 2001.





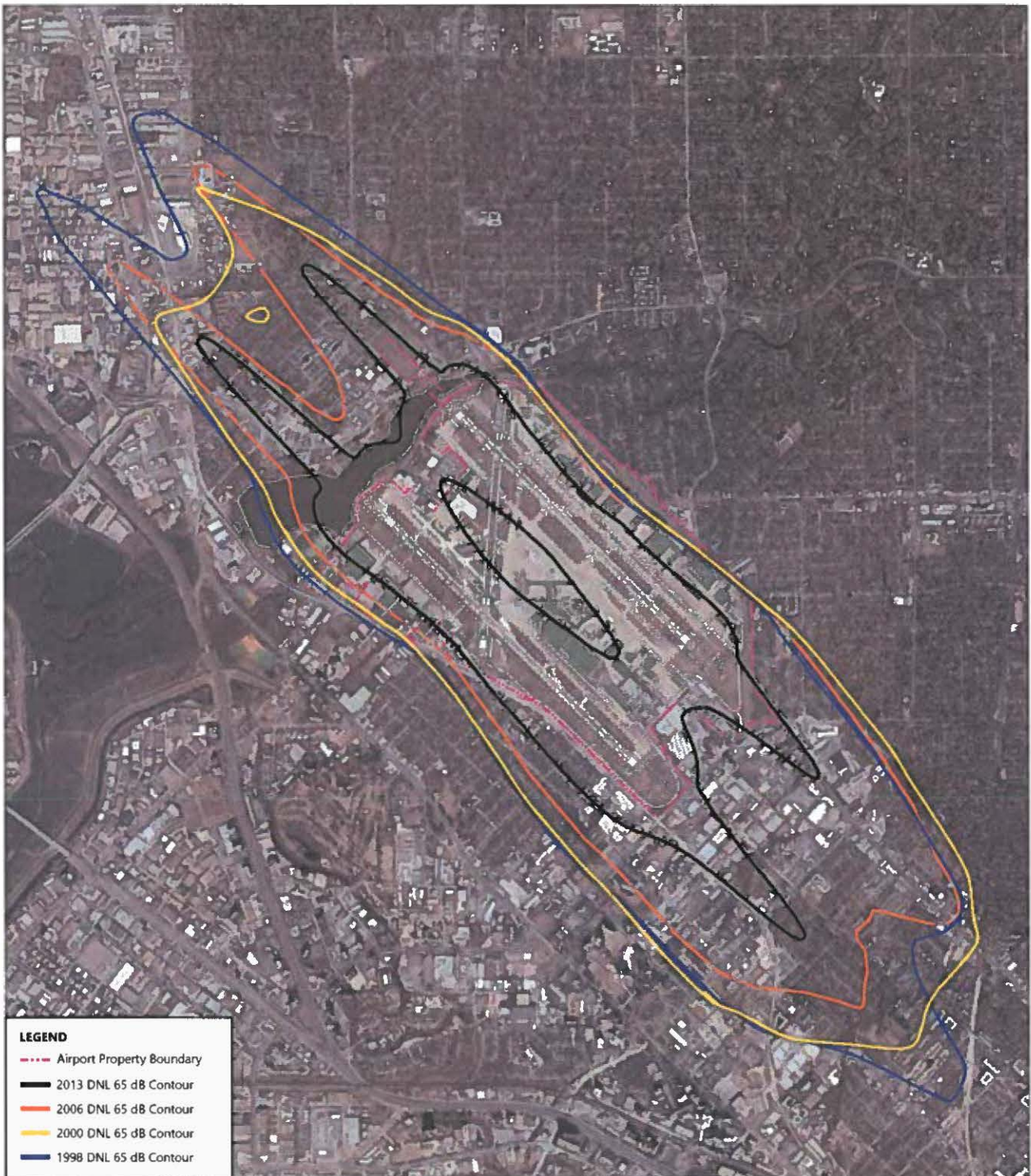
NOTES: dB = Decibels; DNL = Day-night average sound level, in A-weighted decibels.  
 SOURCES: North Central Texas Council of Governments, GIS Clearinghouse, June 2010; HMMH, Inc. Dallas Love Field, 2013 Day-Night Average Sound Level Contours, July 2014.  
 PREPARED BY: Riconda & Associates, Inc., November 2014

EXHIBIT 9-1



### 2013 Noise Exposure in the Airport Vicinity

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NOTES: dB = Decibels; DNL = Day-night average sound level, in A-weighted decibels

SOURCES: Ricondo & Associates, Inc., DAL Airport Layout Plan, December 2013; City of Dallas, Department of Aviation, *Airport Impact Analysis/Master Plan*, March 2001;

HMMH, Inc. Dallas Love Field 2013 Day-Night Average Sound Level Contours, July 2014, ESRI Database (Aerial Imagery), 2011

PREPARED BY: Ricondo & Associates, Inc., November 2014

EXHIBIT 9-2



NORTH



### Noise Exposure Contour Comparison (1998-2013)

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The estimated land area within each 5 dBA noise exposure interval is summarized in **Table 9-5**; between 1998 and 2013, the areas exposed to noise higher than DNL 65 decreased 64 percent, from 6.06 square miles to 2.17 square miles. The estimated population (based on 2000 and 2010 U.S. Census data) within each 5 dBA noise exposure interval is summarized in **Table 9-6**. Between 1998 and 2013, the population exposed to noise higher than DNL 65 decreased 89 percent, from 27,698 to 3,091. Between 2006 and 2013, the population exposed to DNL 65 and higher decreased 82 percent, from 16,798 to 3,091. The proportionally larger decrease in population compared with the area exposed to aircraft noise resulted from a reduction in operations (the 2006 noise contours reflect 784 annual average day operations and the 2013 noise contours reflect 486 annual average day operations), improvements in aircraft performance, and quieter engine technology of the modern aircraft fleet. With the reduced area exposed to aircraft noise in residential areas, the population exposed to aircraft noise also decreased.<sup>8</sup>

**Table 9-5: Estimated Land Area within Noise Exposure Contours (in square miles)**

DNL (dBA)	1998	2000	2006	2013
60-65	7.18	6.29	5.71	3.84
>65	6.06	5.57	4.19	2.17
65-70	3.27	2.89	2.68	1.37
70-75	1.55	1.40	1.08	0.42
>75	0.56	1.25	0.43	0.38

NOTE: Airport property is included in the land areas shown in the table (1.93 square miles.)

SOURCES: City of Dallas, Department of Aviation, *Dallas Love Field Airport Impact Analysis/Master Plan*, March 2001; HMMH, Inc., *Dallas Love Field, 2013 Day-Night Average Sound Level Contours*, July 29, 2014.

PREPARED BY: Ricondo & Associates, Inc., August 2014.

**Table 9-6: Estimated Population within Noise Exposure Contours**

DNL (dBA)	(2010 US CENSUS DATA)			
	1998	2000	2006	2013
60-65	32,088	34,836	42,603	26,958
>65	27,698	27,329	16,798	3,091
65-70	24,785	26,029	15,858	3,088
70-75	2,660	1,214	936	3
>75	253	86	4	0

SOURCES: City of Dallas, Department of Aviation, *Dallas Love Field Airport Impact Analysis/Master Plan*, March 2001; HMMH, Inc., *Dallas Love Field, 2013 Day-Night Average Sound Level Contours*, July 29, 2014; U.S. Decennial Census, 2010.

PREPARED BY: Ricondo & Associates, Inc., August 2014.

<sup>8</sup> HMMH, Inc., *Dallas Love Field, 2013 Day-Night Average Sound Level Contours*, July 29, 2014.

## 9.2 Compatible Land Use

Existing land use plans and policies that affect development in the vicinity of the Airport are described in Section 7 and summarized below. Refer to Section 7 for detailed on-Airport and off-Airport land use information.

### 9.2.1 ON-AIRPORT LAND USES

The Airport is located on 1,256 acres of land approximately 4 miles north of the Dallas Central Business District, and is the only commercial airport that operates within Dallas City limits. Airfield facilities consist of two parallel runways and one crosswind runway, along with associated taxiways and support facilities, including the ATCT, the ARFF station, and general aviation facilities.

### 9.2.2 SURROUNDING LAND USES AND LAND USE PLANS

Land in the vicinity of the Airport is densely developed, as the Airport is located within 4 miles of downtown Dallas. **Table 9-7** lists suggested land use compatibility guidelines as they relate to aircraft noise exposure. The primary land uses immediately surrounding the Airport are shown on Exhibit 9-1. The predominant land use north of the Airport consists of single-family residential neighborhoods along with some commercial parcels. Bachman Lake and Bachman Lake Park are the predominant land uses immediately northwest of the Airport. The area southwest of the Airport is mostly developed in single-family residential uses, with industrial areas surrounding the residential development. Existing land use south of the Airport consists of industrial and commercial uses adjacent to the Airport, with multifamily residential, commercial, and institutional uses beyond the industrial district. Land use southeast of the Airport is dominated by industrial uses with a mix of commercial developments along Mockingbird Lane and Lemmon Avenue. East of the Airport along Lemmon Avenue is a small corridor of commercial uses with predominantly residential uses beyond.

**Table 9-8** lists the sensitive land uses within 1.0 mile of the Airport boundary, specifically schools, religious institutions, and healthcare facilities.

As shown in Table 9-8, 62 sensitive land uses are located within 1.0 mile of the Airport boundary. Of these land uses, 13 are schools, 30 are religious institutions, 6 are healthcare facilities, and 13 are parks. The following eight sensitive land uses are located within the area exposed to DNL 65 and higher in 2013: Obadiah Knight Elementary School, Thomas J Rusk Middle School, Bethany Missionary Baptist Church, El Buen Samaritano Methodist Church, United in Christ Baptist Church, Weichsel Park, Overlake Park, and Bachman Lake Park.

**Table 9-7: Suggested Land Use Compatibility Guidelines in Aircraft Noise Exposure Areas**

LAND USE	DNL 65 TO 70	DNL 70 TO 75	DNL 75+
<b>Residential</b>			
Residential Other than Mobile Homes and Transient Lodgings	NLR required <sup>1/</sup>	NLR required <sup>1/</sup>	Incompatible
Mobile Homes	Incompatible	Incompatible	Incompatible
Transient Lodgings	NLR required <sup>1/</sup>	NLR required <sup>1/</sup>	Incompatible
<b>Public Use</b>			
Schools, Hospitals, and Nursing Homes	NLR required <sup>1/</sup>	NLR required <sup>1/</sup>	Incompatible
Churches, Auditoriums, and Concert Halls	NLR required <sup>1/</sup>	NLR required <sup>1/</sup>	Incompatible
Governmental Services	Compatible	NLR required	NLR required
Transportation	Compatible	Compatible <sup>2/</sup>	Compatible <sup>2/</sup>
Parking	Compatible	Compatible <sup>2/</sup>	Compatible <sup>2/</sup>
<b>Commercial Use</b>			
Offices, Businesses, and Professional	NLR required	NLR required	NLR required <sup>2/</sup>
Wholesale and Retail—Building Materials, Hardware, and Farm Equipment	Compatible	Compatible <sup>2/</sup>	Compatible <sup>2/</sup>
Retail Trade—General	NLR required	NLR required	NLR required
Utilities	Compatible	Compatible <sup>2/</sup>	Compatible <sup>2/</sup>
Communication	NLR required	NLR required	NLR required
<b>Manufacturing and Production</b>			
Manufacturing—General	Compatible	Compatible <sup>2/</sup>	Compatible <sup>2/</sup>
Photographic and Optical	Compatible	NLR required	NLR required
Agriculture (Except Livestock) and Forestry	Compatible	Compatible	Compatible
Livestock Farming and Breeding	Compatible	Compatible	Incompatible
Mining and Fishing Resources Production and Extraction	Compatible	Compatible	Compatible
<b>Recreational</b>			
Outdoor Sports Arenas and Spectator Sports	Compatible <sup>3/</sup>	Compatible <sup>3/</sup>	Incompatible
Outdoor Music Shells, Amphitheaters	Incompatible	Incompatible	Incompatible
Nature Exhibits and Zoos	Compatible	Incompatible	Incompatible
Amusements, Parks, Resorts, and Camps	Compatible	Compatible	Incompatible
Golf Courses, Riding Stables, and Water Recreation	Compatible	Compatible	Incompatible

## NOTES:

DNL = Day-night average sound level, in A-weighted decibels.

Compatible = Generally, no special noise attenuating materials are required to achieve an interior noise level of DNL 45 in habitable spaces, or the activity (whether indoors or outdoors) would not be subject to a significant adverse effect by the outdoor noise level.

Incompatible = Generally, the land use, whether in a structure or an outdoor activity, is considered to be incompatible with the outdoor noise level even if special attenuating materials were to be used in the construction of the building.

NLR = Noise Level Reduction. NLR is used to denote the total amount of noise transmission loss in decibels required to reduce an exterior noise level in habitable interior spaces to DNL 45. In most places, typical building construction automatically provides an NLR of 20 decibels. Therefore, if a structure is located in an area exposed to aircraft noise of DNL 65, the interior noise level would be about DNL 45. If the structure is located in an area exposed to aircraft noise of DNL 70, the interior noise level would be about DNL 50, so an additional NLR of 5 decibels would be required if not afforded by the normal construction. This NLR can be achieved through the use of noise attenuating materials in the construction of the structure.

1/ The land use is generally incompatible with aircraft noise and should only be permitted in areas of infill in existing neighborhoods or where the community determines that the use must be allowed.

2/ NLR required in offices or other areas with noise-sensitive activities.

3/ Provided that special sound reinforcement systems are installed.

SOURCE: Ricondo & Associates, Inc., January 2000, as derived from the U.S. Department of Transportation, Federal Aviation Administration, Federal Aviation Regulations Part 150, *Airport Noise Compatibility Planning*, Code of Federal Regulations, Title 14, Chapter I, Subchapter I, Part 150, Table 1, January 18, 1985, as amended.

PREPARED BY: Ricondo & Associates, Inc., August 2014.

**Table 9-8 (1 of 2): Sensitive Land Uses within One Mile of the Airport Boundary**

NUMBER	CATEGORY	NAME	ADDRESS	WITHIN DNL 65
1	School	Henry W Longfellow Career Exploration Academy	5314 Boaz Street	No
2	School	Julian T Saldivar Elementary School	9510 Brockbank Drive	No
3	School	K. B. Polk Center for Academically Talented and Gifted	6911 Victoria Avenue	No
4	School	Maple Lawn Elementary School	3120 Inwood Road	No
5	School	Oak Hill Academy	9407 Midway Road	No
6	School	Obadiah Knight Elementary School	2615 Anson Road	Yes
7	School	Onesimo Hernandez Elementary School	5555 Maple Avenue	No
8	School	Our Lady of Perpetual Help School	7625 Cortland Avenue	No
9	School	Providence Christian School of Texas	5002 W. Lovers Lane	No
10	School	Stephen C. Foster Elementary School	3700 Clover Lane	No
11	School	Sudie L. Williams Elementary School	4518 Pomona Road	No
12	School	Thomas J. Rusk Middle School	2929 Inwood Road	Yes
13	School	Williams Preparatory School	1750 Viceroy Road	No
14	Religious Institution	Bethany Missionary Baptist Church	6710 Webster Street	Yes
15	Religious Institution	Cathedral of Hope	5738 Cedar Springs Road	No
16	Religious Institution	Cathedral of Hope	5910 Cedar Springs Road	No
17	Religious Institution	Central Christian Church	4711 Westside Drive	No
18	Religious Institution	Church of God - Love Field	2634 Langdon Avenue	No
19	Religious Institution	Church of Jesus Christ of Latter Day Saints	9509 Midway Road	No
20	Religious Institution	Coaches Outreach Ministry	2621 W. Mockingbird Lane	No
21	Religious Institution	El Buen Samaritano Methodist Church	2903 Cherrywood Avenue	Yes
22	Religious Institution	Faith Tabernacle Church	7523 Thurston Street	No
23	Religious Institution	Gilford Avenue Missionary Baptist	2146 Gilford Street	No
24	Religious Institution	Greater Zion Baptist Church	4751 Hopkins Avenue	No
25	Religious Institution	Holy Spirit Association for the Unification of World Christianity	1922 Anson Road	No
26	Religious Institution	Iglesia de Cristo	2145 Empire Central	No
27	Religious Institution	Jehovah's Witnesses	5308 W. Mockingbird Lane	No
28	Religious Institution	Knights Chapel Methodist Church	6615 Tyree Street	No
29	Religious Institution	Korean Dallas Christian Service	2829 W. Northwest Highway	No
30	Religious Institution	Macedonia Missionary Church	6635 Roper Street	No
31	Religious Institution	Migration Refugee Service	5415 Maple Avenue #414	No
32	Religious Institution	North Park Church of God	6533 Victoria Avenue	No
33	Religious Institution	North Park CME Church	6725 Tyree Street	No



**Table 9-8 (2 of 2): Sensitive Land Uses within One Mile of the Airport Boundary**

NUMBER	CATEGORY	NAME	SCHOOL ADDRESS	WITHIN 65dB DNL?
34	Religious Institution	North Park Missionary Baptist Church	6927 Roper Street	No
35	Religious Institution	Our Lady of Perpetual Help Church	7617 Cortland Avenue	No
36	Religious Institution	River of Life Church	5202 Wateka Drive	No
37	Religious Institution	St. Luke's Baptist Church	6702 Victoria Avenue	No
38	Religious Institution	St. Luke's Love Field United	2408 Gilford Street	No
39	Religious Institution	St. Thomas the Apostle Church	6525 Inwood Road	No
40	Religious Institution	Templo El Redentor	8519 Craighill Avenue	No
41	Religious Institution	United in Christ Baptist Church	7715 Denton Drive	Yes
42	Religious Institution	University Church of Christ	6540 Victoria Avenue	No
43	Religious Institution	Whitlow Missionary Baptist Church	3810 Thedford Avenue	No
44	Healthcare Facility	Center for Bio-Behavioral/Doctors Directory	5909 Harry Hines Boulevard	No
45	Healthcare Facility	Dallas Rehabilitation Institute	2124 Research Row	No
46	Healthcare Facility	Life Care Hospital of North Texas	6161 Harry Hines Boulevard	No
47	Healthcare Facility	Pine Creek Medical Center	9032 Harry Hines Boulevard	No
48	Healthcare Facility	St. Paul University Hospital	5909 Harry Hines Boulevard	No
49	Healthcare Facility	Texas Serenity Metroplex	2708 Inwood Road	No
50	Park	Weichsel Park	5700 Cedar Springs Road	Yes
51	Park	Cherrywood Park	Cedar Springs Road	No
52	Park	Overlake Park	Overlake Drive	Yes
53	Park	Midway Manor Park	Lemmon Avenue	No
54	Park	Bluff View Park	Pomona Road	No
55	Park	Field-Frazier Park	Bluff View Boulevard	No
56	Park	Grauwylar Park	Harry Hines Boulevard	No
57	Park	K.B. Polk Park	Thedford Avenue	No
58	Park	Fishing Hole Lake	Storey Lane	No
59	Park	Hines (Elm Fork) Park	2200 Walnut Hill Lane	No
60	Park	Elm Fork Greenbelt	Stemmons Freeway	No
61	Park	Bachman Creek Greenbelt	Shorecrest Drive	No
62	Park	Bachman Lake Park	3500 Northwest Highway	Yes

SOURCES: City of Dallas Schools, [www.nces.ed.gov](http://www.nces.ed.gov) (accessed April 2013); Google Earth Pro, 2013, North Central Texas Council of Governments, Geographical Information System Clearinghouse, June 2010; Ricondo & Associates, Inc., April 2013.  
 PREPARED BY: Ricondo & Associates, Inc., April 2014.

## 9.3 Demographics and Socioeconomic Profile

Socioeconomics encompasses the activities and resources associated with the everyday human environment, particularly related to population centers, their demographics, and the economic activities generated. Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was enacted in 1994. The purpose of this Executive Order is to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no groups of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, tribal, and local programs and policies. Environmental justice concerns must be considered for populations in the vicinity of a proposed project funded by the federal government.

A series of census tracts in the immediate vicinity of the Airport was identified for socioeconomic analysis. **Exhibit 9-3** depicts these census tracts in relation to Airport property. The tables that follow the exhibit provide information on the communities surrounding the Airport. The Airport and adjacent tracts include Census Tracts 4.06, 71.02, 73.02, and 9801.

The population of these census tracts is predominantly white (46.2 percent), with Hispanics or Latinos accounting for the next largest ethnic group (see **Table 9-9**).<sup>9</sup> A mix of median household incomes, ranging from \$38,419 for Census Tract 4.06 to \$131,477 for Census Tract 73.02, is represented in the tracts of interest (see **Table 9-10**). No data are provided for Census Tract 9801 because it consists mainly of Airport property, on which there are no residences.

<sup>9</sup> This calculation is representative of "race alone or in combination with another race" of the total population (U.S. Census, 2010).



SOURCE: North Central Texas Council of Governments, 2010 U.S. Census Tracts, <http://www.nctcog.org/index.asp> (accessed online: June 4, 2012); ESRI Online Database, (Aerial Imagery), 2011.  
 PREPARED BY: Ricardo & Associates, Inc., November 2014.

EXHIBIT 9-3



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**Table 9-9: Demographic and Socioeconomic Data**

	DALLAS COUNTY		CITY OF DALLAS		AIRPORT AND ADJACENT CENSUS TRACTS	
	ESTIMATE	PERCENT	ESTIMATE	PERCENT	ESTIMATE	PERCENT
<b>Race <sup>1/</sup></b>						
Total Population	2,379,214	100.0%	1,207,202	100.0%	19,000	100.0%
White	1,409,404	59.2%	692,090	57.3%	8,774	46.2%
Black or African American	546,901	23.0%	307,333	25.5%	3,056	16.1%
American Indian and Alaska Native	31,054	1.3%	13,242	1.1%	845	4.4%
Asian	133,477	5.6%	39,062	3.2%	863	4.5%
Native Hawaiian and Other Pacific Islander	2,773	0.1%	1,042	0.1%	9	<0.1%
Some Other Race	317,014	13.3%	180,639	15.0%	6,767	35.6%
<b>Hispanic or Latino and Race</b>						
Total Population	2,379,214	100.0%	1,207,202	100.0%	19,000	100.0%
Hispanic or Latino (of any race)	908,199	38.2%	507,405	42.0%	10,249	53.9%
Not Hispanic or Latino	1,471,015	61.8%	699,797	58.0%	8,751	46.1%
Median Household Income	\$49,159	NA	\$42,436	NA	See Table 9-10	
Persons below Poverty Level	18.8%	NA	23.6%	NA	See Table 9-10	

NOTES: NA = NOT AVAILABLE

1/ This calculation is representative of "race alone or in combination with another race" of the total population. Some respondents may identify with more than one race; therefore, total percentages could exceed 100 percent.

SOURCE: U.S. Department of Commerce, Bureau of the Census, *2008-2012 American Community Survey 5-Year Estimates*, <http://factfinder.census.gov> (accessed February 26, 2014).

PREPARED BY: Ricondo & Associates, Inc., February 2014.

**Table 9-10: Income Data by Census Tract**

CENSUS TRACT	MEDIAN HOUSEHOLD INCOME	PERCENT OF POPULATION BELOW THE POVERTY LEVEL <sup>1/</sup>
4.06	\$38,419	32.2%
71.02	\$52,253	19.7%
73.02	\$131,477	11.6%
9801 <sup>2/</sup>	NA	NA

NOTES: NA = NOT AVAILABLE.

1/ Poverty level is \$10,890 for one person and an additional \$3,820 for each additional family member in the lower 48 contiguous United States and Washington, D.C., according to the U.S. Department of Health and Human Services, 2011.

2/ Census Tract 9801 consists mainly of Airport property, which includes no residences. Thus, median income and percent of population below the poverty level are not available.

SOURCE: U.S. Department of Commerce, Bureau of the Census, *2008-2012 American Community Survey 5-Year Estimates*, <http://factfinder.census.gov> (accessed: February 26, 2014).

PREPARED BY: Ricondo & Associates, Inc., February 2014.

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## 9.4 Social Impacts

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Aviation-related development affects not only the natural environment, but also the human environment. Therefore, consideration of social impacts is required to determine the potential effects of Airport development on the human environment. The types of social impacts that generally result from airport development are:

- Relocation of residences and/or businesses
- Surface traffic patterns
- Disruption of established communities
- Disruption of orderly, planned development
- Creation of an appreciable change in employment
- Roadway noise

Potential impacts from implementation of the preferred alternative on the social categories listed above are discussed in Section 9.19.1.

### 9.4.1 DEMOGRAPHICS AND SOCIOECONOMIC STATUS

Table 9-9 presents the general demographics of Dallas County and the City of Dallas as well as a comparison of these areas to the Airport and adjacent U.S. Census tracts. Table 9-10 lists the income data for the U.S. Census tracts surrounding the Airport.

### 9.4.2 SURFACE TRAFFIC PATTERNS

#### 9.4.2.1 Existing Traffic

The traffic analysis for the Airport Master Plan Update, conducted in 2014, included a level-of-service analysis of intersections along Airdrome Drive, Lemmon Avenue, Mockingbird Lane, Cedar Springs Road/Herb Kelleher Way, and Denton Drive. These intersections were monitored during peak morning and afternoon hours. Traffic conditions are described in further detail in Section 4. Level-of-service definitions for roadway traffic are provided in **Table 9-11**. The threshold of acceptable roadway level-of-service during peak periods at most airports is typically LOS D or better.

Table 9-11: Traffic Level of Service Definitions

LOS	A	B	C	D	E	F
<b>CONDITION</b>	<b>Excellent</b>	<b>Very good</b>	<b>Good</b>	<b>Fair</b>	<b>Poor</b>	<b>Failure</b>
<b>DESCRIPTION</b>	Traffic is free flowing, with low volumes and high speeds	Drivers have reasonable freedom to select their speed and lane of operation	Drivers become restricted in their ability to select their speed or to change lanes	Drivers have little freedom to maneuver and driving comfort levels are low	Roadway is operating at or near capacity	Forced flow operations where excessive roadway queuing develops

SOURCE: Ricondo & Associates, Inc., based on information published in Transportation Research Board, *Highway Capacity Manual*, 2010.

PREPARED BY: Ricondo & Associates, Inc., August 2014.

- Lemmon Avenue and Airdrome Drive intersection:
  - a.m. peak: LOS C
  - p.m. peak: LOS C
- Lemmon Avenue and Mockingbird Lane intersection:
  - a.m. peak: LOS C
  - p.m. peak: LOS C
- Airdrome Drive and Mockingbird Lane intersection:
  - a.m. peak: LOS B
  - p.m. peak: LOS C
- Mockingbird Lane and Cedar Springs Road/Herb Kelleher Way intersection:
  - a.m. peak: LOS D
  - p.m. peak: LOS D
- Mockingbird Lane and Denton Drive intersection:
  - a.m. peak: LOS B
  - p.m. peak: LOS C

Existing (2014) traffic conditions near the Airport range from "very good" to "fair" (at the intersection of Mockingbird Lane and Cedar Springs Road/Herb Kelleher Way). This intersection provides access to the Airport Main Terminal area and exhibits the greatest level of congestion in the area surrounding the Airport.

## 9.5 Air Quality

### 9.5.1 REGULATORY REQUIREMENTS

The federal Clean Air Act, as amended, requires individual states to identify general geographic areas where the National Ambient Air Quality Standards are not met for any of seven criteria pollutants.<sup>10</sup> The U.S. EPA has designated such areas as nonattainment areas. A state with a nonattainment area must prepare a State Implementation Plan (SIP) that details the programs and requirements that the state will implement to attain the NAAQS by the deadlines specified in the Clean Air Act Amendments of 1990 and subsequent rules promulgated by the U.S. EPA. In Texas, the TCEQ is responsible for formulating and maintaining the SIP.

The CAAA require federal agencies to ensure that their actions conform to the appropriate SIP. Conformity is defined as demonstrating that a project or action conforms to the SIP's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards. The U.S. EPA has approved conformity regulations in the Texas SIP, which are codified in the Texas regulations at Title 30, Part 1, Chapter 101, Subchapter A, §101.30.

Generally, to comply with the requirements of the general conformity regulations, two criteria must be met. It must be shown that: (1) total direct and indirect pollutant emissions<sup>11</sup> resulting from a project in a nonattainment area or a maintenance area (i.e., an area that has been redesignated from nonattainment to attainment) are accounted for in a SIP, or it must be shown that they would be below *de minimis*<sup>12</sup> emissions levels established for the nonattainment or maintenance area, and (2) pollutant emissions from the project would not be regionally significant (i.e., the project would not contribute 10 percent or more of the region's total emissions of a criteria pollutant). If it is determined through an emissions inventory that the direct and indirect pollutant emissions from a project would be below *de minimis* levels and not "regionally significant," no further air quality analysis is required and the project is presumed to conform with the applicable SIP. If a project's emissions would equal or exceed the annual *de minimis* levels, or be regionally significant, a positive conformity determination/NAAQS assessment is required, including requisite pollutant dispersion analyses.

NAAQS have been established for the following seven air contaminants or criteria pollutants:

- Carbon monoxide
- Lead
- Nitrogen dioxide

<sup>10</sup> The criteria pollutants include carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter less than 10 microns in diameter and particulate matter less than 2.5 microns in diameter and sulfur dioxide.

<sup>11</sup> Total direct and indirect pollutant emissions are the sum of the emissions increases and decreases associated with a proposed project, or the "net" change in emissions anticipated to occur as a result of a proposed project [40 CFR 93.152].

<sup>12</sup> Emissions are so small as to be negligible or insignificant. If a project/action has *de minimis* emissions, a conformity determination/NAAQS assessment pursuant to the CAAA is not required [40 CFR 93.153c].



- Ozone
- Sulfur dioxide
- Particulate matter and fine particulates

The primary standards were established at levels sufficient to protect public health with a satisfactory margin of safety. The regulation and management of ambient (i.e., "outdoor") air quality conditions in Dallas County are the combined responsibility of federal, State, and local governmental agencies.

On the federal level, the U.S. EPA establishes the guiding principles and policies for protecting air quality throughout the nation. Relevant to this assessment, the U.S. EPA is also responsible for promulgating the NAAQS, approving the SIP, and regulating aircraft emissions.

On the State level, the Texas SIP helps ensure that federal air quality requirements and guidelines are met. The Texas Emissions Reduction Program monitors air quality and regulates mobile sources of emissions (i.e., on-road and off-road motor vehicles and equipment). The TCEQ operates 11 permanent ambient air quality monitoring sites scattered throughout the Dallas-Fort Worth TCEQ Region as part of its ongoing State and local air quality monitoring programs.<sup>13</sup> The closest of these air quality monitoring stations is approximately 1.3 miles southwest of the Airport in Dallas. No air quality monitoring stations are located directly on, or adjacent to, the Airport.

## 9.5.2 ATTAINMENT/NONATTAINMENT STATUS

The Airport is located in the City of Dallas, which is currently designated as a moderate nonattainment area for ozone (8-hour).<sup>14</sup> The emissions inventories described below assess how Airport operations and project construction would affect the attainment/nonattainment status of NAAQS criteria pollutants.

### 9.5.2.1 Emissions Inventory – Operational Emissions

An operational emissions inventory is conducted to assess air quality impacts caused by changes in airport activity levels. A substantial change in the number, type, or operating patterns of aircraft, GSE vehicles, point sources (including boilers and fuel tanks), and passenger vehicles caused by an airport improvement project warrants an operational emissions analysis. If, through the operational emissions inventory process, it is determined that project-related emissions (direct and indirect) do not exceed applicable *de minimis* thresholds, then no further air quality analysis is required. If project-related emissions are equal to or greater than the *de minimis* thresholds, an NAAQS assessment may be required (see below). The model approved by the FAA and the U.S. EPA for conducting operational emissions inventories for airports is the Emissions and Dispersion Modeling System (EDMS).

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<sup>13</sup> State of Texas, Texas Commission on Environmental Quality, Geographical Texas Air Monitoring online mapping database. [http://www.tceq.texas.gov/airquality/monops/sites/mon\\_sites.html](http://www.tceq.texas.gov/airquality/monops/sites/mon_sites.html) (accessed June 21, 2012).

<sup>14</sup> U.S. Environmental Protection Agency, *Criteria Pollutant Reports*, <http://www.epa.gov/air/oaqps/greenbk/multipol.html> (accessed August 23, 2012).

The recommended projects in the Master Plan Update preferred alternative would not increase Airport capacity and would not result in an increase in Airport operations. Any change in operating patterns of aircraft, GSE vehicles, point sources, and passenger vehicles would be less than significant and, therefore, not require an operational emissions analysis.

#### 9.5.2.2 Emissions Inventory – Construction Emissions

A construction emissions inventory quantifies the temporary emissions caused by construction and/or demolition activities. Typical sources of construction-related emissions include non-road equipment (backhoes, drilling rigs, mixers, etc.), on-road equipment (dump trucks, concrete trucks, etc.), and construction employee vehicle traffic.

##### *NAAQS Assessment - Hot Spot Analysis*

If a project has the potential to adversely affect air quality at roadway intersections on an airport or in the airport environs by significantly increasing traffic, a hot spot analysis is typically conducted to determine if project-related emissions of carbon monoxide caused by motor vehicles would cause or contribute to an exceedance of the NAAQS. The common protocol for a hot spot analysis is to select the intersections with the highest traffic volumes and the lowest level-of-service rating for modeling. Hot spot modeling is typically conducted using the Mobile 5b emissions model and the CAL3QHC dispersion model. The Master Plan Update preferred alternative would not increase Airport capacity or operations; therefore, hot spot analysis would not be required.

##### *NAAQS Assessment - General*

If a general NAAQS assessment is required, "build" and "no-build" emissions would be inventoried for each reasonable alternative. Emissions for the proposed build case would then be translated into pollutant concentration estimates using a dispersion model (typically EDMS for airport analyses). Once the dispersion modeling has been performed, pollutant concentration estimates from the dispersion model would be added to background concentrations and compared to the NAAQS. If concentrations do not exceed the NAAQS, an air quality certificate would be obtained from the Governor of Texas, and the NAAQS assessment would be complete. If pollutant concentrations exceed the NAAQS, emissions must be mitigated or offset, or the project redesigned to reduce emissions. The Master Plan Update preferred alternative would not increase Airport capacity or operations; therefore, a general NAAQS assessment would not be required. Construction activities related to the preferred alternative would result in a temporary increase in emissions; the construction phases of these projects would be assessed on a project-by-project basis in accordance with NEPA protocol.

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## 9.6 Water Quality

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The regional hydrogeologic gradient of the Airport is presumed to flow toward the south-southwest. However, the actual hydrogeologic gradient may be affected by local influences, such as the topography of the bedrock geology, underground structures, and other variables.

A major aquifer is defined as one that yields large quantities of water in a comparatively large area of the state. The designated major aquifer in this region of Texas is the Trinity Group Aquifer, which serves all or part of 56 Texas counties. The aquifer generally consists of the Paluxy, Glen Rose, and Travis Peak Formations. These Cretaceous-age rocks extend over a large area of north and central Texas and consist primarily of sand with interbedded clays, limestone, dolomite, gravel, and conglomerates. These strata were deposited in fluvial, deltaic, strandplain, and shallow marine environments. Saturated thickness of the water-bearing units ranges from approximately 100 feet in the outcrop area to a maximum of 1,200 feet near the downdip limit of the fresh to slightly saline water. Water quality from the Trinity Group Aquifer is acceptable for most municipal and industrial purposes.<sup>15</sup>

A minor aquifer is defined as one that yields large quantities of water in small areas or relatively small quantities of water in large areas of the state. The designated minor aquifer in this area of Texas is the Woodbine Aquifer, which consists of sands, clays, sandstones, shales, and limestones. The saturated thickness of the water-bearing sand and sandstone beds reaches a maximum of about 600 feet in the downdip areas to the east. Fresh, good quality water is produced from wells in or near the outcrop area of the Woodbine Aquifer. Water quality deteriorates rapidly downdip from the outcrop, with total dissolved solids, sodium, chloride, and bicarbonate concentrations increasing. The Woodbine Aquifer furnishes municipal, industrial, and small irrigation water supplies to several counties in the area.<sup>16</sup> The outcrop area for both the Trinity Group and Woodbine Aquifers encompasses the Dallas metropolitan area. Important aquifer recharge occurs within an aquifer outcrop area via surface infiltration of precipitation.

### 9.6.1 GROUNDWATER

The *Drinking Water Survey Report* cited below documents that no private drinking water wells exist within the 0.5-mile search radius, and that the City of Dallas Water Utilities Department provides drinking water to properties within the entire 0.5-mile search radius. A 0.5-mile-radius records search and 500-foot and 0.25-mile receptor surveys did not locate any private drinking water wells.<sup>17</sup>

The City of Dallas currently receives water from the following area reservoirs: Lake Ray Hubbard, Lake Lewisville, Lake Grapevine, Lake Ray Roberts, and Lake Tawakoni. Because of its poor quality, groundwater underlying the Airport is not used for drinking, irrigation, or industrial supply purposes. The City of Dallas approved a *Municipal Setting Designation Ordinance* in 2005, which restricts the use of groundwater in areas

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<sup>15</sup> Benchmark Environmental Consultants, *Phase I Environmental Site Assessment, City of Dallas, DalFort Aerospace and Former Legend Terminal, 7701 and 7777 Lemmon Avenue, Dallas, Dallas County, Texas*, November 17, 2008.

<sup>16</sup> *Ibid.*

<sup>17</sup> Farmer & Associates, Inc., *Drinking Water Survey Report, Former DalFort Aerospace/Legend Airlines Terminal, 7701-7777 Lemmon Avenue, Dallas (Dallas County), Texas 75235*, June 16, 2009.

designated as contaminated for potable water by ordinance/restrictive covenant.<sup>18</sup> The City of Dallas Department of is in the process of obtaining a Municipal Setting Designation for the entire Airport.

### 9.6.2 SURFACE WATER

Surface water in the vicinity of the Airport consists primarily of Bachman Lake to the northwest. Rainfall on runways, taxiways, and industrial and commercial sites comes in contact with a multitude of pollutants. These pollutants dissolve in the runoff or are absorbed by soil particles and are quickly transported by gravity flow through the network of concrete channels and underground pipes that are part of the Airport storm drain conveyance systems. These systems ultimately discharge the polluted runoff, without treatment, directly to the City storm water system, Bachman Lake, or nearby streams and drainage channels. Pollutants typically found in the Airport runoff include sediment, nutrients (e.g., fertilizers), oxygen-demanding substances (e.g., decaying vegetation), bacteria, heavy metals, synthetic organics (e.g., fuels, oils, solvents, lubricants), pesticides, and other toxic substances.

Authorization for storm water discharges from the Airport is required under the TPDES permit. The requirement is based on the Airport's Standard Industrial Classification code. The TPDES permit provides authorization for point source discharges of storm water associated with industrial activity and certain non-storm water discharges to surface water. The permit contains effluent limitations and requirements applicable to all industrial activities covered under the TPDES permit.

In addition to the pollutants contributed by storm water or wet weather flows, dry weather runoff can also seriously degrade the quality of the receiving water. Dry weather flows conveyed by the storm water conveyance system, which can be substantial, consist of flows from groundwater infiltration and accidental, improper, or illegal discharges to the storm water conveyance system. Common examples of the latter are illegally disposed used motor oil and antifreeze. These pollutants can severely degrade the beneficial uses of receiving surface waters.

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## 9.7 Department of Transportation Act, Section 4(f) Properties

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Section 4(f) of the U.S. Department of Transportation Act of 1966, which was recodified and renumbered as Section 303(c), dictates that, for any program or project undertaken or approved by the U.S. DOT, impacts on the use of any publicly owned land of a public park; recreation area; wildlife and waterfowl refuge of national, state, or local significance; or land from a historic site of national, state, or local significance must be considered. The Act prohibits the Secretary of Transportation from approving actions that would result in use of these properties for transportation purposes unless no prudent and feasible alternative exists and all efforts have been made to minimize impacts.

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<sup>18</sup> City of Dallas, Office of Environmental Quality, *Municipal Setting Designation Ordinance*, <http://www.dallascityhall.com/oeq/msd.html> (accessed June 7, 2012).

A number of parks and other recreational areas are located near the Airport. Recreational resources were identified based on a review of City parks maps. Midway Manor Park is located northeast of Runway 13L-31R on Airport property, but is maintained by the City of Dallas Park and Recreation Department. This park is a small neighborhood park that includes an outdoor basketball court. Other public parks northeast of the Airport include Field Frazier Park and Bluff View Park, which serve the neighborhoods of this area. Bachman Lake Park is immediately adjacent to the northwestern Airport property boundary and is the largest park in the vicinity of the Airport. This park encompasses all of Bachman Lake with scenic recreational trails surrounding the lake shore. Bachman Lake Park is home to the Dallas Rowing Club, which uses Bachman Lake for training and rowing events. East of Bachman Lake is the Bachman Creek Greenbelt, owned and maintained by the Dallas Park and Recreation Department. Other parks in the vicinity of the Airport include Grauwlyer Park to the southwest, which offers athletic fields, a recreational center, and the Grauwlyer Park Library. Weichsel Park is located south-southwest of the Airport and is associated with the Thomas J. Rusk Middle School. East of the Airport is Polk Park, a small neighborhood park associated with the K. B. Polk Center for Academically Talented and Gifted. All public parks and lands in the vicinity of the Airport are operated and maintained by the Dallas Park and Recreation Department.

## 9.8 Historic, Architectural, Archaeological, and Cultural Resources

Numerous laws and regulations require that possible effects on historic, architectural, archaeological, and cultural resources be considered during the planning and execution of federal undertakings. These laws and regulations stipulate a process of compliance, define the responsibilities of the federal agency proposing the actions, and prescribe the relationships among involved agencies. NEPA directs federal agencies to assess the environmental impacts of their proposed actions, including impacts to historic and cultural resources. In addition to NEPA, the primary laws that pertain to the treatment of historic, architectural, archaeological, and cultural resources during environmental analyses are the National Historic Preservation Act (NHPA) (particularly Sections 106 and 110), the Archaeological Resources Protection Act, the American Indian Religious Freedom Act, and the Native American Graves Protection and Repatriation Act.

Section 106 of the NHPA requires that federal agencies consider whether their activities could affect historic properties through consultation with the State Historic Preservation Officer (SHPO). A historic property is defined as any prehistoric or historic district site, building, structure, or object listed in, or eligible for listing in, the National Register of Historic Places.

Properties that are either listed in or eligible for listing in the NRHP are provided the same measure of protection under Section 106 of the NHPA. If an undertaking has the potential to affect historic properties, then the federal agency, in consultation with the SHPO, defines an Area of Potential Effect (APE).

The Texas Historical Commission's *Historic Sites Atlas* was consulted for the presence of previously designated or identified historic properties in and around the Airport, including NRHP properties, State Archaeological Landmarks, and Official Texas Historical Markers, which include Recorded Texas Historic Landmarks, historic

cemetery markers, thematic markers, and 1936 Centennial Markers. The records search found no previously designated historic properties located within the vicinity of the Airport.

However, the EA for redevelopment of the DalFort site required a historic structures survey at the former DalFort Aerospace facilities located on Lemmon Avenue. Through consultation among the FAA, the THC, and the National Park Service, the 1958 Operations and Maintenance Building on the DalFort site was determined eligible for listing in the NRHP, as indicated by the Keeper of the NHRP in May 2013. The OMB is significant under NRHP Criterion A at the local level of significance for its historical association with aviation development in Dallas. The OMB is also significant under NRHP Criterion C at the local level of significance as a notable example of the Midcentury Modern style (a style that was prevalent in the Dallas area during the 1950s) designed by nationally prominent architects William Pereira and Charles Luckman and overseen by locally prominent architect Mark Lemmon. Character-defining features include a wall of windows, flared roofs, and the use of concrete, glass, and steel. The National Park Service determined that the building retains sufficient integrity to convey its historic and architectural significance and is, therefore, eligible for listing in the NRHP.

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## 9.9 Biotic Communities

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According to the U.S. Department of Agriculture, Soil Conservation Service, *Soil Survey of Dallas County, Texas*, the soil located at and surrounding the Airport is classified as Urban Land. The Urban Land map unit consists of extensively built-up areas where 75 percent or more of the surface is covered with buildings and pavement. The soils in these areas have been altered or covered during urban development; therefore, it was not feasible to identify and separate them in mapping.

The habitat surrounding and including the Airport supports a limited number of biological resources because much of the area is already extensively developed. The entire area within the Airport boundary is developed or disturbed in some manner, with no native vegetation existing on the site. According to the U.S. FWS Critical Habitat Portal, no critical habitat can be found within Dallas County.<sup>19</sup> Because of the lack of habitat and the developed condition of the Airport and vicinity, no threatened or endangered species are present or known in the area.

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## 9.10 Wetlands

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The U.S. Army Corps of Engineers' *Wetland Delineation Manual* defines wetland areas that have positive indicators for hydrophytic vegetation, wetland hydrology, and hydric soils as "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal

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<sup>19</sup> U.S. Fish and Wildlife Service, Critical Habitat Portal, <http://criticalhabitat.fws.gov/crithab/> (accessed July 30, 2012).

circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." The U.S. ACE typically takes jurisdiction over wetlands only when they lie within or adjacent to navigable waters, or tributaries of such waters where those tributaries bear an ordinary high water mark. An ordinary high water mark is defined as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in soil character, destruction of terrestrial vegetation, presence of litter or debris, or other appropriate means that consider the characteristics of the surrounding areas."

The Airport is highly developed (i.e., buildings, paved surfaces, ornamental landscaping) and contains few areas with the potential to support wetlands. Virtually all areas that would be affected by implementation of the preferred alternative consist of bare earth, paved surfaces, structures, or ornamental (low habitat value) landscaping.

According to the U.S. FWS National Wetlands Inventory online wetland mapper, no wetlands or waters of the United States exist within the Airport boundary.<sup>20</sup> The body of water nearest the Airport is Bachman Lake, located along the northwest boundary of the Airport. The nearest designated wetlands are within Bachman Creek, located just north/northeast of the Airport boundary, adjacent to Bachman Lake.<sup>21</sup>

## 9.11 Floodplains

Executive Order 11988 was enacted to avoid, to the extent possible, long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practical alternative. The Order was issued in furtherance of NEPA, the National Flood Insurance Act of 1968, and the Flood Disaster Act of 1973. Floodplains are defined as lowland and flat areas adjoining waters that are subject to a 1.0 percent or greater chance of flooding in any given year, i.e., a 100-year flood event.

The Airport lies outside the 100-year flood zone, as delineated on FEMA maps.<sup>22</sup> The Airport is located within Flood Zone X (area of minimal flood hazard, depicted on Flood Insurance Rate Maps as above the 500-year flood level).

<sup>20</sup> U.S. Fish and Wildlife Service, National Wetlands Inventory – Interactive Map, <http://www.fws.gov/wetlands/Data/Mapper.html> (accessed August 18, 2014).

<sup>21</sup> *ibid*

<sup>22</sup> U.S. Department of Homeland Security, Federal Emergency Management Agency, Flood Insurance Rate Map Panel FM48113C0330J, <https://msc.fema.gov/portal> (accessed August 2014).

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## 9.12 Coastal Areas

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The Coastal Barrier Resources Act of 1982 prohibits federal financial assistance for development within the Coastal Barrier Resources System, which contains undeveloped coastal barriers along the Atlantic and Gulf Coasts and the Great Lakes. The Coastal Zone Management Act of 1972 ensures effective management, beneficial use, protection, and development of the coastal zone. Coastal Zone Management Programs, prepared by states according to guidelines issued by the National Oceanic and Atmospheric Administration, are designed to address issues affecting coastal areas. Coastal resources are identified in accordance with the Coastal Public Lands Management Act of 1973 ("Management of Coastal Public Land," *Texas Natural Resources Code*, Chapter 33 *et seq.*). This Act, which is consistent with the federal Coastal Zone Management Act, contains the State's adopted policies with regard to the protection of coastal resources.

The nearest coastal zone to the Airport is the Gulf of Mexico, over 200 miles to the southeast. No other coastal zones are located on or near the Airport.

Coastal barriers are narrow islands or margins along the Texas Gulf Coast with active dunes (or structures built to replace them). These barriers are managed in Texas to prevent beach erosion. The Airport is not located on a coastal barrier. Therefore, projects at the Airport would not affect coastal barriers.

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## 9.13 Wild and Scenic Rivers

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The U.S. Department of the Interior designates certain waterways as Wild and Scenic Rivers to protect the most beautiful and unspoiled rivers in the nation under the Wild and Scenic Rivers Act, approved by the U.S. Congress in 1968. As of 2012, the Wild and Scenic Rivers system consisted of 12,598 miles of 203 protected rivers in 39 states and Puerto Rico.<sup>23</sup> These rivers are designated because of their beauty, historic and natural sources, aquatic and wildlife habitats, and geological values. The Rio Grande at Big Bend National Park is the only designated Wild and Scenic River in Texas, approximately 370 miles southwest of Dallas. Therefore, the Master Plan Update preferred alternative would not affect a wild and scenic river.

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## 9.14 Farmland

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The preservation of prime farmland is a priority goal for the U.S. Department of Agriculture, and the effects on prime farmland of projects with federal support must be assessed. The Airport is located primarily in a developed commercial and industrial area of Dallas. No farmland is located at or in the vicinity of the Airport.

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<sup>23</sup> National Wild and Scenic Rivers System, <http://www.rivers.gov/national-system.php> (accessed August 8, 2014).



No impacts to farmland would occur as a result of implementation of the Master Plan Update preferred alternative.

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## 9.15 Energy Supply and Natural Resources

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The Airport is not an energy-producing location, nor does it produce mineral resources. The effects of Airport development on energy and natural resources are generally related to the amount of energy required for stationary facilities (i.e., terminal building cooling or heating equipment, electrical lighting for building interiors and the airfield, and approach or radar control systems), and the movement of aircraft and GSE vehicles. The prime concern would be if future Airport growth were to result in a shortage of energy or place a strain on existing energy suppliers to serve the Airport at the highest level of efficiency. The Master Plan Update preferred alternative would not significantly increase the need for energy or other natural resources. Construction of the Master Plan Update preferred alternative would likely result in an increased demand for energy and natural resources. However, the energy demand resulting from construction activities would be temporary and would not create a significant resource demand for the region. The Airport's energy and natural resource providers are projected to be able to meet the future energy requirements for the Airport.

### 9.15.1 ELECTRICITY

Oncor Electric Delivery is the sole provider of electricity to the Airport. Oncor provides electrical power to the City of Dallas Department of Aviation and to all on- and off-Airport customers. At its current capability, Oncor is projected to be able to provide electrical power for the Airport and Airport tenants for more than the next 100 years without adding new power generation sources. As part of the Master Plan Update and the Love Field Modernization Program, the Department of Aviation coordinated with Oncor regarding near- and long-term electricity demands.

### 9.15.2 PETROLEUM-BASED FUELS

The Airport is a major consumer of petroleum-based fuels for aircraft and GSE. The Airport fuel suppliers were contacted regarding future fuel demand by the airlines and FBOs at the Airport. Using annual Airport activity forecasts, the fuel suppliers were asked if this growth and demand for more fuel would limit their ability to provide adequate quantities of fuel to maintain a normal operation of aircraft and GSE. Each supplier, based on current supply, reserves, and production and the current availability of fuel statistics, indicated that supplies would more than adequately meet future customer demand.

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## 9.16 Light Emissions and Visual Impacts

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The primary sources of light emissions from airports are the FAA-required lighting for security, obstruction clearance, and navigation. An analysis of the impacts of light emissions on the surrounding environment is required when proposed projects include the introduction of new lighting that may affect residential or other sensitive land uses. It is also important to consider the potential impacts of the proposed improvements on the visual character of the surrounding area.

According to the FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*,<sup>24</sup> a significant environmental impact occurs when light emissions or visual impacts cause an annoyance to the people typically located in residential areas in the surrounding environs of a proposed project.

If nighttime construction activities are deemed necessary for the preferred alternative, mitigation measures would be established prior to project implementation and enforced to ensure that no impacts from light emissions would occur to sensitive receptors in the Airport vicinity. Therefore, light emissions are not expected to be a concern at the Airport.

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## 9.17 Hazardous Materials and Solid Waste

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Four primary statutes have been passed governing the handling and disposal of hazardous materials, chemicals, substances, and wastes. The two statutes most applicable to airport projects are the Resource Conservation and Recovery Act (RCRA) (as amended by the Federal Facilities Compliance Act of 1992) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended (commonly referred to as Superfund). The RCRA governs the generation, treatment, storage, and disposal of hazardous wastes. The CERCLA provides for cleanup of any release of a hazardous substance (excluding petroleum) in the environment.

### 9.17.1 HAZARDOUS MATERIALS

Hazardous materials are regulated by a number of federal laws and statutes, most of which are promulgated by the U.S. EPA. These include the RCRA and CERCLA, as mentioned above, in addition to the CAAA, the Clean Water Act, the Safe Drinking Water Act, the Hazardous Materials Transportation Act, and the Emergency Planning and Community Right to Know Act.

Together, these laws guide and govern the storage, use, and transportation of hazardous and other regulated materials from their time of origin to their ultimate disposal. The recovery and cleanup of environmental contamination resulting from the accidental or unlawful release of these materials and substances are also governed by these laws.

In Texas, hazardous materials include substances or materials, including mixtures and solutions, that the TCEQ has identified as hazardous or dangerous wastes and that the U.S. EPA has designated for special consideration under the Toxic Substances Control Act, the CAAA, or the Clean Water Act, as defined under Section 101 (14) of the CERCLA, as well as hazardous waste under the RCRA. Hazardous materials also include constituents of petroleum products, marine pollutants, or elevated temperature materials that have been

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<sup>24</sup> Federal Aviation Administration, Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, effective April 28, 2006.

determined by the U.S. Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce.

Locally, the City of Dallas Office of Environmental Quality oversees environmental issues within Dallas. Fuel tanks are handled in accordance with International Fire Code regulations. Importantly, no sites or facilities at the Airport or in the immediate vicinity are listed on the federal "Superfund" National Priorities List.

In 2008, an environmental database search was conducted for the redevelopment of the DalFort site at the Airport by Environmental Data Resources, Inc., which included the Airport and Airport vicinity. A number of sites and facilities located on, or adjacent to, Airport property are known, or have the potential, to contain environmental contamination of the soil and/or groundwater. Identification of these sites was based on documents and other sources of information from previous environmental reports on the DalFort site; an electronic search of federal, State, and local agency databases; and an in-field survey of existing conditions. From this literature search, six individual sites (five on Airport and one off Airport) were identified, as presented in **Table 9-12**.

Of the on-Airport listings in Table 9-12, only the DalFort site is known to have outstanding hazardous materials issues. This site is currently undergoing environmental investigations in coordination with the TCEQ and OEQ prior to redevelopment plans that are not part of the Master Plan Update preferred alternative. Additionally, the terminal building is undergoing a NEPA assessment that is also separate from the Master Plan Update. The Sewell Village Cadillac site is adjacent to the northeastern Airport property boundary, along Lemmon Avenue. This site is listed as a TCEQ Voluntary Cleanup Program and has a completed status; therefore, it is unlikely to have any effect on the preferred alternative.

Several database listings shown in Table 9-12 are located along Lemmon Avenue within areas that could be included in land use/FBO redevelopment along Lemmon Avenue as part of the preferred alternative. Potential hazardous materials issues may arise during construction phases of preferred alternative projects. However, project-specific NEPA and environmental investigations would occur prior to any construction. Additionally, should any hazardous materials be encountered during construction phases of the preferred alternative projects, treatment, storage, transportation, and disposal of any such materials would occur in accordance with all applicable local, State, and federal regulations. Therefore, hazardous materials are not anticipated to affect implementation of the Master Plan Update preferred alternative.

**Table 9-12: Environmental Database Listings for Properties Adjacent to or near the Area of Potential Effect**

COMPANY	ADDRESS	DATABASE LISTING	SUMMARY OF LISTING
Signature Flight Support	7515 Lemmon Avenue, Building J	RCRA-CESQG <sup>1/</sup>	Conditionally exempt, no violations.
		TCEQ-LPST <sup>2/</sup>	November 1989: leaking incident, contaminated soils. Status: closed.
Dallas Airmotive, Inc.	7515 Lemmon Avenue, Hangar L	RCRA-NonGen <sup>3/</sup>	Conditionally exempt, no violations.
Signature Flight Support Regional Maintenance Center	7511 Lemmon Avenue, Hangar C	RCRA-CESQG	Conditionally exempt, no violations.
Signature Flight Support	8001 Lemmon Avenue	RCRA-CESQG	Conditionally exempt, one minor violation found.
		TCEQ-PST <sup>4/</sup>	Currently nine 20,000 gallon tanks containing either gasoline or jet fuel.
		TCEQ-LPST	October 1993: leaking incident, contaminated soils. Corrective action plan issued.
DalFort Terminal	8036-7440 Aviation Place	TCEQ-VCP <sup>5/</sup>	This facility is classified as a maintenance aircraft fueling facility. The contaminant was reported as hydrocarbons. Currently in the investigation phase.
Sewell Village Cadillac	4350 West University Boulevard	TCEQ-VCP	Soils and groundwater are reported to be contaminated with total petroleum hydrocarbons. A Voluntary Cleanup Program has been completed for this facility.

## NOTES:

- 1/ RCRA-CESQG: Resource Conservation and Recovery Act - Conditionally Exempt Small Quantity Generators
- 2/ TCEQ-LPST: Texas Commission on Environmental Quality - Leaking Petroleum Storage Tank database
- 3/ RCRA-NonGen: Resource Conservation and Recovery Act - Nongenerators
- 4/ TCEQ-PST: Texas Commission on Environmental Quality - Petroleum Storage Tank
- 5/ TCEQ-VCP: Texas Commission on Environmental Quality - Voluntary Cleanup Program

SOURCES: QORE, Inc., Draft Report, *Phase I Environmental Site Assessment and Additional Services, DalFort Aerospace, 7701 Lemmon Avenue, Dallas, Dallas County, Texas 75209*, August 2003; Benchmark Environmental Consultants, *Phase I Environmental Site Assessment, City of Dallas, DalFort Aerospace and Former Legend Terminal, 7701 and 7777 Lemmon Avenue, Dallas, Dallas County, Texas*, November 17, 2008.

PREPARED BY: Ricondo & Associates, Inc., August 2014.

### 9.17.2 SOLID WASTE

The City of Dallas Sanitation Services provides solid waste disposal services throughout the metropolitan area. One landfill and three waste transfer stations are located within the City of Dallas, the closest of which is the northwest (Bachman) transfer station, located approximately 1,000 feet west-northwest of the Airport. The McCommas Bluff Landfill is more than 11 miles south-southeast of the Airport at 5100 Youngblood Road. With an overall area of 1,029 acres, the McCommas Bluff Landfill only accepts municipal solid waste and nonhazardous industrial waste. The landfill is not permitted for, nor does it accept, hazardous waste. As of a 2010 report from the City of Dallas, the McCommas Bluff Landfill had a remaining capacity of 104 million cubic yards.<sup>25</sup> Wastes designated as hazardous or special waste must be handled, transported, and disposed of at licensed facilities in accordance with all federal, State, and local regulations. The TCEQ provides assistance for permitting and regulation of these wastes.

## 9.18 Environmental Review Process

Most projects specific to master plans require environmental review under NEPA because the FAA is required to undertake an action, such as approving federal funding, approving the use of PFCs to fund the project, or including the project on an ALP. As such, the FAA action related to most airport projects is approval, rather than actual implementation, of the project.

NEPA requires federal agencies to prepare environmental documentation that discloses to decision-makers and the interested public a clear, accurate description of potential environmental effects resulting from proposed federal actions and reasonable alternatives to those actions. Through NEPA, the U.S. Congress directed federal agencies to integrate environmental factors into their planning and decision-making processes and to encourage and facilitate public involvement in decisions that affect the quality of the human environment. Therefore, in making its decisions, the FAA, as a federal agency, is required to consider the environmental impacts of recommended master plan projects.

The level of environmental documentation required for any master plan project, also referred to as the proposed action in the environmental documentation, depends on the type of project, the potential environmental effects of the project, and the type of environmental resources that may be affected. The three levels of environmental documents that comply with NEPA are:

- **Categorical Exclusion (CatEx):** A decision that the proposed action has no effect on the environment and does not require additional environmental review. FAA Order 1050.1E contains a list of projects that normally do not require additional environmental review (i.e., are eligible for a CatEx) as long as no extraordinary circumstances are involved.

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<sup>25</sup> City of Dallas, Sanitation Services, *Green Energy from McCommas Bluff Landfill*, February 2010.

- **Environmental Assessment:** A document that presents analyses of various environmental effects used to determine whether any effects are significant enough to warrant preparation of an EIS. When environmental effects cannot be mitigated below a level of significance, further analysis is required and an EIS is prepared. When no significant effects are found, the FAA issues a FONSI.
- **Environmental Impact Statement:** A document that presents detailed analysis of various environmental impacts of a proposed action. The EIS process provides for full public disclosure of significant environmental impacts and practicable alternatives that avoid or minimize adverse impacts. The responsible FAA official uses a Final EIS as the primary reference and basis to prepare a Record of Decision (ROD) for the approving FAA official's signature. The ROD provides the public with the approving FAA official's rationale for approving or not approving a proposed action. It also references the environmental documents prepared for or used to support the proposed action as well as the Final EIS.<sup>26</sup>

Detailed analysis would be required pursuant to NEPA and FAA guidance following completion of the Master Plan Update. It is also important to note that the scale or specific aspects of each alternative discussed in Section 5 as part of the Master Plan Update preferred alternative can change significantly in the design phase and would need further screening of the environmental impact categories to determine the appropriate NEPA documentation that would be required. Thus, the timeframe of each project in the Master Plan Update preferred alternative would depend on demand-driven factors and Airport and FAA funding, in addition to implementation of the environmental review and NEPA process.

## 9.19 Potential Environmental Consequences

This section of the environmental overview focuses on environmental impact categories with the potential to be affected by implementation of the Master Plan Update preferred alternative including airfield modifications, general aviation development, and support facility improvements. **Table 9-13** shows the potential impacts related to each of the environmental categories discussed in this section.

Projects associated with the Master Plan Update preferred alternative would be confined to the airfield, within the Airport Main Terminal area, or located on specific surrounding roadways. Environmental impact categories DOT Act, Section 4(f) properties, biotic communities, wetlands, floodplains, coastal areas, and wild and scenic rivers were determined to be absent from the Airport and Airport vicinity. Therefore, there would be no impacts in these categories from implementation of the preferred alternative.

<sup>26</sup> Federal Aviation Administration, Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, effective April 28, 2006.

**Table 9-13: Potential Environmental Impacts**

<b>ENVIRONMENTAL IMPACT CATEGORY (APPLICABLE SECTION IN THIS MASTER PLAN UPDATE)</b>	<b>POTENTIAL IMPACT</b>
Aircraft Noise (Section 9.1)	None
Compatible Land Use (Section 9.2)	None
Demographics and Socioeconomic Profile (Section 9.3)	None
Social Impacts (Section 9.4)	Less than Significant Impacts
Air Quality (Section 9.5)	Less than Significant Impacts
Water Quality (Section 9.6)	Less than Significant Impacts
Department of Transportation Act, Section 4(f) Properties (Section 9.7)	None
Historic, Architectural, Archaeological, and Cultural Resources (Section 9.8)	None
Biotic Communities (Section 9.9)	None
Wetlands (Section 9.10)	None
Floodplains (Section 9.11)	None
Coastal Areas (Section 9.12)	None
Wild and Scenic Rivers (Section 9.13)	None
Farmland (Section 9.14)	None
Energy Supply and Natural Resources (Section 9.15)	Less than Significant Impacts
Light Emissions and Visual Impacts (Section 9.16)	None
Hazardous Materials and Solid Waste (Section 9.17)	Less than Significant Impacts

SOURCE: Ricondo & Associates, Inc., August 2014.

PREPARED BY: Ricondo & Associates, Inc., August 2014.

As the Master Plan Update preferred alternative would not include changes to Airport capacity or operations, it is unlikely that aircraft noise, compatible land use, or induced socioeconomic impacts would be affected by implementation of the preferred alternative. Because the preferred alternative would not increase Airport capacity or operations, its implementation would not likely result in an impact on historic, architectural, archaeological, and cultural resources or light emissions and visual impacts. Construction activities and phased implementation of the preferred alternative would follow best management practices (BMPs) in place at the Airport and would not affect these categories.

The remaining environmental impact categories were determined to have less than significant impacts, as described below.

## 9.19.1 SOCIAL IMPACTS

### 9.19.1.1 Relocation of Residences and/or Businesses

Improvements associated with the Master Plan Update preferred alternative would primarily be located on Airport property, with additional improvements along Lemmon Avenue, Airdrome Drive, Mockingbird Lane,

and Cedar Springs Road/Herb Kelleher Way. No residences or businesses would be removed or relocated as a result of the Master Plan Update projects. No residents would be displaced as a result of the Master Plan Update projects.

### 9.19.1.2 Surface Traffic Patterns

#### *Traffic Patterns for Future Conditions (PAL E3)*

Projected traffic patterns at the Airport under PAL E3 growth conditions show several intersections operating at decreased levels of service during peak a.m. and p.m. periods. Particularly, the Airport entrance at the intersection of Mockingbird Lane and Cedar Springs Road/Herb Kelleher Way would perform at LOS F (decreasing from a current LOS D), which equates to a failed condition. Additionally, projections for the Mockingbird Lane and Denton Drive intersection show decreased levels of service during peak periods, operating at LOS E (decreasing from current a.m. peak of LOS B and p.m. peak of LOS C).

- Lemmon Avenue and Airdrome Drive intersection:
  - a.m. peak: LOS C
  - p.m. peak: LOS C
- Lemmon Avenue and Mockingbird Lane intersection:
  - a.m. peak: LOS C
  - p.m. peak: LOS C
- Airdrome Drive and Mockingbird Lane intersection:
  - a.m. peak: LOS B
  - p.m. peak: LOS C
- Mockingbird Lane and Cedar Springs Road/Herb Kelleher Way intersection:
  - a.m. peak: LOS F
  - p.m. peak: LOS F
- Mockingbird Lane and Denton Drive intersection:
  - a.m. peak: LOS E
  - p.m. peak: LOS E

#### *Traffic Patterns for Future Conditions (PAL E3 with Master Plan Update preferred alternative)*

Improvements are recommended for several roadways, including Mockingbird Lane, Airdrome Drive, Cedar Springs Road/Herb Kelleher Way, and Lemmon Avenue, to accommodate future Airport demand (exhibited in the PAL E3 traffic conditions described above). The Master Plan Update preferred alternative includes roadway improvements along Mockingbird Lane that would result in four full continuous lanes from Airdrome Drive to Cedar Springs Road/Herb Kelleher Way, northbound and southbound lanes being tunneled below grade to accommodate through traffic, and an additional turn lane at Denton Drive. Projected traffic patterns



under the preferred alternative demonstrate improvements at the two intersections along Mockingbird Lane that exhibited poor to failing levels of service for future conditions:

- Mockingbird Lane and Cedar Springs Road/Herb Kelleher Way intersection
  - Peak: LOS C
- Mockingbird Lane and Denton Drive intersection:
  - Peak: LOS D

#### 9.19.1.3 Disruption of Established Communities

The Master Plan Update projects would not disrupt the larger neighborhood developments around the Airport. Improvements associated with the Master Plan Update preferred alternative would primarily be located on Airport property, with additional improvements along Lemmon Avenue, Airdrome Drive, Mockingbird Lane, and Cedar Springs Road/Herb Kelleher Way. The preferred alternative would not be located within any of the surrounding established communities and it is not anticipated that any of the elements of the preferred alternative would result in a disruption of established communities. The preferred alternative includes roadway improvements that would result in temporary construction noise and traffic. The roadway improvements would alleviate traffic congestion in surrounding communities and provide aesthetic improvements along the roadways.

#### 9.19.1.4 Disruption of Orderly, Planned Development

Improvements associated with the Master Plan Update preferred alternative would primarily be located on Airport property, with additional improvements along Lemmon Avenue, Airdrome Drive, Mockingbird Lane, and Cedar Springs Road/Herb Kelleher Way. The preferred alternative would not be located within any of the surrounding planned developments and it is not anticipated that any of the elements of the preferred alternative would result in a disruption of any planned development.

#### 9.19.1.5 Creation of an Appreciable Change in Employment

Improvements associated with the Master Plan Update preferred alternative would primarily be located on Airport property, with additional improvements along Lemmon Avenue, Airdrome Drive, Mockingbird Lane, and Cedar Springs Road/Herb Kelleher Way. No businesses would be removed or relocated as a result of the Master Plan Update projects. Construction of the Master Plan Update preferred alternative projects would generate a temporary employment demand. Aside from these temporary changes in employment, no long-term appreciable change in employment would be anticipated as a result of implementation of the Master Plan Update preferred alternative.

#### 9.19.1.6 Roadway Noise

The preferred alternative includes roadway improvements that would result in temporary construction noise and traffic. Improvements are recommended for several roadways, including Mockingbird Lane, Airdrome Drive, Cedar Springs Road/Herb Kelleher Way, and Lemmon Avenue, to accommodate future Airport-related demand.

The improvements to Mockingbird Lane, Airdrome Drive, and Cedar Springs Road/Herb Kelleher Way would occur along corridors that are primarily commercial/industrial in use. Construction of improvements along Lemmon Avenue would occur adjacent to residential uses, but would be temporary. Additionally, roadway improvements would provide aesthetic improvements and provide a buffer between the Airport and residential areas along the northeast side of the Airport. Therefore, no residential land uses would be affected by roadway noise. Roadway noise is not expected to be a concern as a result of implementation of the preferred alternative.

#### 9.19.2 AIR QUALITY

The Master Plan Update preferred alternative would not generate any additional aircraft-related operations at the Airport; therefore, no increase in operational emissions would occur. However, construction-related activities associated with implementation of the Master Plan Update preferred alternative would result in increased emissions. Because of the moderate nonattainment status for 8-hour ozone concentrations in the Dallas-Fort Worth area, all construction activities would have to meet applicable *de minimis* thresholds for ozone general conformity purposes, which are 100 tons per year of VOCs and 100 tons per year of NO<sub>x</sub>.<sup>27</sup> Further air quality emissions analysis would be conducted for the required NEPA documentation to justify general conformity compliance for specific preferred alternative projects.

#### 9.19.3 WATER QUALITY

Water quality BMPs would be integrated into the construction plans for the Master Plan Update preferred alternative, in accordance with the Airport *Storm Water Pollution Prevention Plan* (SWPPP) and applicable water quality regulations, along with other measures, as necessary and appropriate. In addition to water quality BMPs incorporated into the project design, ongoing implementation of Airport-wide water quality measures, such as source control BMPs (i.e., non-storm-water management, waste handling/disposal, good housekeeping, spill prevention, control, and cleanup), as set forth in the Airport SWPPP, would also help address potential water quality impacts associated with the recommended improvements.

Construction activities associated with the Master Plan Update preferred alternative have the potential to generate water pollutants, such as sediments from grading/ground disturbance; fuels, oil, grease, and solvents from construction equipment fueling and servicing; metals from steel/iron work; paints and miscellaneous chemicals stored and used during construction; and trash and debris. Potential water quality impacts would be addressed through compliance with the construction activity requirements specified in the Airport SWPPP.

#### 9.19.4 NATURAL RESOURCES AND ENERGY SUPPLY

The prime concern would be if future growth, improvements, and expansion associated with implementation of the Master Plan Update preferred alternative would result in a shortage of energy or place a strain on existing energy suppliers to serve the Airport at the highest level of efficiency. While the Master Plan Update

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<sup>27</sup> Following standard industry practice, ozone concentrations were evaluated by evaluating the emissions of VOC and NO<sub>x</sub>, which are precursors in the formation of ozone.

preferred alternative would increase the need for energy and other natural resources, the Airport's energy and natural resource providers would be able to meet future energy requirements for the Airport. Therefore, the Master Plan Update preferred alternative would have less than significant impacts on natural resources and energy supply.

#### 9.19.5 HAZARDOUS MATERIALS AND SOLID WASTE

Implementation of the Master Plan Update preferred alternative, which includes construction and operation of airfield facilities, may involve the handling of hazardous materials/wastes; however, such materials/wastes would generally be of a common nature, such as fuels, lubricants, paints, cleansers/solvents, and the like. No acutely hazardous materials, substances, or wastes are anticipated to be associated with the recommended facilities. As stated earlier, the handling of hazardous materials/wastes at the Airport is subject to a number of federal, State, and local safety regulations. Based on the nature of the materials/wastes associated with the Master Plan Update preferred alternative and the regulatory framework that applies to the handling of such materials/wastes, potential impacts, if any, in the vicinity would be less than significant.

Construction activities related to implementation of the preferred alternative would result in a temporary increase in solid waste generated at the Airport. However, if necessary for specific projects, recycling, salvage, reuse, and disposal options would be identified in a Remediation Plan in advance of all activities to minimize the amount of debris directed to local landfills. Locations for sorting materials for reuse and recycling would also be identified. Therefore, the Master Plan Update preferred alternative would have a less than significant impact on the solid waste disposal system. The disposal of municipal (nonhazardous) waste would likely occur at the McCommas Bluff Landfill in accordance with applicable State and local requirements.

Any special or hazardous waste resulting from construction and operation of the preferred alternative projects would be disposed of at a landfill approved to receive special or hazardous waste, as required by local and State regulations, or otherwise treated/managed in accordance with federal, State, and local requirements. A project-specific Remediation Plan would address any specific waste issues based on site contaminants of concern following the identification of existing contaminants of concern and their concentrations. If any asbestos-containing material is found during demolition activities, it would be appropriately removed. Asbestos is considered a "special waste," as defined in Texas Administrative Code, Title 30, Part 1, Chapter 330, and it must be transported by a licensed asbestos waste transporter to a licensed asbestos waste facility/landfill, most likely the Lewisville Landfill.<sup>28</sup>

Soil must be characterized through sampling and laboratory analysis prior to the determination of disposal methods. A project-specific Remediation Plan would address any necessary soil excavation, transportation, and disposal once the full investigation and analysis are complete. Therefore, through implementation of a Remediation Plan and adherence to applicable regulations, the potential impacts of the Master Plan Update preferred alternative related to the regulation of solid waste would be less than significant.

<sup>28</sup> State of Texas, Office of the Secretary of State, Texas Administrative Code, Title 30, Part 1, Chapter 330, accessed online May 2015: [http://texreg.sos.state.tx.us/public/readtac\\$ext.ViewTAC?tac\\_view=4&ti=30&pt=1&ch=330](http://texreg.sos.state.tx.us/public/readtac$ext.ViewTAC?tac_view=4&ti=30&pt=1&ch=330).

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## 9.20 Airport Recycling, Reuse and Waste Reduction Plan

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In May 2015, R&A was tasked with developing an Airport Recycling, Reuse, and Waste Reduction Plan as part of this Master Plan Update. The plan includes review and documentation of the Airport's current waste management program and procedures as well as a plan to minimize solid waste generation at the Airport. At the time this Master Plan Update was published, the study was ongoing. The final Airport Recycling, Reuse, and Waste Reduction Plan is published as separate document.